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March 26, 2015

RESS AND COURIER

Ontario Energy Board
P.O. Box 2319
27th Floor
2300 Yonge Street
Toronto, ON M4P 1E4

Attention: Ms. K. Walli, Board Secretary

Dear Ms. Walli:

Re: EB-2014-0355 – Response to Lambton County Interrogatories of Suncor Energy Products Inc. ("Suncor")

We are counsel to Suncor.

Further to Order 4 of Procedural Order No. 1 in this matter, enclosed, please find Suncor's complete response to each of the interrogatories on its evidence delivered by Lambton County on March 12, 2015.

Yours truly,

FOGLER, RUBINOFF LLP

Albert Engel
Digitally signed by Albert Engel
DN: cn=Albert Engel, o=Fogler, Rubinoff LLP, ou, email=aengel@foglers.com, c=CA
Date: 2015.03.26 12:44:26 -04'00'

Albert M. Engel

cc: C. Brett, Suncor
C. Scott, Suncor
J. Hood, Suncor
M.Kozak, Suncor

ONTARIO ENERGY BOARD

IN THE MATTER OF the *Ontario Energy Board Act, 1998*, S.O. 1998, c. 15 (Sched. B);

AND IN THE MATTER OF an application by Suncor Energy Products Inc. for an Order or Orders pursuant to Section 41(9) of the *Electricity Act, 1998* (as amended) establishing the location of the applicant's distribution facilities within certain streets and highways owned by the Corporation of the County of Lambton, all as set out in this application.

SUNCOR'S RESPONSE TO LAMBTON COUNTY INTERROGATORIES

EB-2014-0355

March 26, 2015

SUNCOR'S RESPONSE TO LAMBTON COUNTY INTERROGATORIES ("RESPONSE")

Lambton County Interrogatory No. 1

Assuming that construction is effected pursuant to the proposed drawings submitted by Suncor, what is the circumference of the area, or set back, required around the proposed collection infrastructure that will be required to assure safety during future construction/repair activities?

Suncor proposes to install its distribution lines in Lambton County ("County") streets and highways in locations substantially in accordance with the plans set out in Exhibit B, Tab 1, Schedule 1 of Suncor's Further Evidence, filed on March 6, 2015. Suncor requires its contractors to install the lines in accordance with the requirements of the Ontario Electrical Safety Code ("OESC"), a copy of which is attached as Appendix A to this Response, and all applicable engineering, environmental and health and safety standards. The OESC requirements are the product of over 50 years of experience with electrical safety. Prior to any future construction/repair activities taking place, the person proposing the future construction/repair activities will be required to comply with all applicable engineering, environmental and health and safety standards, and the requirements of the *Ontario Underground Infrastructure Notification System Act, 2012* S.O. 2012, c.4 ("Ontario One Call"), and the appropriate circumference or set back to assure safety from Suncor's lines will be determined at that time.

Lambton County Interrogatory No. 2

If the circumference area for an adequate safety buffer is such that the County is prohibited from effecting repairs to its own road infrastructure (such as culverts, electric lines running to traffic signals, etc.), what steps is Suncor prepared to take to allow such work to occur?

County Staff provided input into the locations which resulted in the updated drawings at Exhibit B, Tab 1, Schedule 1 of Suncor's Further Evidence, filed on March 6, 2015. This input included ensuring that repair and/or replacement of existing facilities could still occur by requesting Suncor’s cables at sufficient depths beneath existing infrastructure such as ditches and roads. As detailed on the drawings at Exhibit B, Tab 1, Schedule 1 of Suncor's Further Evidence, filed on March 6, 2015, these depths ranged from 1.5m below ditches to 3.5m below roads.

Should the County initiate a locate request through Ontario One Call, Suncor would be notified. If the work is within the vicinity of Suncor's infrastructure, Suncor would ensure the protection of its infrastructure by requesting a locate by a hired contractor who would issue the locates to the County. Suncor would also provide as-built documentation of the infrastructure to the County if requested. Suncor would expect sufficient notice to be provided to Suncor so that Suncor or its agent may witness the work within the vicinity of its infrastructure.

Lambton County Interrogatory No. 3

If the circumference area for an adequate safety buffer for third parties (such as other utility providers) are prohibited from effecting repairs to their infrastructure, what steps is Suncor prepared to take to allow such work to occur?

Should a third party utility initiate a locate request through Ontario One Call, Suncor would be notified. If the work is within the vicinity of our infrastructure, Suncor would ensure the protection of its infrastructure by requesting a locate by a hired contractor who would issue the locates to the utility. Suncor would also provide as-built documentation of the infrastructure to the utility. Suncor would expect sufficient notice to be provided to Suncor so that Suncor or its agent may witness the work within the vicinity of its infrastructure.

Lambton County Interrogatory No. 4

Under Suncor's proposed method of detecting buried collection lines and other infrastructure (e.g. fiber optic or other communication lines), what is the tolerable allowance of error, both vertically and horizontally, that is specified when locating this infrastructure by sensing equipment commonly used in the industry?

As set out in section 4.2 of the ESA and TSSA *Guideline for Excavation in the Vicinity of Utility Lines (*"ESA and TSSA Guideline"), a copy of which is attached as Appendix B to this Response, locate accuracy should be considered to be 1 metre on either side of the surface centre line locate unless the locate instructions specifically indicated other boundary limits.

Lambton County Interrogatory No. 5

Please confirm that Suncor's buried electrical infrastructure associated with this project can be accurately and positively located using sensing equipment commonly used in the industry when such electrical infrastructure is place in close proximity or directly above or below other buried utilities that may be present in the road allowance, such as natural gas lines, water services, telephone, cable, fiber optic or other electrical infrastructure.

