A6

Utility Correspondence

From: Mark-Ups <Mark-Ups@enbridge.com>
Sent: April-20-16 12:33 PM
To: Thompson, Gillian
Subject: RE: EGD 12370948 - City of Mississauga / Region of Peel - Mavis Road Class EA Notice of Commencement - Enbridge

Thank you for submitting your mark-up request. It has been assigned the following **EGD Number**: **12370948**

Please reference this number on all status inquiries and allow 15 business days for electronic requests and 20 business days for hard copy requests to be processed.

We can no longer respond to status inquiries if we have not exceeded the 15 or 20 business day processing time.

All emails should be forwarded to Mark-Ups@enbridge.com.

ENBRIDGE

From: Thompson, Gillian [mailto:ThompsonG@mmm.ca]
Sent: Wednesday, April 20, 2016 10:57 AM
To: Jim Arnott; Mark-Ups; Municipal Planning
Cc: Dana Glofcheskie (Dana.Glofcheskie@mississauga.ca); Dela Cruz, Gino; Ahmed, Neil; Templeton, Heather
Subject: EGD 12370948 - City of Mississauga / Region of Peel - Mavis Road Class EA Notice of Commencement - Enbridge

Good morning,

(Notice provided via email only)

RE: Utility Information Request
City of Mississauga / Region of Peel
Mavis Road Class Environmental Assessment Study
From Courtneypark Drive West to Ray Lawson Boulevard

Dear Sir/Madam:

The City of Mississauga, in partnership with the Region of Peel, has initiated a Class Environmental Assessment (Class EA) study for Mavis Road from Courtneypark Drive West, in the City of Mississauga, to Ray Lawson Boulevard, in the City of Brampton, (refer to key plan). Within the City of Mississauga, Mavis Road consists of four travel lanes, raised median, sidewalks on both sides and some sections of multi-use trails. Within the City of Brampton,

Mavis Road is a Regional Road (18) and has recently been widened to six lanes from Steeles Avenue to south of Ray Lawson Boulevard, with a multi-use path on the west side and sidewalk on the east side.

MMM Group Limited, a WSP company, has been retained to undertake the Class EA and preliminary design assignment. The study is being undertaken to address existing traffic conditions which, when combined with projected traffic growth, indicate that roadway improvements may be required to address capacity deficiencies.

The study will be conducted in accordance with the planning and design process for 'Schedule C' projects as outlined in the Municipal Engineers Association "Municipal Class Environmental Assessment," (October 2000, as amended in 2015), which is approved under the Ontario Environmental Assessment Act.

The purpose of this letter is to request utility information. One of the key study activities is to identify potential impacts to existing and future utilities as the result of any improvements proposed as part of this study. We would appreciate if you could provide us with plans (preferable digital) indicating the description and location (including type, size, depths, clearances, offsets from roadway or property line, etc.) of all existing underground and aboveground utilities within the project limits that should be considered. Please find attached a Response Form to facilitate your response to our request. Additionally, please also identify any planned future facilities within the study area.

We would greatly appreciate receiving your feedback by June 1, 2016. If this study falls under the jurisdiction of another representative of your office, please forward this letter to them, and advise us at your earliest convenience. Thank you for your assistance.

If you wish to obtain additional information about the project or provide input at any point during the study, please feel free to Heather Templeton, Consultant Assistant Project Manager, at 905-823-8500 ext. 1378.

If you have any questions or comments regarding the study, please contact either me, Heather Templeton, Consultant Assistant Project Manager, at 905-823-8500 ext. 1378, or the following project team members:

Dana Glofcheskie, P.Eng.
City of Mississauga Project Manager
City of Mississauga
201 City Centre Drive, Suite 800
Mississauga, Ontario L5B 2T4
Phone: 905-615-3200, Ext. 8243

Neil Ahmed, P.Eng.
Consultant Project Manager
MMM Group Limited
2655 North Sheridan Way
Mississauga, Ontario L5K 2P8
Phone: 905-823-8500, Ext. 1241

Thank you,

Gillian Thompson, B.Sc., MCIP, RPP
Senior Planner, Project Manager
Transportation - Planning

MMM Group Limited
2655 North Sheridan Way, Suite 300
Mississauga, Ontario L5K 2P8 Canada
T +1 905-823-8500 #1285
C +1 519-635-5733
thompsong@mmm.ca

www.mmmgrouplimited.com | www.wspgroup.ca

Please consider the environment before printing...

From: Mark-Ups <Mark-Ups@enbridge.com>
Sent: April-26-16 7:58 AM
To: Thompson, Gillian
Subject: RE: EGD 12370948 - City of Mississauga / Region of Peel - Mavis Road Class EA Notice of Commencement - Enbridge - General Location
Attachments: Cover EGD 12370948.pdf; Guideline_for_Excavation_in_the_Vicinity_of_Utility_Lines.pdf; Mavis Road Class EA Commencement Notice.pdf; Mavis Road Class EA Utilities & Agency Response Form.pdf; Third Party Requirements in the Vicinity of Natural Gas Facilities[1].pdf

Categories: Mavis

Hello,

Attached is the information you had requested.

Should you require anything further please let me know.

Kind Regards,

Kishore Sagar

From: Thompson, Gillian [ThompsonG@mmm.ca]
Sent: Wednesday, April 20, 2016 10:56 AM
To: Jim Arnott; Mark-Ups; Municipal Planning
Cc: Dana Glofcheskie (Dana.Glofcheskie@mississauga.ca); Dela Cruz, Gino; Ahmed, Neil; Templeton, Heather
Subject: EGD 12370948 - City of Mississauga / Region of Peel - Mavis Road Class EA Notice of Commencement - Enbridge

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Senior Planner, Project Manager
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Enbridge Gas Distribution Inc.
500 Consumers Rd.
North York, ON, M2J 1P8
Canada
www.enbridge.com/gas

Mark-ups@enbridge.com

EGD File Number: 12370948

Re: City of Mississauga / Region of Peel - Mavis Road Class EA Notice of Commencement - Enbridge

- By law utility locates must be obtained prior to starting any excavation or ground disturbance activity, such as pile driving, boring, auguring or digging.
- Contact Ontario One Call at 1-800-400-2255 or www.on1call.com at least 5 business days before beginning work to obtain utility locates.
- Please refer to the **"Third Party Requirements In the Vicinity of Natural Gas Facilities**" for requirements and precautions for working safely in the vicinity of natural gas pipelines. The most recent version of this document is available at: https://www.enbridgegas.com/gas-safety/pipeline-safety.aspx
- Enbridge's responses are based on the information available and are valid for a period of 6 months from issue.

☐ **VITAL MAIN**

- You are working within 3m of a Vital Main Pipeline. In order to accommodate Enbridge vital main standby requirements, our Damage Prevention department must be contacted a minimum of three business days prior to commencing any excavation at 1-866-922-3622 to schedule a site meeting.

☐ **NEB PERMIT REQUIRED**

- When crossing or working within 30m of the right-off-way of an NEB regulated natural gas pipeline, a permit must be obtained from the pipeline company (attached).
- Completed permit applications may be submitted to the Enbridge Gas Distribution Inc. Engineering Dept. at alexander.hadjis@enbridge.com.

☐ **CONFLICT**

- We have an **OBJECTION** to your proposed plant as indicated. Please refer to the attached drawings for information on our existing or proposed gas plant.
- You must submit a revised design for our approval that meets the requirements detailed in the Third Party Requirement book before proceeding.
- If relocation of our plant is required, please contact:

☐	Toronto Region	Tara Kuuskman	416-758-4314	tara.kuuskman@enbridge.com
☐	Central Region West	Paul Giovannetti	905-458-2103	paul.giovannetti@enbridge.com
☐	Central Region East	Neerajah Raviraj	905-927-3156	neerajah.raviraj@enbridge.com
☐	Niagara Region	Dennis Stolfi	905-641-4815	dennis.stolfi@enbridge.com
☐	Eastern Region Ottawa	Sonia Padamadan	613-748-6861	sonia.padamadan@enbridge.com
☐	Proposed work is crossing an Enbridge easement. Please contact Anissa Trenholm in our Land Department at 416-753-6937			

☐ **NO-CONFLICT**

- We have **NO OBJECTION** to your proposed plant as indicated. Please refer to the attached drawings for information on our existing and/or proposed gas plant. GAS MAINS MUST BE FIELD LOCATED. Before digging, please call ONTARIO ONE CALL at 1-800-400-2255 for free gas locates.

☒ **GENERAL LOCATION**

- Refer to the attached drawings for information on our existing and/or proposed gas plant within the road allowance.
- The information provided is for **GENERAL LOCATION ONLY** and is not an approval. Detailed plans must be submitted for our review before an approval will be granted.

Kind Regards,

Plate: TT178

Plate: TT39

Plate: CH100

Plate: TT75

Plate: TT58

Plate: TT76

N

Network Numbers and Pressure Types:
2122 - IP

ENBRIDGE

Atlas Plate Record

Plotted By: gisadmin	Date of Last Revision: 2015 Feb 06	Date Plotted: 2015 May 27
Scale: 2400	Reviewed By: matelav	Plate Number: TT57
	Region: Area 20 - Mis	

Plate: TT57

Plate: TT40

Plate: TT76

Plate: TT59

Plate: TT77

N

Network Numbers and Pressure Types:
182 - XHP, 2122 - IP, 2139 - IP, 2210 - IP

ENBRIDGE

Atlas Plate Record

Plotted By: gisadmin	Date of Last Revision: 2015 Feb 06	Date Plotted: 2015 Apr 06
Scale: 2400	Reviewed By: matelav	Plate Number: TT58
	Region: Area 20 - Mis	

Plate: TT58

Plate: TT41

Plate: TT77

Plate: TT60

N

Network Numbers and Pressure Types:
2139 - IP, 194 - XHP, 2214 - IP, 2210 - IP

ENBRIDGE

Atlas Plate Record

Plotted By: gisadmin	Date of Last Revision: 2015 Feb 06	Date Plotted: 2015 Feb 27
Scale: 2400	Reviewed By: matelav	Plate Number: TT59
	Region: Area 20 - Mis	

Plate: TT59

Plate: TT42

Plate: TT77

Plate: TT78

Plate: TT61

N

Network Numbers and Pressure Types:
2139 - IP, 2214 - IP

ENBRIDGE

Atlas Plate Record

Plotted By: gisadmin	Date of Last Revision: 2013 Apr 18	Date Plotted: 2014 Nov 29
Scale: 2400	Reviewed By: dasgups1	Plate Number: TT60
	Region: Area 20 - Mis	

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.

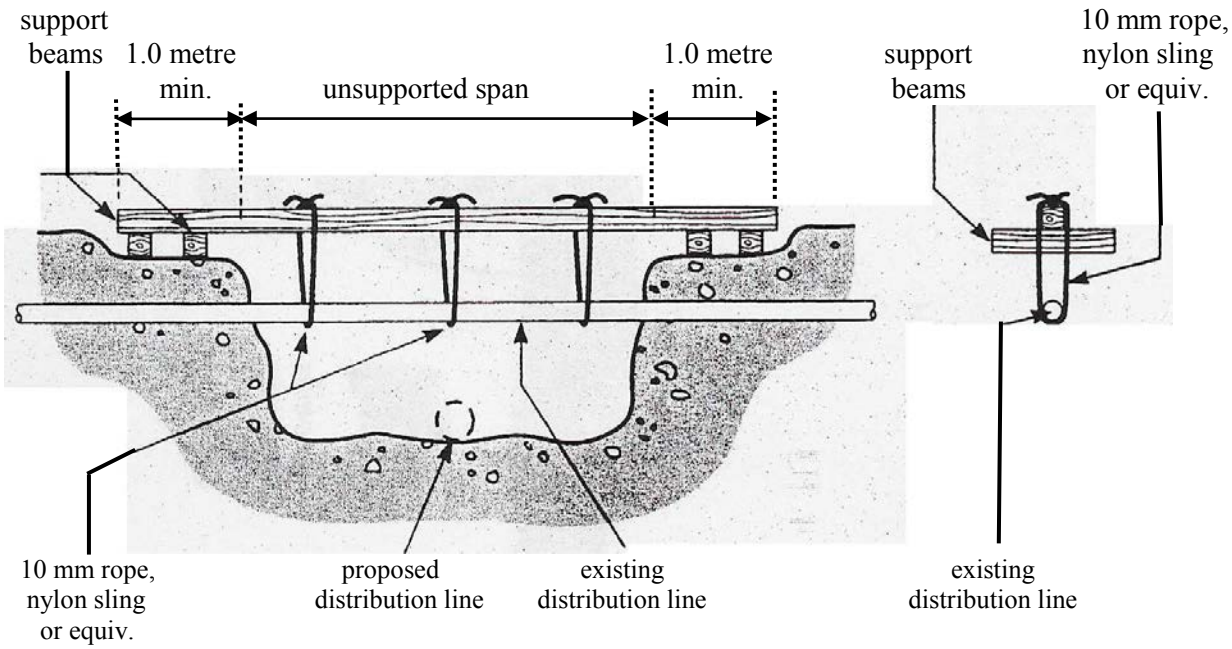
Appendix 4

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 1.0 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:

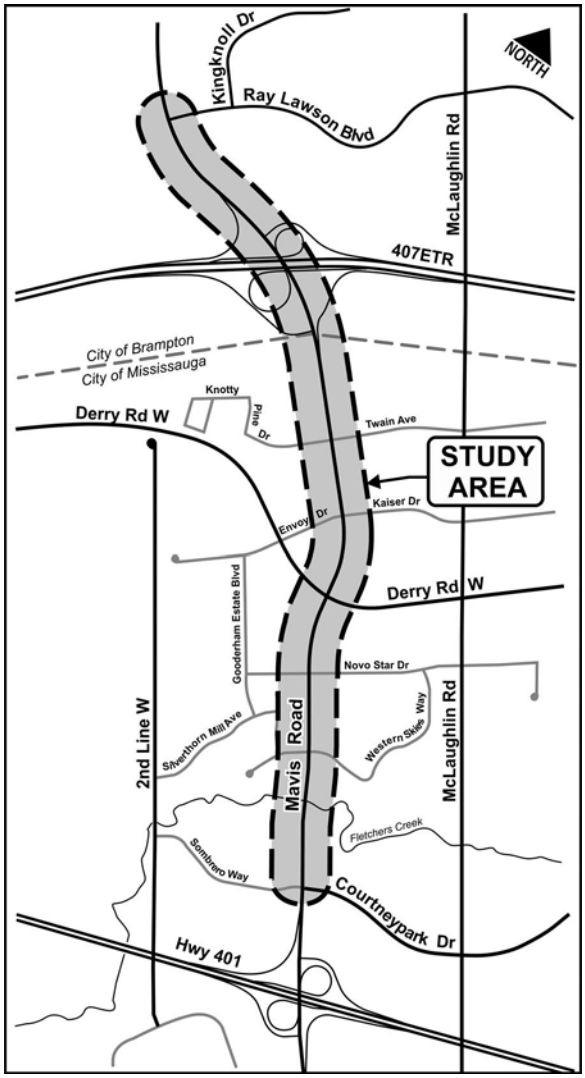
1) Straight Tip Nozzle – A straight tip nozzle is a single orifice fitting that can be inserted into the end of the wand used with a hydro-excavation machine such that there is a single concentrated jet of water exiting from the tip of the nozzle.

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.

CITY OF MISSISSAUGA
NOTICE OF STUDY COMMENCEMENT
Municipal Class Environmental Assessment Study for Mavis Road

The City of Mississauga, in partnership with the Region of Peel, has initiated a Class Environmental Assessment (Class EA) study for Mavis Road from Courtneypark Drive West, in the City of Mississauga, to Ray Lawson Boulevard, in the City of Brampton, to address existing and future 'multi-modal' transportation conditions.

Within the City of Mississauga, Mavis Road consists of four travel lanes, raised median, sidewalks on both sides and some sections of multi-use trails. Within the City of Brampton, Mavis Road is a Regional Road (18) and has recently been widened to six lanes from Steeles Avenue to south of Ray Lawson Boulevard, with a multi-use path on the west side and sidewalk on the east side.



This Class EA study will examine how traffic operates both now and in the future, and will identify ways to address current and future needs to best serve a variety of users including motorists, transit users, pedestrians and cyclists.

The study will be conducted as a 'Schedule C' project under the *Municipal Class Environmental Assessment* (October 2000, as amended in 2015), which is approved under the Ontario Environmental Assessment Act. Through this planning process, the Project Team will define the problem, evaluate alternative solutions, determine a preferred design, examine impacts on the social, cultural and natural environments and identify measures to mitigate those impacts, all in consultation with regulatory agencies and the public. At the end of the study, an Environmental Study Report (ESR) documenting the entire study process will be available for public review.

Public participation is an important part of the Class EA process. Throughout the study, the City will make contact with various agencies and members of the community, and consider their opinions as part of any decisions that are made. Two Public Information Centres (PICs) will be held to present study information and enable the public to meet the project team and share feedback. Details regarding the PICs will be advertised publicly as the study progresses.

For ongoing updates including study notices and other information, please visit the project website:

www.mississauga.ca/mavisroadea

PLEASE VISIT THE WEBSITE AND COMPLETE A SURVEY!

If you require a hard copy of the survey please contact the Project Team members noted below.

If you have any questions or wish to be added to the mailing list, please contact: mavisroadea@mmm.ca

Dana Glofcheskie, P.Eng.
City of Mississauga Project Manager
City of Mississauga
201 City Centre Drive, Suite 800
Mississauga, Ontario L5B 2T4
Phone: 905-615-3200, Ext. 5243

Neil Ahmed, P.Eng.
Consultant Project Manager
MMM Group Limited
2655 North Sheridan Way
Mississauga, Ontario L5K 2P8
Phone: 905-823-8500, Ext. 1241

Personal information collected under the authority of the Environmental Assessment Act and will be used in the assessment process. With exception of personal information, all comments shall become part of the public records. Questions about this collection should be directed to the Project Manager listed in the notice. *This Notice first issued on April 21, 2016*

City of Mississauga
Mavis Road Class Environmental Assessment
Notice of Study Commencement
Utility / Agency Response Form

Agency Name & Division/Branch	
Name:	
Address:	
Phone:	
Email:	

COMMENTS:

1. Does your organization wish to participate in this project? ☐ YES ☐ NO
2. Delete from contact list? ☐ YES ☐ NO
3. Please identify any concerns your agency may have at this time.

Please return this form by June 1, 2016 to:

Neil Ahmed, P.Eng.
Project Manager, MMM Group Limited
2655 North Sheridan Way
Mississauga, ON L5K 2P8
Phone: 905-823-8500, Ext. 1241
Fax: 905-823-8503
Email: mavisroad@mmm.ca

GAS MAINS TO BE FIELD LOCATED
CALL FOR GAS LOCATES
BEFORE YOU DIG
ONTARIO ONE
1-800-400-2255
FREE LOCATE SERVICE

General Information Only
DETAILED DESIGN PLANS MUST BE SUBMITTED TO
ENBRIDGE GAS DISTRIBUTION INC.
FOR APPROVAL PRIOR TO CONSTRUCTION.

ENBRIDGE

Third Party Requirements

In the Vicinity of Natural Gas Facilities

2015
V2.1

CG.034.612 (SEPT.2015)

Revision History

Version	Date	Approved by:	Revisions
V2.1	2015-Sep-30	Gonzalo Juarez, Senior Egineering Construction & Maintenance	**2.2 NEB Pipelines & Vital Mains** • Added requirement for new NPS 42 Vital Main for GTA project, EGD's approval is required for all work within 30 m of the pipeline **2.3 Pipeline Location Verification** • Table 2-2, 2-3, 2-4 and 2-5. Added specific pipeline verification requirement for horizontal directional drilling **5.1 General** • Added additional daylight hole requirement for horizontal directional drilling **5.2 Drilling Parallel to Pipelines** • For drilling parallel to the pipeline, changed distance requirement to be measured from the side of the pipeline instead of locate marks **5.3 Drilling Across Pipelines** • Added additional daylight hole requirement and diagram, for horizontal directional drilling
V2.0	2015-Apr-01	Nick Thalassinos, Chief Engineer	**2.0 General Requirements** • Added requirements for clearance for Vital Mains and NEB regulated pipelines • Added daylight hole requirements • Updated clearance requirements **3.0 Operation of heavy equipment** • Added Section 3.4 Damage to Enbridge Gas Distribution's Facilities **5.0 Horizontal Directional Drilling** • New section **6.0 Backfilling** • New section **Appendix** • Updated contact numbers

Version	Date	Approved by:	Revisions
V1.0	2007-Oct-01	Rob Fox, Chief Engineer	Initial release.

Table of Contents

INTRODUCTION

This document is intended for anyone involved in planning or carrying out work in the vicinity of Enbridge Gas Distribution's (EGD) network. It summarizes the requirements to be followed and specifies the technical requirements aimed at protecting EGD's facilities, and by extension, ensuring public and worker safety.

This document supersedes all previous versions of EGD's Third Party Requirements in the Vicinity of Natural Gas Facilities.

Constructors must follow the regulations and legislation applicable to their work, in addition to the requirements outlined in this document. It is understood that all legal provisions applicable to work carried out around natural gas pipelines take precedence over this document.

The terms "gas lines", "gas pipelines" and "mains" used throughout this document apply equally to natural gas mains and service lines, as well as any other component of the EGD's natural gas distribution system found on public or private land.

Note: Printed copies are not controlled and may not be the current version in use. Ensure you have the latest revision by downloading the controlled copy at *https://www.enbridgegas.com/gas-safety/before-you-dig.aspx*.

1.0 DEFINITIONS

Terms used in the following document are defined as follows:

Applicant: The owner of the proposed work.

Blaster: The person or persons responsible for setting the charges and performing the blast.

Blasting, Surface: An operation involving the excavation of rock foundations for various types of structures, grade construction for highways or railroads, or canals (trenches) for water supply or collection purposes.

Blasting, Tunnel: Operations involving the piercing of below ground (generally horizontal) opening in rock.

Compaction: Any vibration generating operation which will result in a potential increase of the density of soils or controlled backfill materials. The means to increase the density may be static or dynamic.

Enbridge Gas Distribution (EGD): EGD refers to Enbridge Gas Distribution Inc., Enbridge Gas New Brunswick LP, Gazifère Inc., St. Lawrence Gas Company Inc., Niagara Gas Transmissions Limited, 2193914 Canada Limited.

Contractor or Excavator: Any individual, partnership, corporation, public agency or other entity that intends to dig, bore, trench, grade, excavate, hammer into or break ground with mechanical equipment or explosives in the vicinity of a gas pipeline or related facility.

Engineer, Independent Engineering Consultant: A Professional Engineer who is registered with the provincial or state Professional Engineering Association and a holder of Certificate of Authorization (C of A).

Facility: Any Enbridge Gas Distribution main, service, regulator station or storage facility and their related components.

Ground Disturbance: Activities associated with mechanical excavation, hydro excavation, directional drilling, blasting, piling, compaction, boring, ploughing, grading, backfilling and hand digging

Hand Dig: To excavate using either a shovel with a wooden or fiberglass handle, or using hydro vacuum excavation equipment. The use of picks, bars, stakes or other earth piercing devices are not considered hand digging.

Locate Service Provider: Any entity that performs locates under the terms of a Locate service agreement.

Mark-Ups: The formal review process used by infrastructure owners to evaluate and comment on proposed designs.

Pile: Any vertical or slightly slanted structural member introduced or constructed in the soil in order to transmit loads and forces from the superstructure to the subsoil; the structural member can also be used as a component of a retaining wall system.

Pile Driving: The placement of piles carried out by gravity hammer, vibratory hammer, auguring, pressing, screwing or any combinations of the above methods.

Temporary Support: The support of gas pipelines before or during an excavation to protect the pipeline from its own weight; minimize deflection stresses

Main, Vital: A subset of mains that consists of NEB (National Energy Board) pipelines, IMP (Integrity Management Program) pipelines, and select distribution pipelines.

2.0 GENERAL REQUIREMENTS

2.1 Work in the Vicinity of Pipelines

All work in the vicinity of gas pipelines must adhere to the requirements set forth in this document. Work includes, but not limited to, any ground disturbance in the vicinity of EGD's facilities or equipment crossing. Ground disturbance includes, but is not limited to, activities such as mechanical excavating, hand digging, hydro excavating, directional drilling, grading, blasting and pile installation.

A locate of the gas pipeline must be requested at least five (5) business days prior to beginning any work.

Table 2-1: Locate Contact Information

Area	Locates
Enbridge Gas Distribution Inc.	Ontario One Call: www.on1call.com
Gazifère	Info Excavation: www.info-ex.com
Enbridge Gas New Brunswick	EGNB: 1-800-994-2762
St. Lawrence Gas	Dig Safely New York: Dial 811

2.2 NEB Pipelines & Vital Mains

The NEB regulates natural gas, oil and commodity pipelines that extend beyond provincial, territorial or national boundaries. All work within 30 m (100 ft.) from each side of the right of way of a NEB-regulated pipeline must be approved by the applicable EGD NEB-regulated company prior to commencing. This is a regulatory requirement of the NEB.

Mains are designated as Vital Mains by EGD. The designation of pipelines as Vital Main may change at the discretion of EGD. For the NPS 42 Vital Main, all work within 30 m (100 ft.) from either side of the pipeline must be approved by EGD prior to commencing. For all other Vital Mains, all ground disturbance work within 3 m (10 ft.) from either side of the Vital Main, must be approved by EGD prior to commencing. Approval by EGD may include specific conditions that third parties must follow.

