

ORDINANCE NO. 15001

An ordinance of the LAKE OZARK FIRE PROTECTION DISTRICT adopting the 2011 edition of the *National Electrical Code*, for the purposes of promoting the public safety, health and general welfare, to protect life and property and to govern and regulate the design, materials, quality and safety of materials and workmanship; provide for inspections, issuance of permits and fees thereof; and providing fines and penalties for violations thereof and repealing Ordinance Number 2006-1 of the Lake Ozark Fire Protection District and all other ordinances or parts of laws in conflict therewith.

BE IT ORDAINED BY THE BOARD OF DIRECTORS OF THE LAKE OZARK FIRE PROTECTION DISTRICT AS FOLLOWS:

**Section 1. Adoption of the Electrical Code.**

That a certain document, a copy of which is on file in the office of the Fire Marshal for the Lake Ozark Fire Protection District, being marked and designated as the "National Electrical Code, 2011 (NFPA 2011)" as published by the National Fire Protection Association shall be and is hereby adopted as the Electrical Code of the Lake Ozark Fire Protection District for the control of buildings and structures as provided herein, and each and all of the regulations, provisions, penalties, conditions and terms of said Electrical Code on file in the office of the Fire Marshal for the Lake Ozark Fire Protection District are hereby referred to, adopted and made a part hereof, as if fully set out in this ordinance, to the extent authorized by and not in conflict with the Revised Statutes of Missouri, with the following additions, insertions, deletions and changes, if any, prescribed below.

**Section 2. Jurisdictional Title/Definitions.**

Wherever "Authority Having Jurisdiction" shall appear in the Code, it shall read "Lake Ozark Fire Protection District."

**Section 3. Amendments to the Electrical Code.**

The following amendments are hereby adopted and made a part of this Code:

Delete Section 80.15 in its entirety and substitute in lieu thereof the following:

**APPLICATION OF APPEALS:** An owner, lessee, agent, operator, occupant or any other person aggrieved by an order or decision of the Fire Official pursuant to this Code, may file an appeal to the Board of Directors within ten days from the service of any order or decision. All appeals shall be filed in writing with the Fire Official. Applications may be made when it is claimed that the true intent of this code or rules adopted thereunder have been incorrectly interpreted, the provisions of this Code do not fully apply or an equally good or better form of construction can be used. Except for emergency conditions, such appeal shall stay the execution of an order or decision of the Fire Official until it has been heard and reviewed, vacated or confirmed by the Board of Directors.

**PUBLIC HEARING:** Upon receipt of a written application for an appeal, together with prescribed filing fees, the Board of Directors shall schedule and conduct a timely public hearing on the appeal. At such hearing, the Board of Directors shall provide the applicant and interested parties the opportunity to be heard, consider recommendations of the professional advisory committee (when applicable) and affirm, modify, revoke or vacate the order or decision of the Fire Official. The decision of the Board shall be in writing and delivered to the applicant and Fire Marshal within ten working days of the conclusion of the hearing.

**PROFESSIONAL ADVISORY COMMITTEE:** When emergency conditions do not exist and professional analysis is demanded by the applicant or determined necessary by the Board of Directors for matters of technical or legal complexity, the Board shall direct the formation of a special professional advisory committee to make recommendations on appeal decisions.

**COMPOSITION OF THE PROFESSIONAL ADVISORY COMMITTEE:** The professional advisory committee shall consist of no less than three persons, one of whom shall be the District's Fire Official. The second shall be the owner or legal representative, or a licensed professional engineer or architect or a qualified builder designated by that owner. The third shall be chosen jointly by the other two members or designated by the Board in case the parties fail to agree. In the event that the applicant demands both technical and legal analysis, a five-member committee shall be appointed; one being the Fire Official or designee, two being designated by the owner, and two being designated jointly by the unanimous decision of the other three, or by the Board in case the parties cannot unanimously agree. In all cases, the Fire Official or designee of the Fire Official shall act as the chairman of the committee.

**DUTIES OF THE PROFESSIONAL ADVISORY COMMITTEE:** It shall be the duty of the professional advisory committee to analyze the matter under appeal and prepare a timely written report of recommendations to the Board of Directors concerning decisions on the appeal. In situations where the committee members cannot unanimously agree on the recommendations, a simply majority agreement report of the committee shall be submitted and written minority reports, if provided, will be received as supplemental information for the Board's consideration.