Suncor's infrastructure will be able to be located using appropriate techniques as set out in the ESA and TSSA Guideline.

APPENDIX A

The following are the Code requirements and explanatory material for buried electrical wiring that are applicable to most residential applications.

12-012 Underground Installations

- **Subrule (1)** Direct buried conductors, cables, or raceways shall be installed to meet the minimum cover requirements of Table 53.

Wiring Method	Minimum Cover — Millimetres			
	Non-vehicular Areas		Vehicular Areas	
	750 V or Less	Over 750 V	750 V or Less	Over 750 V
Conductors or cable not having a metal sheath or armour e.g.- NMWU, USEI90	600	750	900	1000
Conductor or cables having a metal sheath or armour e.g. – TECK90, ACWU	450	750	600	1000
Raceway e.g. – PVC, DB2	450	750	600	1000

Note: *Minimum cover means the distance between the top surface of the conductor, cable, or raceway and the finished grade.*

Table 53

Minimum Cover Requirements for Direct Buried Conductors, Cables, or Raceways

Notes for Subrule (1) (see Figure 12-012 on page 3). The aim is that buried electrical wiring be adequately protected from potential damage by being buried to a minimum depth in the ground. "Direct burial" means conductors or cables that are directly buried underground (ie, the outer surface of the conductor or cable is in direct contact with the earth). "Cover" refers to the minimum distance between the top surface of the cable or raceway and finished grade.

- **Subrule (2)** The minimum cover requirements shall be permitted to be reduced by 150 mm where mechanical protection is placed in the trench over the underground installation.

Notes for Subrule (2) (see Figure 12-012 on page 3). The purpose is to permit a reduction in the protective depth of the wiring when adequate mechanical protection is installed above the wiring.

- **Subrule (3)** Mechanical protection shall consist of one of the following and, when in flat form, shall be wide enough to extend at least 50 mm beyond the conductor, cables, or raceways on each side:

  (a) Treated planking at least 38 mm thick; or

  (b) Poured concrete at least 50 mm thick; or

  (c) Concrete slabs at least 50 mm thick; or

  (d) Concrete encasement at least 50 mm thick; or

  (e) Other suitable material.

  Notes for Subrule (3) (see Figure 12-012 on page 3). This subrule specifies the types of mechanical protection that are considered as being adequate and that will not injure the conductors or the insulating covering on the conductors.

  Paragraph (a). Treated planking – Wood planking should be pressure treated with a solution such as pentachlorophenol. Creosote and some types of wood preservative may injure the insulation of the conductor and must not be used.

  Paragraphs (b), (c), and (d). Concrete -- When 50 mm of poured concrete, or 50 mm thick concrete slabs are placed over the installation, or concrete encasement of 50 mm thick is used, the conductors or cable should be installed in a conduit to prevent injury to the conductors.

  Paragraph (e). Other material -- Other material includes polyethylene pipe that is certified to CSA Standard B137.1. Because this pipe is not certified as an electrical raceway, conductors and cables approved for direct earth burial shall be used (This is usually indicated by the letter “U” in the conductor/cable type. Examples are types NMWU, or TWU).

- **Subrule (4)** Direct buried conductors or cables shall be installed so that they run adjacent to each other and do not cross over each other and with a layer of 6 mm (nominal) screened sand or screened earth at least 75 mm deep both above and below the conductors.

