

(a) Where the power conductor used is No. 6 A.W.G., or larger, the cross-sectional area of the grounding wire is at least one-half the cross-sectional area of the power conductor.

(b) Where the power conductor used is less than No. 6 A.W.G., the cross-sectional area of the grounding wire is equal to the cross-sectional area of the power conductor.

**§ 77.701-4 Use of grounding connectors.**

If ground wires are attached to grounded power conductors, separate clamps, suitable for such purpose, shall be used and installed to provide a solid connection.

**§ 77.702 Protection other than grounding.**

Methods other than grounding which provide no less effective protection may be permitted by the Secretary or his authorized representative. Such methods may not be used unless so approved.

**§ 77.703 Grounding frames of stationary high-voltage equipment receiving power from ungrounded delta systems.**

The frames of all stationary high-voltage equipment receiving power from ungrounded delta systems shall be grounded by methods approved by an authorized representative of the Secretary.

**§ 77.703-1 Approved methods of grounding.**

The methods of grounding stated in § 77.701-1 will be approved with respect to the grounding of frames of high-voltage equipment referred to in § 77.703.

**§ 77.704 Work on high-voltage lines; deenergizing and grounding.**

High-voltage lines shall be deenergized and grounded before work is performed on them, except that repairs may be permitted on energized high-voltage lines if (a) such repairs are made by a qualified person in accordance with procedures and safeguards set forth in §§ 77.704-1 through 77.704-11 of this Subpart H as applicable, and (b) the operator has tested and properly

maintained the protective devices necessary in making such repairs.

**§ 77.704-1 Work on high-voltage lines.**

(a) No high-voltage line shall be regarded as deenergized for the purpose of performing work on it, until it has been determined by a qualified person (as provided in § 77.103) that such high-voltage line has been deenergized and grounded. Such qualified person shall by visual observation (1) determine that the disconnecting devices on the high-voltage circuit are in open position, and (2) insure that each ungrounded conductor of the high-voltage circuit upon which work is to be done is properly connected to the system grounding medium. In the case of resistance grounded or solid wye-connected systems, the neutral wire is the system grounding medium. In the case of an ungrounded power system, either the steel armor or conduit enclosing the system or a surface grounding field is a system grounding medium;

(b) No work shall be performed on any high-voltage line which is supported by any pole or structure which also supports other high-voltage lines until: (1) All lines supported on the pole or structure are deenergized and grounded in accordance with all of the provisions of this § 77.704-1 which apply to the repair of deenergized surface high-voltage lines; or (2) the provisions of §§ 77.704-2 through 77.704-10 have been complied with, with respect to all energized lines, which are supported on the pole or structure.

(c) Work may be performed on energized surface high-voltage lines only in accordance with the provisions of §§ 77.704-2 through 77.704-10, inclusive.

**§ 77.704-2 Repairs to energized high-voltage lines.**

An energized high-voltage line may be repaired only when:

- (a) The operator has determined that,
  - (1) Such repairs cannot be scheduled during a period when the power circuit could be properly deenergized and grounded;
  - (2) Such repairs will be performed on power circuits with a phase-to-phase nominal voltage no greater than 15,000 volts;