

REFERENCE:

National Electrical Code. Article 525. 1999 Edition. Carnivals, Circuses, Fairs, and Similar Events.

Article 525 – Carnivals, Circuses, Fairs, and Similar Events

A. General Requirements

525-1. Scope. This article covers the installation of portable wiring and equipment for carnivals, circuses, exhibitions, fairs, traveling attractions, and similar functions, including wiring in or on all structures.

525-3. Other Articles

(a) **Permanent Structures.** Articles 518 and 520 shall apply to wiring in permanent structures.

(b) **Portable Wiring and Equipment.** Wherever the requirements of other articles of this Code and Article 525 differ, the requirements of Article 525 shall apply to the portable wiring and equipment.

(c) **Audio Signal Processing, Amplification, and Reproduction Equipment.** Article 640 shall apply to the wiring and installation of audio signal processing, amplification and reproduction equipment.

525-6. Protection of Electrical Equipment. Electrical equipment and wiring methods in or on rides, concessions, or other units shall be provided with mechanical protection where such equipment or wiring methods are subject to physical damage.

B. Installation.

525-10. Power Sources

(a) Separately Derived systems.

(1) **Generators.** Generators shall comply with the requirements of Article 445.

(2) **Transformers.** Transformers shall comply with applicable requirements of Sections 240-3(a), (b)(3), and (c); Section 250-30; and Article 450.

(b) **Services.** Services shall be installed in accordance with applicable requirements of Article 230 and, in addition, shall comply with the following.

(1) **Guarding.** Service equipment shall not be installed in a location that is accessible to unqualified persons, unless the equipment is lockable.

2) **Mounting and Location.** Service equipment shall be mounted on a solid backing and be installed so as to be protected from the weather, unless of weatherproof construction.

525-12. Overhead Conductor Clearances.

(a) **Vertical Clearances.** Conductors shall have a vertical clearance to ground in accordance with Section 225-18. These clearances shall apply only to wiring installed outside of tents and concessions.

(b) **Clearance to Rides and Attractions.** Amusement rides and amusement attractions shall be maintained not less than 15 ft. (4.57 m) in any direction from overhead conductors operating at 600 volts or less, except for the conductors supplying the amusement ride or attraction. Amusement rides or attractions shall not be located under or within 15 ft. (4.57 m) horizontally of conductors operating in excess of 600 volts.

525-13. Wiring Methods.

(a) **Type.** Unless otherwise provided for in this article, wiring methods shall comply with the applicable requirements of Chapters 1 through 4 of this Code. Where flexible cords or cable are used and are not subject to physical damage, they shall be permitted to be listed for hard usage. When used outdoors, flexible cords and cables shall also be listed for wet locations and shall be sunlight resistant.

(b) **Single Conductor.** Single conductor cable shall be permitted only in sizes No. 2 or larger.

(c) **Open Conductors.** Open conductors are prohibited except as part of a listed assemble or festoon lighting installed in accordance with Article 525.

(d) **Splices.** Flexible cords or cables shall be continuous without splice or tap between boxes or fittings. Cord connectors shall not be laid on the ground unless listed for wet locations. Connectors and cable connections shall not be placed in audience traffic paths or within areas accessible to the public unless guarded.

(e) **Support.** Wiring for an amusement ride, attraction, tent, or similar structure shall not be supported by any other ride or structure unless specifically designed for that purpose.

(f) **Protection.** Flexible cords or cable run on the ground, where accessible to the public, shall be covered with approved nonconductive mats. Cables and mats shall be arranged so as not to present a tripping hazard.

(g) **Inside Tents and Concessions.** Electrical wiring for temporary lighting, where installed inside of tents and concessions, shall be securely installed, and where subject to physical damage, shall be provided with mechanical protection. All temporary lamps for general illumination shall be protected from accidental breakage by a suitable fixture or lampholder with a guard.

525-14. Boxes and Fittings. A box or fitting shall be installed at each connection point, outlet, switchpoint, or junction point.

525-15. Portable Distribution or Termination Boxes. Portable distribution or termination boxes shall comply with (a) through (d).

(a) **Construction.** Boxes shall be designate so that no live parts are exposed to accidental contact. Where installed outdoors, the box shall be of weatherproof construction and mounted so that the bottom of the enclosure is not less than 6 in. (152 mm) above the ground.

(b) **Busbars and Terminals.** Busbars shall have an ampere rating not less that the overcurrent device supplying the feeder supplying the box. Where conductors terminate directly on busbars, busbar connectors shall be provided.

(c) **Receptacle and Overcurrent Protection.** receptacles shall have overcurrent protection installed within the box. The overcurrent protection shall not exceed the ampere rating of the receptacle, except as permitted in Article 430 for motor loads.

(d) **Single-Pole Connectors.** Where single-pole connectors are used, they shall comply with Section 530-22.

525-16. Overcurrent Protection. Overcurrent protection of equipment and conductors shall be provided in accordance with Article 240.