**COMPENSATION OF THE PROFESSIONAL ADVISORY COMMITTEE:**

Each other member of the professional advisory committee shall receive a fee of \$50.00 per hearing for time, services and expenses related thereto. This fee shall be paid by the applicant for each such member present at hearings.

Compensation for the time and services of the jointly-determined member(s) of the professional advisory committee shall be the responsibility of the appeal applicant. The applicant shall post a security payment prior to the committee's deliberations, which the Board may utilize to pay for the time and services of the jointly-determined members of the professional advisory committee. The amount of such security shall be as reasonably determined by the Board and in no case shall such security be less than the total amount of the estimate building permit fee plus plan review fee of the District for the project when involving matters related to building permits.

**FILING FEE:** A filing fee of \$500.00 per project shall accompany an application for appeal. The District shall collect this fee prior to any hearing.

**FEE SCHEDULE:**

1. Filing fee \$500.00
2. Compensation of Advisory Board  
    Compensation of Advisory Board \$150.00  
    Compensation of Advisory Board \$250.00 if five person board

**COURT REVIEW:** Nothing contained herein shall be deemed to deny the right of any person, firm, corporation, partnership or voluntary association to appeal from an order and/or decision of the Board of Directors to a court of competent jurisdiction. Such appeals shall stay the execution of such order and/or decision until it has been heard and reviewed, vacated or confirmed. Application for review shall be made to the proper court of jurisdiction within 15 days after the delivery of the Board's decision to the applicant by certified mail, or filing with the office of the Fire Marshal when conditions prohibit such delivery.

**ADDITION: Dock Inspection Fees**

Each dock will be considered as its own structure. The fees will apply to each dock.

**The minimum fee is \$50.00**

**Dock Permit:**

Residential/Commercial up to four wells	\$50.00
Each additional well:	\$6.00

<b>Re-inspection Fee:</b>	\$35.00
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Delete Section 80.23(B)(3) and insert the following:

**80.23(B)(3) Violation Penalties:** Any person, firm or corporation who shall violate any provision of this ordinance, or who shall fail to comply with any of the requirements thereof, or who erects, constructs, alters or repairs a structure in violation of an approved plan or directive of the Fire Official or permit or certification issued under the provisions of this ordinance, or who shall start work requiring a permit without first obtaining a permit therefor, or who shall continue any work in or about a structure after having been served a Stop-Work Order (except for such work that such person, firm or corporation has been directed to perform to remove a violation or unsafe condition), or any owner or tenant of a building or premises or any other person who commits, takes part in or assists in any violation of this Code or who maintains any building or premises in which such violation shall exist, shall be guilty of a Class B misdemeanor, as modified by Section 321, RSMo, punishable by a fine and/or imprisonment, as provided by law. Each day that a violation continues shall be deemed a separate offense.

## **ARTICLE 553: Floating Buildings**

**553.4:** Add the following sentence: The disconnecting means shall be within six (6) feet of the entrance ramp and at the height of forty-two (42) inches above finished grade or surface.

Add a section as follows:

**553.4(A) Type of disconnecting means.** The disconnecting means shall be breaker type switches and shall be recognized as a disconnecting means.

Revise Article 554 as follows:

## **ARTICLE 554: Residential Docks**

### **I. General**

#### **554.1 Scope.**

This article covers wiring, services, feeders, and grounding for residential and private, noncommercial docking facilities constructed or occupied for the use of the owner or residents of the associated single- or two-family dwelling.

#### **554.2 Definition.**

**Residential Dock.** A private, noncommercial docking facility constructed or occupied for the use of the owner or residents or the associated single- or two-family dwelling is considered a residential dock. A residential dock includes a building unit that floats on water, is moored in a permanent location and has a premises wiring system served through connection by permanent wiring to an electricity supply system not located on the premises. The dock shall be limited to a service of fifty (50) amps or less.

#### **554.3 Application of Other Articles.**

Wiring for residential dock as defined in this article shall comply with the applicable provisions of other articles of this Code, except as modified by this article.

Wiring inside storage sheds, wet bars, bar areas and storage lockers shall use the same wiring method as the rest of the dock.

### **II. Services and Feeders**

#### **554.4 Location of Service or Feeder Service Equipment**

The service equipment or the feeder service equipment for a residential dock shall be located adjacent to, but not in or on, the building or any floating structure. The service or feeder service equipment shall be at or within six (6) feet of the floating building ramp.

