JADE LEARNING
A CERTUS COMPANY

2024 NEC CHANGES & CT LAW

Student Handout

4 Continuing Education Hours for
Connecticut Unlimited Electrical Licensees

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Part I: Connecticut General Statutes

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

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 (Journeymen or Contractors)
1	1
2	2
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9	21
10	24

Ratio continues at 3 Journeypersons To 1 Apprentice

Sec. 20-332-15 (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 on commercial vehicles.

(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. In order 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.(Effective October I, 1993)

Sec. 20-335. License fee.

Continuing professional 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.

Sec. 20-338b. Building permit 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.

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.

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.

See https://www.cga.ct.gov/current/pub/chap_393.htm#sec_20-340

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

Public Act No. 17-76

An Act Establishing an Apprentice, Journeymen, and Contractor Working Group.

Be it enacted by the Senate and House of Representatives in General Assembly convened:

Section 1. (NEW) (Effective from passage) (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 of the general statutes. Sec. 2. Section 20-332b of the general statutes is repealed and the following is substituted in lieu thereof (Effective from passage):

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 Apprentices

Public Act 22 – 104, Section 37.

Any contractor who is licensed under chapter 393 of the general statutes and engaged to perform work on a private residence, and any person who owns or controls a business that is engaged to perform work on, or render services concerning, a private residence through persons licensed under chapter 393 of the general statutes to perform such work or render such services, shall include in the invoice or work order for such work or services, provided such invoice or work order is not signed by the consumer and therefore may constitute a contract, when complete:
(1) The full legal name and license number of such licensed contractor or the licensed contractor of record for such business for such work or services, which licensed contractor or licensed contractor of record is liable for the work of any individual who performs work on such contractor's behalf related to the invoiced work or services;
(2) such licensed contractor's address or, in the case of a business, the business's address and phone number;
(3) a description of such work or services;
(4) the labor and material costs of such work or services;
(5) the date or dates on which such work was performed or services were rendered; and
(6) the complete name of each licensee who performed such work or rendered such services. For the purposes of this section, "private residence" has the same meaning as Substitute House Bill No. 5330 Public Act No. 22-104 60 of 91 provided in section 20-419 of the general statutes.

Public Act 22 – 104, Section 42.

Section 20-334d of the general statutes is repealed and the following is substituted in lieu thereof (*Effective from passage*):
(a) As used in this section:
(1) "Accredited continuing professional education" means any education of an electrician or plumber that is (A) designed to maintain professional competence in the [pursuit,] practice, pursuit and standards of electrical work or plumbing and piping work, [and that is] (B) approved by the commissioner, and [is] (C) provided (i) by an agency, institution or organization [, institution or agency that is] that has been approved by the commissioner, and (ii) in-person or through an online technology platform that includes real-time video with audio, requires participants to periodically confirm their active engagement during the educational training session and enables participants to interact with instructors in real time during the entire educational training session;
(2) "Certificate of continuing education" means a document [issued to an electrician or plumber by an organization, institution or agency] that (A) an agency, institution or organization that has been approved by the commissioner [that] and offers accredited continuing professional education [, which (A)] issues to an electrician or plumber, (B) certifies that an electrician or plumber has satisfactorily completed a specified number of continuing education hours, and [(B)] (C) bears the (i) name of such agency, institution or organization, [institution or agency, the] (ii) title of the program, [the] (iii) dates during which the program was conducted, [the] (iv)

number of continuing education hours satisfactorily completed, and [the] (v) signature of the director of such [organization, institution or agency or the signature of the] agency, institution or organization or of such director's authorized agent; and Substitute House Bill No. 5330 Public Act No. 22-104 67 of 91
(3) "Commissioner" means the Commissioner of Consumer Protection. (b) The commissioner, with the advice and assistance of the Electrical Work Board established pursuant to subsection (b) of section 20-331, shall adopt regulations, in accordance with chapter 54, to:
(1) [establish] Establish additional requirements for accredited continuing professional education for electricians licensed pursuant to sections 20330 to 20-341, inclusive.
(2) establish qualifying criteria for accredited continuing professional education programs and establish qualifying criteria for acceptable certificates of continuing education; and
(3) provide for the waiver of required accredited continuing professional education for electricians for good cause. Such regulations shall require not less than four hours per year of accredited continuing professional education for such electricians, except upon request of the Electrical Work Board, the commissioner may increase such hours to a maximum of seven hours. (c) The commissioner, with the advice and assistance of the Plumbing and Piping Work Board established pursuant to subsection (d) of section 20-331, shall adopt regulations, in accordance with chapter 54, to: (1) [establish] Establish additional requirements for accredited continuing professional education for plumbers licensed pursuant to sections 20330 to 20-341, inclusive, which regulations shall require not more than a total of seven hours of accredited continuing professional education every two years, except in the event of significant changes to the building code, as approved by the International Code Council, that relate to plumbing, the commissioner, at such commissioner's discretion, may require more than a total of seven hours of accredited continuing professional education every two years;
(2) establish qualifying criteria for accredited continuing professional education programs and establish qualifying criteria for acceptable certificates of continuing education; and
(3) provide for the waiver of required Substitute House Bill No. 5330 Public Act No. 22-104 68 of 91 accredited continuing professional education for plumbers for good cause. (d) Notwithstanding the provisions of subsection (c) of this section, any person who has been issued a P-6, P-7, W-8 or W-9 license pursuant to section 20-334a and the regulations of Connecticut state agencies shall not be required to meet the continuing education requirements established pursuant to subsection (c) of this section. (e) Notwithstanding the provisions of subsections (a) to (d), inclusive, of this section, all accredited continuing professional education offered under the provisions of this section shall: (1) Limit class size to (A) fifty attendees if such accredited continuing professional education is offered in-person, or (B) twenty-five attendees if such accredited continuing professional education is offered through an online technology platform.
(2) not be offered or held at the place of business of a licensed plumbing contractor if such accredited continuing professional education is for plumbers and offered in-person; and
(3) not be offered or held at the place of business of a licensed electrical contractor if such accredited continuing professional education is for electricians and offered in-person. A provider of an accredited continuing professional education course shall retain an audio-visual recording of such course for a period of not less than thirty days after completion of such course. Recordings shall be made available to the department upon the department's request for such recordings.

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.

The model codes are viewable on their publisher's web sites:
International Code Council (ICC) Codes:
https://codes.iccsafe.org/codes

National Fire Protection Association (NFPA) Codes:
https://www.nfpa.org/for-professionals/codes-and-standards/list-of-codes-and-standards/free-access?l=162

PART II: Safety

The chart below gives OSHA's preliminary data alongside the final data from FY 2021 See recent results here: 2020 | 2019 | 2018

OSHA Standard	FY 2022 Preliminary Data	Previous Year's Data
1. Fall Protection – General Requirements (1926.501) OSHA Fall Protection Defense Guide Construction Fall Protection Standards	5,260 Violations	5,271 Violations
2. Hazard Communication (1910.1200) OSHA's Revised Hazard Communication Standard	2,424 Violations	1,939 Violations
3. Respiratory Protection (1910.134) Selecting and Using Particulate Respirators Starting a Respiratory Protection Program	2,185 Violations	2,521 Violations
4. Ladders (1926.1053) Are Your Ladders Compliant? Ladder Safety Tips	2,143 Violations	2,018 Violations
5. Scaffolding (1926.451) OSHA Scaffolding Requirements for Construction and General Industry	2,058 Violations	1,943 Violations
6. Lockout/Tagout (1910.147) When Does the Lockout/Tagout Standard Apply?	1,977 Violations	1,670 Violations
7. Powered Industrial Trucks (1910.178) Forklift Safety Training Guide	1,749 Violations	1,404 Violations

8. Fall Protection – Training Requirements (1926.503) ANSI/ASSP Z359: Fall Protection Standards System	1,556 Violations	1,660 Violations
9. Personal Protective and Life Saving Equipment – Eye and Face Protection (1926.102) PPE Requirements: Eye and Face Protection	1,401 Violations	1,451 Violations
10. Machine Guarding (1910.212) OSHA Requirements: Machine Guarding	1,370 Violations	1,105 Violations

Amendments to the 2020 NFPA 70, National Electrical Code

Article 90, Introduction

(Amd) **90.2 Scope.**

(A) Covered. This code covers the installation of electrical conductors, equipment and raceways; signaling and communications conductors, equipment and raceways; and optical fiber cables and raceways for the following:

(1) Public and private premises, including:
   a. *buildings* and structures;
   b. utility connections, *additions* and alterations to mobile homes;
   c. utility connections to recreational vehicles; and
   d. floating *buildings*.

(2) Yards, lots, parking lots, carnivals and industrial substations.

(3) Installations of conductors and equipment that connect to the supply of electricity.

(4) Installations used by the electric utility, such as office *buildings*, warehouses, garages, machine shops and recreational *buildings* that are not an integral part of a generating plant, substation or control center.

(5) Installations supplying shore power to ships and watercraft in marinas and boatyards, including monitoring of leakage current.

(6) Installations used to export electric power from vehicles to premises wiring or for bidirectional current flow.

(B) Not covered. This code does not cover the following:

(1) Installations in ships, watercraft other than floating *buildings*, railway rolling stock, aircraft or automotive vehicles other than mobile homes and recreational vehicles.

(2) Installations underground in mines and self-propelled mobile surface mining machinery and its attendant electrical trailing cable.

(3) Installations of railways for generation, transformation, transmission or distribution of power used exclusively for operation of rolling stock or installations used exclusively for signaling and communications purposes.

(4) Installations of communications equipment under the exclusive control of communications utilities located outdoors or in *building* spaces used exclusively for such installations.

(5) Installations under the exclusive control of an electric utility where such installations:
   a. Consist of service drops or service laterals, and associated metering; or
   b. Are located in legally established easements, rights-of-way or by other agreements either designated by or recognized by public service commissions, utility commissions or other regulatory agencies having *jurisdiction* for such installations; or

(A) Are on property owned or leased by the electric utility for the purpose of communications, metering, generation, control, transformation, transmission or distribution of electric energy; or

(B) Are located by other written agreements either designated by or recognized by public service commissions, utility commissions, or other regulatory agencies having *jurisdiction* for such installations. These written agreements shall be limited to installations for the purpose of communications, metering, generation, control, transformation, transmission, or distribution of electric energy where legally established easements or rights-of-way cannot be obtained. These installations shall be limited to federal lands, Native American reservations through the U.S. Department of the Interior Bureau of Indian Affairs, military bases, lands controlled by port authorities and state agencies and departments, and lands owned by railroads.

(C) Special permission. The State Building Inspector may grant an exception for the installation of conductors and equipment that are not under the exclusive control of the electric utilities and are used to connect the electric utility supply system to the service-entrance conductors of the premises served, provided such installations are outside a *building* or terminate immediately inside a *building* wall.

(Amd) **90.4 Enforcement.** Administration of this code shall be in accordance with the provisions of Chapter 1 of the 2021 *International Building Code* portion of the 2022 Connecticut State Building Code. For the purposes of this code, the authority having *jurisdiction* for interpreting the rules and for granting the special permission contemplated in a number of rules is the State Building Inspector. Interpretations shall be requested verbally or in writing from the Office of the State Building Inspector. Special permission shall be requested in writing using the Request for Modification of the State Building Code form available from local building departments or from the Office of the State Building Inspector, 450 Columbus Boulevard, Suite 1303, Hartford CT 06103. www.portal.ct.gov/DAS.

Where this Code contains requirements for a new product, construction, or material that has an effective date after the adoption date of the 2022 Connecticut State Building Code, those requirements are not part of this Code.

Article 100 – Definitions.

(Amd) **Authority having jurisdiction.** The organization, office or individual responsible for approving equipment, material, an installation, or a procedure. The local *building official* has the responsibility for approving *construction documents*, issuing *permits*, approving materials and procedures and for making inspections from time to time as the construction process requires. The State Building Inspector has the responsibility for administering the Connecticut State Building Code, interpreting the Connecticut State Building Code and for granting exceptions from specific rules of the Connecticut State Building Code. See the definition of "Special Permission," and Article 90.4.

(Amd) **Special Permission.** For the purposes of this code, the authority having *jurisdiction* for granting the special permission contemplated in a number of rules is the State Building Inspector. Special permission shall be requested in writing using the Request for Modification of the State Building Code form available from local building departments or from the Office of the State Building Inspector, 450 Columbus Boulevard, Suite 1303, Hartford CT 06103. www.portal.ct.gov/DAS.

Chapter 2 – Wiring and Protection

(Amd) **210.8 Ground-Fault Circuit-Interrupter Protection for Personnel. (F) as follows:**

(Amd) **(F) Outdoor Outlets.** All outdoor outlets for dwellings, other than those covered in 210.8 (A)(3), Exception to (3), that are supplied by single-phase branch circuits rated 150 volts to ground or less, 50 amperes or less, shall have ground-fault circuit-interrupter protection for personnel.

Exception No. 1: Ground-fault circuit-interrupter protection shall not be required on lighting outlets other than those covered in 210.8(C).
Exception No. 2: Ground-fault circuit-interrupter protection shall not be required for mini-split-type heating/ventilating/air-conditioning (HVAC) equipment and other HVAC units employing power conversion equipment as a means to control compressor speed.

(Amd) **230.46 Spliced and Tapped Conductors.** Service-entrance conductors shall be permitted to be spliced or tapped in accordance with 110.14, 300.5(E), 300.13, and 300.15. Power distribution blocks, pressure connectors, and devices for splices and taps shall be listed.

(Amd) **230.85 Emergency Disconnects.** For new one- and two-family dwelling units, all service conductors shall terminate in disconnecting means having a short-circuit current rating equal to or greater than the available fault current, installed in a readily accessible outdoor location. If more than one disconnect is provided, they shall be grouped. Each disconnect shall be one of the following:

(1) Service disconnects marked as follows:
EMERGENCY DISCONNECT, SERVICE DISCONNECT

(2) Meter disconnects installed per 230.82(3) and marked as follows: EMERGENCY DISCONNECT, METER DISCONNECT, NOT SERVICE EQUIPMENT

(3) Other listed disconnect switches or circuit breakers on the supply side of each service disconnect that are suitable for use as service equipment and marked as follows:
EMERGENCY DISCONNECT, NOT SERVICE EQUIPMENT

Markings shall comply with 110.21(B).

(Amd) **250.50 Grounding Electrode System**. All grounding electrodes as described in 250.52(A)(1) through (A)(7) that are available at each building or structure served shall be bonded together to form the grounding electrode system. Where none of these grounding electrodes exist, one or more of the grounding electrodes specified in 250.52(A)(4) through (A)(8) shall be installed and used.
Exception: Concrete-encased electrodes of existing buildings or structures shall not be required to be part of the grounding electrode system where the steel reinforcing bars or rods are not accessible for use without disturbing the concrete.

(Amd) **250.68(C) Grounding Electrode Conductor Connections.** Grounding electrode conductors and bonding jumpers shall be permitted to be connected at the following locations and used to extend the connection to an electrode(s):

(B) Interior metal water piping that is electrically continuous with a metal underground water pipe electrode and is located not more than 1.52 m (5 ft) from the point of entrance to the building shall be permitted to extend the connection to an electrode(s). Interior metal water piping located more than 1.52 m (5 ft) from the point of entrance to the building shall not be used as a conductor to interconnect electrodes of the grounding electrode system.
Exception: In industrial, commercial, and institutional buildings or structures, if conditions of maintenance and supervision ensure that only qualified persons service the installation, interior metal water piping located more than 1.52 m (5 ft) from the point of entrance to the building shall be permitted as a bonding conductor to interconnect electrodes that are part of the grounding electrode system, or as a grounding electrode conductor, if the entire length, other than short sections passing perpendicularly through walls, floors, or ceilings, of the interior metal water pipe that is being used for the conductor is exposed.

(C) The metal structural frame of a building shall be permitted to be used as a conductor to interconnect electrodes that are part of the grounding electrode system, or as a grounding electrode conductor. Hold- down bolts securing the structural steel column that are connected to a concrete-encased electrode complying with 250.52(A)(3) and located in the support footing shall be permitted to connect the metal structural frame of a building or structure to the concrete encased grounding electrode. The hold-down bolts shall be connected to the concrete-encased electrode by welding, exothermic welding, the usual steel tie wires, or other approved means.

