DEPARTMENT OF LABOR AND INDUSTRY

Electrical Code Rules for Portable & Temporary Electrical Power Distribution

A summary of rules based on the National Electrical Code – refer to the NEC for additional rules

110.3 Electrical Equipment. All electrical equipment must be listed and labeled. Equipment must be installed and used in accordance with the listing. Damaged or defective electrical equipment must be repaired or replaced.

590.2. Approval. Temporary wiring methods shall be acceptable only if approved, based on the conditions of use.

525.21 Disconnecting Means. A means to disconnect each portable structure from all ungrounded conductors must be provided. The switch must consist of no more than six enclosed switches or circuit breakers and must be located within sight of and within 6 feet of the operator's station. Fuseholders with switches mounted on box covers and switch controlled multioutlet strips are not acceptable as the required disconnecting means. Enclosures for disconnect switches and circuit breakers installed outdoors must be rainproof unless otherwise protected from the weather by location. Where accessible to unqualified persons, the disconnecting means must be lockable.

525.20 Portable Cords. Portable cords must be size 12 AWG or larger Type G, PPE, S, SE, SEO, SEOO, SC, SCE, SCT, SO, SOO, ST, STO, STOO, W or other types identified for extra-hard usage and must be of the grounding type. The cord type is printed or embossed on approved cords. Two-wire cords are not allowed. Cables with a "J" in the type designation (such as Type SJT) are junior-hard-service rated and are **not** permitted to be used where subject to physical damage. When used outdoors, all cords must be listed for wet locations and be sunlight resistant, unless they are an integral part of listed portable equipment. All cords must be continuous and contain no splices. Temporary repair of a cord outer jacket must be made with listed repair kits and is subject to approval from the electrical inspector.

525.20 Mechanical Protection. Flexible cords and cables laid on the ground must be approved for extra-hard usage, routed and arranged to minimize the tripping hazard and be protected from accidental and physical damage. Where passing through doorways or other pinch points, protection must be provided. Cords and cables may be covered with approved non-conductive mats. Mats must be self-weighted to minimize movement and drape over cords and cables.

250.114 Equipment Connected by Cord- and Plug. Exposed metal parts of cord-and-plug-connected equipment must be connected to the equipment grounding conductor. Cords must have a grounding conductor and grounding type attachment plug. Listed double insulated equipment is permitted.

525.23 Ground-Fault Circuit-Interrupter Protection. In addition to the 210.8(B) requirements, GFCI protection shall be provided for 125-volt, single phase, 15- and 20-ampere receptacle outlets that are used by personnel for assembly and disassembly, or readily accessible to the general public. Manufactured cord sets incorporating listed ground-fault circuit-interrupter protection for personnel shall be permitted.

525.23 (D) Receptacles Supplied by Portable Cords. When GFCI protection is provided by 125-volt, 15- or 20-amp GFCI receptacles, and the branch circuits are supplied by a flexible cord, the GFCI protection must be listed, labeled and identified for portable use (open neutral sensing and protection). This does not apply to GFCI receptacles that are permanently installed in rides or structures even though the ride or structure is supplied by a flexible cord. This also does not apply to feeders that utilize flexible cord.

525.3, 680.1 Attractions Using Contained Volumes of Water. Electrical wiring for, and equipment in or adjacent to pools, fountains or contained volumes of water must be installed in accordance with NEC Article 680.

525.3, 640.1 Audio Signal and Amplification Equipment. Temporary wiring for public address systems, audio systems and electronic musical instruments must be installed in accordance with NEC Article 640.

525.21 Portable Wiring inside Tents. All lamps for general illumination must be protected from accidental contact or breakage by a suitable guard. Overhead lighting must be installed at least 10 feet above ground where it is accessible to the public.

404.4 Damp Locations. Switches used outdoors must have weatherproof covers.

406.9 Receptacles. Receptacles protected from the weather must have an enclosure that is weatherproof with the receptacle covers closed (in-use cover). An outlet box hood (cover) installed for this purpose must be listed and identified as "extra duty." All 15- and 20-ampere, 125- and 250-volt receptacles used outdoors must be listed as weather-resistant (WR).

445.14 Protection of Live Parts. Live parts of generators must not be exposed to accidental contact.

445.20 Ground-Fault Circuit-Interrupters. All 125-volt and 125/250-volt, single-phase, 15- and 20-ampere receptacle outlets that are part of a 15kW or smaller portable generator must have listed ground-fault circuit-interrupter protection for personnel.

250.30 Grounding Electrode. Generators that do not comply with 250.34 must have a grounding electrode system that complies with Part 3 of Article 250. However, for transient installations it is acceptable to install three ground rods driven at least six feet apart and driven more than four feet into the earth.

525.11 Multiple Sources of Supply. Where multiple separately derived systems or services or both supply rides, games, attractions or other structures that are separated by less than 12 feet, all sources must be bonded to the same grounding electrode system.