**554.4(A) Existing Service or Feeder Service Conductors.** Existing service or feeder service conductors to a dock not meeting the current requirements shall not continue as installed. The conductors shall be inspected prior to being covered for confirmation that each meets the installation requirements for conductors as defined in the 2011 National Electrical Code. Any NM, NMC and NMS used as the service or feeder service conductors shall be replaced in a weatherproof junction box where it exits the residence. UF cable shall meet all the current installation requirements for the type of conductors used, including the correct burial depth.

**554.4(B) Disconnecting Means.** The disconnecting means for the service or feeder service equipment shall be forty-two (42) inches off finished grade or surface and shall be measured to the bottom of the equipment enclosure.

**554.4(C) Disconnecting Means Clarification.** All disconnecting means shall have the ability to isolate neutrals and grounds, bond the grounds and protect all circuits with a GFCI personal protection breaker (GFCI modules, pull out (AC) disconnects or regular breakers with only GFCI protected outlets are not allowed). All service, feeder and branch circuits shall be personal protected GFCI breakers (lighting, receptacles and other circuits).

**554.5 Service Conductors.**

One set of service conductors shall be permitted to serve more than one set of service equipment.

**554.6 Feeder Conductors.**

Each floating building shall be supplied by a single set of feeder conductors from its service or feeder service equipment.

*Exception: Where the floating building has multiple occupancy, each occupant shall be permitted to be supplied by a single set of feeder conductors extended from the occupant's service equipment to the occupant's panel board. The feeder conductors shall extend into one disconnecting means for the dock. The disconnect shall be within six (6) feet of the ramp or ramps that extend to the dock.*

**554.7 Installation of Services and Feeders.**

**(A) Flexibility.** Flexibility of the wiring system shall be maintained between floating buildings and the supply conductors. All wiring shall be installed so that motion of the water surface and changes in the water level will not result in unsafe conditions.

**(B) Wiring Methods.** Liquidtight flexible metal conduit or Liquidtight flexible nonmetallic conduit with approved fittings shall be permitted for feeders and where flexible connections are required for services. Extra-hard usage portable power cable listed for both wet locations and sunlight resistance shall be permitted for a feeder to a floating building where flexibility is required. Other raceways suitable for the location shall be permitted to be installed where flexibility is not required.

See 555.1 and 555.13

*Electrical Nonmetallic Tubing (ENT) may not be used as a wiring method.*

### **III. Grounding**

#### **554.8 General Requirements.**

Grounding at floating buildings shall comply with 553.8(A) through (D).

**(A) Grounding of Electrical and Nonelectrical Parts.** Grounding of both electrical and nonelectrical parts in a floating building shall be through connection to a grounding bus in the building panelboard.

**(B) Installation and Connection of Equipment Grounding Conductor.** The equipment-grounding conductor shall be installed with the feeder conductors and connected to a grounding terminal in the service equipment.

**(C) Identification of Equipment Grounding Conductor.** The equipment-grounding conductor shall be an insulated copper conductor with a continuous outer finish that is either green or green with one or more yellow stripes. For conductors larger than 6 AWG, or where multiconductor cables are used, re-identification of conductors as allowed in 250.119(A)(2)(b) and (A)(2)(c) or 250.119(B)(2) and (B)(3) shall be permitted.

**(D) Grounding Electrode Conductor Connection.** The grounding terminal in the service equipment shall be grounded by connection through an insulated grounding electrode conductor to a grounding electrode on shore.

**(E) Grounding Electrode Conductor.** The installation must comply with Article 254.64, either in conduit suited for the application or secured tightly to the supporting structure and buried underground to the ground rod.

**(H) Service Grounding Conductor at Source.** The existing service at service equipment shall have a proper grounding electrode system per section 250.50. If the service is not properly grounded, a grounding electrode system shall be installed that meets the requirements of the 2011 National Electrical Code.

#### **554.9 Insulated Neutral.**

The grounded circuit conductor (neutral) shall be an insulated conductor identified in conformance with 200.6 (shall be identified by a continuous white or gray outer finish or by three continuous white stripes on other than green insulation along its entire length). The neutral conductor shall be connected to the equipment-grounding terminal in the service equipment, and, except for that connection, it shall be insulated from the equipment grounding conductors, equipment enclosures and all other grounded parts. The neutral circuit terminals in the

panelboard and in ranges, clothes dryers, counter-mounted cooking units and the like shall be insulated from the enclosures.

**554.10 Equipment Grounding.**

**(A) Electrical Systems.** All enclosures and exposed metal parts of electrical systems shall be bonded to the grounding bus.

**(B) Cord-Connected Appliances.** Where required to be grounded, cord-connected appliances shall be grounded by means of an equipment-grounding conductor in the cord and a grounding-type attachment plug.