(D) A rebar-type concrete-encased electrode installed in accordance with 250.52(A)(3) with an additional rebar section extended from its location within the concrete footing to an accessible location that is not subject to corrosion shall be permitted for connection of grounding electrode conductors and bonding jumpers in accordance with the following:
a. The additional rebar section shall be continuous with the grounding electrode rebar or shall be connected to the grounding electrode rebar and connected together by the usual steel tie wires, exothermic welding, welding, or other effective means.
b. The rebar extension shall not be exposed to contact with the earth without corrosion protection.
c. Rebar shall not be used as a conductor to interconnect the electrodes of grounding electrode systems.

Chapter 3 – Wiring Methods and Materials

(Add) **300.4.1 Drilling and notching.**

(A) Structural floor, wall, ceiling and roof members.
(1) Solid sawn lumber. Notches in solid lumber joists, rafters and beams shall not exceed one-sixth of the depth of the member, shall not be longer than one-third of the depth of the member and shall not be located in the middle one-third of the span. Notches at the ends of the member shall not exceed one-fourth the depth of the member. The tension side of members 4 inches (102 mm) or greater in nominal thickness shall not be notched except at the ends of the members. The diameter of holes bored or cut into members shall not exceed one-third the depth of the member. Holes shall not be closer than 2 inches (51 mm) to the top or bottom of the member, or to any other hole located in the member. Where the member is also notched, the hole shall not be closer than 2 inches (51 mm) to the notch.
Exception: Notches on cantilevered portions of rafters are permitted provided the dimension of the remaining portion of the rafter is not less than 4-inch (102 mm) nominal and the length of the cantilever does not exceed 24 inches (610 mm).

(A) Engineered wood products. Cuts, notches and holes bored in trusses, structural composite lumber, structural glue-laminated members or I-joists are prohibited except where permitted by the manufacturer's recommendations or where the effects of such alterations are specifically considered in the design of the member by a *registered design professional*.

(B) Studs. Any stud in an *exterior wall* or interior bearing partition may be cut or notched to a depth not exceeding 25 percent of its width. Studs in nonbearing interior partitions may be notched to a depth not to exceed 40 percent of a single stud width. Any stud may be bored or drilled, provided that the diameter of the resulting hole is no greater than 40 percent of the stud width, the edge of the hole is no closer than 5/8 inch to the edge of the stud and the hole is not located in the same section as a cut or notch.

Exception No. 1: A stud may be bored or drilled to a diameter not exceeding 60 per cent of its width, provided that such studs located in exterior walls or interior bearing partitions are doubled and not more than two successive studs are bored.
Exception No. 2: Approved stud shoes may be used when installed in accordance with the manufacturer's recommendations.

(C) Top plates. When wiring, conduit, piping or ductwork is placed in or partly in an *exterior wall* or interior bearing wall, necessitating cutting, drilling or notching of the top plate by more than 50 per cent of its width, a galvanized metal tie of not less than 0.054 inch thick (1.37 mm) (16 ga) and 1 ½ inches (38 mm) wide shall be fastened across and to the plate at each side of the opening with not less than eight 10d (0.148 inch diameter) nails at each side or equivalent. The metal tie must extend a minimum of 6 inches (152 mm) past the opening.
Exception: When the entire side of the wall with the notch or cut is covered by wood structural panel sheathing.

Chapter 4 – Equipment for General Use

(Amd) **440.14 Location –** Add exception No. 3.

(Add) Exception No. 3: Where the interior section of a factory packaged split system is fed solely from the exterior section of the system and the disconnecting means for the exterior section is capable of being locked in the open position, a separate disconnecting means for the interior section shall not be required within sight from that section. The provisions for locking or adding a lock to the disconnecting means shall remain in place with or without the lock installed.

Presentation Slides

JADE LEARNING

JADE Learning
A Trusted Electrical CE Provider Since 1996

VILT is just like classroom training, except you participate from a location of your choosing!

Welcome, CT Electricians!

What Does Connecticut Require?

Four Hours of Continuing Education Required

- Unlimited License Types: E1, E2, E4, E5, E9.
- Hours should be completed by June 30, 2024.
- Today's class is worth 4 hours of classroom/VILT continuing education.

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A TPC COMPANY

Important Reminders

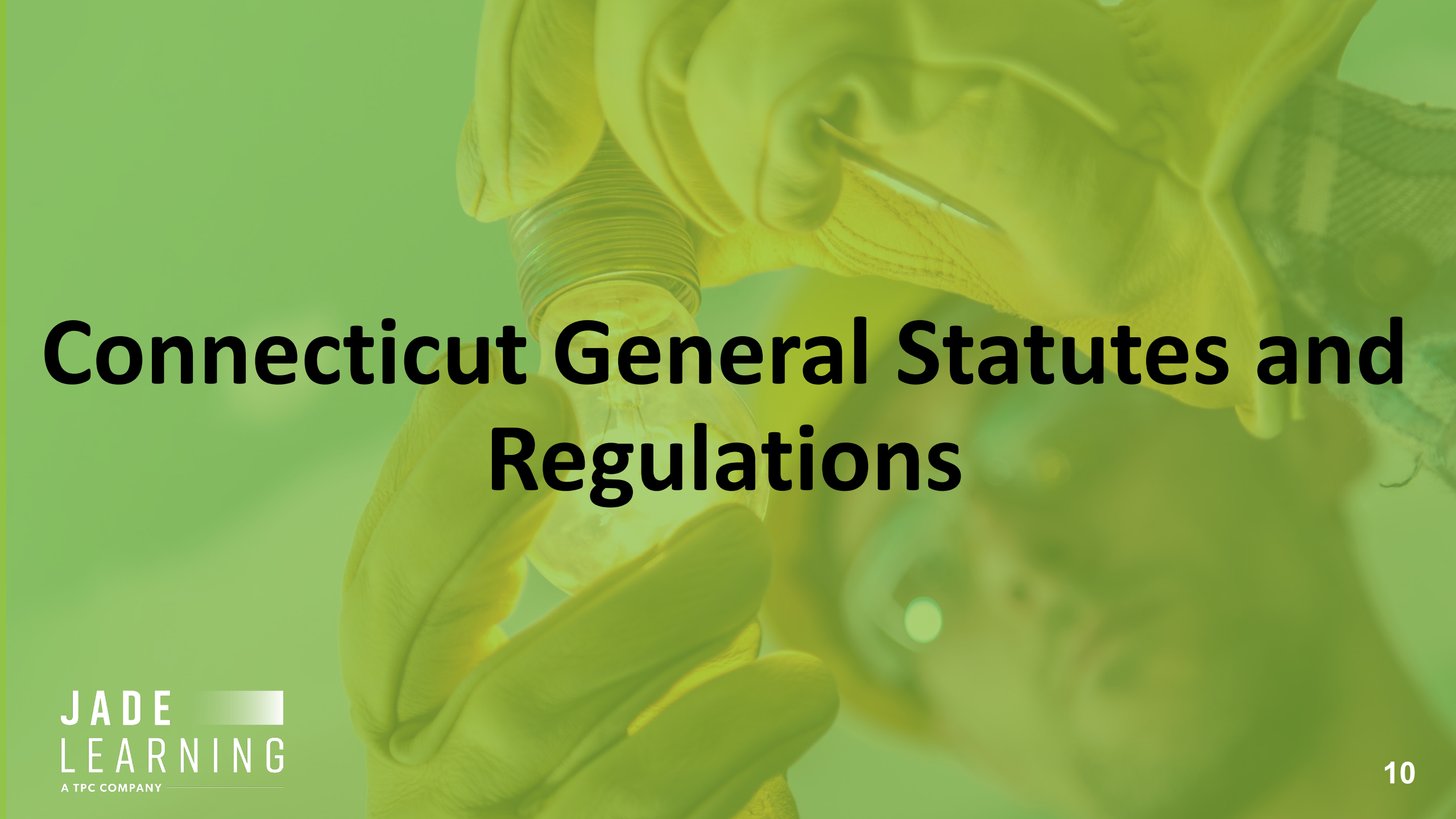
- If you have trouble hearing or need assistance, let us know.
- Make sure you have paid and provided JADE Learning your electrical license number.
- Be sure to sign in/check in and confirm your registration information is correct. Make sure your name is showing correctly.
- You will be emailed a copy of your certificate within two business days.
- You must complete a short survey at the end of class. Your instructor will provide the link and answer any questions.

Questions? Concerns?

Call the JADE Learning office at 1-800-443-5233.

NEC Changes and CT Law for Unlimited Licensees

	Registration/Check-in



Connecticut General Statutes and Regulations

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Section 20-340 Exemptions from Licensing Requirements

The following are exempted from licensing requirements:

- Persons employed by any federal, state, or municipal agency
- Employees of any public service company or corporate affiliate
- Industrial maintenance firms
- Work performed on Single Family Residences occupied by the owner
- Employees of licensed solar contractors
- State and theatrical companies, carnivals, circuses, etc.

Section 20-332b Hiring Ratios Regarding Apprentices, Journeymen, and Contractors

Section 20-332b amends regulations to lower allowable hiring ratios of licensees to apprentices.

Updated Hiring Ratios	
Apprentices	**Licensees** (Journeymen & Contractors)
3	3
4	6
6	12
8	18
10	24

Section 20-332-15a Employment of Apprentices

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- **Apprentices**
  May perform work **only** in the presence and under the direct supervision of a licensed contractor or journeyman.

- **Direct Supervision**
  Is defined as **under the guidance of and within sight and/or hearing** of the licensed person.

- **Violation**
  May result in **disciplinary action, including loss of license** of the contractor who obtains the permit for the work.

Section 20-332-15-a(f) How to Register an Apprentice

- An apprentice may not perform any work covered by Chapter 393 of the General Statutes prior to registration.
- The contractor must contact the Department of Labor to request registration of the apprentice.
- An electrician apprentice can be registered as an E-2 and then must receive 8,000 total hours of training in multiple types of electrical work. Four years (minimum) of on-the-job training are required.

Section 20-332-16 Prohibited Acts, Records, Lettering

- **Prohibited acts subject to disciplinary action include:**
  Working beyond the limitations of one's license or operating under a name other than the one on the given license without first informing the licensure board.
- **Records:**
  Licensed contractors must keep records of all employees, to be shown to the commissioner (or their agent) upon request.
- **Lettering:**
  State license numbers must be displayed on all commercial vehicles in legible, one-inch letters.

Section 20-335 License Fee, Continuing Education Requirements, Expiration, and Renewal

Initial License Application Fee:

- Journeyman: $90.00
- Contractor: $150.00

Annual License Renewal Fee:

- Journeyman: $120.00
- Contractor: $150.00

Continuing Education Requirements:

Required annual continuing education for all license categories is **4 hours**.

Expired Licenses:

Renewable up to one month after expiration date without penalty. Failure to renew license within two years after expiration requires reapplication and payment of associated fees.

Section 20-338a Work Required to Be Performed by Licensed Persons

All work for which a building permit is required must be performed by a licensed contractor or journeyman (or by a properly supervised and trained apprentice).

Online Building Permit Applications, Section 20-338b

****Amended to include new language, effective October 1, 2023**

A licensed contractor may sign the building permit application personally or delegate to an employee, subcontractor or other agent—**provided,** the licensed contractor's employee, subcontractor or other agent submits 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.

Licensed contractors must be allowed to apply for building permits online, where that functionality exists.

Section 20-338c Work Not to Commence Until Permit Is Obtained.

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No licensed contractor may begin work for which a license is required before obtaining all necessary permits from the local AHJ.

- Different permits may be required by general statute (state law) and by local ordinance.
- The state mandates building permit requirements.
- Local government may require additional permits. For example:
  - Occupancy permits for work being done in the public right of way
  - Alarm permits, sign permits, zoning permits, etc.

Each municipality may have its own unique regulations.

Section 20-340 Exemptions from Licensing Requirements.

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- Persons employed by any federal, state, or municipal agency (when performing public utility work)
- Employees of any public service company or corporate affiliate
- Industrial maintenance firms (electrical, plumbing, HVAC, elevators, and others)
- Work performed on Single Family Residences occupied by the owner
- Employees of licensed solar contractors
- State and theatrical companies, carnivals, circuses, etc. (The State Fire Marshal approves these installations.)

Section 20-341 Penalties for Violations

Offenses covered by this section include:

- work performed without a license.
- advertising to do work for which one is not licensed.
- employing a person who does not hold the appropriate license (or apprentice permit).
- working under an expired license or apprentice permit.

Penalties may include:

- criminal charges (class B misdemeanor).
- civil penalties of up to $3,000 per violation.

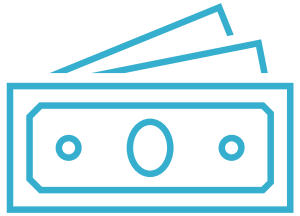
(1 of 3)

Section 20-341 Penalties for Violations

**Amended to include new language, effective immediately

Apprenticeship sponsors must ensure the registration of their:

- apprenticeship programs
- apprentices



Potential fines of up to $5,000 for failure to do so

Stop Work Orders, Violation
PA 23-162

**Amended to include new language, effective October 1, 2023

The fine for violating a stop work order has increased to $5,000 per offense.

New Legislation: PA 22-104, Section 37

Effective July 1, 2022

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The following must be included on the invoice or work order:

- Full legal name and license number of licensed contractor (or licensed contractor of record)
- Licensed contractor's address or address/phone number of licensed contractor's business
- Description of work/services
- Cost of labor and materials
- Date(s) work took place
- Full name of every licensee who worked on the job

(1 of 2)

New Legislation: PA 22-104, Section 37

Effective July 1, 2022

JADE LEARNING
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Regulations for Residential Contractors

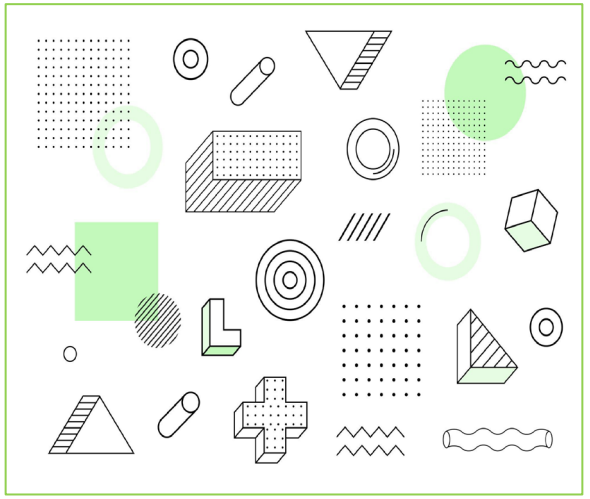
- An independent licensed contractor must provide an invoice or work order once completing work on a **private residence**.
- The same holds true for any business owner/controller who employs a licensed contractor to complete work on a private residence.

(2 of 2)

New Legislation: PA 22-104, Section 42

The new section defines "accredited continuing professional education" as:

- Designed to maintain professional competence in electrical, plumbing, or piping work.
- Provided by a commissioner-approved source.
- Facilitated either in person or via an online technology platform that:
  - uses real-time video with audio.
  - requires participation.
  - allows interaction with instructors.



(1 of 3)

New Legislation: PA 22-104, Section 42

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A certificate of continuing education must be provided by an agency, institution, or organization that:

- has been approved by the commissioner.
- offers accredited continuing professional education.
- certifies that an electrician has completed a specified number of continuing education hours.

The certificate must include:

- name of the agency.
- title of the program.
- dates the program occurred.
- number of continuing education hours successfully completed.
- signature of the director (or the director's authorized agent) of the organization, institute, or agency.

New Legislation: PA 22-104, Section 42

Continuing professional education will:

- limit in-person class size to 50 attendees.
- limit online class size to 25.
- not take place in a licensed electrical contractor's business, if the training is for electricians and offered in-person.
- keep an audio/video recording of the training at least 30 days after the course ends.

(3 of 3)

Section 20-332b Hiring Ratios Regarding Apprentices, Journeymen, and Contractors

Section 20-332b amends regulations to lower allowable hiring ratios of licensees to apprentices.

Updated Hiring Ratios	
Apprentices	**Licensees** (Journeymen & Contractors)
3	3
4	6
6	12
8	18
10	24

Section 20-332c Apprentice, Journeymen, and Contractor Working Group Established. Membership. Report.