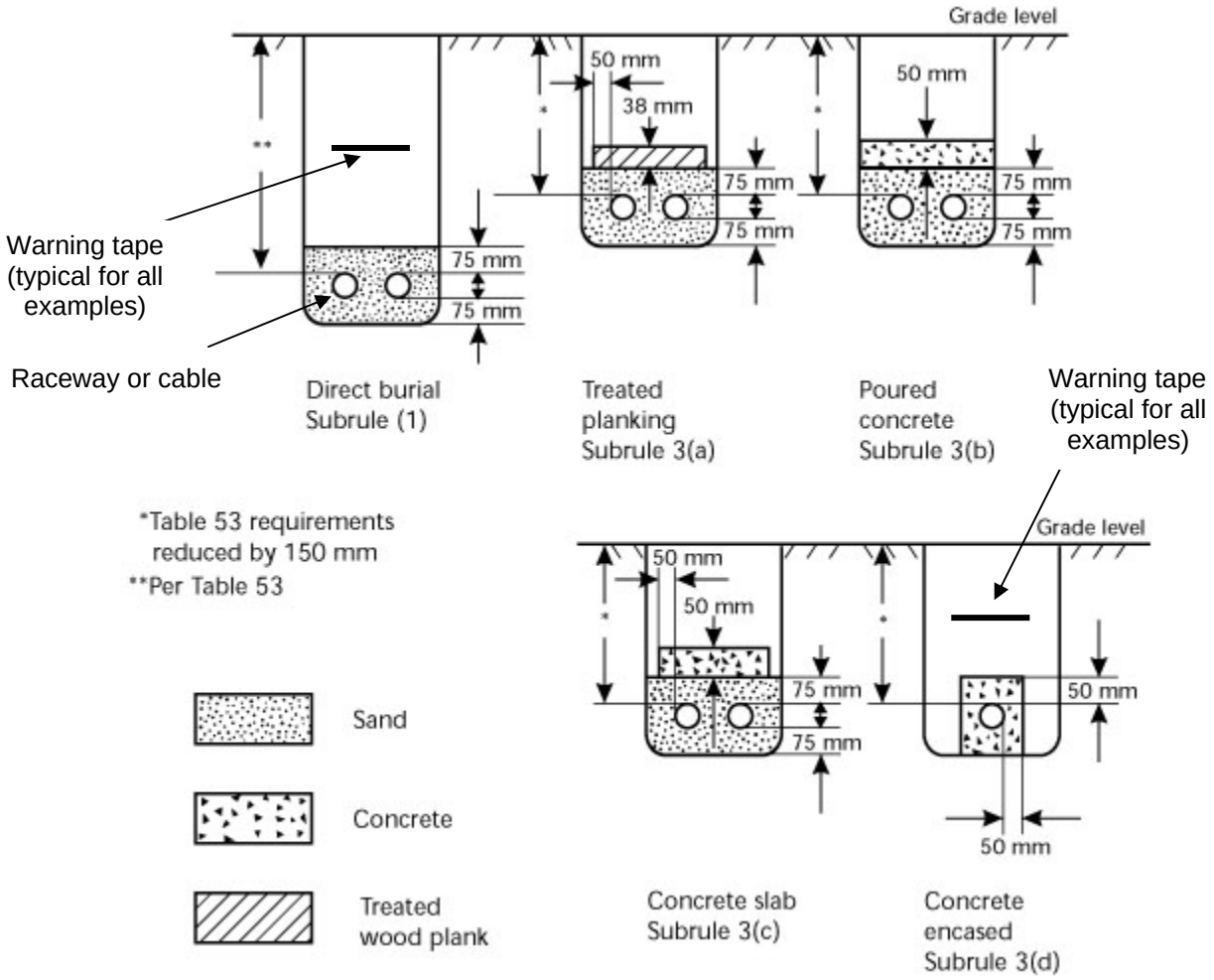


Figure 12-012

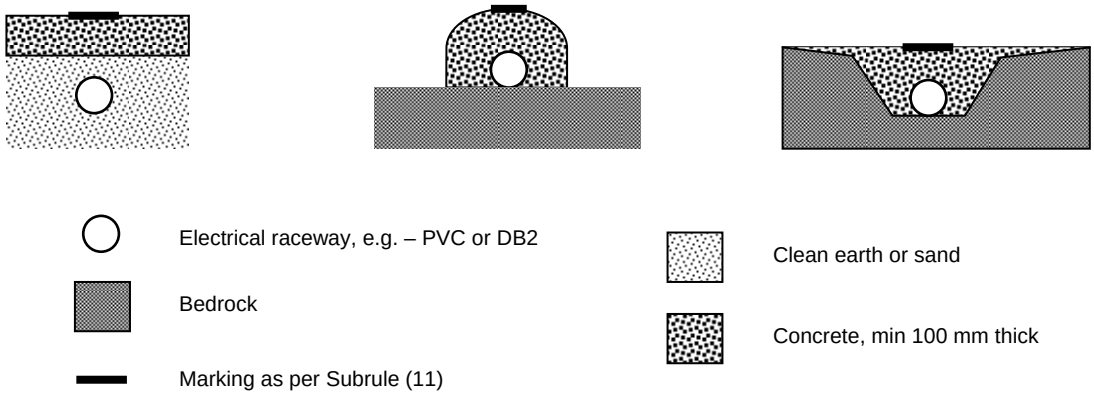
Typical Mechanical Protection for Conductors, Cables, or Raceways

Note: Figure 12-012 is copied from the CSA CE Code Handbook – An Explanation of the Rules of the Canadian Electrical Code, Part 1.

- **Subrule (8)** Raceways shall be permitted to be installed directly beneath a concrete slab at grade level provided the concrete slab is not less than a nominal 100 mm in thickness, the location is adequately marked, and the raceway will not be subject to damage during or after installations.

  Notes for Subrule (8). This subrule permits electrical wiring installed in electrical raceways to be buried beneath a grade level concrete slab, provided that the concrete slab is at least 100 mm thick. Examples of permitted electrical raceways are Rigid PVC conduit, and Rigid Type DB2 conduit. The concrete slab will provide adequate protection from any digging operations, provided that the location is marked after the

installation. This option is useful where local conditions such as bedrock prevent burial at the depths required by Subrules (1), (2) & (3).



- **Subrule (10)** Backfill containing large rock, paving materials, cinders, large or sharply angular substances, or corrosive material shall not be placed in an excavation where such materials may damage cables, raceways, or other substructures, prevent adequate compaction of fill, or contribute to corrosion of cables, raceways, or other substructures.

  Notes for Subrule (10). This subrule makes it clear that material that can damage the underground cables or raceways not be used in backfilling the trench. Backfill containing large rocks may affect backfill settlement, and the additional weight may contribute to sharp objects penetrating the sand or earth covering and damaging the conductor insulation.

- **Subrule (11)** The initial installation shall be provided with a suitable marking tape buried approximately halfway between the installation and grade level, or adequate marking in a conspicuous location to indicate the location and depth of the underground installation.

  Notes for Subrule (11). The intention is to ensure a buried installation of electrical wiring is adequately marked for the safety of persons working on or near the wiring in the future. The requirement applies to all types of installation whether direct buried or installed in pipe or conduit and whether mechanically protected or not.

  Common trade practice is to bury an electrical warning marker tape (similar to crime scene tape) halfway above the electrical wiring in the trench.

  Other adequate marking includes permanent above ground markers such as printed signs on posts or printed “tombstone” markers installed flush to grade indicating the installation location at intervals of not more that 15 m or at any change in direction.

  Another alternative is the installation of suitable markers above grade at each riser location and at any location the buried installation enters a building or similar structure to indicate the presence of buried cables; and the installation of a layout drawing at a conspicuous location such as the service box or distribution panel.

- **Subrule (12)** Where underground raceways or cables are subject to movement by settlement or frost, provision shall be made for the prevention of damage to the conductors or the electrical equipment.

