

Application

This standard is intended for use by electrical consultants and contractors working on BC Hydro-owned infrastructure located on private property. It outlines BC Hydro's general requirements for customer civil and electrical work associated with these installations. See ES55 B2-05 for more guidance and details on when BC Hydro-owned switchgear is required on private property.

Revision Notes

New standard, released concurrently with Standards and Equipment Advisory Information Bulletin 2026-025
Released ES54 Section S Service Standards for BC Hydro-Owned Switchgear on Private Property.

References

BC Hydro Distribution Standards

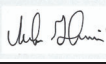
ES54 section B	Pull and Splice, Service, and Junction Boxes
ES54 section C	Vaults
ES54 section E	Switchgear Vaults and Pads
ES54 section F	Transformer Pads and Vaults
ES54 section H	Duct
ES54 H1-01	General Trenching Details URD, UD, and Feeder Installations
ES54 H1-03	General Trenching Details Duct Entry at Pads
ES54 S0-02	Services General Notes
ES54 S0-05	General Notes Service Ducts and Trenches
ES54 S6-01	Over-Pad Above-Ground Outdoor Switchgear Installation
ES54 S6-02	In-Vault Below-Ground Outdoor Switchgear Installation
ES54 U2-01	Concrete Pad Protection General Notes
ES54 U2-02	Concrete Pad Protection Bollards
ES54 U2-03	Concrete Pad Protection Roadside Barriers
ES54 W1-01	Construction Materials Excavation and Backfill
ES55 B2-05	Customer Guide: BC Hydro-Owned Switchgear Placement and Requirements

Other BC Hydro Documents

Requirements for Customer-Owned Primary Services Supplied at 4 kV to 35 kV

External Documents

BCEC	Canadian Electrical Code, Part 1 (CSA C22.1) adopted for BC and endorsed by Technical Safety BC (TSBC)
BC Reg. 100/2004	Safety Standards Act Electrical Safety Regulation
TSBC D-EL 2017-01	Directive: Exemptions to public utilities
TSBC IB-EL 2017-04	Information Bulletin: Electrical Safety Regulation application to public utilities

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Approved: H. Giesbrecht, P. Eng		Issued: 2026-04-02 Effective: 2026-06-01		

Notes

1. Code Requirements

Civil and electrical work associated with BC Hydro-owned equipment on private property for the purpose of utility electrical distribution is considered utility work by TSBC and shall be built to BC Hydro standards. See ES54 S0-02 for more information.

This standard and any related standards shall be interpreted in a manner consistent with the regulations of the province of British Columbia and the requirements of all authorities having jurisdiction.

2. Equipment Location and Access Requirements

BC Hydro's preferred design is to install pad-mounted and subsurface equipment (e.g. switchgear, transformers, junction boxes) outdoors in the public corridor. BC Hydro may permit installation on private property if a statutory right-of-way is in place.

BC Hydro-owned equipment located indoors or in a building alcove on private property shall have no other equipment or ducting (e.g. mechanical, TELUS, Shaw/Rogers, ventilation, electrical conduits not for BC Hydro use) pass through or be located in the vault or alcove designated for BC Hydro-owned equipment.

BC Hydro-owned equipment on private property shall be accessible from a driveable surface to allow BC Hydro vehicles to install and access the equipment throughout the life of the building. Access may be provided via a gate or door unless otherwise noted, provided it has provision to install a BC Hydro lock for BC Hydro access only. See ES55 B2-05 for guidance on access requirements.

A driveable surface is one made of asphalt, concrete, brick, gravel, or hard compact soil used as a roadway for vehicular traffic on a permanent basis (24 hours a day / 7 days a week / 12 months a year). Examples of surfaces that may not be deemed driveable include grass, lawn and landscaped areas, septic fields, rock outcroppings, and any area not reasonable for a vehicle to travel over. Driveable surfaces shall be a minimum 4.5 m wide (see Figure 1) and be designed to support a gross vehicle weight rating (GVWR) as indicated in Table 2. The customer shall provide and maintain a driveable surface and parking area near the equipment that allows BC Hydro to install, maintain, and service the equipment and does not impede building access.

The driveable surface and parking area near BC Hydro-owned equipment shall accommodate a BC Hydro crane truck with nominal dimensions as indicated in Table 2 and Figure 1. The crane truck shall be able to position within 3.0 m measured horizontally from the center of the equipment.

