HOUSE AMENDMENT NO.____
TO
HOUSE AMENDMENT NO.____

Offered By

_____ _____

AMEND House Amendment No._____ to House Bill No. 2230, Page 1, Lines 7-36, and Page 2, Lines 1-18, by deleting all of said lines and inserting in lieu thereof the following:

"320.400. 1. The provisions of sections 320.400 to 320.428 shall apply to wiring, services, feeders, and grounding for private residential and noncommercial docking facilities constructed or occupied for the use of the owner or residents of an associated single-family or two-family dwelling with an electrical service of fifty amperes or less.

2. For purposes of sections 320.400 to 320.428, the following terms mean:

(1) "Dock", 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;

(2) "Marine power outlet", an enclosed assembly that may include receptacles, circuit breakers, fused switches, fuses, a watt-hour meter or meters, and monitoring means approved for marine use;

(3) "Residential dock", a private, noncommercial docking facility, with an electrical service of fifty amperes or less, that is constructed or occupied for the use of the owner or residents of an associated single-family or two-family dwelling.

320.402. 1. Wiring inside storage sheds, wet bars, bar areas, and storage lockers located on residential docks shall use the same wiring method as the rest of the dock.

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

3. 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 if it meets the installation requirements for conductors as identified in the 2011 National Electrical Code. Any type NM, NMC, and NMS cable used as the service of feeder service conductors shall be replaced in a weatherproof junction box where it exits the residence. Underground feeder cable shall meet all the current installation requirements for the type of conductors used, including the correct burial depth.

4. The disconnecting means for the service or feeder service equipment shall be forty-two inches above a finished grade or surface and shall be measured to the bottom of the equipment enclosure.

5. All disconnecting means shall have the ability to isolate neutrals and grounds, bond the

Standing Action Taken_____ Date _____

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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 shall not be allowed. All service, feeder, and branch circuits shall be personal protected GFCI breakers.

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

320.404. Each floating building shall be supplied by a single set of feeder conductors from its service or feeder service equipment; except 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 feet of the ramp or ramps that extended to the dock.

320.406. 1. 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.

2. Liquid tight flexible metal conduit or liquid tight 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.

320.408. Grounding at floating buildings shall comply with the following:

(1) Grounding of both electrical and nonelectrical parts in a floating building shall be through connection to a grounding bus in the building panelboard;

(2) The equipment-grounding conductor shall be installed with the feeder conductors and connected to a grounding terminal in the service equipment;

(3) 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, reidentification of conductors as allowed in articles 250.119(A)(2)(b) and 250.119(A)(2)(c), or articles 250.119(B)(2) and 250.119(B)(3), of the 2011 National Electrical Code shall be permitted;

(4) The grounding terminal in the service equipment shall be grounded by connection through an insulated grounding electrode conductor to a grounding electrode on shore. The installation shall comply with article 254.64 of the 2011 National Electrical Code using conduit suited for the application or secured tightly to the supporting structure and buried underground to the ground rod; and

(5) The existing service at service equipment shall have a proper grounding electrode system as required under article 250.50 of the 2011 National Electrical Code. If the service is not properly grounded, a grounding electrode system shall be installed that meets the requirements of the 2011 National Electrical Code.

320.410. The neutral grounded circuit conductor shall be an insulated conductor identified by a continuous white or gray outer finish or by three continuous white stripes on a color 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 other similar appliances shall be insulated from the enclosures.

320.412. 1. All enclosures and exposed metal parts of electrical systems shall be bonded to the grounding bus. If 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.

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

320.414. 1. Electrical equipment enclosures installed on or 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.

2. Electrical equipment enclosures shall be located so as not to interfere with mooring lines.

3. Weatherproof enclosures are allowed to have weep holes.

320.416. 1. 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.

2. All installations above the waterline and below eight feet of the floating building shall be considered a wet location. All installations above eight feet and not exposed to weather shall 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.

320.418. 1. Wiring methods of Chapter 3 of the National Electrical Code of 2011 shall be permitted where identified for use in wet locations.

2. Extra-hard usage portable power cables rated not less than 167 F (75 C), six hundred 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 floating or fixed piers and docks; and

(2) Where flexibility is necessary as on piers and docks composed of floating sections.

320.420. 1. Outside branch circuits and feeders shall comply with article 225 of the National Electrical Code of 2011.

2. Where portable power cables are permitted under article 553.13(A)(2) of the National Electrical Code of 2011, 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; and

(5) If cables pass through structural members, they shall be protected against chafing by a permanently installed oversized sleeve of nonmetallic material.