  Notes for Subrule (12). The intent is to prevent damage to raceways, cable, and electrical equipment due to movement of the ground due to settling or frost action. Experience has shown damage that includes raceways being pulled apart, conductors being pulled out of terminations, damage to electrical enclosures and to components within the enclosures.

  Examples of provisions that can be made to prevent damage are the proper use of conduit expansion fittings and/or expansion loops in cables both below grade and at terminations within enclosures.

APPENDIX B

Guideline for Excavation in the Vicinity of Utility Lines

Ontario Regulation 210/01 Oil and Gas Pipeline Systems

Ontario Regulation 22/04 Electrical Distribution Safety

December 2008

Legal Disclaimer.

This document contains GUIDELINES ONLY to assist members of the industry in interpreting:

- Ontario Regulation 22/04 - Electrical Distribution Safety - made under subsection 113(1) of Part VIII of the Electricity Act, 1998
- Ontario Regulation 210/01 – Oil And Gas Pipeline Systems – made under the Technical Standards and Safety Act, 2000

These guidelines do not have the force of law. Where there is a conflict between these guidelines and any legislation or regulation which may apply, the relevant law prevails.

Retention Periods stated in the guidelines set out the minimum period for which referenced documents are to be retained. Each distributor needs to make its own assessment of the appropriate retention period for specific documents based on its assessment of risk factors and potential liability.

Definitions

Abandoned utility lines means those *utility lines* that have been identified by the *utility* in the ***locate*** as abandoned.

Blanket Locate or ***Alternate Locate Agreement*** means permission to excavate, subject to the terms and conditions outlined by a written agreement between the *Contractor* or *Excavator* and the *utility*.

Boundary Limits means the volume of soil contained by vertical planes placed 1.0 metre each side of the centre line of the marked *utility line* or 1.0 metre on either side of the marked limits of the underground structure.

Contractor or Excavator means the individual, partnership, corporation, public agency, or other entity that digs, bores, trenches, grades, excavates or breaks ground with mechanical equipment or explosives in the vicinity of a *utility line*.

Hand dig means to excavate using a shovel with a wooden or insulated handle, not including picks, bars, stakes or other earth piercing devices. Please note that Regulations requiring a *locate* include hand digging applications.

Hydrovac means the use of pressurized water or compressed air to loosen soil and a vacuum system to remove it.

Live means:
a) electrically connected to a source of voltage difference or electrically charged so as to have a voltage different from that of the earth,
b) connected to a source of fuel under the *Technical Standards and Safety Act, 2000*.

Locate means identification on the ground of the position of the *utility line*(s) based on records or electronic locating equipment and includes provision of necessary documentation such as a locate sheet.

Mechanical Excavation means boring or open cut excavation by means of mechanical excavating equipment such as powered excavator, earth mover, earth piercing equipment including hand held augers, picks, bars, stakes or any other device that may damage the *utility line*. Please note that Regulations requiring a locate include hand digging applications.

Utility means the individual, partnership, corporation, public agency, or other entity that is licensed to operate an electric distribution system under the *Ontario Energy Board Act* or a pipeline under the *Technical Standards and Safety Act, 2000*.

Utility line means those facilities operated by a *utility* through which gas or electric energy is conveyed and includes pipe, cables, and other directly related equipment and components such as switches, valves, meters and supporting structures.

1.0 General Conditions

1.1 All work shall be carried out in accordance with:

(a) The *Occupational Health and Safety Act* (OH&S) and Regulations which apply under this Act including Regulations for Construction Projects; and

(b) as appropriate,

(i) the *Technical Standards and Safety Act, 2000* and Ontario Regulation 210/01 Oil and Gas Pipeline System and other regulations which apply under this Act; and / or

(ii) the *Electricity Act, 1998* and the Ontario Regulation 22/04 Electrical Distribution Safety Regulation and other regulations which apply under this Act.

1.2 The guidelines, procedures and requirements described herein are prepared in the interest of safety to the general public, the workers carrying out the excavation, and the prevention of damage to *utility lines* and property.

1.3 The *Excavator* shall assume that all *utility lines* are *live* unless otherwise expressly identified by the *utility* on the *locate*.

2.0 Locate Request

2.1 Prior to excavation the person responsible for the work shall contact "Ontario One Call" at the telephone or facsimile numbers listed in Table 1 below, or the *utility*, and request a *locate* of *utility lines* in the areas where excavation will be taking place. The *Excavator* must receive the *locate* as described in Section 3.0 prior to commencing any excavation.

Table 1:

Ontario One Call	
Telephone	1-800-400-2255
Fax	1-800-400-8876

Note: Not all *utilities* belong to Ontario One Call. If you are planning to excavate in an area not serviced by Ontario One Call please contact the local municipality for information on *utilities* in that area and contact the *utility* directly for *locate* requests.

2.2 Subject to entering into an agreement with an *Excavator*, the *utility* may provide that *Excavator* with a *blanket locate*.

2.3 If removing asphalt but not road base or underlying structure a *locate* is not required.
Note: *Locates* are required for sidewalk removal.

2.4 The *Excavator*, when requesting a locate, shall provide the *utility* with relevant information describing the location where the work will take place, the expected time when the work will begin, the scope of the work, the nature of the work, the expected duration, the name address and telephone number of the *Excavator*, and the name of the *Excavator's* site representative.

2.5 Except in emergency situations, requests for stakeouts or *locate* information should be made as early as possible, and at least 5 working days in advance.

2.6 Except in cases of emergency, or where the response for the *locate* request has been agreed with the *Excavator*, the *utility* shall make every reasonable effort to respond to notification requests and provide *locates* within 4 working days of receiving the notification, and 5 working days during peak times.

