Electric Shock Drowning (ESD) Prevention

NEC Ground Fault Protection Requirements

• Article 555.3, Ground Fault Protection:

"The main over current protective device which feeds the marina shall have ground fault protection not exceeding 100mA. Ground fault protection of each individual branch or feeder circuit shall be permitted as a suitable alternative."

Main panel-level protection

- Satisfies NEC 555.3
- Protects against ESD
- Relatively simple installation
- When tripped, creates significant inconvenience, better for small marinas





What does a main panel-level protection system mean to a marina?

- 1. Fault is detected
- 2. The entire feeder to that panel is shunted tripped (10-100+ slips)
- 3. All slips lose power
- 4. Angry boaters
- 5. Locating fault can be a difficult and long process

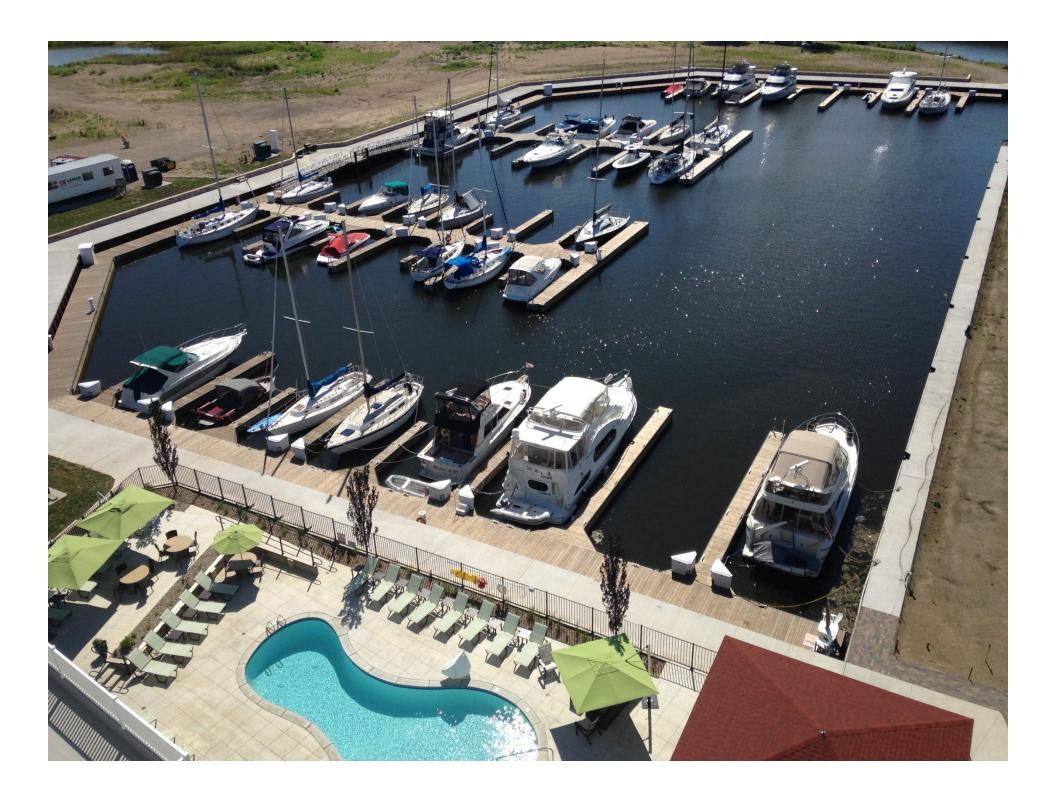
Branch circuit-level protection

- Satisfies NEC 555.3
- Protects against ESD
- More complex installation
- Simplified process to locate fault



What does a circuit-level protection system mean to a marina?

- 1. Fault is detected in a circuit
- 2. One circuit is shunted tripped (typically 2-4 slips on a circuit)
- 3. 2-4 slips lose power
- 4. 2-4 temporarily angry boaters
- 5. Locating fault is much simpler only 2-4 possible slips



NFPA Electrical Maintenance Requirements

• Part 5.20.1, Maintenance of Electrical Wiring and Equip.:

"An inspection of all electrical wiring, ground connections, conduit, hangers, supports, connections, outlets, appliances, devices, and portable cables installed or used in a marina, boatyard, boat basin, or similar establishment shall be made at regular intervals to ensure a complete inspection at least annually."

ESD Prevention Recommendations

- Goal 1 Safety and minimizing risk of injury/death
- Get organized and keep records
- Assess your system for code compliance & condition
- Make corrections immediately
- Perform regular inspections by qualified electrician
- Obtain a clamp on tester (ammeter) for regular shore power checks by harbormaster
- Absolutely NO SWIMMING in marinas
- Boater education and signage