**554.11 Bonding of Non-Current-Carrying Metal Parts.**

All metal parts in contact with the water, all metal piping and all non-current-carrying metal parts that may become energized shall be bonded to the grounding bus in the panelboard.

**IV. Electrical Equipment**

**554.12 Electrical Equipment Enclosures.**

**(A) Securing and Supporting.** Electrical equipment enclosures installed above deck level shall be securely and substantially supported by structural members, independent of any conduit connected to them. If enclosures are not attached to mounting surfaces by means of external ears or lugs, the internal screw heads shall be sealed to prevent seepage of water through the mounting holes.

**(B) Locations.** Electrical equipment enclosures shall be located so as not to interfere with mooring lines.

**(C) Weep Holes.** Weatherproof enclosures are allowed to have "weep holes."

**554.13 Circuit Breakers, Switches, Panelboards and Marine Power Outlets.**

Circuit breakers and switches installed in gasketed enclosures shall be arranged to permit required manual operation without exposing the interior of the enclosure. All such enclosures shall be arranged with a weep hole to discharge condensation.

**554.14 Wiring Methods and Installation.**

All installations above the waterline and below 8 feet of the floating building will be considered a wet location. All installations above 8 feet and not exposed to weather will be considered a damp location.

The complete electrical system shall be located above the finished surface of the dock in order to improve the ability of the owner to regularly inspect and maintain the system.

**(A) Wiring Methods.**

**(1) General.** Wiring methods of Chapter 3 shall be permitted where identified for use in wet locations.

**(2) Portable Power Cables.** Extra-hard usage portable power cables rated not less than 167°F (75°C), 600 volts, listed for both wet locations and sunlight resistance and having an outer jacket rated to be resistant to temperature extremes, oil, gasoline, ozone, abrasion, acids and chemicals shall be permitted as follows:

- (1) As permanent wiring on the underside of piers and docks (floating or fixed)
- (2) Where flexibility is necessary, as on piers and docket composed of floating sections.

**(B) Installation.**

\*removed text

**(1) Outside Branch Circuits and Feeders.** Outside branch circuits and feeders shall comply with Article 225.

\*removed text

**(2) Portable Power Cables.**

(a) Where portable power cables are permitted by 553.13(A)(2), the installation shall comply with the following:

- (1) Cables shall be properly supported.
- (2) Cables shall be located on the underside of the dock or pier.
- (3) Cables shall be securely fastened by nonmetallic clips to structural members other than the deck planking.
- (4) Cables shall not be installed where subject to physical damage.
- (5) Where cables pass through structural members, they shall be protected against chafing by a permanently installed oversized sleeve of nonmetallic material.

(a) Where portable power cables are used as 555.13(A)(2)(2), there shall be an approved junction box of corrosion-resistant construction with permanently installed terminal blocks on each pier and dock section to which the feeder and feeder extensions are to be connected. Metal junction boxes and their covers, and metal screws and parts that are exposed externally to the boxes shall be of corrosion-resistant materials or protected by material resistant to corrosion.

**(3) Protection.** Rigid metal or nonmetallic conduit suitable for the location shall be installed to protect wiring above decks of piers, docks and landing stages and below the enclosure that it serves. The conduit shall be connected to the enclosure by full



standard threads. The use of special fittings of nonmetallic material to provide a threaded connection into enclosures on rigid nonmetallic conduit, employing joint design as recommended by the conduit manufacturer for attachment of the fitting to the conduit shall be acceptable, provided the equipment and method of attachment are approved, and the assembly meets the requirements of installation in damp or wet locations as applicable.

**554.15 Disconnecting Means for Shore Power Connection(s).**

Disconnecting means shall be provided to isolate each boat from its supply connection(s).

- (A) **Type.** The disconnecting means shall be permitted to consist of a circuit breaker, switch, or both, and shall be properly identified as to which receptacle it controls.
- (B) **Location.** The disconnecting means shall be readily accessible, located not more than 30 inches from the receptacle it controls, and shall be located in the supply circuit ahead of the receptacle. Circuit breakers or switches located in marine power outlets complying with this section shall be permitted as the disconnecting means.

**554.16 Receptacles.**

Receptacles shall be mounted not less than 36 inches above the deck surface. **\*removed text.**

**(A) Shore Power Receptacles.**

All shore power receptacles shall be GFCI protected (Ground-Fault Circuit-Interrupter).

