Toronto Hydro-Electric System Limited
14 Carlton Street
Toronto, Ontario M5B 1K5

Telephone: 416-542-2517
Facsimile: 416-542-3024
gwinn@torontohydro.com

September 30, 2011

via RESS e-filing – signed original to follow by courier

Ms. Kirsten Walli
Board Secretary
Ontario Energy Board
PO Box 2319
2300 Yonge Street, 27th floor
Toronto, ON M4P 1E4

Dear Ms. Walli:

Re: Toronto Hydro-Electric System Limited's ("THESL")
Interrogatory Responses
OEB File No. EB-2011-0120

Please find attached THESL's responses to selected interrogatories in the above-noted proceeding. The accompanying Index lists the schedule numbers of the responses that have been filed to date. We continue to work diligently to complete the responses and will provide those as soon as possible, and in any event, by Monday, October 3, 2011.

Yours truly,

[original signed by]

Amanda Klein
Senior Regulatory Counsel

:AA/acc

cc: J. Mark Rodger, Counsel for THESL, by electronic mail only
Applicant and Intervenors of Record for EB-2011-0120, by electronic mail only

INDEX OF INTERROGATORY RESPONSES FILED

Tab 5.2	CANDAS to Michael Starkey *(Total of 46)*		
	Schedules - *filed Sep 20*	7, 15, 25, 32, 35, 42
	- *filed Sep 22*	1, 2, 8, 11, 13, 14, 20, 21, 24, 26, 27, 28, 30, 31, 34, 36, 37, 38, 39, 40, 41, 43, 45, 46
Tab 5.3	CANDAS to THESL *(Total of 32)*		
	Schedules - *filed Sep 22*	1, 2, 3, 8, 9, 26, 27, 29, 31
Tab 5.4	CANDAS to Adonis Yatchew *(Total of 24)*		
	Schedules- *filed Sep 20*	1, 2, 4, 6, 7, 9, 11, 12, 15, 16, 19, 20, 22, 23
	- *filed Sep 22*	5, 8, 10, 17, 18, 21, 24
Tab 6	Consumers Council of Canada *(Total of 16)*		
	Schedules - *filed Sep 22*	1, 2, 3, 4, 10, 13, 14

RESPONSES TO ONTARIO ENERGY BOARD STAFF INTERROGATORIES

INTERROGATORY 1:

Reference(s): Vol 1/ Notice of Motion

THESL Motion, page 9: "Wireless Attachments can be and are placed in a variety of siting locations, including on the roofs or sides of commercial, residential and industrial buildings; on street furniture; on water towers, on traffic lights; on stand-alone communications towers; and on other elevated structures."

Has THESL independently examined or discussed with CANDAS the siting alternatives available for any specifically requested THESL or THESI pole or poles? If so, has this examination or discussion supported the existence or non-existence of suitable siting alternatives?

RESPONSE:

No. THESL has not had discussions with CANDAS on siting alternatives.

RESPONSES TO ONTARIO ENERGY BOARD STAFF INTERROGATORIES

INTERROGATORY 2:

Reference(s): **City of Toronto Telecommunication Tower and Antenna Protocol, internet link provided in Vol1/Notice of Motion, page 31, line3**
City of Toronto Telecommunication Tower and Antenna Protocol, Section 11

To your knowledge, are the types of wireless attachments proposed by CANDAS subject to Industry Canada's requirement for public consultation? Would the siting of the attachments on an electric utility pole affect the application of this requirement?

RESPONSE:

The requested information is not within THESL's knowledge.

RESPONSES TO ONTARIO ENERGY BOARD STAFF INTERROGATORIES

INTERROGATORY 11:

Reference(s): **Vol1/Exh 2: Affidavit of Adonis Yatchew**
Section C.2., page 15: "Utility poles are not an essential facility for CANDAS. Perhaps the best evidence to support this conclusion is that Public Mobile was able to roll out its service in Toronto with minimal reliance on THESL poles for its wireless attachments."

How many total DAS antennas were installed by Public Mobile when it rolled out its service in Toronto?

RESPONSE:

I have not been provided with the specific number of DAS antennas installed by Public Mobile in Toronto, on THESL poles or on other support structures. I have been advised by THESL that it does not track installation dates of telecommunications attachments. However, assuming that the date when Public Mobile "rolled out its service in Toronto" is the date that the network was turned on (May 26, 2010), THESL has advised that at that time, it had granted 206 wireless permits to DAScom, which THESL understands had an agreement with Public Mobile to procure such permits on Public Mobile's behalf.

RESPONSES TO ONTARIO ENERGY BOARD STAFF INTERROGATORIES

INTERROGATORY 12:

Reference(s): **Vol1/Exh 2: Affidavit of Adonis Yatchew**
Section C.2., page 15: "Utility poles are not an essential facility for CANDAS. Perhaps the best evidence to support this conclusion is that Public Mobile was able to roll out its service in Toronto with minimal reliance on THESL poles for its wireless attachments."

How many DAS antennas were installed by Public Mobile on THESL poles?

RESPONSE:

As of September 2011, 105 telecommunications wireless attachments (as applied for by DAScom, presumably on Public Mobile's behalf) were installed on THESL Poles.

RESPONSES TO ONTARIO ENERGY BOARD STAFF INTERROGATORIES

INTERROGATORY 16:

Reference(s): **Affidavit of Mary Byrne**
Section 29 – "In addition to this, THESL has historically charged prospective telecom attachers a $95 application charge to recover its costs of processing those applications."

Please provide any recent cost analysis supporting the application charge of $95.

RESPONSE:

Average cost (total staff/contractor costs divided by the number of telecommunications permit applications processed):

2009: $101

2010: $676

THESL instituted the $95 application charge as a cost recovery mechanism, similar to how THESL charges telecommunications attachers for make ready work in respect of their attachments. As noted at Ms. Byrne's affidavit at paragraphs19-22, THESL experienced a spike in 2009 regarding the number of telecommunications NDA requests. By 2010, it was clear that THESL's current staff were no longer able to manage the demand created by NDAs. In an effort to not divert any further resources away from its distribution function, THESL brought on an intern and seven contract staff to assist with managing the increased – and increasing – workload in this regard. THESL's costs of processing permit applications increased and THESL has accordingly been exploring other means of managing the increased demand that NDAs put on THESL's resources.

RESPONSES TO ONTARIO ENERGY BOARD STAFF INTERROGATORIES

INTERROGATORY 19:

Reference(s): **Affidavit of Mary Byrne**
Section 38 – "From THESL's experience, there is no standard wireless communications attachment – the mini systems are not uniform in nature. Rather, wireless attachments are variable in size and configuration. Further, when mounted on distribution poles, wireless attachments typically occupy a much greater portion of pole space than wireline attachments."

Please indicate quantitatively (provide a range, if needed) how much more pole space does a typical wireless attachments require on a pole in relation to a wireline attachment?

RESPONSE:

In the approximately 60 cm (two feet) of communications space, and pursuant to THESL's standards, three typical wireline attachments can be accommodated. THESL's Standard 23-3100 (in Tab 5.1, Schedule 1, Attachment 1) provides as follows:

> **4.0 Attachments**
>
> 4.1 The number of attachments on a pole will be limited to three where feasible. The highest attachment within the communication space shall be reserved for Toronto Hydro Telecommunication attachments.
>
> 4.2 The diameter of the attachment (either single cable or multi-lashed cables) shall not exceed two and a half inches (2 ½") diameter.

The wireless equipment that has been permitted or proposed to be permitted on THESL Poles ranges from approximately 1.8 to 2.4 metres (6 to 12 feet) of discontinuous space. In other words, a single wireless attachment (including the "mini systems" over and

RESPONSES TO ONTARIO ENERGY BOARD STAFF INTERROGATORIES

above the wireline component of wireless) takes up between 3 and 6 times the amount of space as 3 wireline attachments would.

RESPONSES TO ONTARIO ENERGY BOARD STAFF INTERROGATORIES

INTERROGATORY 20:

Reference(s): **Affidavit of Mary Byrne**
Section 39 – "THESL's experience is also that wireless communications typically do not fall within the communications space appropriate for NDAs on THESL poles. Wireless attachments use up space on THESL poles well beyond the communications space provided for by the CCTA decision."

Please provide information to demonstrate what percentage of all wireless attachments that have been made to date, fall beyond the communications space provided as defined in the CCTA decision.

RESPONSE:

100% of the DAScom permits issued in 2009 and 2010 (total permits of 372) were for wireless attachments that occupy more than the 60 cm of the communications space.

RESPONSES TO ONTARIO ENERGY BOARD STAFF INTERROGATORIES

INTERROGATORY 21:

Reference(s): **Affidavit of Mary Byrne**
Section 39 – "THESL's experience is also that wireless communications typically do not fall within the communications space appropriate for NDAs on THESL poles. Wireless attachments use up space on THESL poles well beyond the communications space provided for by the CCTA decision."

Please confirm whether any existing wireline attachments fall beyond the communications space as defined in the CCTA decision.

RESPONSE:

Yes. THESL Standards accommodate Power supply boxes for wireline telecommunications customers of up to 71cm in height (per Standard 23-3550 in Tab 5.1, Schedule 1, Attachment 1) . THESL estimates that no more than 2% of the total wireline attachments on THESL Poles include power supply boxes that fit this description.

RESPONSES TO ONTARIO ENERGY BOARD STAFF INTERROGATORIES

INTERROGATORY 24:

Reference(s): **Affidavit of Mary Byrne**

Section 43: "Another concern THESL has is regarding the variability of wireless attachment configuration (including that the equipment often does not fit within the communications space) and the quantity of equipment that must be attached to any given THESL Pole. This means that wireless attachments tend to require more frequent and onerous make-ready work as compared with wireline attachments. Depending on the composition of the distribution equipment (and possibly other NDAs) on any given THESL pole, accommodating a wireless attachment may require creating additional space on a pole by moving around existing equipment, or in some cases, replacing the pole altogether."

If the answer to Question 22 is no, please indicate why the costs related to "make-ready" work are not fully recovered from applicants by THESL?

RESPONSE:

Please see the response in Tab 1, Schedule 23 and Tab 6, Schedule 15.

RESPONSES TO ONTARIO ENERGY BOARD STAFF INTERROGATORIES

INTERROGATORY 25:

Reference(s): **Affidavit of Mary Byrne**
Section 44: "Once a wireless attachment is in place on a THESL Pole, the size and quantity of equipment may make it very difficult if not impossible for THESL workers to climb THESL Poles safely."

During a normal day's operations, of the poles on which work is performed, what percentage are climbed by workers and what percentage are worked from the bucket trucks?

RESPONSE:

Although THESL does not have the precise percentage, during a normal day's operation the percentage of work done by climbing a pole is low. The percentage will vary as the method of work is dictated by the task required and the location of the project. There are some circumstances in which using bucket trucks may not be optimal or even possible in certain areas of the City and types of existing installations, such as backyard or box style construction. In these circumstances, THESL may use "pole climbing" rather than bucket trucks to perform the necessary work.

Pole climbing is a necessary activity, and the infrequency of it does not mean that it is not required. On the contrary, even if it is not a skill used every day, pole climbing may be necessary in an emergency, and therefore it is even more important that it not be made more difficult for THESL staff.

RESPONSES TO ONTARIO ENERGY BOARD STAFF INTERROGATORIES

INTERROGATORY 26:

Reference(s): **Affidavit of Mary Byrne**
Section 44: "Once a wireless attachment is in place on a THESL Pole, the size and quantity of equipment may make it very difficult if not impossible for THESL workers to climb THESL Poles safely."

Do the wireless attachments also impact worker safety when they are working from a bucket truck? Please elaborate.

RESPONSE:

Depending on the position of the wireless attachments on the THESL Pole, safety may be affected. It is THESL's view that certain wireless attachments such as pole top antennas can present a safety hazard regardless of the manner in which the THESL Pole is approached. Please refer to the affidavit of Ms. Byrne at paragraph 46.

