The purpose and objective of "Article 250 – Grounding" is to ensure that electrical installations are safe from electric shock and fires by limiting voltage imposed by lightning and line surges. Though not listed in the title of Article 250, yet included in the requirement, "bonding" is the intentional connection of metal parts to form a low-impedance effective ground-fault current path to remove dangerous voltage from metal parts from a ground fault.

AUTHOR'S COMMENT: The grounding and bonding rules covered in this book apply to solidly grounded alternating-current systems under 600V, such as 120/240V, 208Y/120V and 480Y/277V. Other system configurations, such as 3-wire corner-grounded delta systems, ungrounded systems, or high-impedance grounded neutral systems are permitted by the *National Electrical Code*, but they are typically limited to 3-phase industrial applications and not covered in this book.

Part I. General

250.1 Scope

Part I contains the general requirements for grounding and bonding and the remaining parts contain specific grounding and bonding requirements such as:

(1) Systems and equipment required, permitted, or not permitted to be grounded.

(2) Which circuit conductor is required to be grounded on grounded systems.

(3) The location of grounding (bonding) connections.

(4) How to size grounding and bonding conductors.

(5) Methods of grounding and bonding.

250.2 Definitions

Effective Ground-Fault Current Path. An intentionally constructed, permanent, low-impedance conductive path designed to carry fault current from the point of a ground fault on a wiring system to the grounded (neutral) point at the electrical supply source. Figure 250-17

An effective ground-fault current path is created when all non-current-carrying electrically conductive materials of an electrical installation are bonded together and to the grounded (neutral) conductor at the electric supply. Effective bonding is accomplished through the use of equipment grounding (bonding) conductors, metallic raceways, connectors, couplings, metallic-sheathed cable with approved fittings and other approved devices recognized for this purpose [250.18].

AUTHOR'S COMMENT: A ground-fault current path is only effective when it is properly sized so that it will safely carry the maximum fault current likely to be imposed on it. See 250.4(A)(5) and 250.122 for additional details.

Ground Fault (Line-to-Case Fault). An unintentional, electrically conducting connection between an ungrounded conductor of an electrical circuit and metallic enclosures, metallic raceways, or metallic equipment. Figure 250-18

AUTHOR'S COMMENT: Line-to-case ground faults are not always of the low-impedance type; they might be of the high-impedance arcing type, which are difficult to clear before a fire destroys the equipment as well as the property. High impedance, in this case, occurs when improper bonding techniques have been

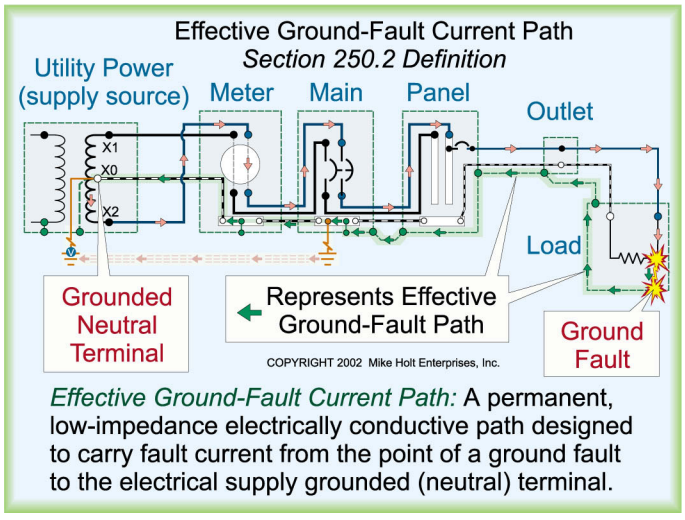

Figure 250–17