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BC Hydro is not liable for reliance on past versions of the Standard that may be stored electronically.

REVISIONS: UPDATED LEGAL ACKNOWLEDGEMENT FORM. FD MAR '16

DESIGNED J. AGNOLIN	RECOMMENDED  F. DENNERT	ACCEPTED  G. REIMER	ENGINEER OF RECORD 	NOTICE FROM THE EXECUTIVE VICE PRESIDENT TRANSMISSION AND DISTRIBUTION AND CUSTOMER SERVICE		
DISTRIBUTION STANDARDS 		ISSUED: MAR 2016 REPLACES: MAY 2004 ORIGINALLY ISSUED: NOV 1980				PAGE 1 OF 2

Scope

This manual is one of a series containing standards for construction of the BC Hydro electrical distribution plant within the service area of BC Hydro. A new distribution plant shall be designed, constructed, owned, operated, maintained and repaired to these standards.

Purpose of Standards

BC Hydro objectives require standardization to:

- a) Ensure uniform safety requirements comply with BC statutes and regulations.
- b) Provide uniform system reliability.
- c) Provide uniform operating practices.
- d) Permit economic bulk purchasing of materials.
- e) Achieve optimum life cycle cost of plant construction.
- f) Effect efficient quality assurance.

Responsibility

The Distribution Standards Department prepares these standards and verifies that specified plant and procedures will perform adequately under all normally expected conditions encountered throughout the province of British Columbia. These standards are approved by Professional Engineers. It is the responsibility of BC Hydro Managers to ensure that the standards are followed unless abnormal conditions are encountered that require variations. These variations should be kept to a minimum and their performance shall be the responsibility of the Professional of Record in charge of the project, who will record and seal the variation based on satisfactory qualifications and experience to do so. As per the latest revision of the BC Hydro Distribution Owner's Engineer Guide, these variations must be accepted by BC Hydro's Owner's Engineer.

Use of Stock Materials

The electrical distribution plant covered by these standards is built using stock materials approved by a Professional Engineer as required by law. The use of non-stock materials for special and unusual situations must be approved by Distribution Standards or the BC Hydro Engineer responsible for the project.

Revisions to Manual

These standards are revised from time to time to improve the safety, performance, workability, cost effectiveness or appearance of the plant. The existing plant built to previous standards need not be updated unless so specifically advised by BC Hydro. When maintenance or other work, such as voltage conversion or conductor change is being done, updating plant to current standards is encouraged.

Mailing Addresses

The manual has been issued to a corporation or firm rather than to an individual. The corporation or firm is responsible for the safekeeping of the manual, and for keeping it current. Changes of address or in number of copies required must be reported promptly.

Suggestions for changes in the manual, or required changes of address may be made on the pre-addressed comment sheet included in the Manual and with each issue of revision.

REVISIONS: UPDATED LEGAL ACKNOWLEDGEMENT FORM. FD MAR '16

DESIGNED J. AGNOLIN	RECOMMENDED  F. DENNERT	ACCEPTED  S. REIMER	ENGINEER OF RECORD  F. U. DENNERT PROFESSIONAL ENGINEER BRITISH COLUMBIA	NOTICE FROM THE EXECUTIVE VICE PRESIDENT TRANSMISSION AND DISTRIBUTION AND CUSTOMER SERVICE		
DISTRIBUTION STANDARDS BC Hydro		ISSUED: MAR 2016 REPLACES: MAY 2004 ORIGINALLY ISSUED: NOV 1980		PAGE 2 OF 2	ES43/53/54/55/65 A1-01.02	R 4

Application

ES54 section S *Services* describes BC Hydro requirements for customer civil and electrical work on private property for supply services, including both medium-voltage (primary) and low-voltage (secondary) services.

This standard applies to all ES54 section S standards. ES54 section S does not cover requirements for renewable energy systems, energy production systems, and energy storage systems, nor the interconnection of customer-owned electrical power production sources.

See BC Hydro distribution instruction DI S10-4 for more information on BC Hydro rules for customer supply voltages.

If there is a conflict between applicable BC Hydro ES43, ES53, and ES54 standards, the construction standards with the latest issue date take precedence.

Revision Notes

Added a new note for conflict between BC Hydro standards. Added notes for BC Hydro delay or refusal of customer service connection. Clarified customer scope of supply. Added new section for high flood areas. Changes are marked by green vertical revision lines in the left margin. This revision released concurrently with Standards and Equipment Advisory 2022-010 R1 Information Bulletin: *Revised ES54 S0-02 Services General Notes and Release of ES54 S0-05 Service Ducts and Trenches*.

