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Civil Contractor Qualifications
To Work On or Around
Hydro Ottawa Electrical
Underground Distribution System

REVISION SHEET

Revision	Description of Change	Date	Initial
0	Original Document	2003-09-29	cp/csm
1	Referenced H&S and procurement requirements. Classified types of UG civil contractors.	2013-02-01	kp/csm
2	Revised Schedule A title	2013-05-28	kp/csm
3	Revised Table 2, Table 3, and trade qualifications	2017-05-18	md/csm/bh
4	update for becoming qualified	2021-05-03	mw/mc

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1. Introduction

Hydro Ottawa Limited requires competent contractors when working On or Around the Hydro Ottawa Limited distribution system. This procedure specifies the contractor's craftsmanship requirements for underground civil activities, public and worker safety, as well as meeting the requirements of:

- Ontario Reg. 22/04
- ESA / TSSA Guideline for Excavation in the Vicinity of Utility Lines.
- OEB Alternate Bid definition for contractors
- Public Road Authority

2. References

City of Ottawa –By-law No. 2003-445: Road Activity

Electrical Safety Authority/Technical Standards and Safety Authority - Guideline for Excavation in the Vicinity of Utility Lines

Hydro Ottawa - ECS0012: Conditions of Service

Hydro Ottawa - ESG0001: Construction Verification Program (CVP)

Hydro Ottawa – POL-ENV-001: Environmental Policy

Hydro Ottawa - PRO-MS-008: Contractor Management Program

Hydro Ottawa - WI-MS-002: Contractor OHSE Requirements

Infrastructure Health and Safety Association (IHSA) - Electrical Utilities Safety Rules (EUSR), (<http://www.ihsa.ca>)

Ontario College of Trades and Apprenticeship Act

Ontario Energy Board: Distribution System Code

Ontario Government: Occupational Health and Safety Act

Ontario - Regulation 22/04: Electrical Distribution Safety Regulation

Ontario – Regulation 213/91: Construction Projects

3. Scope

This procedure will cover the qualifications and minimum experience requirements for a Hydro Ottawa Limited approved or qualified contractor. It will also identify which contractor can perform specific types of work as it relates to Hydro Ottawa Limited or a 3rd Party (eg. developer, homeowner, other utility). Refer to Schedule C for Civil Contractor Type Requirements.

These qualifications are only one component of several in obtaining “Hydro Ottawa Approved Contractor” status with Hydro Ottawa Limited for a specific type of work. There are several components within the “Hydro Ottawa Limited Approved Contractor” certification, which vary depending on the type of work.

These components are:

1. Liability;
2. Craftsmanship;
3. Safety and Environmental, and;
4. Security Clearance.

For the installation and maintenance of civil structures in Hydro Ottawa's Limited electrical underground distribution system, both the liability and craftsmanship components are required. The craftsmanship component for Hydro Ottawa Limited of an “Hydro Ottawa Limited Approved Contractor” shall be comprised of the certification around underground and overhead electrical systems, experience (through references) working in the relevant electrical environment, required tools & equipment.

This document outlines the requirements a contractor needs to understand when working on or around Hydro Ottawa Limited underground system or when applying to become a Hydro Ottawa Limited approved

or qualified contractor to install and maintain civil structures in Hydro Ottawa's Limited electrical underground (duct & cable chambers) distribution system.

Only Hydro Ottawa Limited Approved Contractors can work in the energized underground system. Specifically, Section 6 covers the minimum trade certification and experience required for such work.

This specification does not cover the installation or maintenance of fibre optic cables in Hydro Ottawa Limited electrical underground (duct & cable chambers) distribution system that is energized.

This working procedure does not cover mutual aid work where another distribution utility is assisting Hydro Ottawa and Hydro Ottawa has provided competent staff to oversee the work of the mutual aid utility(s).

4. Definitions, Abbreviations, and Acronyms

"3rd Party Plant" means other utilities authorized in the Right-Of-Way (i.e Bell, Rogers, Natural Gas, street lighting, traffic, city parks, etc.).

