The equipotential plane shall include all metallic enclosures and controls that are likely to become energized and are accessible to personnel. The equipotential plane shall encompass the area around the equipment and shall extend from the area directly below the equipment out not less than 900 mm (36 in.) in all directions from which a person would be able to stand and come in contact with the equipment.

N **(B) Areas Not Requiring Equipotential Planes.** Equipotential planes shall not be required for the controlled utilization equipment on the docking facility or floating building supplied by the service equipment or disconnecting means.

Equipotential bonding of electrical equipment to mitigate the hazard of potential differences is a proven safety feature used in many settings where a shock hazard exists due to touch and step potentials between items of electrical equipment or between electrical equipment and ground. The increased likelihood of step and touch potentials due to wet or damp conditions resulting from the close proximity of electrical equipment to water is the hazard being addressed by this requirement. If outdoor service equipment or other disconnecting means is used to supply equipment in or on the water and the supply system voltage is rated over 250 volts to ground (i.e., a 277/480-volt wye system or a 240-volt delta system), all electrical equipment enclosures within 36 inches horizontally of the service equipment or disconnecting means must be connected together with an 8 AWG conductor. This connection equalizes the touch potential of all exposed conductive surfaces that are *likely to become energized*. Creating the equipotential plane is only required if the service equipment or disconnecting means is located within 10 feet of the body of water.

See also

Article 100 for the definition of *energized, likely to become*

682.33 for a parallel requirement covering electrical equipment installed in proximity to "natural and artificially made bodies of water"

N **555.15 Replacement of Equipment.** When modifications or replacements of electrical enclosures, devices, or wiring methods are necessary on a docking facility, they shall be required to comply with the requirements of this *Code*, and the installation shall require an inspection of the circuit. Existing equipment that has been damaged shall be identified, documented, and repaired by a qualified person to the minimum requirements of the edition of this *Code* to which it was originally installed.

Informational Note: NFPA 303-2021, *Fire Protection Standard for Marinas and Boatyards*, is a resource for guiding the electrical inspection of a marina.

Newly installed electrical equipment that complies with the requirements of Article 555 is considered to be safe. Once the installation has been approved by the AHJ, the responsibility for ongoing safe operation of the electrical system is transferred to the owner/operator of the docking facility. An unsafe presumption by many is that if the equipment is functioning, it must be safe. Unfortunately, that is not always true. Electrical equipment installed at docking facilities is subject to extreme environmental exposure and also to physical damage that is unintended in most cases but is inherent to the use of these types of facilities. While it may still be functioning, damaged electrical equipment can manifest into an unsafe condition, such as enclosures and pedestals that no longer prevent the entrance of moisture. Internal damage to electrical equipment can go unseen until it fails or an accident occurs.

Section 555.15 has the sole purpose of preventing electrical accidents due to the use of electrical equipment that no longer provides the requisite level of electrical safety. The NFPA standard cited in the Informational Note provides for yearly inspection of docking facilities, including a list of observations to make on docking facility electrical systems. Electricity and water are normally not a good mix, but *NEC* requirements such as those contained in Articles 555 and 680 provide for safe interface with electrical equipment while near or in water. However, this safe interface is only as good as how well the original level of safety provided by a compliant installation is maintained.

See also

90.2(B), in which the necessity of maintenance of electrical systems is discussed

Part II. Marinas, Boatyards, and Docking Facilities

555.30 Electrical Equipment and Connections.

Δ **(A) General.** All electrical components within electrical equipment (excluding wiring methods) and connections not intended for operation while submerged shall be located at least 305 mm (12 in.) above the deck of a fixed or floating structure, but not below the electrical datum plane. Conductor splices, within junction boxes identified for wet locations, utilizing sealed wire connector systems listed and identified for submersion shall be required for floating structures where located above the waterline but below the electrical datum plane.

Δ **(B) Replacements.** Replacement electrical connections shall be located at least 305 mm (12 in.) above the deck of a floating or fixed structure. Conductor splices, within junction boxes identified for wet locations, utilizing sealed wire connector systems listed and identified for submersion shall be required where located above the waterline but below the electrical datum plane.

Not all listed sealed wire-connector systems provide the same degree of protection from moisture ingress. Some sealed wire-connector systems are marked "Watertight" or "Submersible," as applicable.

555.31 Electrical Equipment Enclosures.

(A) Securing and Supporting. Electrical equipment enclosures installed on piers above deck level shall be securely and substantially supported by structural members, independent of