2.7 In emergency situations, requests for *locate* information shall be provided by the *utility* as soon as possible.

3.0 Locates

3.1 The *utility* shall provide information using labeled stakes, flags, and/or highly visible paint marks (See section 11.0 for colour code) continuously or at regular intervals on the surface of the ground. The markings should clearly indicate the centre line of the *utility line* and the limits of underground structures, where applicable, in the defined area of the proposed excavation.

3.2 The *utility* shall also provide a diagram describing the *locate* information to the person who requested the *locate* or when requested to the *Contractor's* site representative at the time of the *locate*. The diagram should indicate in clear legible terms the *locate* information including additional clarifications, dimensions from fixed objects, orientation, and any unusual depths, if known.

3.3 When requested by either party, the *utility* and the *Excavator* shall meet on site to confirm details of the excavation and the location of the *utility line*.

3.4 Where there are no *utility lines* in the defined area of the proposed excavation the *utility* may provide verbal confirmation to the *Excavator*. Written confirmation will be provided on request.

4.0 Locate Boundaries and Accuracy

4.1 The *Excavator* shall not excavate outside the area covered by the *locate* request without first obtaining a further *locate*.

4.2 *Locate* accuracy shall be considered to be 1 metre on either side of the surface centre line *locate* or 1 metre on either side of the marked limits of the underground structure, unless the *locate* instructions specifically indicate other *boundary limits*.

4.3 Irrespective of the depth of the *utility line*, the *Excavator* must not use mechanical excavating equipment to dig within the *boundary limits* to expose the *utility line*.

5.0 Duration

5.1 The *utility* shall indicate the expiry date (normally 30 days) on the *locate* form or diagram and the *utility* contact phone number.

5.2 Stakes or markings may disappear or be displaced. *Excavators* shall not rely on expired *locates*. Where delays occur beyond the period specified in 5.1 or where the *locate* markings become unclear, a new *locate* must be requested by the *Excavator*.

5.3 Where the *utility* has ascertained that no changes have taken place since releasing the locate information and the *locate* markings are still clear, the *utility* may provide a new expiry date in writing.

6.0 Hydrovac Excavation

6.1 With prior agreement of the *utility*, *hydrovac* may be used as an alternative to *hand digging*.

6.2 For detailed procedures for using *hydrovac* excavation in the vicinity of pipelines see Appendix 5.

6.3 For detailed procedures for using *hydrovac* excavation in the vicinity of electric distribution lines see the E&USA Safe Practice Guide *"Excavating with Hydrovacs in the Vicinity of Underground Electrical Plant*

7.0 Initial Exposure

7.1 At no time, with the exception of 2.3, should an *Excavator* use *mechanical excavation* within the *boundary limits* of the *locate* without first *hand digging* test holes to determine the exact centre line and depth of cover of the *utility line*.

7.2 Where the proposed excavation is to be parallel and within the *boundary limits* of a *utility* line, the *Excavator* shall expose the *utility line* by *hand digging* a series of test holes along the entire route at regular intervals. The separation between test holes shall not exceed 4.5 metres.

7.3 Test holes may be excavated by one of the following methods:

(a) *mechanical excavation* may be used to dig test holes immediately outside of the *boundary limits* and then *hand digging* used laterally until the *utility line* is found; or

(b) A combination of *hand digging* and *mechanical excavation* as follows:

(i) *hand digging* between the *boundary limits* of the *locate* in cuts of at least 0.3 metre (1 foot) in depth,

(ii) *mechanical excavation* could then be used to widen the hand dug trench to within 0.3 metre (1 foot) of the depth of the *hand digging*,

(iii) repeat step (i) and (ii) until the *utility line* is located.

7.4

(a) Concrete saws, jackhammers, hand tools or other similar equipment may be used to break concrete or asphalt on a road or sidewalk surface.

(b) With the exception of 2.3 and 7.3, mechanical excavating equipment should only be used to remove broken asphalt or concrete.

(c) Concrete below the road and sidewalk surface layers may have *utility lines* encased therein and should not be removed without consultation with the *utility*.

7.5 The *Excavator* shall dig additional test holes where the *utility* has identified changes in alignment or in elevation.

7.6 Where the *utility line* cannot be located following the procedures described above, the *Excavator* shall contact the *utility* for assistance with the *locate*.

8.0 Excavating After Test Holes Are Completed

8.1 Where test holes in an area have been completed and the *utility line* located, *mechanical excavation* may take place provided the following procedures are used:

(a) wherever possible, mechanical excavating equipment should be operated parallel to the direction of the *utility line* when the excavation is within 1 metre of the *utility line*; and

(b) *mechanical excavation* must not be used closer than 0.3 metre (1 foot) in any direction to the *utility line*;

(c) excavation within 0.3 metre (1 foot) in any direction of the *utility line* must be carried out by *hand digging*;

8.2 Prior to initiating any blasting activities in proximity of *utility lines Excavators* must obtain specific guidelines from the *utilities.*

8.3 Specific instructions for *utility lines* needing support must be obtained from the *utilities*. The *Excavator* will install temporary support acceptable to the *utilities* that is adequate to prevent any deflection or damage to the *utility line*. (for an electric utility sample see Appendix 4).

8.4 Temporary support shall remain in place until the backfill material underneath the structure has cured or it has been compacted adequately to restore support.

8.5 Under no circumstances shall an *Excavator* attempt to move *utility line*s. Where such a need arises during excavation, the *Excavator* shall contact the *utilities* to make the necessary arrangements.

9.0 Backfilling Trenches

9.1 Where trenches are to be backfilled, the following requirements should be followed:

(a) backfilling should be performed in such a manner as to provide firm support under the *utility lines*; and

(b) the trench must be backfilled with clean fill or granular material free of material injurious to the *utility lines*

(c) where flooding of gas *utility* trenches is done to consolidate the backfill, care must be exercised so that the gas line is not floated from its firm bearing on the ditch bottom.

