



NEC Changes & CT Laws

2025 Connecticut Unlimited Electrical Licensee

Student Handout

4 Continuing Education Hours for
Connecticut Unlimited Electrical Licensees

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Course Reminders

- All students are required to bring a copy of the 2020 National Electrical Code to class for reference.
- All students are required to view the 2020 National Electrical Code on an electronic device during the course. Cell phones are not acceptable for use with this content.

PART I - Connecticut General Statutes and Safety

Sec 20-340 Exemptions from licensing requirements.

Current with legislation from the 2024 Regular and Special Sessions.

The provisions of this chapter shall not apply to:

- (1) Persons employed by any federal, state or municipal agency;
- (2) employees of any public service company regulated by the Public Utilities Regulatory Authority or of any corporate affiliate of any such company when the work performed by such affiliate is on behalf of a public service company, but in either case only if the work performed is in connection with the rendition of public utility service, including the installation or maintenance of wire for community antenna television service, or is in connection with the installation or maintenance of wire or telephone sets for single-line telephone service located inside the premises of a consumer;
- (3) employees of any municipal corporation specially chartered by this state;
- (4) employees of any contractor while such contractor is performing electrical-line or emergency work for any public service company;
- (5) persons engaged in the installation, maintenance, repair and service of electrical or other appliances of a size customarily used for domestic use where such installation commences at an outlet receptacle or connection previously installed by persons licensed to do the same and maintenance, repair and service is confined to the appliance itself and its internal operation;
- (6) employees of industrial firms whose main duties concern the maintenance of the electrical work, plumbing and piping work, solar thermal work, heating, piping, cooling work, sheet metal work, elevator installation, repair and maintenance work, automotive glass work or flat glass work of such firm on its own premises or on premises leased by it for its own use;
- (7) employees of industrial firms when such employees' main duties concern the fabrication of glass products or electrical, plumbing and piping, fire protection sprinkler systems, solar, heating, piping, cooling, chemical piping, sheet metal or elevator installation, repair and maintenance equipment used in the production of goods sold by industrial firms, except for products, electrical, plumbing and piping systems and repair and maintenance equipment used directly in the production of a product for human consumption;
- (8) persons performing work necessary to the manufacture or repair of any apparatus, appliances, fixtures, equipment or devices produced by it for sale or lease;
- (9) employees of stage and theatrical companies performing the operation, installation and maintenance of electrical equipment if such installation commences at an outlet receptacle or connection previously installed by persons licensed to make such installation;
- (10) employees of carnivals, circuses or similar transient amusement shows who install electrical work, provided such installation shall be subject to the approval of the State Fire Marshal prior to use as otherwise provided by law and shall comply with applicable municipal ordinances and regulations;
- (11) persons engaged in the installation, maintenance, repair and service of glass or electrical, plumbing, fire protection sprinkler systems, solar, heating, piping, cooling and sheet metal equipment in and about single-family residences owned and occupied or to be occupied by such persons; provided any such installation, maintenance and repair shall be subject to inspection and approval by the building official of the municipality in which such residence is located and shall conform to the requirements of the State Building Code;
- (12) persons who install, maintain or repair glass in a motor vehicle owned or leased by such persons;
- (13) persons or entities holding themselves out to be retail sellers of glass products, but not such persons or entities that also engage in automotive glass work or flat glass work;
- (14) persons who install pre-glazed or preassembled windows or doors in residential or commercial buildings;
- (15) persons registered under chapter 400 who install safety-backed mirror products or repair or replace flat glass in sizes not greater than thirty square feet in residential buildings;

- (16) sheet metal work performed in residential buildings consisting of six units or less by new home construction contractors registered pursuant to chapter 399a, by home improvement contractors registered pursuant to chapter 400 or by persons licensed pursuant to this chapter, when such work is limited to exhaust systems installed for hoods and fans in kitchens and baths, clothes dryer exhaust systems, radon vent systems, fireplaces, fireplace flues, masonry chimneys or prefabricated metal chimneys rated by Underwriters Laboratories or installation of stand-alone appliances including wood, pellet or other stand-alone stoves that are installed in residential buildings by such contractors or persons;
- (17) employees of or any contractor employed by and under the direction of a properly licensed solar contractor, performing work limited to the hoisting, placement and anchoring of solar collectors, photovoltaic panels, towers or turbines;
- (18) persons performing swimming pool maintenance and repair work authorized pursuant to section 20-417aa; and
- (19) any employee of the Connecticut Airport Authority covered by a state collective bargaining agreement.
- Conn. Gen. Stat. § 20-340

Sec 20-332b Hiring ratios re apprentices, journeymen, and contractors.

Current with legislation from the 2024 Regular and Special Sessions.

Regulations

The Commissioner of Consumer Protection shall amend existing regulations of Connecticut state agencies adopted pursuant to section 20-332 to specify the following allowable hiring ratios regarding apprentices, journeymen, and contractors for the following trades:

HIRING RATIO CHART	
Electrical, Plumbing, Heating, Piping and Cooling, Sprinkler Fitter and Sheet Metal Work Trades	
Apprentices	Licensees (Journeymen or Contractors)
1	1
2	2
3	3
4	6
5	9
6	12
7	15
8	18
9	21
10	24
Ratio continues at 3 Journeypersons To 1 Apprentice	

Conn. Gen. Stat. § 20-332b

Sec 20-332c Apprentice, journeymen and contractor working group established. Membership. Report.

- (a) There is established a working group to discuss hiring ratios for apprentices, journeymen and

contractors and study the hiring ratio relief process. The working group shall meet at least three times annually and shall study and make recommendations related to apprentices, journeymen, and contractors.

(b) The working group shall consist of ten members, and shall be evenly divided between members of the following union and nonunion industry trade groups: The International Brotherhood of Electrical Workers, the Independent Electrical Contractors of New England, the Associated Builders and Contractors of Connecticut, Sheet Metal Local 40, Sprinkler Fitters Local 669, the Connecticut Chapter of American Fire Sprinkler Association, the United Association of Plumbers and Pipefitters Local 777, the Plumbing Heating and Cooling Contractors of Connecticut, the Connecticut Heating and Cooling Contractors and the Connecticut State Building and Construction Trades Council. Each union industry trade group member shall be either the business manager of such group or such business manager's designee from such group. Each nonunion industry trade group member shall be either the president of such group or such president's designee from such group.

(c) Such members shall be selected as follows:

- (1) Two union members appointed by the speaker of the House of Representatives;
- (2) Two union members appointed by the president pro tempore of the Senate;
- (3) One nonunion member appointed by the majority leader of the House of Representatives;
- (4) One union member appointed by the majority leader of the Senate;
- (5) Two nonunion members appointed by the minority leader of the House of Representatives;
- and
- (6) Two nonunion members appointed by the minority leader of the Senate.

(d) All appointing authorities shall consult with the chairpersons and ranking members of the joint standing committee of the General Assembly having cognizance of matters relating to the Department of Consumer Protection prior to making any appointments pursuant to this section.

(e) All appointments to the working group shall be made not later than thirty days after the effective date of this section. Any vacancy shall be filled by the appointing authority.

(f) The members of the working group shall select the chairpersons of the working group from among the members of the group. One chairperson shall be a union member and one chairperson shall be a nonunion member. Such chairpersons shall schedule the first meeting of the working group.

(g) The administrative staff of the joint standing committee of the General Assembly having cognizance of matters relating to the Department of Consumer Protection shall serve as administrative staff of the working group.

(h) Not later than December 1, 2017, and annually thereafter, the working group shall submit a report on its recommendations to the joint standing committee of the General Assembly having cognizance of matters relating to the Department of Consumer Protection, in accordance with the provisions of section 11-4a.

Sec 20-332-15a Employment of apprentices.

(a) Nothing in Chapter 393 of the General Statutes shall be construed to prohibit the employment of apprentices.

(b) An apprentice may perform the work for which he is being trained only in the presence and under the direct supervision of a licensed contractor or journeyman in his trade and shall comply with all the regulations pertaining thereto.

(c) No apprentice shall at any time engage in any of the work for which a license is required without direct supervision. Direct supervision shall mean under the guidance of a licensed contractor or journeyman and within the sight and/or hearing of said licensed person.

(d) Any person who encourages or permits an apprentice or helper to so engage in the work or occupation for which a license is required without direct supervision shall also be subject to appropriate disciplinary

action. The contractor who obtains the permit for the work for which a license is required shall be deemed to have encouraged or permitted the apprentice or helper to work without direct supervision for the purpose of disciplinary action by the appropriate board.

(e) **Ratios**

Nothing in Chapter 393 of the General Statutes shall be construed to prohibit the employment of apprentices by a licensed contractor in the electrical, plumbing, heating, piping, and cooling, sprinkler fitter or sheet metal work trades according to the following schedule:

TRADE	
Electrical, Plumbing, Heating, Piping and Cooling, Sprinkler Fitter and Sheet Metal Work	
Apprentices	Licensees (Journeyman or Contractors)
1	1
2	2
3	3
4	6
5	9
6	12
7	15
8	18
9	21
10	24

Ratio continues at 3 Journeypersons to 1 Apprentice.

Sec 20-332-15-a(f) How to register an apprentice.

(f) How to register as an apprentice.

- (1) No apprentice shall perform the work of any occupation covered by Chapter 393 of the General Statutes unless he has first obtained a card of registration from the Connecticut Department of Labor.
- (2) Prior to employing an apprentice, the contractor shall communicate immediately with the Connecticut Department of Labor to request registration of said apprentice.
- (3) When registration is requested for an area of the trade which is not available through the Connecticut Department of Labor, said contractor shall make his request to the appropriate board prior to the employment of the apprentice.

Sec 20-332-16 Prohibited acts. Records. Lettering.

- (a) Any licensee who installs, performs, or directs the performance of work in violation of any applicable state statute, state code, or state regulation, any municipal code or ordinance, any of these regulations, or who violates generally accepted basic trade practices shall be subject to disciplinary action by the appropriate board.
- (b) Licensed contractors alone shall be permitted to acquire building permits to perform work covered by chapter 393 of the General Statutes and the regulations promulgated thereunder. To apply for a building permit to perform work covered by chapter 393 of the General Statutes and the regulations adopted thereunder a contractor shall be directly employed by the business on a regular and full-time basis. In applying for the building permit to perform work covered by chapter 393 of the General Statutes and the regulations promulgated thereunder the contractor is attesting to the fact that he is responsible for and will directly supervise the work being performed under said permit. Except as provided for in Section 20-338b of the General Statutes, the licensed contractor must sign each building permit application personally and may not delegate the signing of the permit to any employee, subcontractor, or other agent. Any licensed contractor who violates these regulations shall be subject to disciplinary action by the appropriate board.
- (c) No licensee shall engage in or offer to engage in business under any name other than that stated on his application for a license unless he has notified the board ten days prior to using the new name.
- (d) Any holder of a journeyman's license who performs work without being in the direct and regular employ of a properly licensed contractor shall be subject to disciplinary action by the appropriate board.
- (e) All licensed contractors shall keep a record of all employees they employ and exhibit such records to the Commissioner or her agents upon request.
- (f) No one shall perform any work beyond the limitations stated on his license regardless of the type of license his employer holds. Further, no one holding a limited or unlimited journeyman's license can perform any work beyond the limitations of the license held by the contractor for whom he is employed.
- (g) The lettering of the state license numbers required to be displayed on all commercial vehicles used in the contractor's business shall be at least one inch high and legible.
- (h) Any holder of a contractor's license who installs, performs, or directs the performance of work for which a building permit is required shall cause said performance of work to be performed by a person licensed or registered under the provisions of Section 20-334 of the General Statutes. The contractor who obtains the building permit shall be deemed to have caused or directed the performance of all work performed under the building permit.
- (i) No person shall use solder containing more than 0.2 per cent lead in making joints and fitting in any public or private plumbing, heating or cooling system, or fire protection system as defined in Sections 20-330 (3), 20-330- (5) and 20-330 (9) of the general statutes.

Sec 20-335 License fee. Continuing education requirements. Expiration and renewal.

Any person who has successfully completed an examination for such person's initial license under this chapter shall pay to the Department of Consumer Protection a fee of one hundred fifty dollars for a contractor's license or a fee of one hundred twenty dollars for any other such license. Any such initial license fee shall be waived for persons who present a recommendation for review issued pursuant to section 31-22u. All such licenses shall expire annually.

No person shall carry on or engage in the work or occupations subject to this chapter after the expiration of such person's license until such person has filed an application bearing the date of such person's registration card with the appropriate board. Such application shall be in writing, addressed to the secretary of the board from which such renewal is sought and signed by the person applying for such renewal.

A licensee applying for renewal shall, at such times as the commissioner shall by regulation prescribe, furnish evidence satisfactory to the board that the licensee has completed any continuing professional education required under sections 20-330 to 20-341, inclusive, or any regulations adopted thereunder. The board may renew such license if the application for such renewal is received by the board no later than one month after the date of expiration of such license, upon payment to the department of a renewal fee of one hundred fifty dollars in the case of a contractor and of one hundred twenty dollars for any other such license.

For any completed renewal application submitted pursuant to this section that requires a hearing or other action by the applicable examining board, such hearing or other action by the applicable examining board shall occur not later than thirty days after the date of submission for such completed renewal application. The department shall issue a receipt stating the fact of such payment, which receipt shall be a license to engage in such work or occupation. A licensee who has failed to renew such licensee's license for a period of over two years from the date of expiration of such license shall have it reinstated only upon complying with the requirements of section 20-333.

All license fees and renewal fees paid to the department pursuant to this section shall be deposited in the General Fund.

Sec 20-338a Work required to be performed by licensed persons.

Any contractor who applies for a building permit from a local building official for any work required to be performed by a person licensed under the provisions of this chapter, shall cause such work to be performed by a person licensed under the provisions of this chapter. (P.A. 80-420, S. 1.)

Sec 20-338b Building permits applications. Who may sign.

Any licensed contractor who seeks to obtain a permit from a building official may sign the building permit application personally or delegate the signing of the building permit application to an employee, subcontractor or other agent of the licensed contractor, provided, the licensed contractor's employee, subcontractor or other agent submits to the building official a dated letter on the licensed contractor's letterhead, signed by the licensed contractor, stating that the bearer of the letter is authorized to sign the

building permit application as the agent of the licensed contractor. The letter shall not be a copy or a facsimile but shall be an original letter bearing the original signature of the licensed contractor.

The letter shall also include:

- (1) The name of the municipality where the work is to be performed;
 - (2) the job name or a description of the job;
 - (3) the starting date of the job;
 - (4) the name of the licensed contractor;
 - (5) the name of the licensed contractor's agent; and
 - (6) the license numbers of all contractors to be involved in the work.
- (P.A. 91-95; P.A. 98-3, S. 33.)

Sec 20-338c Work not to commence until permit obtained.

No person licensed pursuant to sections 20-330 to 20-341, inclusive, shall commence work within the scope of sections 20-330 to 20-341, inclusive, unless each applicable permit with respect to the specific work being performed by such licensee has been obtained as required pursuant to local ordinances and the general statutes.

(P.A. 02-82, S. 6.)

Sec 20-340 Exemptions from licensing requirements.