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The Working Group:

- Reviews hiring ratios and hiring ratio relief process.
- Ten members meet 3x per year.
- State representatives or senators appoint equal number of union and nonunion industry trade members.
- Union members must be the union's business manager (or designated by business manager)
- Nonunion members must be president (or designated by president) of the nonunion group.
- Submits annual report of recommendations related to apprentices, journeymen, and contractors to General Assembly.

2022 Connecticut State Building Code

26

Proposed Model Codes:

- International Code Council (ICC) Codes
- National Fire Prevention Association (NFPA) Codes

Access and review the Building and Fire Code Adoption Process here:

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

State Building, Fire Safety, and Fire Prevention Codes Update

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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

State Building, Fire Safety, and Fire Prevention Codes Update, continued

- 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

2022 Connecticut State Building Code Update

Adopted October 1, 2022

JADE LEARNING
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Additions:

101.4.8 Electrical.

- **Alterations** and **repairs** have been added to the list of electrical systems installations that fall under the 202 NFPA 70, National Electric Code.

105.2 Work exempt from permit. Permits are not required for: (Electrical):

- minor repairs and maintenance work.
- electrical equipment used solely for radio and television transmissions.
- temporary testing systems required to test or service electrical equipment or apparatus.

Additions:

105.2.2. Repairs. Notice to building official not required for:

- ordinary repairs to structures.
- replacement of lamps.
- connection of approved portable electrical equipment to approved, permanently installed receptacles.

2022 Connecticut State Building Code Update

Adopted October 1, 2022

Amended:

108.3. Temporary power.

- Authorizes building official to allow temporary supply to utilities before installation is complete/final certificate of approval issued.
- Only temporarily covers part that complies with requirements specified for temporary lighting, heat, or power in this code and in the NFPA 70, National Electrical Code.

Chapter 12: Energy Systems: Electric fire pumps:

1203.2.20:

Buildings with standby electrical power will provide power for any electric fire pump installed to provide an adequate water supply or minimum operating pressure to a required automatic sprinkler system.

2022 Connecticut State Fire Safety Code Update

Adopted October 1, 2022

(CT Amendments to NFPA 1 – Fire Code; 2021 edition)

Chapter 10: Means of Egress: Activation: 1008.3.6:

- Illumination system for emergency egress will automatically respond if regular lighting is interrupted.
- Instances may include:
  - failure of public utility or other outside electrical power supply.
  - opening circuit breaker/fuse.
  - manual acts (e.g., accidental opening of a switch controlling normal lighting facilities).

2022 Connecticut State Fire Safety Code Update

Adopted October 1, 2022

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Amended:

Chapter 10: Means of Egress: 1008.3.3 Rooms and spaces. Emergency electrical system will automatically illuminate the following areas, for example, if there is a failure in power supply:

- Electrical equipment rooms
- Fire command centers and fire pump rooms
- Generator rooms

2022 Connecticut State Fire Safety Code Update

Adopted October 1, 2022

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Chapter 12: Energy Systems: 1205.2.3. Building-integrated photovoltaic (BIPV) systems.
Mandates reflective, visible markings be used to identify hazardous areas where building-integrated photovoltaic (BIPV) systems are installed.

Additional spaces where emergency electrical systems must automatically illuminate in case of power supply failure:

- Public restrooms with an area greater than 300 square feet (27.87 m2)
- Means of egress components, other than those within sleeping rooms, of Group R-1 Bed and breakfast establishments.

2022 Connecticut State Fire Prevention Code Update

Adopted October 1, 2022

Chapter 11: Building Services: 11.12.1.2: Electrical portions of ground-mounted photovoltaic systems must be designed and installed in accordance with NFPA 70.

Chapter 13: Fire Protection Systems: 13.3.1.9: Buildings with standby electrical power will provide power for any electric fire pump installed to provide water or minimum operating pressure to a required automatic sprinkler system.

State Building, Fire Safety, and Fire Prevention Codes Update

JADE LEARNING
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The next state building, fire safety and fire prevention codes are expected to go into effect in the fall of 2025.

The Code Amendment Subcommittee will begin meeting to discuss the proposed 2025 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:

- **2025 Connecticut State Building Code**
- **2025 Connecticut State Fire Safety Code**
- **2025 Connecticut State Fire Prevention Code**

The following model codes are anticipated to be adopted by the 2025 Connecticut state codes:

- 2024 International Building Code (IBC) by ICC
- 2024 International Existing Building Code (IEBC) by ICC
- 2024 International Energy Conservation Code (IECC) by ICC
- 2024 International Mechanical Code (IMC) by ICC
- 2024 International Plumbing Code (IPC) by ICC
- 2024 International Residential Code (IRC) by ICC
- 2024 International Swimming Pool & Spa Code (ISPSC) by ICC
- 2023 NFPA 70 National Electrical Code (NEC) by NFPA
- 2017 ICC A117.1 Accessible and Usable Buildings and Facilities by ICC
- 2024 International Fire Code (IFC) by ICC
- 2021 NFPA 101 - Life Safety Code by the NFPA
- 2024 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

Safety

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Top 10 OSHA Violations for 2022

Fall Protection – General Requirements

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Employers Are Required to Provide Training on:

- Hazards of falls from height and how to recognize them
- What to do to reduce hazards
- How to install, inspect, operate, maintain, and disassemble personal fall protection systems
- How to use fall protection systems and equipment properly

OSHA Fall Protection – General Requirements:
5,260 violations in 2022

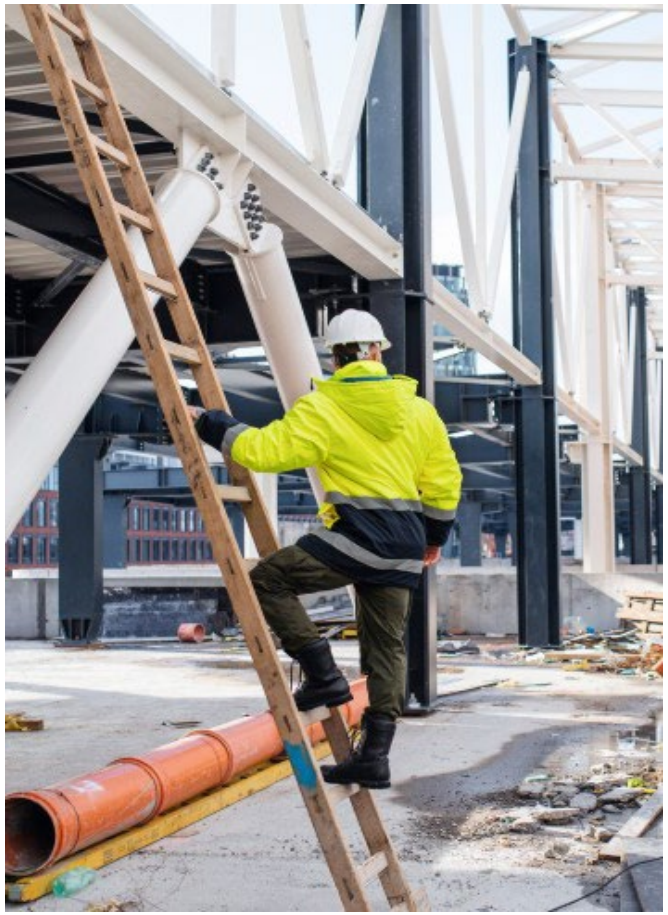
Top 10 OSHA Violations for 2022
Respiratory Protection

OSHA Respiratory Protection:
2,185 violations

Respiratory protection programs should address/include:

1. Written plan of action
2. Comprehensive information about respiratory hazards in the workplace
3. How respiratory hazards will be addressed with procedures and equipment
4. How the right respiratory protective equipment should be chosen
5. Training program for employees
6. Plan to inspect, maintain, and repair respiratory protective equipment
7. Employee medical evaluation

Top 10 OSHA Violations for 2022
Ladders



OSHA Ladder Violations: 2,143 violations in 2022

OSHA's standard for ladders address:

- General requirements for all ladders
- Portable ladders
- Fixed ladders

Each category includes its own OSHA regulatory requirements.

OSHA **proper ladder-climbing technique** (must maintain three points of contact when going up or down):

- Must face the ladder
- One hand must hold onto the ladder
- Do not carry anything that could result in balance loss (fall risk)

Top 10 OSHA Violations for 2022
Scaffolding

OSHA Scaffolding Violations

- **2,058** violations in 2022

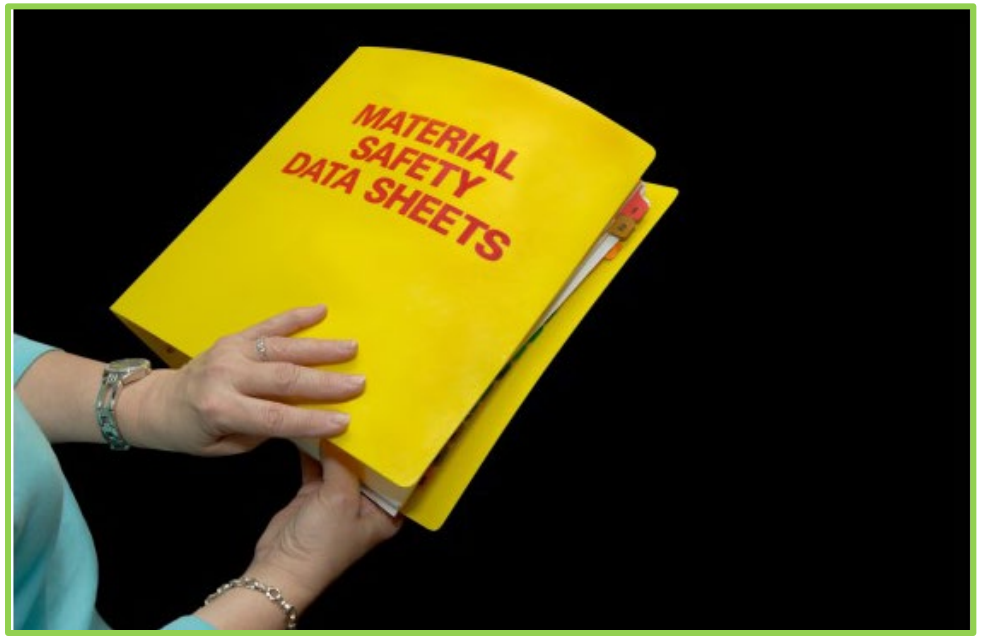
Common Scaffold Hazards:

- Falls from elevation
- Collapse of scaffold
- Falling objects
- Electrocution

Some OSHA Scaffolding Safety Requirements:

- **Guardrail** – vertical barrier that prevents workers from falling off the scaffold platform
- **Personal fall arrest system (PFAS)** – including anchorage, connectors, body harness

Top 10 OSHA Violations for 2022
Hazard Communication



OSHA Hazard Communication Violations: **2,424 violations** in 2022

OSHA mandates that employers provide:

- Proper chemical labeling on containers
- Safety Data Sheets
- Information/training to employees about chemical hazards in the workplace
- Written hazard communication program

Top 10 OSHA Violations for 2022
Control of Hazardous Energy (Lockout/Tagout)

Effective 4-Step LO/TO Plan

1. Write procedures for a lockout policy.

2. Locate and mark energy control points.

3. Conduct training, explain procedures, and perform inspections.

4. Make sure that employees have what they need to correctly perform the LO/TO plan, including the right tools and warning devices.

OSHA Lockout/Tagout: **1,977 violations** in 2022

Top 10 OSHA Violations for 2022

JADE LEARNING
A TPC COMPANY

Fall Protection – Training Requirements

OSHA Fall Protection – Training Requirements: **1,556 violations in 2022**

Employers are required to train all workers who face fall hazards.

Training programs must enable each employee to recognize:

- dangers of falling
- how to reduce hazards
- fall hazards of specific work areas
- existing fall protection procedures
- how to use various systems of protection
- their role in fall protection plans and safety monitoring systems
- correct procedures for handling and storing equipment
- procedures to erect overhead protection
- limitations of mechanical-equipment use on low-sloped roofs

Top 10 OSHA Violations for 2022

Fall Protection – Training Requirements

OSHA Fall Protection – Training Requirements: **1,556 violations in 2022**

Each trained worker should receive **written record of certification** from the employer that includes:

- name (or another identifier) of trained employee.
- training date.
- signature of trainer or employer

Top 10 OSHA Violations for 2022

Personal Protective and Life-Saving Equipment – Eye and Face Protection

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OSHA standards for eye and face protection help prevent eye injuries that result in blindness for thousands of workers each year.

Workers must wear eye and face protection when chemical, environmental, radiological, and mechanical irritants are present.

OSHA Personal Protective and Life-Saving Equipment – Eye and Face Protection: **1,401 violations** in 2022

Top 10 OSHA Violations for 2022

Personal Protective and Life-Saving Equipment – Eye and Face Protection

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A TPC COMPANY

Requirements for eye and face protectors:

- Must be used when exposed to flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or injurious light radiation.
- Must provide side protection when at risk from flying objects.
- If prescription lenses are necessary, then the eye protection must either include the prescription in its design OR the worker can wear the eye protection over the prescription lenses, as long as the prescription lenses can still be worn properly positioned.
- Equipment used must have filter lenses with the correct shade number to protect from harmful light radiation.

Top 10 OSHA Violations for 2022

Powered Industrial Trucks (PIT)

Powered industrial trucks (PITS) are **commonly known as**:

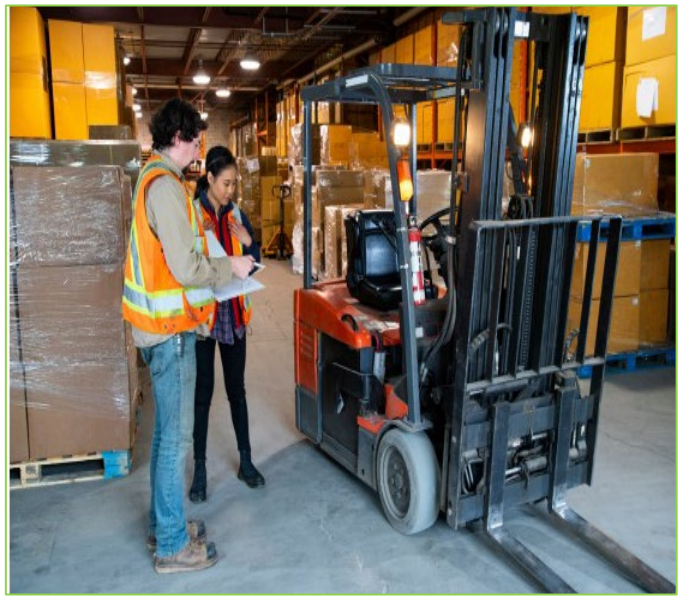
- forklifts
- lift trucks
- pallet trucks
- rider trucks

Operating Hazards depend on:

- Type of PIT
- Type and conditions of workplace

Common causes of worker injury :

- Accidental driving off loading docks
- Falling between docks and unsecured trailers
- Being struck by a PIT
- Falling while on elevated equipment



OSHA Powered Industrial Trucks: **1,749 violations in 2022**

Top 10 OSHA Violations for 2022

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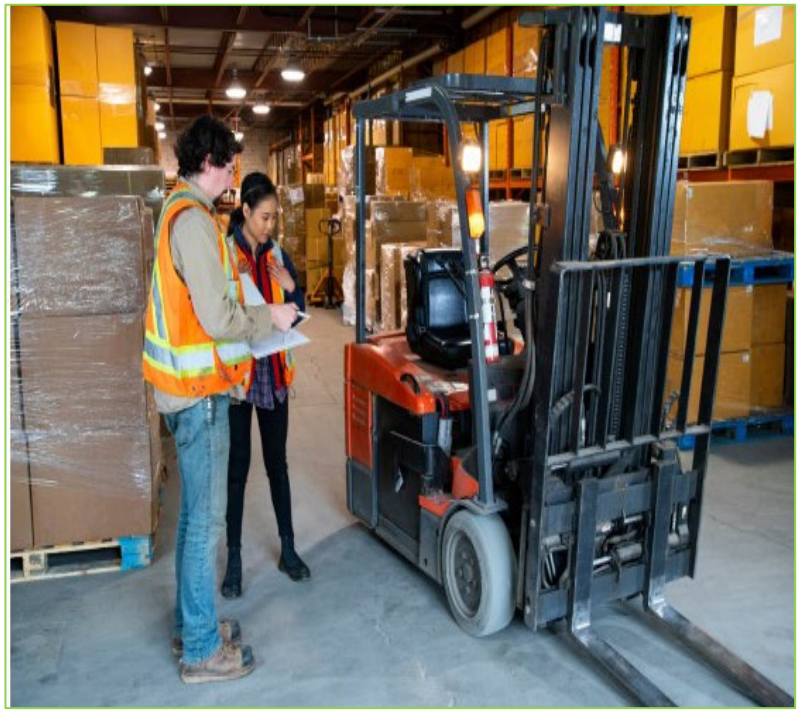


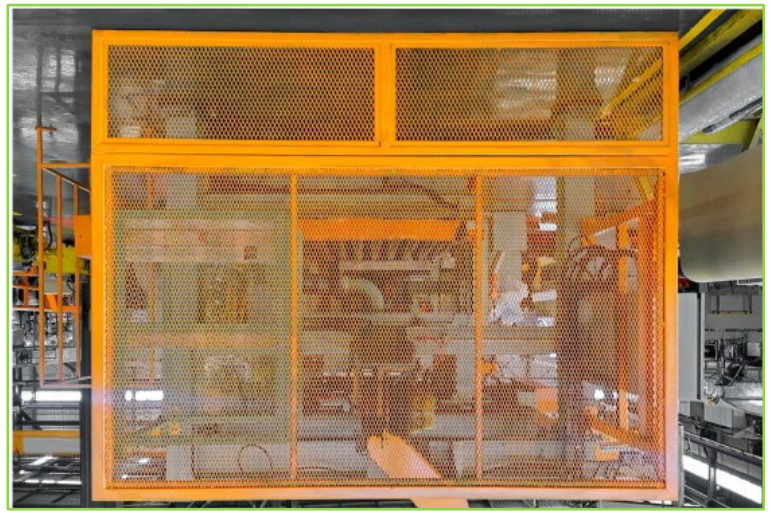
OSHA Powered Industrial Trucks: **1,749 violations in 2022**

Top 10 OSHA Violations for 2022

Machine Guarding

OSHA requires:

- One or more methods of guarding on any machine that exposes workers to hazards.
- Protection from hazards, such as those created by point of operation, in-running nip points, rotating parts, flying chips, and sparks.