RESPONSES TO ONTARIO ENERGY BOARD STAFF INTERROGATORIES

INTERROGATORY 27:

Reference(s): **Affidavit of Mary Byrne**
Section 45 "Such "pole clutter" may also increase wear and tear on THESL Poles, which accelerates THESL Pole deterioration. THESL Poles were not designed or installed with bearing the additional load of wireless attachments in mind. Pole attachments, if designed or installed incorrectly, can overload or damage a pole. Further, to the extent that wireless attachers may require holes to be drilled through THESL Poles to mount wireless communications attachments below the distribution zone, this could incrementally weaken those THESL Poles."

Has THESL undertaken any studies to determine the reduction in anticipated service life of a pole due to installation of wireless attachments? If so, please provide the reports resulting from those studies.

RESPONSE:

No.

RESPONSES TO ONTARIO ENERGY BOARD STAFF INTERROGATORIES

INTERROGATORY 28:

Reference(s): **Affidavit of Mary Byrne**
Section 45 "Such "pole clutter" may also increase wear and tear on THESL Poles, which accelerates THESL Pole deterioration. THESL Poles were not designed or installed with bearing the additional load of wireless attachments in mind. Pole attachments, if designed or installed incorrectly, can overload or damage a pole. Further, to the extent that wireless attachers may require holes to be drilled through THESL Poles to mount wireless communications attachments below the distribution zone, this could incrementally weaken those THESL Poles."

In your opinion, by what duration would the life expectancy of a typical pole be reduced with installation of wireless attachments and additional pole drilling requirements?

RESPONSE:

Without extensive analysis, which cannot be undertaken within the timelines of this proceeding, THESL cannot provide a meaningful response to this interrogatory.

RESPONSES TO ONTARIO ENERGY BOARD STAFF INTERROGATORIES

INTERROGATORY 32:

Reference(s): **Affidavit of Mary Byrne**
Section 55: "As discussed above, wireless attachments take up a significant amount of space on THESL Poles, and a larger amount of space in comparison to other NDAs. As a result, where a wireless attachment mini-system is attached to a THESL Pole, THESL's ability to use that pole for its own distribution needs and/or non-distribution projects is importantly curtailed."

If, hypothetically, wireless antennas are allowed to be installed on THESL distribution poles, what percentage of such poles would need to be replaced by THESL during the next 15 years to make room for THESL's own needs?

RESPONSE:

If pole-top antennas were permitted on THESL poles, then THESL expects that a certain number of poles would need to be replaced with poles of higher capacity to permit THESL to add circuits as necessary. The exact number would depend, to some extent, on how rapidly wireless telecommunications systems are adopted in Toronto. THESL is unable to provide a meaningful estimate of the number of poles that would be affected without having greater certainty in this regard, as well as undertaking extensive analysis of existing THESL pole infrastructure opposite forecasts of local area load growth.

RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES

INTERROGATORY 1:

Reference(s): The Affidavit of Mary Byrne Sworn September 2, 2011 ("Byrne) Byrne, para. 1

(a) Provide copies of all written policies, standards and procedures pertaining to the attachment, on THESL distribution poles, of:

(i) antenna
(ii) equipment enclosures or boxes
(iii) fibre
(iv) banners
(v) streetlights
(vi) traffic lights
(vii) signage
(viii) banners
(ix) other

(b) Provide copies of all THESL attachment policies, as revised to reflect the adoption of THESL's "no wireless" policy.

(c) Describe, in detail, the technical and other information that THESL requires to be provided in support of an application for an attachment permit in the case of:

(i) A permit for the attachment of the non-fibre components of a wireless telecommunication pole installation (i.e., antenna and equipment enclosures)
(ii) A permit for the attachment of the fibre component of a wireless telecommunication pole installation
(iii) A permit for the attachment of the non-fibre components of a wireline telecommunication pole installation (i.e., the equipment enclosures)

RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES

(iv) A permit for the attachment of the fibre component of a wireline telecommunication pole installation

RESPONSE:

(a) Please see Tab 5.1, Schedule 1, Attachment 1.

(b) Please see the response in Tab 5.3, Schedule 1.

(c) Please see the Affidavit of Ms. Byrne, at paragraphs 18 a and c.

SECTION - 23 : FOREIGN ATTACHMENTS

INDEX OF STANDARDS

Temporary Decorative Attachments

1) General Requirement

a) Structural/Material Composition

All attachments shall be constructed and composed of a non-flammable material and be supported by a bracket made of stainless steel, galvanized steel, aluminum or an aluminum alloy and should be easily removable from the pole. 1

b) Dimensions/Weight Restrictions

The complete attachment, including the bracket, shall not be greater than 0.90m (3') wide and 1.80m (6') long. The maximum allowable surface area of the attachment shall be 1.5m^2 (16ft^2). The maximum weight of the complete attachment shall not exceed 9kg (20lb). 1

c) Banners shall have semi-circles (vents) cut in the banner to allow for the full passage of air to reduce wind loading on the pole.

2) Methods of Attachment to the Pole

The installation of any attachment on Toronto Hydro poles is contingent upon maintaining minimum clearances from the electrical distribution system. **See Standard 23-2100** on minimum clearances for temporary attachments.

Attachments to the poles shall be by means of stainless steel banding tape or galvanized steel clamp bands. The lower part of a banner shall be loose with a lanyard attached at its centre to allow for the banner to remain unfurled. **See Standard 23-2200 for reference.**

3) Guidelines for approval of Temporary Decorative Attachments on Poles

In determining suitability of poles for approval, the following guidelines are used:

a) Attachments must be below all primary and secondary line conductors as outlined on **Standard 23-2200.**

b) Attachments must meet minimum clearances above roadway/sidewalk as outlined on **Standard 23-2100.**

c) Attachments are not allowed on poles with traffic lights or pedestrian crossovers.

d) Attachments are not allowed on poles with Primary or Secondary Risers.

e) Attachments are not allowed on poles, which are in "poor" or questionable condition.

f) Only one organization at any given period is allowed to utilize the same pole.

g) Attachments are covered by a City permit.

h) Attachments on any ornamental street lighting poles are subject to the approval of the Toronto Hydro Street Lighting Inc.

In the interest of public safety or to satisfy required work practices, Toronto Hydro, at its sole discretion, may prohibit attachments for reasons other than those listed above. 1

4) Removals

Temporary attachments are typically installed for a duration not exceeding 180 days. All temporary attachments shall be removed by the respective owner no later than five (5) business days after the expiry of the designated installation period stated, unless an extension has been approved in writing by Toronto Hydro Electric System and the City of Toronto. △3

Not withstanding the above, temporary attachments are to be removed by the respective owner as follows:

a) Within five (5) business days after written notification from Toronto Hydro Electric System that a banner/sign is:

1) Damaged or deteriorated from its original condition.
2) Installed in an improper manner.
3) In violation of safety requirements by not being in compliance with the Ontario Electrical Safety Code, Occupational Health and Safety Act and Regulations for Construction Projects, or any other legislation, by-laws, regulations or rules which apply.

b) The temporary attachment(s) is to be removed immediately by the owner where, in the judgement of Toronto Hydro Electric System, the attachment(s) has been installed without permission, or on a pole not specified on the permit, or the attachment(s) is in violation of Toronto Hydro Electric System safety requirements.

Toronto Hydro reserves the right to remove or arrange for the removal of the attachment from the pole at the owner's expense under emergency conditions, or in cases where the pole is unexpectedly removed, or the attachment hinders planned work. The owner of the attachment(s) will be requested to collect the removed attachment(s), if retrievable. **Toronto Hydro will not, at any time, be held liable for any damages to or loss of the attachment.**

5) Provision of Electrical Supply

a) Owners are responsible for the costs incurred by Toronto Hydro Electric System to provide electrical service connections and/or disconnection to the temporary decorative attachments. This cost is in addition to any permit fees and may include costs to rearrange any Hydro Plant necessary to accommodate the attachments.

b) **Please refer to Standard 23-2500 for Toronto Hydro's Service requirements on typical electrical installations.** Electricity Safety Authority's Connection Permit is required prior to any service connection by Toronto Hydro.

c) Energy Billing issues including electricity rates applicable to the required electrical service will be confirmed at the time of owner's application. Rates are subject to change without prior notice.

6) Responsibility

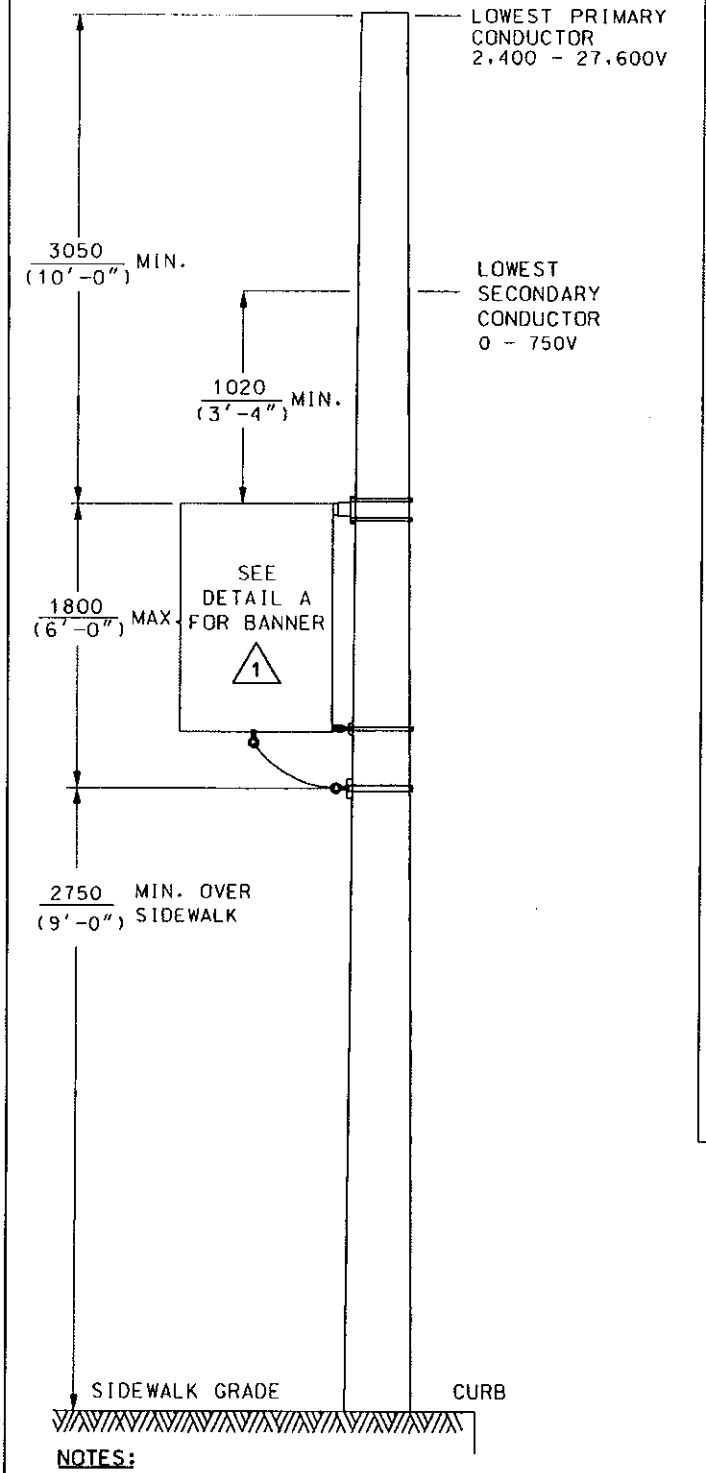
The design, installation, maintenance, and removal of temporary decorative attachments rest with the owner. The owner shall ensure compliance with all the applicable legislation, by-laws, and regulations. Written assurance / indemnity shall be made available to Toronto Hydro Electric System upon request.

