

**USE:** General Customer information for grounding and bonding

## GENERAL INFORMATION

### INTRODUCTION

TEP/UES recognizes the value of the NEC Grounding and Bonding requirements. We are pleased to share the following illustrations and data applicable to the requirements.

This information will provide assistance and guidance to person's installing Service Entrance equipment in areas served by TEP/UES.

The methods of Grounding and Bonding of Service Entrance equipment shown in this manual are recommended to maintain consistency throughout our service territory.

The following drawings and tables will assist in assuring a safe and adequate grounding installation, acceptable under any code. Please consult your local governmental agency that has provided you with a permit for all applicable codes within their jurisdiction.

### NFPA 70 NEC

1. Customer wire shall not be run through utility sealed areas.
2. Weatherproof hubs, etc., shall be used on any penetrations of equipment at the same height or above energized areas. A good rule of thumb is; that unless the penetration is on the bottom surface of a can, it shall be done with a weatherproof connection. Indoor equipment is an exception to this requirement.
3. Bonding hubs (Meyers or equivalent) shall not be used on multi-centric knockouts, unless the largest knockout is used.
4. Interior metal water piping systems, complying with NEC requirements are permitted for grounding and shall be bonded to the service entrance enclosure with conductors sized per NEC. In multiple occupancy buildings where the interior metal water piping system for the individual occupancies is isolated from all other occupancies by the use of non-metallic pipe, each water system may be bonded to the panel board or switchboard enclosure supplying that occupancy, sized per NEC.
5. Other metal piping systems (e.g. gas pipe) shall be bonded to the service equipment enclosure with a conductor sized per NEC.
6. Nonconductive paint must be removed at threads, contact points and contact surfaces of any ground/bond lugs, terminal strips, etc., to assure a good electrical connection.

### GROUNDING



The grounding electrode conductor may be either bare or with green insulation. Ground electrode conductors not encased in conduit shall be a minimum size of No. 4 copper or larger and must be securely fastened to the building or structure with approved fastening devices. The spacing of such devices shall not exceed 2 feet. If a ground rod is used as an electrode, they shall be at least 6 feet apart and at least 8 feet shall be in contact with the soil.

Grounding Electrode conductors smaller than size No. 4 copper shall be solid copper wire, or shall be attached to the ground rod using the exothermic welding process.

### BONDING (UNFUSED AREA)

Bonding is required on all enclosures, equipment, raceways, and fittings which contain unfused service conductors. Nipples and bushings installed through eccentric or concentric knockouts must be bonded with ground bushings, wedges, or other approved devices. Bond conductor size shall be per NEC.

FORMALLY: SR-453 Page 2

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