EGD may require representation on site for any ground disturbance work within the vicinity of Vital Main and NEB regulated pipelines.

NEB Vital Main

NEB pipelines and Vital Mains will be identified through locates and Mark-Ups process. In this document, special considerations for NEB pipelines and Vital Mains will be highlighted.

IMPORTANT: Memo has been issued which affects this page. Click here to open memo.

2.3 Pipeline Location Verification

Table 2-2: Pipeline Location Verification Requirements for NEB pipelines and Vital Mains indicates EGD's minimum requirements for the verification of the pipeline location based on the nature of work. The frequency and location of verification holes may change at the discretion of EGD. Additional verification holes may be required to sufficiently confirm the location of the pipeline.

When using hydro excavation as an alternative to hand digging, refer to the *ESA/TSSA Guideline for Excavation in the Vicinity of Utility Lines, December 2008 edition* for safe operating practices.

Note: For all pipelines (including NEB, and Vital Mains), a minimum horizontal clearance of 1 m (3.3 ft.) is required when drilling parallel to the pipeline and a minimum vertical clearance of 1 m (3.3 ft.) is required when crossing perpendicular to the pipeline. See *Section 5.0 Horizontal Directional Drilling*.

Table 2-2: Pipeline Location Verification Requirements for NEB pipelines and Vital Mains

Location of work relative to Pipeline	Required Verification of Pipe Location by Hand Digging or Hydro Excavation
Work within 3 m (10 ft.) but not crossing main	Top and sides of pipeline
Crossing below pipeline (open excavation)	All sides of pipeline including 0.6 m (2 ft.) below pipeline
Crossing above pipeline (open excavation)	Top of pipeline and all sides or 0.6 m (2 ft.) below the proposed installation
Work parallel to pipe, within 1 m (3.3 ft.) of edge of pipe	Spacing of test holes must not exceed 4.5 m (15 ft.)
Work parallel to pipe, 1 m – 3 m (3.3 ft. – 10 ft.) from edge of pipe	Spacing of test holes must not exceed 10 m (33 ft.)

Table 2-3: Pipeline Location Verification Requirements for All Other Pipelines

Location of work relative to Pipeline	Required Verification of Pipe Location by Hand Digging or Hydro Excavation
Work within 3 m (10 ft.) but not crossing pipeline	Top and sides of pipeline
Crossing below pipeline (open excavation)	All sides of pipeline including 0.3 m (1 ft.) (for less than NPS 12) or 0.6 m (2 ft.) (for NPS 12 and larger) below pipeline
Crossing above pipeline (open excavation)	Top of pipeline and all sides or 0.3 m (1 ft.) (for less than NPS 12) or 0.6 m (2 ft.) (for NPS 12 and larger) below the proposed installation
Work parallel to pipe, within 1 m (3.3 ft.) of edge of pipe	Spacing of test holes must not exceed 4.5 m (15 ft.)
Work parallel to pipe, 1 m – 3 m (3.3 ft. – 10 ft.) from edge of pipe	Spacing of test holes must not exceed 10 m (33 ft.)

Table 2-4: Pipeline Location Verification and Clearance Requirements for HDD for all pipelines (including NEB and Vital Mains)

Location of work relative to Pipeline*	Required Verification of Pipe Location by Hand Digging or Hydro Excavation
Crossing below pipeline (HDD)	All sides of pipeline (including below pipeline) exposed to 1.0 m (3.3 ft.) from the pipeline's sidewalls Additional daylight hole at 2.0 to 4.0 m (6.6 to 13.1 ft) prior to the daylight hole at the crossing, to verify depth and trajectory of drill head and backreamer
Crossing above pipeline (HDD)	Top of pipeline and all sides exposed to 1.0 m (3.3 ft) or 1.0 m (3.3 ft.) below the proposed installation Additional daylight hole at 2.0 to 4.0 m (6.6 to 13.1 ft) prior to the daylight hole at the crossing, to verify depth and trajectory of drill head and backreamer

*See *Figure 5-2: Pipeline Location Verification and Clearance Requirements for HDD for all pipelines (including NEB and Vital Mains)*

IMPORTANT: Memo has been issued which affects this page. Click here to open memo.

2.4 Safe Excavation

NEB Vital Main

Mechanical excavation is not permitted within 3 m (10 ft.) of NEB-regulated pipelines or Vital Mains, unless verified visually. After the exact location of the main is verified visually, mechanical excavation is allowed up to 1 m (3.3 ft.) of the pipeline. Within 1 m (3.3 ft.) of the NEB or Vital Main, only hand digging or hydro excavation is allowed, unless otherwise approved by EGD.

Mechanical excavation is not allowed within 1 m (3.3 ft.) of the locate marks of the pipeline (excluding NEB and Vital Mains), until the exact location of the pipeline has been visually verified. The excavator must expose the pipeline by hand digging or hydro excavation. Once complete, mechanical excavation is then permitted up to 0.3 m (1 ft.) from the pipeline. Within 0.3 m (1 ft.) of any pipeline (excluding NEB and Vital Mains), only hand digging or hydro excavation is permitted.

Only hand held compaction equipment may be used within 1 m (3.3 ft.) of the sides or top of all gas pipelines.

Spoil from excavation must not be piled on the pipeline or its easement.

2.5 Points of Thrust

Additional precautions must be taken when working in the vicinity of points of thrust. Points of thrust occur at pipeline fittings such as elbows (45° or 90°), end caps, weld tees, reducers, closed valves and reduced port valves. In the event that the excavation involves exposing a point of thrust, or exposing an area near a point of thrust, specific instructions provided by EGD with a white sticker on the locate sheet must be followed. If a point of thrust is identified through the locate process, EGD may require additional time to review. Failure to follow these instructions can result in significant harm to persons, property and the environment.

2.6 Minimum Clearance from Other Structures

The following clearances must be maintained between the circumference of the gas pipeline and other underground structures:

Table 2-5: Gas Pipelines (Less than NPS 12)

Direction	Minimum Clearance m (ft.)
Horizontal	0.6 m (2 ft.)
Vertical	0.3 m (1 ft.)

Table 2-6: Gas Pipelines (NPS 12 and larger)

Direction	Minimum Clearance m (ft.)
Horizontal	0.6 m (2 ft.)
Vertical	0.6 m (2 ft.)

Table 2-7: NEB-regulated pipelines and Vital Mains

Direction	Minimum Clearance m (ft.)
Horizontal	1 m (3.3 ft.)
Vertical	0.6 m (2 ft.)

When crossing EGD's pipelines, all proposed installations must be installed as close to a 90° angle as possible.

Note: For all pipelines (including NEB and Vital Mains), a minimum horizontal clearance of 1 m (3.3 ft.) is required when drilling parallel to the pipeline and a minimum vertical clearance of 1 m (3.3 ft.) is required when crossing perpendicular to the pipeline. See to *Section 5.0 Horizontal Directional Drilling*.

Table 2-8: Minimum Cover Requirements

	Location	Min. Cover m (ft.)
Mains	Under traveled surfaces (roads), Road Crossings	1.2 m (4 ft.)
	Right-of-way	1 m (3.3 ft.)
	Highways	1.5 m (5 ft.)
	Railways – Cased	1.7 m (5.5 ft.)
	Railways – Uncased	3.1 m (10 ft.)
	Below drainage and irrigation ditch	1 m (3.3 ft.)

	Location	Min. Cover m (ft.)
Services	Private property	0.5 m (1.6 ft.)
	Streets and Roads	0.9 m (2.9 ft.)

2.7 Blasting, Pile Installation and Compaction

Blasting, pile installation or compaction activities in the vicinity of natural gas pipelines require the prior approval of EGD.

Written notification from the owner of the proposed work must be submitted to EGD at the contact information listed in the *Appendix*. The request must be submitted a minimum of four (4) weeks prior to beginning work to allow sufficient time for review. (See to *Section 7.0 Blasting Requirements*, and *Section 8.0 Pile Installation Or Compaction Requirements*, for specific responsibilities.)

NEB Vital Main

Piles within 3.0 m (10 ft.) of NEB-regulated pipelines and Vital Main must be installed by augering, unless otherwise approved by EGD. Vibration and displacement monitoring must be conducted, and communicated to EGD daily. Work must stop if the peak particle velocity exceeds 50 mm/sec (2 in/s) or displacement exceeds 50 mm (2 in.). Augering will not be permitted within 1 m of a NEB-regulated pipeline or Vital Main, unless approved by EGD.

2.8 Repair of Damaged Pipe and Pipe Coating

In all cases where the pipeline or the pipeline coating is damaged by construction activities, contact EGD immediately and leave the excavation open until EGD personnel have made the necessary repairs.

2.9 Encroachment

Permanent awnings and roof structures are prohibited above gas pipelines within the public right-of-way, or EGD's right-of-way. EGD will not accept responsibility for any damages resulting from maintenance or operation of its gas facilities to encroaching structures within the public or EGD right-of-ways. Example of encroaching structure may include: bus shelters, street benches or garbage bins.

EGD requires that all permanent structures be built a minimum of 7 m away from EGD's Vital and NEB mains, unless otherwise approved by EGD Engineering. This requirement is in place as to allow EGD sufficient access and working space should an inspection or repair be needed.

2.10 Tree Planting

When planting trees, the gas pipeline in and near the area of excavation must be located. This is to ensure sufficient clearance is maintained.

NEB Vital Main

For pipelines regulated by the NEB and Vital Mains, trees or large shrubs must have a minimum horizontal clearance between the edge of the root ball or open bottom container and adjacent edge of the existing pipeline of not less than 2.5 m (8 ft).

For all other pipelines (excluding NEB and Vital Mains), a minimum horizontal clearance of 1.2 m (4 ft.) is recommended between the edge of the root ball or open bottom container and adjacent edge of the existing gas pipeline.

In cases where the recommended clearance (2.5 m (8 ft.) for NEB pipelines and Vital Mains or 1.2 m (4 ft.) for all other gas pipelines) cannot be achieved, EGD may specify the installation of a root deflector.

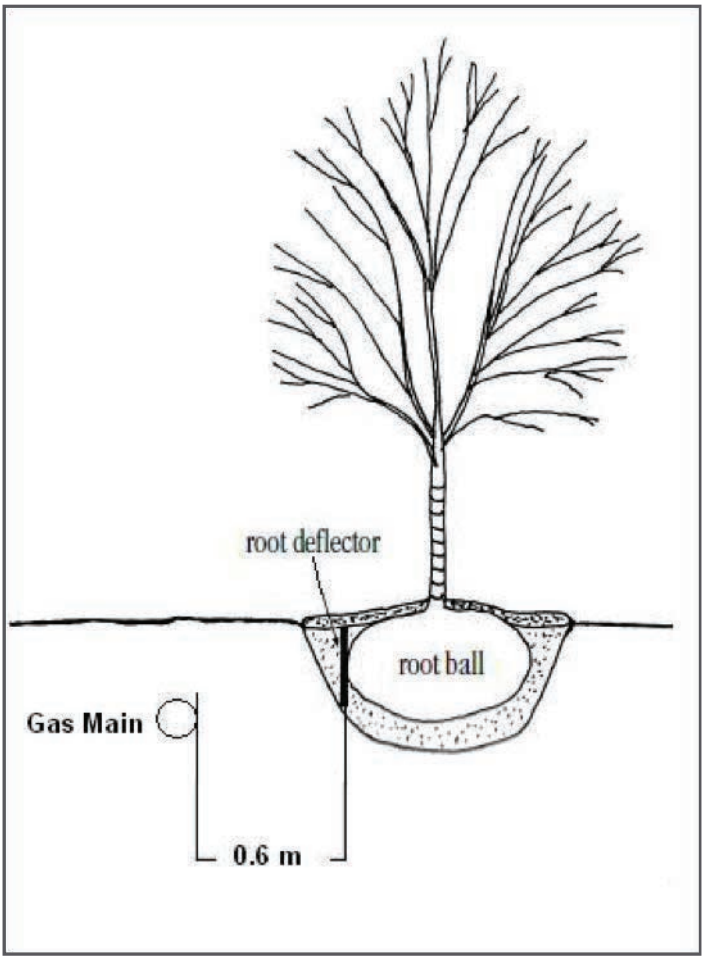
Root Deflectors

A root deflector is a physical barrier placed between tree roots and pipelines to prevent damage to the pipelines. A root deflector can be made from ¼ in. thick rigid plastic, fiberglass or other non-degradable material. The root deflector is intended to prevent the root tips from attaching to the gas main. Typically root deflectors are installed 0.6 m (2 ft.) from the pipeline on the tree-side of the pipeline and extend 1.2 m (4 ft.) from the center of the tree trunk, parallel to the pipeline, in both directions, or encircle the tree.

Root deflectors usually have a collar to keep the top of the deflector at ground level, and extend down to the bottom of the root-ball as shown in *Figure 2-1: Root Deflector*.

For further information regarding tree planting, refer to the Tree Planting information available on the Enbridge Gas Distribution's website (*https://www.enbridgegas.com/gas-safety/safety-tips/tree-planting.aspx*).

Figure 2-1: Root Deflector



3.0 OPERATION OF HEAVY EQUIPMENT

3.1 General

Additional precautions are necessary when equipment in excess of the weights listed in *Table 3-1: Vehicle Load Restrictions* is operated in the vicinity of buried pipelines where no pavement exists or where grading operations are taking place.

Table 3-1: Vehicle Load Restrictions

Pipe Material	Weight/Axle Maximum Allowable Load kg (lb)
Plastic	7,000 kg (15,400 lb)
Steel	10,000 kg (22,046 lb)

Prior to any crossing, the location of the gas main must first be staked out by an EGD representative.

The Excavator is responsible for confirming the location and depth of the main. Test hole spacing must not exceed 50 m (160 ft.).

3.2 Equipment Moving Across the Pipeline

Crossing locations for heavy equipment must be kept to a minimum.

The crossing locations must be determined by EGD after reviewing the nature of the construction operation, the types and number of equipment involved, as well as the line and depth of the existing gas main. The use of equipment is contingent upon the review of EGD's Engineering department.

Once the crossing locations have been established, heavy equipment is restricted to crossing at these locations only. It is the responsibility of the Constructor to inform their personnel of the crossing location restrictions.

Pipelines may require additional protection at crossing locations by constructing berms and/or installing steel plates over the pipeline.

Equipment must be operated at "dead-slow" speed when crossing pipelines in order to minimize loading impact. The pipeline must also be crossed at a 90°, angle.

3.3 Equipment Moving Along the Pipeline

Heavy equipment can be operated parallel to existing pipelines provided that a minimum offset of 1 m (3.3 ft.) is maintained on pipeline sizes less than NPS 12 and 2 m (6.6 ft.) on pipeline sizes NPS 12 and larger, unless otherwise directed by EGD.

Only lightweight, rubber-tired equipment may be operated directly over the existing gas pipelines, unless a minimum pipe cover of twice the pipe diameter or 1 m (3.3 ft.) (whichever is greater) can be verified. The use of all other equipment is contingent upon review and approval by EGD Engineering.

3.4 Damage to Enbridge Gas Distribution's Facilities

Damage to EGD's facilities must be reported immediately by calling the Emergency Contact numbers listed in the *Appendix*. All work must stop immediately.

4.0 SUPPORT OF GAS PIPELINES

4.1 General

The support requirements specified in this section are the minimum requirements. EGD must be notified regarding the support of any main. EGD has complete discretion in the approval of any support system. Excavators must not depart from these unless a Professional Engineer working for or on behalf of the Excavator has designed an alternative method. Any alternative method must be comparable to these specifications and be, in the opinion of the Professional Engineer, consistent with good engineering practices. The alternative specification must be documented, approved by a Professional Engineer and provided to EGD for review.

The Excavator is responsible for the adequate support of the buried gas pipelines exposed during excavation according to this section.

Pipelines being exposed for extended periods of time (longer than one month) require the approval of EGD's Engineering department.

4.2 Support of Gas Pipelines Perpendicular to Excavation

Temporary support must remain in place until the backfill material underneath the pipeline is compacted adequately to restore support of the pipeline.

Before trenching beneath a main or service, temporary support must be erected for pipelines if the unsupported span of pipe in the trench exceeds the length indicated in *Table 4-1: Maximum Span without Support Beam*.

Note: For pipelines larger than NPS 8, contact EGD. Refer to the Appendix for contact information.

When temporary support is required, *Table 4-2: Support Beam Sizes and Maximum Span Between Beam Supports* indicates the required beam for a given span. The beam must be a continuous length grade No. 1 Spruce-Pine-Fir (S-P-F) or equivalent. For spans exceeding 4.5 m (15 ft.), a continuous length timber beam may not be available. In that case, steel I-beams (or equivalents) can be used as the support beam. Steel beam selection must be certified by a Professional Engineer.

Table 4-1: Maximum Span without Support Beam

Pipe Size (NPS)	Steel m (ft.)	PE (polyethylene) m (ft.)
½	2 m (6.6 ft.)	1 m (3.3 ft.)
¾ - 1¼	2.5 m (8.2 ft.)	1.25 m (4.1 ft.)
2	3 m (10 ft.)	1.5 m (5 ft.)
3 to 4	4.5 m (15 ft.)	1.75 m (6 ft.)
6	6 m (20 ft.)	2 m (7 ft.)
8	7 m (23 ft.)	2 m (7 ft.)

Table 4-2: Support Beam Sizes and Maximum Span Between Beam Supports

Pipe Size (NPS)	Steel		PE	
	≤ 2 m (≤ 6.6 ft.)	≤ 4.5 m (≤ 14.7 ft.)	≤ 2 m (≤ 6.6 ft.)	≤ 4.5 m (≤ 14.7 ft.)
½ - 2	Nil	4 x 6	4 x 4	4 x 6
3 – 6	Nil	Nil	4 x 4	6 x 6

The beam must be placed above the pipe with the ends of the beam resting on firm undisturbed soil. The beam must not bear directly on the gas line. The pipe must be supported from the beam with rope, canvas sling or equivalent in a manner that will prevent damage to the pipe or coating and eliminate sag. The spacing between the ropes must not exceed 1 m (3.3 ft.) (refer to *Figure 4-1: Support of Gas Pipelines Crossing Excavations*).

Backfill material underneath the exposed pipeline must be compacted to a minimum of 95% standard Proctor density. Sand padding must be placed to a level 150 mm (6 in.) below and above the main. See *Section 6.0 Backfilling* for additional details.

Perform compaction with the loose lift height not exceeding 200 mm (8 in.) or one-quarter of the trench width, whichever is less. Injecting water into the backfill beneath the pipe is not an acceptable method of compaction.

All temporary support on pipelines must be removed before backfilling. Adequate support must remain in place until the backfill material has restored support.

4.3 Support of Pipelines Parallel to Excavation

Trench wall support may not be required for excavations less than 1.2 m (4 ft.) deep. In this case support is not required if the pipeline is at least 0.6 m (2 ft.) from the edge of the excavation or outside the 45° line projected upward from the trench bottom (refer to *Figure 4-2: Influence Lines for Gas Pipelines Adjacent to Excavations*). If the pipe does not meet these requirements and the soil is soft clay or sand (soil types 3 and 4), the excavation must be suitably shored to prevent movement of the pipe. The shoring must remain in place until the backfill material has restored support.

Trench wall support is required for excavations with the following conditions: depth is equal or greater than 1.2 m (4 ft.), the pipeline is closer to the edge of the excavation than the minimum allowed distance indicated in *Table 4-3: Minimum Allowed Distance from Main to Excavation*, or the soil is unstable.

Table 4-3: Minimum Allowed Distance from Main to Excavation gives minimum distances from the edge of the trench to the pipeline in which the excavation influences pipelines. The pipeline must be supported if these minimum distances cannot be met.

Table 4-3: Minimum Allowed Distance from Main to Excavation

Minimum Allowed Distance from Main to Excavation		
Trench Depth (m)	**Soils* Type 1 & 2**	**Soils* Type 3 & 4**
≥ 1.2 m (3.9 ft.)	0.9 m (3 ft.)	0.9 m (3 ft.)
≥ 1.5 m (4.9 ft.)	0.9 m (3 ft.)	0.9 m (3 ft.)
≥ 1.8 m (5.9 ft.)	0.9 m (3 ft.)	0.9 m (3 ft.)
≥ 2.1 m (6.9 ft.)	0.9 m (3 ft.)	0.9 m (3 ft.)
≥ 2.4 m (7.9 ft.)	0.9 m (3 ft.)	0.9 m (3 ft.)
≥ 2.7 m (8.9 ft.)	0.9 m (3 ft.)	1 m (3.3 ft.)
≥ 3 m (9.8 ft.)	0.9 m (3 ft.)	1.5 m (4.9 ft.)
≥ 3.3 m (10.8 ft.)	0.9 m (3 ft.)	1.8 m (5.9 ft.)
≥ 3.6 m (11.8 ft.)	0.9 m (3 ft.)	2.2 m (7.2 ft.)
≥ 3.9 m (12.8 ft.)	0.9 m (3 ft.)	2.5 m (8.2 ft.)
≥ 4.2 m (13.8 ft.)	0.9 m (3 ft.)	3 m (9.8 ft.)
≥ 4.5 m (14.8 ft.)	1 m (3.3 ft.)	3.4 m (11.2 ft.)
≥ 4.8 m (15.7 ft.)	1.5 m (4.9 ft.)	3.8 m (12.5 ft.)
≥ 5.1 m (16.7 ft.)	2 m (6.6 ft.)	4.1 m (13.5 ft.)
≥ 5.4 m (17.7 ft.)	2.5 m (8.2 ft.)	4.6 m (15.1 ft.)
≥ 5.7 m (18.7 ft.)	3 m (9.8 ft.)	5 m (16.4 ft.)
≥ 6 m (19.7 ft.)	3.4 m (11.2 ft.)	5.5 m (18 ft.)
*as defined in the Occupational Health and Safety Act		

For pipelines where the trench bottom is below the water table, the trench must be suitably shored as required in *Section 4.3 Support of Pipelines Parallel to Excavation*.

For pipelines within the minimum distances given in *Table 4-3: Minimum Allowed Distance from Main to Excavation*, shoring must remain in place until backfill material restores support.

Any pipeline that is exposed for a length greater than indicated in *Table 4-1: Maximum Span without Support Beam* must require a field assessment.

Figure 4-1: Support of Gas Pipelines Crossing Excavations

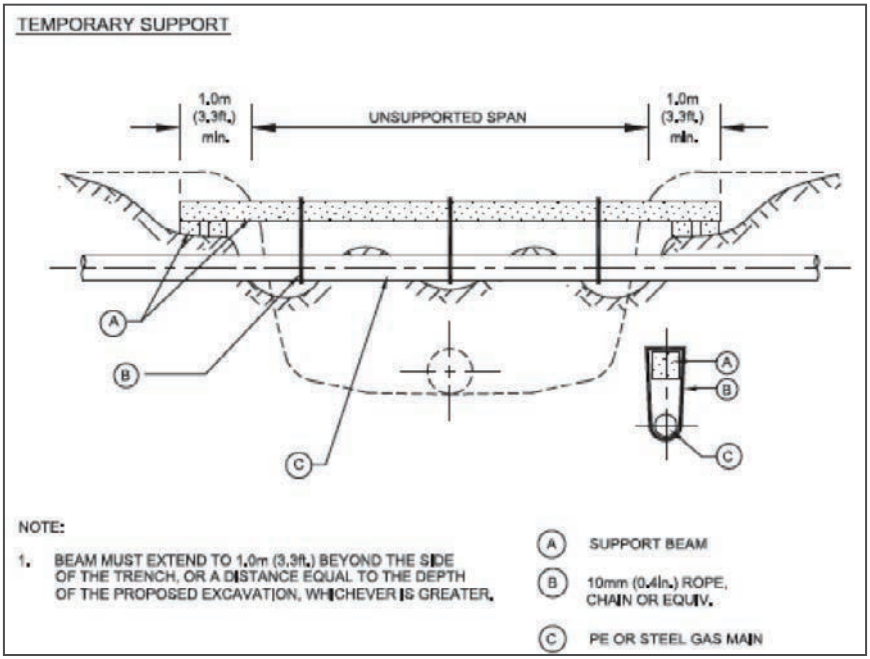
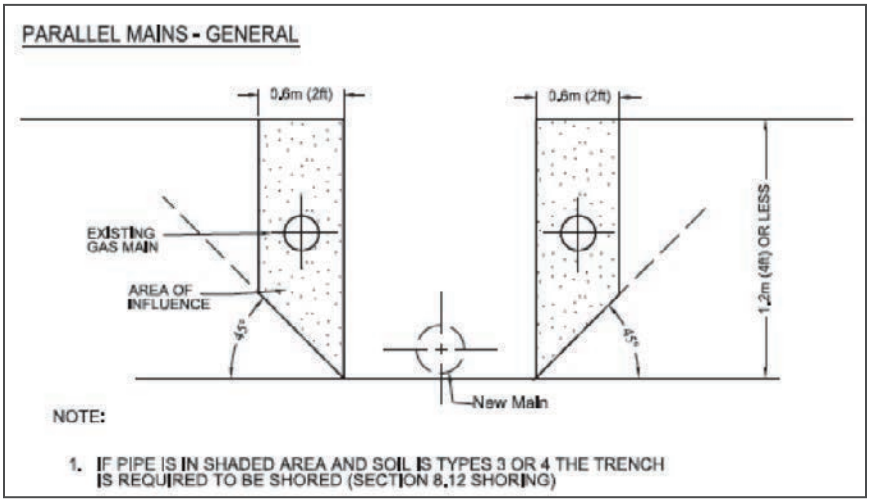


Figure 4-2: Influence Lines for Gas Pipelines Adjacent to Excavations



5.0 HORIZONTAL DIRECTIONAL DRILLING

5.1 General

Horizontal Directional Drilling (HDD) or Directional Boring is a steerable trenchless method of installing underground facilities.