The provisions of this chapter shall not apply to:

- (1) Persons employed by any federal, state or municipal agency;
- (2) employees of any public service company regulated by the Public Utilities Regulatory Authority or of any corporate affiliate of any such company when the work performed by such affiliate is on behalf of a public service company, but in either case only if the work performed is in connection with the rendition of public utility service, including the installation or maintenance of wire for community antenna television service, or is in connection with the installation or maintenance of wire or telephone sets for single-line telephone service located inside the premises of a consumer;
- (3) employees of any municipal corporation specially chartered by this state;
- (4) employees of any contractor while such contractor is performing electrical-line or emergency work for any public service company;
- (5) persons engaged in the installation, maintenance, repair and service of electrical or other appliances of a size customarily used for domestic use where such installation commences at an outlet receptacle or connection previously installed by persons licensed to do the same and maintenance, repair and service is confined to the appliance itself and its internal operation;
- (6) employees of industrial firms whose main duties concern the maintenance of the electrical work, plumbing and piping work, solar thermal work, heating, piping, cooling work, sheet metal work, elevator installation, repair and maintenance work, automotive glass work or flat glass work of such firm on its own premises or on premises leased by it for its own use;
- (7) employees of industrial firms when such employees' main duties concern the fabrication of glass products or electrical, plumbing and piping, fire protection sprinkler systems, solar, heating, piping, cooling, chemical piping, sheet metal or elevator installation, repair and maintenance equipment used in the production of goods sold by industrial firms, except for products, electrical, plumbing and piping systems and repair and maintenance equipment used directly in the production of a product for human consumption;
- (8) persons performing work necessary to the manufacture or repair of any apparatus, appliances, fixtures, equipment or devices produced by it for sale or lease;
- (9) employees of stage and theatrical companies performing the operation, installation and maintenance of electrical equipment if such installation commences at an outlet receptacle or connection previously installed by persons licensed to make such installation;
- (10) employees of carnivals, circuses or similar transient amusement shows who install electrical work, provided such installation shall be subject to the approval of the State Fire Marshal prior to use as otherwise provided by law and shall comply with applicable municipal ordinances and regulations;
- (11) persons engaged in the installation, maintenance, repair and service of glass or electrical, plumbing, fire protection sprinkler systems, solar, heating, piping, cooling and sheet metal equipment in and about single-family residences owned and occupied or to be occupied by such persons; provided any such installation, maintenance and repair shall be subject to inspection and approval by the building official of the municipality in which such residence is located and shall conform to the requirements of the State Building Code;

- (12) persons who install, maintain or repair glass in a motor vehicle owned or leased by such persons;
- (13) persons or entities holding themselves out to be retail sellers of glass products, but not such persons or entities that also engage in automotive glass work or flat glass work;
- (14) persons who install preglazed or preassembled windows or doors in residential or commercial buildings;
- (15) persons registered under chapter 400 who install safety-backed mirror products or repair or replace flat glass in sizes not greater than thirty square feet in residential buildings;
- (16) sheet metal work performed in residential buildings consisting of six units or less by new home construction contractors registered pursuant to chapter 399a, by home improvement contractors registered pursuant to chapter 400 or by persons licensed pursuant to this chapter, when such work is limited to exhaust systems installed for hoods and fans in kitchens and baths, clothes dryer exhaust systems, radon vent systems, fireplaces, fireplace flues, masonry chimneys or prefabricated metal chimneys rated by Underwriters Laboratories or installation of stand-alone appliances including wood, pellet or other stand-alone stoves that are installed in residential buildings by such contractors or persons;
- (17) employees of or any contractor employed by and under the direction of a properly licensed solar contractor, performing work limited to the hoisting, placement and anchoring of solar collectors, photovoltaic panels, towers or turbines;
- (18) persons performing swimming pool maintenance and repair work authorized pursuant to section 20-417aa; and (19) any employee of the Connecticut Airport Authority covered by a state collective bargaining agreement.

Sec 20-341 Penalties for violations.

- (a) Any person who willfully engages in or practices the work or occupation for which a license is required by this chapter or chapter 399b without having first obtained an apprentice permit or a certificate and license for such work, as applicable, or who willfully employs or supplies for employment a person who does not have a certificate and license for such work, or who willfully and falsely pretends to qualify to engage in or practice such work or occupation, including, but not limited to, offering to perform such work in any print, electronic, television or radio advertising or listing when such person does not hold a license for such work as required by this chapter, or who willfully engages in or practices any of the work or occupations for which a license is required by this chapter after the expiration of such person's license, shall be guilty of a class B misdemeanor, except that no criminal charges shall be instituted against such person pursuant to this subsection unless the work activity in question is reviewed by the Commissioner of Consumer Protection, or the commissioner's authorized agent, and the commissioner or such agent specifically determines, in writing, that such work activity requires a license and is not the subject of a bona fide dispute between persons engaged in any trade or craft, whether licensed or unlicensed.
Notwithstanding the provisions of subsection (d) or (e) of section 53a-29 and subsection (d) of section 54-56e, if the court determines that such person cannot fully repay any victims of such person within the period of probation established in subsection (d) or (e) of section 53a-29 or subsection (d) of section 54-56e, the court may impose probation for a period of not more than five years. The penalty provided in this subsection shall be in addition to any other penalties and remedies available under this chapter or chapter 416.
- (b) The appropriate examining board or the Commissioner of Consumer Protection may, after notice and hearing, impose a civil penalty for each violation on any person who (1) engages in or practices the work or occupation for which a license or apprentice registration certificate is required by this chapter, chapter 394, chapter 399b or chapter 482 without having first obtained such a license or

certificate, or (2) willfully employs or supplies for employment a person who does not have such a license or certificate or who willfully and falsely pretends to qualify to engage in or practice such work or occupation, or (3) engages in or practices any of the work or occupations for which a license or certificate is required by this chapter, chapter 394, chapter 399b or chapter 482 after the expiration of the license or certificate, or (4) violates any of the provisions of this chapter, chapter 394, chapter 399b or chapter 482 or the regulations adopted pursuant thereto. Such penalty shall be in an amount not more than one thousand dollars for a first violation of this subsection, not more than one thousand five hundred dollars for a second violation of this subsection and not more than three thousand dollars for each violation of this subsection occurring less than three years after a second or subsequent violation of this subsection, except that any individual employed as an apprentice but improperly registered shall not be penalized for a first offense.

- (c) If an examining board or the Commissioner of Consumer Protection imposes a civil penalty under the provisions of subsection (b) of this section as a result of a violation initially reported by, a municipal building official in accordance with subsection (c) of section 29-261, the commissioner shall, not less than sixty days after collecting such civil penalty, remit one-half of the amount collected to such municipality.
- (d) A violation of any of the provisions of this chapter shall be deemed an unfair or deceptive trade practice under subsection (a) of section 42-110b.
- (e) This section shall not apply to any person who (1) holds a license issued under this chapter, chapter 394, chapter 399b or chapter 482 and performs work that is incidentally, directly and immediately appropriate to the performance of such person's trade where such work commences at an outlet, receptacle or connection previously installed by a person holding the proper license, or (2) engages in work that does not require a license under this chapter, chapter 394, chapter 399b or chapter 482.

Sec 31-22r(c) New Reporting Requirements.

Apprenticeship registration; apprentices, sponsors.

(c) Fifty per cent of any amount collected by the Labor Department pursuant to this section shall be deposited in the General Fund and fifty per cent of such amount shall be credited to a separate nonlapsing appropriation to the Labor Department, for the purpose of administering the department's apprentice training program and sections 31-22m to 31-22p, inclusive.

Note: Access Sections 31-22m - 31-22p at [Chapter 557 - Employment Regulation.](#)

Sec 20-332b Hiring ratios re apprentices, journeymen, and contractors. Electrical, plumbing, heating, piping, and cooling, sprinkler fitter, and sheet metal work. Regulations.

The Commissioner of Consumer Protection shall amend existing regulations of Connecticut state agencies adopted pursuant to section 20-332 to specify the following allowable hiring ratios regarding apprentices, journeymen, and contractors for the following trades:

TRADE: Electrical, Plumbing, Heating, Piping and Cooling, Sprinkler Fitter, and Sheet Metal Work

Apprentices	Licensees (Journeymen or Contractors)
1	1
2	2
3	3
4	6
5	9
6	12
7	15
8	18
9	21
10	24
Ratio continues at 3 Journeypersons To 1 Apprentice	

Ratio continues at 3 Journeypersons to 1 Apprentice
(P.A. 10-27, S. 1; P.A. 17-76, S. 2.)

2022 Connecticut State Building Code

Building and Fire Code Adoption Process

State Building, Fire Safety and Fire Prevention Codes Update

The **Department of Administrative Services, Office of the State Building Inspector** and **Office of the State Fire Marshal**, in conjunction with the **Codes & Standards Committee** and the **Fire Prevention Code Advisory Committee**, have adopted the following new codes, effective October 1, 2022:

- 2022 Connecticut State Building Code (CSBC)
- 2022 Connecticut State Fire Safety Code (CSFSC)
- 2022 Connecticut State Fire Prevention Code (CSFPC)
- 2021 International Building Code (IBC) by the ICC
- 2021 International Existing Building Code (IEBC) by the ICC
- 2021 International Energy Conservation Code (IECC) by the ICC
- 2021 International Mechanical Code (IMC) by the ICC
- 2021 International Plumbing Code (IPC) by the ICC
- 2021 International Residential Code (IRC) by the ICC
- 2021 International Swimming Pool & Spa Code (ISPSC) by the ICC
- 2020 NFPA 70 National Electrical Code (NEC) by NFPA
- 2017 ICC A117.1 Accessible and Usable Buildings and Facilities by the ICC
- 2021 International Fire Code (IFC) by the ICC
- 2021 NFPA 101 - Life Safety Code by the NFPA
- 2021 NFPA 1 - Fire Code by the NFPA
- The model codes are viewable on their publisher's web sites:
- International Code Council (ICC) Codes
- National Fire Protection Association (NFPA) Codes

<https://portal.ct.gov/DAS/Office-of-State-Building-Inspector/Building-and-Fire-Code-Adoption-Process/Documents>

Note: Always refer to the State Building Officials website indicated above for all of the most currently adopted codes and “AMENDMENTS” to the codes.

2022 State Building Code Adoption

(Add) 101.4.8 Electrical. The provisions of the 2020 NFPA 70, National Electrical Code, shall apply to the installation of electrical systems, including alterations, repairs, replacement, equipment, appliances, fixtures, fittings, and appurtenances thereto.

(Amd) 105.2 Work exempt from permit. Exemption from the permit requirements of this code shall not be deemed to grant authorization for any work to be done in any manner in violation of the provisions of this code or any other laws, statutes, regulations or ordinances of the jurisdiction. Permits shall not be required for the following:

Electrical: 1. Minor repairs and maintenance work, including replacement of lamps and fuses or the connection of approved portable electrical equipment to approved permanently installed receptacles. 2. Electrical equipment used solely for radio and television transmissions, but a permit is required for equipment and wiring for power supply and for the installation of towers and antennas. 3. Temporary testing systems required for the testing or servicing of electrical equipment or apparatus.

(Add) 105.2.2 Repairs. Application or notice to the building official is not required for ordinary repairs to structures, replacement of lamps or the connection of approved portable electrical equipment to approved permanently installed receptacles. Such repairs shall not include the cutting away of any wall, partition of portion thereof, the removal or cutting of any structural beam or load-bearing support, or the removal or change of any required means of egress, or rearrangement of parts of a structure affecting the egress requirements; nor shall ordinary repairs include addition to, alteration of, replacement or relocation of any standpipe, water supply, sewer drainage, drain leader, gas, soil, waste, vent or similar piping, electric wiring or mechanical or other work affecting public health or general safety.

(Amd) 108.3 Temporary power. The building official is authorized to give permission to temporarily supply utilities before an installation has been fully completed and the final certificate of approval has been issued. The part covered by the temporary certificate shall comply with the requirements specified for temporary lighting, heat or power in this code and in NFPA 70, National Electrical Code.

2022 Connecticut State Fire Safety Code Update

(Add) 1203.2.20 Electric fire pumps. Buildings provided with standby electrical power for the purpose of continuing operations or occupancy shall provide standby power in accordance with Article 701 of the 2020 NFPA 70, National Electrical Code, portion of the Connecticut State Building Code for any electric fire pump installed to provide an adequate water supply or minimum operating pressure to a required automatic sprinkler system.

Add) 1008.3.6 Activation. The emergency means of egress illumination system shall be arranged to provide the required illumination automatically in the event of any interruption of normal lighting due to any of the following: 1. Failure of a public utility or other outside electrical power supply. 2. Opening of a circuit breaker or fuse. 3. Manual acts including accidental opening of a switch controlling normal lighting facilities.

(Amd) 1008.3.3 Rooms and spaces. In the event of power supply failure, an emergency electrical system shall automatically illuminate all of the following areas: 1. Electrical equipment rooms. 2. Fire command centers. 3. Fire pump rooms. 4. Generator rooms. 5. Public restrooms with an area greater than 300 square

feet (27.87 m²). 6. Means of egress components, other than those within sleeping rooms, of Group R-1 Bed and breakfast establishments.

(Amd) 1205.2.3 Building-integrated photovoltaic (BIPV) systems. Where building integrated photovoltaic (BIPV) systems are installed in a manner that creates areas with electrical hazards to be hidden from view, markings shall be provided to identify the hazardous areas to avoid. The markings shall be reflective and be visible from grade.

2022 Connecticut State Fire Prevention Code

(Add) 11.12.1.2 Electrical portions of ground mounted photovoltaic systems shall be designed and installed in accordance with NFPA 70.

(Add) 13.3.1.9. Buildings provided with standby electrical power for the purpose of continuing operations or occupancy shall provide standby power for any electric fire pump installed to provide an adequate water supply or minimum operating pressure to a required automatic sprinkler system, except that existing installations may be continued in service subject to the approval of the authority having jurisdiction. Standby electrical power in accordance with NFPA 70®, and NFPA 110, Type 60 shall be provided. The standby power system shall have a capacity and rating sufficient to supply all required equipment. Selective load pickup and load shedding shall be permitted in accordance with NFPA 70®. The next state building, fire safety and fire prevention codes are expected to go into effect in early 2026.

The **Code Amendment Subcommittee** will begin meeting to discuss the proposed 2026 Connecticut state codes on January 10, 2024. For meeting dates, agendas, and meeting minutes, visit the Codes Amendment Subcommittee page.

The new Connecticut state codes that will be in effect will be the:

- 2026 Connecticut State Building Code
- 2026 Connecticut State Fire Safety Code
- 2026 Connecticut State Fire Prevention Code

PART II - Safety

OSHA – Hard Hats to Safety Helmets for OSHA Employees.



OSHA Trade Release

OSHA announces switch from traditional hard hats to safety helmets to protect agency employees from head injuries better.

The U.S. Department of Labor's Occupational Safety and Health Administration announced that the agency is replacing traditional hard hats used by its employees with more modern safety helmets to protect them better when they are on inspection sites.

In 2020, the Bureau of Labor Statistics reports head injuries accounted for nearly 6 percent of non-fatal occupational injuries involving days away from work. Almost half of those injuries occurred when workers came in contact with an object or equipment while about 20 percent were caused by slips, trips and falls.

Dating back to the 1960s, traditional hard hats protect the top of a worker's head but have minimal side impact protection and also lack chin straps. Without the straps, traditional hard hats can fall off a worker's head if they slip or trip, leaving them unprotected. In addition, traditional hard hats lacked vents and trapped heat inside.

On Nov. 22, 2023, OSHA published a [Safety and Health Information Bulletin](#) detailing key differences between traditional hard hats and more modern safety helmets and the advancements in design, materials and other features that help protect workers' entire heads better. Today's safety helmets may also offer face shields or goggles to protect against projectiles, dust, and chemical splashes. Others offer built-in hearing protection and/or communication systems to enable clear communication in noisy environments.

The agency recommends safety helmets be used by people working at construction industry and the oil and gas industry; in high-temperature, specialized work, and low-risk environments; performing tasks involving electrical work and working from heights; and when required by regulations or industry standards.

OSHA wants employers to make safety and health a core value in their workplaces and is committed to doing the same by leading by example and embracing the evolution of head protection.

OSHA – Hard Hats vs. Safety Helmets.

Head Protection: Safety Helmets in the Workplace

Bulletin 3-6-2024

Introduction

OSHA regulates head protection for general industry, construction, and maritime and requires employers to ensure affected workers wear appropriate head protection. This Safety and Health Information Bulletin (SHIB) provides information for employers and employees when selecting PPE for head protection. This SHIB also provides instructions for properly inspecting and storing head protection. With a thorough understanding of the benefits and capabilities of head protection options, employers and workers can make informed decisions on selection and use.

Background

Proper head protection is crucial in work environments with falling objects, struck-by, overhead electrical hazards, and risks from slips, trips, and falls. Both scientific understanding of head injuries and head protection technology continues to advance. Modern head protection, whether it's a safety helmet or a hard hat, varies in styles and levels of protection, allowing employers and workers to choose head protection appropriate for the job. OSHA's head protection standards state that there can be compliance through ANSI Z89.1-2009, 2003, and 1997: published by the International Safety Equipment Association (ISEA). The range of products available today allows employers and employees to select the right type of head protection for the job, comply with the requirements of all OSHA standards (general industry, construction, maritime), and obtain optimum head protection.

Two Types (impact) and three Classes (electrical) of head protection are recognized.

Type I head protection offers protection from blows to the top of the head.

Type II head protection offers protection from blows to the top and sides of the head.

Class G (General) head protection is designed to reduce exposure to low voltage conductors and are proof tested at 2,200 volts (phase to ground).