- (1) **Enclosures.** Receptacles intended to supply shore power to boats shall be housed in marine power outlets listed as marina power outlets or listed for set locations, or shall be installed in listed enclosures protected from the weather or in listed weatherproof enclosures. The integrity of the assembly shall not be affected when the receptacles are in use with any type of booted or nonbooted attachment plug/cap inserted.
- (2) **Strain Relief.** Means shall be provided where necessary to reduce the strain on the plug and receptacle caused by the weight and catenary angle of the shore power cord.
- (3) **Branch Circuits.** Each single receptacle that supplies shore power to boats shall be supplied from a marine power outlet or panelboard by an individual branch circuit of the voltage class and rating corresponding to the rating of the receptacle.
- (4) **Ratings.** Shore power boats shall be provided by single receptacles rated not less than 30 amperes.

For locking and grounding type receptacles for auxiliary power to boats, see NPA 303-2000, *Fire Protection Standard for Marinas and Boatyards*.

- (a) Receptacles rated not less than 30 amperes or more than 50 amperes shall be of the locking and grounding type.

For various configurations and ratings of locking and grounding type receptacles and caps, see ANSI/NEWA 18WD 6-1989, National Electrical Manufacturers Association's *Standard for Dimensions of Attachment Plugs and Receptacles*.

- (b) Receptacles rated for 60 amperes or 100 amperes shall be of the pin and sleeve type.

For various configurations and ratings of pin and sleeve receptacles, see ANSI/UL 1686, *UL Standard for Safety Pin and Sleeve Configurations*.

## **(B) Other Than Shore Power.**

- (1) **Ground-Fault Circuit-Interrupter (GCFI) Protection for Personnel.** Fifteen and 20 ampere, single-phase, 125-volt receptacles installed outdoors, in boathouses, in buildings used for storage, maintenance or repair where portable electrical hand tools or portable lighting equipment are to be used shall be provided with GFCI protection for personnel. Receptacles in other locations shall be protected in accordance with 210.8(B).
- (2) **Marking.** Receptacles other than those supplying shore powers to boats shall be permitted to be housed in marine power outlets with the receptacles that provide shore power to boats, provided they are marked to clearly indicate that they are not to be used to supply power to boats.

**554.17 Temporary Wiring.** Temporary wiring shall not be used to supply boats or docks.

**DELETION: Article 555, Marinas and Boatyards** (page 70-477). Delete in its entirety and insert:

## **ARTICLE 555: MARINAS AND BOATYARDS**

### **555.1 Scope**

This article covers the installation of wiring and equipment in the areas comprising fixed or floating piers, wharves, docks and other areas in marinas, boatyards, boat basins, boathouses, yacht clubs, boat condominiums, docking facilities associated with residential condominiums, any multiple docking facility or similar occupancies, residential docks with a service of 51 amps or larger and facilities that are used or intended for use for the purpose of repair, berthing, launching, storage or fueling of small craft and the moorage of floating buildings.

This article does not cover private, noncommercial docking facilities constructed or occupied for the use of the owner or residents of the associated single- or two-family dwelling.

The docks covered under this section shall submit an electrical schematic and cut sheets on type or types of material to be used for the project.

Wiring inside storage sheds, wet bars, bar areas and storage lockers shall use the same wiring method as the rest of the dock.

See NFPA 303-2000, *Fire Protection Standard for Marinas and Boatyards*, for additional information.

**(A) Application of Other Articles.** Wiring for docks covered by this article shall comply with the applicable provisions of other articles of this Code, except as modified by this Article.

## **555.2 Definitions**

**Electrical Datum Plane.** The electrical datum plane is defined as follows:

- (1) In land areas subject to tidal fluctuation, the electrical datum plane is a horizontal plane 606 mm (2 feet) above the highest tide level for the area occurring under normal circumstances, that is, highest high tide.
- (2) In land areas not subject to tidal fluctuation, the electrical datum plane is a horizontal plane 606 mm (2 feet) above the highest water level for the area occurring under normal circumstances.
- (3) The electrical datum plane for floating piers and landing stages that are (a) installed to permit rise and fall response to water level, without lateral movement and (b) equipped so that they can rise to the datum plane established for (1) or (2), is a horizontal plane 762 mm (30 inches) above the water level at the floating pier or landing stage and a minimum of 305 mm (12 inches) above the level of the deck.

**Marine Power Outlet.** An enclosed assembly that can include receptacles, circuit breakers, fused switches, fuses, watt-hour meter(s) and monitoring means approved for marine use.