For installations using any other type of drilling or augering equipment in the vicinity of the pipeline, contact EGD's Engineering Department.

In all cases, an additional daylight hole is required to visually verify the drill head's location (including depth) relative to the measurement of the tracking equipment. For daylight hole requirements, see *Figure 5-2: Pipeline Location Verification and Clearance Requirements for HDD for all pipelines (including NEB and Vital Mains)*

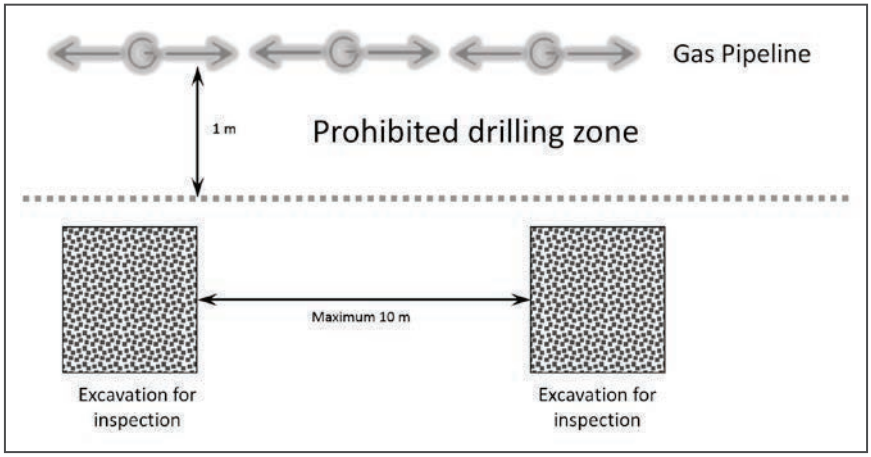
5.2 Drilling Parallel to Pipelines

When the proposed route is parallel to a natural gas pipeline at a perpendicular distance of 3 m (10 ft.) or less, daylighting must be performed at intervals of no more than 10 m (33 ft.) along the drilling path so that the precise location of the drilling head and backreamers (if any) can be verified visually. These excavations must be sufficiently wide to see the entire width of the drilling head, backreamers and structures from entry point to exit point.

The location of the pipeline must be visually confirmed as per the requirements set out in *Table 2-2: Pipeline Location Verification Requirements for NEB pipelines and Vital Mains* and *Table 2-3: Pipeline Location Verification Requirements for All Other Pipelines*.

No drilling installation is to be performed within a distance of 1 m (3.3 ft.) or less from either side of the pipeline. This prohibited zone may be widened in some cases.

Figure 5-1: Drilling Parallel to Pipelines



5.3 Drilling Across Pipelines

When the proposed drill path crosses an EGD pipeline, the pipeline must be exposed to the desired depth of the crossing to ensure that the natural gas pipeline is not affected and that the required clearance is maintained during all drilling operations.

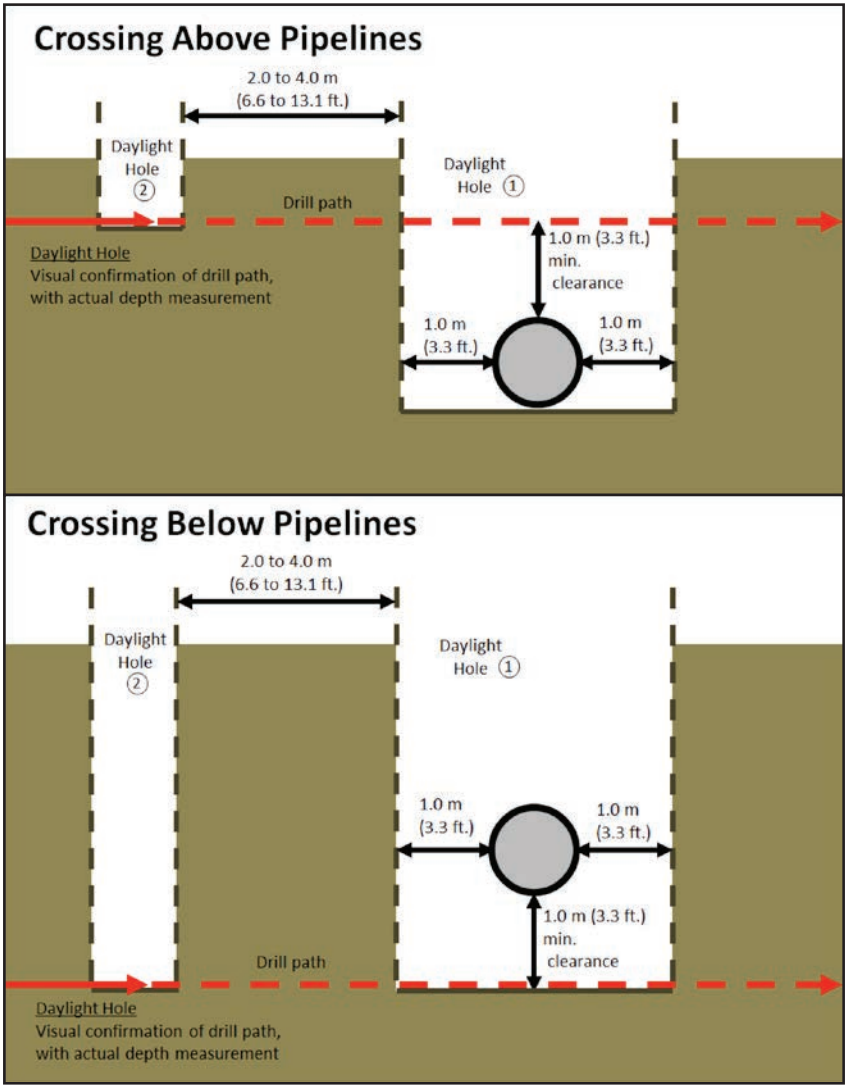
To assure that the directional drilling operation will not result in damage to the pipeline, the following daylight hole requirements must be followed:

- A pipeline daylight hole must be created that is sufficiently wide enough to see the drill head and backreamer entering the excavation at a minimum of 1 m (3.3 ft) before crossing the pipeline. See *Figure 5-2: Pipeline Location Verification and Clearance Requirements for HDD for all pipelines (including NEB and Vital Mains)* Daylight Hole 1.
- A second daylight hole must be created prior to reaching the pipeline such that the precise location of the drill head and backreamer (if any) can be verified visually. The daylight hole must be sufficiently wide to measure the depth and trajectory of the drill head and backreamer. See *Figure 5-2: Pipeline Location Verification and Clearance Requirements for HDD for all pipelines (including NEB and Vital Mains)* Daylight Hole 2.

See *Figure 5-2: Pipeline Location Verification and Clearance Requirements for HDD for all pipelines (including NEB and Vital Mains)*.

The location of the pipeline must be visually confirmed as per the requirements set out in *Table 2-2: Pipeline Location Verification Requirements for NEB pipelines and Vital Mains* and *Table 2-3: Pipeline Location Verification Requirements for All Other Pipelines*. See *Section 2.6 Minimum Clearance from Other Structures* for specified minimum clearances.

Figure 5-2: Pipeline Location Verification and Clearance Requirements for HDD for all pipelines (including NEB and Vital Mains)



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6.0 BACKFILLING

6.1 General

The gas pipeline must be inspected by EGD for damages before backfilling the excavation. It is the Excavator's responsibility to ensure that the gas pipeline is not undermined or endangered in any way. If any damage occurs, contact EGD immediately at the Emergency phone numbers listed in the *Appendix*.

Backfilling must be done in such a manner as to prevent any rocks from being placed at or near the surface of the pipe. Native excavated material must be used as backfill unless otherwise directed by EGD. Where native material is unsuitable, 150 mm (6 in.) of approved earth or sand padding must be placed over the pipe for protection. Topsoil must not be used for backfilling.

Aggregate backfill must be replaced in 300 mm (12 in.) layers. Each layer must be thoroughly compacted by pneumatic tampers or an equivalent method acceptable to EGD to ensure no settlement.

The final layer must be smoothed down with a grader (or a rake for small scale projects) and must be tamped flush or slightly higher than the surrounding ground surface in order to prevent ponding of water and accommodate any future soil subsidence over the trench line.

Backfilling a flooded trench will not be allowed. The Constructor is responsible for the removal of water from the trench, before backfilling. If backfilling on a slope, backfill must be first placed from the bottom of the slope, working upwards. This will prevent large voids in the backfill which can occur when the backfill is dumped from the top of a slope.

Backfill and compaction within road allowances must be completed in accordance with the local governing authority. Any excess spoil must be removed as specified by EGD.

Unshrinkable fill or other engineered backfill material must be installed only when requested by the municipalities, local governing authority or as directed by EGD. The pipe and valve assemblies must be sand padded before placement of unshrinkable fill. The Construction must ensure that placement of the unshrinkable fill does not displace sand padding or directly contact the pipeline.

The final covering of gas pipelines must adhere to municipal requirements.

7.0 BLASTING REQUIREMENTS

7.1 General

Before any blasting operation in the vicinity of a gas pipeline can occur, the hazards to EGD's plant must be evaluated. Responsibility for the design of the blast and any resultant damage is borne entirely by the party using the explosives.

A recognized independent blasting consultant must be retained at the applicant's expense to perform an evaluation. The validation report of the blast must be submitted to EGD for review if the blasting will occur within 30 m (100 ft.) of EGD facilities.

The Independent Blasting Consultant must be a Registered Professional Engineer and a holder of a Certificate of Authorization (C of A) specializing in blasting.

A copy of the consultant's report must be forwarded to EGD's Engineering Department for review.

If in the opinion of EGD or an independent blasting consultant, blasting cannot be carried out without affecting the facility's integrity, alternatives must be considered, including the replacement or relocation of the affected facility at the applicant's expense. In these situations, additional time must be allowed to obtain the necessary permits and to complete the necessary construction work.

In the event a third party is affected as a result of the blasting operations, all expenses associated therewith incurred by EGD must also be at the applicant's expense.

Ontario: The applicant must comply with the Ontario Provincial Standard Specification (OPSS 120 - General Specification for the Use of Explosives) in addition to EGD's blasting requirements.

New Brunswick: The applicant must comply with the New Brunswick Provincial Standard Specification (NB Reg 89-108) in addition to EGD's blasting requirements.

Quebec: The applicant must comply with Quebec's Acts regarding explosives (CQLR c E-22 and CQLR c E-22, r 1) and Safety Code (CQLR c S-2.1, r 4), in addition to EGD's blasting requirements.

7.2 Notification Requirements

Surface Blasting Applications

For surface blasting, a letter must be obtained from the applicant, which includes:

- Name of the owner of the project, general contractor and design engineer
- Name of the blasting contractor and person in charge of the blast
- Proof of liability insurance in the minimum amount of $2 million. Additional insurance requirements may be necessary.
    - Date for the blasting operation
    - A copy of a construction drawing drawn to scale indicating:
    - Details of the proposed drilling and loading pattern for explosives
    - Diameters of drilled holes, relative to EGD's facilities
    - Location of other public utilities (i.e. Bell, hydro, water)
    - Number and timing of delays
    - Total explosive weight to be detonated per delay
    - Specifications for the type of explosives to be used
    - Predicted vibration levels anticipated at any affected facilities
    - Controls to be used to confirm vibration levels (i.e. seismographs)
- Potential stabilization of rock face and type of potential stabilization techniques (i.e. rock anchors, shot crete, ribs, etc.).
- Geological parameters (borehole logs or geological reports) which indicate the design of the blast are acceptable
- Written confirmation that the blasting operation will be carried out by qualified workers with appropriate engineering supervision

Tunnel Blasting Applications

For tunnel blasting, the applicant's letter must contain all information required in the surface blasting application as set out above. In addition, the required independent blasting consultant's report must include:

- Location plan and profile views with construction drawing or sketch drawn to scale
- Evaluation of geotechnical data
- Exact stand-off distances, horizontal and direct (radial)
- Type of advancement proposed and type of tunnel method; full face, top-heading and bench, pilot tunnel
- Type of tunnel lining proposed
- Other pertinent information specific to tunneling techniques
- The use of preventative blasting techniques such as line drilling, cushion blasting, etc.

To assist with the preparation of the written request, locates to determine the location of the pipeline should be requested. Lists of regional addresses and phone numbers are outlined in the *Appendix*

7.3 Guidelines for Blasting

The information provided in this section is not to be construed as an exhaustive list of performance specifications, but rather a guide for conducting blasting in the vicinity of EGD's gas pipelines. The applicant is responsible for ensuring that all blasting work is performed in a good and workmanlike manner in accordance with all applicable laws, codes, by-laws, and regulations.

The contractor will be held liable for and indemnify EGD in relation to any and all damage directly or indirectly caused or arising as a result of blasting operations carried out by the applicant, its employees, contractors or those for whom the applicant is responsible at law.

Prior to blasting operations, a site meeting must be arranged with an authorized representative of the applicant and an EGD representative to confirm the location of EGD's facilities and details of the proposed blast.

EGD's pipelines must not be excavated prior to blasting. If excavation is unavoidable, then the pipeline must be properly supported according to EGD's requirements as referred to in *Section 4.0 Support Of Gas Pipelines*. The Constructor must take suitable precautions to protect the exposed pipeline from fly-rock. Blasting mats must be used to minimize the risk of fly-rock.

Explosives must be of a type which must not propagate between holes or be desensitized due to compression pressures. Explosives must not be left in the drill hole overnight.

For surface blasts located at distances of 10 m (33 ft.) or less from a pipeline and when the excavation of the first blast hole has attained a depth equal to the top of the buried natural gas pipeline, when the vertical depth of subsequent blast holes exceeds one half of the horizontal distance to the closest portion of the natural gas pipeline, the required independent blasting consultant's report must specifically address the impact of these conditions. This condition is not applicable for tunnel blasting operations.

Monitoring of blasting vibrations with a portable seismograph capable of producing on site print outs in the vicinity of EGD's facilities is mandatory to confirm that predicted vibration levels are respected. On a daily basis, a copy of the seismographic report must be provided to EGD.

Peak Particle Velocity (PPV) must be limited to 50 mm/sec (2 in./s) and maximum amplitude must be limited to 0.15 mm (0.006 in.).

7.4 Post Blasting Operation

Upon completion of daily blasting operations and within 30 days after the final blasting, EGD will conduct a leak survey of the pipeline at the applicant's expense. Leak survey will also be completed at the end of each day of blasting. Damage that has resulted from the blasting will be repaired at the applicant's expense. A summary of all blasting operations including blasting logs, vibration control, seismograph reports and other pertinent information must be provided to EGD by the applicant daily and at the completion of blasting operations.

8.0 PILE INSTALLATION OR COMPACTION REQUIREMENTS

8.1 General

Pile installation or compaction activities in the vicinity of EGD's facilities must be evaluated by EGD prior to beginning. Any resultant damage as a result of these activities will be borne entirely by the Contractor undertaking the proposed work.

If in the opinion of EGD, the particular pile installation or compaction operation cannot be carried out without affecting the pipeline or facility integrity, the following must be considered:

- Risk analysis and/or mitigation program for the proposed operation
- Alternate construction methods
- Relocation or replacement of the pipeline/facility.

All costs incurred will be covered by the Contractor undertaking the proposed work with final approval being granted by EGD.

Piles installed via augering must satisfy the locating and clearance requirements listed in *Section 2.3 Pipeline Location Verification* and *Section 2.6 Minimum Clearance from Other Structures*, respectively. EGD must provide approval for the installation of pile within 3 m (10 ft.) of a NEB-regulated pipeline or Vital Main.

The Contractor will be responsible for all costs related to customer interruption as well as costs incurred because of work delays. In the event a third party is affected as a result of the pile installation and/or compaction operations, all expenses associated therewith incurred by EGD will be passed to the Contractor.

8.2 Pile Installation or Compaction Application

The application to pile drive or do compaction work must be sent to EGD. Refer to the Appendix for contact information. The application must include the following:

- Name of project owner, general contractor and applicable sub-contractors

- A copy of the permits, certificates or other forms that are municipal bylaw requirements
- Name of design engineer and a copy of the construction plans with drawings. These must detail the natural gas facilities that can be affected.
- The type of piles and equipment to be used. Also the control methods to prevent pile deviation.
- Geo-technical reports and other applicable information
- A copy of the location of other public utilities: telephone, cable TV, sewer and water mains, electrical services, etc.
- A technical report with appropriate analysis and prediction of the vibration levels according to the opinion of an independent Engineering Consultant specialized in vibration control and analysis

This work must be completed under the supervisor of qualified personnel. Vibration results must be provided to EGD on a daily basis.

8.3 Guidelines

The information provided in this section is to be viewed as a guideline only. The Contractor is responsible for ensuring that all pile installation and compaction work is performed in accordance with all applicable laws, codes, by-laws and regulations.

No operations must be permitted within a standoff distance of 1.5 m (5 ft.) from the pipeline or other natural gas facility, unless approved by EGD's Engineering Department.

Prior to pile installation and/or compaction work, a site meeting must be arranged with an authorized representative of the Contractor and an EGD representative to confirm the location of EGD's facilities and details of the proposed work.

The pipeline should not be excavated prior to the piling or compaction operation. If excavation of the pipeline is necessary, then it must be properly supported in accordance with *Section 4.0 Support Of Gas Pipelines*.

The following situations will require the opinion of an independent Engineer:

1. Compaction of soils or backfill rated at 10,000 ft-lbs (13,600 Nm) or higher at a stand-off distance of 6 m (20 ft.) or less from the pipeline

2. Pile driving at a stand-off distance of 10 m (33 ft.) or less from the pipeline or other natural gas facility.
3. High-energy dynamic compaction for the rehabilitation of soils at a stand-off distance of 30 m (100 ft.) or less from the pipeline.
4. Type 4 soil as defined in Article 226 of the Occupational Health and Safety Act and Regulations for Construction Projects (See to *Section 8.5 Soil Types*).

For these situations, the appropriate number of seismographs to monitor vibrations is mandatory. The seismographs must be the portable type with the capability of producing on site printouts. This control will confirm the intensity of the vibrations generated by the pile installation or compaction work as projected. Furthermore, reports of recorded intensities must be provided on a regular basis or at the request of EGD.

Should a situation with low energy compaction operations with a soil cover of less than 1.5 m (5 ft.) above the pipeline at a stand-off distance of 3 m (10 ft.) or less from a pipeline be encountered, EGD may require the opinion of an independent Engineering Consultant.

In addition, if a Type 3 soil (see *Section 8.5 Soil Types*) is present on site, EGD may require the opinion of an independent Engineering Consultant.

The Peak Particle Velocity (PPV) measured on the pipeline, or at the closest point of the related structure with respect to the work, must not exceed 50 mm/sec (2 in/s). Furthermore, the maximum displacement for the vertical and/or horizontal component corresponding to the above stated vibration intensity must not exceed 50 mm (2 in.) at any given length of the pipeline in question.

If the PPV or displacement limit are surpassed, all operations must stop notwithstanding any delays or costs incurred by the Contractor or owner of the proposed work. EGD will require that the cause of these higher vibrations or displacements be investigated. EGD may arrange for a leak survey to be conducted. EGD's Engineering Department must approve resumption of operations.

Auguring may be required in order to avoid the use piles.

All operations must comply with the Provincial Occupational Health and Safety Act and Regulations for Construction Projects as well as all applicable EGD specifications, standards and guidelines.

8.4 Post Piling or Compaction Operations

The Contractor must send EGD the items that follow within five (5) business days of the completion of the pile installation via pile driving or compaction operations:

- A summary of all operations
- Pile driving and compaction logs
- Vibration control records
- Seismograph records

On completion of each day's work, and approximately 30 days after all work is completed, EGD will arrange to conduct a leak survey of the facility. If damage to EGD's facilities is found, it will be repaired by the Contractor. An invoice will be sent to the Contractor responsible for the work.

Maximum Vibration Intensities Expected from Pile Driving

	Particle Velocity (in/s)		
(E/D)1/2	Dry Sand	Wet Sand	Clay
0.10	0.020	0.030	
0.22	0.040	0.060	0.010
0.30	0.050	0.080	0.020
0.40	0.070	0.110	0.040
0.50	0.080	0.130	0.040
0.60	0.100	0.180	0.050
0.70	0.110	0.200	0.060
0.80	0.130	0.230	0.080
0.90	0.160	0.270	0.090
1	0.180	0.290	0.100
2	0.330	0.590	0.300
3	0.560	0.880	0.580
4	0.700	1.100	0.890
5	0.880	1.400	1.100
6	1.050	1.850	1.800
7	1.100	2.010	2.010
8	1.400	2.300	2.400
9	1.750	2.800	3.100
10	1.850	2.900	3.400

	Particle Velocity (mm/s)		
(E/D)1/2	Dry Sand	Wet Sand	Clay
0.10	0.43	0.74	
0.22	0.97	1.50	0.25
0.30	1.27	1.27	0.43
0.40	1.75	2.80	0.66
0.50	0.06	3.30	1.02
0.60	2.54	4.57	1.27
0.70	2.80	5.08	1.52
0.80	3.30	5.84	1.96
0.90	4.06	6.86	2.29
1	4.57	7.37	2.54
2	8.38	14.99	7.62
3	14.22	22.35	14.73
4	17.78	27.94	22.61
5	22.35	35.56	27.94
6	26.67	46.99	45.72
7	27.94	50.80	50.80
8	35.56	58.42	60.96
9	44.45	71.12	78.74
10	46.99	73.66	86.36

E is defined as rated energy of the pile hammer in ft-lbs.
D is defined as distance in inches.
Values highlighted in red indicate unacceptable vibration levels.

8.5 Soil Types

(Occupational Health and Safety Act and Regulations for Construction Projects)

1. For the purposes of this Part, soil must be classified as Type 1, 2, 3, or 4 in accordance with the descriptions set out in this section.
2. **Type 1 soil:**
   a) is hard, very dense and only able to be penetrated with difficulty by a small sharp object;
   b) has a low natural moisture content and a high degree of internal strength;
   c) has no signs of water seepage; and
   d) can be excavated only by mechanical equipment.
3. **Type 2 soil:**
   a) is very stiff, dense and can be penetrated with moderate difficulty by a small sharp object;
   b) has a low to medium natural moisture content and a medium degree of internal strength; and
   c) has a damp appearance after it is excavated.
4. **Type 3 soil:**
   a) is stiff to firm and compact to loose in consistency or is previously- excavated soil;
   b) exhibits signs of surface cracking;
   c) exhibits signs of water seepage;
   d) if it is dry, may run easily into a well-defined conical pile; and
   e) has a low degree of internal strength.
5. **Type 4 soil:**
   a) is soft to very soft and very loose in consistency, very sensitive and upon disturbance is significantly reduced in natural strength;
   b) runs easily or flows, unless it is completely supported before excavating procedures;
   c) has almost no internal strength;
   d) is wet or muddy, and
   e) exerts substantial fluid pressure on its supporting system.

APPENDIX

Contact Information

ENBRIDGE GAS DISTRIBUTION 500 Consumers Road North York, ON M2J 1P8	Markups: Mark-Ups@enbridge.com Mail to: Distribution Asset Management Ontario One Call Locates: 1 (800) 400-2255 Damage Prevention: 1 (866) 922-3622 **Emergency: 1 (866) 763-5427**
ENBRIDGE GAS STORAGE 3595 Tecumseh Road Mooretown, ON N0N 1M0	Ontario One Call Locates: 1 (800) 400-2255 Engineering Dept.: 1 (519) 862-6027 Operations Dept.: 1 (519) 862-6017 **Emergency: 1 (866) 763-5427**
GAZIFÈRE 706 Boulevard Greber, Gatineau QC J8V 3P8	Locates: 1 (800) 663-9228 Planning Dept.: 1 (819) 771-8321 X-2449 **Emergency: 1 (819) 771-8321, press 1**
ST. LAWRENCE GAS COMPANY LTD. 33 Stearns Street, P.O. Box 270 Massena, NY. 13662	Dig Safely New York Locates: 811 or 1 (800) 962-7962 Damage Prevention: 1 (315) 842-3621 **Emergency: 1 (800) 673-3301**
ENBRIDGE GAS NEW BRUNSWICK INC 440 Wilsey Road Fredericton NB E3B 7G5	Locates: 1 (800) 994-2762 Locates (Saint John only): 1 (866) 344-5463 Planning and Technical Services: 1 (888) 642-2020 **Emergency: 1 (800) 994-2762**

Engineering Memo

Effective: 2015-Nov-15 **Issued:**2015-Sep-30

To: All Manual holders, Gazifère, St. Lawrence Gas, Area Planning and Design, Distribution Planning, Asset Renewal & Improvement, Damage Prevention, Major Projects, and Land Services Departments

Updates to the Third Party Requirements In the Vicinity of Natural Gas Facilities Manual

Summary

The Third Party Requirements in the Vicinity of Natural Gas Facilities Manual is now updated to include requirements for work performed near the new NPS 42 pipeline. Additional requirements for Horizontal Directional Drilling (HDD) are now defined to continue to ensure safe work practices when drilling across or parallel to a pipeline.