(d) backfilling should be performed without using tamping equipment directly on exposed *utility lines* and using extra caution around electric cable splices.

10.0 Unidentified and Abandoned Distribution Lines

10.1 Where a *utility line* is found during excavation that was not identified by the *utility*, but within the area covered by the *locate*, the *Excavator* shall never assume the line is an abandoned *utility line*. The *Excavator* shall immediately contact the *utility* as appropriate, to determine if the line is abandoned or *live*.

10.2 Excavations in the vicinity of *abandoned utility lines* shall not be subject to the guidelines in Section 8.0.

Note: In circumstances where a *locate* shows an abandoned utility line the *utility* should clearly state on the locate form that the *utility line* is abandoned.

11.0 Colour Coding

Markings on stakes, streets and sidewalks must be “Safety Yellow” for gas lines and highly visible “Safety Red” paint for electric distribution lines

COLOUR		*TYPE OF FACILIITY/INDICATOR*	*MUNSELL NOTATIONS*
Red		Electric - Powerlines, Cables, Conduit & Lighting cables	(Safety Red 7.5R 4.0/14)
Yellow		Gas, Oil, Steam, Petroleum, Compressed air, Gases and other hazardous liquid or gaseous materials	(Safety Yellow 5.0Y 8.0/12)
Blue		Potable water	(Safety Blue 2.5PB 3.5/10)
Orange		Communications - Alarm, Cable TV, Signal lines, Cables & Conduit	(Safety Orange 5.0YR 6.0/15)
Green		Sewers & Drain lines	(Safety Green 7.5G 4.0/9)
Purple		Reclaimed/treated water, Irrigation & Slurry lines	
Pink		Temporary survey markers	
White		Proposed excavation	

12.0 Procedure When Damage Occurs

12.1 If damage to the *utility line* occurs, including damage to the coating, the *Excavator* shall leave the *utility line* exposed, barricade the area and contact the *utility* immediately.

12.2 If gas is escaping from a gas pipeline, shut off vehicles or equipment, remove or extinguish all ignition sources, barricade the area off, and keep public and workers away. Call 911 and the Gas *utility* immediately. No attempt should be made to control the escaping gas.

12.3 If there are any flames or sparks originating from the exposed electric distribution line or other works, barricade the area off, and keep public and workers away. Call 911 and the Local Electric Distribution *utility* immediately.

Note: In no case shall the *Excavator* attempt to control or make repairs to the damaged *utility line* or equipment.

13.0 Acts and Regulations

A copy of the relevant sections of Acts and Regulations are attached as appendices.

Appendix 1: The *Technical Standards and Safety Act, 2000* and the *Ontario Regulation 210/01 Oil and Gas Pipeline Systems*.
Appendix 2: The *Ontario Energy Board Act*
Appendix 3: *Ontario Regulation 22/04 "Electrical Distribution Safety"*.
Appendix 4: Guideline for Temporary Support of Electric Distribution Lines across the Trench
Appendix 5: Procedures for using hydro-excavation machines in the vicinity of Pipelines.

Appendix 1

Sections of the *Technical Standards and Safety Act*:

Offences

37. (1) Every person who,

(a) contravenes or fails to comply with any provision of this Act, the regulations or a Minister's order;

(b) knowingly makes a false statement or furnishes false information under this Act, the regulations or a Minister's order;

(c) contravenes or fails to comply with a term or condition of an authorization;

(d) contravenes or fails to comply with an order or requirement of an inspector or obstructs an inspector,

is guilty of an offence and on conviction is liable to a fine of not more than $50,000 or to imprisonment for a term of not more than one year, or to both, or, if the person is a body corporate, to a fine of not more than $1,000,000. 2000, c. 16, s. 37 (1).

Duty of director or officer

(2) Every director or officer of a body corporate has a duty to take all reasonable care to prevent the body corporate from committing an offence under subsection (1). 2000, c. 16, s. 37 (2).

Offence

(3) Every director or officer of the body corporate who has a duty under subsection (2) and who fails to carry out that duty is guilty of an offence and on conviction is liable to a fine of not more than $50,000 or to imprisonment for a term of not more than one year, or to both. 2000, c. 16, s. 37 (3).

Separate offence

(4) Where a person contravenes any of the provisions of this Act, the regulations, a Minister's order or any notice or order made under them on more than one day, the continuance of the contravention on each day shall be deemed to constitute a separate offence. 2000, c. 16, s. 37 (4).

Administrative penalty

(5) A person against whom an administrative penalty has been levied by a designated administrative authority or, in the absence of such authority, by the Minister does not preclude a person from being charged with, and convicted of, an offence under this Act for the same matter. 2000, c. 16, s. 37 (5).

Time limit

(6) No proceeding in respect of an alleged offence under this Act may be commenced after two years following the date on which the facts that gave rise to the alleged offence were discovered. 2000, c. 16, s. 37 (6).

41. Every contractor and employer shall take all reasonable precautions to ensure that they and their agents and employees comply with this Act, the regulations or a Minister's order.

Sections of the Oil and Gas Pipeline Systems Regulation:

Ascertaining pipeline locations

9. (1) No person shall dig, bore, trench, grade, excavate or break ground with mechanical equipment or explosives without first ascertaining from the licence holder the location of any pipeline that may be interfered with.

(2) The licence holder shall provide as accurate information as possible on the location of any pipeline within a reasonable time in all the circumstances.