"Alternate Bid" has the meaning ascribed in its Conditions of Service (ECS0012).

"Around" means to locate existing Hydro Ottawa cables/conductors and structures by non-mechanical methods (i.e. hand digging or equivalent) within 1.5 metres underground or 3 metres overhead and where no handling or undermining of cables, poles, anchors, or other electrical structures will be involved or permitted.

"Daylighting" means the exposure of underground utility infrastructure by minimally intrusive excavation practices to ascertain precise horizontal and vertical position or other attributes

Note: Daylighting may also be referred to as "potholing" or "creating a test hole"

"Demonstrated" means that Hydro Ottawa has evaluated the contractor on their performance to carry out specific tasks or to construct electrical systems, structures, or equipment which may be in the vicinity of high voltage cables/conductors. Each task is to be evaluated and documented by Hydro Ottawa as proof of competency for that task.

"Directional Boring" means dislodging or displacement of ground material (eg. soils or rock) by a rotating auger drill string or torpedo to produce a hole called a bore.

"Greenfield" means an un-developed or un-serviced area where utility infrastructure is required to be installed (i.e. roads, sewer, water, and utilities).

"Hold Off" means an electrical device having its operation restricted to previously agreed limits by the placement of a hold off tag. Hold Offs shall only be held by a certified representative of the contractor. Hold Off is a specific process within the electrical utility Work Protection Code.

"HOL" means Hydro Ottawa Limited

"Hydro Ottawa Limited (HOL) Approved Contractor" has the meaning ascribed in its Conditions of Service (ECS0012).

"Hydro Ottawa Limited (HOL) Qualified Contractor" has the meaning ascribed in its Conditions of Service (ECS0012).

"Infill" has the meaning ascribed in its Conditions of Service (ECS0012).

"Integral" has the meaning ascribed in its Conditions of Service (ECS0012). Operation, maintenance, repairs, or minor replacement shall be undertaken on Integral equipment by Hydro Ottawa. ESA permits are taken for both planned and emergency work; Referenced from Hydro Ottawa Conditions of Service Section 4 for Definitions.

"**On**" means to physically break into/or handle existing cable/conductor or electrical structure.

"**Primary**" means cables/conductors with a voltage between 750 volts and 50,000 volts.

"**Private Property**" means properties off the public road allowance or other Hydro Ottawa limited Right of Ways (e.g. Easement).

"**Public Contractor**" refers to a contractor or person who has not been evaluated for quality, craftsmanship, health, safety, environmental or financial stability by Hydro Ottawa. Where the Public contractor is working within the public road allowance, the contractor shall be bonded with the road authority or be working directly for a utility that has rights to the within the public road allowance.

"**Secondary**" means cables and conductors with a voltage less than 750 volts.

"**Structures**" mean manholes, switching manholes, 1 & 3 phase transformer pads, concrete duct bank, direct buried ducts, poles, and anchors;

"**Supervision**" means when Hydro Ottawa or its agent reviews the work only with respect to the quality Around/On Hydro Ottawa existing plant.

"**Undermining**" means to remove the sub-base or undisturbed soil from beneath the pole, anchoring, underground cable, or electrical structure for placement of utilities or other structures.

"**Utility Coordination Agreement**" means an agreement between HOL and the road authority for the road authority to install new de-energized specific HOL structures to assist coordination with a specific road project.

5. Contractor Requirements

The requirements below apply to both an HOL Approved Contractor, who is hired directly by HOL, and a HOL Qualified Contractor, who is hired by a 3rd party. The HOL Approved Contractor can work On or Around HOL civil plant were as the HOL Qualified Contractor can only work around HOL civil structures.

Please note that only HOL Approved Contractor can work On HOL or integral energized cables and are hired directly by HOL unless otherwise authorized in writing by HOL.

Once approved, the contractor cannot transfer its HOL approval to an affiliate, subsidiary, subcontractor, or hiring company. HOL's Approved Contractors are responsible to manage and approve their subcontractors through their contractor management program.