Class E (Electrical) head protection is designed to reduce exposure to higher voltage conductors and are proof tested at 20,000 volts (phase to ground).

Class C (Conductive) head protection is not intended to provide protection against contact with electrical hazards.

ANSI/ISEA Z89.1-compliant head protection, including safety helmets and hard hats, are manufactured using a wide range of materials from high density polyethylene to glass reinforced nylon. Some hard hats and safety helmets incorporate advanced energy re-distribution solutions that reduce rotational forces of certain impacts and distribute impact energy throughout the headwear to help reduce brain trauma. Chin straps are recognized as an effective way to keep head protection on when working in awkward positions or when experiencing a slip or fall and should be considered for use with all head protection.

Manufacturers offer an array of product-specific approved optional features designed to address specific workplace hazards. Accessories can include add-on face shields or goggles, to protect against projectiles, dust, and chemical splashes, and hearing protection and communication systems. In addition, impact indicator technology can be mounted on protective headwear for concussion awareness. However, head protection with integrated technology may not be suitable for some workplaces.

Choosing the right head protection

Employers must conduct a hazard assessment at their job site and based on the workplace hazards determine whether head protection is necessary and if so, the most appropriate type.

Safety Helmets for OSHA

After a general Job Hazard Analysis of its work and a thorough evaluation of head protection options, OSHA determined Type II, Class G safety helmets were the most appropriate form of head protection for its employees. The Agency recognizes that based on their own Job Hazard Analysis, employers and workers may decide that another form of head protection is for them. Considerations when selecting head protection.

Construction Sites. For construction sites, especially those with high risks of falling objects and debris, impacts from equipment, awkward working positions, and/or slip, trip, and fall hazards: consider Type II head protection with chin straps.

Oil and Gas Industry. For oil and gas industry worksites where workers face multiple hazards, including potential exposure to chemicals and severe impacts: consider Type II head protection with integrated eye and face protection, like face shields and googles.

Working from Heights. For tasks or jobs that involve working from heights: consider head protection with chin straps to prevent the head protection from falling off.

Electrical Work. For tasks involving electrical work or proximity to electrical hazards, head protection with non-conductive materials (Class G and Class E) provide protection to prevent electrical shocks. Note: Vented hard hats or safety helmets cannot be used for electrical work.

High and Low-Temperature Environments. In high temperatures or where there is exposure to molten materials, employers should select head protection with advanced heat resistant properties, which can provide appropriate protection to workers. These are marked “HT” on the label. For cold environments, employers should select head protection that has been preconditioned in low temperatures prior to testing. These are marked “LT” on the label.

High visibility. High visibility head protection is marked “HV” on the label. HV head protection helps workers be seen on jobsites like construction and road work.

Specialized Work Environments. For jobs that require integrated face shields, hearing protection or communication devices, employers should consider protective headwear that allows for these manufacturer compatible safety features.

Properly storing and evaluating head protection

Always refer to the manufacturer’s specific guidelines for head protection care, use, and storage. As a general rule:

1. Inspect the outer shell for cracks, dents, or other signs of damage. Run your fingers over the surface to check for any irregularities.
2. Examine the suspension system (headband and chin strap) for wear and tear, ensuring it is securely attached to the shell and free from damage, and inspect interior cushioning for wear or compression, if applicable. If there are any signs of deterioration, contact the manufacturer for replacement options.
3. Check for labels and certification marks. Look for labels and certification marks inside the head protection. These indicate that the head protection meets the necessary safety standards and

- requirements. Check that the labels are legible and not tampered with. Note: only head protection having a reverse-wearing label or mark can be worn in reverse.
4. Examine accessories and attachments. If head protection has manufacturer approved accessories or attachments (face shields, goggles, earmuffs, etc.), inspect them for damage or signs of wear. Make sure they are securely fastened to the head protection and are functioning correctly.
 5. Check for proper fit. Before using head protection, ensure it fits comfortably and securely. Adjust the suspension system to achieve a snug fit without excessive pressure points. Head protection should not be too loose or too tight.
 6. Refer to the manufacturer's guidelines for recommended lifespan or guidance on when to take head protection out of service. The service-life of head protection depends on many factors including storage, handling, use, and exposure to harsh environments including UV Rays. Any hard hat or helmet should be discarded when it is impacted or if there are any signs of damage or degradation.
 7. Clean and dry head protection before storing. After each use, clean the exterior of head protection with mild soap and water. Ensure no dirt, debris, or chemicals are present that could compromise the head protection's structural integrity. Once cleaned, allow the head protection to air-dry. Avoid exposing head protection to direct sunlight, extreme temperatures, or chemicals during storage. Do not store your head protection in your car or where it may be exposed to direct sunlight or extreme temperatures.
 8. Impact damage. If head protection has experienced an impact or has been subjected to a significant force, retire it immediately, even if there is no visible damage. Head protection is designed for single-use impact protection and may not retain its full effectiveness after an incident.
 9. Keep Records: Maintain a record of each inspection, noting the date, any findings, and actions taken. Document the date of purchase and any relevant information about the head protection to track its lifespan. This is recommended for all personal protective equipment.

Resources

OSHA's Website: The OSHA website provides extensive information on workplace safety, including head protection requirements. Workers can find OSHA standards related to personal protective equipment (PPE) and head protection.

General Industry. **29 CFR 1910.135 - Head Protection:** The general requirements of this standard state that "The employer shall ensure that each affected employee wears a protective helmet when working in areas where there is a potential for injury to the head from falling objects," 29 CFR 1910.135(a)(1), and that "The employer shall ensure that a protective helmet designed to reduce electrical shock hazard is worn by each such affected employee when near exposed electrical conductors which could contact the head," 29 CFR. § 1910.135(a)(2).

Construction. **29 CFR 1926.100 – Head Protection:** This standard generally requires that "Employees working in areas where there is a possible danger of head injury from impact, or from falling or flying objects, or from electrical shock and burns, shall be protected by protective helmets." 29 CFR 1926.100(a).

Maritime. **29 CFR 1915.155 - Head Protection(Shipyard), 29 CFR 1917.93 – Head Protection (Marine Terminals), and 29 CFR 1918.103 – Head Protection (Longshoring):** Each of the maritime standards generally require that "The employer shall ensure that each affected employee wears a protective helmet when working in areas where there is a potential for injury to the head from falling objects." 29 CFR 1915.155(a)(1); 1917.93(a), 1918.103(a).

OSHA Regional and Area Offices. Employers and employees can contact their local OSHA regional or area offices for assistance and information on head protection requirements.

ANSI/ISEA Z89.1 - Industrial Head Protection: This is the ANSI standard that specifies performance and testing requirements for industrial head protection, including safety helmets and hard hats.

How to Contact OSHA

To discuss a health and safety issue at work, contact OSHA toll-free at 1-800-321-6742 (OSHA) or [by email](#), or [contact your nearest OSHA office](#).

This Safety and Health Information Bulletin is not a standard or regulation, and it creates no new legal obligations. The Bulletin is advisory in nature, informational in content, and is intended to assist employers in providing a safe and healthful workplace. Pursuant to the Occupational Safety and Health Act (OSH Act), employers must comply with hazard-specific safety and health standards and regulations promulgated by OSHA or by a state with an OSHA-approved State Plan. In addition, pursuant to Section 5(a)(1), the General Duty Clause of the Act, employers must provide their employees with a workplace free from recognized hazards likely to cause death or serious physical harm. Employers can be cited for violating the General Duty Clause if there is a recognized hazard and they do not take reasonable steps to prevent or abate the hazard. However, failure to implement any recommendations in this Safety and Health Information Bulletin is not, in itself, a violation of the General Duty Clause. Citations can only be based on standards, regulations, and the General Duty Clause.

There are 29 OSHA-approved occupational safety and health State Plans. State Plans are required to have standards and enforcement programs that are at least as effective as federal OSHA's and may have different or more stringent standards. More information about State Plans is available at: <https://www.osha.gov/stateplans>.

Workplace Mental Health



Mental health is an important component of overall well-being and is equally as vital as physical health for all employees. Mental health concerns due to work have the potential to adversely impact an employee's social interactions, productivity, performance, and absenteeism.

Stress affects people in a variety of ways such as muscle tension, headaches, stomach discomfort, high blood pressure, and heart disease. Ignoring workplace stress can have lasting harmful effects on individuals, families, co-workers, and communities.

Traumatic Events

Sometimes a shocking, scary, or dangerous experience can be so intense that it can have an emotional, cognitive, behavioral, and physical impact on a person. Some examples of traumatic events that can happen in workplaces are:

- Explosions or chemical releases
- Building, crane, or other equipment collapses
- Co-workers being injured or dying on the job
- Abuse or assault of a co-worker or client

It is normal to feel terrified during and after a traumatic event. This is part of the body's "fight or flight" response to possible danger.

Traumatic events can happen to workers in all industries.

After experiencing a traumatic event people may:

- Feel anxious, sad, or angry
- Have terrifying thoughts or flashbacks
- Have recurring nightmares

- Be confused or unable to think clearly
- Have a hard time falling and staying asleep
- Frighten easily



If these symptoms continue long after the event or affect day-to-day life, they can be signs of acute stress disorder, or post-traumatic stress disorder. Both require professional help to address.

Substance Use Disorder

Substance use disorder is a persistent desire for substances even in the face of negative consequences. Some people come to rely on opioids, stimulants, alcohol, or other substances even when the substances cause harm. People may develop a dependence on drugs, including prescription medications, and alcohol for many reasons, including the presence of other mental health conditions, chronic pain, or injuries. Regardless of the underlying reason, substance use disorder can be treated and controlled.



MAY

Mental Health
Awareness Month

JUNE

Post Traumatic Stress
Disorder Awareness Month

SEPTEMBER

National Suicide Prevention Month
National Recovery Month

Suicide

Suicide can touch anyone, anywhere, at any time. But it is not inevitable. Help is available.

According to the CDC^{1,2}

- More than 12 million adults seriously think about suicide each year.
- More than 3 million adults make a plan to commit suicide each year.
- More than 1 million adults attempt suicide each year.
- More than 48,000 people die by suicide in the United States each year.

People of any age, gender, and background can have thoughts of suicide. Untreated mental health conditions can lead to these thoughts and even suicidal actions. That is why it is important to provide resources and encourage people to get help when they are having mental health concerns, experiencing traumatic events, or battling substance use disorders.



Certain factors may increase an individual's risk of developing suicidal thoughts and attempting suicide such as:

- Mental health conditions like depression, bipolar disorder, schizophrenia, anxiety disorders, and substance use disorders

- Traumatic events
- Health issues like chronic pain or illness
- Prolonged stress
- Recent tragedy or loss
- Criminal or legal problems
- Job loss or financial problems
- Substance use disorder
- Childhood trauma
- Domestic violence

References

1. [Centers for Disease Control and Prevention \(2021\)](#)
2. [Centers for Disease Control and Prevention Statistics \(2021\)](#)

Resources

Employers can help change the stigma of mental health by prioritizing it as part of their workplace culture, having conversations about it, and knowing how to support those workers who say they need assistance. [Workplace Stress - Overview | Occupational Safety and Health Administration \(osha.gov\)](#)

- [OSHA Suicide Prevention in Construction](#)
- [OSHA Workplace Stress](#)
- [Call or text 988 for free, confidential crisis counseling anytime, 24/7](#)
- [Text a counselor at 838255 for Veterans Crisis Line](#)
- [Text Talk to 741741 for English](#)
- [Text Ayuda to 741741 for Spanish](#)

OSHA – Long-Term Stress Harms Everyone in the Workplace.

Long-Term Stress Harms Everyone in the Workplace



Stress is not always bad. In fact, in the workplace, stress can prompt workers to stay focused on a task or meet a deadline. Extensive and prolonged stress in the workplace, however, can harm workers' physical and mental health, negatively affecting an organization's success. Employers can help alleviate workplace stress by supporting their workers. Unions and worker organizations can also support workplace mental health and well-being through their member services, outreach, and community engagement work.

How Does Long-Term Stress Harm Workers?

Physical harm:

- Heart disease
- High blood pressure
- Muscle tension and pain (e.g., back pain)
- Headaches
- Poor sleep
- Stomach discomfort
- Excessive weight gain or loss



Mental health challenges or behavioral changes:

- Depression
- Anxiety
- Burnout
- Emotional outbursts
- Social withdrawal
- Drug or alcohol use
- Restlessness
- Fatigue
- Anger and irritability
- Lack of motivation or focus



How Does Long-Term Stress Harm Employers?

- **Increases potential for workplace incidents.** Stressed and fatigued workers are less attentive in recognizing and avoiding hazards.
- **Reduces productivity.** Stressful working conditions can cause workers to lose motivation, become easily distracted, lose focus, make mistakes, experience a decline in performance, and develop mental health challenges. The [World Health Organization](#) estimates that for every dollar U.S. employers spend treating common mental health issues, they receive a return of \$4 in improved health and productivity.
- **Increases absenteeism.** Exposure to long-term stress undercuts workers' physical and mental health, causing them to miss more days of work.
- **Undermines morale and leads to high turnover.** Stressed workers are less likely to be energized to perform well or to stay at a company that does not show interest in improving work conditions.



[Link to this Information from OSHA](#)

Resources

- OSHA: [Worker Fatigue](#)
- Healthy Work Campaign: [Healthy Work Tools](#)
- Mayo Clinic: [Stress Management](#)
- National Institute of Mental Health: [5 Things You Should Know About Stress](#)
- National Institute of Mental Health: ["I'm So Stressed Out!" Fact Sheet](#)
- National Safety Council's [SAFER: Mental Health and the Workplace](#)
- NIOSH's [Stress at Work](#) booklet

OSHA – Workplace Stress, Overview.

Workplace Stress



[Link to this Resource from OSHA](#)

Overview

Statistics

- Nearly one in five US adults live with a mental illness.
- Workplace stress has been reported to cause 120,000 deaths in the US each year.
- Approximately 65% of U.S. workers surveyed have characterized work as being a very significant or somewhat significant source of stress in each year from 2019-2021.
- 83% of US workers suffer from work-related stress and 54% of workers report that work stress affects their home life.
- For every \$1 spent on ordinary mental health concerns, employers see a \$4 return in productivity gains

Stress can be harmful to our health and increase mental health challenges. Mental health challenges can include clinical mental illness and substance use disorders as well as other emotions like stress, grief, feeling sad and anxious, where these feelings are temporary and not part of a diagnosable condition. While there are many things in life that induce stress, work can be one of those factors. However, workplaces can also be a key place for resources, solutions, and activities designed to improve our mental health and well-being.

Workplace stress and poor mental health can negatively affect workers through:

- Job performance
- Productivity
- Work engagement and communication
- Physical capability and daily functioning

OSHA – Workplace Stress: Understanding the Problem.

Workplace Stress



[Link to this Resource from OSHA](#)

Understanding the Problem

Loneliness. Isolation. Uncertainty. Grief. Fear. Stress can increase these and other mental health challenges and can be harmful to our health. The amount and type of stress experienced varies from person to person due to many factors, including those experienced at work.

While there are many things in life that induce stress, work can be one of those factors. Workplace stress and poor mental health can negatively affect workers through their job performance and productivity, as well as with their engagement with others at work. It can also impact worker physical health, given that stress can be a risk factor for various cardiovascular diseases. However, workplaces can also be a key place for resources, solutions, and activities designed to improve our mental health and well-being.

Work has always presented various stress. Workers are constantly dealing with new stressors introduced to the workplace, and in some instances, these stressors have amplified other issues at work. More than [80% of US workers](#) have reported experiencing workplace stress, and more than 50% believe their stress related to work impacts their life at home. Workplace stressors may include:

- Concerns about job security (e.g., potential lay-offs, reductions in assigned hours).
- Lack of access to the tools and equipment needed to perform work safely.
- Fear of employer retaliation
- Facing confrontation from customers, patients, co-workers, supervisors, or employers.
- Adapting to new or different workspace and schedule or work rules.
- Having to learn new or different tasks or take on more responsibilities.
- Having to work more frequent or extended shifts or being unable to take adequate breaks.
- Physically demanding work.
- Learning new communication tools and dealing with technical difficulties.
- Blurring of work-life boundaries, making it hard for workers to disconnect from the office.
- Finding ways to work while simultaneously caring for children including overseeing online schooling or juggling other caregiving responsibilities while trying to work, such as caring for sick, elderly, or disabled household members.
- Concerns about work performance and productivity.
- Concerns about the safety of using public transit as a commuting option.