No interference with pipeline

10. No person shall interfere with or damage any pipeline without authority to do so.

Appendix 2

Ontario Energy Board Act, Section V

Requirement to hold licence
57. Neither the OPA nor the Smart Metering Entity shall exercise their powers or perform their duties under the Electricity Act, 1998 unless licensed to do so under this Part and no other person shall, unless licensed to do so under this Part,
(a) own or operate a distribution system;
(b) own or operate a transmission system;
(c) generate electricity or provide ancillary services for sale through the IESO-administered markets or directly to another person;
(d) retail electricity;
(e) purchase electricity or ancillary services in the IESO-administered markets or directly from a generator;
(f) sell electricity or ancillary services through the IESO-administered markets or directly to another person, other than a consumer;
(g) direct the operation of transmission systems in Ontario;
(h) operate the market established by the market rules; or
(i) engage in an activity prescribed by the regulations that relates to electricity. 1998, c. 15, Sched. B, s. 57; 2002, c. 1, Sched. B, s. 6; 2004, c. 23, Sched. B, s. 10; 2006, c. 3, Sched. C, s. 4.

Emergency
59. (1) Despite this Act, the Board may issue an interim licence authorizing a person to undertake any of the activities described in section 57 if the Board considers it necessary to do so to ensure the reliable supply of electricity to consumers. 1998, c. 15, Sched. B, s. 59 (1).

Appendix 3

Ontario Regulation 22/04, "Electrical Distribution Safety"

Section 10 Proximity to Distribution Lines

(1) Despite section 4 of CSA Standard C22.3, No. 1-01 Overhead Systems, a person may place an object closer to an energized conductor forming part of a system of overhead distribution lines than the required minimum separations from energized conductors forming part of such a system if the person first obtains an authorization from the distributor responsible for the energized conductor. O. Reg. 22/04, s. 10 (1).

(2) Despite sections 4 and 5 of CSA Standard C22.3, No. 7-94 Underground Systems (Reaffirmed 1999), a person may place an object closer to an energized conductor forming part of a system of distribution lines than the required minimum separations from energized conductors forming part of such system if the person first obtains an authorization from the distributor responsible for the energized conductor. O. Reg. 22/04, s. 10 (2).

(3) Before digging, boring, trenching, grading, excavating or breaking ground with tools, mechanical equipment or explosives, a Excavator, owner or occupant of land, buildings or premises shall, in the interests of safety, ascertain from the distributor responsible for the distribution of electricity to the land, building or premises the location of any distribution line that may be interfered with in the course of such activities. O. Reg. 22/04, s. 10 (3).

(4) The distributor shall provide reasonable information with respect to the location of its distribution lines and associated plant within a reasonable time. O. Reg. 22/04, s. 10 (4).

Note: Section 10 came into force on November 11, 2004.

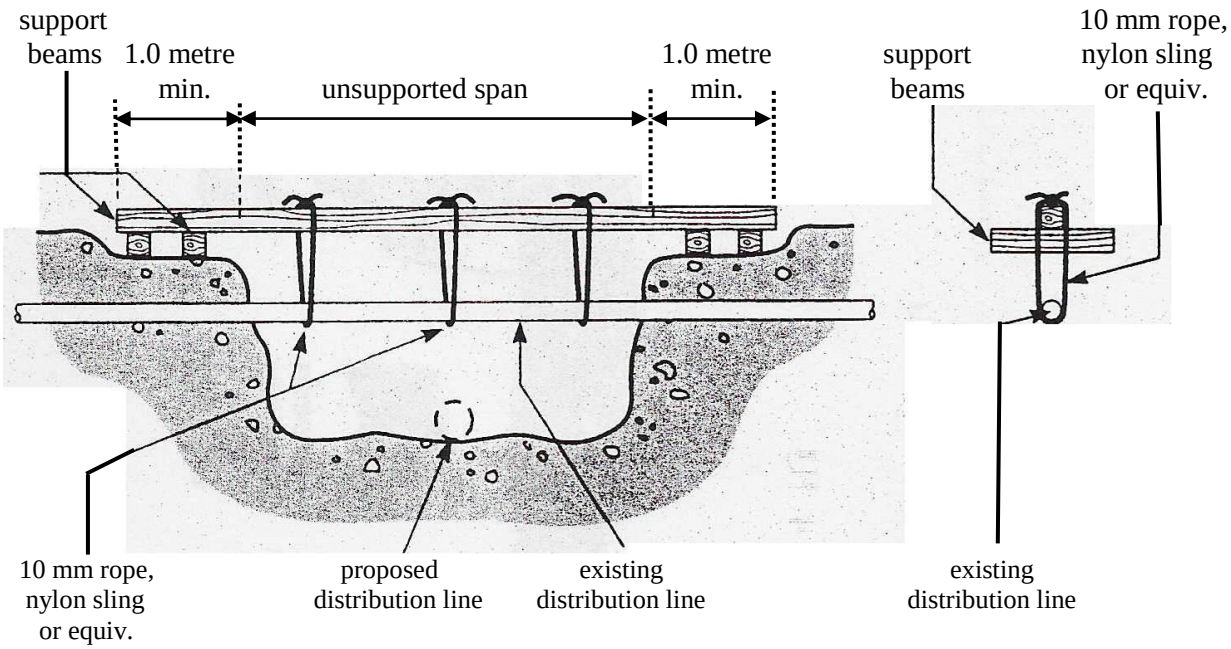
Appendix 4

Guideline for Temporary Support of Electric Distribution Lines across the Trench

1. When trenching beneath underground conduit systems a temporary support may be required to prevent deflection and damage to the electric distribution line.

2. Prior to trenching beneath the electric distribution line the Excavator is to install a temporary support if the unsupported span of conduit in the trench exceeds l.0 meter in length. However, a support with closer spacing intervals may be required as identified below.