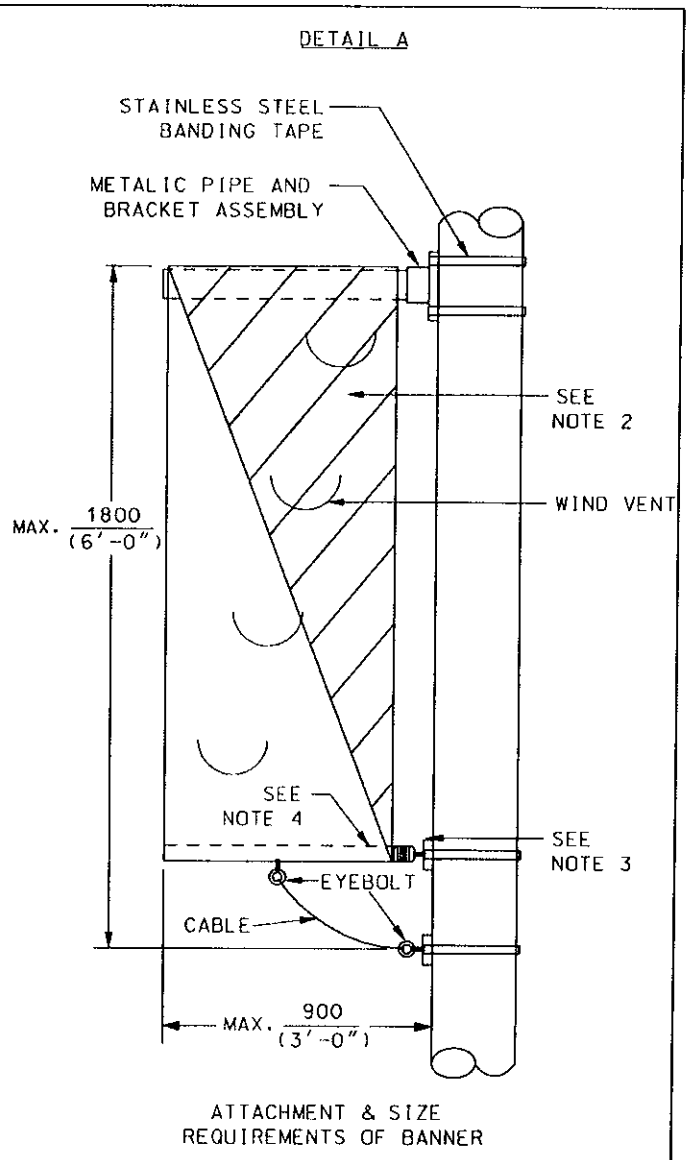
Foreign Attachments: Overhead System - Temporary Minimum Horizontal and Vertical Clearances					
Attachment Type	**Crosswalks and Traffic Control Signals (see note 1)**	**Sidewalks (see note 1)**	**Electric Line Below 750V**	**Electric Line 750V to 27.6kV**	
	Horizontal Clearances				
Electrical Decorations	30.5m (100'-0")	n/a	n/a	n/a	2
Banners/Flags Baskets	30.5m (100'-0")	n/a	n/a	n/a	2
	Vertical Clearances				
Electrical Decorations	n/a	2.75m (9'-0")	1.02m (3'-4")	3.05m (10'-0")	
Banners/Flags Baskets	n/a	2.75m (9'-0")	1.02m (3'-4")	3.05m (10'-0")	

n/a = not applicable

Notes:

1) These are minimum values and the City may have specified, on the City permit, more clearances to suit local conditions.





ATTACHMENT & SIZE REQUIREMENTS OF BANNER

NOTES:

1) ALL ATTACHMENTS TO BE WITHIN A 6FT VERTICAL BY 3FT HORIZONTAL PERIMETER.
2) SURFACE AREA OF THE BANNER OR SIGN MUST NOT EXCEED 1.5m^2 (16 ft^2).
3) THE BOTTOM ATTACHMENT TO BE A STAINLESS STEEL SWIVEL HINGE TO ALLOW 90° ROTATION IN EITHER DIRECTION.
4) RIGID INSERT IS TO BE PVC OR SIMILAR MATERIAL, NOT METAL.
5) TO BE READ IN CONJUNCTION WITH 23-1100.

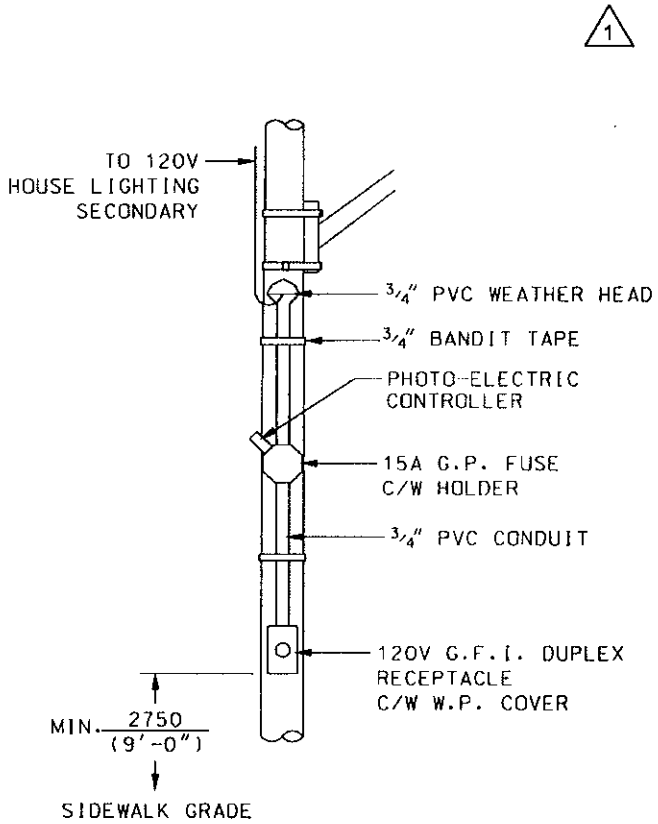
1

DISTRIBUTION CONSTRUCTION STANDARD
Foreign Attachments

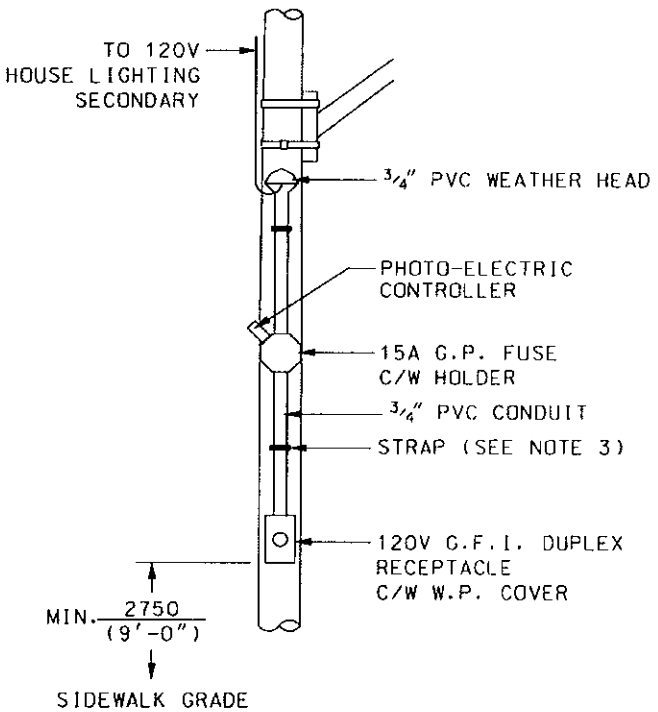
OVERHEAD SYSTEM-TEMPORARY DECORATIVE
BANNERS & SIGNS CLEARANCE & SIZE REQUIREMENTS

toronto hydro electric system

civil:	electrical: L.G.				
original issue: 2000-02-19	scale: N.T.S.	rev. 1 Feb 19/06	rev. 2	rev. 3	23-2200	1/1



CONCRETE, STEEL POLES



WOOD POLES

NOTES:

1) ALL HARDWARE TO BE INSTALLED AND MAINTAINED BY CUSTOMER.
2) CONNECTION TO HOUSE LIGHTING SECONDARY TO BE DONE BY TORONTO HYDRO.
3) BANDIT TAPE CAN BE USED AS AN ALTERNATIVE. 1
4) ALL WIRING MUST CONFORM TO THE REQUIREMENTS OF THE ONTARIO ELECTRICAL SAFETY CODE.
5) FOR SERVICE CONNECTION, SEE STANDARD 23-2500.

DISTRIBUTION CONSTRUCTION STANDARD Foreign Attachments			OVERHEAD SYSTEM: TEMPORARY DECORATIVE UNDERGROUND SUPPLIED STREET LIGHTING POLE TYPICAL ELECTRICAL RECEPTACLE				
toronto hydro electric system	civil:	electrical: L.G.					
	original issue: 2000-02-19	scale: N.T.S.	rev. 1 Feb 17/06	rev. 2	rev. 3	23-2500	1/1

Permanent Foreign Attachments

Types of Customer/Utility

Permanent foreign attachments encountered in the City of Toronto can be subdivided into six types:

1) **Communication Systems**

Companies in the communications business such as [redacted] and [redacted] commonly rent space on Toronto Hydro poles to which they attach their communication circuits. These circuits usually consist of messenger supported multi-strand conductors, coaxial or fiber optic cables, control boxes, associated hardware and equipment. In all cases, these circuits must be installed in accordance with the minimum clearance requirements.

2) **Municipal**

Municipal attachments consist of a variety of signs and signals. They include street-name signs, traffic signs and signals, bicycle path signs, parking signs, pedestrian crosswalk signs and signals.

3) **Toronto Transit Commission (TTC) Distribution Systems**

In the City of Toronto, it is common practice for the TTC to attach their trolley suspension cables, 600 Volt DC traction feeder cables, communication transmitters, transit stop signs and route schedules to Toronto Hydro poles.

4) **Decorations**

There are a number of locations in the City of Toronto where the local Business Improvement Associations (B.I.A.'s) apply for permission to attach permanent decorations to poles in front of their place of business. These decorations consist of flower baskets, banners, flags, and electric-light decorations requiring the installation of electrical receptacles on our poles.

5) **Privately Owned**

Canada Post regularly requests permission to attach small letter boxes to Toronto Hydro poles. In addition, applications may be received from vending box operators such as newspaper companies for permission to anchor their vending boxes to poles to ward against theft. [redacted] occasionally asks for permission to attach their rectifiers at various locations. We also receive requests by Houses of Worship to allow the installation of floodlights on our poles to illuminate their parking lots or property.

6) **Street Lighting**

All street lighting equipment is owned by the City of Toronto. Toronto Hydro acts as a consultant and a contractor to the City with respect to the street lighting plant. The majority of the street lights in the City of Toronto are attached to Toronto Hydro poles and are supplied from house lighting lines via photo-electric controllers. Due to the scope and variety of luminaires used in the city, all street lighting installation details are included in Section 30.

Standard Practices for the Installation of Communication Wires on Toronto Hydro Poles

1.0 Scope

This standard pertains to the installation practices to be followed by the *Licensed Occupant* for the communication wires on Toronto Hydro poles.

2.0 General

The *Licensed Occupant* shall install, operate and maintain their overhead plant in accordance with CSA Standard C22.3 No. 1-M87 and Toronto Hydro Standard 23-3100.

3.0 Communication Messenger

3.1 The minimum attachment height shall be:

A)	30' poles	4.6m
B)	35' poles and above	5.0m

3.2 The preferred attachment height shall be maintained at 6.0m.

3.3 The communications messenger shall be installed on the same side of the pole as the Hydro secondary.

3.4 Communication messenger shall not be installed between a street light bracket and a brace.

3.5 The mid-span vertical clearance with supply conductor shall be 450mm minimum and at the same time comply with C22.3 No. 1-M87 clause 4.10.3.1.

4.0 Attachments

4.1 The number of attachments on a pole will be limited to three where feasible. The highest attachment within the communication space shall be reserved for Toronto Hydro Telecommunication attachments.

4.2 The diameter of the attachment (either single cable or multi-lashed cables) shall not exceed two and a half inches (2 ½") diameter.

5.0 Transformer Poles

5.1 The minimum vertical clearance between the bottom of a transformer tank and a communications cable shall be 300mm.

5.2 When it is necessary to install a communications cable 300mm from the bottom of a transformer's tank where multiple transformers are mounted on crossarms, Toronto Hydro personnel shall invert the crossarm brace.