These qualifications are established by HOL and may change from time to time. It is the contractor's responsibility to remain current with the latest version of this specification.

Although this procedure is directed towards the contractor's craftsmanship there are several HOL requirements that the contractor must provide to become and maintain the HOL Approved Contractor or HOL Qualified Contractor status, which are:

5.1. Health and Safety

For HOL's Contractor Safety Management Program refer to PRO-MS-008: Contractor Management Program and WI-MS-002: Contractor OHSE Requirements.

In addition, the HOL Approved Contractor shall provide HOL access to all tools (including personal protective equipment), vehicles (including MTO truck signage), tools/equipment, sponsor's vehicle signage, etc. for inspection and approval of their use.

5.2. Environment

HOL's Approved contractor has an environmental responsibility to protect the environment as per HOL environment policy POL-ENV-001.

5.3. Financial

HOL's Approved Contractor must be in good financial standing and pass a credit check.

5.4. Craftsmanship

As well as the requirements set out in this procedure, HOL will review all references as it pertains to an HOL Approved Contractor or HOL Qualified Contractor craftsmanship. HOL will also review major equipment used to construct HOL underground civil structures.

5.5. Discipline

Once a HOL Approved Contractor or HOL Qualified Contractor has been approved or qualified by HOL for a specific year and type of work, the contractor can be placed on probation or removed from the approval or qualified status for specific misconduct – see HOL's contractor discipline process for more information.

5.6. Duty to Report

The HOL Approved Contractor or HOL Qualified Contractor has ongoing responsibilities to report to Hydro Ottawa various contractor status requirements and field safety and access issues as noted in the Request for Proposal documents.

5.7. Security Clearance

Due to specific access locations to sensitive Hydro Ottawa and customer facilities maybe required for the underground work, the contractor shall obtain federal security clearance to Level II when requested.

5.8. Construction Verification Program (CVP)

Where the contractor is required to inspect the cable installation under Hydro Ottawa's CVP program (in compliance with O. Reg. 22/04), the contractor shall demonstrate competence with its skill and ability to complete all requirements under the CVP program.

6. Craftsmanship Experience

There are different craftsmanship experience requirements depending on the work being performed. This section summarizes the competencies the contractor must demonstrate when working On or Around HOL underground systems for the installation of underground structures for HOL Approved or Qualified Contractors.

6.1. For the installation of Underground Civil Structures – Light Qualified Civil Contractor

Type of work performed:

- installation in de-energized Greenfield trench and duct
- installation of street lighting trench and duct
- excavation around insulated energized secondary cables
- excavate for pole holes
- install anchors/anchor holes
- install ground grid around de-energized chambers and poles

- complete re-instatement of hard and soft surfaces
- install small de-energized chambers such as hand holes, transformer bases, and pedestals
- install new service ducts

May require up to full time Hydro Ottawa site presence, technical, reference, and quality assurance inspection.

The Contractor's shall have the minimum experience and shall maintain the qualifications shall be as follows:

- Civil Contractor specializing work identified above
- at least 10 years experience of work experience in this environment within the last 5 years in and around de-energized distribution system; and
- no outstanding work-related infractions with the province and the municipality

6.2. For the installation of Underground Civil Structures – Heavy Qualified Civil Contractor

Type of work performed:

- includes all light civil (Qualified) requirements
- work Around insulated energized primary cables
- support excavated concrete encased duct banks and direct buried ducts containing insulated energized primary cables
- install new manholes and large switching centre bases with no insulated energized primary cables
- civil works on specialty structures such as bridges or heritage structures
- work in areas of high utility congestion

The contractor may require up to full time Hydro Ottawa site presence for technical reference and quality assurance inspection.