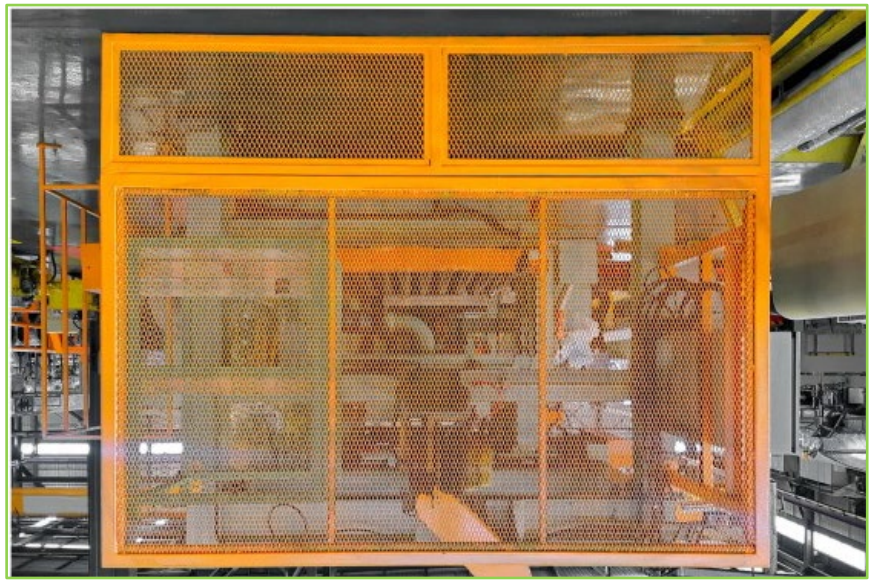
OSHA Machine Guarding: **1,370 violations** in 2022

Top 10 OSHA Violations for 2022

Machine Guarding

Machine safeguards must:

- Prevent contact.
- Be secure.
- Protect from falling objects.
- Create no new hazards.
- Create no interference.
- Allow safe lubrication.



2020 NEC Changes

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220.12 and Table 220.12 - Lighting Load for Non-Dwelling Occupancies.

TABLE 220.12 GENERAL LIGHTING LOADS BY NON-DWELLING OCCUPANCY		
TYPE OF OCCUPANCY	UNIT LOAD	
	Volt-amperes/m2	Volt-amperes/ft2
Automotive facility	16	1.5
Convention center	15	1.4
Courthouse	15	1.4
Dormitory	16	1.5
Exercise center	15	1.4
Fire station	14	1.3
Gymnasiuma	18	1.7
Health care clinic	17	1.6
Hospital	17	1.6
Hotels and motels, including apartment houses without provisions for cooking by tenants	18	1.7
Library	16	1.5.
Manufacturing facilityc	24	2.2
Motion picture theater	17	1.6
Museum	17	1.6
Office	14	1.3
Parking garage	3	0.3
Penitentiary	13	1.2
Performing arts theater	16	1.5
Police station	14	1.3
Post office	17	1.6
Religious facility	24	2.2
Restaurant	16	1.5
Retail	20	1.9
School/university	33	3
Sports arena	33	3
Town hall	15	1.4
Transportation	13	1.2
Warehouse	13	1.2
Workshop	18	1.7

- 2020 NEC moved all dwelling unit info from NEC 220.12 to NEC 220.14(J).
- 220.12 expanded to 29 occupancies.
- The 125% multiplier for continuous loads is now included in Table 220.12.
- Motors less than 1/8 hp and connected to lighting circuits are now part of the general lighting load of a service calculation.

250.122 Size of Equipment Grounding Conductors.
(B) Increase Size

There are several reasons why increasing the dimensions of ungrounded conductors is a wise choice. It is recommended to also increase the size of the wire-type equipment grounding conductor in proportion.

EGCs may need to be increased for voltage drop and new for 2020 NEC, it can be increased by a qualified person (instead of the NEC).

TABLE 250.122 MINIMUM SIZE EQUIPMENT GROUNDING CONDUCTORS FOR GROUNDING RACEWAY AND EQUIPMENT

RATING OR SETTING OF AUTOMATIC OVERCURRENT DEVICE IN CIRCUIT AHEAD OF EQUIPMENT, CONDUIT, ETC., NOT EXCEEDING (AMPERES)	Size (AWG or kcmil)	
	COPPER	ALUMINUM OR COPPER-CLAD ALUMINUM
15	14	12
20	12	10
60	10	8
100	8	6
200	6	4
300	4	2
400	3	1
500	2	1/0
600	1	2/0
800	1/0	3/0
1000	2/0	4/0
1200	3/0	250
1600	4/0	350
2000	250	400
2500	350	600
3000	400	600
4000	500	750
5000	700	1250
6000	800	1250

Sizing an Equipment Grounding Conductor

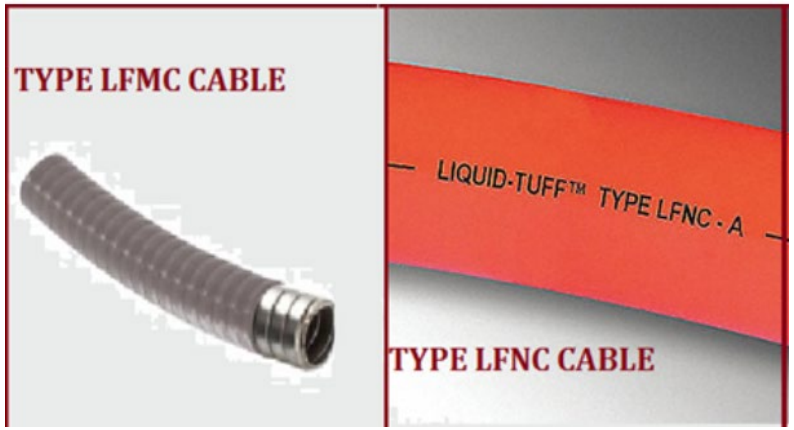
- The EGC determined by Table 250.122 is sized based on the OCPD for that circuit.
  Example: A 20-amp branch circuit requires a No. 12 AWG copper EGC.
- The circular mil area (CMA) of a No. 12 AWG can safely sustain that fraction of a second of spiked current that would occur during a short-to-ground event when protected by a 20-amp OCPD.

TABLE 250.122 MINIMUM SIZE EQUIPMENT GROUNDING CONDUCTORS FOR GROUNDING RACEWAY AND EQUIPMENT

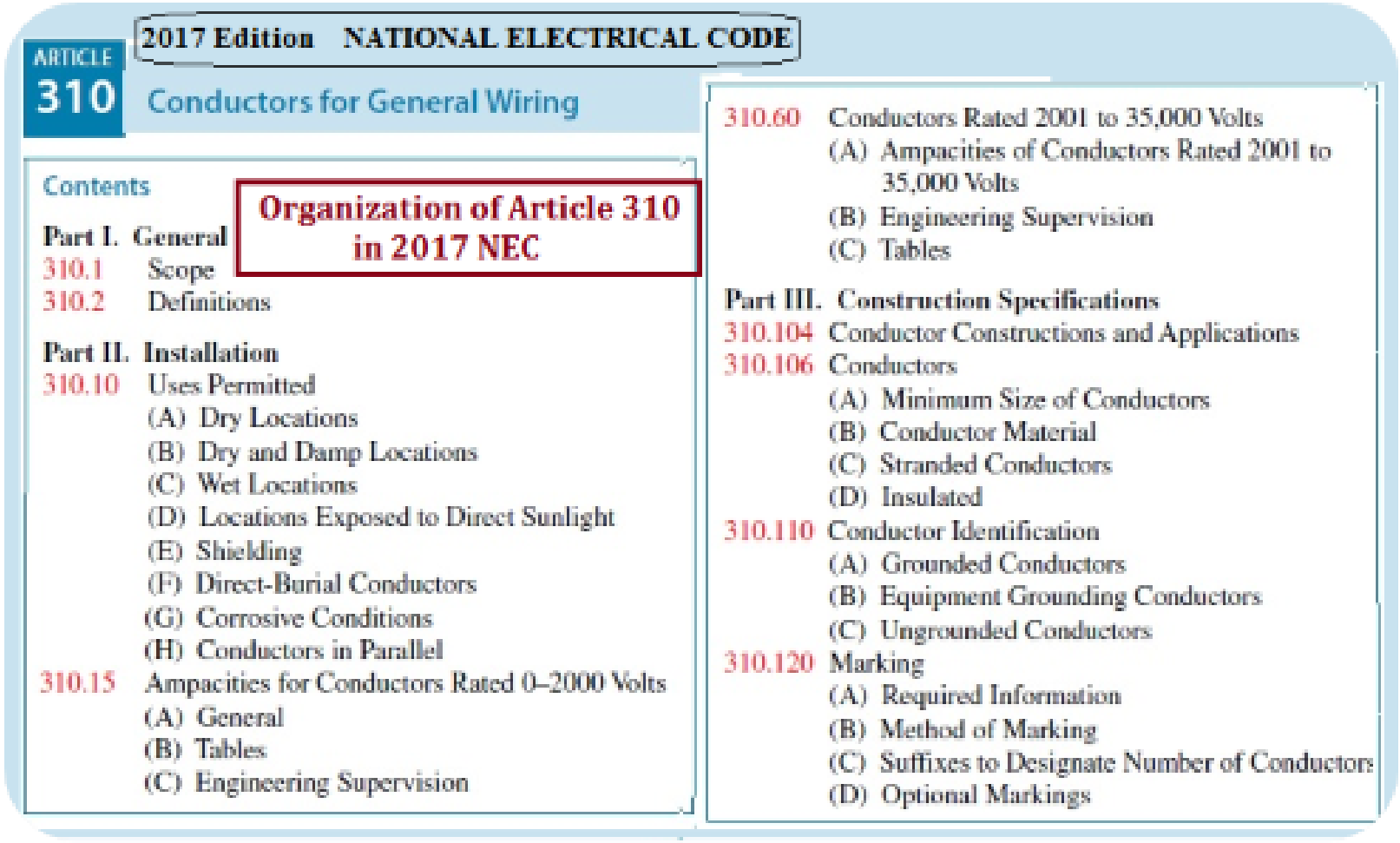
RATING OR SETTING OF AUTOMATIC OVERCURRENT DEVICE IN CIRCUIT AHEAD OF EQUIPMENT, CONDUIT, ETC., NOT EXCEEDING (AMPERES)	Size (AWG or kcmil)	
	COPPER	ALUMINUM OR COPPER-CLAD ALUMINUM
15	14	12
20	12	10
60	10	8
100	8	6
200	6	4
300	4	2
400	3	1
500	2	1/0
600	1	2/0
800	1/0	3/0
1000	2/0	4/0
1200	3/0	250
1600	4/0	350
2000	250	400
2500	350	600
3000	400	600
4000	500	750
5000	700	1250
6000	800	1250

350.10(4) Temperature Ratings.

350.10 Uses Permitted. LFMC shall be permitted to be used in exposed or concealed locations as follows:
(1) Where conditions of installation, operation, or maintenance require flexibility or protection from machine oils, liquids, vapors, or solids.
(2) In hazardous (classified) locations where specifically permitted by Chapter 5.
(3) For direct burial where listed and marked for the purpose.
(4) Conductors or cables rated at a temperature higher than the listed temperature rating of LFMC conduit shall be permitted to be installed in LFMC, provided the conductors or cables are not operated at a temperature higher than the listed temperature rating of the LFMC per 110.14(C).



Comparison Chart (NEC-2017 to NEC-2020) for Article 310 Conductors for General Wiring



2017 Edition NATIONAL ELECTRICAL CODE

ARTICLE 310 Conductors for General Wiring

Contents

Organization of Article 310 in 2017 NEC

Table 310.12 Dwelling Unit Service and Main Power Feeder Conductors.

Using the Grace Table:

The service calculation from Article 220 used to size a dwelling unit's electrical service ensures that the loads calculated from the dwelling do not exceed 80% of the service main breaker rating.

If the Article 220 service calculation dictates you need a 100-amp service, that means you are pulling no more than 80 amps.

TABLE 310.12 SINGLE-PHASE DWELLING SERVICES AND FEEDERS		
SERVICE OR FEEDER RATING (AMPERES)	CONDUCTOR (AWG or kcmil)	
	COPPER	ALUMINUM OR COPPER-CLAD ALUMINUM
100	4	2
110	3	1
125	2	1/0
150	1	2/0
175	1/0	3/0
200	2/0	4/0
225	3/0	250
250	4/0	300
300	250	350
350	350	500
400	400	600

Note: If no adjustment of correction factors are required, this table shall be permitted to be applied.

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Table 310.12 Dwelling Unit Service and Main Power Feeder Conductors.

Small "derating calculations" must be applied to current carrying conductors when they are installed in ambient temperatures above 86’F or
when bundled together in a raceway where 4 or more current-carrying conductors are present.

TABLE 310.12 SINGLE-PHASE DWELLING SERVICES AND FEEDERS		
SERVICE OR FEEDER RATING (AMPERES)	CONDUCTOR (AWG or kcmil)	
	COPPER	ALUMINUM OR COPPER-CLAD ALUMINUM
100	4	2
110	3	1
125	2	1/0
150	1	2/0
175	1/0	3/0
200	2/0	4/0
225	3/0	250
250	4/0	300
300	250	350
350	350	500
400	400	600

Note: If no adjustment of correction factors are required, this table shall be permitted to be applied.