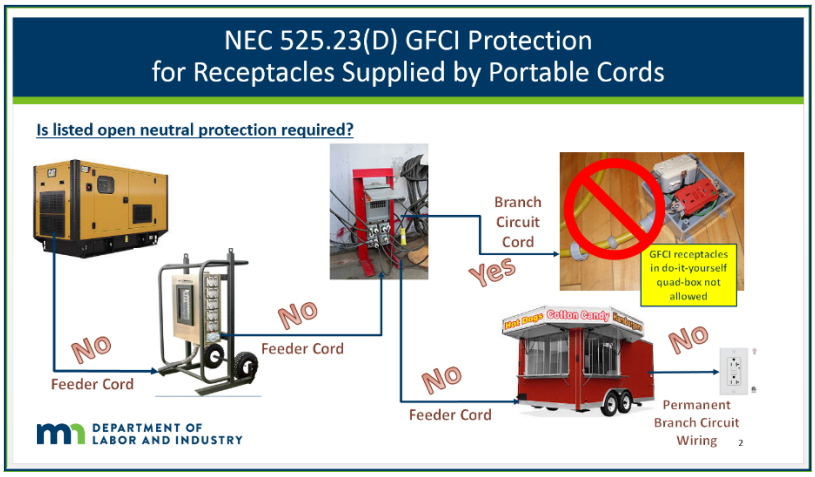
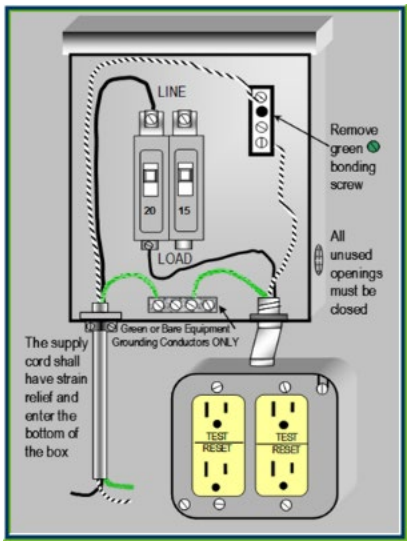
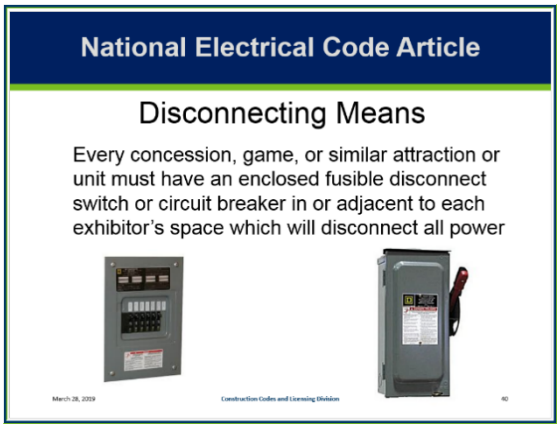
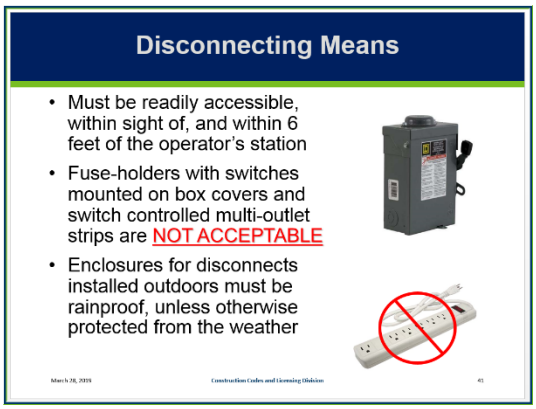
525.5 Overhead Clearances. A clearance of 15 feet in any direction must be maintained from overhead conductors operating at 600 volts or less and any portion of an amusement ride or attraction. No portion of an amusement ride or attraction may be located under or within 15 feet horizontally of conductors operating at over 600 volts.

240.20 and 240.22 Overcurrent Protective Devices. Motors and lighting circuits must have separate fuses or circuit breakers. Lighting circuits must be protected at no more than 20 amperes. Motors must be protected at not over 125% of full load current or must be thermally protected. All cords, cables and equipment must be protected from overcurrent by properly sized fuses or circuit breakers.

525.31 Equipment Grounding. Equipment grounding conductors must be installed with all feeders and branch circuits. Exposed metal parts of electrical equipment must be bonded, and if cord connected, the cord must have an equipment grounding conductor and grounding type attachment plug. Equipment that is listed and labeled as double insulated is permitted. All grounding conductors in an enclosure must terminate in a common grounding bus or lugs. The equipment grounding bar or lug(s) must be secured to the electrical enclosure with screws or bolts used for no other purpose. Approved means must be used to connect equipment grounding conductors to enclosures.

250.34 Portable Generators. Generators that supply only loads connected directly to receptacle outlets mounted on the generator and where the equipment grounding terminals of the receptacles are bonded to the generator frame shall not be required to be connected to a grounding electrode system. Marking by the manufacturer must indicate whether or not the generator neutral is bonded to the generator frame.

250.142 Isolated Neutral or Grounded Conductor. (*White Conductor*) The neutral conductor must be isolated from the equipment grounding conductor and all metal noncurrent carrying parts beyond the service disconnect or the system bonding jumper at the generator or other separately derived system.

CAUTION: THIS INFORMATION IS NOT INTENDED TO BE YOUR ONLY ELECTRICAL INFORMATION RESOURCE. ADDITIONAL INFORMATION AND KNOWLEDGE ARE NECESSARY FOR AN ELECTRICAL INSTALLATION THAT COMPLIES WITH THE NATIONAL ELECTRICAL CODE (NEC) AND IS FREE FROM FIRE AND ELECTRIC SHOCK HAZARDS.

Examples of temporary portable electrical distribution equipment