The Contractor's shall have the minimum experience and shall maintain the qualifications shall be as follows:

- Civil contractor, specializing in the above work
- at least 10 years Demonstrated experience of working in and around de-energized distribution systems (duct and manhole system) and in the congested downtown core of a large metropolitan area (references required)
- work experience in this environment within the last 5 years; and
- no outstanding work related infractions with the province and the municipality

6.3. For the installation of Underground Civil Structures – Heavy Approved Civil Contractor

Type of work performed:

- installation of Greenfield de-energized or energized trench and duct
- installation of street lighting trench and duct
- excavation around insulated energized secondary cables
- excavate for pole holes
- install anchors/anchor holes
- install ground grid around de-energized or energized chambers and poles
- complete re-instatement of hard and soft surfaces
- install small de-energized or energized chambers such as hand holes, transformer bases, and pedestals
- install new service ducts
- work Around or on insulated energized primary cables
- support excavated duct banks containing insulated energized primary cables
- install new manholes and large switching centre bases with de-energized or energized primary cables
- rebuild part or all of existing underground cable chamber

- civil works on specialty structures such as bridges or heritage structures
- work in areas of high utility congestion
- install civil works in substations yards.
- clean manholes

The Contractor's shall have the minimum experience and shall maintain the qualifications shall be as follows:

- Civil contractor, specializing in the above work
- at least 10 years Demonstrated experience of working in and around de-energized and energized distribution systems (duct and manhole system) and in the congested downtown core of a large metropolitan area (references required) and energized substation yards (references required)
- work experience in this environment within the last 5 years
- The on-site competent worker shall have direct responsibility for the quality of the work completed by the labourers / apprentices. The maximum labour / apprenticeship to competent worker ratio is 1:1 for civil works
- certified in IHSA work protection code
- demonstrated ability to access and use vehicles and equipment to complete the work in a safe, efficient, and environmentally friendly manner
- demonstrated exceptional customer service and the ability to deal with difficult people
- demonstrated ability to work in high volume traffic while ensuring public mobility and safety
- meet the HOL requirements of WI-MS-002 for high risk contractors; and
- no outstanding work related infractions with the province and the municipality

6.4. For the installation of Underground Civil Structures – Light Approved Civil Contractor

Type of work performed:

- installation of de-energized trench and duct
- excavate for pole holes
- install anchors/anchor holes
- install ground grid around de-energized chambers and poles
- complete re-instatement of hard and soft surfaces
- install small de-energized precast chambers such as hand holes, transformer bases, and pedestals
- install new service ducts and pole laterals
- install new precast manholes and large switching centre bases with de-energized primary cables
- work in areas of high utility congestion but at least 1.5m away from energized underground primary cables

The Contractor's shall have the minimum experience and shall maintain the qualifications shall be as follows:

- Civil contractor, specializing in the above work
- at least 10 years Demonstrated experience of working in and around de-energized distribution systems (duct and manhole system) and energized substation yards (references required)
- work experience in this environment within the last 5 years
- The on-site competent worker shall have direct responsibility for the quality of the work completed by the labourers / apprentices. The maximum labourer / apprenticeship to competent worker ratio is 1:1 for civil works
- demonstrated ability to access and use vehicles and equipment to complete the work in a safe, efficient, and environmentally friendly manner
- demonstrated exceptional customer service and the ability to deal with difficult people
- demonstrated ability to work in high volume traffic while ensuring public mobility and safety
- meet the HOL requirements of WI-MS-002 for high risk contractors; and
- no outstanding work related infractions with the province and the municipality

The contractor may require up to full time Hydro Ottawa site presence for technical reference, system security, and quality assurance inspection.

The Contractor's on-site tradespersons shall have direct responsibility for the quality of the work completed by the labourers and apprentices.

7. Information Reporting When Working for Hydro Ottawa

The Contractor craftsmanship approval is dependent on the approval of components such as skilled personnel, equipment, tools, vehicles, and third party authorizations (from groups such as ESA, MOL, MOE, MTO, ISHA, the municipality, ...) to carry out standard work. If any required component is changed, added, removed, or service level lowered during the specific year of approval, the approved contractor shall notify the Hydro Ottawa responsible manager immediately in writing of their lower capabilities.