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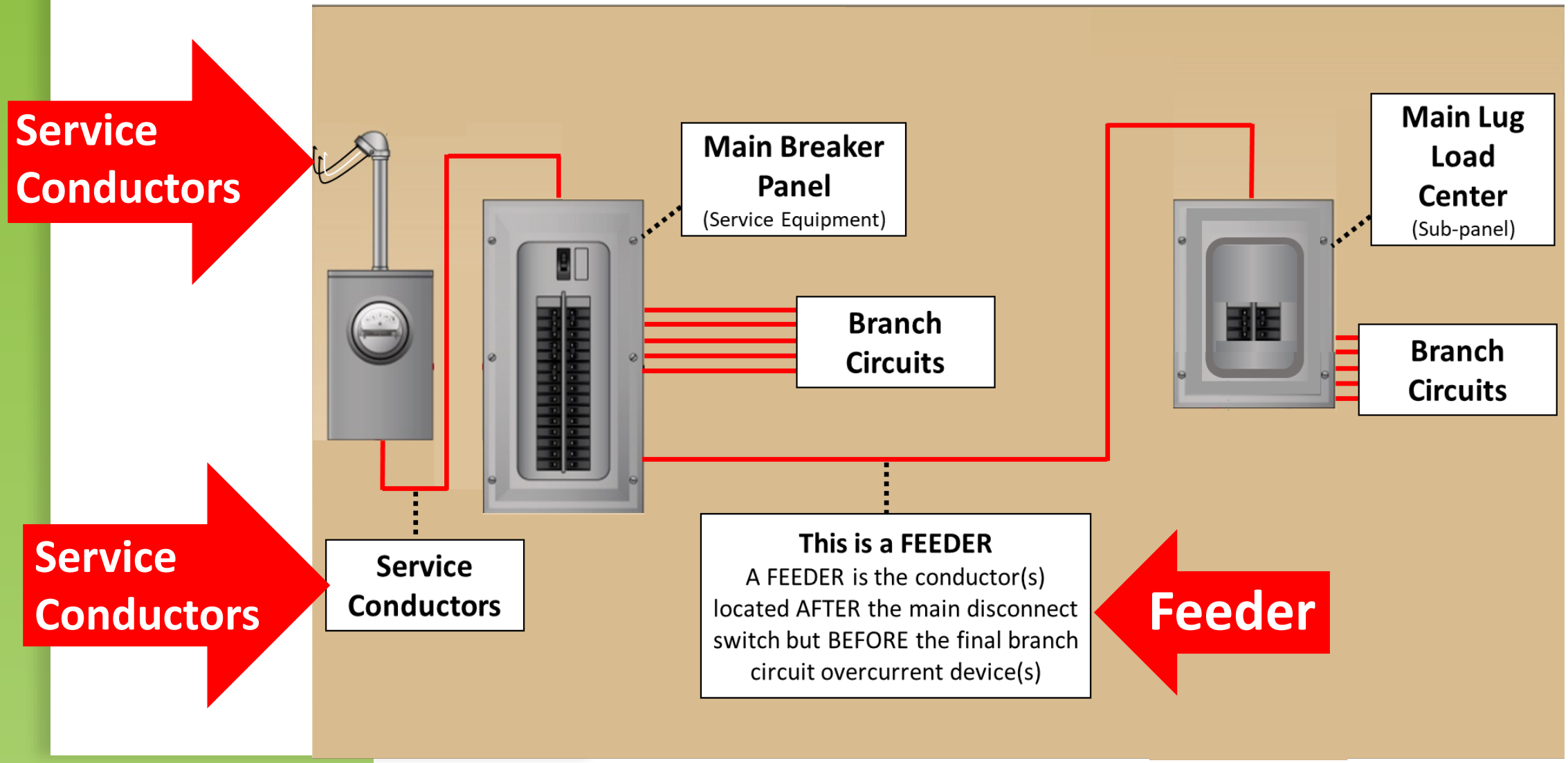
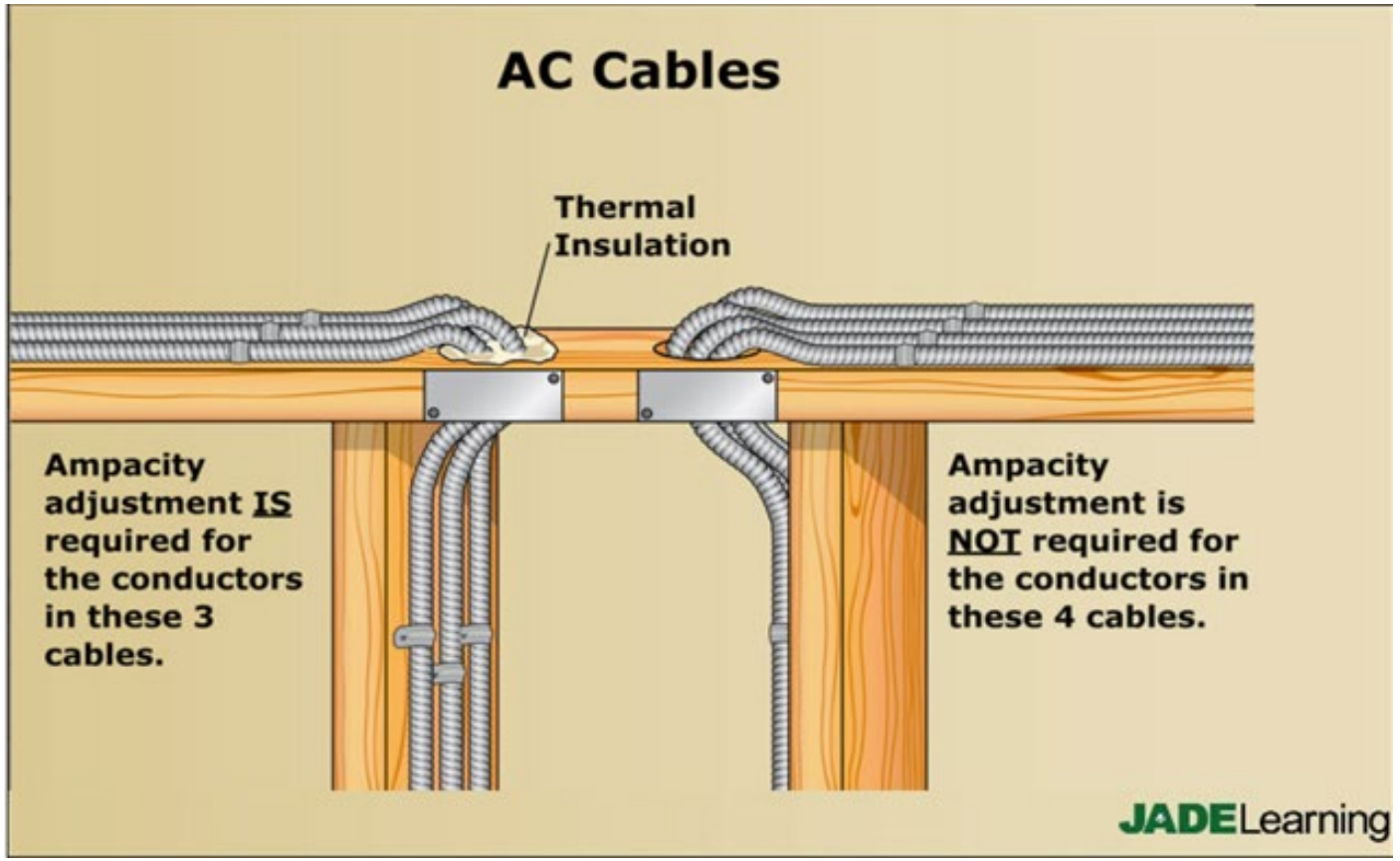
Additional heat adds to the conductor’s resistance to current flow.

EXAMPLE: This feeder does not carry the entire load of the dwelling, and the previous table cannot be used!



320.80(A) Ampacity. Thermal Insulation.

In the 2020 NEC, AC Cables may need to be derated according to Table 310.15(C)(1) if more than 2 AC Cables containing 2 or more current-carrying conductors are bundled so they cannot displace their heat.



Annex C: Conduit, Tubing, and Cable Tray Fill Tables for Conductors and Fixture Wires of the Same Size

Informative Annex C - Conduit, Tubing, and Cable Tray Fill Tables for Conductors and Fixture Wires of the Same Size

C.1 - Electrical Metallic Tubing (EMT)
C.1(A)* - Electrical Metallic Tubing (EMT)
C.2 - Electrical Nonmetallic Tubing (ENT)
C.2(A)* - Electrical Nonmetallic Tubing (ENT) 23
C.3 - Flexible Metal Conduit (FMC)
C.3(A)* - Flexible Metal Conduit (FMC)
C.4 - Intermediate Metal Conduit (IMC)
C.4(A)* - Intermediate Metal Conduit (IMC)
C.5 - Liquidtight Flexible Nonmetallic Conduit (Type LFNC-A)
C.5(A)* - Liquidtight Flexible Nonmetallic Conduit (Type LFNC-A)
C.6 - Liquidtight Flexible Nonmetallic Conduit (Type LFNC-B)
C.6(A)* - Liquidtight Flexible Nonmetallic Conduit (Type LFNC-B)
C.7 - Liquidtight Flexible Nonmetallic Conduit (Type LFNC-C)
C.7(A) - Liquidtight Flexible Nonmetallic Conduit (Type LFNC-C)
C.8 - Liquidtight Flexible Metal Conduit (LFMC)
C.8(A)* - Liquidtight Flexible Metal Conduit (LFMC)
C.9 - Rigid Metal Conduit (RMC)
C.9(A)* - Rigid Metal Conduit (RMC)
C.10 - Rigid PVC Conduit, Schedule 80
C.10(A)* - Rigid PVC Conduit, Schedule 80
C.11 - Rigid PVC Conduit, Schedule 40 and HDPE Conduit
C.11(A)* - Rigid PVC Conduit, Schedule 40 and HDPE Conduit
C.12 - Type A, Rigid PVC Conduit
C.12(A)* - Type A, Rigid PVC Conduit
C.13 - Type EB, PVC Conduit
C.13(A)* - Type EB, PVC Conduit
C.14- Type MC Cables Permitted in Cable Tray
C.15- Type MC Cables Permitted in Cable Tray
C.16- Type TC Cables Permitted in Cable Tray
C.17- Type TC Cables Permitted in Cable Tray
C.18- Single Conductor Cables Permitted in Cable Tray
C.19- Single Conductor Cables Permitted in Cable Tray
C.20- Single Conductor Cables Permitted in Cable Tray

NEC-2017 had 26 Tables in Informative Annex C to be used when calculating the maximum number of conductors or fixture wires permitted in various conduits and tubings.

Informative Annex C in NEC-2020 contains 33 Tables and now includes the term "and Cable Trays" in the title to reflect that it now provides guidance in calculating the maximum number of conductors or fixture wires permitted in various conduits, tubings, and cable trays.

Annex C: Conduit, Tubing, and Cable Tray Fill Tables for Conductors and Fixture Wires of the Same Size

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Conductor area is the cross-sectional area of the conductor in question multiplied by the number of each conductor. The cross-sectional area equation is area = 0.79 x diameter squared. Then, depending upon your pipe run, there may be considerations for the number of bends in your pipe, derating, or any other conductor reducing factors that may apply.

Informative Annex C - Conduit, Tubing, and Cable Tray Fill Tables for Conductors and Fixture Wires of the Same Size

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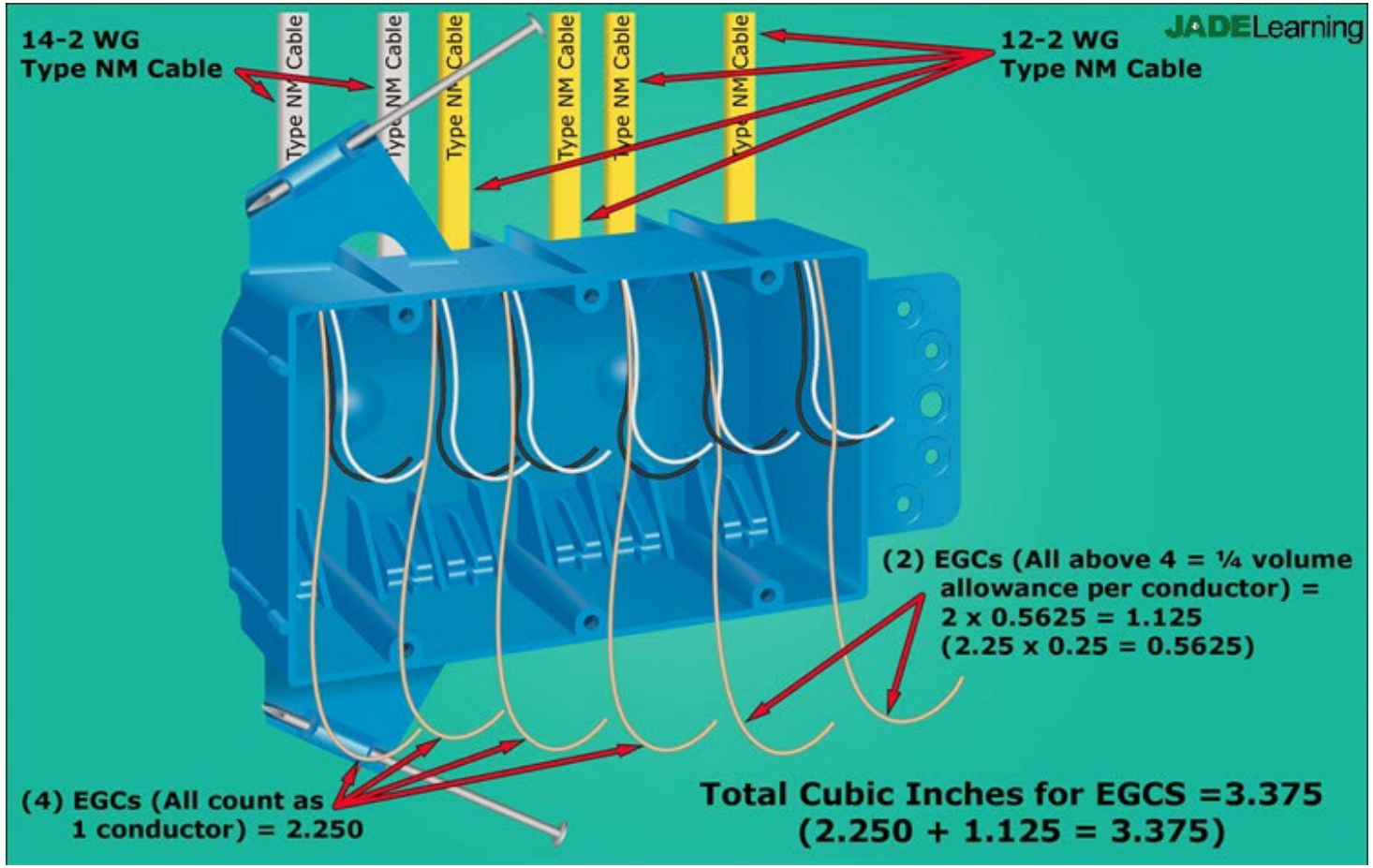
C.19- Single Conductor Cables Permitted in Cable Tray
C.20- Single Conductor Cables Permitted in Cable Tray

314.16(B)(5) Equipment Grounding Conductor Fill.

- There are new EGC fill-count instructions in the 2020 NEC.
- If more than 4 EGCs are in a box, a ¼ volume allowance is made for each additional EGC that enters a box based on the largest EGC.



Sizing an Equipment Grounding Conductor
314.16(B)(5) Equipment Grounding Conductor Fill

Where up to four equipment grounding conductors or equipment bonding jumpers enter a box, a single volume allowance in accordance with Table 314.16(B) shall be made based on the largest equipment grounding conductor or equipment bonding jumper entering the box.

A **1⁄4** volume allowance shall be made for each additional equipment grounding conductor or equipment bonding jumper that enters the box, based on the largest equipment grounding conductor or equipment bonding conductor.
In the 2020 NEC, once you surpass four EGCs, you start adding 25% for each EGC after that.

314.16(B)(5) Equipment Grounding Conductor Fill.

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Basics of Box Fill

- Locate the pre-stamped cubic inch on the electrical box [or refer to T314.16(A) for applicable cubic inches].
- Deduct each conductor or device installed, based on a cubic inch allowance for that conductor or device.

The standard cubic inch(es) you can expect each conductor to consume from the available free space in the box is listed in Table 314.16(B).

314.16(B)(5) Equipment Grounding Conductor Fill.

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Basics of Box Fill

For example:

Using Table 314.16(B) you see for every No. 14 AWG conductor pulled into a box, you would deduct 2.00 cubic inches from available space.