These, and many other, work-related stressors can take a toll on a person's sense of well-being and negatively impact their mental health. For some, these stressors can contribute to serious problems, such as the development or exacerbation of mental health challenges (e.g., anxiety disorder, depression disorder or substance use disorders.) Psychologists and psychiatrists are sounding the alarm about a mental health crisis forming, and data supporting their concerns have started to emerge. As one example, [survey results from the Centers for Disease Control and Prevention \(CDC\)](#) suggest that about 40 percent of U.S. adults were experiencing negative mental or behavioral health effects in June 2020, including symptoms of anxiety disorder or depressive disorder, trauma-related symptoms, new or increased substance use, or suicidal

thoughts. An article published by the [National Safety Council in August 2020](#) detailing a spike in opioid overdoses further highlights the need for more mental health resources.

Because of the many potential stressors workers may be experiencing, a comprehensive approach is needed to address stressors throughout the community, and employers can be part of the solution. More than 85% of employees surveyed in 2021 by the [American Psychological Association](#) reported that actions from their employer would help their mental health. The goal is to find ways to alleviate or remove stressors in the workplace to the greatest extent possible, build coping and resiliency supports, and ensure that people who need help know where to turn. This toolkit offers resources and tips that employers, workers, and co-workers can use to support each other. Unions and worker organizations can also use these resources to support worker mental health.

OSHA Resources

- [Long-Term Stress Harms Everyone in the Workplace](#). This fact sheet explains how workplace stress harms individual workers and employers.
- [Workplace Mental Health Fact Sheet](#). This fact sheet is designed to equip workplaces with vital information and resources to address mental health concerns effectively. Available in [Spanish](#).
- [Glossary of Frequently Used Terms](#). This webpage provides definitions for terms frequently used when discussing stress and mental health in the workplace.

OSHA – Workplace Stress: Guidance and Tips for Employers.

Workplace Stress



Guidance and Tips for Employers

Workplaces can have many stressors. Issues in the workplace can exacerbate the risk of experiencing mental health challenges. Combined, these stressors can make it more difficult for workers to get their tasks done; threaten their productivity, happiness, and well-being; and lead to burnout. Because of the many potential stressors employees may be experiencing, a comprehensive approach is needed to address stressors throughout the community, and employers can be part of the solution. More than 85% of employees surveyed in 2021 by [the American Psychological Association](#) reported that actions from their employer would help their mental health.

The goal is to find ways to alleviate or remove stressors in the workplace to the greatest extent possible, build coping and resiliency supports, and ensure that people who need help know where to turn. Reducing workplace stress benefits everyone across an organization. It can improve morale and lead to increased productivity and better focus, fewer workplace injuries, fewer sick days, and improved physical health (e.g., lower blood pressure, stronger immune system). All these factors can also lead to reduced turnover among an employer's workforce.

In fact, the [World Health Organization](#) estimate that for every dollar U.S. employers spend treating common mental health issues, they receive a return of \$4 in improved health and productivity. Employers can make a difference when it comes to helping their staff manage stress. Key things they can do include:

- **Be aware** and acknowledge that people can carry an emotional load that is unique to their own circumstances. They may be experiencing heightened levels of loneliness, isolation, uncertainty, grief, and stress; and some may face additional demands, such as parents caring for children or elderly household members; and those with existing mental health or substance use challenges.
- **Identify factors are making it harder for workers to get their jobs done** and determine if adjustments can be made.
- **Show empathy.** Ensure workers that 1) they are not alone, 2) their employer understands the stress they are under, 3) there is no shame in feeling anxious, and 4) asking for help is important. Employers can reassure employees they are open and receptive to discussions about employees' work stress, by creating a safe and trustworthy space.
- **Provide access** to coping and resiliency resources, workplace and leave flexibilities without penalty, or other supportive networks and services. Research from the American Psychological Association suggests 50 % of employees find that a lack of paid time off or sick leave has a negative impact on stress levels at work.

The following resources provide guidance to help employers alleviate workplace stress and support mental health.

OSHA Resources

- **Getting Started Guides for Employers.** These aim to help employers gain confidence about talking to workers about workplace stress, mental health, and substance use.
 - [Getting Started Guide for Senior Managers](#)
 - [Getting Started Guide for Front-line Supervisors](#)
- **Mental Health Checklists for Employers.** These identify ways for employers to alleviate workplace stressors and support mental health.
 - [Checklist for Senior Managers](#)
 - [Checklist for Front-line Supervisors](#)
- [Workplace Stress Sample Survey Questions](#). This document provides sample questions that employers could ask to determine whether adjustments can be made to reduce workplace stress, and if staff need mental health support.
- [Myth Buster Fact Sheet](#). This dispels myths that might make workers reluctant to talk about workplace stress and mental health challenges. Employers could distribute this to employees or display in the workplace to reduce the stigma surrounding these topics.
- [Preventing Suicides](#). This webpage provides information on the [988 Suicide & Crisis Lifeline](#), and links to access to useful resources.
- [Mental Health Employer Tips – Workplace Stress Statistics](#) (ZIP) [Spanish](#) (ZIP)
- [Mental Health Employer Tips – Provide More Information](#) (ZIP) [Spanish](#) (ZIP)
- [TALK/DILO Infographic](#) (ZIP) [Spanish](#) (ZIP)
- [Start the Conversation – ABC Mental Health Videos](#)
- [Tips to Improve Relationships – ABC Mental Health Videos](#)
- [Build Your mental Health Toolkit – ABC Mental Health Videos](#)

OSHA – Workplace Stress: Training Resources.

Workplace Stress



Training Resources

The idea of talking about stress and mental health at work might feel scary or too personal. These can be sensitive topics that require a foundation of trust and goodwill to broach, or alternatively, the support for a worker to seek external resources and assistance outside of the workplace.

However, there are ways in which employers, supervisors, and co-workers can support each other, and training is available on a variety of relevant topics. Ideally, employers should provide training for supervisors and workers to help them recognize the signs and symptoms of stress. Through this training, Employers, supervisors, and workers will know what to say, how to listen, and how to support others at the workplace who are struggling; learn about ways to build coping and resiliency skills; and know what avenues are available if professional help is needed either for themselves or their co-workers. Unions and worker organizations can also serve an important role in supporting workplace mental health and well-being through their member services as well as their outreach and community engagement work.

These training resources offer useful starting points for employers, supervisors, and employees:

- The National Council for Mental Wellbeing offers [Mental Health First Aid](#), which teaches people how to identify, understand and respond to signs of mental illness and substance use disorders. Multiple trainings are offered (some of which are virtual), and they target different areas (e.g., workplace in general, fire and EMS sector). Train-the-trainer programs are offered for employers that wish to have a staff member become a qualified trainer and then provide training more broadly throughout the organization. Additionally, companies can work directly with NCBH to have them develop training and other resources tailored to meet the needs of their specific worksite (more details are available [here](#)).
- The QPR Institute offers a one-hour online course, [QPR Gatekeeper Training](#), that provides insight on how to **question (Q)**, **persuade (P)**, and **refer (R)** someone who may be suicidal.
- The U.S. Department of Veterans Affairs offers a [Stress First Aid slide deck](#), which is a 30-minute presentation (developed for first responders) that provides a framework to improve recovery from stress reactions.

[Link to this Resource from OSHA](#)

OSHA – Workplace Stress: Real World Solutions.

Workplace Stress



Real World Solutions

There's no one-size-fits-all strategy when it comes to alleviating workplace stress. The most effective approach is to identify the specific stressors associated with a particular job or industry and take concrete and practical steps to remove or lessen those stressors. Much can be learned by exploring what others are already doing and tips experts in the field have identified to address workplace stress. Some of the approaches discussed below can be applied to [any workplace](#); others focus on specific groups, such as [hybrid](#) and remote workers, working [parents and other caregivers](#), [young workers](#), [frontline workers](#), those in customer service roles, and workers who do manual labor, among other workers.

OSHA – Workplace Stress – Outreach Materials.

Workplace Stress



Outreach Materials

It is imperative to talk about mental health; shine light on the stressors; strategize about ways to alleviate stress them; and be on the lookout for signs and symptoms of stress and mental health emergencies so that people can either direct themselves, their friends, co-workers or family members to helpful coping and resiliency resources or other supportive networks and services if needed. The key is to build awareness, and the outreach products identified below will help with that goal. Workers and employers alike will benefit from the information, and the latter may wish to use these resources as building blocks for creating an awareness campaign within their organization. Employers, unions, and worker organizations can and should take all steps to protect the mental health of workers. Unions and worker organizations can also serve an important role in supporting workplace mental health and well-being through their member services as well as their outreach and community engagement work.

OSHA Resources

- **Support One Another Toolkit** ([ZIP](#)) Spanish ([ZIP](#)). Provides tips on creating a workplace culture that support mental health by talking about mental health.
- **[Working Together poster](#)**. Provides a brief overview of steps employers and workers can take to address stress and mental health in the workplace.
- **[Supporting Your Co-Workers poster](#)**. Provides concrete tips that people can use to support their co-workers, offering suggestions on how to be respectful when broaching stress and mental health topics, how to listen compassionately, how to determine if more assistance is needed, and how to follow up on concerns.
- **[Worker-Fatigue Webpage](#)**. Focuses on worker fatigue and includes information about the impact of demanding work schedules and measures workers and employers can take to prevent worker fatigue and fatigue-related injuries and illnesses by providing or participating in education, training, and fatigue management programs.
- **[Helping Your Co-Workers and Yourself poster](#)**. Offers general tips on ways employers and co-workers can help each other address stress and mental health, and advice for those currently facing mental health challenges.

PART III – 2020 NEC Changes

2020 NEC Changes Chapter 4

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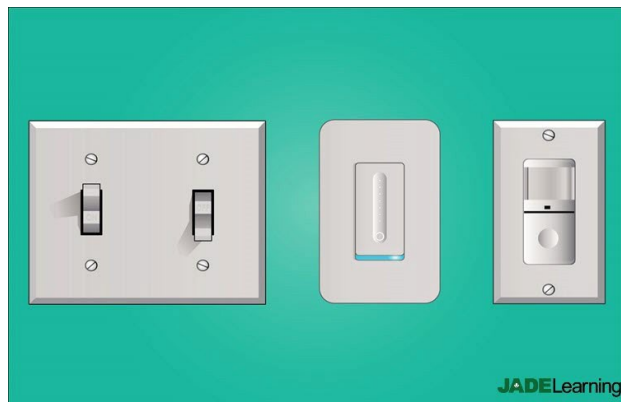
68

404.9 General Use Snap Switches, Dimmers, and Control Switches.

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In 2020 NEC, dimmers and control switches are specifically referenced in Section 404.9.

The requirements for grounding these devices and their faceplates has been clarified in 2020.



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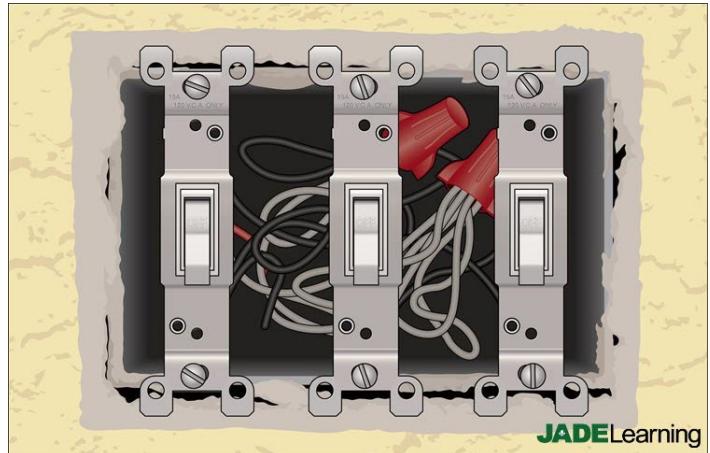
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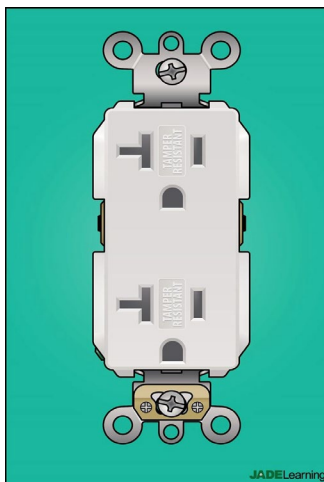
69

404.14(A), (B), (C), (D) Rating and Use of Switches.

Snap switches are now permitted to be used with new types of loads depending on the switch type (AC, AC/DC, CO/ALR or 347-volt switches) including LEDs and their associated drivers.



406.3(A) Receptacle Rating and Type. Receptacles.



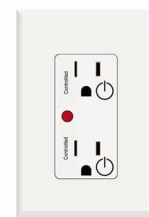
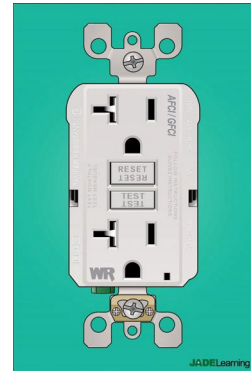
Section 406.3(A) has been revised in 2020:

Receptacles shall be listed and marked with the manufacturer's name or identification and voltage and ampere ratings. Receptacles shall not be permitted to be reconditioned.

406.4(D)(4) Replacements. AFCI Protection and 406.4(D)(7) Replacements. Controlled Receptacles.

(4) 2017 NEC, when no EGC was previously installed/no AFCI device was commercially available for a 2-wire receptacle with no ground, an AFCI protected replacement receptacle was not required to be installed. ***Exception was removed in the 2020 NEC**

(7) When replacing a controlled receptacle, an equivalent controlled receptacle must be installed. If automatic control is no longer required, the replacement receptacle may then not be identified as controlled.



Two Controlled



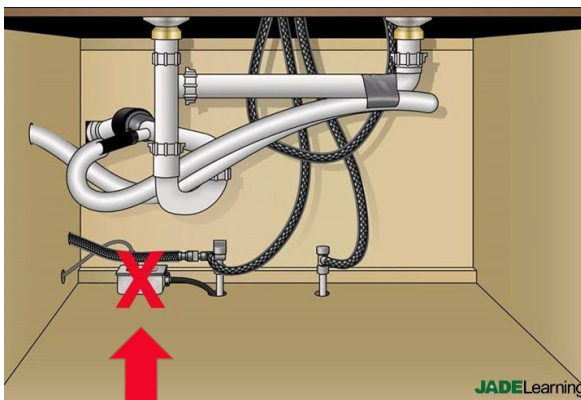
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406.5(G)(2) Receptacle Orientation. Under Sinks.

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New for 2020 NEC:

- Receptacles shall not be installed in a face-up position in the area below a sink.
- This new directive has no exceptions and applies to all receptacles under all sinks.

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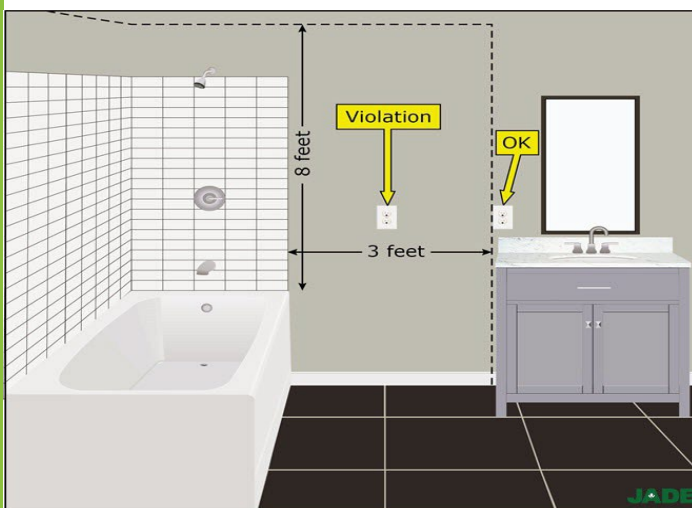
406.7 Attachment Plugs, Cord Connectors, and Flanged Surface Devices.

New for 2020 NEC:

- Attachment plugs, cord connectors, and flanged surface devices shall not be permitted to be reconditioned.
- The term “reconditioned” is often referred to as rebuilt, refurbished, or remanufactured.



406.9(C) Receptacles in Damp or Wet Locations. Bathtub and Shower Space.



Receptacles shall not be installed within a zone measured 3 ft horizontally and 8 ft vertically from the top of the bathtub rim or shower stall threshold.

The identified includes the space directly over the tub or shower stall.