Contractors have a duty to report as required in GAP0018. In addition to this duty to report requirement, the contractor shall also provide to HOL the following information when accessing Hydro Ottawa's electrical distribution system:

- a. the job plan and associated traffic plan;
- b. work site tailboard;
- c. the communication coordination and emergency contact list;
- d. the May-Day and rescue plan;
- e. Pre-notice to HOL's System Office for work protection (eg. Hold Offs) and confined space entry; and
- f. the current Hydro Ottawa work protection.

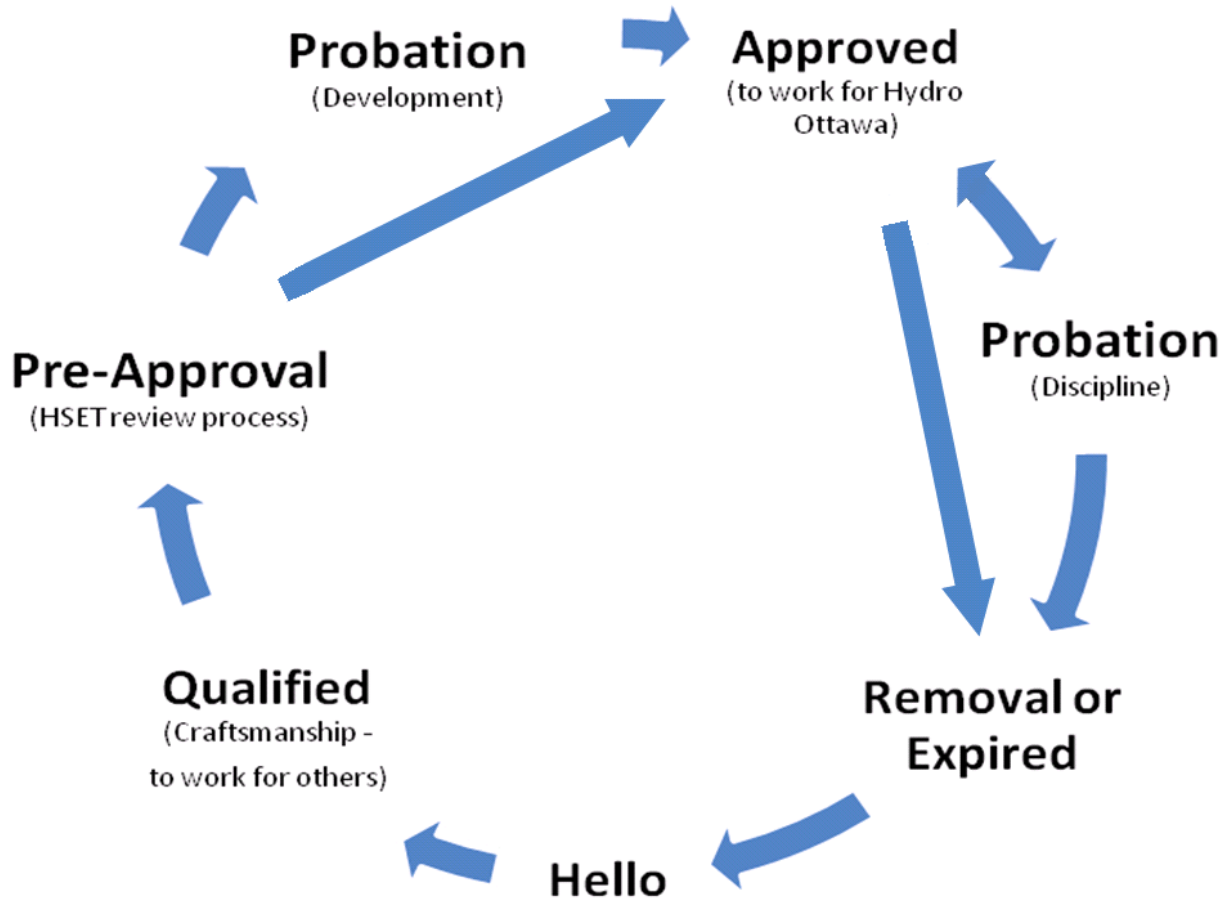
8. Requirements for a Public Contractor to do the work as a proposed Qualified Contractor