Reason for the Change

These new requirements are added to continually ensure the safe delivery of natural gas as work is performed within the vicinity of Enbridge Gas Distribution's (EGD) natural gas facilities.

EGD Engineering

Pages 11 to 15 are affected by this memo. Click here to open the first affected page.

Action

1. All groups affected by the change must review the revised manual and complete all required training.
2. Supervisors of all groups affected by the change must ensure their direct reports have reviewed all changes and completed all training.

Summary of Changes

The Third Party Requirements In the Vicinity of Natural Gas Facilities Manual is updated with the following changes:

Section	Change	Training
2.2 NEB Pipelines & Vital Mains	▪ Added requirement for new NPS 42 Vital Main: EGD approval is required for all work within 30m (100 ft) of the pipeline.	✓ Yes, for: ▪ AR&I ▪ Ultilities & Markups ▪ Damage Prevention ▪ Quality Assurance
2.3 Pipeline Location Verification	▪ Added specific pipeline verification requirement for horizontal directional drilling to Tables 2-2, 2-3, 2-4 and 2-5	
5.1 General	▪ Added additional daylight hole requirement for horizontal directional drilling	
5.2 Drilling Parallel to Pipelines	▪ Changed distance requirement to be measured from the side of the pipeline instead of locate marks	
5.3 Drilling Across Pipelines	▪ Added additional daylight hole requirement and diagram, for horizontal directional drilling	

Contact

Project Manager: Ronnie Fong, 416-753-4659
Manual Manager: Stephanie Pazuki
Engineering Project Number: 5347-15

A. Pazuki

Stephanie Pazuki
Program Manager,
Engineering Construction and Maintenance
Engineering

EGD Engineering

Pages 11 to 15 are affected by this memo. Click here to open the first affected page.

MISSISSAUGA

City of Mississauga
Mavis Road Class Environmental Assessment
Notice of Study Commencement
Utility / Agency Response Form

Region of Peel
Working for you

Agency Name & Division/Branch	TransCanada Pipelines c/o Lehman & Associates
Name:	Darlene Presley
Address:	97 Collier St., Barrie, ON L4M 1H2
Phone:	705-727-0663 x 21
Email:	darlene@lehmanplan.ca

COMMENTS:

1. Does your organization wish to participate in this project? ☐ YES ☒ NO
2. Delete from contact list? ☒ YES ☐ NO
3. Please identify any concerns your agency may have at this time.

Please return this form by June 1, 2016 to:

Neil Ahmed, P.Eng.
Project Manager, MMM Group Limited
2655 North Sheridan Way
Mississauga, ON L5K 2P8
Phone: 905-823-8500, Ext. 1241
Fax: 905-823-8503
Email: mavisroadea@mmm.ca

WSP MMM GROUP

Sirianni, Stefan

From: Cliff Lee <clee@tnpi.ca>
Sent: October-27-16 12:32 PM
To: Sirianni, Stefan
Subject: RE: City of Mississauga Mavis Road Class EA Study - Notice of Public Information Centre #2
Attachments: General Clear Letter.pdf

Categories: Print and File / Update Comment Sheet

Please see attached

Kindest Regards,

Cliff Lee, C.E.T.
Trans-Northern Pipeline Inc.
45 Vogell Rd
Richmond Hill, ON
L4B 3P6
Ph:905-770-3353 ext 292
Fx: 905-770-8675
Em:clee@tnpi.ca

Trans-Northern // Trans-Nord
Operational Excellence Management System

From: Sirianni, Stefan [mailto:SiranniS@mmm.ca]
Sent: October-27-16 10:13 AM
Subject: City of Mississauga Mavis Road Class EA Study - Notice of Public Information Centre #2

Re: City of Mississauga
Municipal Class Environmental Assessment Study for Mavis Road
Courtneypark Drive West to Ray Lawson Boulevard
Public Information Centre #2

On behalf of the City of Mississauga, we are writing to inform you that the second and final Public Information Centre (PIC) for the above-noted study is scheduled to be held as follows; please see the attached notice for more information:

Date: Wednesday, November 9, 2016
Time: 6:00 pm to 8:00 pm (Drop-In Centre)
Location: David Leeder Middle School, 6900 Gooderham Estate Boulevard, Mississauga ON

The purpose of PIC #2 is to provide the public and technical agencies with an opportunity to view the Preliminary Plan of the preferred alternative for improvements to Mavis Road and to discuss the next steps in the study. Input to the study received at PIC #2 will be used to confirm a suitable planning solution for Mavis Road. Any agencies with an interest in this study are invited to attend.

Regards,
Stefan

Stefan Sirianni, E.I.T.
Designer
Transportation – Planning

MMM Group
2655 North Sheridan Way, Suite 300
Mississauga, ON L5K 2P8 Canada
T 905.823.8500 x1421
F 905.823.8503
SirianniS@mmm.ca

www.mmmgrouplimited.com | www.wspgroup.ca

Trans-Northern // Trans-Nord

Operational Excellence Management System

Date: 2016

General Clearance Notification

Greetings:

Thank-you for informing us of your upcoming project, and by way of this attached letter Trans-Northern Pipelines Inc. (TNPI) certifies that it does NOT own or operate any facilities within the work extents as outlined in your map or engineering drawing submission, therefore, clearance is granted.

However, should the scope of your work change and you intend on crossing the Pipeline or Right Of Way You must contact TNPI providing the project location, a description of work, contact data along with other pertinent information such as maps drawings etc. Should you require a Locate please contact Ontario One Call at 1-800-400-2255, www.on1call,com to obtain a Ticket and should you require further information or other assistance please contact the TNPI Coordinator Crossings & Facilities.

Kindest Regards,

Trans-Northern // Trans-Nord

Cliff Lee
Coordinator, Crossings & Facilities

Operator of the Alberta Products Pipe Line Ltd.
45 Vogell Rd., Suite 310
Richmond Hill, ON L4B 3P6
www.tnpi.ca

T (289) 475-5381
clee@tnpi.ca

Sirianni, Stefan

From: Telus Utility Markups <telusutilitymarkups@Telecon.ca>
Sent: November-16-16 9:18 AM
To: Sirianni, Stefan
Cc: Frederic Sua
Subject: City of Mississauga Mavis Road Class EA Study - Notice of Public Information Centre #2

Categories: Print and File / Update Comment Sheet

Good morning Stefan,

Telus has infrastructure in your area of study and we would like to be included in future discussions. Please include Fred (Frederic Sua Frederic.Sua@telus.com) in all future communications.
.

Re: City of Mississauga
Municipal Class Environmental Assessment Study for Mavis Road
Courtneypark Drive West to Ray Lawson Boulevard
Public Information Centre #2

On behalf of the City of Mississauga, we are writing to inform you that the second and final Public Information Centre (PIC) for the above-noted study is scheduled to be held as follows; please see the attached notice for more information:

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Thanks,

Project Support, Engineering Central Canada
Appui aux projets IngénierieCentre du Canada

T 905-470-2112 EXT 40235
200 Town Centre Blvd, Suit 300 Markham (Ontario). L3R 8G5

telecon design MEMBER OF TELECON GROUP

telecon.ca

Sirianni, Stefan

From: Frederic Sua <Frederic.Sua@telus.com>
Sent: February-16-17 2:57 PM
To: Sirianni, Stefan
Subject: RE: City of Mississauga Mavis Road Class EA Study - Utility Network Plans and Potential Relocations - Information Request

Categories: Print and File / Update Comment Sheet

Hello Stefan,

TELUS has leased fibres with Enersource along Mavis. Unfortunately, we do not have access to Enersources' records or plans. If you require further information, please do not hesitate to contact me.

Sincerely,

Frederic Sua, C. Tech
Design Specialist II – Access Engineering
TELUS CSD, Engineering Operations & Implementations East
22nd Floor, 25 York St., Toronto, Ontario, M5J 2V5
Phone: (647) 837-9112
Cell: (416) 912-5607
E-mail: frederic.sua@telus.com

From: Sirianni, Stefan [mailto:SirianniS@mmm.ca]
Sent: February 10, 2017 04:32 PM
To: Frederic Sua <Frederic.Sua@telus.com>
Subject: City of Mississauga Mavis Road Class EA Study - Utility Network Plans and Potential Relocations - Information Request

Re: City of Mississauga
Municipal Class Environmental Assessment Study for Mavis Road
Courtneypark Drive West to Ray Lawson Boulevard
Utility Network Plans

Good afternoon,

Our records indicate that Telus has utilities present within the limits of the above noted study, for which a utility relocation plan is currently being developed.

To ensure that any potential impacts to your network are identified through this process, we ask that you please provide the Project Team with the following information:

- Utility plans/drawings that are pertinent to the Study Area shown in the attached key plan; and
- Details regarding any future work within the Study Area (if relevant)

Your assistance in this matter will help ensure that any necessary mitigation/relocation measures are recommended through this EA Study.

Please feel free to contact me if you have any questions.

Best,
Stefan

Stefan Sirianni, E.I.T.
Designer
Transportation – Planning

MMM Group
610 Chartwell Road, Suite 300
Oakville, ON L6J 4A5 Canada
T 289.835.2604
F 905.823.8503
SirianniS@mmm.ca

www.mmmgrouplimited.com | www.wspgroup.ca

Sirianni, Stefan

From: Telus Utility Markups <telusutilitymarkups@Telecon.ca>
Sent: February-17-17 10:03 AM
To: Sirianni, Stefan
Subject: RE: City of Mississauga Mavis Road Class EA Study - Utility Network Plans and Potential Relocations - Information Request

Categories: Print and File / Update Comment Sheet

Telus has aerial Plant along the west side of Mavis from Courtnepark to Derry Rd w.

Thanks,

Project Support, Engineering Central Canada
Appui aux projets IngénierieCentre du Canada

T 905-470-2112 EXT 40235
200 Town Centre Blvd, Suit 300 Markham (Ontario). L3R 8G5

telecon design MEMBER OF TELECON GROUP

telecon.ca

From: Sirianni, Stefan [mailto:SiranniS@mmm.ca]
Sent: Friday, February 10, 2017 4:32 PM
To: Telus Utility Markups
Subject: City of Mississauga Mavis Road Class EA Study - Utility Network Plans and Potential Relocations - Information Request

Re: City of Mississauga
Municipal Class Environmental Assessment Study for Mavis Road
Courtneypark Drive West to Ray Lawson Boulevard
Utility Network Plans

Good afternoon,

Our records indicate that Telus has utilities present within the limits of the above noted study, for which a utility relocation plan is currently being developed.

To ensure that any potential impacts to your network are identified through this process, we ask that you please provide the Project Team with the following information:

- Utility plans/drawings that are pertinent to the Study Area shown in the attached key plan; and
- Details regarding any future work within the Study Area (if relevant)

Your assistance in this matter will help ensure that any necessary mitigation/relocation measures are recommended through this EA Study.

Please feel free to contact me if you have any questions.

Best,
Stefan

WSP | MMM GROUP

Stefan Sirianni, E.I.T.
Designer
Transportation – Planning

MMM Group
610 Chartwell Road, Suite 300
Oakville, ON L6J 4A5 Canada
T 289.835.2604
F 905.823.8503
SirianniS@mmm.ca

www.mmmgrouplimited.com | www.wspgroup.ca

Sirianni, Stefan

From: Susan.SUN@HydroOne.com
Sent: February-13-17 2:14 PM
To: Sirianni, Stefan
Cc: rick.schatz@HydroOne.com; rossella.fazio@HydroOne.com
Subject: City of Mississauga Mavis Road Class EA
Attachments: Mavis Road Class EA - Study Area Key Map.jpg; Marvis Road_Courtneypark Drive West to Ray Lawson Boulevard.PNG

Categories: Print and File / Update Comment Sheet

Dear Stefan Sirianni,

In our initial review, we have confirmed that Hydro One has high voltage transmission facilities within your study area. At this point in time we do not have enough information about your project to provide you with meaningful input with respect to the impacts that your project may have on our infrastructure. As such, this response does not constitute any sort of approval for your plans and is being sent to you as a courtesy to inform you that we must be consulted on your project.

In addition to the existing infrastructure mentioned above, the affected transmission corridor may have provisions for future lines or already contain secondary land uses (i.e. pipelines, water mains, parking, etc). Please take this into consideration in your planning.

Please allow the appropriate lead-time in your project schedule in the event that your proposed development impacts Hydro One infrastructure to the extent that it would require modifications to our infrastructure.

In planning, please note that developments should not reduce line clearances or limit access to our facilities at any time in the study area of your Proposal. Any construction activities must maintain the electrical clearance from the transmission line conductors as specified in the Ontario Health and Safety Act for the respective line voltage.

The integrity of the structure foundations must be maintained at all times, with no disturbance of the earth around the poles, guy wires and tower footings. There must not be any grading, excavating, filling or other civil work close to the structures.

We reiterate that this message does not constitute any form of approval for your project. Once more details about your plans are known and it is established that your development will affect Hydro One facilities including the rights of way, please submit your plans to:

Richard SCHATZ, Real Estate, Hydro One Real Estate Management
185 Clegg Road, Markham L6G 1B7
Phone: (905) 946-6233
rick.schatz@HydroOne.com

Please note that the proponent will be held responsible for all costs associated with modification or relocation of Hydro One facilities, as well as any added costs that may be incurred due to increase efforts to maintain our facilities.

Regards,

Susan Sun
Tel: 416-345-6629

On behalf of

Secondary Land Use
Transmission Asset Management
Hydro One Networks

Sirianni, Stefan

From: Elsa Gregorio <egregorio@hydroonebrampton.com>
Sent: February-16-17 8:09 AM
To: Sirianni, Stefan
Cc: Robert Evangelista
Subject: FW: City of Mississauga Mavis Road Class EA Study - Utility Network Plans and Potential Relocations - Information Request
Attachments: Mavis Road Class EA - Study Area Key Map.jpg; Mavis Rd from Ray Lawson Blvd to Hwy 407 civil.pdf; Mavis Rd from Ray Lawson Blvd to Hwy 407 electrical.pdf; symbols-revjuly8-16.pdf

Categories: Print and File / Update Comment Sheet

Please find attached digital files –pdf format (Civil and Electrical) map extractions from our GIS record map. Scaled at 1:1000. Also included is the legend chart.

Regards
Elsa

Elsa Gregorio
Drafting & Records Supervisor
Hydro One Brampton
(905)840-6300 Ext. 5564
egregorio@hydroonebrampton.com

From: Robert Evangelista
Sent: February-14-17 10:36 AM
To: Elsa Gregorio <egregorio@hydroonebrampton.com>
Subject: FW: City of Mississauga Mavis Road Class EA Study - Utility Network Plans and Potential Relocations - Information Request

Elsa, please find attached Key map of area within the study.

Robert E

From: Sirianni, Stefan [mailto:SirianniS@mmm.ca]
Sent: February-10-17 4:24 PM
To: Robert Evangelista <revangelista@hydroonebrampton.com>
Subject: City of Mississauga Mavis Road Class EA Study - Utility Network Plans and Potential Relocations - Information Request

Re: City of Mississauga
Municipal Class Environmental Assessment Study for Mavis Road
Courtneypark Drive West to Ray Lawson Boulevard
Utility Network Plans

Good afternoon,

Our records indicate that Brampton Hydro has utilities present within the limits of the above noted study, for which a utility relocation plan is currently being developed.

To ensure that any potential impacts to your network are identified through this process, we ask that you please provide the Project Team with the following information:

- Utility plans/drawings that are pertinent to the Study Area shown in the attached key plan; and
- Details regarding any future work within the Study Area (if relevant)

Your assistance in this matter will help ensure that any necessary mitigation/relocation measures are recommended through this EA Study.

Please feel free to contact me if you have any questions.

Best,
Stefan

Stefan Sirianni, E.I.T.
Designer
Transportation – Planning

MMM Group
610 Chartwell Road, Suite 300
Oakville, ON L6J 4A5 Canada
T 289.835.2604
F 905.823.8503
SirianniS@mmm.ca

www.mmmgrouplimited.com | www.wspgroup.ca

ELECTRICAL LEGEND:

- TRANS.BANK (ABOVE GRD. VAULT)
- 3 PHASE O/H TRANS.-SINGLE
- 3 PHASE O/H TRANS. BANK
- 1 PHASE PADMOUNT TRANS.
- 3 PHASE PADMOUNT TRANS.
- SUBMERSIBLE TRANS.
- TRANS. BANK (SUB. VAULT)
- POLE TRANS.
- NETWORKED 1 PHASE TRANS.
- NETWORKED 3 PHASE TRANS.
- 1 PHASE O/H TRANS.
- FAULT INDICATOR
- PRIMARY METERING UNIT
- ELBOW
- OPEN POINT
- FUSED ELBOW
- GROUND
- ARRESTER
- O/H VACUUM SWITCH
- RESTABLE BREAKER
- REGULATOR
- SOLID BLADE SWITCH
- SF6 OVERHEAD
- LOAD INTERRUPTER SWITCH
- LIVE LINE OPENER
- INDICATES MOTORIZED
- PARKING STAND ELBOW
- SECONDARY HOUSE SERVICE
- R— RELAY (ARROW INDICATES DIRECTION OF SUPPLY)
- —R— RELAY (ARROW INDICATES DIRECTION OF SUPPLY)
- PC PHOTO CELL
- POLE TOP FIXTURE
- BRACKET FIXTURE
- UNDERGROUND STREETLIGHT CONDUCTOR
- OVERHEAD STREETLIGHT CONDUCTOR
- UNDERGROUND STREET LIGHT CONDUCTOR SUPPLIED FROM HOUSE SERVICE

CIVIL LEGEND:

- DIRECT BURIED CABLE OR CABLE IN CONDUIT
- DIRECT BURIED DUCT, 3 INDICATES DUCT QUANTITY
- CONCRETE ENCASED DUCT, 4 INDICATES DUCT QUANTITY
- COMBINATION OF DIRECT BURIED CABLE, DIRECT BURIED DUCT AND CONCRETE ENCASED DUCT. (NOTE THAT COMBINATIONS MAY VARY)
- DIRECT BURIED ROAD CROSSING, 3 INDICATES DUCT QUANTITY
- CONCRETE ENCASED ROAD CROSSING, 4 INDICATES DUCT QUANTITY
- COMBINATION OF DIRECT BURIED AND ENCASED TYPE ROAD CROSSING, 3 AND 4 INDICATE DUCT QUANTITY
- CIC CABLE IN CONDUIT TYPE CROSSING
- UNKNOWN CROSSING TYPE OR UNKNOWN LOCATION
- INDICATES CHANGE IN DUCT STRUCTURE OR TRENCH COMPOSITE
- SERVICE LOCATE REQUIRED CIVIL MAINTENANCE TAG, ACTION REQUIRED AS NOTED
- SINGLE OR THREE PHASE MINI PAD TRANS.
- SWITCHGEAR FOUNDATION
- MANHOLE OR PULLING VAULT
- FOREIGN STRUCTURE
- BUILDING VAULT
- PRIMARY SPLICE, PHASE AS INDICATED
- JUNCTION BOX
- HANDHOLE
- SF6 SWITCHGEAR FOUNDATION
- INDICATES STEEL, ALUMINUM OR FIBREGLASS POLE
- INDICATES WOOD POLE
- INDICATES CONCRETE POLE
- INDICATES FOREIGN POLE
- POLE ANCHOR
- S/G SPAN GUY

SL19853 IS ON POLE IN FIELD
T19854-R
20-2075
SUPPLY TO TRAFFIC & ST/LT CONTROL
120/240 V SUPPLY TO BELL DMS UNIT
CUSTOMER OWNED
T13250 120/208
T9038-B
T9037-B
T9034-R
T9033-W
T9031-W
T6164 120/208
HICKORY WOOD PUBLIC SCHOOL
RED & BLUE PHASE OPEN OUT OF PHASE BACK-UP
20-533
20-532
BM
SUPPLY TO ROGERS PED.
T18899 347/600
TRAFFIC SIGNAL 120 V POWER SUPPLY TO ROGERS CABLE TV PEDESTAL
T13663-R
T13649-W
T13651-B
T13653-B
T13654-B
T8945-R
T8946-R
T8947-R
T8948-R
T8955-W
T8954-W
T8956-W
T8957-W
T8958-W
T8961-W
T8959-W
T8960-W
T8543-W
T8547-W
T8549-R
T8548-W
120V SUPPLY TO SIGN
TL19854
T10716-W
MEADOWVALE CEMETERY
T-FUSE
20-2155
20-2157
ROUTE OF COND. UNKNOWN FEEDS MTO AT 407 & MAVIS
T13650-B
T13656-R
T13657-R
T13662-R
T13652-B
T13660-R
T13661-R
T13659-R
T13658-R
T13655-B
TEMP. 3 PHASE PADMOUNT SECTIONALIZING UNIT
PL13656
ROLLINGWOOD PARK
T21735-R
SL21735
METERED PED FOR ST/LT SUPPLY
T21736-W
T21737-B
T15184-R
T15175-W
T15176-W
T15177-W
OUT OF PHASE
T15180-B
T15178-W
T15181-B
T15182-B
SL15183
T15183-B
T15185-R
ILLUMINATION FOR CITY OF BRAMPTON SIGN
PL15185
SL15186
T15186-R
T15187-R
T15188-R
T15179-W
SL17681
T17681-R
T10922-R
T17409-W
T17390-B
T17397-W
T17396-W
T17394-B
T17393-B
T17395-W
T17391-R
SL17392
T17392-R
METERED ST/LT PEDESTAL
T17618-B
T17616-W
T17412-R
T17413-R
T17414-R
SL17415
T17415-R
T17617-W
T17619-R
T17411-W
T17620-B
SL17411
T17410-B
FUTURE PARK SERVICE
T19146-R
T19147-B
T19148-B
SL19148
T19149-B
SL19854B
20-2029
SUPPLY TO MTO TRAFFIC/SL CABLE ROUTE UNKNOWN FED DIRECTLY FROM BUS AT T12074
20-2081
T372 347/600
HWY #407 CONTROL CABINET
20-2083
20-1477
MAVIS RD
RAY LAWSON BLVD
CHINGUACOUSY RD
GAMMON CRES
CEDAR LAKE CRES
BERGAMONT RD
SOCCAVO CRES
CAILIFF ST
BAKEWELL ST
ROLLINGWOOD DR
YUILE CRT
HEFFERON CRT
FAULKNER DR
LENNON TRAIL
WILDSKY RD
TUMBLEWEED TRAIL
MOONSTONE RD
HWY #407
BLDG 1
BLDG 2
BLDG 3
BLDG 4
BLDG 5
BLDG 6

PULLING PIT
#7772 50' 5.5 m A/L
S/G
#7771 50' 3.5 m A/L
#P3A UNK
DMS
CUSTOMER OWNED T13250
MAVIS RD
CUSTOMER OWNED
T9038
#26 25'
#14 25'
T9037
DINO CRT
KINGKNOLL DR
T9034
T9033
#217 25'
#229 25'
#24 25'
#30 25'
#16 25'
#700 40'
#690 40'
#680 40'
#670 40'
#660 40'
#650 40'
#640 40'
#630 40'
#620 40'
#610 40'
#600 40'
#590 40'
#710 40'
BM
120 V SUPPLY TO CITY OF BRAMPTON FLASHING BEACON ON POLE CONNECTED TO STREETLIGHT CCT.
T6164
HICKORY WOOD PUBLIC SCHOOL
#6 20'
#3 20'
T9031
#7756 75'
#7740 70' 3.4-8 m A/L
UNK #00
1.5m DEEP UNK #00
2.5m DEEP
2.9m BEHIND CURB 4.7m W. OF HYDRANT
#7700 25'
#7724 75'
RAY LAWSON BLVD
#UNK 40'
#UNK UNK
#00 UNK
T18899
SL13649 #228 32.5'
T13649
T13651
#215 32.5'
#12 32.5'
T13663
T13653
#2 32.5'
#11 32.5'
T13654
T13655
T13662
T13657
T13660
#10 32.5'
#17 32.5'
#30 32.5'
#26 32.5'
#25 32.5'
#105 32.5'
#89 32.5'
#34 32.5'
#48 32.5'
#50 32.5'
T13659
T13661
YUILE CRT
FELSTAFF DR
JEFFERSON CRT
ROLLINGWOOD DR
#144 32.5'
#140 32.5'
#214 32.5'
#132 32.5'
#207 32.5'
#202 32.5'
T13650
T13656
#7708 75'
#7716 60'
#7702 70'
#7699 50' 5.3 m A/L 5.3 m A/L 5.3 m A/L
#7714 55' 6.7 m A/L 6.7 m A/L
MEADOWVALE CEMETERY
T10716
#7692 55' 3 m A/L
#7690 75' 3.5 m A/L
#7692 70' 3.4-5 m A/L
BLDG 1
BLDG 2
BLDG 3
BLDG 4
BLDG 5
BLDG 6
T21735
SL21735
T21736
T21737
GAMMON CRES
CHINGUACOUSY RD
#7678 75' 3.3 m A/L
#P7 UNK
#7674 55'
#7662 75' 3.9 m A/L
#7653 50' 2.8 m A/L
#7656 55' 2 m A/L 2 m A/L
#7652 75' 3.5 m A/L
#P8 UNK
#7636 75' 3.5 m A/L
#P9 UNK
#7616 80' 3.5 m A/L 5.5,7,8.5 m A/L 3.5 m A/L
#7604 75' 9,10.5,11.5 m A/L
#P10 UNK
#7638 55'
#7620 55'
#7621 40'
#7602 55'
#7582 55'
#7570 55' 2 m A/L
#7569 40' 3 m A/L
#7564 65'
#7556 55' 3.5 m A/L
T372
#7513 70' 6.7,8.2 m A/L
#7433 70' 6.7,8.2 m A/L
HWY #407 DUCT BANK NOTE: 4-100mm DUCTS ARE BELL CANADA OWNED
HWY #407
MAVIS RD
T17396
CEDAR LAKE CRES
T17397
T17394
T17390
T17391
SL17392 T17392
T17393
T17395
T17618
T17616
CALIFLOWER ST
BAKEWELL ST
T17409
T17412
T17413
T17414
BERGAMONT RD
SL17415 T17415
T17617
T17619
SL17411
T17411
T17620
CEDAR LAKE CRES
T17410
5978
T19146
T19147
T19148
SL19148
T19149
SOCCAVO CRES
#P11 UNK
#P12 UNK
#P13 UNK
#P14 UNK
#P15 UNK
T15185
PL15185
#102 32.5'
#96 32.5'
SL15186
#85 32.5'
T15186
T15187
T15188
#84 32.5'
#44 32.5'
#71 32.5'
#59 32.5'
T15179
#100 32.5'
#35 32.5'
#31 32.5'
#23 32.5'
T8543
ROLLINGWOOD PARK
PL13656
#193 32.5'
#120 32.5'
T13652
#00 20'
#96 32.5'
#80 32.5'
T13658
T15175
T15176
T15177
#26 32.5'
#120 32.5'
T15184
#1 32.5'
#45 32.5'
T15180
#112 32.5'
T15178
#34 32.5'
#26 32.5'
#14 32.5'
#2 32.5'
#17 32.5'
#29 32.5'
#41 32.5'
LENNON TRAIL
WILDSKY RD
T15181
T15182
SL15183
T15183
#86 32.5'
#74 32.5'
#134 32.5'
#125 32.5'
#119 32.5'
#115 32.5'
#4 32.5'
#1 32.5'
#31 25'
#45 25'
#46 25'
#79 25'
#18 25'
#53 25'
#40 25'
#41 25'
GUARD POST
T8950
T8957
T8958
T8961
T8959
T8960
T8954
T8955
T8946
T8947
T8948
T8945
T8547
T8549
T8548
TUMBLEWEED TRAIL
MOONSTO
WOODSLEE DR
STAFFORD GLEAVE
RAY LAWSON BLVD
YUILE CRT
ROLLING

Sirianni, Stefan

From: Micheline Scaife <Micheline.Scaife@alectrautilities.com>
Sent: February-21-17 2:25 PM
To: Sirianni, Stefan
Subject: FW: City of Mississauga Mavis Road Class EA Study - Utility Network Plans and Potential Relocations - Information Request
Attachments: Mavis Road Class EA - Study Area Key Map.jpg; 1 EHM AMFM Map Legends - Equipment Symbols.pdf; EHM Area Map - Mavis (Derry to 407ETR).pdf; EHM Area Map - Mavis (CourtneyPark to Derry).pdf; EHM dwgs - Mavis (Hwy 407 to Courtney Park).pdf

Categories: Print and File / Update Comment Sheet

Stefan,

I have included a legend (EHM AMFM Map Legends) to explain the symbols found in the map I have provided.
I have included 2 Distribution Area Maps which shows our EHM Hydro devices in your search area.
I've included 8 drawings which show u/g equipment in your search area.
Please note that copies of the map product and drawings are issued for information purposes only.
If I can be of any further assistance, please let me know.