406.12 Tamper Resistant Receptacles.

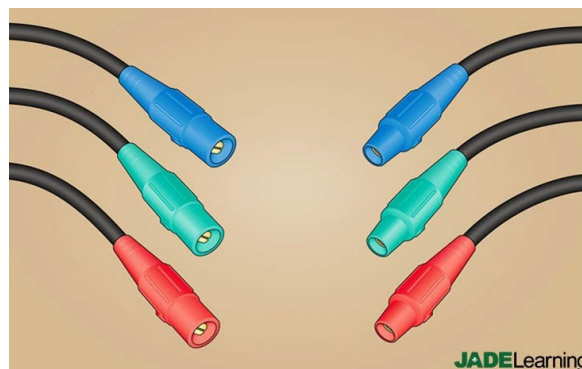


In the 2020 NEC, tamper-resistant receptacles are required in additional locations including common areas of hotels, assisted-living facilities, accessory buildings, and detached garages.

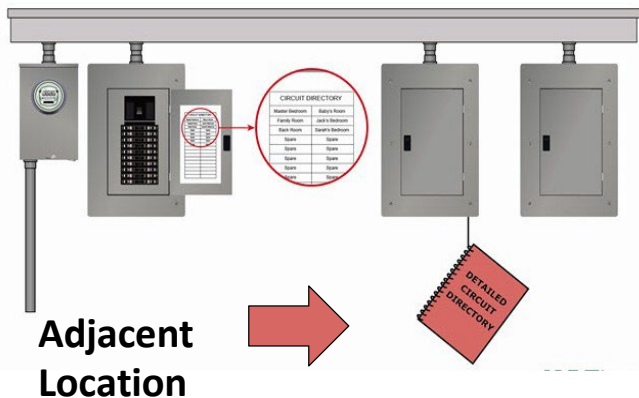
406.13 Single Pole Separable Connector Type.

Single-pole separable-connectors individually carry the ungrounded, grounded and equipment grounding conductors.

Section 406.13(A) through (D) was added to 2020 NEC to provide new guidelines for these connectors.



408.4(A) Field Identification Required. Circuit Directory or Circuit Identification.



Directories may be located on the face, inside of, or now in ***an approved location*** adjacent to the panel door.

The AHJ must approve any adjacent location(s).

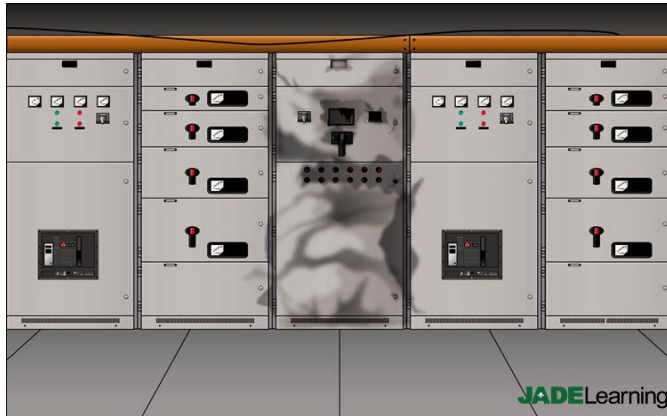
408.6 Switchboards/Panelboards. Short-Circuit Current Rating.

- Section 408.6 extends available fault current marking requirements to all switchboards, switchgear and panelboards in other than one- and two-family dwelling units.
- The Short Circuit Current Rating (SCCR on Equipment) must be no less than the available fault current that may be able to pass through the equipment.

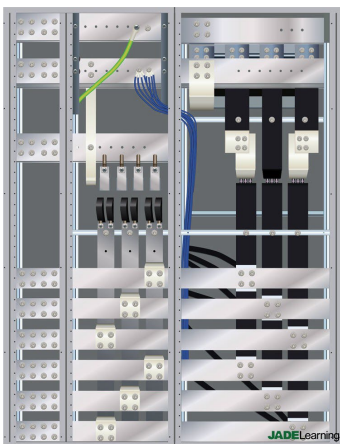


408.8 Switchboards/Panelboards. Reconditioning of Equipment.

If switchboards, switchgear or panelboards are damaged by fire, fire-related contaminants or water, the equipment must be evaluated by the original manufacturer or a qualified testing lab (UL) before returning to service.



408.18(C)(2) Clearances. Connections. Grounded Circuit Conductors.

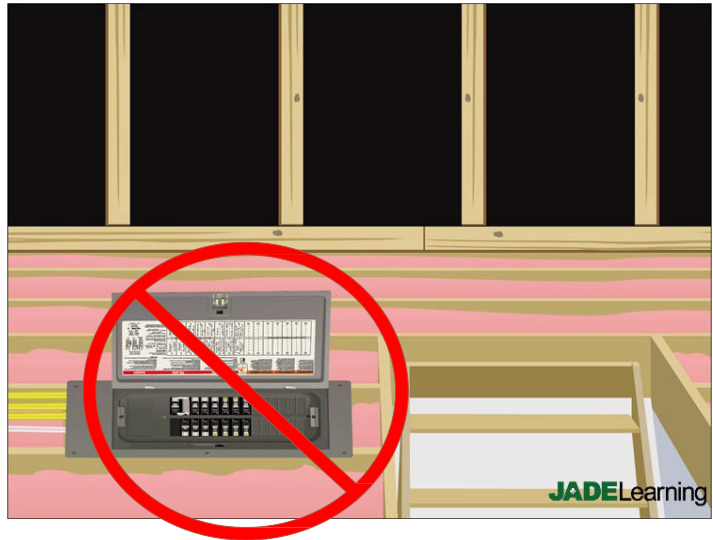


- New rules for the placement of grounded (neutral) lugs.
- Applies to switchboards and switchgear, but not panelboards.
- Different requirements for when single or multiple grounded terminals are installed.

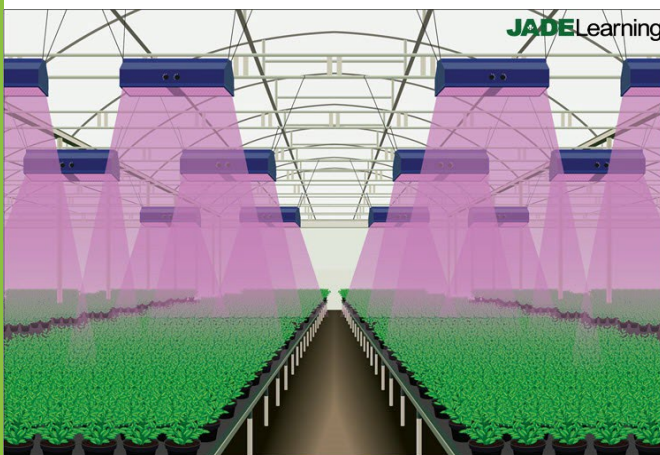
08.43 Panelboard Orientation.

Panelboards are now prohibited from being installed on their backs, facing up.

Panelboards may be placed horizontally, but all the breaker handles must be up when "on."



410 Luminaires, Lampholders and Lamps. Part XVI. Special Provisions for Horticultural Lighting Equipment.



Horticulture lighting equipment is regulated by the NEC.

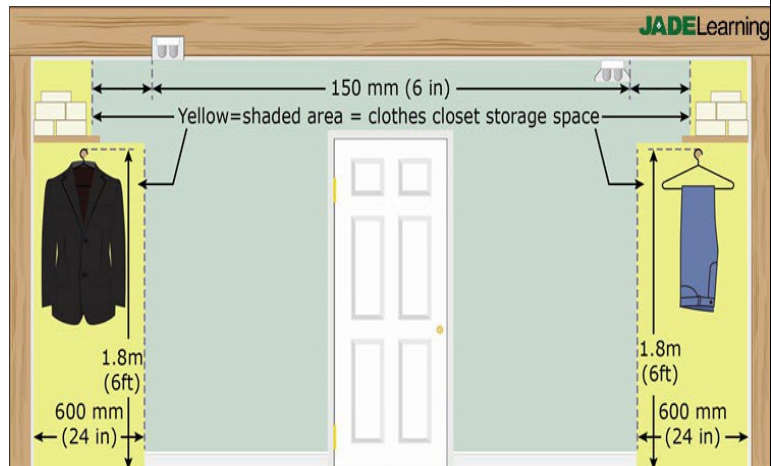
Locations include greenhouses & nurseries.

Listing, installation, location, fittings, flexible cord, and GFCI requirements are provided.

410.2 and 410.16 Luminaires, Lampholders, and Lamps. Luminaires in Clothes Closets.

The term “Closet Storage Space” has been updated to “Clothes Closet Storage Space.”

Permitted locations of fixtures and dimensions of closet space is provided in Sections 410.16.



410.42 Luminaire(s) with Exposed Conductive Parts.



Revised for 2020 NEC, 410.42 states:

If accessible to unqualified persons, exposed conductive parts of any light fixture must either:

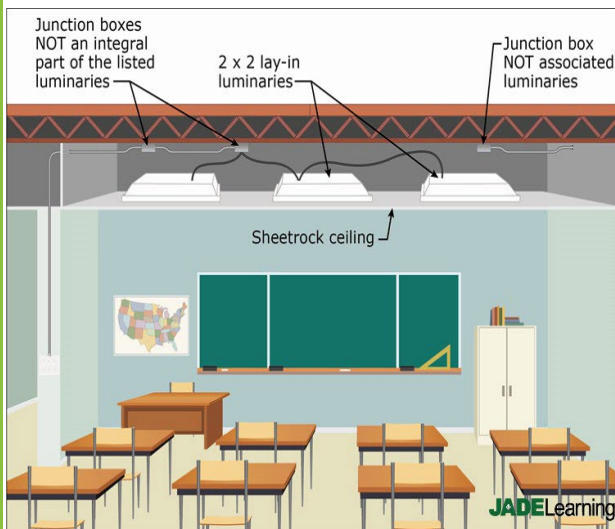
1. Be connected to an equipment grounding conductor.
2. Be separated from all live parts by a listed double insulation system.

410.116(C) Installation in Fire-Resistant Construction.

- 410.116(C) prohibits installing recessed luminaires marked “FOR USE IN NON-FIRE-RATED INSTALLATIONS” in fire-rated installations.
- Section 410.116(C) provides three ways that recessed luminaires may be installed in locations with fire ratings.



410.118 Luminaire Access to Other Boxes.



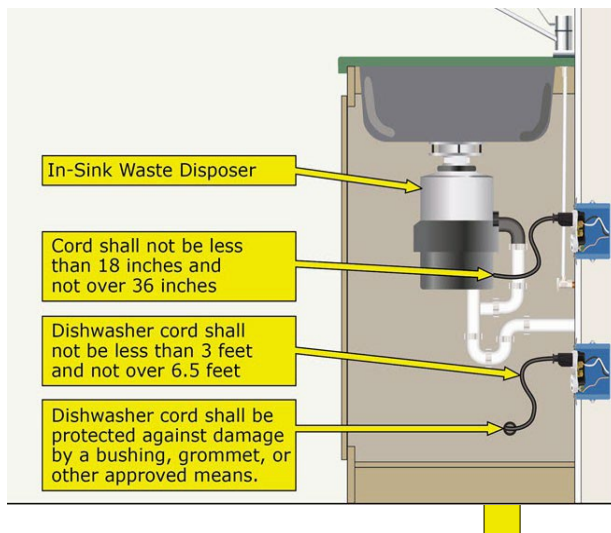
- Recessed luminaires are prohibited from being used as access points for outlet boxes, pull boxes, junction boxes or conduit bodies unless an integral part of the luminaire.
- Electricians may not modify recessed luminaires to make boxes an integral part of the luminaire.

422.5(A) GFCI Protection for Personnel.

- In the 2017 NEC, Section 422.5(A) required GFCI protection for personnel for equipment 250 volts or less.
- In the 2020 NEC, the voltage requirement is now 150 volts or less to ground.
- Dishwashers and sump pumps are now listed in this section- and will require GFCI protection if 150 volts or less to ground and 60 amps or less.



422.16(B) Specific Appliances.



Flexible cords must have an EGC **AND** be terminated with a grounding type plug.

For dishwashers and trash compactors, cords that pass through a hole must be protected by a bushing, grommet, or other approved means.

425.28(B) Marking of Heating Equipment. Nameplate. Location.

The nameplate must list the manufacturer (previously required the identifying name).

The word “normal” was removed from normal rating in volts and watts.

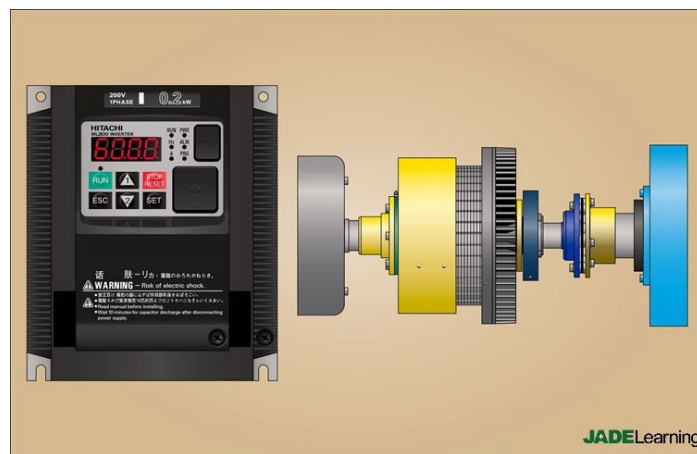
The 2020 NEC requires the label to be permanent.



430.122(B) Conductors- Minimum Size and Ampacity. Output Conductors.

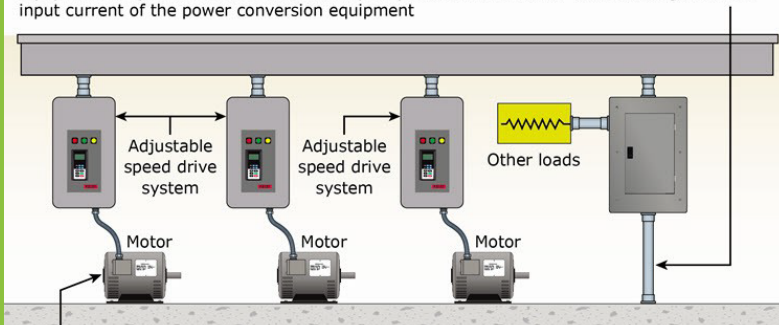
The 2020 NEC distinguishes between branch circuit/feeder and output conductors.

Output conductors are now generally required to have an ampacity equal to or larger than 125% of the motor full-load current.



430.122(D) Conductors- Minimum Size and Ampacity. Several Motors or a Motor and Other Loads.

Conductors supplying several motors or motor(s) and other load(s), including power conversion equipment, required to have calculated ampacity in accordance with 430.24, using the rated input current of the power conversion equipment



Output conductors between power conversion equipment and the motor must have an ampacity equal to or larger than 125 percent of the motor full-load current (w/ exception) [430.122(B)]

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Section 430.122(D) is new in 2020 NEC and sends electricians to Section 430.24.

Motor circuit conductors must be chosen based on the sum of the motor and non-motor loads listed in Section 430.24.

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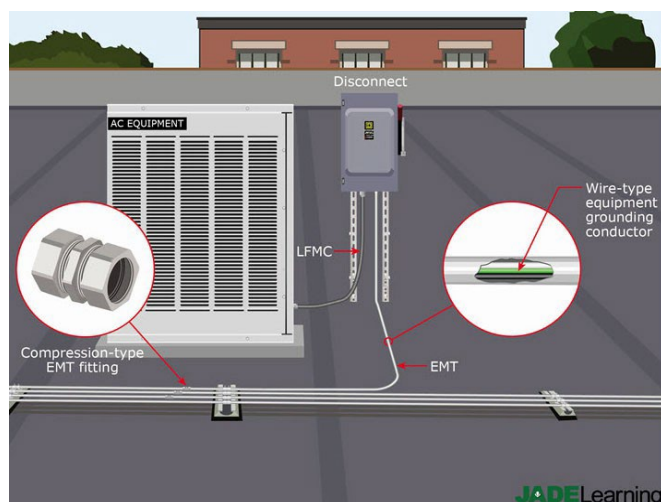
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440.9 Air Conditioning and Refrigeration Equipment. Grounding and Bonding.

New wording for this Section omits the phrase “non-threaded fittings” and adds “compression-type fittings,” for improved clarity.

An EGC of the wire type must be installed in outdoor portions of metallic raceway systems that use **compression-type fittings** for HACR equipment on a roof.