**555.3 Ground-Fault Protection.** The main overcurrent protective device serving the dock shall be protected with ground fault protection not exceeding 100 mA (these are the conductors from the shoreline disconnect to the subpanel on the dock). The circuits leaving the sub-panels on the dock shall be GFCI personal protected with a breaker (all branch circuit on a dock shall be GFCI protected, not just the receptacle outlets).

## **555.4 Distribution System.**

Yard and pier distribution systems shall not exceed 600 volts phase to phase.

## **555.5 Transformers.**

Transformers and enclosures shall be specifically approved for the intended location. The bottom of enclosures for transformers shall not be located below the electrical datum plane.

## **555.7 Location of Service Equipment.**

The service equipment for floating docks or marinas shall be located adjacent to, but not on or in, the floating structure. The service equipment shall be at or within 6 feet of the marina and boatyard ramp.

**555.7(A) Existing Service or Feeder Service Conductors.** Existing service or feeder service conductors to a dock not meeting the current requirements shall not continue as installed. The conductors shall be inspected prior to being covered for confirmation to determine each meets the installation requirements for conductors as identified in the 2011 National Electrical Code. Any NM, NMC and NMS used as the service or feeder service conductors shall be replaced in a weather proof junction box where it exits the residence. UF cable shall meet all the current installation requirements for the type of conductors used, including the correct burial depth.

**555.7(B) Disconnecting Means.** The disconnecting means for the service or feeder service equipment shall be forty-two (42) inches off finished grade or surface and shall be measured to the bottom of the equipment enclosure.

**555.9 Electrical Connections.**

All electrical connections shall be located at least 36 inches above the deck of a floating pier, pier or dock. \*removed text.

**555.10 Electrical Equipment Enclosures.**

**(A) Securing and Supporting.** Electrical equipment enclosures installed in piers above deck level shall be securely and substantially supported by structural members, independent of any conduit connected to them. If enclosures are not attached to mounting surfaces by means of external ears or lugs, the internal screw heads shall be sealed to prevent seepage of water through mounting holes.

**(B) Location.** Electrical equipment enclosures on piers shall be located so as not to interfere with mooring lines.

**(C)** Weatherproof enclosures are allowed to have "weep holes."

**555.11 Circuit Breakers, Switches, Panelboards and Marine Power Outlets.**

Circuit breakers and switches installed in gasketed enclosures shall be arranged to permit required manual operation without exposing the interior of the enclosure. All such enclosures shall be arranged with a weep hole to discharge condensation.

**555.12 Load Calculations for Service and Feeder Conductors.**

General lighting and other loads shall be calculated in accordance with Article 220 and, in addition, the demand factors set forth in Table 555.12 shall be permitted for each service and/or feeder circuit supplying receptacles that provide shore power for boats. These calculations shall be permitted to be modified as indicated in notes (1) and (2) to Table 555.12.

**Table 555.12 Demand Factors**

<b>Number of Receptacles</b>	<b>Sum of the Rating of the Receptacles (percent)</b>
1-4	100
5-8	90
9-14	80
15-30	70
31-40	60
41-50	50
51-70	40
71-plus	30

**Notes:**

1. Where shore power accommodations provide two receptacles specifically for an individual boat slip and these receptacles have different voltages (for example, one 30 ampere, 125 volt and one 50 ampere, 125/250 volt), only the receptacle with the larger kilowatt demand shall be required to be calculated.
2. If the facility being installed includes individual kilowatt-hour submeters for each slip and is being calculated using the criteria listed in Table 555.12, the total demand ampere may be multiplied by 0.9 to achieve the final demand ampere.
3. These demand factors may be inadequate in areas of extreme hot or cold temperatures with loaded circuits for heating, air conditioning or refrigerating equipment.

**555.13 Wiring Methods and Installation.**

All installations measured from the waterline and below 8 feet will be considered a wet location. All installations above 8 feet and not exposed to weather will be considered damp locations.

**(A) Wiring Methods.**

**(1) General.** Wiring methods of Chapter 3 shall be permitted where identified for use in wet locations.

**(2) Portable Power Cables.** Extra-hard usage portable power cables rated not less than 167°F (75°C), 600 volts, listed for both wet locations and sunlight resistance and having an outer jacket rated to be resistant to temperature extremes, oil, gasoline, ozone, abrasion, acids and chemicals shall be permitted as follows:

- (1) As permanent wiring on the underside of piers (floating or fixed)
- (2) Where flexibility is necessary as on piers composed of floating sections

**(3) Temporary Wiring.** Temporary wiring, except as permitted by Article 590, shall not be used to supply power to boats.