For a Public Contractor to become a Qualified Contractor, the Public Contractor shall;

1. Meet all the requirements specified in this document for Qualified Contractors
2. Be inspected by Hydro Ottawa as per Hydro Ottawa requirements.
3. Hire a qualified Professional Engineer for full time site presence to sign off that all civil installations for Hydro Ottawa were installed as per Hydro Ottawa requirements.

Once the Public Contractor has proven that they can build to Hydro Ottawa standards with limited supervision, they can apply to become a Qualified Contractor.

Appendix A – Hydro Ottawa Contractor Authorization Lifecycle



Schedule 1 – Civil Contractor Requirements for Excavation and Working On/Around Hydro Ottawa Underground Electrical System

Abbreviations for Tables 1, 2, and 3:

- A** = Hydro Ottawa or its Approved Contractor. All work shall be performed by Hydro Ottawa or its Approved Contractor when indicated by an “A” in the following tables. See Conditions of Service, Section 4 (Glossary)
- Q** = Hydro Ottawa Qualified Contractor. All work shall be performed by the Qualified Contractor when indicated by a “Q” in the following tables. See Conditions of Service, Section 4 (Glossary)
- P** = Public Contractor
- Hor** = Horizontally away from Hydro Ottawa existing plant
- Long** = Longitudinal with Hydro Ottawa existing plant
- ROW** = Hydro Ottawa having legal access in a specific right of way.
- m** = meter

Table 1-1

MINIMUM Requirements for Installing 3rd Party Plant “Around” Hydro Ottawa's Existing Underground Electrical System ⁴				
Utilities which have been granted rights to be in the public road Right of Way can install their underground plant to the depths as per the road authority and utility approved road/trench cross sections and standards.				
Structures ²	Excavating “Around” Hydro Ottawa's plant		Supporting Hydro Ottawa's plant for Undermining or Temporary re-location	
	With existing insulated energized primary cable		With existing insulated energized primary cable	
	<1.5m ^{1,2,3} Hor.	>1.5m Hor.	<1.5m ^{1,3} Long	>1.5m ^{1,3} Long
Direct Buried Cable	P	P	A	A
Direct Buried Duct	P	P	P	Q
Concrete Encased Duct	P	P	P	Q
Manholes/Hand holes	P	P	-	-
Switching Manholes	A	P	-	-
3 PH Transformers	A	P	-	-
1 PH Transformers	A ⁵	P	-	-
Pole Lateral	P	P	-	-

Notes pertaining to Table 1-1:

1. May require on-site Hydro Ottawa review.
2. HOL can provide the public or Public Contractor on-site technical advice when excavating within 1.5m of designated Hydro Ottawa plant excluding transformer pads and switching manholes. Any excavating within 1.5m of any HOL underground system will be by hand digging or equivalent unless authorized in writing by HOL on a case-by-case basis.
3. To work On primary energized cables requires a HOL Approved Contractor. If all cables can be de-energized as determined by Hydro Ottawa, a HOL Qualified Contractor may be used with a documented engineered support, protection, and emergency access, restoration plan, and ESA Authorized Contractor Program approved high voltage contractor. The owner of the 3rd party plant shall enter into a Coordination Agreement with HOL at least 60 days prior to the proposed construction commencement.
4. All Directional Boring shall maintain at least 1.5 meter clearance longitudinally from Hydro Ottawa electrical underground plant. All directional boring that cross perpendicular to Hydro Ottawa electrical underground plant shall be Daylighted by hand and follow the requirements of Table 1 above.
5. HOL authorized telecommunication utilities and municipal street lighting that are permitted to be in the ground grid of a single phase transformer to access their above grade pedestals.