TYPICAL TEMPORARY SUPPORT OF EXISTING ELECTRIC DISTRIBUTION LINE CROSSING EXCAVATION



From EUSA Handbook for Excavation near Electrical Cables

3. **Concrete Encased PVC, Transite, or Fibre Conduit** must not be underexposed without adequate support. When temporary support is required, support beams and posts shall be placed in a manner that will prevent damage to the conduit and eliminate sag. The maximum span that the conduit is permitted to be supported in this manner is 2.0 metres and the spacing between supports shall not exceed 1.0 metre. The Excavator is to contact the distributor for special instructions if the distribution line is to be underexposed by more than 2.0 metres or if the conduit cross-section dimensions exceed 1.5 metres by 1.5 metres.

4. **Concrete Encased Clay Tile Conduit** must be supported at short-spaced intervals. Since the conduit can be damaged very easily, exposed conduit should be inspected by the distributor's representative when uncovered and again before backfilling. The maximum span that the conduit is permitted to be supported in this manner is 2.0 metres and the spacing between supports shall not exceed 0.6 metres. The Excavator is to contact the distributor for special instructions if the distribution line is to be underexposed by more than 2.0 metres or if the conduit cross-section dimensions exceed 1.5 metres by 1.5 metres.

5. **High Density Polyethylene (HDPE) and Direct Buried PVC Duct** are very flexible and must be continually supported with a set of pressure treated timbers consisting of 50 mm x 150 mm planks nailed together in a "V" formation. These timbers shall be placed under the cable and supported every 2.0 metres with vertical l00 mm x l00 mm timbers with a "V" notch at the top to hold the 50 mm x 150 mm planks in place. The conduit bundles must not be separated or displaced.

6. Support is required when a trench is parallel to a distribution line and soil rupture or lateral movement of the soil may undermine the distribution line.

7. Table #1 shows the maximum allowed horizontal distances from the edge of the trench to the distribution line affected by the excavation. Shoring may be already in place if workers are to enter a trench excavation that is deeper than 1.2 metres.

8. In case the distributor's structure is closer than the maximum allowed distances given in Table 1, then the excavation shall be suitably shored to prevent movement of the conduit structure. The shoring shall remain in place until the backfill material has restored support. A sliding trench box does not provide adequate support.

9. Where the trench bottom is below the water table, the trench shall be suitably shored with close sheathing.

TABLE #1
Maximum Allowed Horizontal Distances from
Distribution Line to Edge of Unshored Excavation

Proposed Trench Depth (m)	Horizontal Distance Type 1 and 2 Soils Hard, Dry, Stiff (m)	Horizontal Distance Type 3 and 4 Soils Wet, Soft, Clay, or Sand (m)
Up to 1.2	0.6	0.6
Up to 2.4	1.0	1.0
Up to 3.6	1.0	2.0
Up to 4.5	1.5	3.0
Over 4.5	2.0	4.0

Appendix 5

Procedures for using hydro-excavation machines to locate and expose pipelines as an alternative to hand digging.

Please note that this applies to pipelines only.
For hydrovac excavation in the vicinity of electric distribution lines see the E&USA Safe Practice Guide "*Excavating with Hydrovacs in the Vicinity of Underground Electrical Plant"*

The following procedures shall be followed at all times when excavating with hydro-excavation technology within 1 m of gas plants.

1. Obtain locates prior to commencement of work. Only a competent, qualified worker shall operate hydro-excavation equipment.

2. The maximum water pressure to be used at any time with a straight tip nozzle1 during excavation in public roads or easements shall be 17250 kPa (2500 psi). Below a depth of 45 cm (18") the water pressure to be used at any time with a straight tip nozzle1 during excavation shall be reduced to a maximum of 10350 kPa (1500 psi). All pressure measurements are to be taken at the hydro-excavation machine (truck, pump).

3. The maximum water pressure to be used at any time with a spinning tip nozzle2 during excavation shall be 20684 kPa (3000 psi). When a spinning tip nozzle2 is used, pressure measurements are to be permanently monitored using a calibrated device mounted on either the hydro-excavation machine (truck, pump) or the wand.

4. The wand shall never remain motionless during excavation. Aiming directly at the plant shall be avoided at all times.

5. A distance of 20 cm (8") shall be maintained between the end of the pressure wand nozzle and the plant and / or subsoil. The nozzle shall never be inserted into the subsoil while excavating above the plant.

6. Only use hydro-excavation equipment and nozzles that have been specifically designed for use above buried gas lines or other reasonably expected underground gas plant.

7. A device capable of stopping the excavation on demand, such as a dead man trigger or valve, shall be installed on the wand.

8. If heated water is used during excavation, the temperature and pressure of the water shall never exceed 115 oF (45 oC) and 17250 kPa (2500 psi) respectively.

9. If damage to gas plant occurs while using hydro-excavation technology or any other method of excavation, the excavator shall contact the gas utility.

Notes:

1) Straight Tip Nozzle – A straight tip nozzle is a single orifice fitting that can be inserted into the end of the wand used with a hydro-excavation machine such that there is a single concentrated jet of water exiting from the tip of the nozzle.

2) Spinning Tip Nozzles – A spinning tip nozzle consists of a conically shaped housing that contains a single exit port (to facilitate the flow of liquid) as well as a rotor insert. The rotor insert has a series of blades such that when liquid is flowing through the nozzle, the rotor is forced to spin around the longitudinal axis of the the nozzle. The rotor insert also contains three or more channels that force liquid to flow in different pathways through the rotor insert to the tip of the rotor which, as a result of the high pressure liquid is forced into contact with the nozzle housing. The liquid flowing through the nozzle is dispersed through the tip of the nozzle housing in a conical shape, having an angle of not less than 20o.