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445.18(D) Generators. Disconnecting Means and Emergency Shutdown.



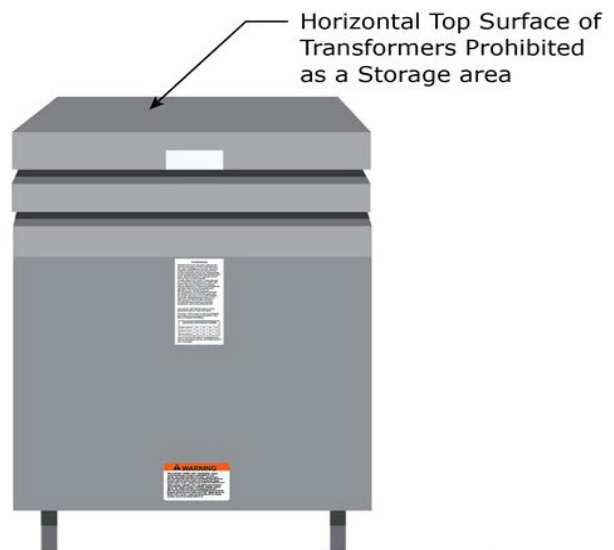
Section 445.18(D) is new in the 2020 NEC:

For other than cord-and-plug connected portable generators, an emergency shutdown device shall be located outside the dwelling unit at a readily accessible location.

450.9 Transformers. Ventilation.

Transformer top surfaces that are horizontal and readily accessible shall be marked to prohibit storage.

These new markings are meant to prevent storage on top of flat-top transformers.



2020 NEC Changes Chapter 5

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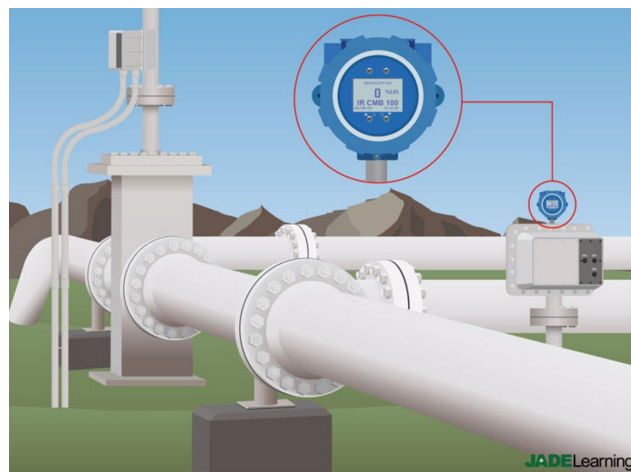
96

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500.7 (L),(M),(N),(O) Hazardous Locations. Protection Techniques.

Four new techniques for protecting electrical and electronic equipment were introduced in the 2020 NEC:

1. Inherently Safe Optical Radiation
2. Protected Optical Radiation
3. Optical System With Interlock
4. Protection by Skin Effect Trace Heating



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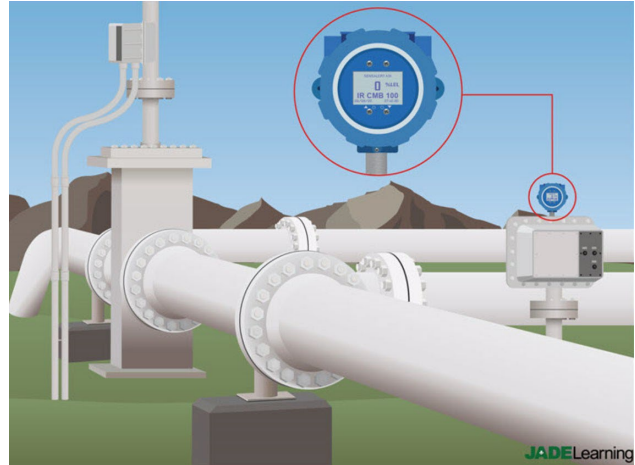
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500.7 (L),(M),(N),(O) Hazardous Locations. Protection Techniques.

Four new techniques for protecting electrical and electronic equipment were introduced in the 2020 NEC:

1. Inherently Safe Optical Radiation
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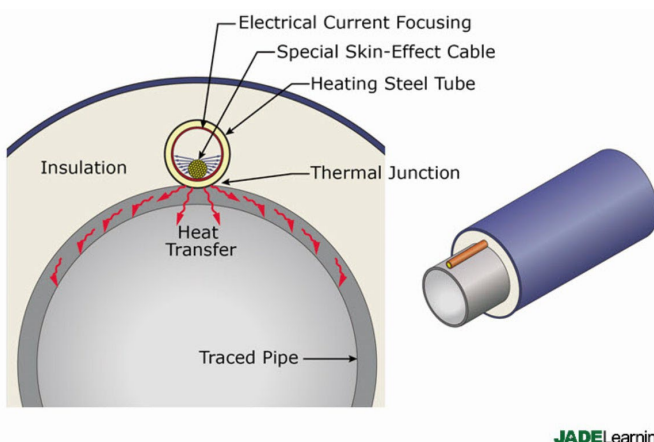


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500.7(O) Hazardous Locations. Protection Techniques.



Skin Effect Trace Heating is now an approved protection technique in the following hazardous locations:

1. Class I Division 2
2. Class II Division 2
3. Class III Division 2

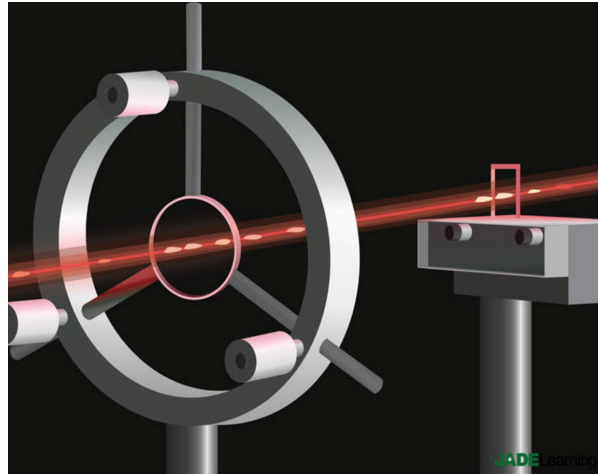
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500.8(G) Hazardous (Classified) Locations. Equipment. Equipment Involving Optical Radiation.

- The risk of ignition must be considered for all electrical parts and circuits that may be exposed to optical radiation, both inside and outside of the optical equipment.
- All luminaires (fixed, portable, transportable, etc.) including LEDs are exempt from this requirement.



501.10(A)(2) Hazardous (Classified) Locations. Class I Division 1 Locations. Flexible Connections.



Type TC-ER-HL Cable



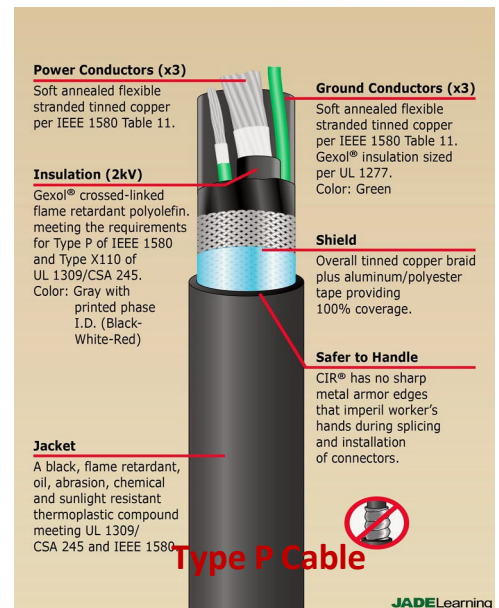
Type P Cable

- Type TC-ER-HL is permitted in Class I, Division 1 locations when installed according to Section 336.10.
- Type P Cable is permitted in Class I, Division 1 locations when installed according to Section 337.10.

502.10(A)(2) Class II Locations. Wiring Method. Class II Division 1. Flexible Connections.

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- Motors in hazardous locations may need a flexible cable to avoid premature loosening or damage to electrical equipment.
- Division 1 locations, Type TC-ER-HL and Type P cables are also permitted in Class II, Division 1 locations.
- Additional installation requirements are listed in Section 502.10(A)(2).



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511.12 Commercial Garages, Repair, and Storage. GFCI Protection for Personnel.

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- Section 511.12 (addressing commercial garages) now refers to Section 210.8(B) for GFCI protection requirements.
- Section 210.8(B)(8) requires GFCI protection in garages, accessory buildings, service bays, and similar areas other than vehicle exhibition halls.



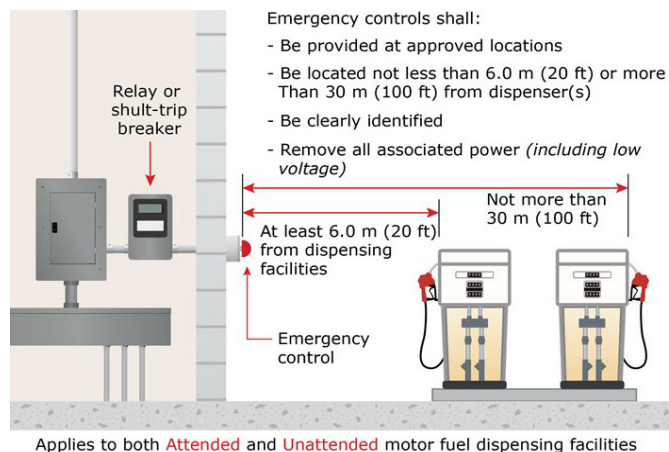
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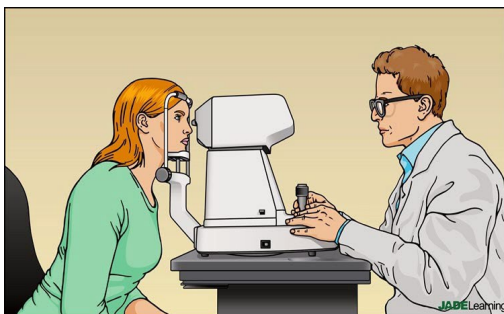
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514.11(A) Motor Fuel Dispensing Facilities. Emergency Electrical Disconnects.

- All ungrounded and grounded conductors must be simultaneously disconnected when the emergency disconnect is activated.
- Conductors must be disconnected from the source of supply.
- EGCs must remain connected.



517.10(B)(3) Health Care Facilities. Applicability. Not Covered.

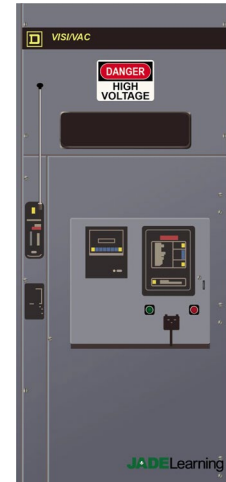


New patient care spaces were added to the 2020 NEC that are **not** required to adhere to Article 517 Part II wiring methods:

1. Intramuscular Injections (Immunizations)
2. Psychiatry and Psychotherapy
3. Alternative Medicine
4. Optometry

517.17(D) Health Care Facilities. Ground-Fault Protection of Equipment. Testing.

- Section 517.17(D) requires the ground-fault protection system to be performance tested when first installed.
- Testing must be performed by qualified person(s) according to the manufacturer's requirements.
- A written record of the test must be available to the authority having jurisdiction (AHJ).



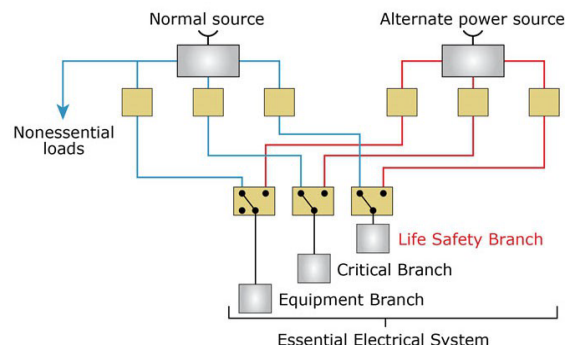
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517.26 Health Care Facilities. Essential Electrical System. Application of Other Articles.

- Essential Electrical Systems (EES) are divided into Life Safety Branches, Critical Branches, and Equipment Branches.
- The Life Safety Branch now has four amendments, which indicate what sections in Article 700 do and do not apply.

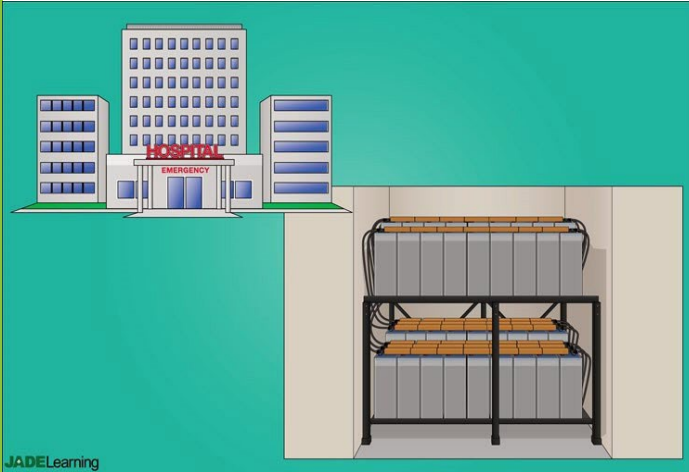


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517.30(B)(3) Sources of Power. Types of Power Sources. Battery Systems.



Section 517.30(B)(3) is new in the 2020 Code cycle:

Battery systems shall be permitted to serve as the alternate source for all or part of an essential electrical system.

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518.6 Assembly Occupancies. Illumination.



- Workspaces for fixed service equipment installed outdoors at “assembly occupancies” must be provided with illumination.
- Control **only** by automatic means is **not** permitted.
- This lighting is not required if illumination comes by an adjacent light source.

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545.24(A), (B). Manufactured Buildings and Relocatable Structures. Disconnecting Means and Branch-Circuit Overcurrent Protection.



- A new Part II *Relocatable Structures* has been added to Article 545.
- New Section 545.24 helps distinguish between requirements for mobile homes and other portable buildings.

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547.5(G) Agricultural Buildings. Wiring Methods. Receptacles.

GFCI protection is **not** required for receptacles other than the 125-volt, 15- and 20-amp receptacles installed in these areas:

1. Equipotential plane areas
2. Outdoors
3. Damp or wet locations
4. Dirt confinement areas for livestock.



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550.13(B) Mobile Homes, Manufactured Homes, Mobile Home Parks. Receptacle Outlets. GFCI.



In mobile and manufactured homes, GFCI protection is now required for these new areas:

1. Garages and accessory buildings
2. Crawl spaces
3. Basements
4. Boathouses
5. Bathtubs and shower stalls (within 6 feet)
6. Laundry area(s)

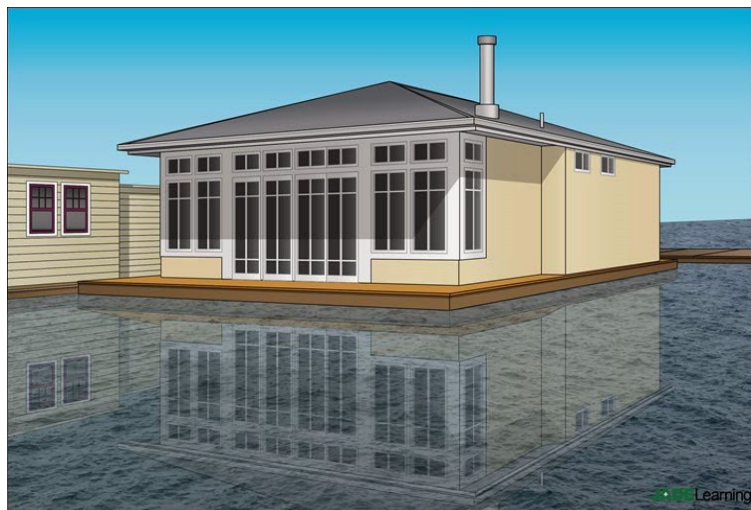
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555 Part III. Floating Buildings.

- Article 553 Floating Buildings was moved to Part III of Article 555 (Marinas, Boatyards, etc.).
- A floating building is not a watercraft but shares many water requirements with marinas and boatyards.



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555.2 Marinas, Boatyards, Floating Buildings and Commercial and Noncommercial Docking Facilities. Definitions.