Regards,

alectra utilities
Discover the possibilities

Micheline Scaife
Records Analyst
3240 Mavis Rd. Mississauga, ON L5C 3K1
t 905.283.4292
e Micheline.Scaife@alectrautilities.com
alectrautilities.com

From: Phieu Nguyen
Sent: February-13-17 9:04 AM
To: Micheline Scaife
Subject: FW: City of Mississauga Mavis Road Class EA Study - Utility Network Plans and Potential Relocations - Information Request

Good morning Micheline,

Please find attached file for your information.

Regards,
Phieu

From: Paul Sidhu
Sent: February-10-17 4:44 PM
To: Phieu Nguyen
Cc: Sirianni, Stefan; Matthew Hotham

Subject: FW: City of Mississauga Mavis Road Class EA Study - Utility Network Plans and Potential Relocations - Information Request

Phieu,

Please provide info required.

Stefan,

We have no other proposed work in the Study Area enclosed that I am aware of.

Thanks

From: Sirianni, Stefan [mailto:SirianniS@mmm.ca]
Sent: February-10-17 4:23 PM
To: Paul Sidhu
Subject: City of Mississauga Mavis Road Class EA Study - Utility Network Plans and Potential Relocations - Information Request

Re: City of Mississauga
Municipal Class Environmental Assessment Study for Mavis Road
Courtneypark Drive West to Ray Lawson Boulevard
Utility Network Plans

Good afternoon,

Our records indicate that Enersource has utilities present within the limits of the above noted study, for which a utility relocation plan is currently being developed.

To ensure that any potential impacts to your network are identified through this process, we ask that you please provide the Project Team with the following information:

- Utility plans/drawings that are pertinent to the Study Area shown in the attached key plan; and
- Details regarding any future work within the Study Area (if relevant)

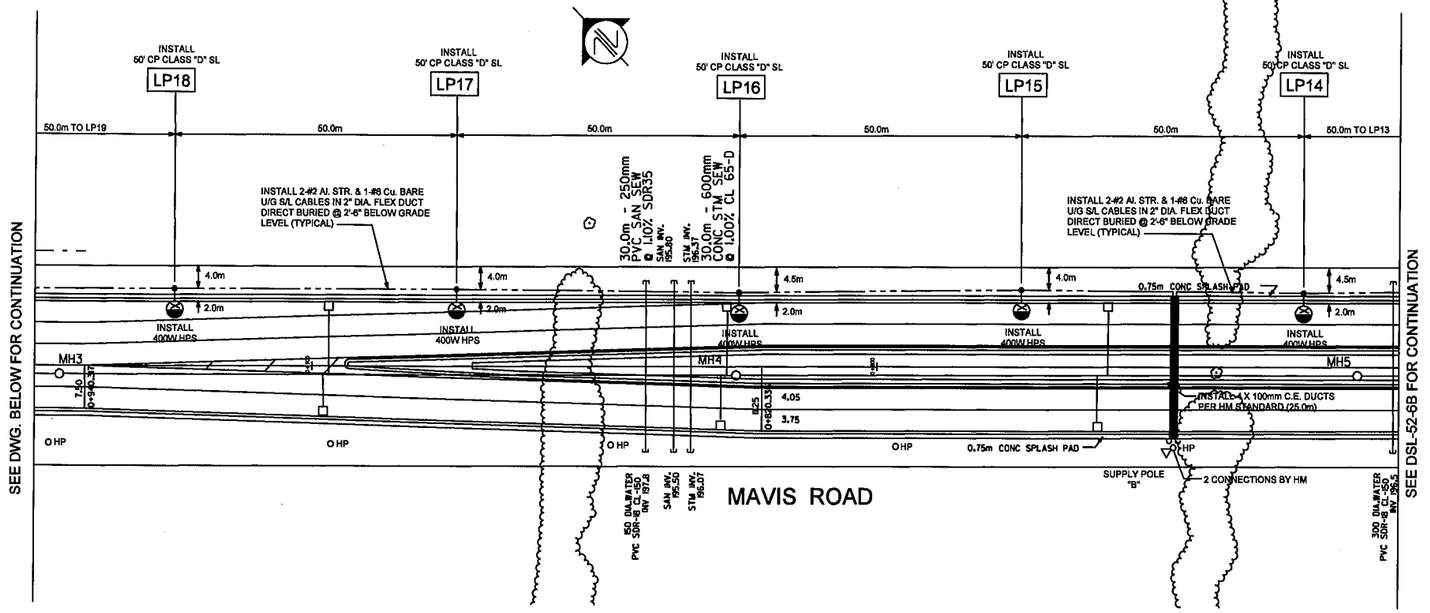
Your assistance in this matter will help ensure that any necessary mitigation/relocation measures are recommended through this EA Study.

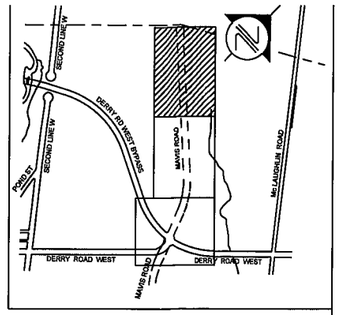
Please feel free to contact me if you have any questions.

Best,
Stefan

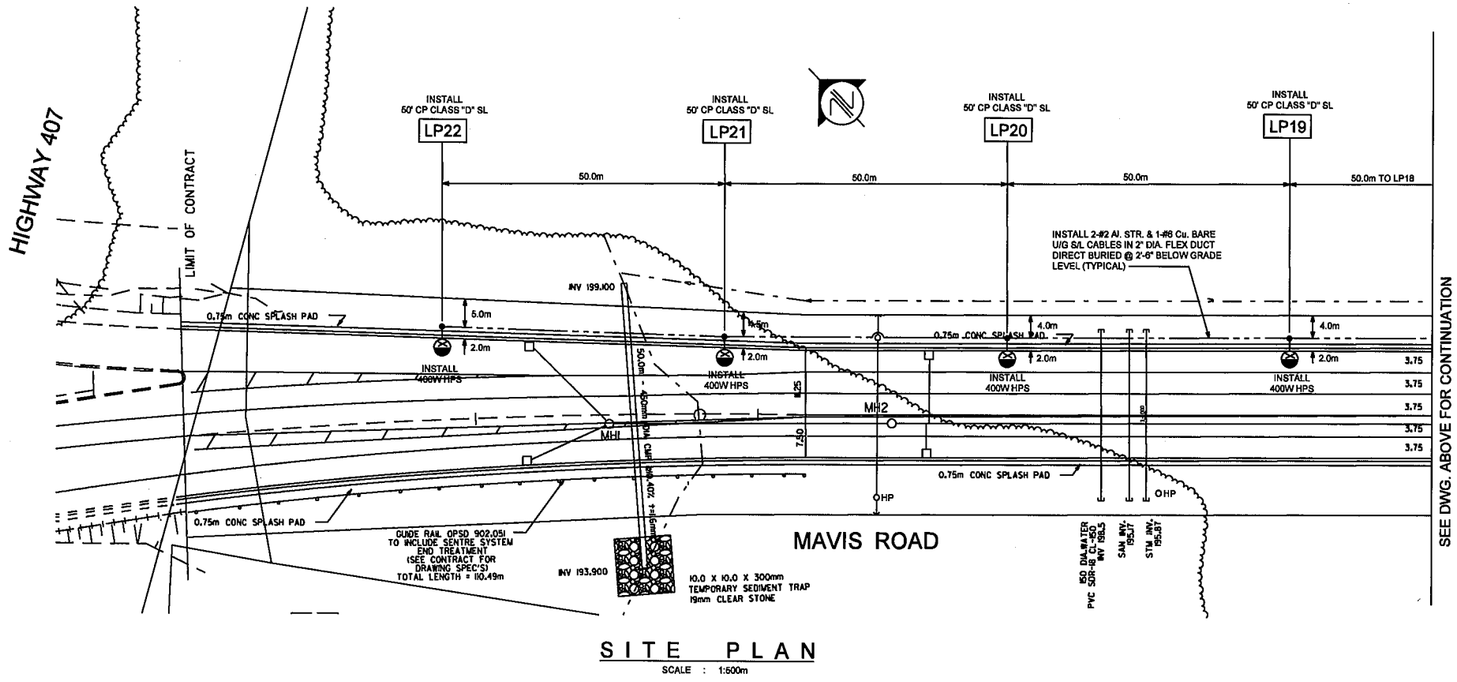
Stefan Sirianni, E.I.T.
Designer
Transportation – Planning

MMM Group
610 Chartwell Road, Suite 300
Oakville, ON L6J 4A5 Canada
T 289.835.2604
F 905.823.8503





KEY PLAN
SCALE : N.T.S.



SITE PLAN
SCALE : 1:500m

REV. NO.	REVISION	DES. TECH.	APPD.	DATE

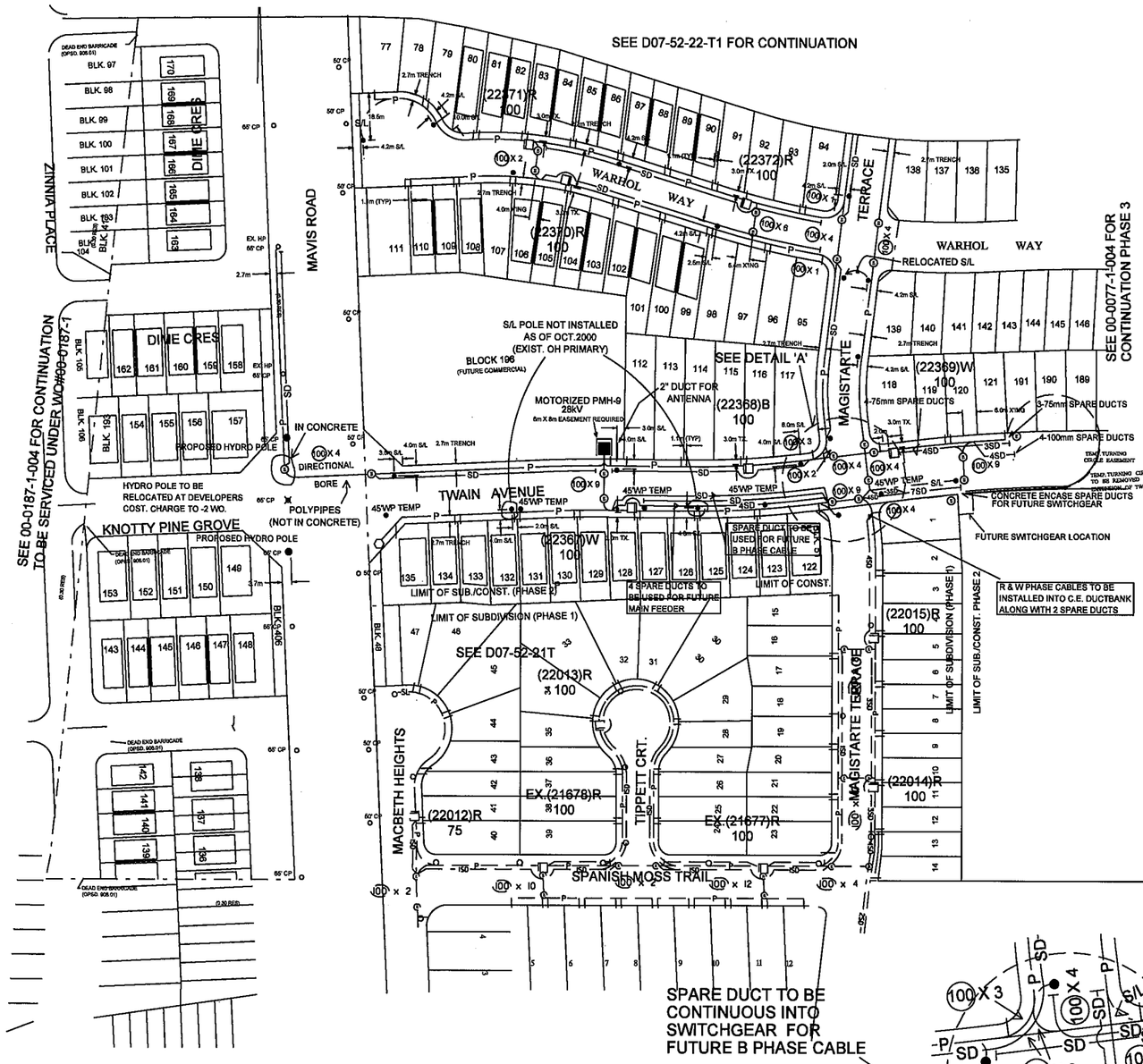
hydro mississauga
3240 Mavis Road
Mississauga, Ontario
L5C 3K1
Tel: (905)279-9050
Fax: (905)279-7300

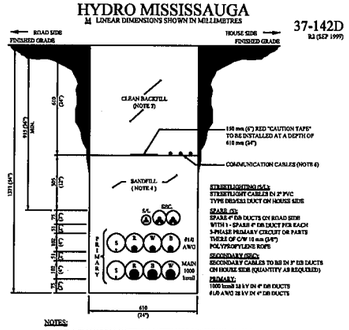
MAVIS RD. STREETLIGHTING
FROM DERRY RD. WEST TO HIGHWAY 407

WORK ORDER	DRAWN	DATE
97-7220-1	C.P.	10 JUL 97
SCALE	DES. TECH.	DSL-52-6C
AS SHOWN	I.G.P.	

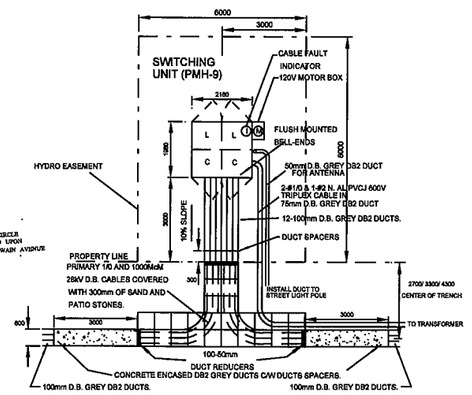
APPD. _____
DATE _____

DSL-52-6C

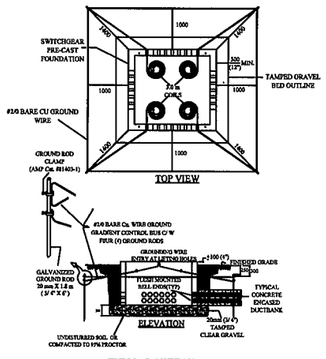




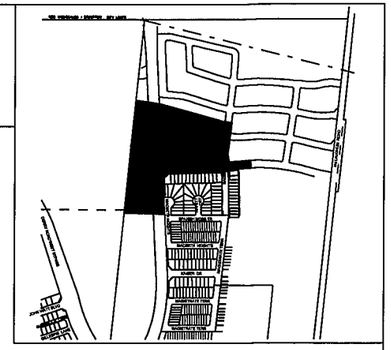
TYPICAL PLANNED SEPARATION
UTILITY CABLES IN A 610 mm (24") JOINT USE TRENCH
(1 - MAIN FEEDER AND 1 - DISTRIBUTION FEEDER)



TYPICAL INSTALLATION OF
PRIMARY CABLES AT SWITCHGEAR



TYPICAL SWITCHGEAR
(PMH) GROUNDING



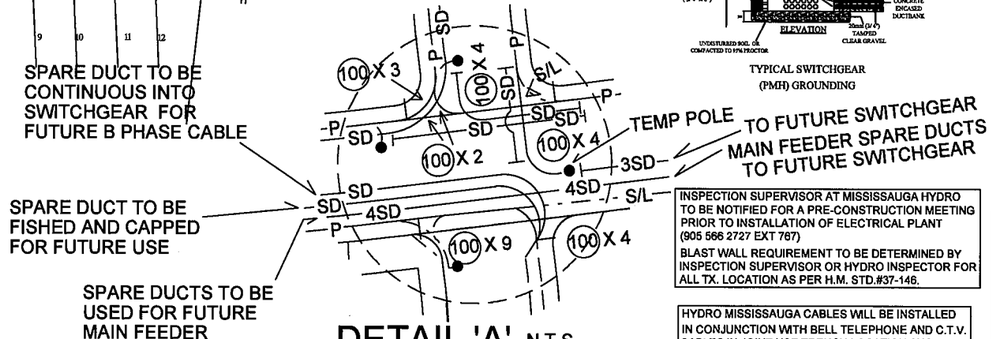
KEY PLAN
N.T.S.

LEGEND

SYMBOL	DESCRIPTION
—P—	POWER TRENCH FOR CABLES & DIRECT BURIED DUCTS. DUCT QUANTITY AS REQUIRED.
—25D—	SPARE 100mm TYPE 2 GREY DIRECT BURIED PVC DUCT. QUANTITY AS SHOWN. ENSURE SPARE DUCT IS SEALED AND FISHED.
—S/L—	STREET LIGHT TRENCH
100 x 3	CONCRETE ENCASED DUCTS. SIZE & NUMBER, INSTALLED WITH ELECTRONIC MARKERS AT BOTH ENDS.
	TRANSFORMER BASE,CONCRETE FOUNDATION DOUBLE LINE INDICATES TRANSFORMER OPENING
	CONCRETE FOUNDATION FOR PADMOUNT SWITCHGEAR
SP	SPLICE PIT (DIRECT BURIED CABLES) WITH PATIO STONES AND ELECTRONIC MARKER
	9.9m BLACK OCTAGONAL POLE UNLESS INDICATED
	EXISTING POLE TO BE REMOVED
	EXISTING POLE, ANY TYPE
	TRAFFIC SIGNAL POWER PEDESTAL
—P—	EXISTING POWER TRENCH FOR CABLES & DIRECT BURIED DUCTS. DUCT QUANTITY AS REQUIRED.
—S—	EXISTING CONCRETE ENCASED DUCTS. SIZE & NUMBER, INSTALLED WITH ELECTRONIC MARKERS AT BOTH ENDS.
	EXISTING TRANSFORMER BASE,CONCRETE FOUNDATION DOUBLE LINE INDICATES TRANSFORMER OPENING
—25D—	EXISTING SPARE 100mm TYPE 2 DIRECT BURIED PVC DUCT. QUANTITY AS SHOWN. ENSURE SPARE DUCT IS SEALED AND FISHED.

DESIGN CODE	ROAD TYPE	HYDRO MISS. STANDARD	ROAD ALLOWANCE (m)	ASPHALT WIDTH (m)	ROAD ALLOWANCE 6m BOULEVARD BACK OF TX (m)	6m BOULEVARD CENTER OF S/L (m)	6m BOULEVARD JOINT USE TRENCH (m)	ROAD XING LOCATION	TOP OF TX FOUNDATION
D	STANDARD RESIDENTIAL	22/1.07	20	8	3.0	4.2	3.7	3.5m FROM TX CENTER	370mm ABOVE BASE CURB

DESIGN CODE	ROAD TYPE	HYDRO MISS. STANDARD	ROAD ALLOWANCE (m)	ASPHALT WIDTH (m)	ROAD ALLOWANCE 6.75m BOULEVARD BACK OF TX (m)	6.75m BOULEVARD CENTER OF S/L (m)	6.75m BOULEVARD JOINT USE TRENCH (m)	ROAD XING LOCATION	TOP OF TX FOUNDATION
F	LOCAL INDUSTRIAL	1.2.6	24	12.6	3.0	4.0	3.7	AT CENTER OF TX	370mm ABOVE BASE CURB



DETAIL 'A' N.T.S.

ROAD CROSSING DETAIL SHOWING SPARE DUCT ROUTING

INSPECTION SUPERVISOR AT MISSISSAUGA HYDRO TO BE NOTIFIED FOR A PRE-CONSTRUCTION MEETING PRIOR TO INSTALLATION OF ELECTRICAL PLANT (905 566 2727 EXT 767)

BLAST WALL REQUIREMENT TO BE DETERMINED BY INSPECTION SUPERVISOR OR HYDRO INSPECTOR FOR ALL TX. LOCATION AS PER H.M. STD.#37-146.

HYDRO MISSISSAUGA CABLES WILL BE INSTALLED IN CONJUNCTION WITH BELL TELEPHONE AND C.T.V. CABLES IN JOINT USE TRENCH LOCATION SHOWN.