This applies for each grounded (white) conductor and each ungrounded (colored) conductor.

Then any device (switch or receptacle) installed, further deducts from free space: A device counts as the largest conductor terminated on that device x 2.

IRC R314.2.2 Smoke Detectors

(**Amd) R314.2.2 Alterations, repairs and additions.** When alterations, repairs or additions requiring a permit occur, or when one or more sleeping rooms are added or created in existing dwellings, the entire dwelling unit shall be provided with smoke alarms located as required for new dwellings.

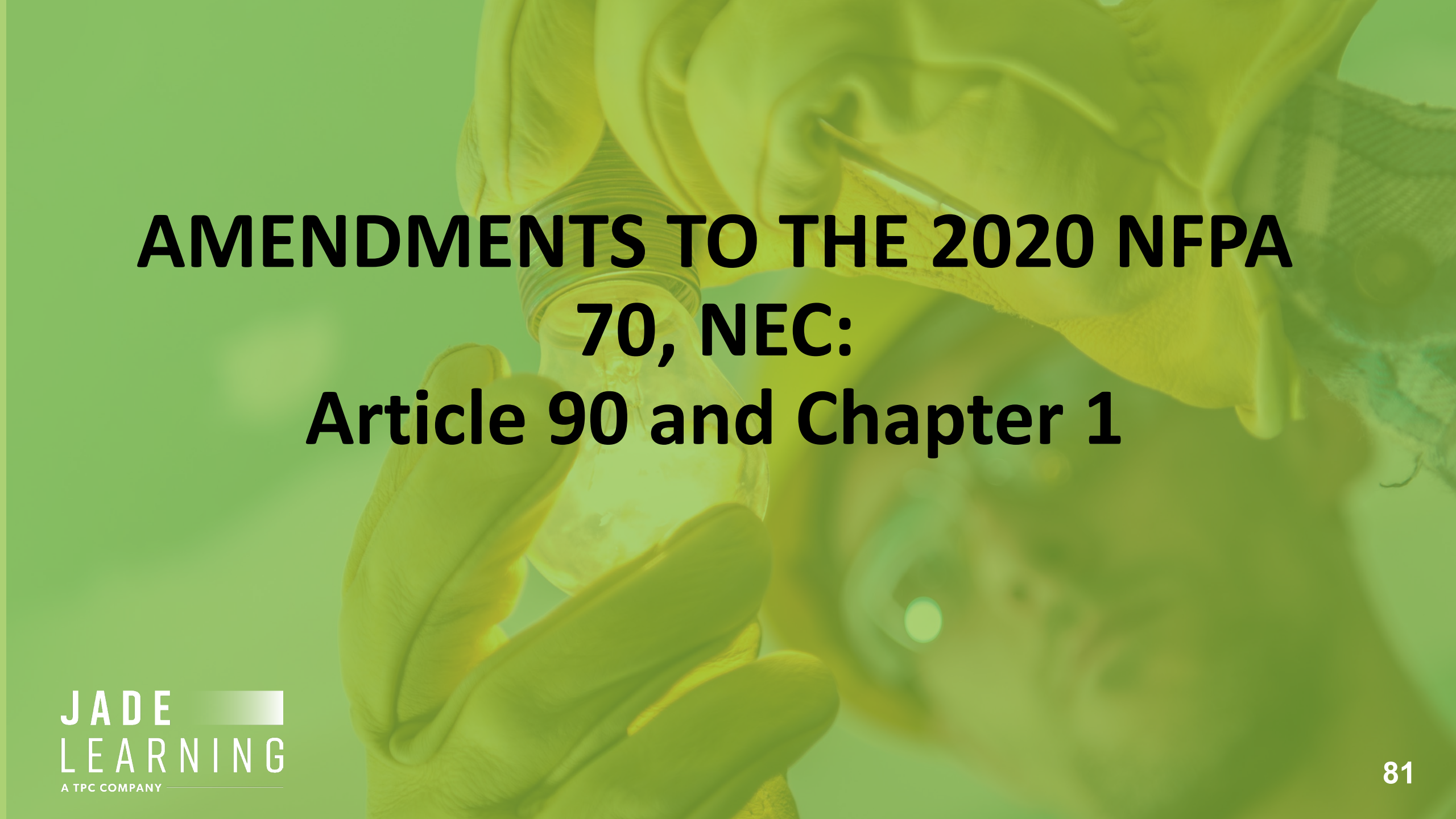
Exceptions:

1. Work involving the exterior surfaces of dwellings, such as the replacement of roofing or siding, or the addition or replacement of windows or doors, or the addition of a porch or decks, are exempt from the requirements of this section.
2. Installation, alteration or repairs of plumbing, mechanical or electrical systems are exempt from the requirements of this section.

IRC 315.2.2 Carbon Monoxide Detectors

(Amd) R315.2.2 Alterations, repairs and additions.
Where alterations, repairs, or additions requiring a permit occur, or where one or more sleeping rooms are added or created in existing dwellings, the individual dwelling unit shall be equipped with carbon monoxide alarms located as required for new dwellings.

Exceptions:
1. Work involving the exterior surfaces of dwellings, such as the replacement of roofing or siding, or the addition or replacement of windows or doors, or the addition of a porch or deck.
2. Installation, alteration, or repairs of plumbing systems.
3. Installation, alteration, or repairs of mechanical systems that are not fuel fired.



AMENDMENTS TO THE 2020 NFPA 70, NEC: Article 90 and Chapter 1

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A TPC COMPANY

CT Amendments to the NEC 90.2 Scope

(A) **Covered.** This code covers the installation of electrical conductors, equipment and raceways; signaling and communications conductors, equipment and raceways; and optical fiber cables and raceways for the following:

(1) Public and private premises, including:

a. buildings and structures;
b. utility connections, additions and alterations to mobile homes;
c. utility connections to recreational vehicles; and
d. floating buildings.

(2) Yards, lots, parking lots, carnivals and industrial substations.

(3) Installations of conductors and equipment that connect to the supply of electricity.

(4) Installations used by the electric utility, such as office buildings, warehouses, garages, machine shops and recreational buildings that are not an integral part of a generating plant, substation or control center.

(5) Installations supplying shore power to ships and watercraft in marinas and boatyards, including monitoring of leakage current.

(6) Installations used to export electric power from vehicles to premises wiring or for bidirectional current flow.

CT Amendments to the NEC Article 90: 90.2 Scope

(B) Not covered.

This code does not cover the following:

(1)Installations in ships, watercraft other than floating buildings, railway rolling stock, aircraft or automotive vehicles other than mobile homes and recreational vehicles.

(2) Installations underground in mines and self-propelled mobile surface mining machinery and its attendant electrical trailing cable.

(3) Installations of railways for generation, transformation, transmission or distribution of power used exclusively for operation of rolling stock or installations used exclusively for signaling and communications purposes.

(4) Installations of communications equipment under the exclusive control of communications utilities located outdoors or in building spaces used exclusively for such installations.

CT Amendments to the NEC Article 90: 90.2 Scope

(5) Installations under the exclusive control of an electric utility where such installations:
a. Consist of service drops or service laterals, and associated metering; or
b. Are in legally established easements, rights-of-way or by other agreements either designated by or recognized by public service commissions, utility commissions or other regulatory agencies having jurisdiction for such installations; or
c. Are on property owned or leased by the electric utility for the purpose of communications, metering, generation, control, transformation, transmission or distribution of electric energy; or
d. Are located by other written agreements either designated by or recognized by public service commissions, utility commissions, or other regulatory agencies having jurisdiction for such installations. These written agreements shall be limited to installations for the purpose of communications, metering, generation, control, transformation, transmission, or distribution of electric energy where legally established easements or rights-of-way cannot be obtained.

CT Amendments to the NEC
Article 90: 90.2 Scope

(C) Special permission.

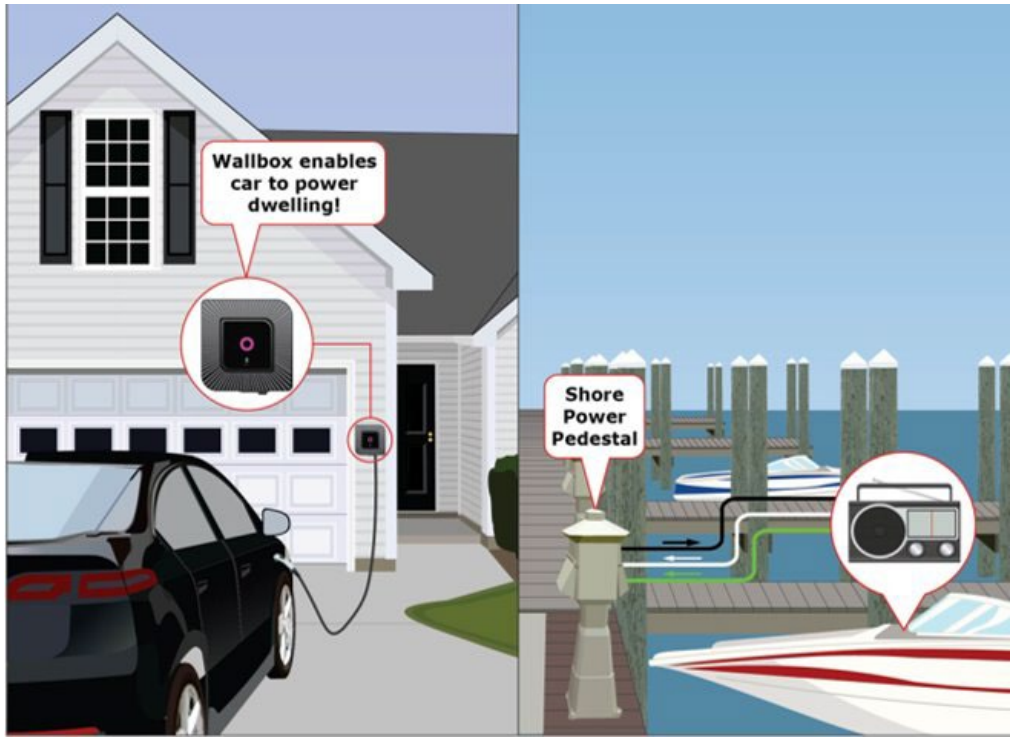
The State Building Inspector may grant an exception for the installation of conductors and equipment that are not under the exclusive control of the electric utilities and are used to connect the electric utility supply system to the service-entrance conductors of the premises served, provided such installations are outside a building or terminate immediately inside a building wall.

CT Amendments to the NEC Article 90 – Introduction

90.2(A) Scope. Covered. New to the NEC Scope:

- Installations supplying shore power to ships and watercraft in marinas and boatyards, including monitoring of leakage current.

- Installations used to export electric power from vehicles to premises wiring or for bidirectional current flow.



CT Amendments to the NEC

- Code administration follows the provisions of Chapter 1 of the 2021 *International Building Code* portion of the 2022 Connecticut State Building Code.
- Any requirements for a new product, construction, or material date after that has an effective the adoption date of the 2022 Connecticut State Building Code are not part of this Code.

90.4 Enforcement

- The **authority having jurisdiction** is the State Building Inspector, who interprets the rules and grants the special permission contemplated in several rules.
- Requests for interpretations can be made verbally or in writing from the Office of the State Building Inspector.
- Requests for special permissions should be made in writing using the Request for Modification of the State Building Code form, which is available from local building departments or from the Office of the State Building Inspector.

CT Amendments to the NEC
Chapter 1 – General and Article 100 – Definitions

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(Amd) **Authority having jurisdiction**. The organization, office or individual responsible for approving equipment, material, and installation, or a procedure.

Local building official is responsible for:

- Approving construction documents
- Issuing permits
- Approving materials and procedures
- Making inspections from time to time as the construction process requires

State Building Inspector is responsible for:

- Administering the CT State Building Code
- Interpreting the CT State Building Code Granting exceptions from specific rules of the CT State Building Code.

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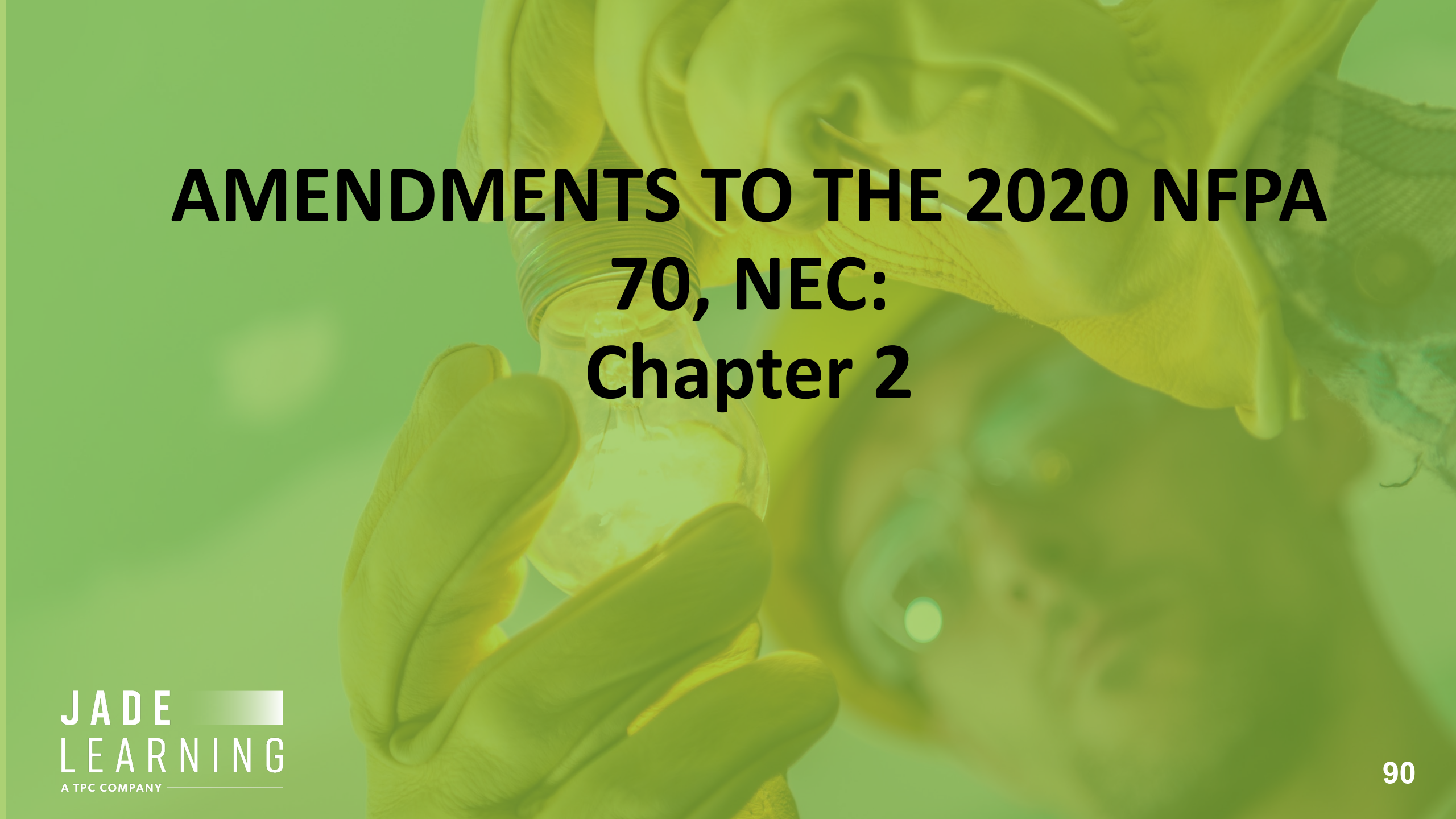
(Amd) Special Permission.

The State Building Inspector is the authority having jurisdiction for granting the special permission contemplated in several rules.

To request special permission, submit in writing using the Request for Modification of the State Building Code form.