6.0 Anchors

The Licensed Occupant shall install its own anchors at its own expense where necessary at dead-end and heavy angle locations. All guys shall be equipped with a strain insulator and shall be placed before the cable messenger is installed and tensioned.

7.0 Bonding

Bonding between the cable messenger and sheath or shield is required at each 400 metre interval to effect coordinated protection. Toronto Hydro personnel must make the connections to the power system neutral, and the cost shall be borne by the Licensed Occupant. See THES Standard 18-4100.

8.0 Power Supplies

8.1 Power supply units may be installed on poles provided that none of the following equipment or conditions exists on the pole:

- 3 phase Load Interrupter Switch (LIS).
- Cable riser.
- Transformer mounted below the secondary conductors.

8.2 Power supply units and attachments are to be installed 300mm below the messenger on the same side as the messenger.

9.0 Service Drops

9.1 All drops shall run off the messenger at approximately 300mm from the center of the pole.

9.2 All drops shall follow the route of existing hydro or communication services where possible.

9.3 Where it is necessary to install a drop by a pole, the drop shall follow the messenger rather than go around the pole on the side opposite the messenger.

9.4 Drops shall be attached 150mm to 300mm from the hydro service on the hydro standpipe.

9.0 Service Drops continued

9.5 Drive hooks shall be mounted on the side of the pole opposite the crossarm, subject to the following conditions:

9.5.1 Do not install drive hooks on transformer poles if the messenger is mounted 300mm below the transformer.

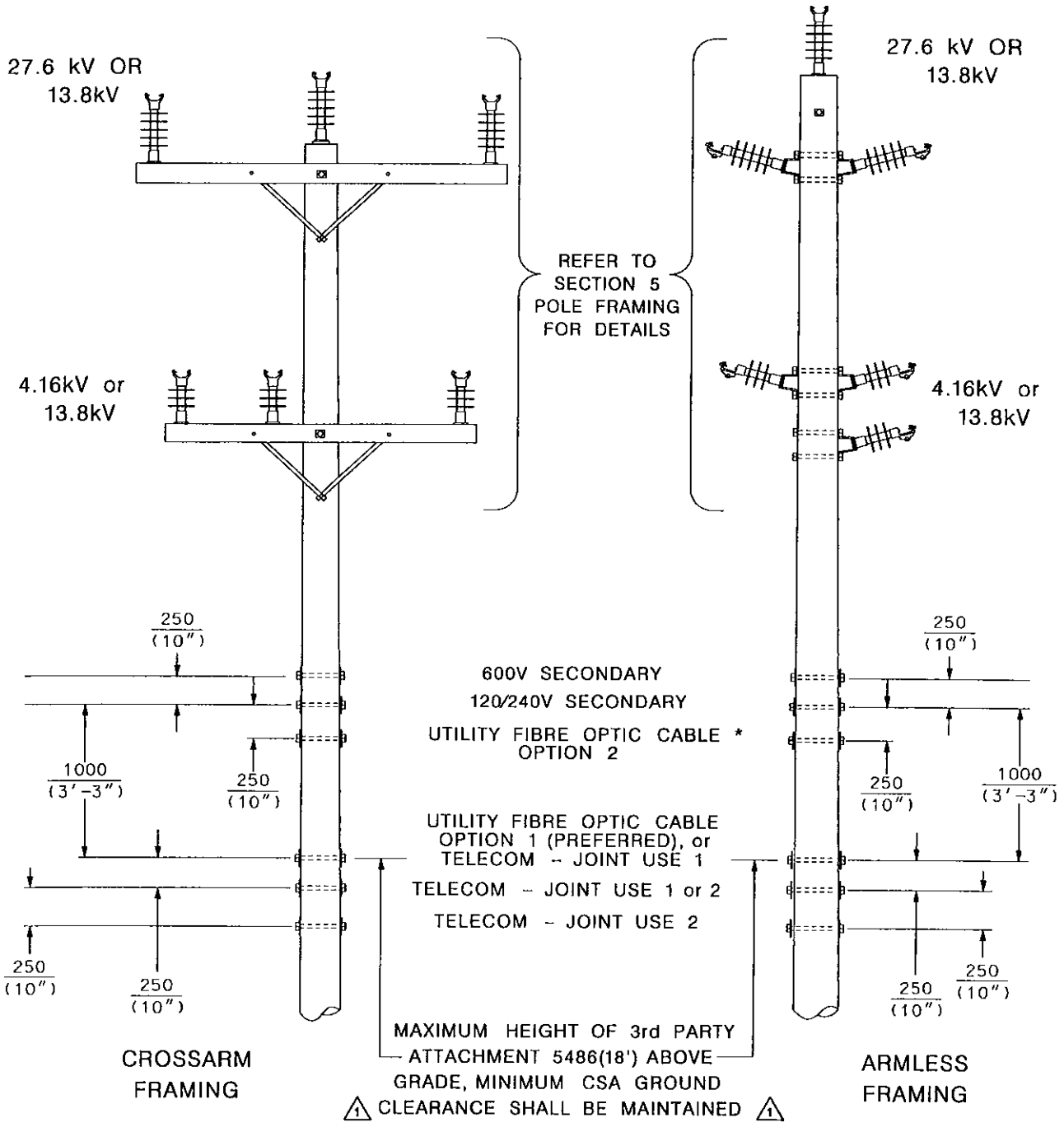
9.5.2 Do not install drive hooks on poles where it is possible to move the messenger up the pole and still maintain a 1.0m clearance from hydro.

9.5.3 Installation of drive hooks on 35' poles is permitted only if the conditions of 8.5.1 and 8.5.2 are met.

9.5.4 Installation of drive hooks 600mm or less above hydro plant is permitted on 30' poles if conditions 8.5.1 and 8.5.2 are met.

9.6 Rather than using drive hooks on both sides of the pole, a through bolt shall be installed perpendicular to the messenger, subject to the same conditions as drive hook installations.

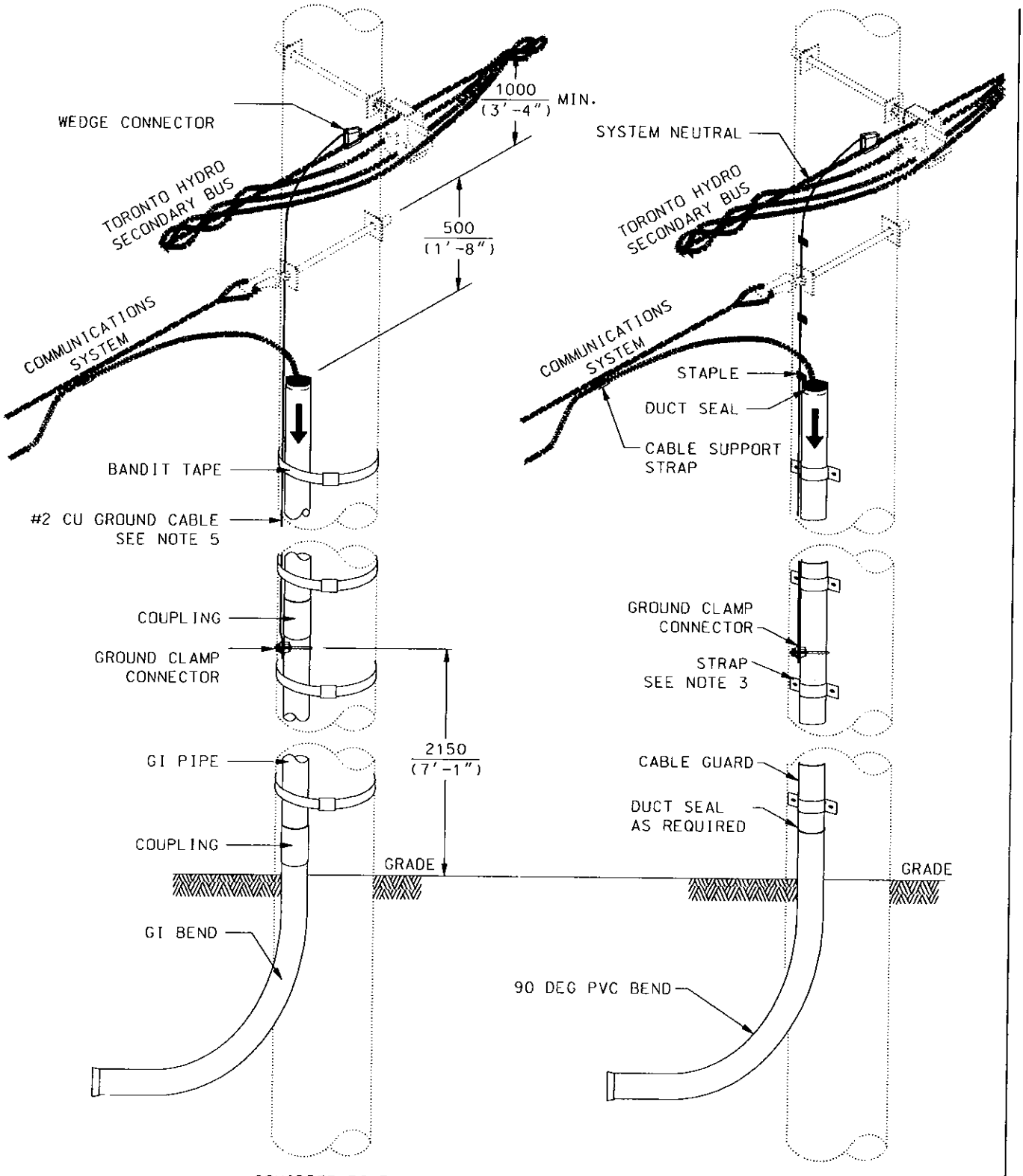
9.7 No deviations from the above listed standards will be permitted without prior written approval from Toronto Hydro.



* PERSONNEL MUST BE QUALIFIED TO WORK IN PROXIMITY TO POWER CONDUCTORS

NOTE:
SEE STANDARDS 03-2100 AND 03-2150 FOR MINIMUM CLEARANCES

DISTRIBUTION CONSTRUCTION STANDARD Foreign Attachments			PERMANENT POLE ATTACHMENTS JOINT USE LOCATIONS ON POLES				
toronto hydro	civil:	electrical: C.P.					
	original issue: 2002-07-04	scale: N.T.S.	rev. 1 Dec 6/06	rev. 2	rev. 3	23-3200	1/1



