

- Exposed conductive parts of electrical equipment
- Extraneous conductive parts
- Building main ring electrode

The design of the ground system shall be based on:

- Ground resistivity data
- Ground resistance of the whole system and its components
- Ground potential rise
- High ground resistance
- Systems fault currents and their duration
- Conductor ratings

The design calculations shall show that the fault currents and DC stray currents will not damage the grounding system.

Soil and Survey Calculations

A ground resistivity survey shall be carried out at each site. The weather conditions prior to and at the time of the surveys shall be recorded in the report and an assessment made of the seasonal variations in resistivity based on meteorological data for the area.

System Requirements

Grounding system components include:

- Ground electrode
- Main grounding terminals or bars
- Grounding conductors
- Protective conductors
- Equipotential bonding conductors
- Electrically independent ground electrodes for special systems (clean ground)

Shared neutral is not allowed. Ground electrode total combined resistance value shall not exceed ~~0.5~~ 5.0 ohm, during any season of the year and before interconnection to other grounded systems or grounding means.

Protective conductors shall not to be formed by conduit, trunking or ducting. Ground Fault Loop Impedance for complete circuits shall be recorded. Supplementary Equipotential Bonding: Connect all extraneous conductive parts of the buildings such as metallic conduit and raceways, cable trays and cable armour to nearest grounding terminals by equipotential bonding conductors.

A Ground Inspection Chamber shall be provided for each ground rod where connected to a grounding conductor and shall extend 150 mm below top of ground rod.

Transformer Grounding

Transformer body grounding terminal shall be connected to MV main grounding bar by insulated copper grounding conductor not less than 3 AWG per 100 kVA of transformer rating, with a minimum of 2 AWG.

Transformer neutral (star point) shall be connected by insulated grounding conductor (colour White) directly to independent grounding electrode. Neutral grounding conductor shall be sized for maximum ground fault current for 5 seconds.