DIRECTIVE
No: D-E3 090313 1

HIGH VOLTAGE INSTALLATIONS

This Directive is being issued by a Provincial Safety Manager pursuant to section 30 of the Safety Standards Act. Stakeholders should consult with local authorities having jurisdiction prior to undertaking work, to determine local requirements.

Date of Issue: March 13, 2009

Scope
1. This directive provides guidance on the interpretation and application high-voltage installations operating, or designed to operate, in excess of 750V.
2. Utilities exempted from regulation by Electrical Safety Regulations Section 3 are not bound by this directive. This includes any work done on behalf of the Utility, when the contract is direct with the Utility, and the work is within the scope of the exemption in ESR (3).

Permits
3. All new high-voltage construction requires an installation permit obtained by a licensed contractor with an unrestricted ‘A’ FSR or restricted ‘LI’ FSR.
4. All high-voltage installations require an operating permit per Directive D-E3 070801 7 (Electrical Operating Permit Requirements) prior to energization. Installations that have a Utility take-over agreement do not require an operating permit.
5. If approved by variance, an operating permit with a ‘B’ class FSR is acceptable to operate the high-voltage equipment if that installation is a minor portion of the installation covered by the permit. In this case, maintenance or alteration of high-voltage equipment must be done by a licensed ‘A’ contractor under a separate permit.

Plans, Specifications, and Service Reports
6. Any plans and specifications required to be submitted must be approved by a Professional Engineer in good standing with the Association of Professional Engineers and Geoscientists of BC.
7. Plans and specifications may not be required to be submitted for installations being built under an approved variance for Utility take-over.
8. As per Directive D-E3 070302 3 (Section 2—General Rules), the following plans and specifications must be submitted with the permit application to the authority having jurisdiction:
   a) A one-line diagram of the installation from the utility connection to the main low voltage distribution point, including connections to any alternate power sources;
   b) Transformer ratings and ratios;
   c) Conductor types and sizes;
   d) Switch, fuse and circuit breaker ratings;
   e) Fault current levels available at the utility connection and at any low voltage distribution point; as well as any fuse co-ordination documents;
   f) Relay and tripping device settings; and
   g) Grounding system details including station grounds.
   h) Declarations from a Professional Engineer for the suitability of equipment, as outlined below.
9. Any revisions to plans and specifications ("as built" condition) must be submitted with other related documents (such as service reports, ground resistance tests, equipment acceptance reports) when the final declaration is submitted.

Acceptance of High-Voltage Equipment

10. High-voltage equipment will be accepted for service if:
   a) it bears an approval mark issued by an accredited certification or testing agency per Electrical Safety Regulations section 21(1);
   b) it is for privately built installations intended for Utility take-over; or
   c) it is declared to be suitable for the intended use by a Professional Engineer in good standing with the Association of Professional Engineers and Geoscientists of BC if:
      i) no approval program is available from an accredited certification agency;
      ii) the equipment is of a design that can be installed according the BC Electrical Code
      iii) the equipment is designed, built, and tested to the applicable CAN or CSA standard(s), where such a standard exists;
      iv) the equipment is labelled in accordance with Rule 2-100, except for the approval mark required in 2-100(i); and,
      v) specifications for the equipment have been submitted with the permit application.

11. For equipment accepted for service through a declaration by a Professional Engineer and installed at a specific location under an installation or operating permit, an approval label may not be required if a variance has been obtained per Safety Standards Act s. 32.

12. For equipment accepted for service through a declaration by a Professional Engineer but not installed at a specific location under permit, a BC Safety Authority Equipment Approval Label may be applied to the equipment. Requests for this service must be submitted on an “Electrical Product Approval” form.

13. Consumer high-voltage service entrance and protective equipment connected to the Utility system must be acceptable to the Utility.

Overhead Lines

14. Overhead lines are normally constructed to CEC Part III rules, as well as any applicable BC Electrical Code requirements. Information Bulletin B-E3 090312 1 provides information that may assist in the design and construction of overhead lines, whether operating at high or low voltage.

15. Private high-voltage overhead lines are required to have a disconnecting means with overcurrent protection, in accordance with Rule 36-204, at the point of connection to the utility.

16. Private high-voltage installations connected to the Utility must be acceptable to the Utility.
Utility Take-over

17. Privately built installations intended for Utility take-over may be exempted from some requirements of the BC Electrical Code, including submission of plans, specifications, and service reports, if, prior to construction,
   a) an installation permit exists, and
   b) a variance has been granted. The variance request must include a copy of the Take-over Agreement, approved by the Utility, including the effective date for take-over, and any conditions for take-over.

18. Privately built installations intended for Utility take-over shall be acceptable to the Utility.

Stephen Hinde
Provincial Safety Manager, Electrical

References:
Bill 19 – 2003 Safety Standards Act
B.C. Reg. 100/2004 Electrical Safety Regulation
B.C. Reg. 105/2004 Safety Standards General Regulation

For more information on the British Columbia Safety Authority, please visit our web site at: www.safetyauthority.ca