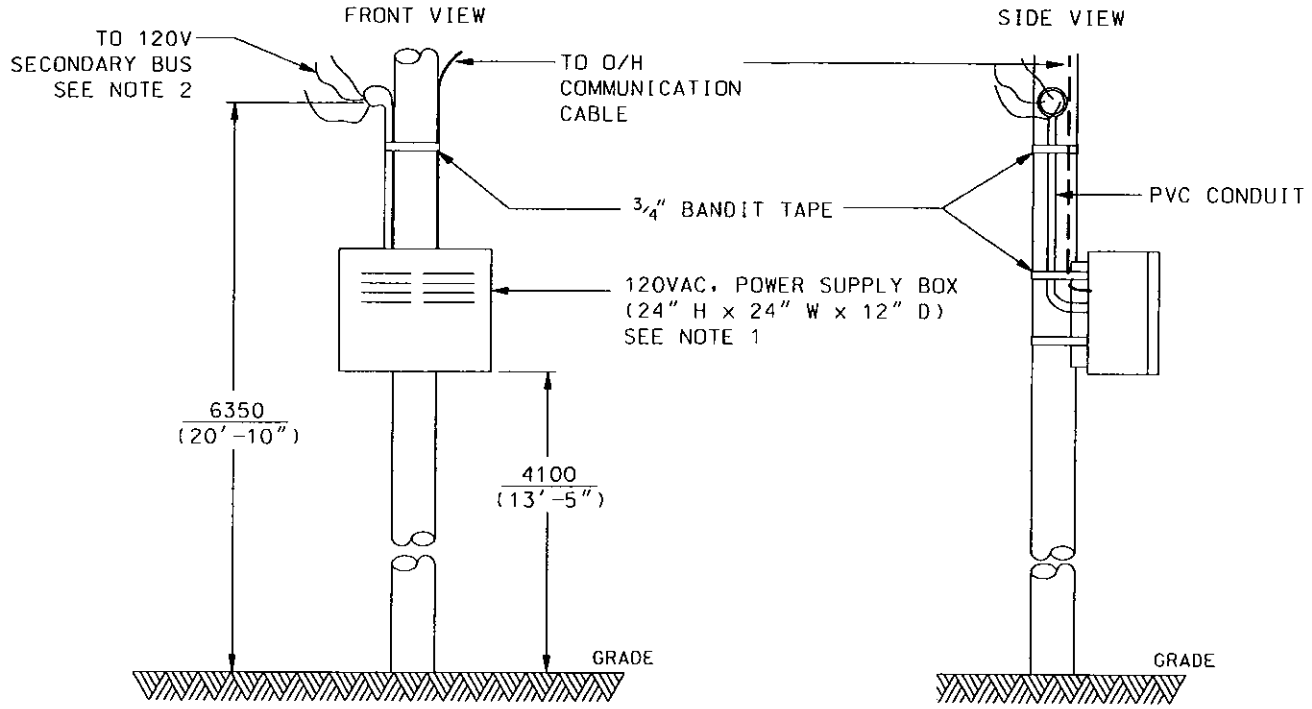
CONCRETE POLE

WOOD POLE

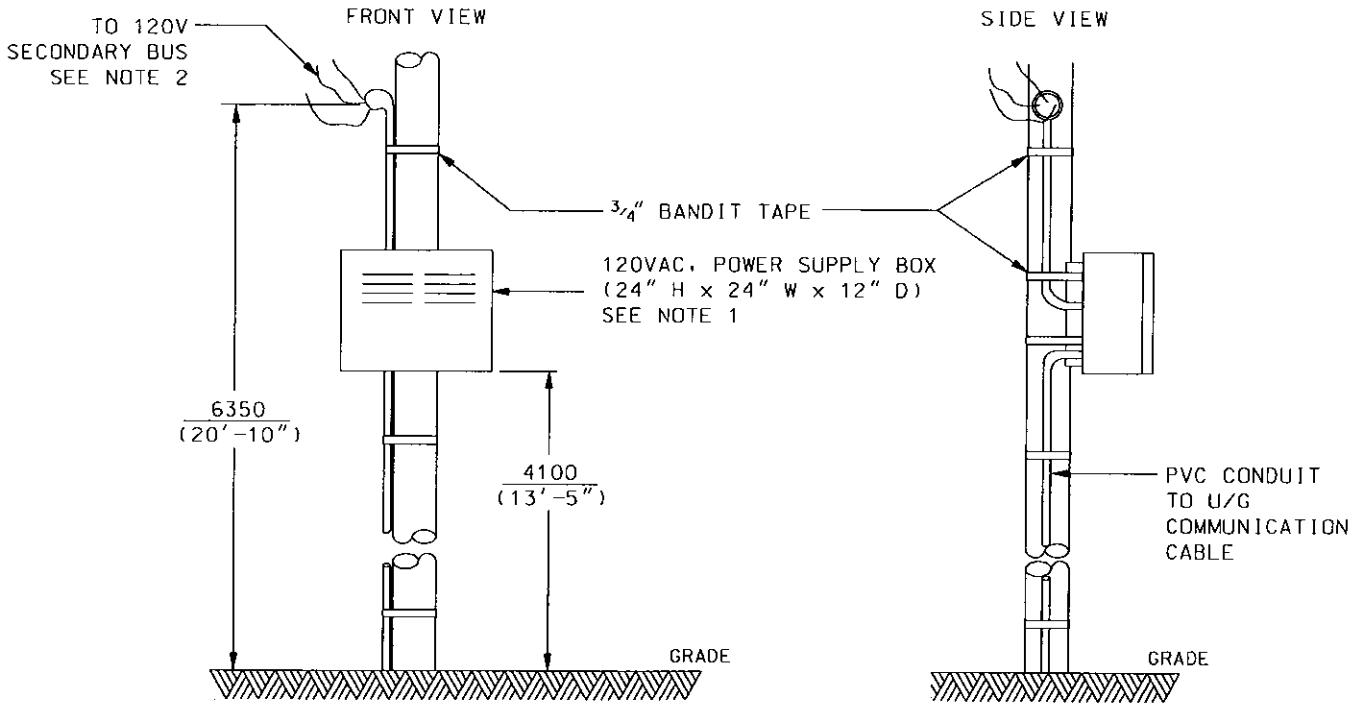
NOTES:

1) ALL HARDWARE IS INSTALLED AND MAINTAINED BY LICENSED OCCUPANT.
2) ALL WIRING MUST CONFORM TO THE REQUIREMENTS OF THE ONTARIO ELECTRICAL SAFETY CODE.
3) BANDIT TAPE CAN BE USED AS AN ALTERNATIVE.
4) CONNECTION TO SYSTEM NEUTRAL TO BE DONE BY TORONTO HYDRO.

DISTRIBUTION CONSTRUCTION STANDARD Foreign Attachments			PERMANENT FORIEGN ATTACHMENT U/G RISER FOR COMMUNICATIONS				
toronto hydro	civil:	electrical:					
	original issue:	scale: N.T.S.	rev. 1	rev. 2	rev. 3	23-3300	1/1



TYPICAL POWER SUPPLY BOX ON POLES (OVERHEAD COMMUNICATION)

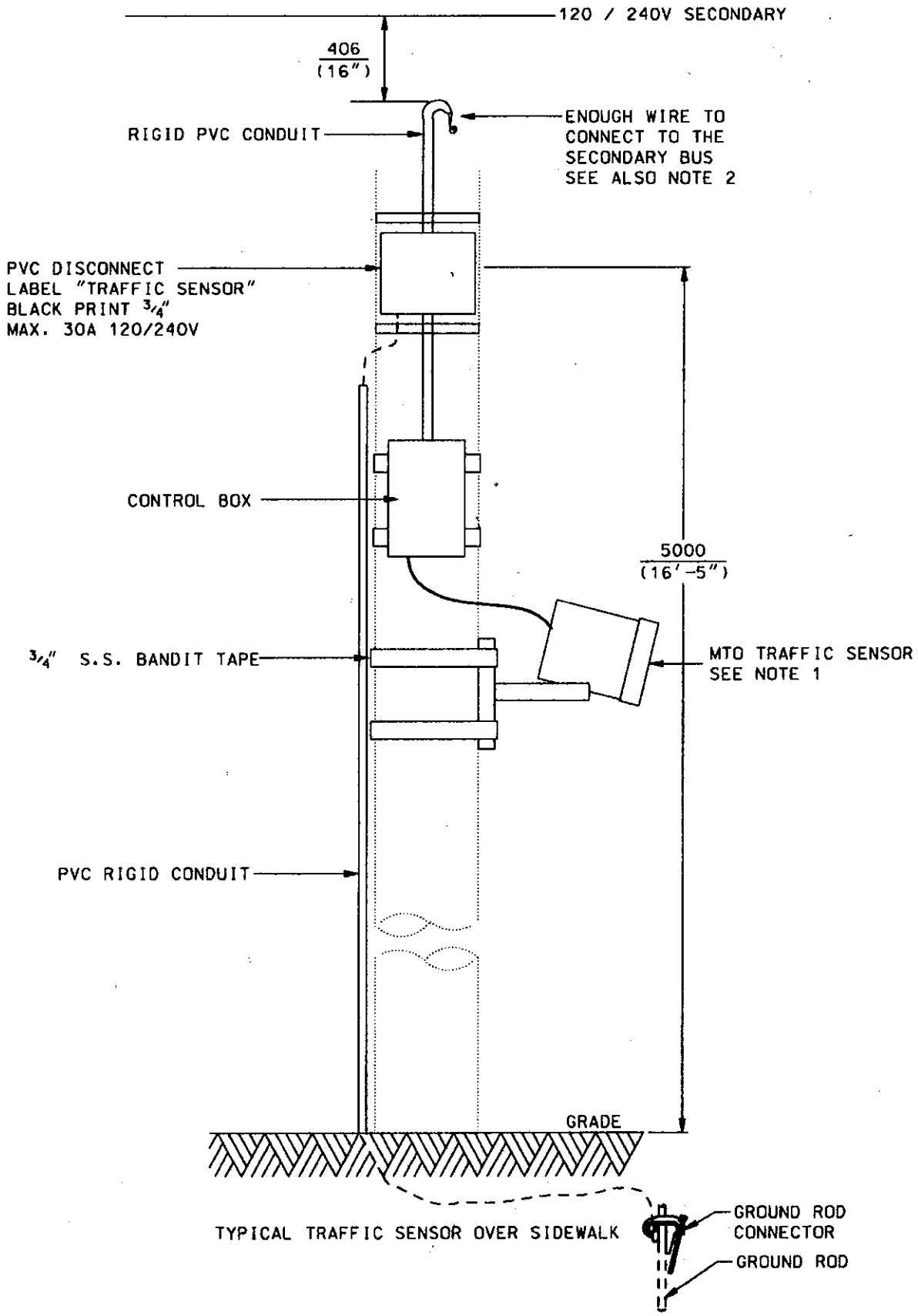


TYPICAL POWER SUPPLY BOX ON POLES (UNDERGROUND COMMUNICATION)

NOTES:

1) POWER SUPPLY BOXES ARE INSTALLED AND MAINTAINED BY LICENSED OCCUPANT.
2) CONNECTION TO THE SECONDARY BUS TO BE DONE BY TORONTO HYDRO.
3) ALL WIRING MUST CONFORM TO THE REQUIREMENTS OF THE ONTARIO ELECTRICAL SAFETY CODE.
4) RISER TO BE STENCILLED AS PER SECTION 21.

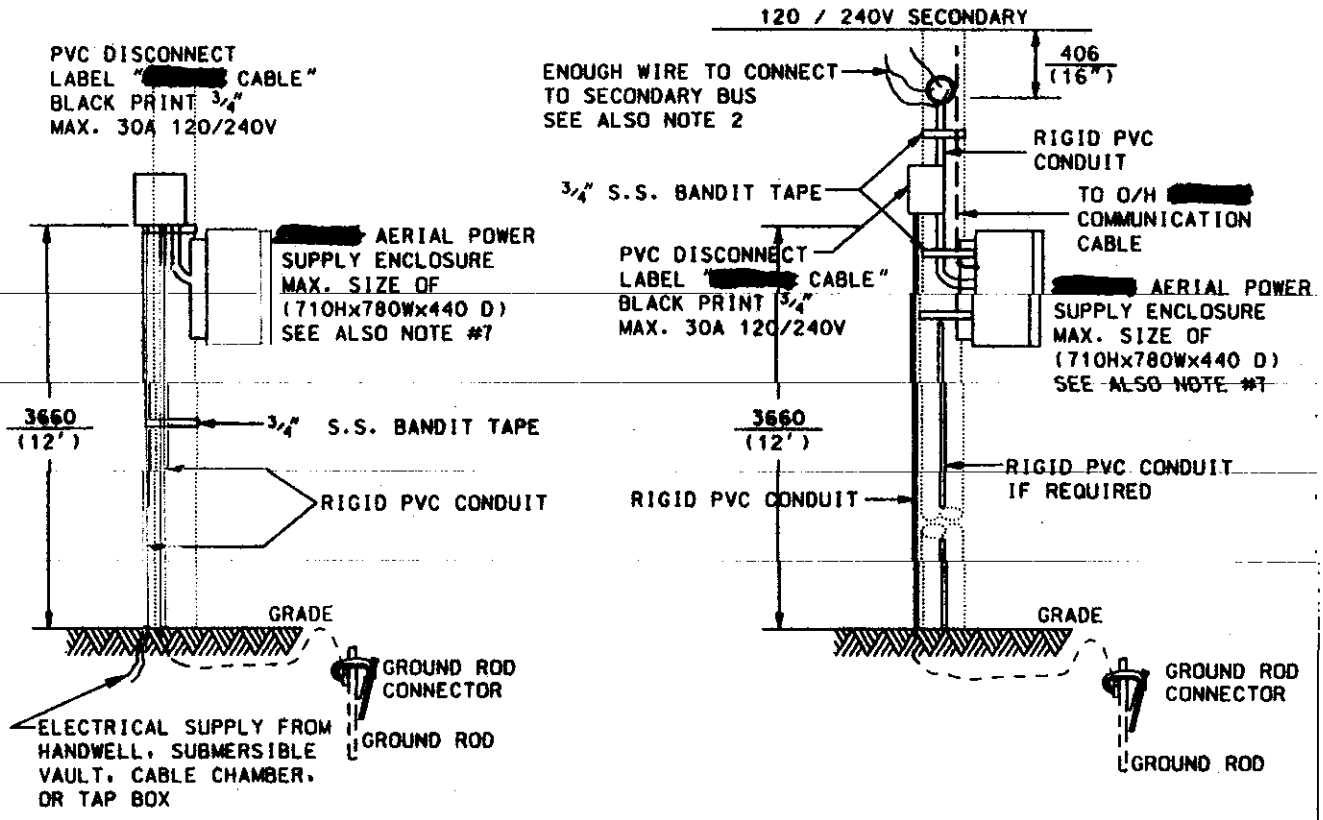
DISTRIBUTION CONSTRUCTION STANDARD Foreign Attachments			PERMANENT FOREIGN ATTACHMENT COMMUNICATION POWER SUPPLY				
toronto hydro	civil:	electrical:					
	original issue:	scale: N.T.S.	rev. 1	rev. 2	rev. 3	23-3400	1/1