References

BC Hydro Distribution Standards

ES54 S0-05 General Notes, Service Ducts and Trenches

Other BC Hydro Documents

BC Hydro Electric Tariff

DI S10-4 Electric Service Connections – Voltages

External Documents

BCEC Canadian Electrical Code, Part I (CSA C22.1) adopted for BC and enforced by Technical Safety BC (TSBC)

BC Reg. 100/2004 Safety Standards Act Electrical Safety Regulation

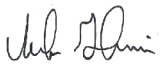
TSBC D-EL 2017-01 Directive: Exemptions to public utilities

TSBC IB-EL 2017-04 Information Bulletin: Electrical Safety Regulation application to public utilities

Electrical Safety Regulation Application to Utilities

BC Reg. 100/2004 (except for section 3.1) does not apply to BC Hydro with respect to electricity distribution.

TSBC directive D-EL 2017-01 clarifies the demarcation point separating regulated electrical work from utility work on private property. See TSBC bulletin IB-EL 2017-04 for more information.

Designed: M. Kelvin, P. Eng		Professional of Record 2023-06-27  Permit To Practice-1002449	Services General Notes	
Checked: M. Kelvin, P. Eng				
Reviewed: M. Stevens, P. Eng				
Approved: H. Giesbrecht, P. Eng		Issued: 2023-06-30 Effective: 2023-07-31	DISTRIBUTION STANDARDS 	ES54 S0-02 R2

The customer shall supply, install, and maintain civil work and structures required for underground supply service connections on private property at their own cost, per the BC Hydro Electric Tariff.

Civil and electrical work on private property for the purpose of electrical distribution by the utility that is exempt from BC Reg. 100/2004 shall be built to BC Hydro standards.

Supply Authority Requirements

BC Hydro installation crews have the authority to reject a customer request for service connection if there is discrepancy between the electrical service agreement and the service equipment installed.

Customer secondary and primary service locations and connection details shall comply with BC Hydro requirements as the supply authority as stipulated by BCEC sections 6 and 36 and the BC Hydro Electric Tariff.

The unmetered portion of the service connection shall be secured by seal or BC Hydro padlock for BC Hydro restricted access only.

Revenue metering equipment, including access and radio link antennae, shall be installed in compliance with BC Hydro Revenue Metering department requirements.

BC Hydro supply service cables shall be installed in a duct. Direct buried supply service cables are not acceptable.

The customer shall dig a service trench, install service ducts, and cover with backfill in compliance with ES54 S0-05. The customer does not require a duct installation permit nor inspection by the local regulatory authority.

BC Hydro service connection is based on a 50-year service life expectancy.

Utility Access

BC Hydro requires unobstructed access to the service equipment to safely isolate the service in an emergency. Service equipment and point of connection locations shall be acceptable to BC Hydro.

BC Hydro requires unobstructed access to revenue metering equipment.

Customer Scope of Supply

The location and installation details of service equipment on private property shall be clearly shown on building permit drawings and shall be accepted by the local regulatory authority building department and the BC Hydro designer. Customer drawings shall indicate construction details specific to the building. Do not copy and paste BC Hydro standards to use as generic installation details for building permit drawings.

The customer scope of supply includes service equipment, civil work, and ducts on private property, from the utility supply service duct stub-off (located at the property line) to the point of delivery inside the customer service equipment. Civil works on private property includes civil infrastructure associated with the underground distribution of electricity by BC Hydro, including all vaults, lids, chambers, boxes, cabinets, transformer pads, ducts, conduits, associated protective installations, grounding, concrete pads, bollards, and pull boxes (including materials supplied by BC Hydro). Civil works on private property are owned by the customer and shall be repaired and maintained by the customer. The applicable portion of the service installation and equipment, including the supply service duct drain, shall be inspected by a BC Hydro civil inspector.

Supply ducts inside a building shall be engineered to support the weight of the concrete, ducts, and supply service cables, and to withstand all cable pulling forces (provided by a BC Hydro designer) during the installation and removal of supply service cables.

Supply service ducts entering pull boxes, pull pits, duct wells, and wireways shall be terminated into bell ends to minimize damage to BC Hydro supply service cables. Bell ends shall be finished flush with the concrete surface and comply with any other applicable reference standards.

Service Equipment Located in High Flood Plain Area

Many local authorities having jurisdiction over customer buildings and electrical service connections stipulate that customer service rooms (both primary and secondary) shall be located above the high flood level designated for the area, per BCEC Rule 6-206 (1)(c)(v). Flood level is defined in BCEC Section 0 *Object, scope, and definitions* as the elevation of the flood water surface resulting from a flood event (50 or 100 year) designated in accordance with the National Building Code of Canada or applicable local bylaws or regulations. BC Hydro complies with these requirements and accepts new customer service connections located above a building's main floor. BC Hydro limits the maximum elevation of new customer service to the mezzanine floor constructed at 300 mm above the designated flood water surface level. See Figure 1 for details.