525-17. Motors. Motors and associated equipment shall be installed in accordance with Article 430.

525-18. Ground-Fault Circuit Interrupter Protection for Personnel.

(a) **General-use 15- and 20-Ampere, 125-Volt Receptacles.** All 125-volt, single-phase, 15- and 20-ampere receptacle outlets that are in use by personnel shall have listed ground-fault circuit-interrupter protection for personnel. The ground-fault circuit interrupter shall be permitted to be an integral part of the attachment plug or located in the power supply cord, within 12 in. (305 mm) of the attachment plug. For the purposes of this section, listed cord sets incorporating ground-fault circuit-interrupter protection for personnel shall be permitted. Egress lighting shall not be connected to the load side terminals of a ground-fault circuit-interrupter receptacle.

(b) **Appliance Receptacles.** Receptacles supplying items, such as cooking and refrigeration equipment, which are incompatible with ground-fault circuit-interrupter devices shall not be required to have ground-fault circuit-interrupter protection.

(c) **Other Receptacles.** Other receptacle outlets not covered in (a) or (b) shall be permitted to have ground-fault circuit-interrupter protection for personnel, or a written procedure shall be continuously enforced at the site by one or more designated persons to ensure the safety of equipment grounding conductors for all cord sets and receptacles, as described in Section 305-6(b)(2).

C. Grounding and Bonding.

525-20. General. All system and equipment grounding shall be in accordance with Article 250.

(3) Metal frames and metal parts of rides, concessions, trailers, trucks, or other equipment that contain or support electrical equipment.

525-22. Equipment Grounding Conductor. All equipment requiring grounding shall be grounded by an equipment grounding conductor of a type and size recognized by Section 250-118 and installed in accordance with Article 250. The equipment grounding conductor shall be bonded to the system grounded conductor at the service disconnecting means, or in the case of a separately derived system such as a generator. The grounded circuit conductor shall not be connected to the equipment ground conductor on the load side of the service disconnecting means or on the load side of a separately derived system disconnecting means.

D. Disconnecting Means.

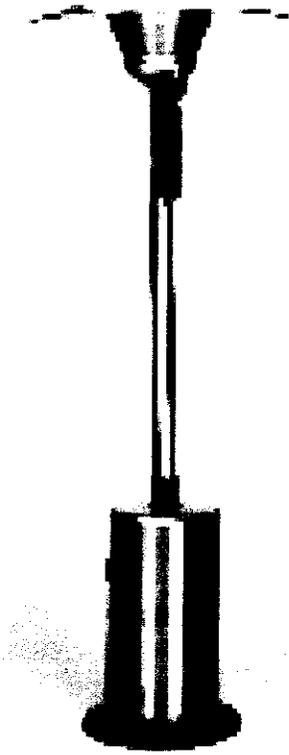
525-30. Type and Location. Each ride and concession shall be provided with a fused disconnect switch or circuit breaker located within sight and within 6 ft. (1.83 m) of the operator's station. The disconnecting means shall be readily accessible to the operator, including when the ride is in operation. Where accessible to unqualified persons, the enclosure for the switch or circuit breaker shall be of the lockable type. A shunt trip device that opens the fused disconnect or circuit breaker when a switch located in the ride operator's console is closed shall be a permissible method of opening the circuit.

E. Attractions Utilizing Pools, Fountains, and Similar Installation with Contained Volumes of Water.

525-40. Wiring and Equipment. This equipment shall be installed to comply with the applicable requirements of Article 680.

525-21. Equipment. The following equipment connected to the same source shall be bonded.

- (1) Metal raceways and metal sheathed cable.
- (2) Metal enclosures of electric equipment.



OUTDOOR PATIO HEATER SAFETY

City of Bradenton Fire Department

Portable Propane Heater Information

Portable Propane Outdoor Heaters can provide a convenient way to heat an outdoor area. Using them safely will ensure a safe season and greatly reduce the risk of injury or property damage.

Safety First !

Become familiar with the heating device that you are using.

Caution: These appliances are for outdoor use only (outside any enclosure).

- Always maintain manufacturer's recommended clearances from combustibles, if unsure, 36 inches shall be maintained.
- Always place heaters on a hard level surface.
- Do not use if the wind velocity is greater than 10 miles per hour.
- Always use extreme caution when near heaters. Children must be supervised and alerted to the hazards of high temperatures of patio heaters.
- The surface of a heater's emitter can reach temperatures approaching 1600 degrees Fahrenheit.

Specific use requirements:

- LP gas cylinders **cannot** be stored inside of any structure !
- Gas cylinders should be stored in racks a safe distance from building openings and ignition sources and protected from vehicular traffic.
- Heaters shall not obstruct clear paths of egress.
- Heaters shall display a UL or other nationally recognized standard listing.
- In the unlikely event of a leak, immediately shut off the valve on the gas cylinder. If you are unable to stop the leak call 911.

Please call the City of Bradenton Fire Prevention Bureau at 708- 6248 with any questions pertaining to Portable Propane Outdoor Heaters.