**(B) Installation.**

\*removed text

**(1) Outside Branch Circuits and Feeders.** Outside branch circuits and feeders shall comply with Article 225 except that clearances for overhead wiring in portions of the yard other than those described in 555.13(B)(1) shall not be less than 5.49 m (18 feet) above grade.

**(2) Portable Power Cables.**

(a) Where portable power cables are permitted by 555.13(A)(2), the installation shall comply with the following:

- (1) Cables shall be properly supported.
- (2) Cables shall be located on the underside of the pier.
- (3) Cables shall be securely fastened by nonmetallic clips to structural members other than the deck planking.
- (4) Cables shall not be installed where subject to physical damage.
- (5) Where cables pass through structural members, they shall be protected against chafing by a permanently installed oversized sleeve of nonmetallic material.

(b) Where portable power cables are used as permitted in 555.13(A)(2)(2), there shall be an approved junction box of corrosion-resistant construction with permanently installed terminal blocks on each pier section to which the feeder and feeder extensions are to be connected. A listed marine power outlet employing terminal blocks/bars shall be permitted in lieu of a junction box. Metal junction boxes and their covers, and metal screws and parts that are exposed externally to the boxes, shall be of corrosion-resistant materials or protected by material resistant to corrosion.

**(3) Protection.** Rigid metal conduit, reinforced thermosetting resin conduit (RTRC) listed for aboveground use, or rigid polyvinyl chloride (PVC) conduit suitable for the location shall be installed to protect wiring above decks of piers and landing stages and below the enclosure that it serves. The conduit shall be connected to the enclosure by full standard threads or fittings listed for use in damp or wet locations, as applicable. The use of special fittings of nonmetallic material to provide a threaded connection into enclosures on rigid nonmetallic conduit, employing joint design as recommended by the conduit manufacturer for attachment of the fitting to the conduit shall be acceptable, provided the equipment and method of attachment are approved and the assembly meets the requirements of installation in damp or wet locations as applicable.

**555.15 Grounding.**

Wiring and equipment within the scope of this Article shall be grounded as specified in Article 250 and as required by 555.15(A) through 555.15(E).

**(A) Equipment to be Grounded.** The following items shall be connected to an equipment grounding conductor run with circuit conductors in the same raceway, cable or trench:

- (1) Metal boxes, metal cabinets and all other metal enclosures
- (2) Metal frames of utilization equipment
- (3) Grounding terminals of grounding-type receptacles

- (B) **Type of Equipment Grounding Conductor.** The equipment grounding conductor shall be an insulated copper conductor with a continuous outer finish that is either green or green with one or more yellow stripes. The equipment grounding conductor of Type MI cable shall be permitted to be identified at terminations. For conductors larger than 6 AWG, or where multiconductor cables are used, re-identification of conductors as allowed in 250.119(A)(2)(b) and (A)(2)(c) or 250.119(B)(2) and (B)(3) shall be permitted.
- (C) **Size of Equipment Grounding Conductor.** The insulated copper equipment grounding conductor shall be sized in accordance with 250.122 but not smaller than 12 AWG.
- (D) **Branch-Circuit Equipment Grounding Conductor.** The insulated equipment-grounding conductor for branch circuits shall terminate at a grounding terminal in a remote panelboard or the grounding terminal in the main service equipment.
- (E) **Feeder Equipment Grounding Conductors.** Where a feeder supplies a remote panelboard, an insulated equipment-grounding conductor shall extend from a grounding terminal in the service equipment to a grounding terminal in the remote panel board.
- (F) **Grounding Electrode Conductor.** The installation must comply with Article 254.64, either in conduit suited for the application or secured tightly to the supporting structure and buried underground to the ground rod.
- (H) **Service Grounding Conductor at Source.** The existing service at service equipment shall have a proper grounding electrode system per section 250.50. If the service is not properly grounded, a grounding electrode system shall be installed that meets the requirements of the 2011 National Electrical Code.

**555.17 Disconnecting Means for Shore Power Connection(s).**

Disconnecting means shall be provided to isolate each boat from its supply connection(s)

- (A) **Type.** The disconnecting means shall be permitted to consist of a circuit breaker, switch, or both, and shall be properly identified as to which receptacle it controls.
- (B) **Location.** The disconnecting means shall be readily accessible, located not more than 762 mm (30 inches) from the receptacle it controls, and shall be located in the supply circuit ahead of the receptacle. Circuit breakers or switches located in marine power outlets complying with this section shall be permitted as the disconnecting means.