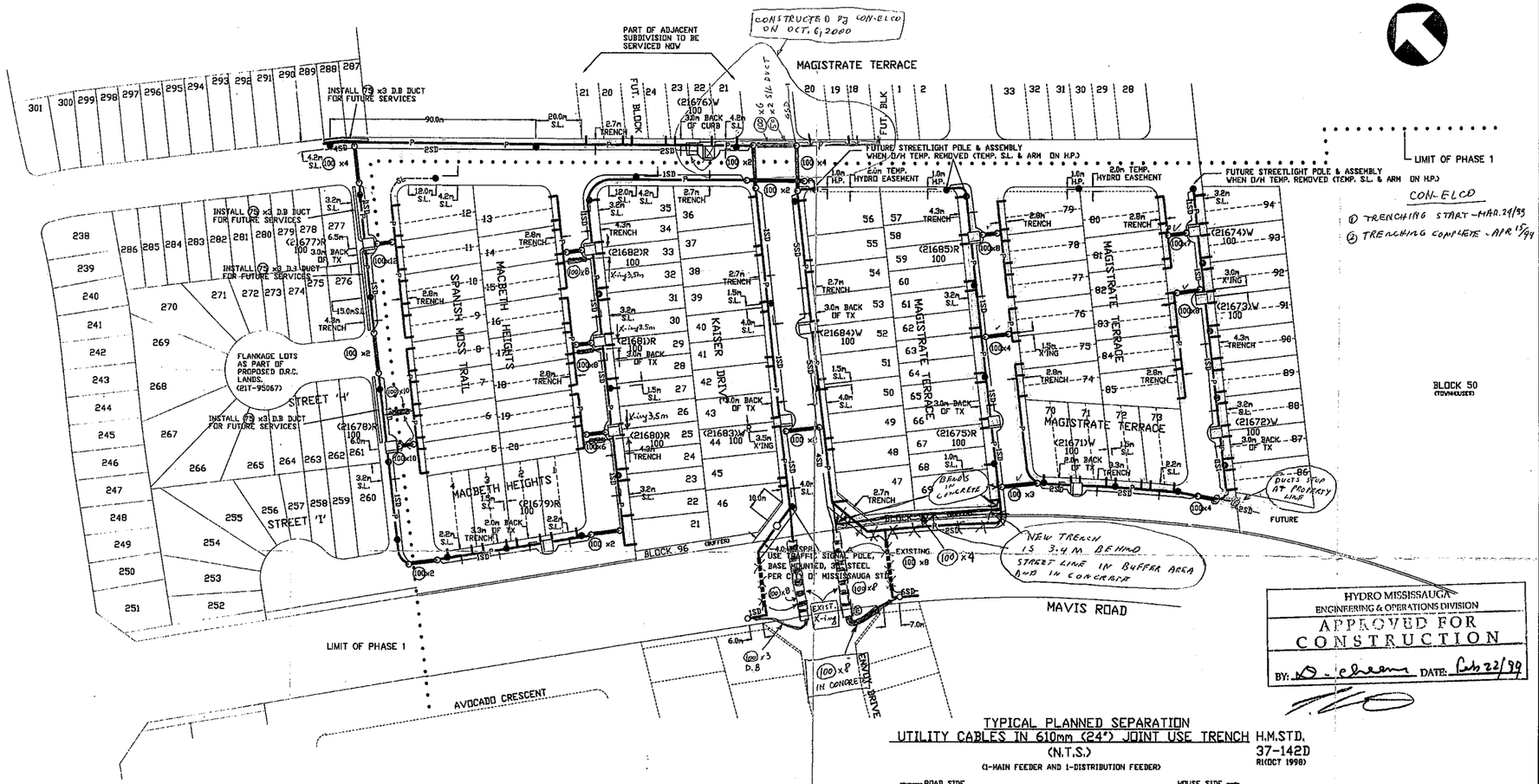
REV. NO.	REVISION	DES. TECH.	APPD.	DATE
R3	AS CONSTRUCTED. GEN. REVISION			DEC. 15, 2000
R2	JULY 24,2000, RELOCATED S/L POLE FROM 6.0m TO 10.0m OFFSET			
R1	TRANSFORMER #223369 AND STREETLIGHT RELOCATED.	PF		MAY 29,2000

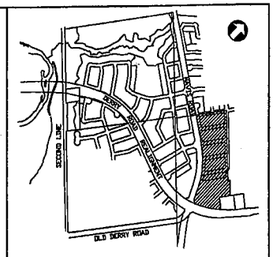
APPD. _____
DATE _____

hydro mississauga
3240 Mavis Road
Mississauga, Ontario
L5C 3K1
Tel: (905)279-9050
Fax: (905)279-7399

MAVIS VALLEY SUBDIVISION
PHASE 2-TRENCHING

WORK ORDER	DRAWN	DATE
99-8550-1	PATRICK FALZON	APRIL 24,2000
SCALE 1:1000	DES. TECH. PATRICK FALZON	D07-52-22-T2





KEY PLAN N.T.S.

LEGEND

- TRANSFORMER BASE, CONCRETE FOUNDATION, STEEL PLATE INDICATES TRANSFORMER FRONT
- —P— POWER TRENCH FOR CABLES & DIRECT DURIED DUCTS. DUCT QUANTITY AS REQUIRED.
- —SL— STREETLIGHT TRENCH.
- (100) x4 CONCRETE ENCASED DUCTS, SIZE & NUMBER WITH ELECTRONIC MARKER DISKS WHERE DENOTED.
- —SD— SPARE 100mm TYPE 2 DB PVC DUCT ENSURE SPARE DUCT IS SEALED AND FISHED.
- STREETLIGHT POLE: 9.9m BLACK OCTAGONAL CONCRETE POLE USING SCROLL ARM. (OR HYDRO POLE WHERE INDICATED)
- TRAFFIC SIGNAL POWER PEDESTAL
- EXISTING HYDRO POLE
- EXISTING ROAD CROSSING

HYDRO MISSISSAUGA
ENGINEERING & OPERATIONS DIVISION
APPROVED FOR CONSTRUCTION
BY: D. Cheema DATE: Feb 22/99

HYDRO MISSISSAUGA
"AS BUILT"
INSPECTIONS MT JUNE 10/99
ENERGIZATION J. May 27/99

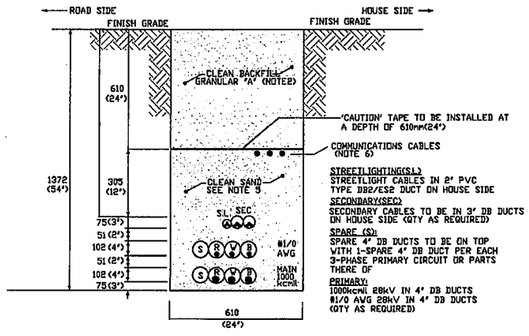
STANDARD OFFSETS FOR ROADWAYS

DESIGN CODE	ROAD TYPE & APPLICABLE STREETS	CITY STANDARD	HYDRO REF. DRAWING	ROAD ALLOWANCE (m)	ASPHALT WIDTH (m)	BOULEVARD WIDTH (m)	STANDARD OFFSET: BACK OF TX (m)	STANDARD OFFSET: CENTRE OF SL (m)	STANDARD OFFSET: JOINT USE TRENCH (m)	X'ING LOC.	TOP OF TX FOUNDATION
B	LOCAL RESIDENTIAL (paver)	2211.30	37-481B	18.0	8.0	6.5	2.0	2.2	3.3	AT ℄ OF TX	400mm ABOVE BASE CURB
	MAGISTRATE TERRACE MACBETH HEIGHTS					3.5	N/A	N/A	2.2		
C	LOCAL RESIDENTIAL (paver)	2211.31	37-481A	20.0	8.0	7.5	3.0	3.2	4.3	AT ℄ OF TX	400mm ABOVE BASE CURB
	MAGISTRATE TERRACE MACBETH HEIGHTS SPANISH MOSS TRAIL					4.5	N/A	N/A	2.8		
D	STANDARD RESIDENTIAL	2211.07	37-481C	20.0	8.0	6.0	3.0	4.2	2.7	3.5m FROM ℄ OF TX	370mm ABOVE BASE CURB
	MAGISTRATE TERRACE					6.0	3.0	4.2	2.7		
F	LOCAL INDUSTRIAL	1-2-6		24.0	12.5	5.75	3.0	4.0	2.7	AT ℄ OF TX	370mm ABOVE BASE CURB
	KAISER DRIVE					5.75	3.0	4.0	2.7		

TYPICAL PLANNED SEPARATION UTILITY CABLES IN 610mm (24") JOINT USE TRENCH H.M.STD. 37-142D

(N.T.S.) R1(OCT 1998)

(1-MAIN FEEDER AND 1-DISTRIBUTION FEEDER)



STREETLIGHTING(SL)
STREETLIGHT CABLES IN 2" PVC TYPE DB2/ESE DUCT ON HOUSE SIDE

SECONDARY(SEC)
SECONDARY CABLES TO BE IN 3" DB DUCTS ON HOUSE SIDE (QTY AS REQUIRED)

SPARE (S):
SPARE 4" DB DUCTS TO BE ON TOP WITH 1-SPARE 4" DB DUCT PER EACH 3-PHASE PRIMARY CIRCUIT OR PARTS THERE OF

PRIMARY:
1000kcmil 28kV IN 4" DB DUCTS
#1/0 AWG 28kV IN 4" DB DUCTS (QTY AS REQUIRED)

LINEAR DIMENSION SHOWN IN MILLIMETRES

NOTES:
1. AS PER ONTARIO HYDRO ELECTRICAL SAFETY CODE (21st EDITION1994) & C.S.A. STD C22.1-1994 & C.S.A. CAN3-C22.3 No.7-M86 "UNDERGROUND SYSTEMS"
2. FOR DRIVEWAYS, BACKFILL SHALL BE GRANULAR 'A' (REBUILDS ONLY).
3. ALL DIRECT BURIED (DB) DUCTS TO BE PVC TYPE DB2/ESE AS PER C.S.A. C22.2 #211.1
4. 900mm MINIMUM COVER WHERE THERE IS VEHICULAR TRAVEL.
5. SANDFILL SHALL BE UNIFORMLY GRADED CLEAN SAND WITH MAXIMUM AGGREGATE SIZE OF 8.0mm, AND MAXIMUM OF 8% PASSING THE NUMBER 200 SIEVE.
6. COVER OF 610mm FOR DROPS UNDER PARKWAYS AND LAWNS / 910mm UNDER ROADWAYS AND DRIVEWAYS. (REFERENCE BELL AND ROGERS DESIGN DRAWINGS FOR SPECIFIC DETAILS)

APPROVED
FOR CONSTRUCTION

STREET LIGHT APPROVAL
SEPT 4 1998
TRAFFIC SIGNAL SUPPLY APPROVAL
SEPT 4 1998

HYDRO MISSISSAUGA CABLES WILL BE INSTALLED IN CONJUNCTION WITH BELL TELEPHONE AND C.T.V. CABLES IN A JOINT USE TRENCH LOCATION SHOWN

W.O.#98-8532-1

98.06.11 AIC-HM REVISION

R7	99.02.19	H.M. REV - 3rd SUB. COMMENTS	J.F.
R6	99.02.12	H.M. REV - 2nd SUB. COMMENTS	J.F.
R5	99.01.28	H.M. REV - 1st SUB. COMMENTS	J.F.
R4	99.01.28	S.L. APPROVAL ADDED	J.F.
R3	98.12.11	REV. PER HYDRO COMMENTS	S.C.G.
R2	98.12.02	GENERAL REVISION	J.F.
R1	98.09.02	REV PER CIVIL REQUEST	J.F.

REVISIONS

FEB 23 1999

21T-95033

R.T. GAYOWSKY 99.02.22 — REGISTERED PROFESSIONAL ENGINEER — PROVINCE OF ONTARIO

ronald t. gayowsky LTD
ELECTRICAL CONSULTING ENGINEERS
2518 HADWAY
SUITE NO. 203
BURLINGTON, ONTARIO L7M 1A8 (905) 335-4470

HYDRO MISSISSAUGA

FIELDRUN - DALEBRIGHT
PHASE 1
HYDRO DISTRIBUTION SYSTEM
TRENCHING

DWG BY	DATE	CK'D BY	DATE
J.F.	98.07.28		

SCALE	DRAWING NO.	SHEET
1:1000 EXCEPT SYMBOLS	D07-52-18T	1 OF 1

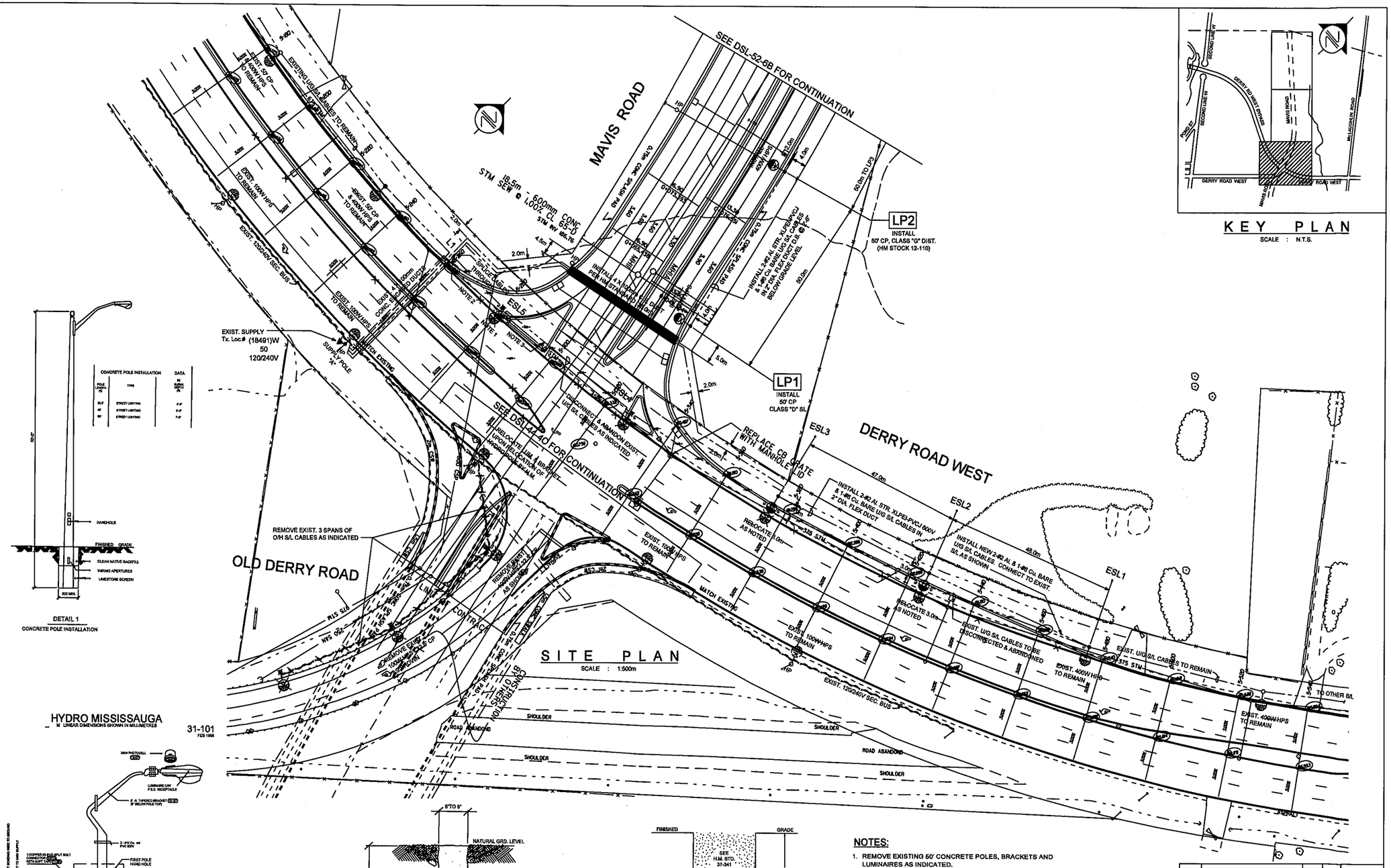
ISD-A1 00983-00

D07-52-18T

ORIGINAL

G:\00983-00\TRENCH.dwg Fri Feb 19 17:02:41 1999 JANICE

416-936-7684 416-981-4162



SITE PLAN

SCALE : 1:500m

KEY PLAN

SCALE : N.T.S.

DETAIL 1

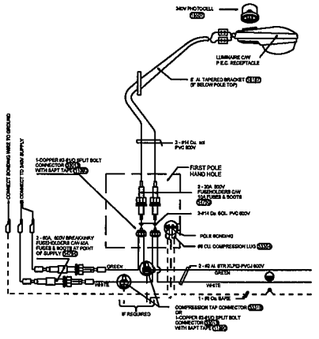
CONCRETE POLE INSTALLATION

HYDRO MISSISSAUGA

M LINEAR DIMENSIONS SHOWN IN MILLIMETRES

31-101

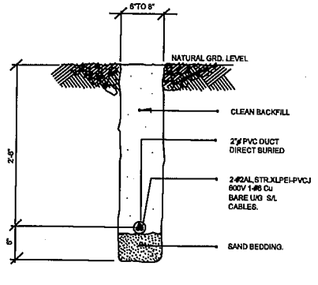
FEB 1998



STREETLIGHTING - 240V U/G SYSTEM DESIGN

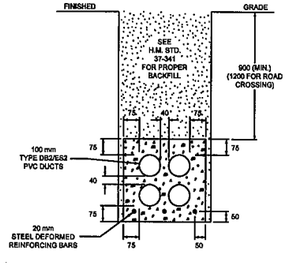
(INDIVIDUALLY CONTROLLED AND FUSED)

DRAWN : IGP
APPROVED : IGP
DATE : MARCH 16, 1994



TYP. ST. LTG. TRENCH DETAIL

SCALE: N.T.S.



DUCTBANK DETAIL

NOTES:

1. REMOVE EXISTING 50' CONCRETE POLES, BRACKETS AND LUMINAIRES AS INDICATED.
2. EXISTING UNDERGROUND STREETLIGHTING CABLES TO BE "SPLICED-THROUGH" TO THE NEW CABLES AS INDICATED.
3. DISCONNECT AND ABANDON EXISTING UNDERGROUND STREETLIGHTING CABLES AS NOTED.

POLES LP8 TO LP22 SHALL BE ENERGIZED UPON INSTALLATION OF NEW DISTRIBUTION LINE ALONG THE NEW MAVIS ROAD, NORTH OF DERRY ROAD WEST.

REV. NO.	REVISION	DES. TECH.	APPD.	DATE

hydro mississauga

3240 Mavis Road
Mississauga, Ontario
L5C 3K1
Tel: (905)270-8050
Fax: (905)276-7300

MAVIS RD. STREETLIGHTING

FROM DERRY RD. WEST TO HIGHWAY 407

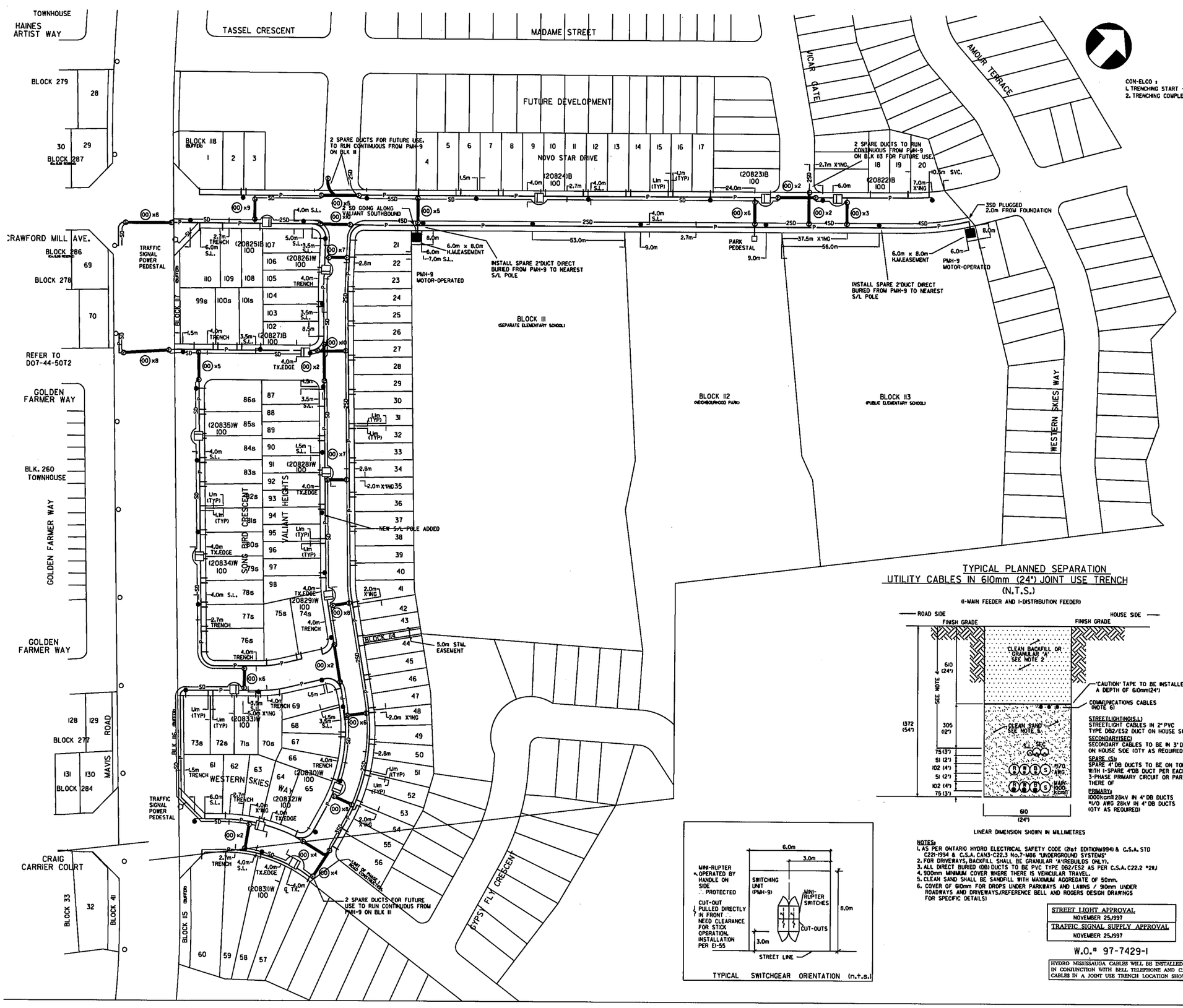
WORK ORDER	DRAWN	DATE
97-7220-1	C.P.	10 JUL 97
SCALE: AS SHOWN	DES. TECH.: I.G.P.	DSL-52-6A

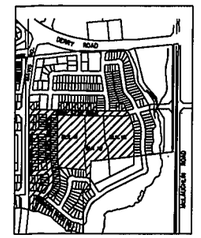
APPD. _____

DATE _____

DWG. SIZE : ISO A1 1:500m

DSL-52-6A





LEGEND

- TRANSFORMER BASE. CONCRETE FOUNDATION.STEEL PLATE INDICATES TRANSFORMER FRONT.
- —P— POWER TRENCH FOR CABLES & DIRECT BURIED DUCTS. DUCT QUANTITY AS REQUIRED.
- —SL— STREETLIGHT TRENCH.
- ● STREETLIGHT POLES, 9.9m OCTAGONAL CONCRETE
- (00) ×2 CONCRETE ENCASED DUCTS, SIZE & NUMBER WITH ELECTRONIC MARKERS.
- —SD— SPARE 100mm TYPE 2 DB PVC DUCT. ENSURE SPARE DUCT IS SEALED AND FISHED.
- ■ FOUNDATION FOR PMH-9 28kV MOTOR-OPERATED SWITCHGEAR UNIT
- □ PARK POWER PEDESTAL
- ○ EXISTING HYDRO POLE & LUMINAIRE
- ⬠ PROPOSED TRAFFIC SIGNAL POWER PEDESTAL

TYPICAL PLANNED SEPARATION UTILITY CABLES IN 610mm (24") JOINT USE TRENCH

(N.T.S.)

(I-MAIN FEEDER AND I-DISTRIBUTION FEEDER)

LINEAR DIMENSION SHOWN IN MILLIMETRES

NOTES:
1. AS PER ONTARIO HYDRO ELECTRICAL SAFETY CODE (21st EDITION/1994) & C.S.A. STD C22.1-1994 & C.S.A. CAN3-C22.3 No.7-M86 "UNDERGROUND SYSTEMS"
2. FOR DRIVEWAYS, BACKFILL SHALL BE GRANULAR 'A'(RESBUILDS ONLY).
3. ALL DIRECT BURIED (DB) DUCTS TO BE PVC TYPE DB2/ES2 AS PER C.S.A. C22.2 #211
4. 900mm MINIMUM COVER WHERE THERE IS VEHICULAR TRAVEL.
5. CLEAN SAND SHALL BE SANDFILL WITH MAXIMUM AGGREGATE OF 50mm.
6. COVER OF 610mm FOR DROPS UNDER PARKWAYS AND LAWNS / 910mm UNDER ROADWAYS AND DRIVEWAYS.(REFERENCE BELL AND ROGERS DESIGN DRAWINGS FOR SPECIFIC DETAILS)

TYPICAL SWITCHGEAR ORIENTATION (n.t.s.)

STREET LIGHT APPROVAL
NOVEMBER 25,1997
TRAFFIC SIGNAL SUPPLY APPROVAL
NOVEMBER 25,1997

W.O.# 97-7429-1

HYDRO MISSISSAUGA CABLES WILL BE INSTALLED IN CONJUNCTION WITH BELL TELEPHONE AND C.T.V. CABLES IN A JOINT USE TRENCH LOCATION SHOWN

R4	98JL24	A/C HM REVISION	
R3	97J2.23.	REV PER H.M.2nd SUB.COMMENTS	H.P.B.
R2	97J2.17.	S.L.APPROVAL ADDED	H.P.B. R.T.C.
R1	97J10.29.	REV PER H.M.1st.SUB.COMMENTS	H.P.B. R.T.C.