NOTES:

1) TRAFFIC SENSORS ARE INSTALLED AND MAINTAINED BY TTC/CITY.
2) CONNECTION TO THE HOUSE LIGHTING SECONDARY TO BE DONE BY TORONTO HYDRO.
3) ALL WIRING MUST CONFORM TO THE REQUIREMENTS OF THE ONTARIO HYDRO ELECTRICAL SAFETY CODE.
4) PERMISSION FOR ATTACHMENT SHALL BE OBTAINED FROM TORONTO HYDRO ASSET MANAGEMENT.

DISTRIBUTION CONSTRUCTION STANDARD Foreign Attachments			OVERHEAD SYSTEM - PERMANENT - OTHER TYPES - TRAFFIC SENSOR FOREIGN ATTACHMENTS				
toronto hydro	civil:	electrical:					
	original issue: Dec 2/03	scale: N.T.S.	rev. 1	rev. 2	rev. 3	23-3500	1/1



TYPICAL [redacted] CABLE EQUIPMENT (1)

NOTES: (1)

1) AERIAL POWER SUPPLY ENCLOSURE TO BE INSTALLED AND MAINTAINED BY [redacted].

2) CONNECTION TO THE HOUSE LIGHTING SECONDARY TO BE DONE BY TORONTO HYDRO.

3) ALL WIRING MUST CONFORM TO THE REQUIREMENTS OF THE ELECTRICAL SAFETY AUTHORITY (ESA).

4) SUPPLY CONDITIONS AND TERMINATION TO BE DETERMINED BY TORONTO HYDRO-ELECTRIC SYSTEM LTD. (THESL).

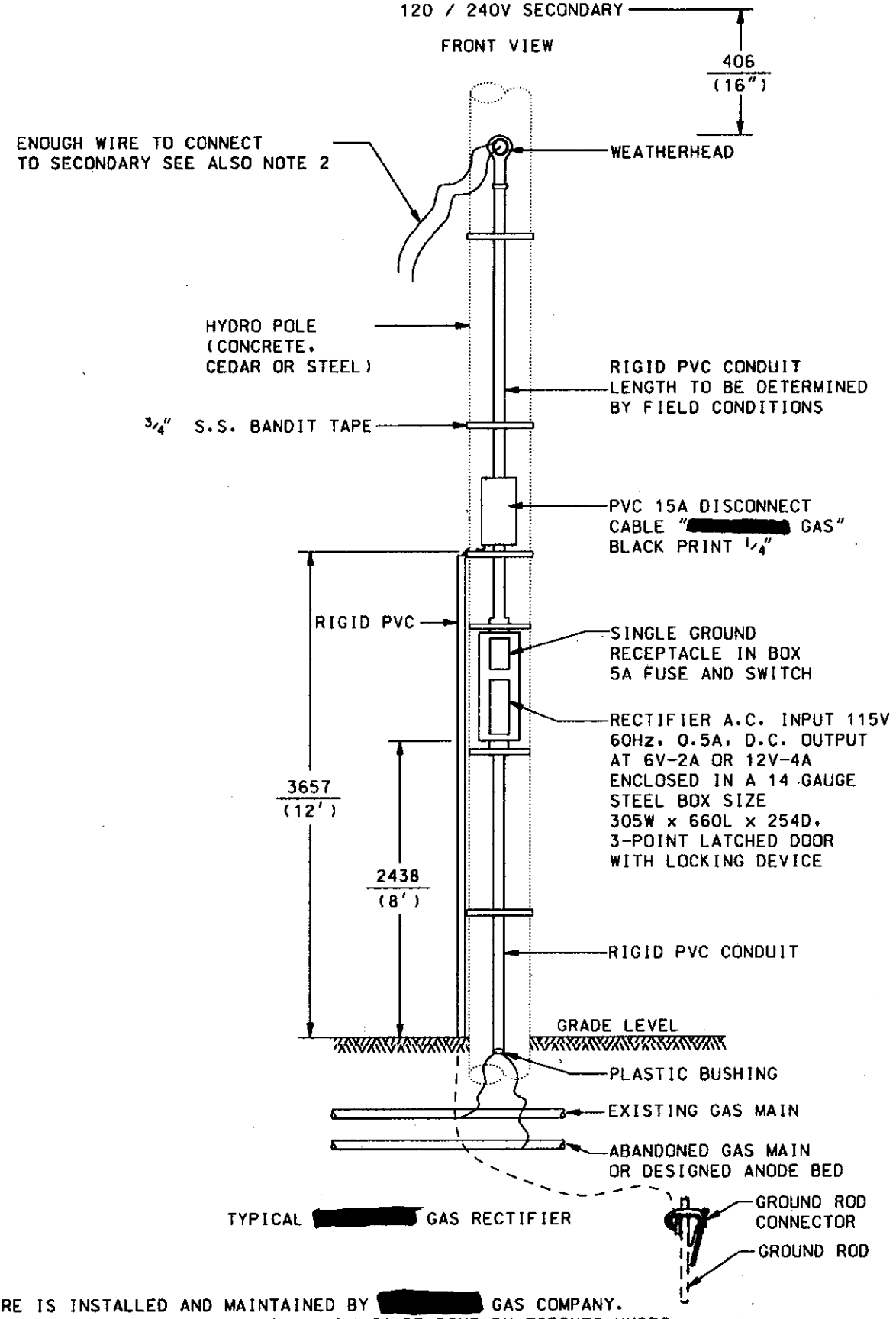
5) PERMISSION FOR ATTACHMENT SHALL BE OBTAINED FROM THESL ASSET MANAGEMENT DEPARTMENT.

6) ATTACHMENT POINT OF [redacted] AERIAL POWER SUPPLY ENCLOSURE SHALL BE 3.66m (12') FROM GRADE.

6) REQUIREMENTS FOR ATTACHING [redacted] AERIAL POWER SUPPLY ENCLOSURE TO THESL POLES:

- POLES SHALL 40', 45' OR 50' HIGH.
- FOR SINGLE CIRCUIT PRIMARY CONDUCTORS POLE TO BE A MINIMUM CLASS 3/F (WOOD/CONCRETE).
- FOR DOUBLE CIRCUIT PRIMARY CONDUCTORS POLE TO BE A MINIMUM CLASS 2/G (WOOD/CONCRETE).
- POLES WILL NOT HAVE TRANSFORMERS OR SWITCHES ATTACHED TO IT.
- POLES TO BE IN GOOD CONDITION.
- CONTACT STANDARDS & MATERIAL DEPARTMENT FOR POLES WITH TTC CABLES OR TTC SUSPENSIONS.
- INSTALLATION MUST BE DONE IN ACCORDANCE WITH ESA, ALL THESL RULES & REGULATIONS, AS WELL AS PROVINCIAL/MUNICIPAL REGULATIONS AND BY-LAWS.

DISTRIBUTION CONSTRUCTION STANDARD Foreign Attachments			OVERHEAD SYSTEM [redacted] AERIAL POWER SUPPLY ENCLOSURE FOREIGN ATTACHMENTS				
toronto hydro electric system	civil:	electrical: C.P.					
	original issue: 2003-12-02	scale: N.T.S.	rev. 1 2004-11-30	rev. 2	rev. 3	23-3550	1/1



NOTES:

1) ALL HARDWARE IS INSTALLED AND MAINTAINED BY [redacted] GAS COMPANY.
2) CONNECTION TO THE HOUSE LIGHTING SECONDARY TO BE DONE BY TORONTO HYDRO.
3) ALL WIRING MUST CONFORM TO THE REQUIREMENTS OF THE ONTARIO HYDRO ELECTRICAL SAFETY CODE.
4) PERMISSION FOR ATTACHMENT SHALL BE OBTAINED FROM TORONTO HYDRO ASSET MANAGEMENT.

DISTRIBUTION CONSTRUCTION STANDARD Foreign Attachments			OVERHEAD SYSTEM - PERMANENT - OTHER TYPE - [redacted] RECTIFIER FOREIGN ATTACHMENTS				
toronto hydro	civil:	electrical:					
	original issue: Dec 2/03	scale: N.T.S.	rev. 1	rev. 2	rev. 3	23-3900	1/1

Standard Practice for the Installation of Communication Cables in Toronto Hydro Underground Ducts

1.0 Scope

This standard pertains to the installation practices to be followed by *Licensed Occupants* for communication cables in Toronto Hydro Electric System Limited underground ducts.

2.0 General

Licensed Occupants shall install, operate and maintain their underground plant in accordance with THESL Specification for Civil Construction Work #CV-CON-01 and Agreement for Licensed Occupancy of THESL Underground Ducts.

3.0 Occupancy Agreement

All telecommunication companies are required to enter into an agreement with THESL for licensed occupancy of the underground ducts. The agreement outlines the terms and conditions under which THESL will lease its ducts.

Toronto Hydro Electric Corporation - Business Support Services are responsible for executing and maintaining the agreements with the telecommunication companies as well as managing the duct leasing process on behalf of Asset Management.

THESL's underground ducts are leased to telecommunication companies with the proviso that should THESL require the use of the duct space for their own purposes, the respective companies will be advised of this fact and be given sixty (60) days notice to remove and relocate their communication cables at their expense.

4.0 Application

Licensees' will make an initial request to Business Support Services indicating their requirements for duct occupancy. Business Support Services will advise whether or not infrastructure capacity is available to accommodate the request and confirm the proposed routing.

Upon receiving preliminary approval from Business Support Services, the Licensee will then be required to submit a set of plan drawings to Business Support Services that shall include the following:

a) The company name, address and contact person.

b) A drawing showing the complete route of the proposed cable installation.
c) The size and type of cable(s) proposed for installation.

1.0 Duct Selection

Ducts used by foreign utilities are usually selected in the middle or top row of the duct bank, whenever possible. The lower rows are to be reserved for THESL primary feeders (27.6kV, 13.8kV or 4kV).

During the preliminary application stages, Business Support Services will consult with Investment Planning concerning future duct capacity requirements needed to meet future demand.

Where possible, all communication cables shall be restricted to one duct within the civil infrastructure. Licensees' will be required to install their communication cable within a 2" inner duct (supplied and installed by Licensee) installed within the THESL duct.

6.0 Installation of Communication Cables within Cable Chambers/Vaults

Contractors of the Licensee must appear on the THESL "Approved Contractors List" before given access to THESL cable chamber or vaults.