Table 1-2

MINIMUM Requirements for Installing New De-energized Underground Electrical Structures ⁶

Structures	HOL Owned	Customer Owned Electrical Structures ^{7,8}	
	Structures	HOL Cable or Integral Customer Cable	Non Integral Customer Cable
Direct Buried Cable	-	-	P
Direct Buried Duct	Q	Q	P
Concrete Encased Duct	Q	Q	P
Manholes/Hand holes	Q	Q	P
Switching Manholes	Q	Q	P
3 PH Transformers	Q	Q	P
1 PH Transformers	Q	Q	P
Pole Lateral(s)	Q ⁸	Q	P
Substations ⁹	A	-	-

Notes pertaining to Table 1-2:

6. Private Property Development Project can install de-energized service lateral ducts within the public road allowance only abutting the property or directly across (perpendicular) the public road from the property with one of the public road authority's bonded excavating contractors and HOL inspection. Both HOL and the public road authority shall pre-approve this installation by their consent processes. The property owner's contractor shall be responsible to establish the traffic plan within public roads and approved by the public road authority.
7. Where Hydro Ottawa existing primary cables or a customer's Integral service are encased in or runs under the owner's building or structure that is being structurally re-built, the owner will be required to provide Hydro Ottawa with a documented engineered support, protection, and emergency access & restoration plan for the primary cables at least 60 days in advance of the proposed construction. This plan shall also indicate the ESA Authorized Contractor Program approved high voltage contractor to be used for work around/on the primary cable. The owner of the Integral building or structure shall enter into a Coordination Agreement with HOL at least 60 days prior to the proposed construction commencement.
8. For Infills, the owner may use his own contractor to dig the secondary cable trench and install the pole lateral from the supply point to the meter base. The contractor must remain 1.5 meters away from Hydro Ottawa primary energized equipment.
9. Mechanical excavation within a substation property can only be performed after the cable, duct bank and/or the entire perimeter of the excavation has been Daylighted using a hydro-vac and/or hand digging to ensure positive identification of the location of the buried primary cables. A 1.5m minimum working clearance for buried energized primary cables (both in duct or direct buried) must be maintained while using mechanical excavation methods.

Table 1-3

MINIMUM Work On Hydro Ottawa’s Existing or Integral Customers Owned Existing Underground Electrical System				
Structures	Excavating or Supporting Existing Plant “On” Hydro Ottawa’s plant		Installing Support Structures	
	<1.5m Hor.	>1.5m Hor.	<1.5m Long.	>1.5m Long.
Direct Buried Cable	A	-	A	A
Direct Buried Duct	A	-	A	A
Concrete Encased Duct	A	-	A	A
Manholes/Hand holes	A	-	A ¹¹	A ¹¹
Switching Manholes	A	-	A ¹¹	A ¹¹
3 PH Transformers	A	-	A ¹¹	A ¹¹
1 Ph Transformers	A	-	A ¹¹	A ¹¹
Pole Lateral(s)	A	-	-	-
Substations ¹⁰	A ¹¹	-	A	A

Notes pertaining to Table 1-3:

10. Mechanical excavation within a substation property can only be performed after the cable, duct bank and/or the entire perimeter of the excavation has been Daylighted using a hydro-vac and/or hand digging to ensure positive identification of the location of the buried primary cables. A 1.5m minimum working clearance for buried energized primary cables (both in duct or direct buried) must be maintained while using mechanical excavation methods.
11. Where Hydro Ottawa existing structures require supporting, the contractor will be required to provide Hydro Ottawa with a documented engineered support, protection, and emergency access & restoration plan for the primary cables at least 60 days in advance of the proposed construction. This plan shall also indicate the ESA Authorized Contractor Program approved high voltage contractor to be used for work around/on the primary cable. The owner of the Integral building or structure shall enter into a Coordination Agreement with HOL at least 60 days prior to the proposed construction commencement.