The customer shall submit permit drawings clearly showing the elevation of the mezzanine floor to a BC Hydro designer for review and acceptance. The customer shall provide channels as required to support the service cables in vertical runs up to 6.0 m (20 ft) maximum. Contact a BC Hydro designer for supply service cable sizes and types. BC Hydro shall supply and install Kellems standard-duty support grips with eye length 100 mm (4") to 320 mm (27").

Consulting Agreements

Customer work performed without prior consultation with BC Hydro, and work performed that is not in compliance with submitted BC Hydro electrical service connection forms, runs the risk of BC Hydro requiring changes to the service entrance equipment or equipment location.

The customer shall obtain agreement from the local BC Hydro design office for the following:

- a. Service location;
- b. Pull box design for service runs longer than 50 m or aggregate bends greater than 135°;
- c. Deviations from BC Hydro ES54 S0-05 due to local conditions, including engineering details for duct entry into building foundation walls for building settlement and backfill differential settlement; and
- d. Suitability of the supply service conduit and pull string for cable pulling before commencing backfilling.

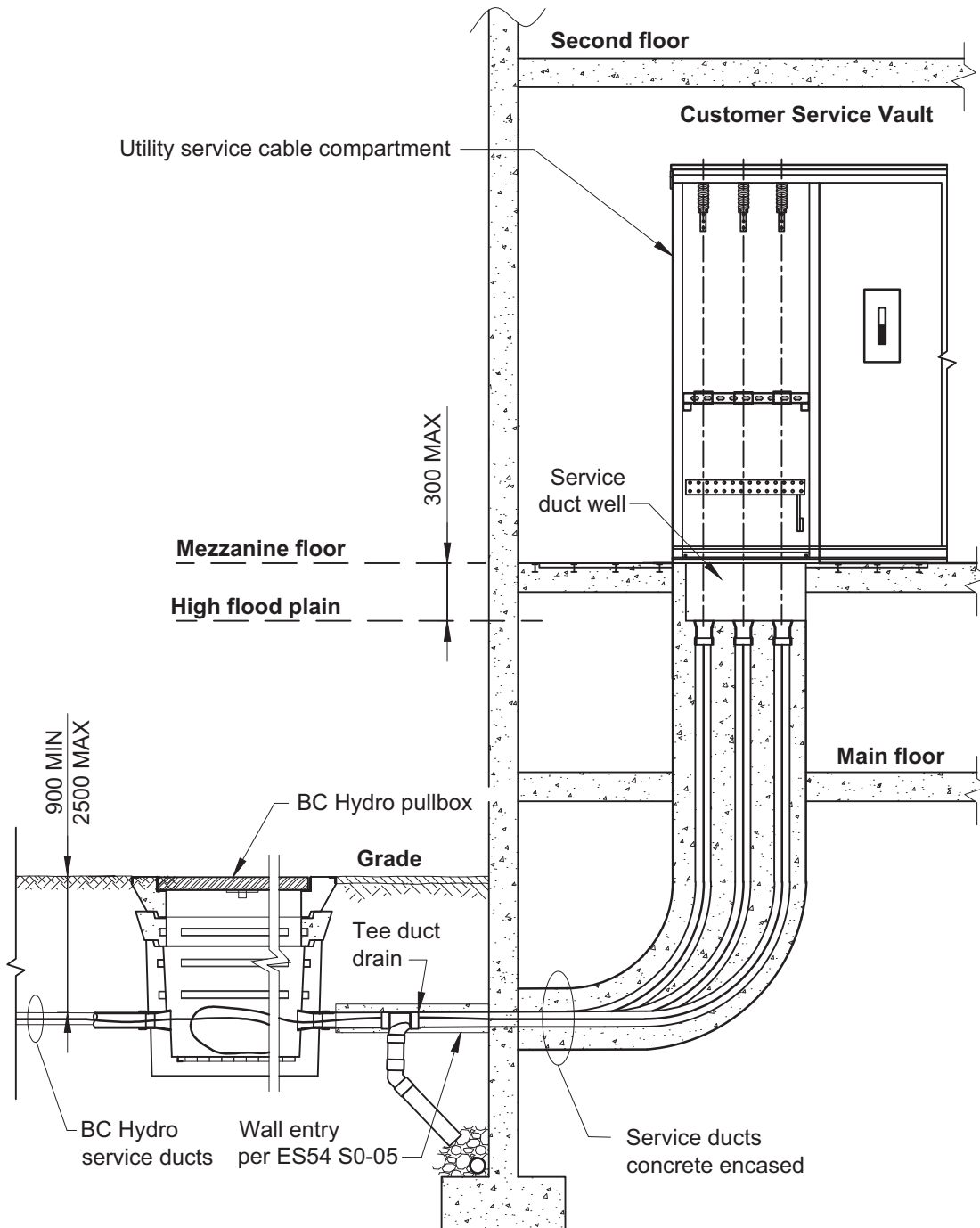


Figure 1 – Service duct profile and service vault for high flood level buildings