Access the form from:

- Local building departments
- Office of the State Building Inspector (450 Columbus Blvd., Suite 1303, Hartford, CT 06103)



AMENDMENTS TO THE 2020 NFPA 70, NEC: Chapter 2

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210.8 Ground-Fault Circuit-Interrupter Protection for Personnel. (AMD)

(F) **Outdoor Outlets.**

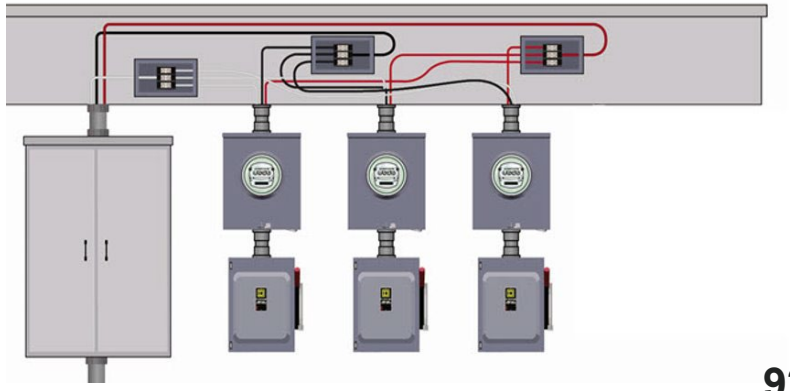
All outdoor outlets for dwellings, other than those covered in 210.8 (A)(3), Exception to (3), that are supplied by single-phase branch circuits rated 150 volts to ground or less, 50 amperes or less, shall have ground-fault circuit-interrupter protection for personnel.

Exception No. 1: Ground-fault circuit-interrupter protection shall not be required on lighting outlets other than those covered in 210.8(C).

Exception No. 2: Ground-fault circuit-interrupter protection shall not be required for mini-split-type heating/ventilating/air-conditioning (HVAC) equipment and other HVAC units employing power conversion equipment as a means to control compressor speed.

230.46 Spliced and Tapped Conductors.

(Amd) **230.46 Spliced and Tapped Conductors.**
Service-entrance conductors shall be permitted to be spliced or tapped in accordance with 110.14, 300.5(E), 300.13, and 300.15.
Power distribution blocks, pressure connectors, and devices for splices and taps shall be listed.



230.85 Emergency Disconnects.

(Amd**) 230.85 Emergency Disconnects.** For new one- and two-family dwelling units, all service conductors shall terminate in disconnecting means having a short-circuit current rating equal to or greater
than the available fault current, installed in a readily accessible outdoor location. If more than one disconnect is provided, they shall be grouped. Each disconnect shall be one of the following:
(1) Service disconnects marked as follows:
EMERGENCY DISCONNECT, SERVICE DISCONNECT

230.85 Emergency Disconnects. (Cont.d')

(2) Meter disconnects installed per 230.82(3) and marked as follows:
EMERGENCY DISCONNECT,
METER DISCONNECT, NOT SERVICE EQUIPMENT

(3) Other listed disconnect switches or circuit breakers on the supply side of each service disconnect that are suitable for use as service equipment and marked as follows:
EMERGENCY DISCONNECT, NOT SERVICE EQUIPMENT
Markings shall comply with 110.21(B).

250.50 Grounding Electrode System.

(Amd) All grounding electrodes as described in 250.52(A)(1)through (A)(7) that are available at each building or structure served shall be bonded together to form the grounding electrode system. Where none of these grounding electrodes exist, one or more of the grounding electrodes specified in 250.52(A)(4) through (A)(8) shall be installed and used.

Exception: Concrete-encased electrodes of existing buildings or structures shall not be required to be part of the grounding electrode system where the steel reinforcing bars or rods are not accessible for use without disturbing the concrete.

250.68(C) Grounding Electrode Conductor Connections. (Cont.d')

(Amd) **250.68(C) Grounding Electrode Conductor Connections.** Grounding electrode conductors and
bonding jumpers shall be permitted to be connected at the following locations and used to extend the connection to an electrode(s):

(1) Interior metal water piping that is electrically continuous with a metal underground water pipe electrode and is located not more than 1.52 m (5 ft) from the point of entrance to the building shall be permitted to extend the connection to an electrode(s). Interior metal water piping located more than 1.52 m (5 ft) from the point of entrance to the building shall not be used as a conductor to interconnect electrodes of the grounding electrode system.

Note the Exception*

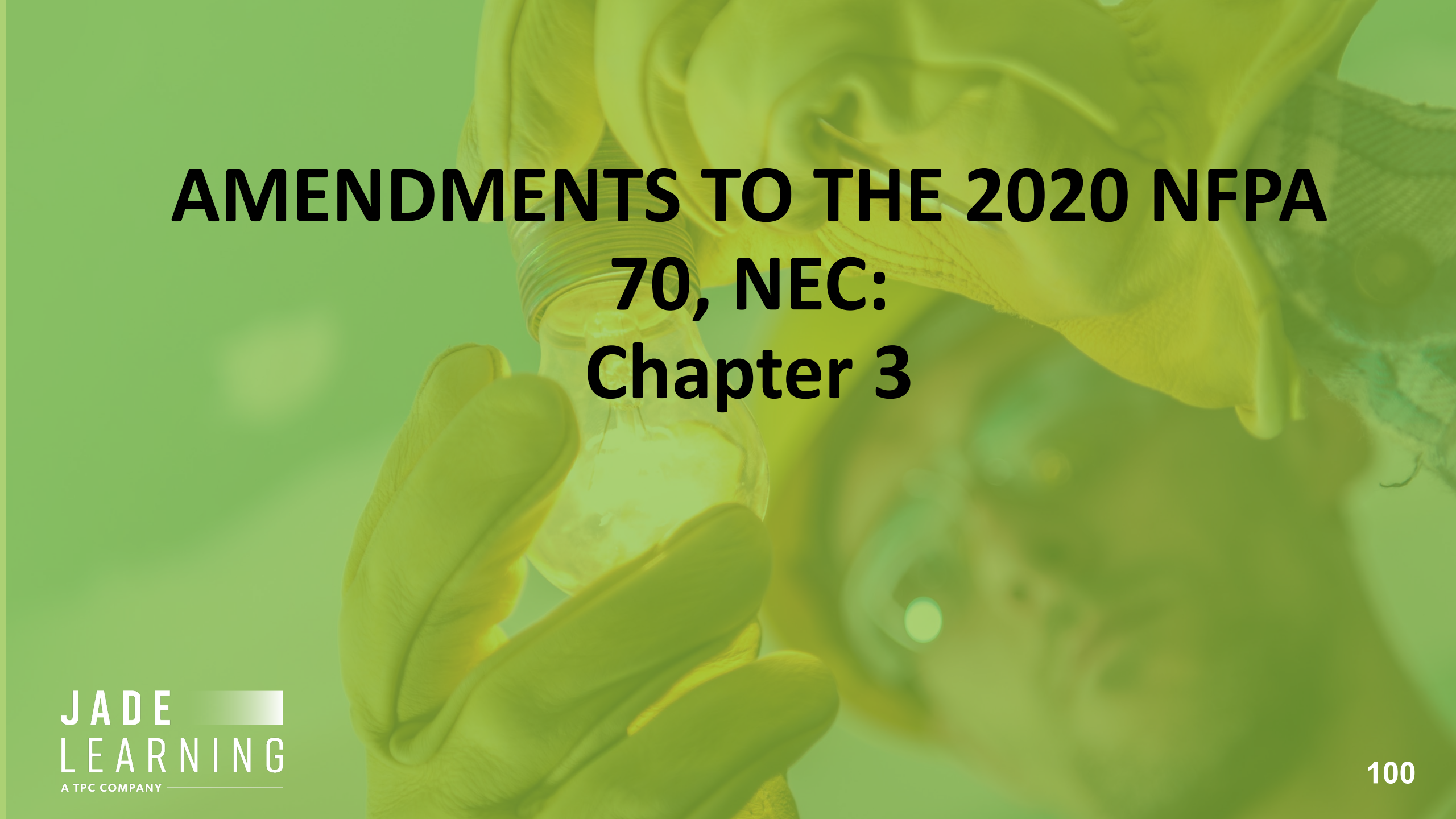
250.68(C) Grounding Electrode Conductor Connections. (Cont.d')

(2) The metal structural frame of a building shall be permitted to be used as a conductor to interconnect electrodes that are part of the grounding electrode system, or as a grounding electrode conductor. Hold- down bolts securing the structural steel column that are connected to a concrete-encased electrode complying with 250.52(A) (3) and located in the support footing shall be permitted to connect the metal structural frame of a building or structure to the concrete encased grounding electrode. The hold-down bolts shall be connected to the concrete-encased electrode by welding, exothermic welding, the usual steel tie wires, or other approved means.

250.68(C) Grounding Electrode Conductor Connections. (Cont.d')

(3) A rebar-type concrete-encased electrode installed in accordance with 250.52(A)(3) with an additional rebar section extended from its location within the concrete footing to an accessible location that is not subject to corrosion shall be permitted for connection of grounding electrode conductors and bonding jumpers in accordance with the following:

a. The additional rebar section shall be continuous with the grounding electrode rebar or shall be connected to the grounding electrode rebar and connected by the usual steel tie wires, exothermic welding, welding, or other effective means.
b. The rebar extension shall not be exposed to contact with the earth without corrosion protection.
c. Rebar shall not be used as a conductor to interconnect the electrodes of grounding electrode systems.



AMENDMENTS TO THE 2020 NFPA 70, NEC: Chapter 3

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CT Amendments to the NEC
Chapter 3 – Wiring Methods and Materials
300.4.1 Drilling and notching.

(A) Structural floor, wall, ceiling and roof members.
(1) Solid sawn lumber. Notches in solid lumber joists, rafters, and beams shall not:

- exceed one-sixth of the depth of the member
- be longer than one-third of the depth of the member
- be located in the middle one-third of the span
- Notches at the ends of the member shall not exceed one-fourth the depth of the member.
- The tension side of members 4 inches (102 mm) or greater in nominal thickness shall not be notched except at the ends of the members.
- The diameter of holes bored or cut into members shall not exceed one-third the depth of the member.
- Holes shall not be closer than 2 inches (51 mm) to the top or bottom of the member, or to any other hole located in the member. Where the member is also notched, the hole shall not be closer than 2 inches (51 mm) to the notch.

Exception: Notches on cantilevered portions of rafters are permitted provided the dimension of the remaining portion of the rafter is not less than 4-inch (102 mm) nominal and the length of the cantilever does not exceed 24 inches (610 mm).

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300.4.1 Drilling and notching.

(2) Engineered wood products. Cuts, notches, and holes bored in trusses, structural composite lumber, structural glue-laminated members or I-joists are prohibited, except in cases in which either:

- they are permitted by the manufacturer's recommendations
- the effects of such alterations are specifically considered in the design of the member by a *registered design professional*

CT Amendments to the NEC
Chapter 3 – Wiring Methods and Materials
300.4.1 Drilling and notching. (Cont.d')

(3) Studs. Any stud in an *exterior wall* or interior bearing partition may be cut or notched to a depth not exceeding 25 percent of its width.

- Studs in nonbearing interior partitions may be notched to a depth not to exceed 40 percent of a single stud width.

Any stud may be bored or drilled, provided:

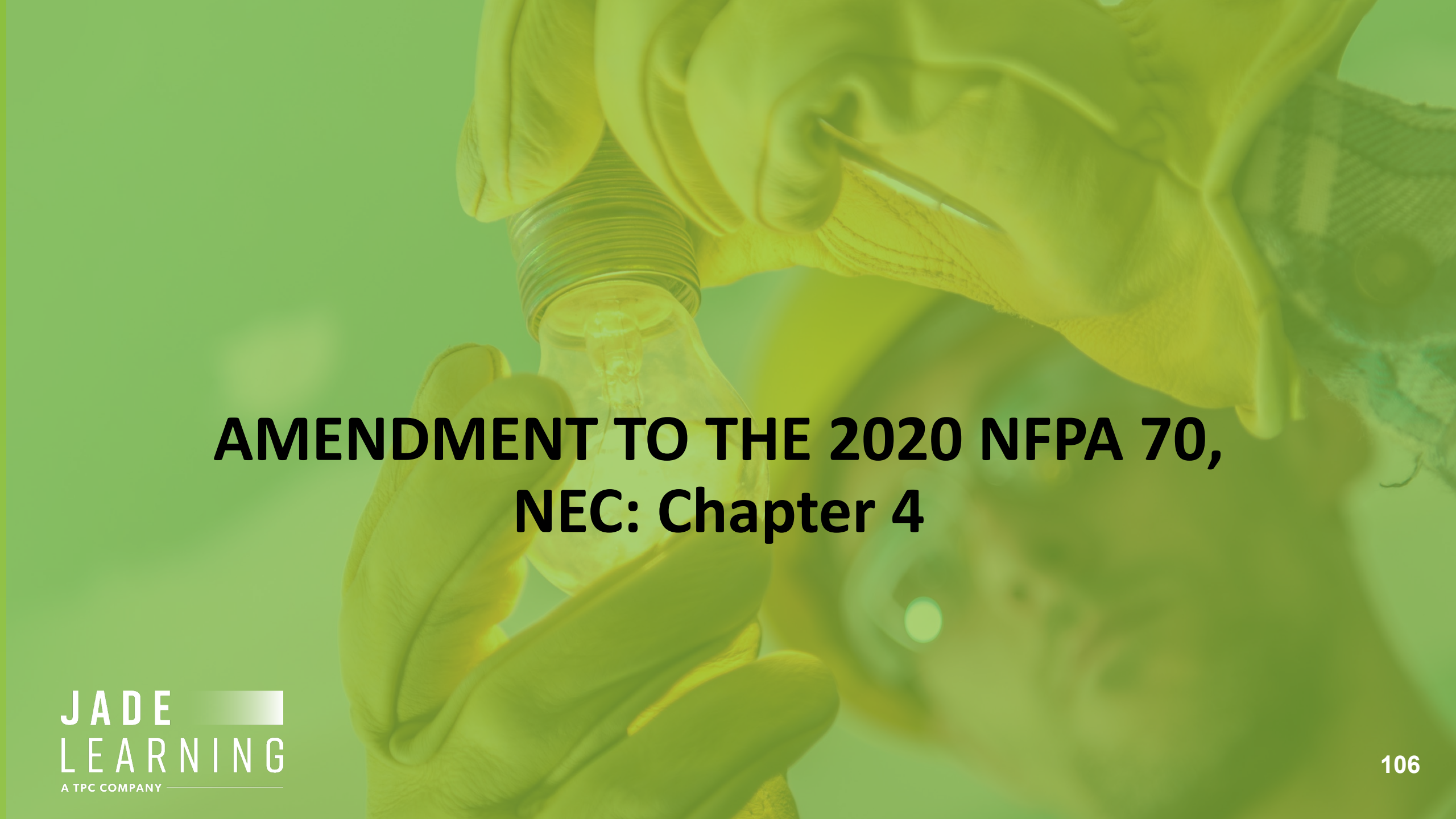
- the diameter of the resulting hole is no greater than 40 percent of the stud width
- the edge of the hole is no closer than 5/8 inch to the edge of the stud
- the hole is not located in the same section as a cut or notch.

Exception 1: A stud may be bored or drilled to a diameter not exceeding 60 per cent of its width, provided that such studs located in exterior walls or interior bearing partitions are doubled and not more than two successive studs are bored.
Exception 2: Approved stud shoes may be used when installed in accordance with the manufacturer's recommendations.

Chapter 3 – Wiring Methods and Materials 300.4.1
Drilling and notching. (Cont.d')

(4) Top plates. When wiring, conduit, piping, or ductwork is placed in an *exterior wall* or interior bearing wall, necessitating cutting, etc. of the top plate by more than 50 percent of its width, a galvanized metal tie of not less than 0.054 in thick (1.37 mm) (16 ga) and 1 ½ inches (38 mm) wide shall be fastened across and to the plate at each side of the opening, with not less than eight 10d (0.148 in diameter) nails at each side or equivalent.
The metal tie must extend a minimum of 6 inches (152 mm) past the opening.

Exception: When the entire side of the wall with the notch or cut is covered by wood structural panel sheathing.