- Section 555.2 is the new home for 14 terms and definitions used to navigate Article 555 on water-based structures.
- In the 2017 NEC, only 2 definitions were provided.

555.35(A) Marinas, Boatyards: Ground-Fault Protection of Equipment (GFPE) and GFCI Protection.

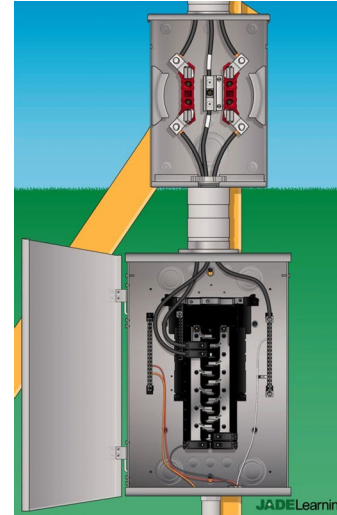


- Receptacles for shore power must have GFPE protection that trips at 30 mA or less.
- For other than shore power, GFCI receptacles must trip between 4 to 6 mA.
- Feeders must have GFPE protection not exceeding 100 mA.

590.8 Temporary Installations. Overcurrent Protective Devices.

Section 590.8(A) now requires examination of used OCPDs to make sure that they have been installed properly with no evidence of impending failure.

Breakers must be replaced when there is evidence of impending failure; meaning arcing, overheating, loose parts, bound parts, or visible damage or deterioration.



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2020 NEC Changes Chapter 6

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600.2 Electric Signs and Outline Lighting. Definitions.



Four new definitions were provided in the 2020 NEC for the retrofitting of signs.

1. **Host sign:** A sign already installed in the field that is designated for field conversion with a retrofit kit
2. **Retrofit Kit, General Use:** A kit consisting of primary parts (not all parts) and a list of required parts for subassembly in the field

600.2 Electric Signs and Outline Lighting. Definitions.

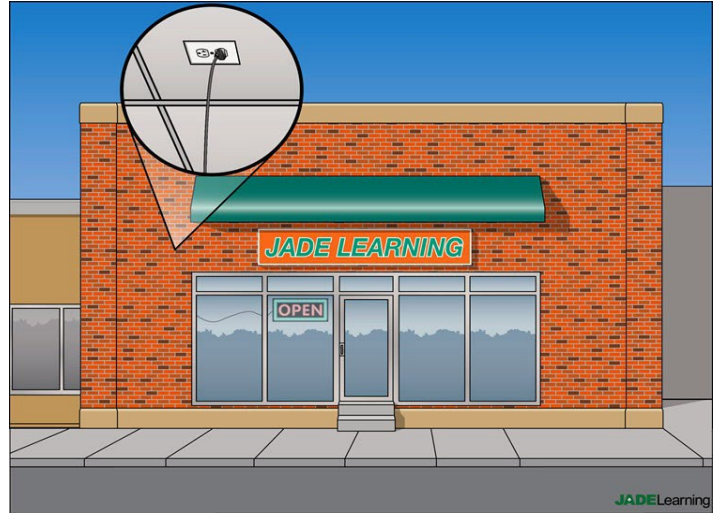


3. **Retrofit Kit, Sign Specific:** A kit consisting of all parts, hardware, and instructions necessary for field installation in a host sign
4. **Subassembly:** Component parts or a segment of a sign, retrofit kit, or outline lighting system that, when assembled, forms a complete unit or product

600.5(A) Electric Signs and Outline Lighting. Required Branch Circuit.

Section 600.5 clarifies which entrances must have required sign outlet(s).

Sign outlets are not required at entrances for deliveries, service corridors, or service hallways that are intended to be used only by service personnel or employees.



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600.35 Electric Signs and Outline Lighting. Retrofit Kits.



Section 600.35 provides requirements for installing, marking, wiring methods, and damaged components in retrofit kits.

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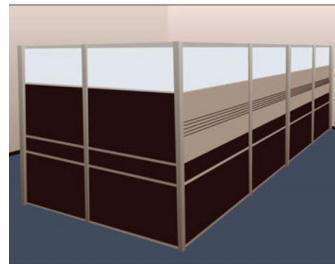
122

605.1 Office Furnishings. Scope.

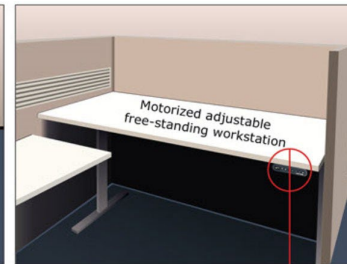
Section A: items that are covered

Section B: items that are not covered.

Article 605 does not cover individual office furnishings not connected to a system--chairs, freestanding desks, tables, storage units, and shelving units.



COVERED



NOT COVERED



625 and 625.1 Electric Vehicle Power Transfer System. Scope. (1of2)



The scope of Article 625 was revised in the 2020 NEC.

Electric vehicles are now recognized as capable of sending stored energy from their on-board batteries to the electrical system of a home or business.

625 and 625.1 Electric Vehicle Power Transfer System. Scope. (2of2)



Electric Vehicle Power Export Equipment (EVPE):

The equipment, including the outlet on the vehicle, that is used to provide electrical power at voltages greater than or equal to 30 Vac or 60 Vdc to loads external to the vehicle, using the vehicle as the source of power.

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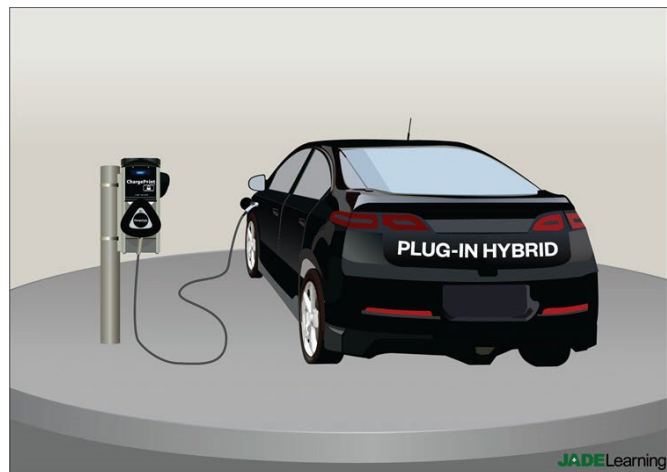
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625.2 Electric Vehicle Power Transfer System. Definitions.

- Four definitions were eliminated in the 2020 Code cycle.
- EVPE definition was added.

The updates to the definitions reflect changes to the current electric vehicle technology.



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625.44 Electric Vehicle Power Transfer System. Equipment Connection.



- **Section 625.44** offers two new charger connection types.
- The term “Stationary Equipment” was replaced with “Fastened-in-place.”
- The term “Equipment” was replaced with the more specific terms “Electric Vehicle Supply Equipment” and “Wireless Power Transfer Equipment.”

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625.54 Electric Vehicle Power Transfer System. GFCI Protection for Personnel.

GFCI protection is now required for **ALL** outlets used for electric vehicle power transfer.

In the 2017 NEC, GFCI protection was required only for single-phase receptacles rated 150 volts to ground or less and 50 amps or less.

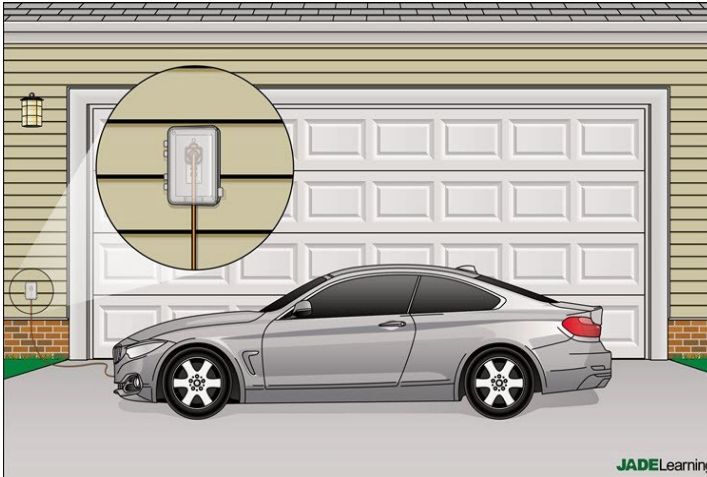


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625.56 Electric Vehicle Power Transfer System. Receptacle Enclosures.



All electric vehicle charging receptacles in wet locations must be protected by a weatherproof enclosure.

The hood of the enclosure must be listed and identified as extra duty.

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625.60 Electric Vehicle Power Transfer System. AC Receptacle Outlets Used for EVPE.

Section 625.60 ensures that vehicle power export installations are safe.

This section covers the types and ratings of receptacles used, overcurrent protection, and GFCI requirements.



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680.4 Swimming Pools, Fountains, & Similar Installations. Inspections After Installation.

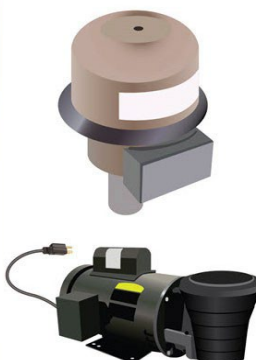
Section 680.4:

The AHJ shall be permitted to require periodic inspection and testing.

This section allows for periodic electrical inspections **indefinitely** of pool, fountain, and similar installations, even after installation is complete.



680.21(C) Swimming Pools, Fountains, and Similar Installations. Motors. GFCI Protection.



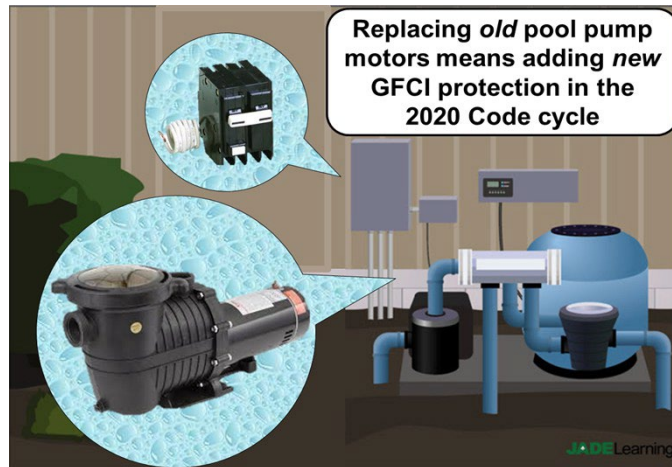
GFCI protection for motors is now 150 volts or less to ground and 60 amps or less (previously 120 through 240 volts).

Three-phase motors will now need GFCI protection when in the voltage and amperage range above.

680.21(D) Swimming Pools, Fountains, and Similar Installations. Motors. Pool Pump Motor Replacement.

Section 680.21(D) requires GFCI protection for pool motors when replaced for maintenance or repair.

This applies to any pool motor 150 volts or less to ground, 60 amps or less, single- or 3-phase.

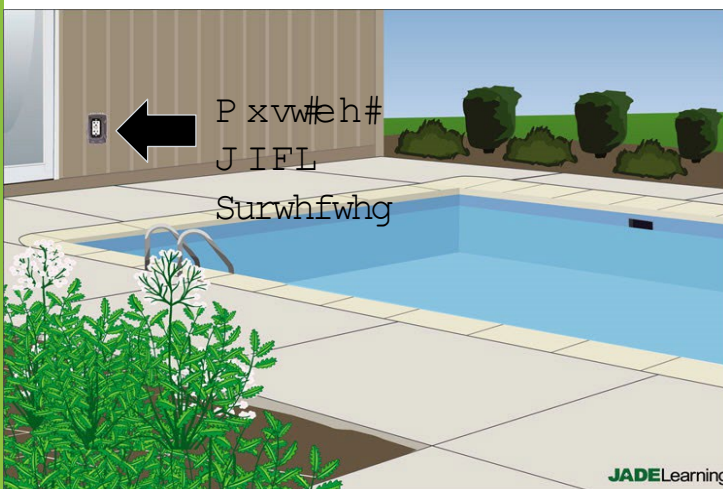


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680.22(A)(4) Swimming Pools, Fountains, and Similar Installations. Receptacles.



All 15- and 20-ampere, single-phase, 125-volt receptacles located within 20 feet of the inside walls of a pool shall be protected by a Class A ground-fault circuit interrupter (GFCI).

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680.22(A)(5) Swimming Pools, Fountains, and Similar Installations. Receptacles.

At least one GFCI-protected 125-volt, 15- or 20-amp general-purpose receptacle must be located within a pool equipment room.

All other receptacles 150 volts or less to ground in a pool equipment room must be GFCI protected.

At least one GFCI-protected 125-volt, 15- or 20- ampere receptacle on a general-purpose circuit required to be located within a pool equipment room

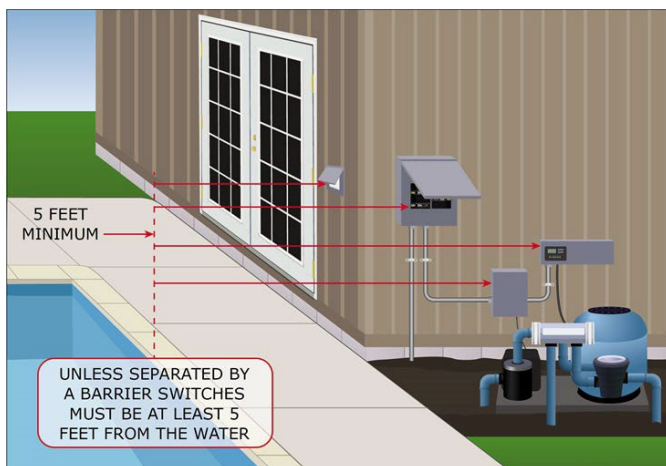


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680.22(C) Swimming Pools, Fountains, and Similar Installations. Switching Devices. Other Equipment.



Switching devices must be located at least 5 feet horizontally from the inside walls of a pool unless separated by a permanent barrier.

Switches listed as being acceptable for use within 5 feet of a pool are permitted.

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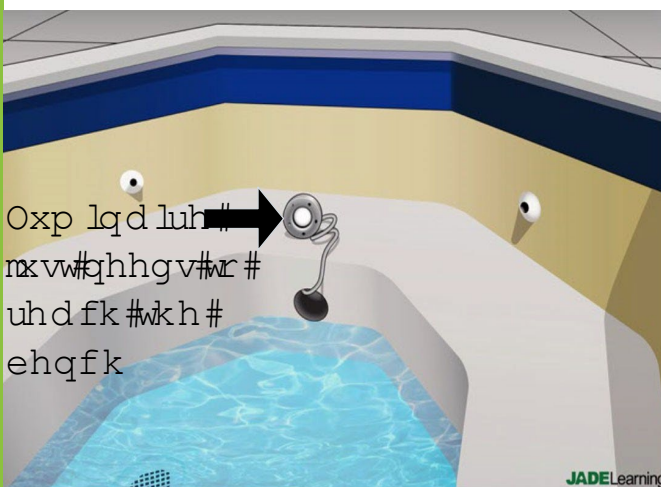
680.22(E) Swimming Pools, Fountains, and Similar Installations. Switching Devices. Other Equipment.

Equipment other than circulation pumps and pump motors must be located at least 5 feet horizontally from the inside walls of a pool.

The requirement does not apply if separated by a permanent barrier or under the low-voltage contact limit.



680.23(B)(6) Swimming Pools, Fountains, and Similar Installations. Wet Niche Luminaires. Servicing.



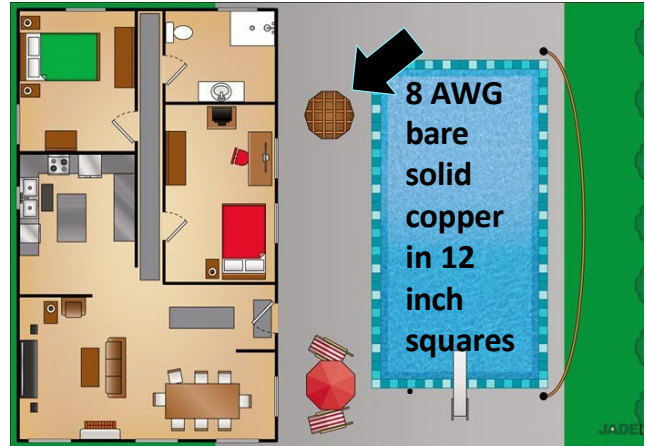
Electricians and manufacturers no longer must conceal extra cable allowing service of spa luminaire on the dry surface above the rim of the spa.

