

Application

This standard provides electrical installation notes for customer-owned service equipment. This standard is intended for use by BC Hydro designers and for reference by BC Hydro utility workers. It is not intended to specify requirements to the customer.

Revision Notes

Entire standard revised. Removed service cable installation and termination details now covered in ES53 section M *Terminal Structures*. Cable sizing tables revised: editorial revisions, presentation of data changed, material number listings deleted and replaced with references to ES53 section J, cables per phase removed and now covered in note 2, titles modified for clarity regarding supply voltage, now-obsolete A-25 replaced with G-13. Note 2 specifies cable sizes must meet or exceed recommendations provided. Terminology updated throughout standard for consistency with other documents. Changed content is marked by green vertical revision lines in the left margin. This standard released concurrently with Standards and Equipment Advisory Information Bulletin 2024-017 *Released ES53 M6-01, M6-02, M6-11, and M6-12, and Revised ES53 S3-01.*

References

BC Hydro Distribution Standards

ES53 J1-02	Extruded Dielectric Cables Cable Parameters, Active
ES53 J3-02	Cable Code List, Active
ES53 M6-01	Medium-Voltage Services Outdoor Kiosk
ES53 M6-02	Medium-Voltage Services Indoor Customer Vault
ES53 M6-11	Medium-Voltage Services Dead-Front Service Cable Terminations
ES53 M6-12	Medium-Voltage Services Live-Front Service Cable Terminations
ES53 R5-01	Bonding and Grounding Neutrals
ES53 U1-01	Cable and Conductor Data New Construction
ES54 S0-03	General Notes Primary Services
ES54 S3-01	Primary Services Dead-Front Outdoor Kiosk Private Property Installation
ES54 S3-02	Primary Services Live-Front Outdoor Kiosk Private Property Installation
ES54 S3-03	Primary Services Indoor Switchgear Private Property Installation

Other BC Hydro Documents

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

Notes

1. See the Primary Guide, ES54 S0-03, ES54 S3-01, ES54 S3-02, and ES54 S3-03 for customer interconnection preconditions and other requirements.

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2. Conductors have been sized to 125% of unit substation rating. Cable ampacities are based on ES53 U1-01 R4. BC Hydro service cables shall meet or exceed the sizing recommendations provided in Tables 1 and 2. Service cables are specified as one cable per phase. See ES53 J1-02 and ES53 J1-03 for cable parameters and cable code list.
3. See ES53 M6-01, M6-02, M6-11, and M6-12 for BC Hydro service cable installation, BC Hydro service termination installation, and other electrical construction requirements.
4. Dead-front customer-owned service entrance equipment cannot be supplied with #1 AWG Al Sol. 25 kV extruded dielectric full JCN (cable code G-16) cables. 900 A class dead-front cable terminations are required for termination of BC Hydro service cables on customer dead-front service entrance equipment. Per ES53 M6-11, a dead-front cable termination for #1 AWG Al Sol. 25 kV extruded dielectric full JCN (cable code G-16) cable is not available. Select an alternative service cable type that can be terminated to the customer's equipment, for example 4/0 AWG Al CR 25 kV extruded dielectric 1/3 JCN (cable code G-4).
5. A separate service neutral conductor is required when tape-shielded service cable is used, per ES53 R5-01. A separate service neutral is not required for concentric neutral service cables.
6. Single-phase primary services are not a standardized underground service type.

Table 1 – Minimum BC Hydro primary service cable size for unit substations supplied at 12.5 kV

Customer unit substation size	Minimum aluminum conductor size 15 kV or 25 kV rated extruded dielectric service cable (see note 2)	
	Underground supply	Dip from overhead supply
$0 < \text{kVA} \leq 1500$	#1 AWG	#1 AWG
$1500 < \text{kVA} \leq 2500$	#1 AWG	4/0 AWG
$2500 < \text{kVA} \leq 4000$	4/0 AWG	500 kcmil
$4000 < \text{kVA} \leq 5000$	500 kcmil	N/A

Table 2 – Minimum BC Hydro primary service cable size for unit substations supplied at 25 kV

Customer unit substation size	Minimum aluminum conductor size 25 kV rated extruded dielectric service cable (see note 2)	
	Underground supply	Dip from overhead supply
$0 < \text{kVA} \leq 3000$	#1 AWG	#1 AWG
$3000 < \text{kVA} \leq 5000$	#1 AWG	4/0 AWG