

## ***Material, Equipment and Method of Installation***

### **Regulation 15. Apparatus, conductor, accessory, etc.**

- (1) Any apparatus, conductor or accessory for the purpose of connection to an installation shall be sufficient in size, power and number to serve the purpose for which it is intended and shall be constructed, installed, arranged, protected, worked and maintained in such a manner as to prevent danger.
- (2) A conductor shall be insulated and effectively protected or so placed or safeguarded in such a manner as to prevent danger.
- (3) A conductor which is neither protected by metallic sheath nor conveyed in a conduit shall be protected by an insulating bush or tube, where it passes through a wall, partition, floor, or the roof of a building or other structure.
- (4) Every cable or metallic conduit in which cables are run can be buried in plaster provided that the cable or conduit is of such material that corrosion of the cable or conduit will not cause weakening of the insulation and consequent danger from leakage of current.
- (5) A cable or metallic conduit in which cables are run may be buried in pure cement or concrete.
- (6) Any conductor or apparatus that is exposed to the weather, water, corrosion, undue heating or used in inflammable surroundings or in an explosive atmosphere shall be constructed or protected in such a manner as to prevent danger.

### **Regulation 16. Switch, switchfuse, fuse switch, circuit breaker, contractor, fuse, etc.**

- (1) Any switch, switchfuse, fuse switch, circuit breaker or isolating link shall be—
  - (a) constructed, placed or protected in such a manner as to prevent danger;
  - (b) constructed and adjusted in such a manner as to and maintain efficient contact;
  - (c) provided with an efficient handle insulated from the system and arranged in such a manner that the handle cannot inadvertently touch any live part;
  - (d) constructed or arranged in such a manner that it cannot accidentally come into contact with any live conductor when left in the "off" position;
  - (e) constructed in such a manner that it cannot be left in partial contact with any live conductor; and
  - (f) constructed in such a manner that an arc cannot be maintained when used for breaking a circuit on load.

(2) Any circuit breaker or contactor used for changing a source of supply shall have poles which include a pole for the neutral.

(3) Any fuse or circuit breaker shall be—

(a) constructed and arranged in such a manner so as to break the current when it exceeds a given value for a sufficient time to prevent danger; and

(b) constructed, guarded or placed in such a manner as to prevent danger of overheating, arcing or from the scattering of hot metal or other substance.

(4) A fuse in subregulation (3) shall be either of such construction or protected by a switch so that the fusible portion shall be readily renewed without danger.

### **Regulation 17. Generator, motor, transformer, etc.**

(1) Any part of a generator, motor, transformer, or other equipment operating at high or extra high voltage which is within the natural reach of a person shall be protected where necessary to prevent danger.

(2) A motor shall be controlled by one or more effective starting devices for starting or stopping it

(3) The switch referred to in subregulation (2) shall be placed in such a manner that it can be easily operated by the person in charge of the motor.

(4) Any switchgear for use in connection with winches, winders and cranes exposed to the weather, on dredges or in underground places, operating at higher than low voltage, shall be of the totally enclosed metal-clad type.

(5) Where electricity is transformed from one voltage to another, provision shall be made to guard against danger by reason of the lower voltage system becoming accidentally charged above its normal voltage by leakage from or leakage due to contact with the higher voltage system.

(6) Where an auto-transformer is used for any purpose, care shall be taken to ensure that the voltage between any part of the lower voltage winding and the earth does not exceed the voltage between the terminals of the lower voltage winding.

(7) An underground substation, not otherwise easily and safely accessible, shall be provided with adequate means of access by a door way with a staircase or ladder securely fixed and placed in such a manner that no live part of any switchboard or any bare conductor is within the natural reach of any person.

### **Regulation 18. Means of isolation.**

In an electrical system effective means shall be provided for—

- (a) making dead every part of the system;
- (b) protecting every part of the system from excess current;
- (c) making dead every branch of a distribution system without interruption of supply to the remainder system; and
- (d) making dead every sub-circuit of a wiring system without interruption of supply to the remainder system.