REVISIONS

2IT-95007M

ronald t. gayowsky
ELECTRICAL CONSULTING ENGINEERS
358 MAPLEY
SUITE NO. 203
BURLINGTON, ONTARIO L7N 1A8 (905) 335 - 4470

HYDRO MISSISSAUGA

ARROWSMITH - PH.I

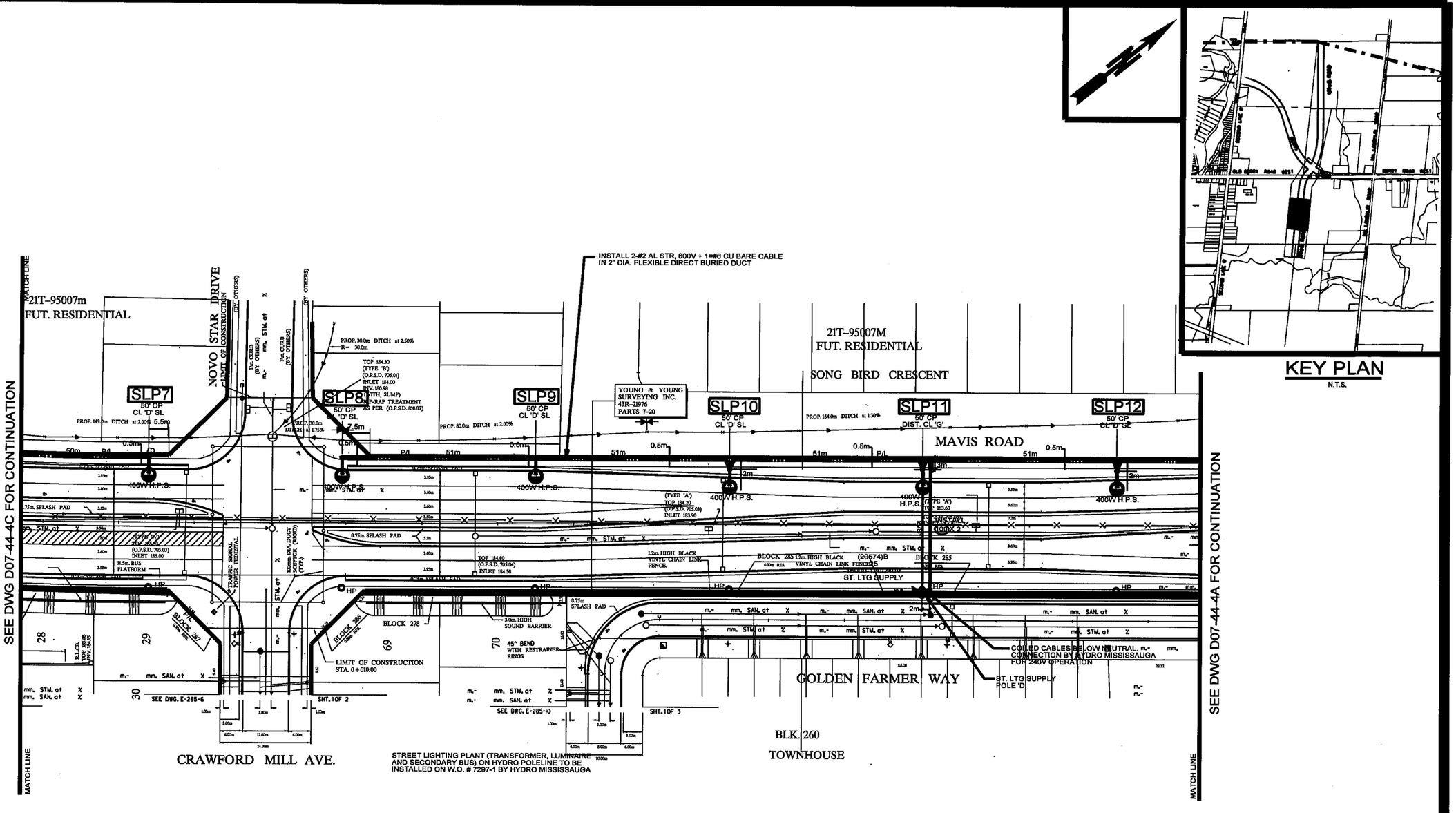
HYDRO DISTRIBUTION SYSTEM

TRENCHING

DRG BY	DATE	CK'D BY	DATE
H.P.B.	JUNE 10,1997		

SCALE	DRAWING NO.	SHEET 2 OF 4
1/1000 EXCEPT FOR SYMBOLS	D07-44-55T	

D07-44-55T



STREET LIGHTING PLANT (TRANSFORMER, LUMINAIRE AND SECONDARY BUS) ON HYDRO POLELINE TO BE INSTALLED ON W.O. # 7297-1 BY HYDRO MISSISSAUGA

SITE PLAN

SCALE = 1:500

KEY PLAN

N.T.S.

hydro mississauga

3240 Mavis Road
Mississauga, Ontario
L5C 3K1
(416) 278-9050
Fax. 278-2013

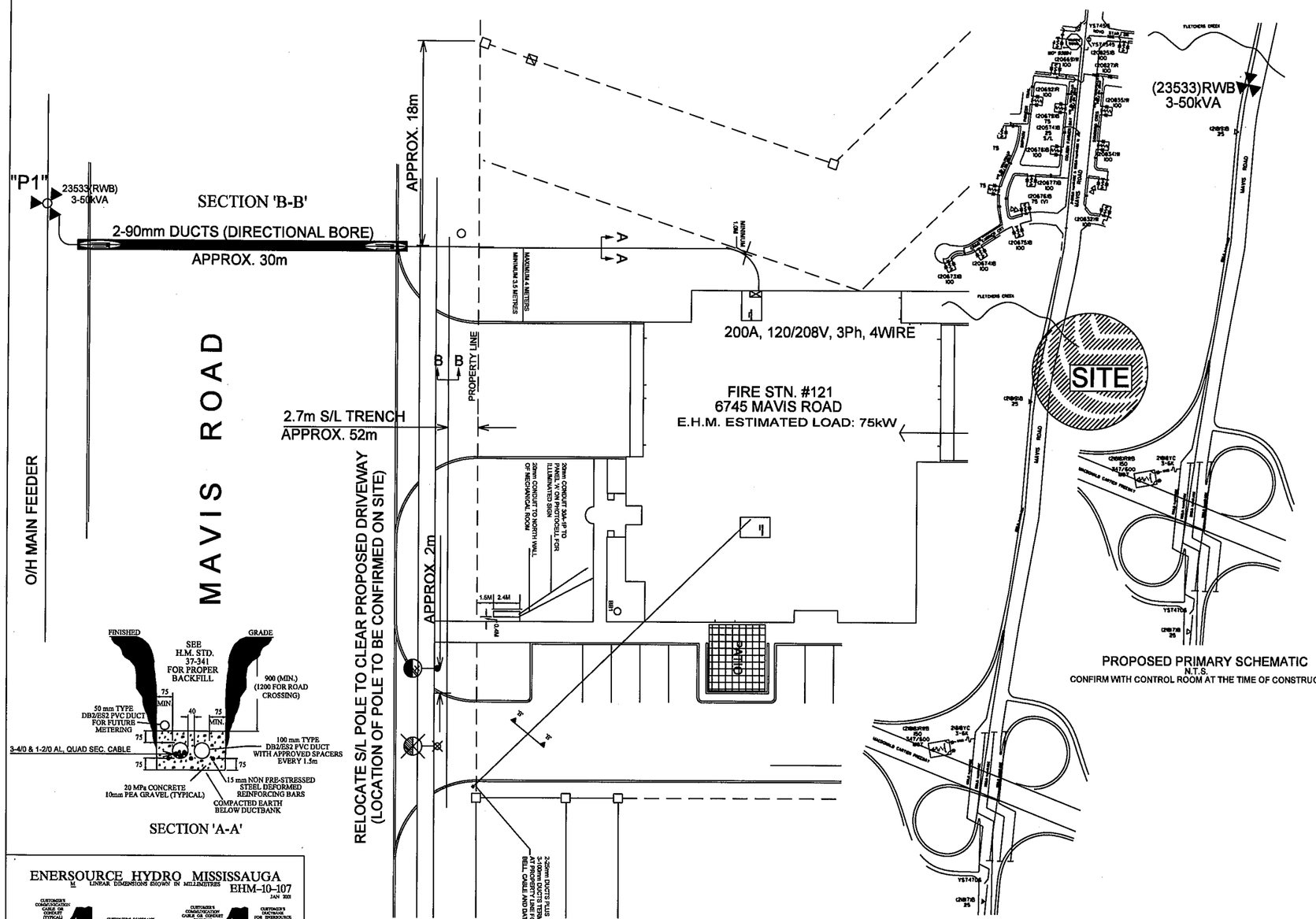
MAVIS ROAD STREET LIGHTING
PHASE 2

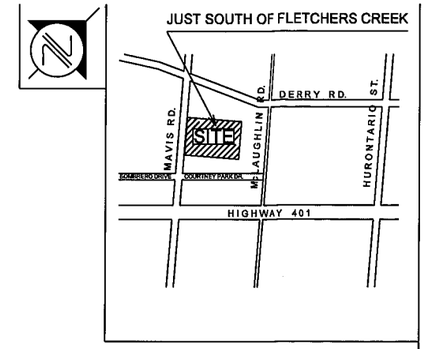
FROM CRAIG CARRIER COURT TO NEW DERRY ROAD

97-7220-1	TTB / CP	JULY 1997	
AS SHOWN		DSL-44-4B	

DWG. SIZE ISO A1

DSL-44-4B





KEY PLAN
N.T.S.

PROPOSED PRIMARY SCHEMATIC
N.T.S.
CONFIRM WITH CONTROL ROOM AT THE TIME OF CONSTRUCTION

EXISTING PRIMARY SCHEMATIC
N.T.S.
CONFIRM WITH CONTROL ROOM AT THE TIME OF CONSTRUCTION

CUSTOMER'S WORK SCOPE:

DUCT BANK:

CUSTOMER TO PROVIDE, INSTALL & MAINTAIN SECONDARY DUCTBANK FROM ELECTRICAL ROOM TO PROPERTY LIMIT (SEE TERMINATION OF DUCTBANK).

SECONDARY DUCTBANK TO SLOPE AWAY FROM ELECTRICAL ROOM TO PREVENT WATER GOING INTO ELECTRICAL ROOM.

ELECTRICAL SERVICE:

CUSTOMER TO INSTALL 200A, 120/208V, 3-Ph, 4-W SERVICE AS PER "ELECTRICAL SAFETY AUTHORITY" &"ENERSOURCE HYDRO MISSISSAUGA" STANDARDS.

H.M. WORK SCOPE:

INSPECTION:

INSPECT ELECTRICAL ROOM, SWITCHBOARD, ROAD CROSSING & DUCTBANK.

ROAD CROSSING:

CONSULTANT'S CONTRACTOR TO INSTALL 2-90mm ROAD CROSSING BY DIRECTIONAL BORE ACROSS MAVIS ROAD.

TRENCH:

TRENCH APPROX. 15m & INSTALL DUCTS FROM POLE "P1" TO ROAD CROSSING & FROM ROAD CROSSING TO CUSTOMER'S INSTALLED C.E. DUCTBANK..

SECONDARY CABLES:

INSTALL APPROX. 65m OF 3-4/0 & 1-2/0 AL., 600V, QUAD SECONDARY CABLES FROM O/H. TX. BANK @ POLE "P1" TO ELECTRICAL ROOM.

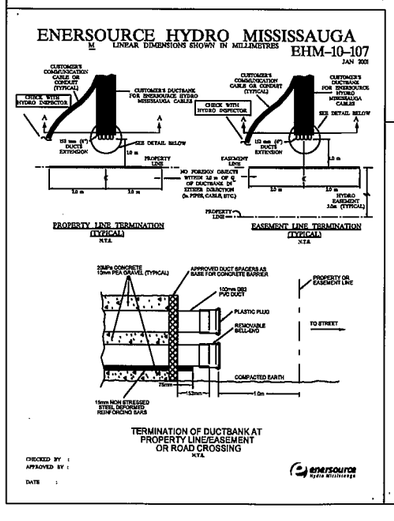
POLEMOUNTED TRANSFORMERS: (23533)RWB

INSTALL 3-50kVA 16,000-347V POLEMOUNTED TRANSFORMERS (CAT #17836) C/W FUSES AND CONNECT FOR 16,000-208Y/120V CONNECTION.

NOTES:
PRIOR TO ENERGIZATION H.E.P.C. INSPECTION, APPROVAL, H.M. CONNECTION ORDER AND PAYMENTS FOR SERVICE CONNECTION ARE REQUIRED.

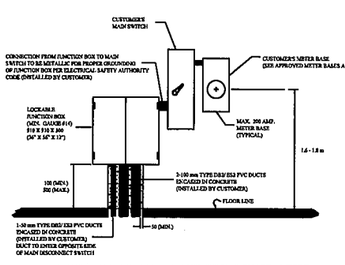
E.H.M. INSPECTION:
Call Mr. Mario Tomljenovic @ cell# 416-823-2699 for inspection of Ductbank, Pad Installation, Cable Installation, Bollardas & Road Crossing.

ENERSOURCE HYDRO MISSISSAUGA
M LINEAR DIMENSIONS SHOWN IN MILLIMETRES
EHM–10–107
JAN 2001



CHECKED BY :
APPROVED BY :
DATE :

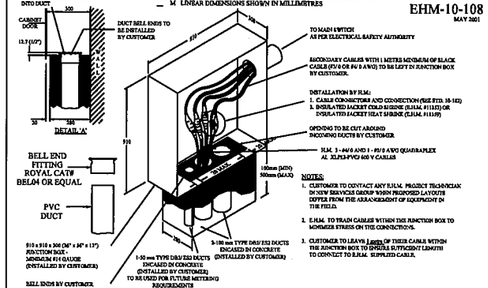
ENERSOURCE HYDRO MISSISSAUGA
M LINEAR DIMENSIONS SHOWN IN MILLIMETRES
EHM-10-109
FEB 2001



UP TO 200 AMP., 347/ 600 V AND 120/ 208 V, 3-PHASE, 4-WIRE
C/ W TYPICAL BULK METER BASE ARRANGEMENT
(TYPICAL INSTALLATION ONLY)

CHECKED BY :
APPROVED BY :
DATE :

ENERSOURCE HYDRO MISSISSAUGA
M LINEAR DIMENSIONS SHOWN IN MILLIMETRES
EHM-10-108
MAY 2001



200 AMP. JUNCTION BOX
INDUSTRIAL / COMMERCIAL SECONDARY SERVICE
(TYPICAL INSTALLATION ONLY)

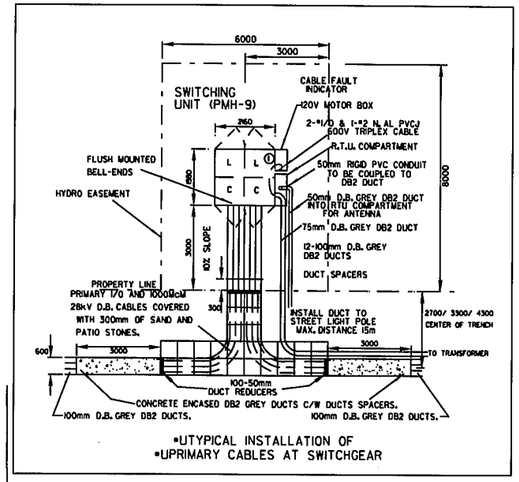
REV. NO.	REVISION	DES. TECH.	APPD.	DATE
R1	AS CONSTRUCTED - 06/11/01	PK		03/10/04

enersource Hydro Mississauga
3240 Mavis Road
Mississauga, Ontario
L5C 3A1
Tel : (905) 273-9050
Fax: (905) 279-2103
www.enersource.com

FIRE STN. #121
6745 MAVIS ROAD

WORK ORDER	AREA	DRAWN	DATE
01-1309-1	44	PAUL KUNER	16-JUNE-2001
SCALE: AS SHOWN	DES. TECH. PAUL KUNER	D07- 01-1309-1-001	

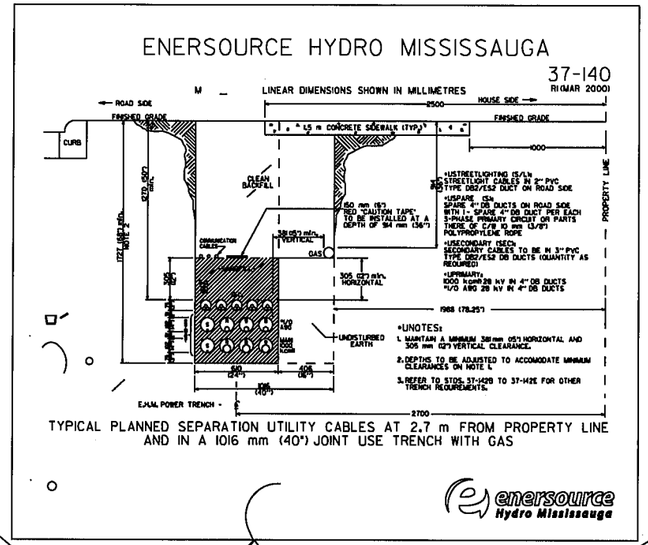
APPD. ----------
DATE ----------



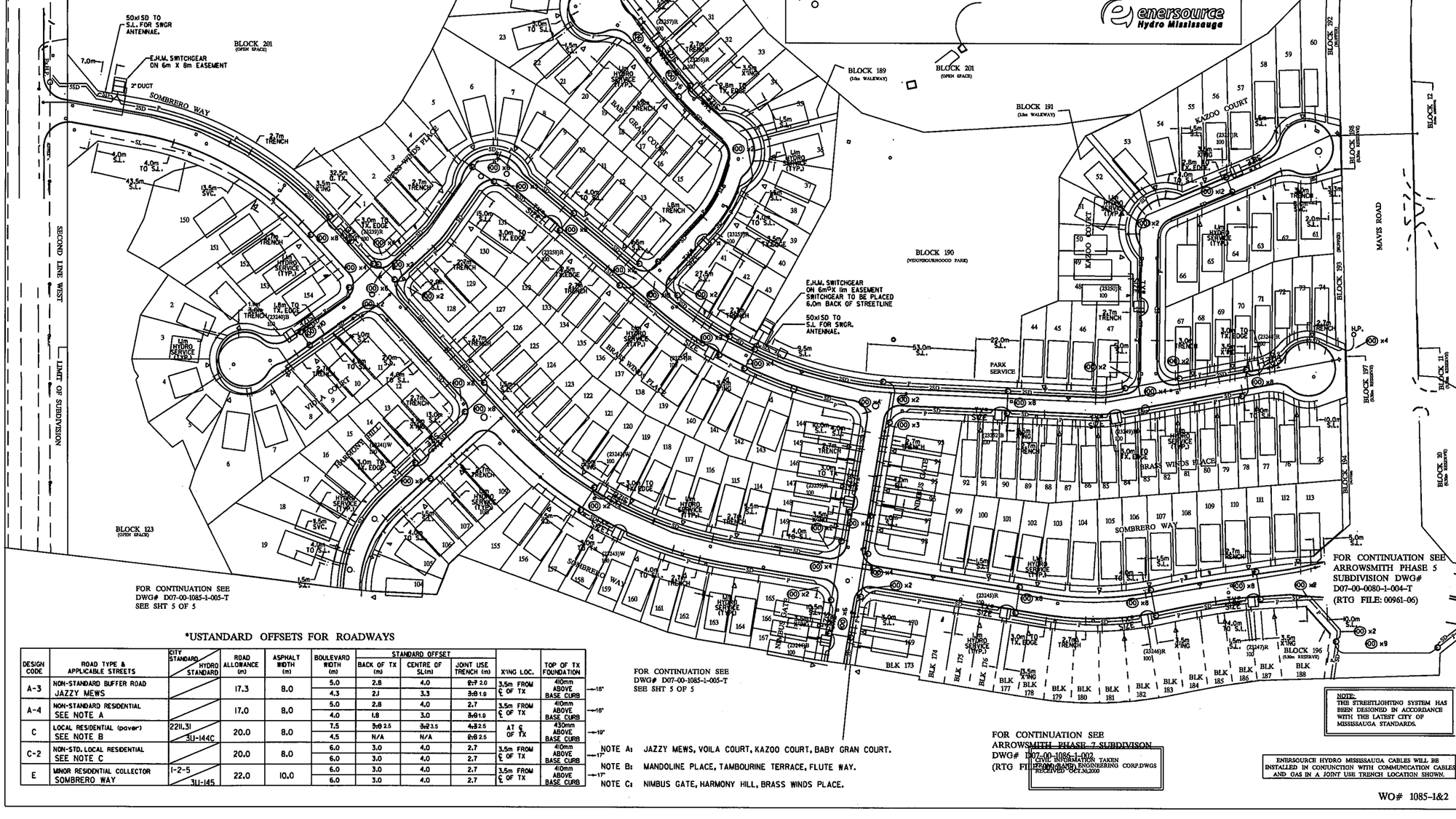
*UTYPICAL INSTALLATION OF *UPRIMARY CABLES AT SWITCHGEAR

TRANS-POWER

1. TRENCHING START - OCT. 14, 2001
2. TRENCHING COMPLETE - NOV 14, 2001



TYPICAL PLANNED SEPARATION UTILITY CABLES AT 2.7 m FROM PROPERTY LINE AND IN A 1016 mm (40") JOINT USE TRENCH WITH GAS



FOR CONTINUATION SEE DWG# D07-00-1085-1-005-T SEE SHT 5 OF 5

FOR CONTINUATION SEE DWG# D07-00-1085-1-005-T SEE SHT 5 OF 5

FOR CONTINUATION SEE ARROWSMITH PHASE 5 SUBDIVISION DWG# D07-00-0080-1-004-T (RTG FILE: 00961-06)

FOR CONTINUATION SEE ARROWSMITH PHASE 7 SUBDIVISON DWG# D07-00-1086-1-002 (RTG FILE: 00961-07)

*USTANDARD OFFSETS FOR ROADWAYS

DESIGN CODE	ROAD TYPE & APPLICABLE STREETS	CITY STANDARD / HYDRO STANDARD	ROAD ALLOWANCE (m)	ASPHALT WIDTH (m)	BOULEVARD WIDTH (m)	STANDARD OFFSET: BACK OF TX (m)	STANDARD OFFSET: CENTRE OF SL(m)	STANDARD OFFSET: JOINT USE TRENCH (m)	X'ING LOC.	TOP OF TX FOUNDATION
A-3	NON-STANDARD BUFFER ROAD JAZZY MEWS		17.3	8.0	5.0	2.8	4.0	~~2.7~~ 2.0	3.5m FROM ℄ OF TX	410mm ABOVE BASE CURB
					4.3	2.1	3.3	~~3.0~~ 1.9		
A-4	NON-STANDARD RESIDENTIAL SEE NOTE A		17.0	8.0	5.0	2.8	4.0	2.7	3.5m FROM ℄ OF TX	410mm ABOVE BASE CURB
					4.0	1.8	3.0	~~3.0~~ 1.9		
C	LOCAL RESIDENTIAL (paver) SEE NOTE B	22U.3I / 3U-144C	20.0	8.0	7.5	~~3.0~~ 2.5	~~3.2~~ 3.5	~~4.8~~ 2.5	AT ℄ OF TX	430mm ABOVE BASE CURB
					4.5	N/A	N/A	~~2.8~~ 2.5		
C-2	NON-STD. LOCAL RESIDENTIAL SEE NOTE C		20.0	8.0	6.0	3.0	4.0	2.7	3.5m FROM ℄ OF TX	410mm ABOVE BASE CURB
					6.0	3.0	4.0	2.7		
E	MINOR RESIDENTIAL COLLECTOR SOMBRERO WAY	1-2-5 / 3U-145	22.0	10.0	6.0	3.0	4.0	2.7	3.5m FROM ℄ OF TX	410mm ABOVE BASE CURB
					6.0	3.0	4.0	2.7		

NOTE A: JAZZY MEWS, VOILA COURT, KAZOO COURT, BABY GRAN COURT.

NOTE B: MANDOLINE PLACE, TAMBOURINE TERRACE, FLUTE WAY.

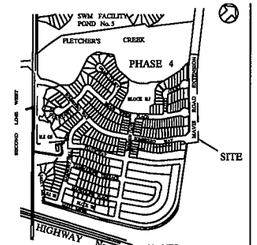
NOTE C: NIMBUS GATE, HARMONY HILL, BRASS WINDS PLACE.

NOTE: THE STREETLIGHTING SYSTEM HAS BEEN DESIGNED IN ACCORDANCE WITH THE LATEST CITY OF MISSISSAUGA STANDARDS.

ENERSOURCE HYDRO MISSISSAUGA CABLES WILL BE INSTALLED IN CONJUNCTION WITH COMMUNICATION CABLES AND GAS IN A JOINT USE TRENCH LOCATION SHOWN.

CIVIL INFORMATION TAKEN FROM (SAME) ENGINEERING CORP.DWGS RECEIVED OCT.30,2000

WO# 1085-1&2



KEY PLAN N.T.S.

LEGEND

- TX# SIZE — TRANSFORMER BASE, CONCRETE FOUNDATION. STEEL PLATE INDICATES TRANSFORMER FRONT.
- —P— POWER TRENCH FOR CABLES & DIRECT BURIED DUCTS. DUCT QUANTITY AS REQUIRED.
- —SL— STREETLIGHT TRENCH.
- STREETLIGHT POLES, 9.9m (32.5ft) BLACK OCTAGONAL CONCRETE
- (00) x2 —0— CONCRETE ENCASED DUCTS, SIZE & NUMBER WITH ELECTRONIC MARKERS.
- —SD— SPARE 100mm TYPE 2 DB PVC DUCT. ENSURE SPARE DUCT IS SEALED AND FISHED.
- H.P. ○ EXISTING HYDRO POLE

R4	01.27.2021	AS CONSTRUCTED-EHM REVISIONS		
R3	08.13.2018	REV. PER LATEST CIVIL PLAN	S.C.O.	
R2	06.04.2018	REV. AS PER HYDRO COMMENTS	M.B.S.	M.A.O.
R1	05.15.2018	REV. AS PER HYDRO COMMENTS	D.S.C.	M.A.O.