**555.19 Receptacles.**

**All receptacles shall be GFCI protected.**

Receptacles shall be mounted not less than 36 inches above the deck surface. **\*removed text.**

**(A) Shore Power Receptacles.** All shore power receptacles shall be GFCI protected (Ground-Fault Circuit-Interrupter).

**(1) Enclosures.** Receptacles intended to supply shore power to boats shall be housed in marine power outlets listed as marina power outlets or listed for set locations, or shall be installed in listed enclosures protected from the weather or in listed weatherproof enclosures. The integrity of the assembly shall not be affected when the receptacles are in use with any type of booted or nonbooted attachment plug/cap inserted.

**(2) Strain Relief.** Means shall be provided where necessary to reduce the strain on the plug and receptacle caused by the weight and catenary angle of the shore power cord.

**(3) Branch Circuits.** Each single receptacle that supplies shore power to boats shall be supplied from a marine power outlet or panelboard by an individual branch circuit of the voltage class and rating corresponding to the rating of the receptacle.

Supplying receptacles at voltages other than the voltages marked on the receptacle may cause overheating or malfunctioning of connected equipment, for example, supplying single-phase, 120/240 volt, 3-wire loads from a 208Y/120-volt, 3-wire source.

**(4) Ratings.** Shore power for boats shall be provided by single receptacles rated not less than 30 amperes.

For locking and grounding type receptacles for auxiliary power to boats, see NFPA 303-2000, *Fire Protection Standard for Marinas and Boatyards*.

(a) Receptacles rated no less than 30 amperes or more than 50 amperes shall be of the locking and grounding type.

For various configurations and ratings of locking and grounding type receptacles and caps, see ANSI/NEMA 18WD 6-1989, National Electrical Manufacturers Association's *Standard for Dimensions of Attachment Plugs and Receptacles*.

(b) Receptacles rated for 60 amperes or 100 amperes shall be of the pin and sleeve type.

For various configurations and ratings of pin and sleeve receptacles, see ANSI/UL 1686, *UL Standard for Safety Pin and Sleeve Configurations*.

**(B) Other Than Shore Power.**

**(1) Ground-Fault Circuit-Interrupter (GFCI) Protection for Personnel.** Fifteen- and 20-ampere, single-phase, 125-volt receptacles installed outdoors in boathouses, in buildings or structures used for storage, maintenance or repair where portable electrical hand tools,



electrical diagnostic equipment or portable lighting equipment are to be used shall be provided with GFCI protection for personnel. Receptacles in other locations shall be protected in accordance with 210.8(B).

**(2) Marking.** Receptacles other than those supplying shore power to boats shall be permitted to be housed in marine power outlets with the receptacles that provide shore power to boats, provided they are marked to clearly indicate that they are not to be used to supply power to boats.

**555.21 Motor Fuel Dispensing Stations – Hazardous (Classified) Locations.**

Electrical wiring and equipment located at or serving motor fuel dispensing stations shall comply with Article 514 in addition to the requirements of this Article. All electrical wiring for power and lighting shall be installed on the side of the wharf, pier, or dock opposite from the liquid piping system.

For additional information, see NFPA 303-2000, *Fire Protection Standard for Marinas and Boatyards*, and NFPA 30A-2003, *Motor Fuel Dispensing Facilities and Repair Garages*.

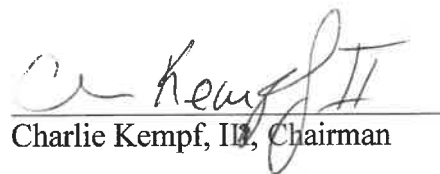
**555.22 Repair Facilities – Hazardous (Classified) Locations.**

Electrical wiring and equipment located at facilities for the repair of marine craft containing flammable or combustible liquids or gases shall comply with Article 511 in addition to the requirements of this Article.

**555.23 Marine Hoists, Railways, Cranes and Monorails.**

Motors and controls for marine hoists, railways, cranes and monorails shall not be located below the electrical datum plane. Where it is necessary to provide electric power to a mobile crane or hoist in the yard and a training cable is utilized, it shall be a listed portable power cable rated for the conditions of use and be provided with an outer jacket of distinctive color for safety.

Adopted this 27<sup>th</sup> day of February, 2014 and effective \_\_\_\_\_.

  
Charlie Kempf, III, Chairman

  
Ed Dobson, Director

  
Paul Faulconer, Director

Attest:

  
\_\_\_\_\_  
Karen Bishop, Secretary