3. If portable power cables are used as provided in article 555.13(A)(2)(2) of the National Electrical Code of 2011, 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.

4. 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 the dock 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 manufacter, 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.

320.422. 1. Disconnecting means shall be provided to isolate each boat from its supply connection or connections.

2. 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.

3. The disconnecting means shall be readily accessible, located not more than thirty 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.

320.424. 1. Receptacles shall be mounted not less than thirty-six inches above the deck surface. All shore power receptacles shall be GFCI protected. 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 or cap inserted.

2. Means shall be provided as necessary to reduce the strain on the plug and receptacle caused by the weight and catenary angle of the shore power cord.

3. 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. Shore power boats shall be provided by single receptacles rated not less than thirty amperes. For locking-type and grounding-type receptacles for auxiliary power to boats, the provisions of article 303-2000, Fire Protection Standard for Marinas and Boatyards, of the National Electrical Code of 2011, shall apply.

5. Receptacles rated not less than thirty amperes or more than fifty amperes shall be of the locking and grounding type.

6. Receptacles rated for sixty amperes or one hundred amperes shall be of the pin and sleeve type.

320.426. 1. Fifteen and twenty ampere, single-phase, one hundred twenty-five-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 article 210.8(B) of the National Electrical Code of 2011.

2. 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.

320.428. Temporary wiring shall not be used to supply boats or docks.

320.500. The provisions of sections 320.500 to 320.536 shall apply to the installation of wiring and equipment on 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 fifty-one amperes 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. The provisions of sections 320.500 to 320.536 shall not apply to private residential and noncommercial docking facilities constructed or occupied for the use of the owner or residents of an associated single-family or two-family dwelling with an electrical service of fifty amperes or less.

320.502. For purposes of sections 302.300 to 302.336, the following terms mean:

(1) "Electrical datum plane":

(a) In land areas subject to tidal fluctuation, the electrical datum plane is a horizontal plane six hundred six mm, or two feet, above the highest tide level for the area occurring under normal circumstances, commonly referred to as highest high tide;

(b) In land areas not subject to tidal fluctuation, the electrical datum plane is a horizontal plane six hundred six mm, or two feet, above the highest water level for the area occurring under normal circumstances;

(c) The electrical datum plane for floating piers and landing stages that are installed to permit rise and fall response to water level, without lateral movement, and so equipped that they can rise to the datum plane established for subdivisions (1) or (2) of this subsection, is a horizontal plane seven hundred sixty-two mm, or thirty inches, above the water level at the floating pier or landing stage and a minimum of three hundred five mm, or twelve inches, above the level of the deck;

(2) "Marine power outlet", an enclosed assembly that may include receptacles, circuit breakers, fused switches, fuses, a watt-hour meter or meters, and monitoring means approved for marine use.

320.504. 1. The main overcurrent protective device serving the dock shall be protected with ground fault protection not exceeding 100 mA. The circuits leaving the sub-panels on the dock shall be GFCI personal protected with a breaker; all branch circuits on a dock shall be GFCI protected, not just the receptacle outlets.

2. Yard and pier distribution systems shall not exceed six hundred volts phase to phase.

3. 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.

320.506. 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 six feet of the marina and boatyard ramp.

320.508. 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 they meet the installation requirements for conductors as identified in the 2011 National Electrical Code. Any type NM, NMC, and NMS cable used as the service of feeder service conductors shall be replaced in a weatherproof junction box where it exits the residence. Underground feeder cable shall meet all the current installation requirements for the type of conductors used including the correct burial depth.

320.510. The disconnecting means for the service or feeder service equipment shall be forty-two inches above a finished grade or surface and shall be measured to the bottom of the equipment enclosure.

320.512. All electrical connections shall be located at least thirty-six inches above the deck of a floating pier, pier, or dock.

320.514. 1. Electrical equipment enclosures installed on 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.

2. Electrical equipment enclosures on piers shall be located so as not to interfere with mooring lines.

3. Weatherproof enclosures shall be allowed to have weep holes.

320.516. 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.

320.518. General lighting and other loads shall be calculated in accordance with article 220

of the National Electrical Code of 2011 and, in addition, the demand factors set forth in the table contained in section 320.320 shall be permitted for each service 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) of the table contained in section 320.520.

320.520.