REVISIONS

21T-95007

REGISTERED PROFESSIONAL ENGINEER R.T. GAYOWSKY PROVINCE OF ONTARIO

ronald t. gayowsky LTD
ELECTRICAL CONSULTING ENGINEERS
1018 MAINWAY, SUITE 301, BURLINGTON, ON L7M 1A8
E-MAIL: RTGENG@IDIRECT.COM
Office (905) 335-4476
Fax (905) 637-7887
Fax (905) 637-1977

ENERSOURCE HYDRO MISSISSAUGA

ARROWSMITH PHASE 4 SUBD'N.

HYDRO DISTRIBUTION SYSTEM

TRENCHING

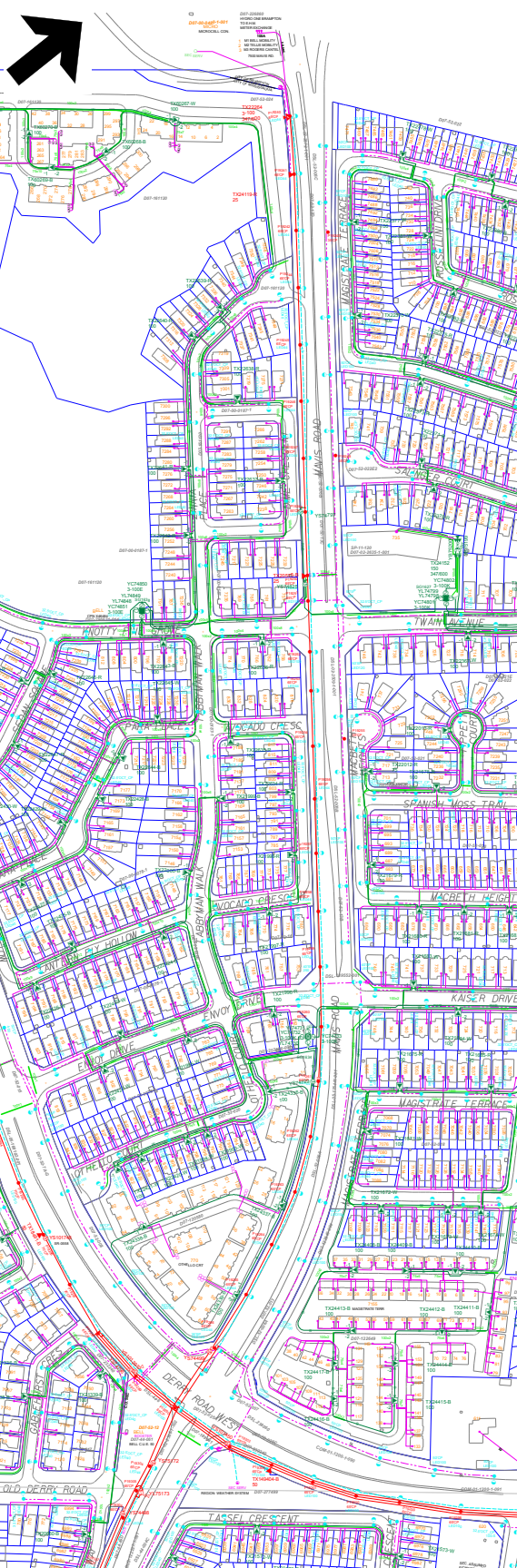
(AREA 44W)

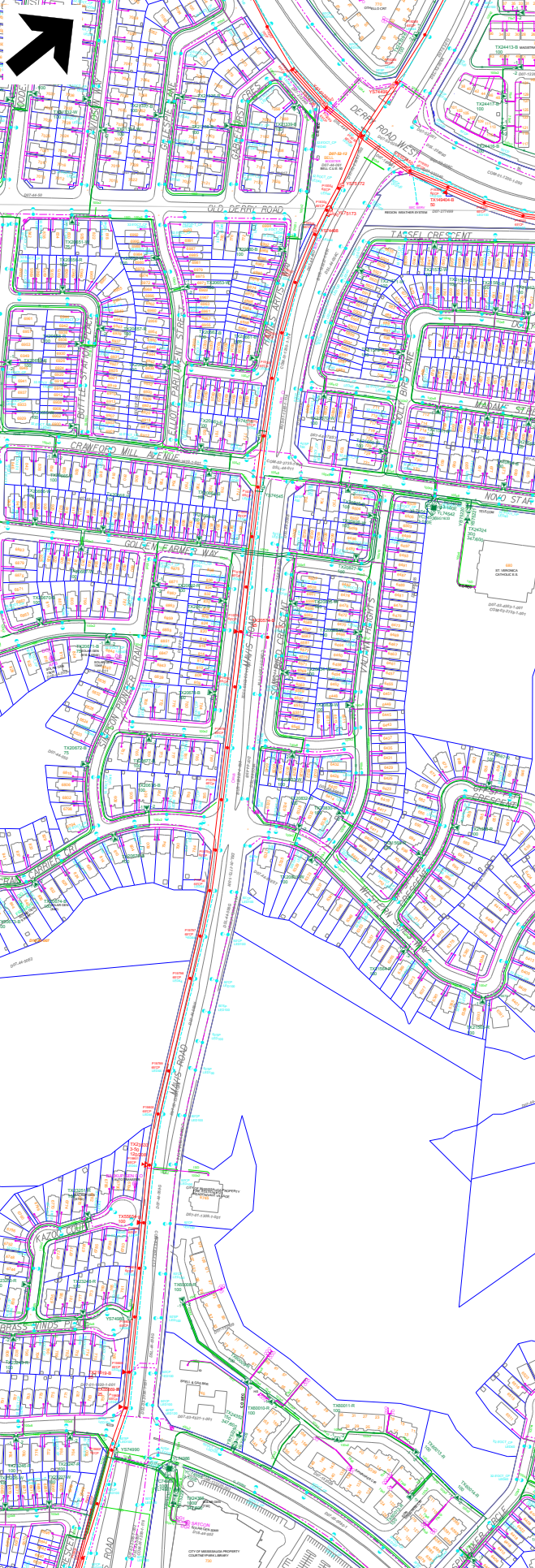
DWG BY	DATE	CKD BY	DATE
H.P.B.	00.01.17.		

SCALE 1:1000 EXCEPT FOR SYMBOLS

DRAWING NO. D07-00-1085-1-004-T

SHEET 4 OF 5


MAVIS ROAD
MISSISSAUGA ROAD
SPANISH MOSS TRAIL
TWAIN AVENUE
KNOTTY PINE TRAIL
AVOCADO CRESCENT
ABBOTHAM WALK
ENWOOD DRIVE
KAISER DRIVE
MAGISTRATE TERRACE
MACBETH HEIGHT
SALMAR COURT
DERRY ROAD WEST
OLD DERRY ROAD
TASSEL CRESCENT
GARDEN GATE
HEATHERLEIGH GATE
MAVIS GATE FENCE


DERRY ROAD WEST
OLD DERRY ROAD
TASSEL CRESCENT
MADAME STAR
NOMO STAR
CRAWFORD MILL AVENUE
GOLDEN FARMER WAY
MAVIS ROAD
KAZOO COURT
BRASS WINDS PLACE
CRAWFORD MILL AVENUE

ENERSOURCE
HYDRO MISSISSAUGA

AM/FM SYMBOL		DESCRIPTION
	60'WP	ENERSOURCE HYDRO MISSISSAUGA POLE
	35'CO	CUSTOMER OWNED POLE
	32.5'SP	STREETLIGHT POLE
	100X3	CONCRETE ENCASED DUCTBANK
		DIRECT BURIED DUCT
	1SD	SPARE DUCT
	MH-35	MANHOLE
		PEDESTAL
		PULL BOX
	5 BIRCHVIEW	MUNICIPAL SUBSTATION (M.S.)
	74 BRAMALEA	TRANSFORMER STATION (T.S.)
		VAULT

MAP LEGENDS
STRUCTURE SYMBOLS

enersource

3240 Mavis Road
Mississauga, Ontario
L5C 3K1
Tel : (905) 273-9050
Fax: (905) 279-2103
www.enersource.com

PREPARED BY : D.Slijepcevic
REVIEWED BY : P.Nguyen
DATE : November 25, 2009

63-400

ENERSOURCE
HYDRO MISSISSAUGA

AM/FM SYMBOL	DESCRIPTION
	SECONDARY OH CONDUCTOR - SPUN
	SECONDARY OH CONDUCTOR - OPEN WIRE
	SECONDARY UG CONDUCTOR
	RESIDENTIAL / INDUSTRIAL SEC. METER - UNDERGROUND, SINGLE CUSTOMER
	RESIDENTIAL / INDUSTRIAL SEC. METER - OVERHEAD, SINGLE CUSTOMER
G	SECONDARY GENERATOR (MICROFIT SERVICE, SOLAR)
	TOWNHOUSE SEC. METER
	RESIDENTIAL BULK METER - UNDERGROUND
	INDUSTRIAL BULK METER - UNDERGROUND
BUS	BUS SHELTER
PEDESTAL	SERVICE PEDESTAL
SIGN	SIGN

MAP SYMBOLS

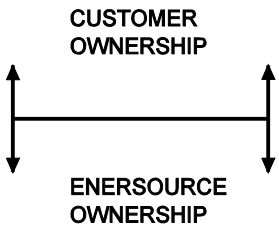
SECONDARY EQUIPMENT SYMBOLS

PREPARED BY : O.Oanca
REVIEWED BY : P.Nguyen
DATE : November 25, 2009

enersource
3240 Mavis Road
Mississauga, Ontario
L5C 3K1
Tel : (905) 273-9050
Fax: (905) 279-2103
www.enersource.com

63-401A

ENERSOURCE
HYDRO MISSISSAUGA

AM/FM SYMBOL	DESCRIPTION
D07-125487	DRAWING INDICATOR
2244	MUNICIPAL ADDRESS
	DEMARCATION POINT

MAP SYMBOLS

ADMINISTRATIVE SYMBOLS

PREPARED BY : O.Oanca
REVIEWED BY : P.Nguyen

DATE : November 25, 2009

enersource
3240 Mavis Road
Mississauga, Ontario
L5C 3K1
Tel : (905) 273-9050
Fax: (905) 279-2103
www.enersource.com

63-401B

ENERSOURCE
HYDRO MISSISSAUGA

AM/FM SYMBOL	DESCRIPTION
	STREETLIGHTING CONDUCTOR - SPUN, OVERHEAD
	STREETLIGHTING CONDUCTOR - OPEN WIRE, OVERHEAD
	STREETLIGHTING CONDUCTOR - UNDERGROUND
	TRAFFIC SIGNAL PEDESTAL
32.5'CP	STREETLIGHTING POLE
1260W 30A,(120)V	CONTROL RELAY
70	STREETLIGHT - PHOTOCELL CONTROLLED
100	STREETLIGHT - RELAY CONTROLLED
100	STREETLIGHT - POST TOP
250	STREETLIGHT - UNDERPASS

MAP SYMBOLS
STREETLIGHTING EQUIPMENT SYMBOLS

enersource
3240 Mavis Road
Mississauga, Ontario
L5C 3K1
Tel : (905) 273-9050
Fax: (905) 279-2103
www.enersource.com

PREPARED BY : O.Oanca
REVIEWED BY : P.Nguyen
DATE : November 25, 2009

63-402

ENERSOURCE
HYDRO MISSISSAUGA

AM/FM SYMBOL	DESCRIPTION
B	U/G PRIMARY CONDUCTOR- 1 PHASE
RW	U/G PRIMARY CONDUCTOR - 2 PHASE
RWB	U/G PRIMARY CONDUCTOR - 3 PHASE
TX20640-R 100	U/G TRANSFORMER - 1 PHASE PAD MOUNTED
TX20641-R 100	U/G TRANSFORMER - SUBMERSIBLE
TX20642-R 100	U/G TRANSFORMER - IN KIOSK
B64532 TX21343 300 347/600V B64531	U/G TRANSFORMER - 3 PHASE PAD MOUNTED (OLD)
C21343 B64532 TX21343 300 347/600V B64531	U/G TRANSFORMER - 3 PHASE PAD MOUNTED (NEW)
TX16031 2250 347/600V	U/G TRANSFORMER - POWERCLASS
TX49T1 20MVA	MUNICIPAL STATION TRANSFORMER

MAP SYMBOLS

UNDERGROUND PRIMARY EQUIPMENT SYMBOLS - PART 1

2.4/4.16 kV TO 44 kV

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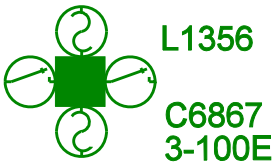
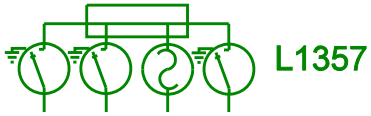
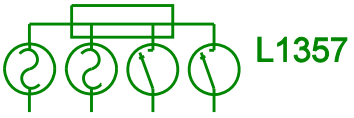
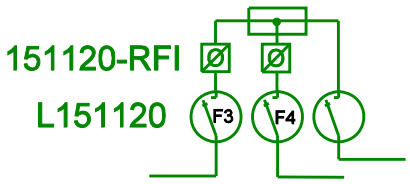
PREPARED BY : D.Slijepcevic
REVIEWED BY : P.Nguyen
DATE : February 6, 2012

63-403A

ENERSOURCE
HYDRO MISSISSAUGA

AM/FM SYMBOL	DESCRIPTION
	PMH UNIT (SWITCHING CUBICLE)
	SOLID DIELECTRIC SWITCHGEAR UNIT
	VISTA SWITCHGEAR UNIT WITH GROUNDING SYMBOLS
	VISTA UNIT (TYPE 422) (FOR ALL VISTA TYPES SEE 'VISTA UNDERGROUND DISTRIBUTION SWITCHGEAR' SHEET)
	VISTA UNIT (RESETTABLE FAULT INTERRUPTER TYPE)

MAP SYMBOLS
UNDERGROUND PRIMARY EQUIPMENT SYMBOLS - PART 2
2.4/4.16 kV TO 44 kV

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3240 Mavis Road
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Tel : (905) 273-9050
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PREPARED BY : D.Slijepcevic
REVIEWED BY : P.Nguyen
DATE : February 6, 2012

63-403B

ENERSOURCE
HYDRO MISSISSAUGA

AM/FM SYMBOL	DESCRIPTION
	PRIMARY METER
	FAULT INDICATOR
	CURRENT SENSING INDICATOR
	OH FAULT INDICATOR
	OH FAULT INDICATOR SCADAMATE
- - - - INTERLOCK - - - -	DICONNECT INTERLOCK (MISCELLANEOUS TEXT)
- - - - - AUTO - - - - - -	AUTOMATIC TRANSFER (MISCELLANEOUS TEXT)

MAP SYMBOLS
UNDERGROUND PRIMARY EQUIPMENT SYMBOLS - PART 3
2.4/4.16 kV TO 44 kV

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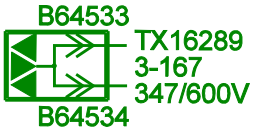
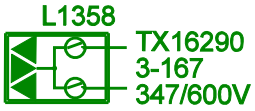
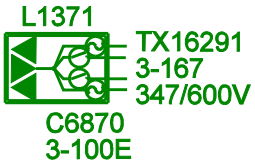
PREPARED BY : D.Slijepcevic
REVIEWED BY : P.Nguyen
DATE : February 6, 2012

63-403C

ENERSOURCE
HYDRO MISSISSAUGA

AM/FM SYMBOL	DESCRIPTION
	U/G TRANSFORMER IN VAULT - LOOP FED WITH ELBOWS
	U/G TRANSFORMER IN VAULT - LOOP FED WITH LOAD INTERRUPTERS
	U/G TRANSFORMER IN VAULT - LOOP FED WITH LOAD INTERRUPTERS
 S1370	SWITCH - SOLID BLADE
 J61056	JUMPER
 C6867 3-100E	FUSE
 L24568	LOAD INTERRUPTER - SINGLE BREAK, SINGLE BREAK MOTORIZED, DOUBLE BREAK, DOUBLE BREAK MOTORIZED
	CONNECTION POINT
	CONNECTED SPLICE
	PHASE CHANGE
 G_PS0025	GPS SPLICE
	OPEN POINT SYMBOL

MAP LEGENDS

UNDERGROUND PRIMARY EQUIPMENT SYMBOLS - PART 4

2.4/4.16 kV TO 44 kV

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PREPARED BY : O.Oanca/ D.Slijepcevic
REVIEWED BY : P.Nguyen
DATE : February 6, 2012

63-403D

ENERSOURCE
HYDRO MISSISSAUGA

AM/FM SYMBOL		DESCRIPTION
		O/H PRIMARY CONDUCTOR - 1 PHASE
		O/H PRIMARY CONDUCTOR - 2 PHASE
		O/H PRIMARY CONDUCTOR - 3 PHASE
		O/H PRIMARY DEAD END
		O/H PRIMARY CONNECTION POINT
		O/H PRIMARY PHASE CHANGE POINT
	TX33001-W 50	O/H TRANSFORMER - 1 PHASE
	TX33002-RW 100 120/240	O/H TRANSFORMER - 2 PHASE
	TX33003 150 347/600	O/H TRANSFORMER - 3 PHASE
	LJ323	PRIMARY JUMPER
	R444	PRIMARY RECLOSER
	AB555	PRIMARY BREAKER SWITCH
	C111 3-100E	PRIMARY FUSED CUTOUT
	L333	PRIMARY LOAD INTERRUPTER
	S222	PRIMARY SWITCH
F1	90F1	PRIMARY FEEDER BREAKER
M		PRIMARY METER
		OPEN POINT

MAP SYMBOLS
OVERHEAD PRIMARY EQUIPMENT SYMBOLS

2.4/4.16 kV TO 16/27.6 kV

PREPARED BY : D.Slijepcevic
REVIEWED BY : P.Nguyen
DATE : February 6, 2012

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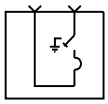
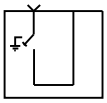
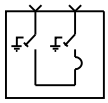
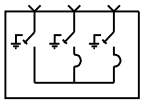
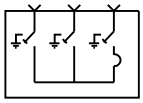
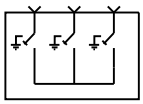
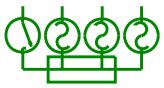
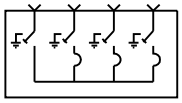
63-404

ENERSOURCE
HYDRO MISSISSAUGA

AM/FM SYMBOL	SCHEMATIC	DESCRIPTION
		VISTA 201 2 - WAY UNIT : - 1 FAULT INTERRUPTER
		VISTA 210 2 - WAY UNIT : - 1 LOAD INTERRUPTER SWITCH
L6869  C6868 3-140K AM/FM/ G/TECH C=CUTOUT SWITCH TYPE=FAULT INTERRUPTER	L6869  C6868 3-140K	VISTA 211 2 - WAY UNIT : - 1 LOAD INTERRUPTER SWITCH - 1 FAULT INTERRUPTER
		VISTA 312 3 - WAY UNIT : - 1 LOAD INTERRUPTER SWITCH - 2 FAULT INTERRUPTERS
		VISTA 321 3 - WAY UNIT : - 2 LOAD INTERRUPTER SWITCHES - 1 FAULT INTERRUPTER
		VISTA 330 3 - WAY UNIT : - 3 LOAD INTERRUPTER SWITCHES
		VISTA 413 4 - WAY UNIT : - 1 LOAD INTERRUPTER SWITCH - 3 FAULT INTERRUPTERS

VISTA UNDERGROUND DISTRIBUTION SWITCHGEAR CAN INCORPORATE COMPONENTS INCLUDING LOAD INTERRUPTER SWITCHES AND FAULT INTERRUPTERS. EACH SUCH COMPONENT REPRESENTS ONE 'WAY'. A SINGLE VISTA UNIT CAN HAVE UP TO SIX WAYS.

THE MODEL NUMBER INDICATES THE TOTAL NUMBER WAYS, AS WELL AS THE NUMBER OF LOAD INTERRUPTER SWITCHES AND FAULT INTERRUPTERS. FOR EXAMPLE MODEL 321 HAS '3' WAYS - '2' LOAD INTERRUPTER SWITCHES AND '1' FAULT INTERRUPTER.

MAP LEGENDS

VISTA UNDERGROUND DISTRIBUTION SWITCHGEAR SYMBOLS

8/13.8kV AND 16/27.6kV

PREPARED BY : O.Oanca & D.Slijepcevic
REVIEWED BY : P.Nguyen
DATE : March 25, 2011

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63-405

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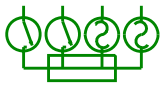
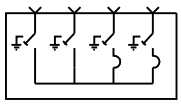
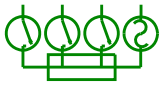
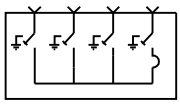
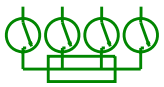
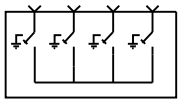
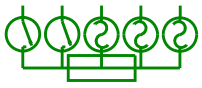
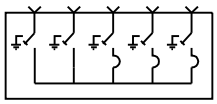
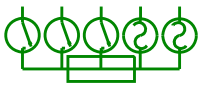
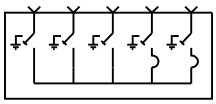
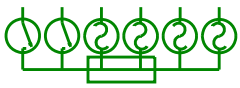
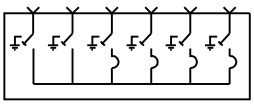
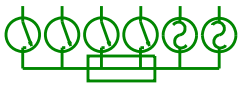
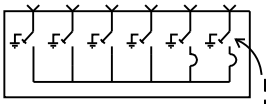
HYDRO MISSISSAUGA

AM/FM SYMBOL	SCHEMATIC	DESCRIPTION
		VISTA 422 4 - WAY UNIT : - 2 LOAD INTERRUPTER SWITCHES - 2 FAULT INTERRUPTERS
		VISTA 431 4 - WAY UNIT : - 3 LOAD INTERRUPTER SWITCHES - 1 FAULT INTERRUPTERS
		VISTA 440 4 - WAY UNIT : - 4 LOAD INTERRUPTER SWITCHES - 0 FAULT INTERRUPTERS
		VISTA 523 5 - WAY UNIT : - 2 LOAD INTERRUPTER SWITCHES - 3 FAULT INTERRUPTERS
		VISTA 532 5 - WAY UNIT : - 3 LOAD INTERRUPTER SWITCHES - 2 FAULT INTERRUPTERS
		VISTA 624 6 - WAY UNIT : - 2 LOAD INTERRUPTER SWITCHES - 4 FAULT INTERRUPTERS
YL100103 YL100104 YL100105 YL100106 	YC100102 3-100E YC100101 3-100E 	VISTA 642 6 - WAY UNIT : - 4 LOAD INTERRUPTER SWITCHES - 2 FAULT INTERRUPTERS

FAULT INTERRUPTER:
NEW TYPE - GANG OPERATED SWITCH
OLD TYPE - PHASE OPERATED SWITCH

VISTA UNDERGROUND DISTRIBUTION SWITCHGEAR CAN INCORPORATE COMPONENTS INCLUDING LOAD INTERRUPTER SWITCHES AND FAULT INTERRUPTERS. EACH SUCH COMPONENT REPRESENTS ONE 'WAY'. A SINGLE VISTA UNIT CAN HAVE UP TO SIX WAYS.

THE MODEL NUMBER INDICATES THE TOTAL NUMBER WAYS, AS WELL AS THE NUMBER OF LOAD INTERRUPTER SWITCHES AND FAULT INTERRUPTERS. FOR EXAMPLE MODEL 321 HAS '3' WAYS - '2' LOAD INTERRUPTER SWITCHES AND '1' FAULT INTERRUPTER.

MAP LEGENDS

VISTA UNDERGROUND DISTRIBUTION SWITCHGEAR SYMBOLS

8/13.8kV AND 16/27.6kV

PREPARED BY : O.Oanca
REVIEWED BY : P.Nguyen
DATE : November 25, 2009

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Fax: (905) 279-2103
www.enersource.com

63-406

Thompson, Gillian

From: Jaclyn Mui <Jaclyn.Mui@enbridge.com>
Sent: November-01-16 11:27 AM
To: MavisRoadEA
Cc: Marcel Mallia
Subject: Mississauga Schedule C Environm Assessm Study for Mavis Rd Addressing Transportation Condition
Attachments: Mississauga Schedule C Env Assessm Mavis Rd transportation conditions.pdf

Hi,

Thank you for sending out this communication about your proposed project.
Enbridge Gas Distribution Inc. has some vital gas mains within the study area and would like to be engaged earlier on in the project development. Some concerns are, but not limited to, road alignment changes and grade changes.
Please ensure Marcel Mallia is included as this project progresses.

Thanks,
Jaclyn Mui
Manager, Planning & Design Toronto, Distribution Planning & Records
—
Enbridge Gas Distribution Inc.
TEL: 416-495-7222 | CELL: 647-225-3592
500 Consumers Road, North York, ON M2J 1P8
enbridge.com
Integrity. Safety. Respect.