The proposed communication cables must not interfere with existing hydro cables in any way. Cables must be tagged and clearly identify the company name and the cable type at all exit points in the cable chambers/vaults. Other attachment conditions are as follows:

a) Communication cables and slack loops are to be securely clipped to the cable chamber/ vault walls as close as possible to the roof. Slack loops are to be limited to 15.0m lengths.
b) No communication cable splice enclosures will be permitted as permanent installations within THESL cable chambers or vaults.

8.0 Communication Cable Risers

All communication cable risers must be tagged clearly on the riser pipe/duct.

If no riser duct/pipe is available from the cable chamber/vault to the riser pole, the Licensee must indicate this requirement in the Permit Request Form drawing. All poles must be tested and approved by THESL prior to granting approval. Supporting of the poles (by THESL) may be required during excavation.

9.0 New Ducts Entering Toronto Hydro Cable Chambers/Vaults

In cases where the telecom companies require the installation of additional new ducts into THESL cable chambers/vaults, the following requirements must be met:

a) Permit Request Form including a drawing must be submitted to Business Support Services.
b) No construction shall commence until written approval has been received.
c) Installation must conform to Toronto Hydro Technical Specification for Civil Construction Work #CV-CON-01.
d) Business Support Services must be given 48 hours notice, prior to construction start to allow for the scheduling of inspection.
e) The telecom company must use a civil contractor that is approved by Toronto Hydro.

10.0 Make-Ready Work

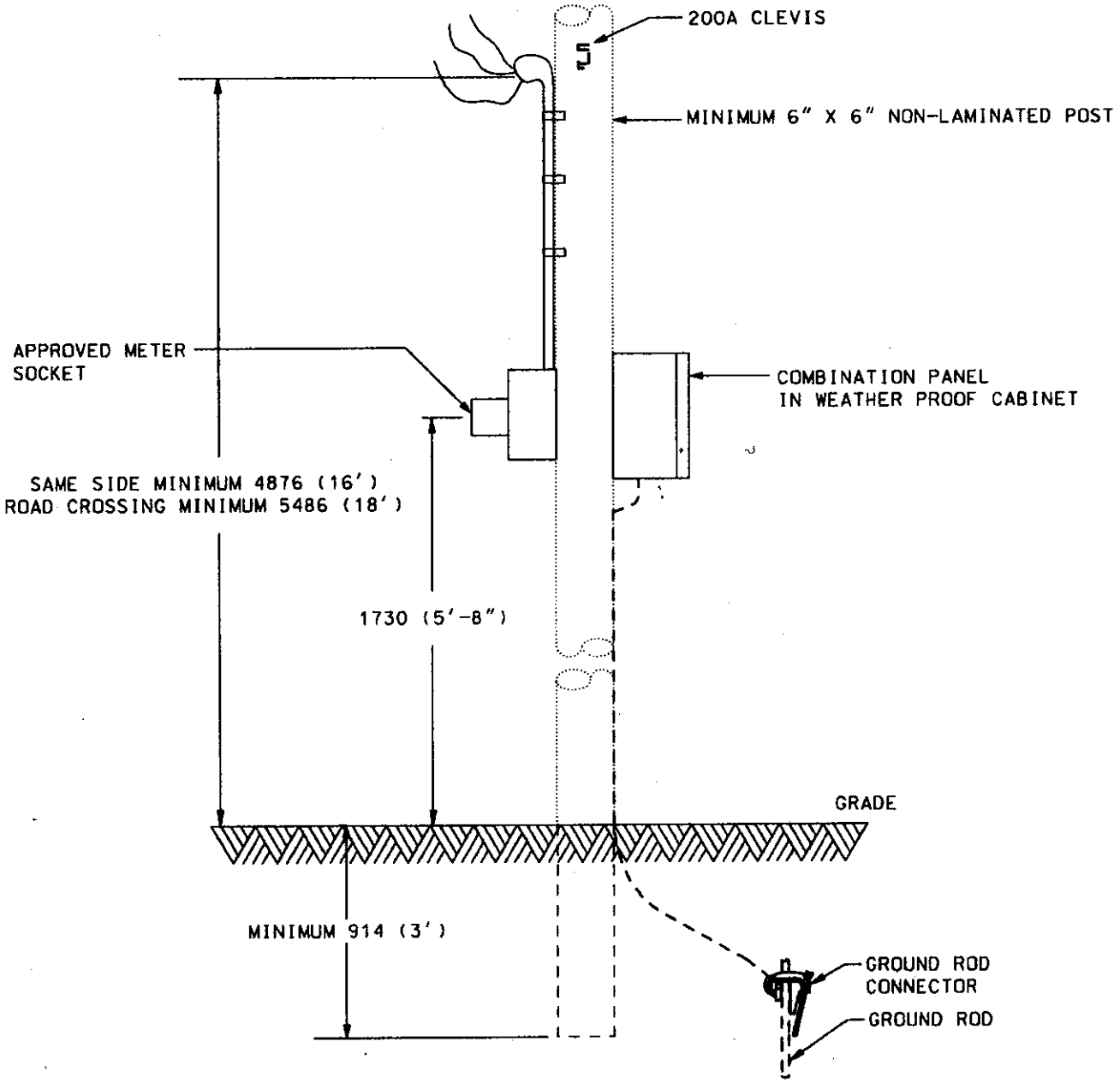
In some instances it may be necessary for THESL to rearrange existing facilities within the cable chambers/vaults to allow for the installation of new telecom cables. This may entail the re-routing or re-racking of existing hydro cables. This work will be performed by THESL at the expense of the telecom company making the request.

Cable chambers containing leaking lead splices or cable ("leakers") must first be repaired by THESL. If this work cannot be performed during normal business hours, the Licensee shall pay for any incremental costs incurred by THESL as a result thereof.

11.0 Customer Owned Civil Infrastructure

All concrete encased and direct buried ducts, cable chambers and electrical distribution vaults located on private property are owned by the customer. THESL have no authority to grant permission for access to this infrastructure. Any spare duct capacity is typically reserved for hydro cables in the event of an emergency.

Telecom equipment is not permitted in customer owned vaults containing THESL electrical distribution equipment.



NOTES:

1) CONSULT TORONTO HYDRO SERVICE INSPECTOR FOR LOCATION.

2) ELECTRICAL SAFETY AUTHORITY CONNECTION AUTHORIZATION AND TORONTO HYDRO CONNECTION FEES ARE REQUIRED PRIOR TO SERVICE CONNECTION.

3) GUY WIRES MAY BE REQUIRED FOR STREET CROSSINGS OR LONG SERVICE WIRE SPANS.

4) CUSTOMER OWN POLE ON PRIVATE PROPERTY.

5) MAX. 200A 120/240V

DISTRIBUTION CONSTRUCTION STANDARD FOREIGN ATTACHMENTS			TEMPORARY SERVICE INSTALLATION 120/240V UP TO 200 AMP SERVICE				
toronto hydro	civil:	electrical:					
	original issue: Dec 2/03	scale: N.T.S.	rev. 1	rev. 2	rev. 3	23-4010	1/1

RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES

INTERROGATORY 4:

Reference(s): Byrne, para. 9 and generally

(a) Describe, in detail, the current THESL standards, policies and procedures that pertain to the attachment, on THESL distribution poles, of:

(i) The equipment box components of a wireless telecommunication pole installation

(ii) The equipment box components of a wireline telecommunication pole installation

(iii) The fibre component of a wireless telecommunication pole installation

(iv) The fibre component of a wireline telecommunication pole installation

(b) Describe material changes in the past five years to the standards, policies and procedures that pertain to each of the above-referenced categories of equipment.

(c) Describe, in detail, the step-by-step process for processing applications for attachment permits in respect of each of the categories of equipment described in (a).

RESPONSE:

(a) Please refer to Tab 5.1, Schedule 1, Attachment 1.

(b) Please see the Issue and Revision notes and dates in the footers of the pages of THESL Standards Section 23 in Tab 5.1, Schedule 1, Attachment 1.

(c) No material changes have occurred in the last five years.

(d) Please see Ms. Byrne's Affidavit, paragraph 18.

RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES

INTERROGATORY 5:

Reference(s): Byrne, paras. 4 and 41-44

Ms. Byrne states that "the configuration, condition and congestion of the THESL poles today is highly varied." Ms. Byrne goes on to conclude that the variability of wireless and DAS equipment and attachment configurations creates safety concerns and causes other issues.

(a) Is it THESL's position that the attachment of wireless equipment to THESL poles increases the level of congestion on THESL poles?

(b) Explain, in detail, how the attachment configuration of wireless telecommunication equipment differs from the attachment configuration of wireline telecommunication equipment, including the attachment of equipment enclosures (i.e., boxes) and fibre.

(c) Describe the training received by THESL employees and contractors, who perform work on distribution poles and lines, in respect of the different and various equipment configurations that they are likely to encounter on a THESL pole.

(d) Describe the material ways in which the training referred to in (c), differs in respect of a wireless telecommunication pole installation and a wireline telecommunication pole installation.

RESPONSE:

(a) Yes.

(b) Please see Ms. Byrne's Affidavit, paragraphs 34 through 50.

(c) THESL employees who do this type of work are Certified Power Line Persons. The

RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES

Certified Power Line Person is a 54-month program administered by THESL. It is recognized by the Ministry of Training, Colleges and Universities (MTCU) and is designated as the Power Line Technician Program (a Red Seal Program). Toronto Hydro was granted training delivery status by the MTCU for the Power Line Technician Program in 2008. Employees also receive ongoing training for various Health and Safety and operational matters, such as changes to legislation or Standards. In the course of this training, THESL employees are trained to identify and work around NDAs, which include telecommunications attachments.

(d) Please see the response in (c) above.

RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES

INTERROGATORY 6:

Reference(s): Byrne, para. 4

(a) Are the poles from each of the six former municipal electric distribution utilities subject to the same engineering and construction standards?
(b) If the response to (a) is "no", compare and contrast the various applicable legacy standards.
(c) In the event that a THESL standard conflicts with OR 22/04, CSA C22.3 No. 1, or Ontario OSHA, which standard applies?
(d) Does THESL attempt to reconcile conflicting standards in the field? If so, explain the process by which this is achieved and the time it takes to correct the conflict.
(e) Describe and explain how legacy variations in distribution equipment configurations etc. are managed *vis à vis* the THESL employees and contractors that work on THESL poles.
(f) Is it THESL's position that such legacy variations constitute a safety issue or concern?

RESPONSE:

(a) No. Existing "legacy" assets are not expected to meet current standards, and accordingly, THESL performs like-for-like maintenance on legacy assets without rebuilding to current standards. Any new construction requiring an incremental change to the asset requires assessment of the extent to which current engineering and construction standards apply, and replacement of a legacy asset is done to current THESL Construction Standards.

RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES

(b) The relevance of such information to this proceeding is minimal. In any event, the onerous nature of generating this information is not justified by its low probative value. THESL cannot provide a meaningful response to this interrogatory within the timelines provided in this proceeding.

(c) O.Reg. 22/04 authorizes the creation of company standards. If a conflict arose between the OSHA or CSA that THESL could not resolve itself, given its ability to create company standards, it would review the specific situation, and could ask for input from other members of the industry, including ESA, the MOL or could ask CSA to review the conflict and propose a resolution through its standards-making processes. As a general matter, the ESA, MOL and the CSA do not overlap in their subjects: ESA oversees the legislation for the safety of the public related to the electricity distribution system, MOL oversees the legislation for worker health and safety, and the CSA publishes standards for design, construction, and maintenance of the electricity distribution system.

(d) Please see the response in (c) above. THESL employees are expected to follow THESL Standards when conducting their work. If THESL employees have any concerns when performing work, they are expected to follow established protocols with regard to questions about job design, or Standards, or unsafe work concerns.

(e) THESL employees gain experience on the various existing assets during their training and apprenticeship, and through their ongoing work experiences. For example, both CPLP apprentices, and staff in groups that performance emergency response, are rotated across the city to gain, and maintain their knowledge base.

RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES

(f) No. As stated in Ms. Byrne's affidavit at paragraph 4 it is THESL's position that such legacy assets materially contribute to the way in which the configuration, condition and congestion of THESL Poles today is highly varied.

RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES

INTERROGATORY 7:

Reference(s): Byrne, para. 4

Ms. Byrne states that "the configuration, condition and congestion of the THESL Poles today is highly varied."

(a) How are legacy variations (i.e., different distribution configurations and varying standards on poles) documented and tracked?

(b) What in THESL's view, is an acceptable level of congestion in respect of all "zones" on a pole.

(c) Describe the basis upon which THESL relies to determine when a pole exceeds acceptable levels of congestion.

(d) Provide a breakdown, in tabular form, for the THESL poles (140,000) and the THESI poles to be transferred to THESL (40,000), that shows how many poles are at capacity in terms of the acceptable level of congestion (described in (b)) and how many poles have capacity available to accommodate new attachments.

(e) How is the age and condition of poles tracked and managed to ensure that poles are replaced at the end of their useful life?

(f) If age, condition and congestion (loading) are not tracked on a pole by pole basis, explain how THESL decides when to replace a pole?

(g) Does THESL visually inspect each pole before a decision is taken to replace it? If so, how often are all 140,000 poles inspected?

RESPONSE:

(a) Legacy asset installations may be documented in construction drawings from the time of the installation. There may also be documented Standards from the former

RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES

company. THESL asset information is contained in computer system databases and programs, such as our geographical information system.

(b) The THESL Standards give the approved configurations for conductors or other items installed on a pole.

(c) THESL follows its own Standards for construction in the ordinary course.

(d) THESL records for pole attachments, based on current invoicing, show:

Telecommunications: 83,662 pole attachments

Other commercial: 1,332

THESL does not have records that capture the specific number of attachments on each given distribution pole, nor does it have precise records regarding the number of traffic attachments, police cameras or temporary decorative attachments put up by business improvement areas on its primary distribution poles. THESL is in the process of gathering such data in the ordinary course, but due to the time-consuming nature of the project, it is not possible to have this data available for the purposes of the present proceeding.

Streetlighting poles – currently THESI assets - were erected for a different purpose and have different physical characteristics than THESL's distribution poles, which carry primary voltage. THESL only received approval from the Board to transfer certain streetlighting poles from THESI to THESL in August 2011, and the related transactions have not occurred yet. Accordingly, THESL is currently in the process

RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES

of transitioning these assets, including assessing the appropriate standards, safety, operational and other considerations that apply in respect of streetlighting poles. It would be premature for THESL to speculate on the considerations that would apply to those streetlighting poles. Further, streetlighting poles are not essential facilities for wireless attachers and the CCTA Decision does not apply to them for those wireless attachers' purposes.

(e) THESL has various maintenance programs for preventive, predictive and corrective or emergency maintenance, including asset condition assessments.

(f) THESL will replace a Pole if under any of the various maintenance programs, or through any other means, a pole is found to be in unacceptable condition. THESL Poles may also be replaced for other reasons. For example, refer to page 37, Section 3.3.7 in the EB-2011-0144 THESL Evidence, Exhibit D1, Tab 7l, Schedule 6 that discusses the Rear Lot and Box Construction Conversion capital programs. This information can be found on the Board's website at the following weblink: http://www.rds.ontarioenergyboard.ca/webdrawer/webdrawer.dll/webdrawer/search/rec&sm_udf10=eb-2011-0144&sortd1=rs_dateregistered&rows=200

(g) Not necessarily. For example, where THESL is required to move its poles for the purposes of road widenings, not every THESL Pole would be visually inspected.

RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES

INTERROGATORY 8:

Reference(s): Byrne, paras. 6, 20, 32 and 49

(a) When adding new conductors, under what circumstances does THESL:

(i) Replace the existing pole with a new pole of larger diameter

(ii) Replace the existing pole with a new pole of the same diameter

(iii) Install the conductor on a cross-arm

(b) Are the current and forecast levels of applications for attachment permits taken into account when deciding:

(i) Whether to replace an existing pole with a new pole

(ii) The dimensions (i.e., height diameter) of new pole replacements

(c) If the response to (b) is "yes", explain how the demand for attachment space is taken into account in deciding when to replace a pole.

RESPONSE:

a) When adding new conductors, THESL:

(i) replaces the existing pole with a new pole of larger diameter if adding the proposed conductors will exceed the loading capacity of the existing pole outlined in THESL standards.

(ii) replaces the existing pole with a new pole of the same diameter if the existing pole is determined to not be sound via a site inspection, and the diameter of the THESL Pole is sufficient for the proposed loading capacity as outlined in THESL standards.

(iii) installs the conductor on a cross-arm under one of three common situations:

- Where the conductors change direction

RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES

- Where the conductors dead end at the pole
- Where there are conductor run-offs

(b) Current attachments are taken into account when replacing a THESL Pole, including the appropriate dimensions for the new THESL Pole. Forecast levels of applications regarding NDAs on THESL Poles are considered by THESL for the purposes of resource allocation in general, but are not taken into account when deciding whether to replace an existing THESL Pole with a new pole because those forecasts are not provided by attachment customers on a pole-by-pole basis.

(c) Existing attachments are provided for when replacing THESL Poles. Further, THESL Standard 23-3200 allows for up to three telecommunications attachments in the communications space (see Tab 5.1, Schedule 1, Attachment 1). This standard is taken into account during the process of THESL Pole replacement such that new THESL Poles are built to accommodate up to three telecommunications attachments in the communications space.

RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES

INTERROGATORY 9:

Reference(s): Byrne, para. 6

a) If a taller pole were to replace an existing pole, is there an objective standard or regulation (i.e., ESA, CSA, etc.) that "allocates" the additional height to the distribution zone?

b) What is the height of the communications space on taller poles and how many attachments can taller poles hold? Please answer by reference to all available pole sizes and compositions and by reference to the standards and regulations listed above in (a).

c) Could this additional space be used to increase the size of the communication space without violating any objective standards and regulations? If not, please describe how such standards and regulations would be violated.

d) Does THESL have a current standard that would limit the expansion of the communications space instead of the distribution zone? Please specify by reference to THESL standards.

RESPONSE:

a) While the "objective standards or regulations" do not explicitly speak to allocation of additional pole height, CSA C22.3 No. 1, section 5.10, "Joint-use clearances and separations — Supply and communication plant", provides required clearances and separations.

b) The communications space is consistently two feet on THESL Poles, regardless of the height or type of the pole. THESL Standard 23-3200 allows for up to three

RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES

telecommunications attachments in the communications space (see Tab 5.1, Schedule 1, Attachment 1).

c) In determining the size of the communications space, THESL follows and applies the CCTA Decision, which provides that the communications space on THESL Poles is limited to two feet for the purposes of accommodating wireline attachments, and computing the rate that applies to those attachments.

d) Please see THESL Construction Standards 23-3100 and 3200, attached as Tab 5.1, Schedule 1, Attachment 1. The THESL Standards limit the number of telecommunication attachments per pole to three (within the two feet of communications space).

RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES

INTERROGATORY 10:

Reference(s): Byrne, para. 6

a) Exhibit A is a sketch of a "typical pole". Provide a similar sketch of the taller poles referred to in paragraph 6, including the dimensions of each "zone" on the pole, as defined or delineated in an objective standard. Identify each such objective standard.

RESPONSE:

THESL is not aware of any such "sketches" being provided in "objective" standards.

RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES

INTERROGATORY 12:

Reference(s): Byrne, para. 8

Ms. Byrne describes some of the distribution equipment attached to THESL poles, including transformers.

a) Describe the physical specifications of each such transformer (e.g. dimensions, weight, etc.) and the method and configuration of each such transformer.

b) Does THESL employ bolts to attach transformers and other distribution equipment?

c) Provide the combined weight and overall loading of: (i) a pole with three transformers; and (ii) a pole with DAS equipment and antenna system. Please answer (ii) by reference to the DAS drawings submitted by DAScom in respect of the DAScom Toronto DAS network.

RESPONSE:

(a) The requested information regarding THESL overhead transformers attached to THESL Poles is provided as Attachment 1 to this interrogatory response.

(b) Yes.

(c) THESL understands from CANDAS' Larson evidence (Exhibit "D", PDF page number 60 of 313) that the typical weight of DAS equipment is given as 89.65kg. The range of weight for THESL transformers is between 380kg and 725kg, meaning that three have a combined weight of between 1140kg and 2175 kg.

Stock Code#	Phase	Size (in KVA)	Primary Voltage (in V)	Secondary Voltage (in V)	Weight (kg)	Height of bushing (mm)	Height of tank(mm)	Overall Height	Diameter (mm)
6611243	1	100	13860GRDY/8000	120/240	600	311	1040	1351	610
6611334	1	100	27600GRDY/16000	120/240	600	311	865	1176	520
6611344	1	100	27600GRDY/16000	347/600Y	597	311	865	1176	520
9656530	1	100	4160Y/2400	120/240	600	0	1040	1040	610
6611345	1	167	27600GRDY/16000	347/600Y	725	311	1040	1351	610
6611241	1	50	13860GRDY/8000	120/240	400	0	1040	1040	520
6611332	1	50	27600GRDY/16000	120/240	400	311	865	1176	520
6611342	1	50	27600GRDY/16000	347/600Y	400	311	865	1176	520
9656529	1	50	4160Y/2400	120/240	390	0	865	865	520
6611363	1	100	27600Y/16000	600	400	462	890	1352	610
6611115	1	100	4160Y/2400	600	600	311	890	1201	610
6611134	1	100	4160Y/2400	120/240V	595	0	890	890	610
6611142	1	100	4160Y/2400	347/600Y	600	0	890	890	610
6611103	1	100	4160 GRDY/2400	120/240	600	311	890	1201	610
6611224	1	100	13860Y/8000	600	725	311	890	1201	610
6611206	1	167	13860GRDY/8000	120/240	725	311	1040	1351	610
6611214	1	167	13860GRDY/8000	347/600Y	725	311	1040	1351	610
9656450	1	167	27600Y/16000	600	400	462	1040	1502	610
6611125	1	167	4160Y/2400	600	725	0	1040	1040	610
6611135	1	167	4160Y/2400	120/240	725	0	1040	1040	610
6611143	1	167	4160Y/2400	347/600Y	725	0	1040	1040	610
6611305	1	167	27600GRDY/16000	120/240	725	462	1040	1502	610
6611315	1	167	27600GRDY/16000	347/600Y	700	462	1040	1502	610
6611105	1	167	4160 GRDY/2400	120/240	700	311	1040	1351	610
6611226	1	167	13860Y/8000	600	725	311	1040	1351	610
6611113	1	50	4160Y/2400	600	390	311	865	1176	520
6611101	1	50	4160 GRDY/2400	120/240	380	311	865	1176	520
6611222	1	50	13860Y/8000	600	725	311	865	1176	520
6611321	1	167	27600GRDY/16000	4160Y/2400	750	462	1040	1502	610
6611204	1	100	13860GRDY/8000	120/240	588	311	890	1201	610
6611213	1	100	13860GRDY/8000	347/600Y	600	311	890	1201	610
6611123	1	100	4160Y/2400	600	600	0	890	890	610
6611304	1	100	27600GRDY/16000	120/240V	600	462	890	1352	610
6611314	1	100	27600GRDY/16000	347/600Y	575	462	890	1352	610
6611117	1	167	4160Y/2400	600	725	311	1040	1351	610
6611202	1	50	13860GRDY/8000	120/240V	380	311	865	1176	520
6611211	1	50	13860GRDY/8000	347/600Y	404	311	865	1176	520
6611121	1	50	4160Y/2400	600	390	0	865	865	520
6611132	1	50	4160Y/2400	120/240	390	0	865	865	520
6611302	1	50	27600GRDY/16000	120/240	390	462	865	1327	520
6611312	1	50	27600GRDY/16000	347/600	380	462	865	1327	520

RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES

INTERROGATORY 14:

Reference(s): Byrne, General

a) Is it THESL's view that erecting new poles in a public right-of-way is a viable alternative to using existing utility poles for wireless attachments?

b) If the response to (b) is "yes", explain the basis of this view.

RESPONSE:

(a) Please see the response in Tab 5.3, Schedule 27.