Cable pull pit and junction boxes shall be accessible and located within 3.0 m of a driveable surface capable of supporting the following BC Hydro vehicles described in Table 2:

- a. A cable trailer at the feeding end of a cable pull, unless the cable length is 10 m or less; and
- b. Vehicle-mounted cable pulling equipment on a crane truck at the pulling end of a cable pull, unless the BC Hydro designer determines the pulling tension is 5000 lbs or less.

3. Working Space and Clearance Requirements

BC Hydro requires the following unless otherwise noted:

- a. 3 m of flat unobstructed access to the primary side of the equipment;
- b. 1 m of flat unobstructed access to the low-voltage side of the equipment;
- c. 1 m of flat unobstructed access to access hatches and doors; and
- d. 4.6 m of unobstructed overhead clearance from grade where a crane truck is used or 2.8 m of unobstructed overhead clearance from grade to the bottom of an I-beam when a trolley hook is used.

4. Grounding and Bonding Requirements

See the applicable individual ES54 standards for specific details. Following is a summary of typical BC Hydro grounding and bonding requirements:

- a. BC Hydro precast concrete boxes are self-grounding and do not require additional ground electrodes;
- b. BC Hydro precast concrete pads are not self-grounding and shall be bonded to a ground electrode, such as a ground rod or a self-grounding BC Hydro precast concrete box;
- c. BC Hydro-owned equipment installed above grade and located within 3.0 m of a conductive structure (e.g. building, fence, bollard) shall have the equipment ground system bonded to the structure's ground system. Customers shall bond all exposed metal structures (e.g. gate, building columns, pull pit metal cover plates) to the ground bus per BCEC section 36; and
- d. Customers shall provide a copy of a certified grounding report per BCEC section 36 for customer primary service. See the *Requirements for Customer-Owned Primary Services Supplied at 4 kV to 35 kV*.

5. Duct and Trench Requirements

The BC Hydro designer will advise the customer on the required size; quantity, and configuration of BC Hydro feeder and customer service ducts.

Duct installations shall comply with the minimum requirements outlined in ES54 S0-05. Feeder ducts installed in a statutory right-of-way shall also comply with ES54 section H, including concrete encasement for feeder ducts, ducts at reduced burial depth, and ducts within 1.0 m of tree roots (unless root deflectors are installed).

Trenching and duct entry at pads shall follow the configurations and clearances in ES54 H1-01 and H1-03, including thermal resistivity requirements for backfill and minimum separations from other utilities.

6. Excavation and Backfill Requirements

Excavation and backfill for BC Hydro precast concrete boxes, collars, lids, and pads shall comply with ES54 W1-01. Backfill materials and compaction methods shall be reviewed and accepted by BC Hydro's representative prior to placement. Key excavation and backfill requirements include:

- a. Excavation to specified lines, grades, and dimensions with care to avoid over-excavation or trench wall sloughing;
- b. Removal of unsuitable material and replacement with compacted aggregate where necessary;
- c. Use of selected native material or imported aggregate for backfill, compacted in lifts not exceeding 200 mm;
- d. Compaction to 95% modified proctor density (MPD) within 300 mm of duct banks and in traffic areas, and 85% MPD in non-traffic areas;
- e. Do not use lightweight fill (e.g. EPS, GeoFoam) adjacent to or above duct banks due to thermal insulation effects; and
- f. Use of controlled density fill (CDF) only where specified, with compressive strength below 1 MPa at 28 days.

7. Power Supply for Controlgear

BC Hydro requires a reliable power supply for switchgear control system low-voltage enclosures (LVE) unless otherwise noted. Customers shall provide two separate 120 VAC 15 A power supply circuits fed from the building essential load's electrical panel to the BC Hydro-owned switchgear location. Customers shall provide minimum 35 mm conduit and clear "For BC Hydro use only" markings on the breakers. See ES54 S6 for details.

8. Supply, Installation, and Maintenance

BC Hydro will provide, install, and maintain the following:

- a. BC Hydro distribution switchgear, transformers, and auxiliary control equipment;
- b. Primary feeder cables and terminations;
- c. Primary supply service cables and terminations;
- d. Secondary supply service cables and terminations; and
- e. Low-voltage control cables.

BC Hydro will provide and the customer shall install and maintain the following:

- a. Precast concrete boxes, collars, lids, and pads (see ES54 sections B, C, E, and F);
- b. Protective bollards (see ES54 U2-01 and U2-02); and
- c. Equipment grounding kits for pad-mounted equipment.