Spas may now be drained, and luminaires can be serviced down low on the spa bench.

680.26(B)(2) and (B)(5) Swimming Pools, Fountains, and Similar Installations. Equipotential Bonding.

A **copper grid** is permitted to be built around the pool to bond the walking surfaces if reinforcing steel is not available.

If used, the copper grid must be solid, bare 8 AWG copper conductors arranged in a network of 12-inch squares.



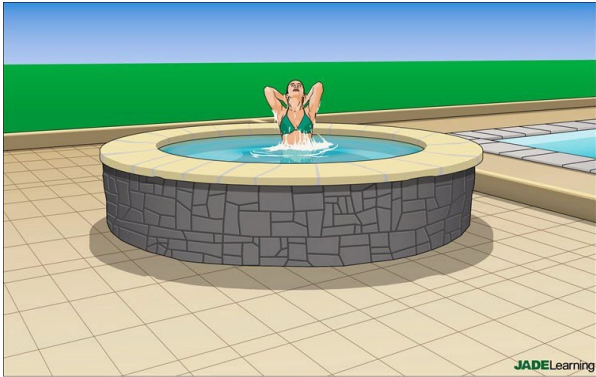
680.26(B)(2) and (B)(5) Swimming Pools, Fountains, and Similar Installations. Equipotential Bonding.

680.26(B)(5):

- requires all metal fittings, except isolated fittings measuring 4 inches or less, to be bonded
- small metal pool cover anchors exempt from this bonding requirement



680.35 Swimming Pools, Fountains, and Similar Installations. Storable and Portable Immersion Pools.



Article 680:
covers storable/portable immersion pools and includes new requirements.

An immersion pool:
a pool for ceremonial or ritual immersion of users, designed and intended to have its contents drained or discharged

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680.45 Swimming Pools, Fountains, and Similar Installations. Permanently Installed Immersion Pools.

Section 680.45:

- new and covers **permanently installed** immersion pools
- details the requirements for cord-and-plug connections, pumps, heaters, audio equipment, and equipotential bonding

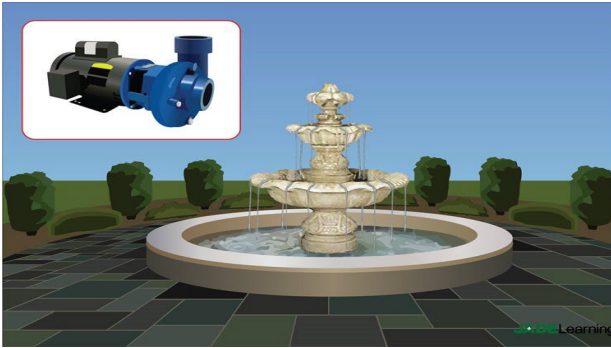


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680.59 Swimming Pools, Fountains, and Similar Installations. GFCI Protection for Permanently Installed Nonsubmersible Pumps.



Section 680.59:

- new to the 2020 NEC
- requires all outlets that supply single-phase or 3-phase pump motors to have GFCI protection if 250 volts or less and 60 amps or less

682.33(C) Natural and Artificially Made Bodies of Water. Bonding of Equipotential Planes.

Section 682.33(C)(2):

- provides new equipotential bonding requirements for certain types of outdoor service equipment near bodies of water *other* than pools.
- Walking surfaces below or within 3 feet of the services must be bonded to the equipotential plane.



690.33 Solar PV Systems. Mating Connectors.

The 2020 NEC addresses **intermatability** between PV mating connectors, and they must be one of the following:

- of the same type and brand for proper fit
- or
- listed and identified for intermatability



690.41(B) Solar PV Systems. System Grounding. Ground-Fault Protection.



- All PV system dc circuits exceeding 30 volts or 8 amps must be provided with dc ground-fault protection.
- In the 2017 NEC, only PV system dc circuits located within the PV Array required ground-fault protection.

2020 NEC Changes Chapter 7

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700.5(A) Emergency Systems. Transfer Equipment.

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Meter-mounted transfer switches are no longer permitted for emergency system use.

All emergency system transfer switches must now be listed and marked for emergency use.



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702.7(A) Optional Standby Systems. Signs. Standby.

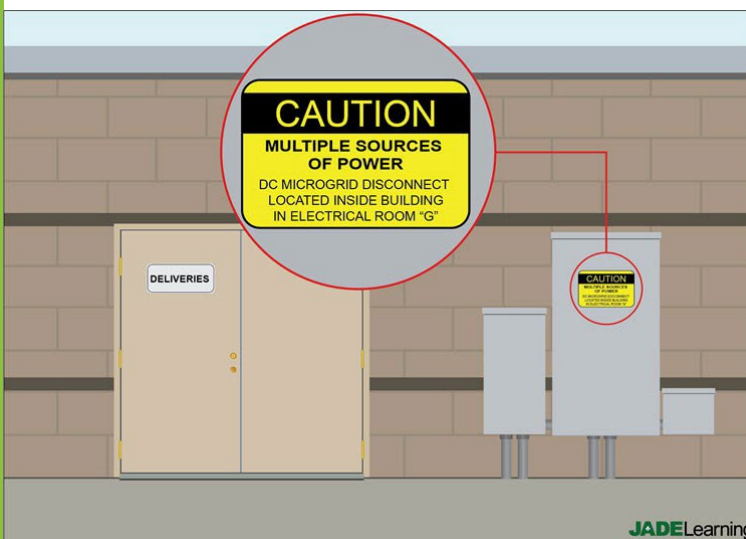


Section 702.7(A):

separates sign requirements for commercial and industrial vs. one- and two-family dwellings.

At one- and two-family dwelling units, a sign must be placed at the service disconnecting means indicating the location of each on-site optional standby power source disconnect.

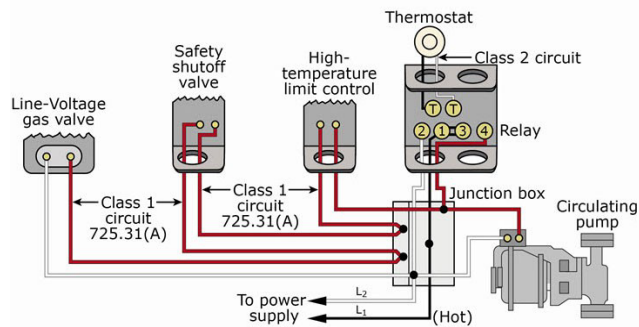
712.10 DC Microgrids. Directory.



The 2020 NEC requires a permanent plaque or directory be installed outside a building at each service equipment (or approved readily visible location) when supplied by a dc microgrid system.

725.48(B)(1) Class 1, 2, & 3 Remote-Control, Signaling and Power-Limited Circuits. Class 1 Circuits with Power-Supply Circuits. In a Cable, Enclosure, or Raceway.

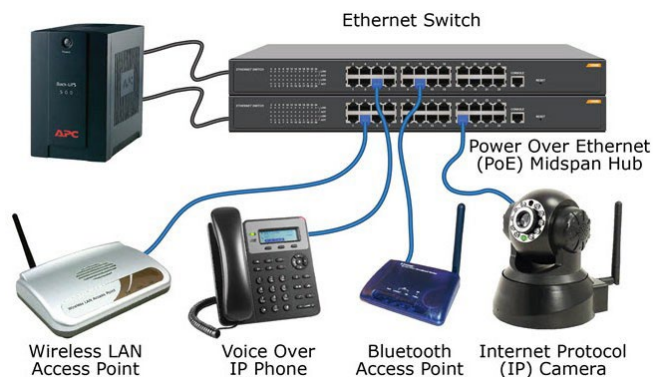
New permission in the 2020 NEC, allows Class 1 circuit conductors to occupy the same cable, enclosure, or raceway as power-supply circuits, even when they are **not** functionally associated.



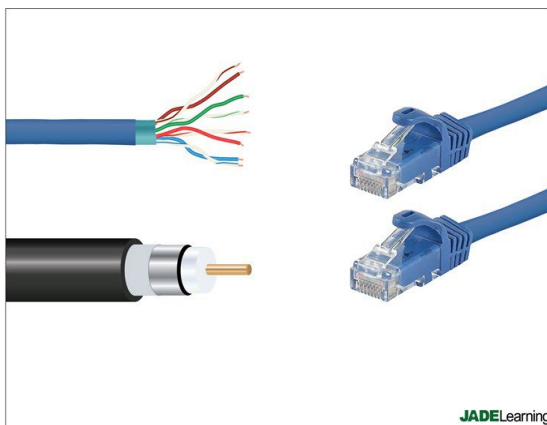
2020 NEC Changes Chapter 8

800.1, 800.2 General Requirements for Communications Systems.

- General requirements were often repeated in various sections of Article 800.
- Repeated information has been gathered to one place.
- It is now presented at the beginning of Article 800 only.



Section 800.27 General Requirements for Communications Systems. Temperature Limitation of Wire and Cables.



800.27:

No wire or cable shall be used in such a manner that its operating temperature exceeds that of its rating.

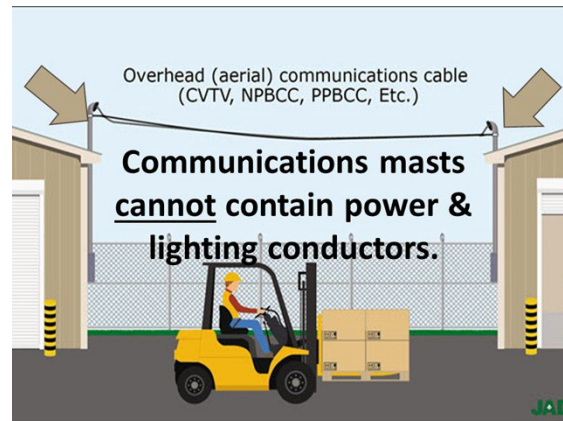
This new section names cables, where previous Code sections named only conductors as protected.

800.44(C) & (D) General Requirements for Communications Systems. Overhead (Aerial) Wires and Cables. On Masts. Between Buildings.

New for 2020

NEC 800.44(C):

overhead communications and CATV cables are permitted to attach to an above-the-roof raceway that does **NOT** enclose or support electric light or power circuit conductors.



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805.179(D) Communications Circuits. Communications Wires and Cables.

Article 805:

new and provides communications circuit requirements moved from Article 800

Section 805.179(D):

provides new and specific permission allowing electricians to use limited-power cable in place of Class 2 and Class 3 cables

CMR-LP (0.6A) (75C) 23 AWG 4 pair



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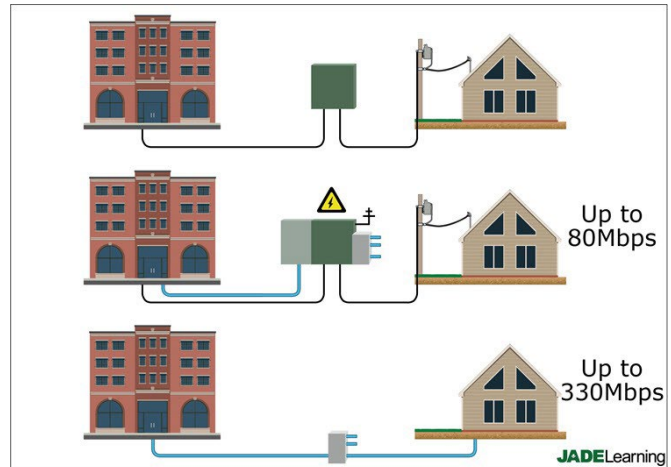
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840.2 Premises-Powered Broadband Communications Systems. Definitions.

New Terms (2020)

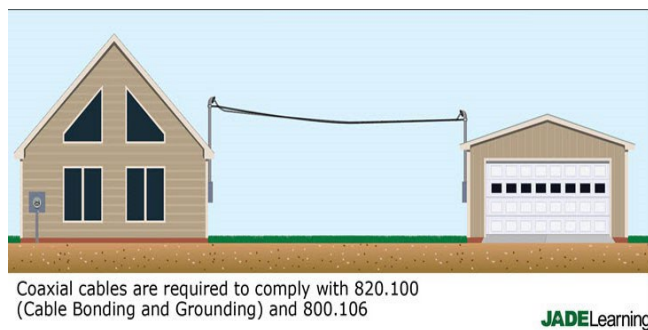
Broadband: wide bandwidth data transmission that transports multiple signals, protocols, and traffic types over various media types

Premises-Powered: using power provided locally from the premises



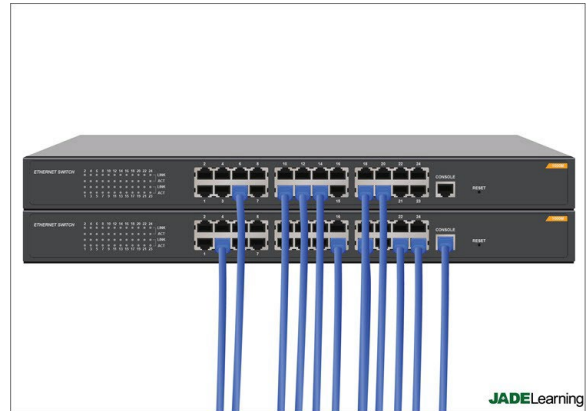
840.94, 840.102 Premises-Powered Broadband Communications Systems. Premises Circuits Leaving the Building.

- Section 840.94 is new and covers the **protection** of communications systems.
- Section 840.102 is also new and covers the **grounding methods** of communications systems.



840.160 Premises-Powered Broadband Communications Systems. Powering Circuits.

- New text in the 2020 NEC identifies new *listing* requirements for communications cables containing power conductors for equipment.
- 4-pair communications cables are now referenced in this Code section.



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TIA's and Errata

Tentative Interim Amendments (TIAs): amendments to an NFPA standard; they are processed in accordance with Section 5 of the Regulations Governing the Development of NFPA Standards.

They have not been published in a 1st Draft Report/2nd Draft Report for review and automatically become a Public Input for the standards development process

Errata:

- a correction to an NFPA Standard
- published in NFPA News, NFPA LiNK®, the National Fire Codes Subscription Service (NFCSS)
- included in any further distribution of the Standard

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How to Find 2020 NEC Tentative Interim Amendments

1. First, navigate to the NFPA website via this link:
<https://www.nfpa.org/codes-and-standards/7/0/nfpa-70>
2. Scroll down to see a list of Proposed and Issued Amendments under **Tentative Interim Amendment (TIA)**.
Proposed and Issued Amendments are listed separately by date – Closing Date for Proposed Amendments and Issued Date for Issued Amendments

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How to Find 2020 NEC Errata

1. First, navigate to the NFPA website via this link:
<https://www.nfpa.org/codes-and-standards/7/0/nfpa-70>
2. Scroll down to see an index under the title **Errata**.
The index is organized by **Document Title** and **Issued Date**.
3. Click the red **View** button next to each document to download a PDF of the details.

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Informative Annex C – Chapter 9 Tables and Examples for Raceway Fill Annex C

- 2020 NEC Chapter 9 is used for combinations of conductors of different sizes or insulation types installed in the same conduit or tubing.
- 2020 NEC Annex C is used to determine the maximum number of conductors permitted in conduit or tubing, when all conductors in the conduit are the same size and insulation type.

Chapter 9 Tables

Table 1 Percent of Cross Section of Conduit and Tubing for Conductors and Cables

Number of Conductors and/or Cables	Cross-Sectional Area (%)
1	53
2	31
Over 2	40



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Informative Annex C – Chapter 9 Tables and Examples for Raceway Fill Annex C

Example:

What is the maximum number of 8 AWG type RHH copper conductors permitted inside a 1-inch EMT raceway?

Table C.1 Maximum Number of Conductors or Fixture Wires in Electrical Metallic Tubing (EMT)
(Based on Chapter 9: Table 1, Table 4, and Table 5)

Type	Conductor Size (AWG/kcmil)	Trade Si					
		³ / ₈ (12)	¹ / ₂ (16)	³ / ₄ (21)	1 (27)	1 ¹ / ₄ (35)	1 ¹ / ₂ (41)
CONDUCTORS							
RHH, RHW, RHW-2	14	—	4	7	11	20	27
	12	—	3	6	9	17	23
	10	—	2	5	8	13	18
	8	—	1	2	4	7	9
	6	—	1	1	3	5	8
	4	—	1	1	2	4	6
	3	—	1	1	1	4	5
	2	—	1	1	1	3	4
	1	—	0	1	1	1	3
	1/0	—	0	1	1	1	2

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