Number of Receptacles	Demand Factors Sum of the Rating of the Receptacles (percent)
1-4	100
5-8	90
9-14	80
15-30	70
31-40	60
41-50	50
51-70	40
71-and up	30

Notes:

1. Where shore power accommodations provide two receptacles specifically for an individual boat slip and these receptacles have different voltages, 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 the table contained in this section, 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

320.522. 1. All installations measured from above the waterline and below eight feet shall be considered a wet location. All installations above eight feet and not exposed to weather shall be considered damp locations.

2. Wiring methods of Chapter 3 of the National Electrical Code of 2011 shall be permitted where identified for use in wet locations.

3. Extra-hard usage portable power cables rated not less than 167°F (75°C), six hundred 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 floating or fixed piers;

(2) If flexibility is necessary as on piers composed of floating sections; and

(3) Temporary wiring, except as permitted by article 590 of the National Electrical Code of 2011 shall not be used to supply power to boats.

320.524. 1. Outside branch circuits and feeders shall comply with article 225 of the National Electrical Code of 2011, except that clearances for overhead wiring in portions of the yard other than those described in article 555.13(B)(1) of the code shall not be less than 5.49 m, or eighteen feet, above grade.

2. If portable power cables are permitted under article 555.13(A)(2) of the National Electrical Code of 2011, 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; and

(5) If cables pass through structural members, they shall be protected against chafing by a permanently installed oversized sleeve of nonmetallic material.

3. If portable power cables are used as permitted in article 555.13(A)(2)(2) of the National Electrical Code of 2011, 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 or 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.

4. Rigid metal conduit, reinforced thermosetting resin conduit (RTRC) listed for above-ground 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 the 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.

320.526. 1. Wiring and equipment within the scope of sections 320.500 to 320.536 shall be grounded as specified in article 250 and as required by article 555.15(A) through 555.15(E) of the National Electrical Code of 2011.

2. The following items shall be connected to an equipment grounding conductor run with the 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; and

(3) Grounding terminals of grounding-type receptacles.

3. 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 if multiconductor cables are used, re-identification of conductors as allowed in articles 250.119(A)(2)(b) and 250.119(A)(2)(c), or articles 250.119(B)(2) and 250.119(B)(3), of the National Electrical Code of 2011 shall be permitted.

4. The insulated copper equipment grounding conductor shall be sized in accordance with 250.122 but not smaller than 12 AWG.

5. 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.

6. If 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.

7. The installation shall be made in conduit suited for the application secured tightly to the supporting structure and buried underground to the ground rod, and shall comply with article 254.64 of the National Electrical Code of 2011.

8. The existing service at service equipment shall have a proper grounding electrode system as provided in section 250.50 of the National Electrical Code of 2011. If the service is not properly grounded, a grounding electrode system shall be installed that meets the requirements of the 2011 National Electrical Code.

320.528. 1. Disconnecting means shall be provided to isolate each boat from its supply

connection or connections.

2. 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.

3. The disconnecting means shall be readily accessible, located not more than seven hundred sixty-two mm, or thirty 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.

320.530. 1. All receptacles shall be GFCI protected. Receptacles shall be mounted not less than thirty-six inches above the deck surface.

2. All shore power receptacles shall be GFCI protected.

3. Receptacles intended to supply shore power to boats shall be housed in marine power outlets listed as marine 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 or cap inserted.

4. Means shall be provided as necessary to reduce the strain on the plug and receptacle caused by the weight and catenary angle of the shore power cord.

5. 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.

6. Shore power for boats shall be provided by single receptacles rated not less than thirty amperes. For locking-type and grounding-type receptacles for auxiliary power to boats, the provisions of article 303-2000, Fire Protection Standards for Marinas and Boatyards, of the National Electrical Code of 2011, shall apply.

7. Receptacles rated not less than thirty amperes or more than 50 amperes shall be of the locking and grounding type.

8. Receptacles rated for sixty amperes or 100 amperes shall be of the pin and sleeve type.

9. Fifteen and twenty 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) of the National Electrical Code of 2011.

10. 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.

320.532. Electrical wiring and equipment located at or serving motor fuel dispensing stations shall comply with Article 514 of the National Electrical Code of 2011 in addition to the requirements of sections 320.500 to 320.536. 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.

320.534. 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 of the National Electrical Code in addition to the requirements of sections 320.500 to 320.536.

320.536. Motors and controls for marine hoists, railways, cranes, and monorails shall not be located below the electrical datum plane. If it is necessary to provide electric power to a mobile crane or hoist in the yard and a trailing 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.";

and

Further amend said bill by amending the title, enacting clause, and intersectional references accordingly.

THIS AMENDMENT AMENDS AMENDMENT 5923H01.05H