

General Requirements for Construction Work by External Parties in the Vicinity of Hydro One 115,000 and 230,000 Volt Underground Plant

External parties constructing, excavating or daylighting within the vicinity of Hydro One Networks Inc. (“Hydro One”) high voltage (115kV - 230kV) underground plant must obey the following requirements. Underground plant includes but is not limited to cables, pipes, backfill, duct banks, protective structures, vaults, manholes, etc. These are general requirements; all projects will be reviewed in detail, on a case-by-case basis, to determine if any, additional project specific requirements are to be satisfied.

1. New or relocated underground installations by external parties must have a minimum vertical and horizontal clearance of one metre from Hydro One’s underground plant.
2. The external party shall provide Hydro One as much advance notice as possible, typically at least three months, prior to the commencement of any construction work in the vicinity of Hydro One’s underground plant. A detailed scope of work and construction plan shall be submitted to Hydro One for review and comment. Depending on the nature of the work (for instance, deep excavation that may affect the plant integrity or there is a risk of mechanical or hydrovac equipment coming within one metre of Hydro One’s underground plant), a circuit outage or support structure(s) may be required.
3. Locates must be performed prior to the start of any construction, excavation or hydrovac work within the vicinity of Hydro One’s underground plant. Excavation after 60 days of the initial locate will require the excavator to re-apply for a second confirming locate.
4. The presence of a Hydro One representative is required for any construction, excavation or hydrovac work occurring within one metre of Hydro One’s underground plant. As such, the external party must provide as much advance notice as possible. The external party must contact Hydro One at 1-888-977-8665 #1, at least 72 hours before any work, to schedule the attendance of a Hydro One representative.
5. The existing 115kV or 230kV cables must be considered live and fully energized at all times. The requirement for circuit outages will be determined by Hydro One on a case-by-case basis from the scope of work and construction plans provided by the external party.
6. If it has been determined during the initial review of the external party’s scope of work and construction plan that a circuit outage is necessary, the external party must coordinate with Hydro One and schedule outage and construction activities. Typically, 60 days’ notice is required to schedule a planned outage.

7. The external party shall ensure that no personnel make direct contact with any Hydro One cable, duct or pipe without wearing appropriately rated personal protective equipment (PPE). Accidental contact with the exposed cable shall be avoided.
8. Follow all applicable safety regulations, the Infrastructure Health & Safety Association (IHSA) safe practice guide, “Excavating with Hydrovacs in the Vicinity of Underground Electrical Plant”, and any other requirements determined by Hydro One at its discretion.
9. The permitted excavation and daylighting methods when near Hydro One’s underground plant are outlined in Table 1.

Table 1 – Excavation and Daylighting Methods

Type of Plant	Excavation and Daylighting Methods
Pipe Type (High-Pressure Liquid-Filled) Cables	Only hand digging is permitted within one metre of the pipe. Mechanical or hydrovac excavation is not permitted within one metre of the pipe.
Direct Buried Cables	Only hand digging is permitted beyond the protective tiles. An outage is required when digging beyond the protective tiles. Mechanical or hydrovac excavation is not permitted beyond the protective tiles.
Duct Bank Installed Cables	Hand digging, mechanical and hydrovac excavation is permitted to expose the concrete duct bank.

10. Ensure that step and touch potentials are controlled by the use of an equipotential work zone prior to operating hydrovac equipment within one metre of the underground plant. The external party must protect the public and workers from these potential electrical hazards.
11. Temporary shoring and bracing must be provided for the sides of the excavation where sides are too steep to be self-supporting.
12. Vibration is a concern during pile driving, auguring, boring, jackhammering, use of vibratory rollers, demolition, and the use of other equipment that create significant vibration. Vibration monitoring is required for any activities within the vicinity of Hydro One’s underground plant, typically within three (3) metres, but could vary on a case-by-case basis as reasonably determined by Hydro One. The vibration values should be measured at the location and depth of the Hydro One cables and should not exceed the levels set out in Table 2 “Prohibited Vibration Levels”:

Table 2 – Prohibited Vibration Levels

Frequency of Vibration (Hertz)	Vibration Peak Particle Velocity (mm/s)
Less than 4	8
4 to 10	15
More than 10	25

13. Exposed underground plant must not be used to support any load. During electrical faults, underground plant may become energized. Insulating blankets for protection against electrical hazards and a wooden box shall be built around the cables to protect against brush contact.
14. Where excavation extends below Hydro One's underground plant, all exposed underground equipment must be temporarily supported at suitable intervals to prevent damage due to its own weight. The temporary support design drawing, bearing the stamp of a Professional Engineer, shall be presented to Hydro One for approval. The external party will need to implement a daily monitoring and recording system (which must be approved by Hydro One) to ensure that there is minimal deflection or settlement of the underground plant. The measurements must be taken relative to a fixed location such as a survey monument. Readings shall be taken at 3-4 metre intervals along the entire length of the exposed plant. All readings shall be provided to Hydro One on a daily basis. On a weekly basis, a Hydro One representative should accompany the external party in the field to witness the readings.
15. Upon completion of the construction, excavation or daylighting work, the external party must reinstate the backfill. Use only backfill that satisfies Hydro One specifications.
16. Prior to replacing the backfill, an on-site Hydro One representative must be provided physical access to inspect the exposed underground plant and deem it satisfactory. A Hydro One representative shall be on-site to witness the backfilling process.
17. If any Hydro One underground plant is compromised, the external party shall immediately respond to remediate to Hydro One's specification and contact Hydro One. The external party may be liable for any damages incurred to the underground plant.