The customer shall provide, install, and maintain the following:

- a. Ducts and trenches (see ES54 S0-05);
- b. Asset protection and physical and visual vehicle access control (see ES54 U2-01 and U2-03);
- c. Equipment access (see note 2);
- d. Duct drainage (see ES54 S0-05);
- e. Power supply for control equipment (see ES54 S6);
- f. Cast-in-place concrete boxes, collars, lids, and pads;
- g. Approval drawings (including general layouts and structural drawings for supporting the civil infrastructure); and
- h. Oil containment (for transformers only).

The customer shall provide, install, and maintain the following when BC Hydro-owned equipment is located indoors:

- a. Personnel and equipment access doors;
- b. Signage for access doors;
- c. I-beam lift system;
- d. Equipment and systems required by the local fire authority;
- e. Adequate ventilation for equipment cooling;
- f. Ground bus;
- g. Room lighting, emergency lighting, and convenience outlets; and
- h. Antenna conduit.

Table 1 – BC Hydro equipment data

Type	Material no.	Width (mm)	Depth (mm)	Height (mm)	Weight (kg)
Dead-front switchgear 5-way	9601-6601	2445	900	870	930
Dead-front switchgear enclosure 5-way	9700-1253	2590	1650	1150	365
LVE control kiosk	9601-6626	765	395	915	275
Pre-cast concrete vault submersible box	9600-5803	Box 3680, platform 3980	Box 2460, platform 2860	Box 2130, platform 383	19,000
Pre-cast LVE pad	9601-9917	1220	520	750	850
Primary cable dead weight	-	N/A	N/A	N/A	15 per m
Vault lid removable	N/A	N/A	N/A	N/A	18 per lid
Vault lid hinged	N/A	N/A	N/A	N/A	36 per lid

Table 2 – BC Hydro vehicle data

Type	Width (mm)	Length (mm)	Height (mm)	GVWR (kg)	Working area around vehicle
Crane truck	2896	10592	3556	26100	2.5 m all around
Cable trailer	2438	5562	3124	12700	1.5 m all around and 5 m from the back

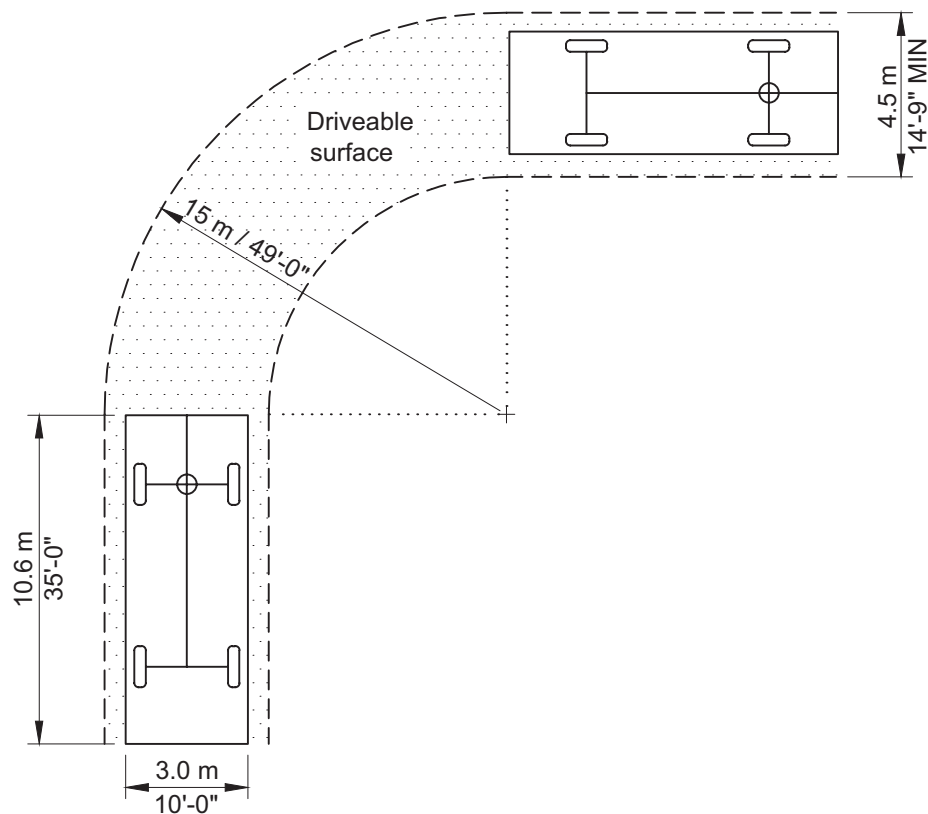


Figure 1 – BC Hydro crane truck minimum turning radius