AMENDMENT TO THE 2020 NFPA 70, NEC: Chapter 4

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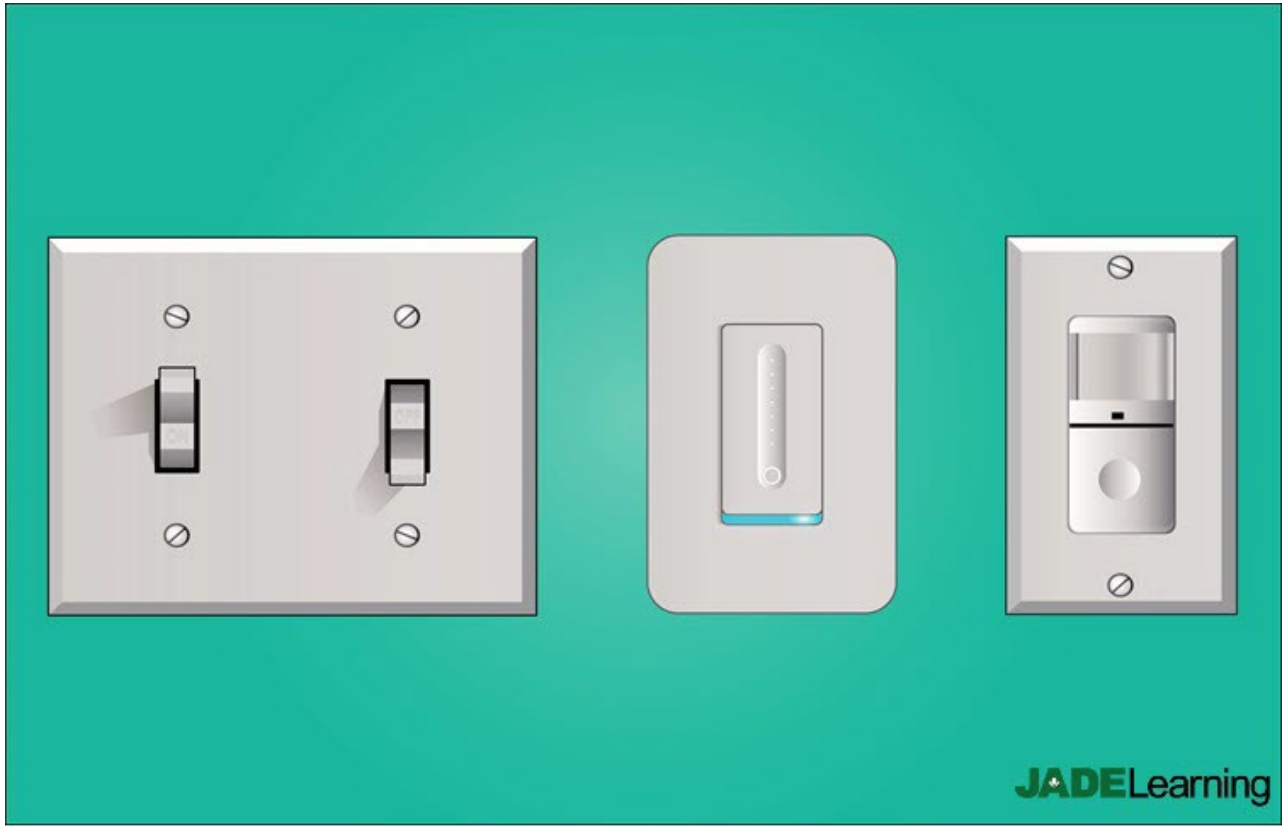
(Amd) 440.14 Location

(Add) Exception No. 3:
Where the interior section of a factory packaged split system is fed solely from the exterior section of the system and the disconnecting means for the exterior section is capable of being locked in the open position, a separate disconnecting means for the interior section shall not be required within sight from that section. The provisions for locking or adding a lock to the disconnecting means shall remain in place with or without the lock installed.

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

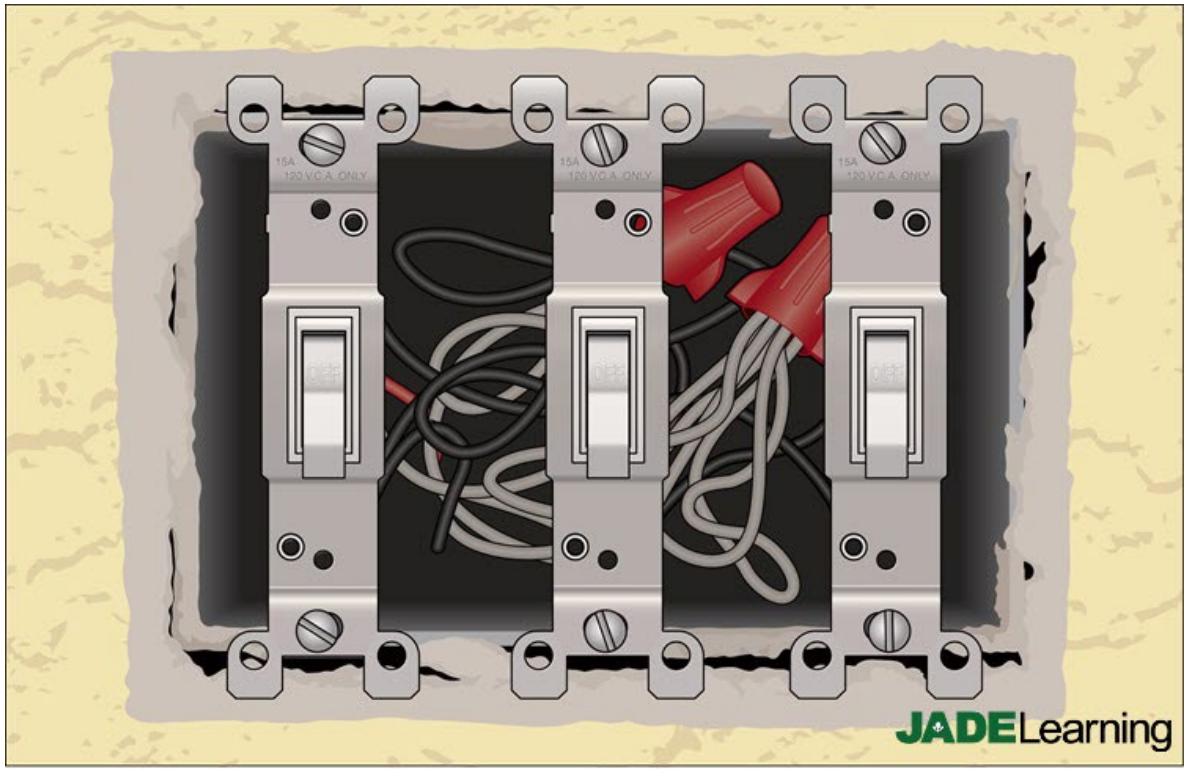
- In 2020 NEC, dimmers and control switches are specifically referenced in Section 404.9.

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



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

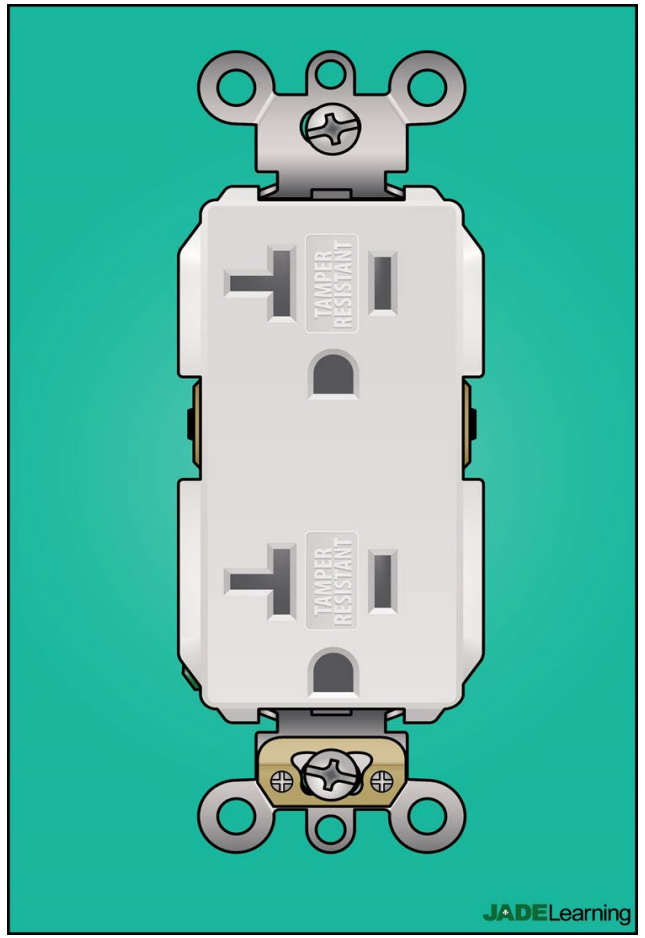
Snap switches are now permitted to be used with new types of loads depending on the switch type (AC, AC/DC, CO/ALR or 347-volt switches) including LEDs and their associated drivers.



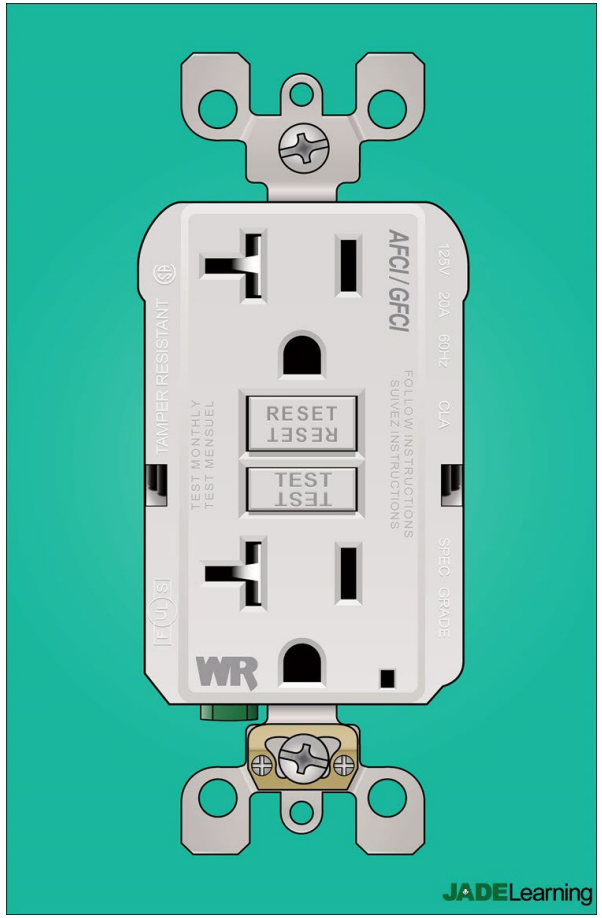
406.3(A) Receptacle Rating and Type. Receptacles.

Section 406.3(A) has been revised in 2020 NEC to say:

- 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.



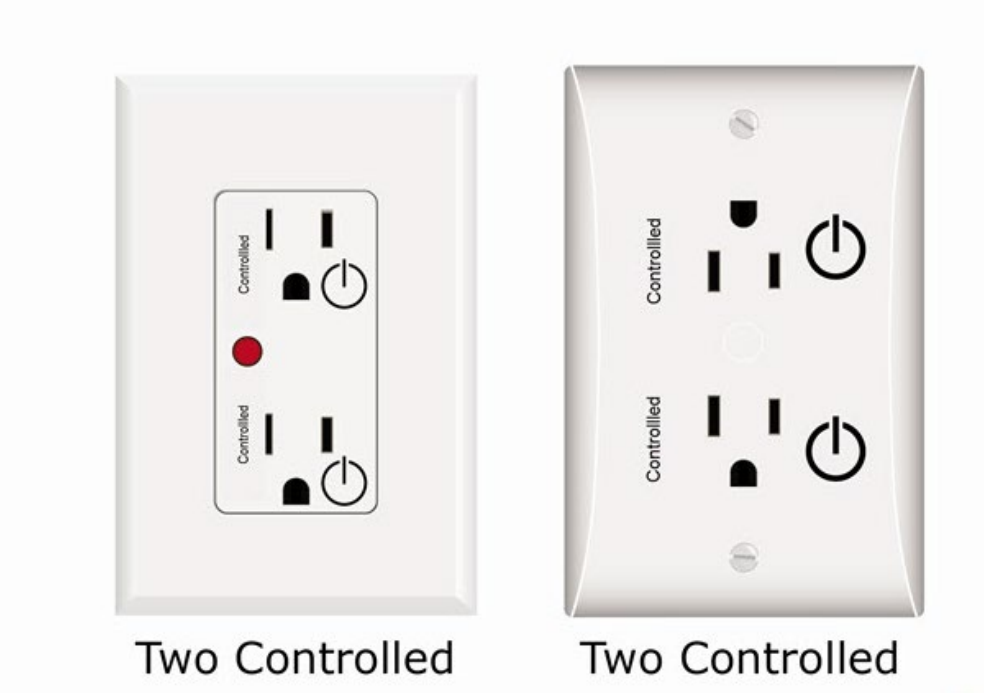
When Replacing Receptacles:

- In the 2017 NEC, when no EGC was previously installed and no AFCI device was commercially available for a two-wire receptacle with no ground, an AFCI protected replacement receptacle was not required to be installed.

- Since AFCI protection is commercially available now, this exception was removed from the 2020 NEC.

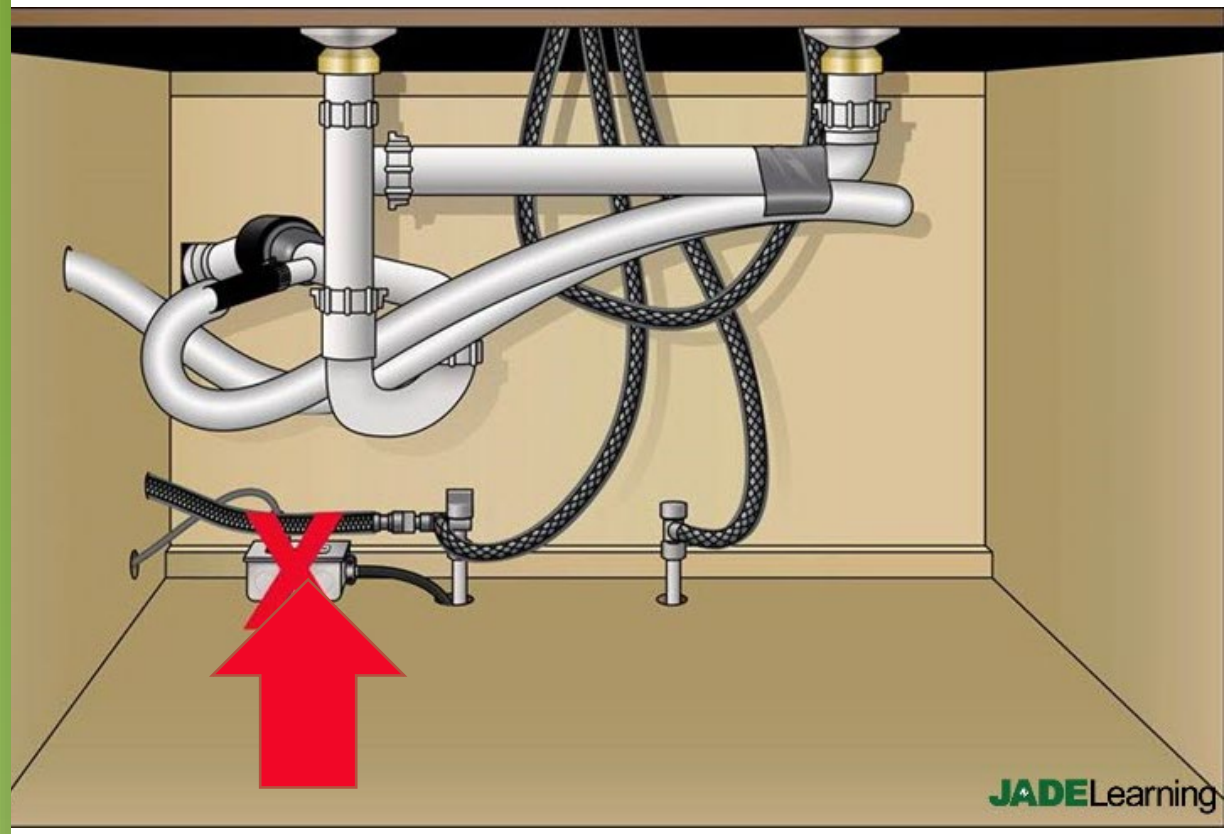
406.4(D)(7) Replacements. Controlled Receptacles.

- 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 Two Controlled

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



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.

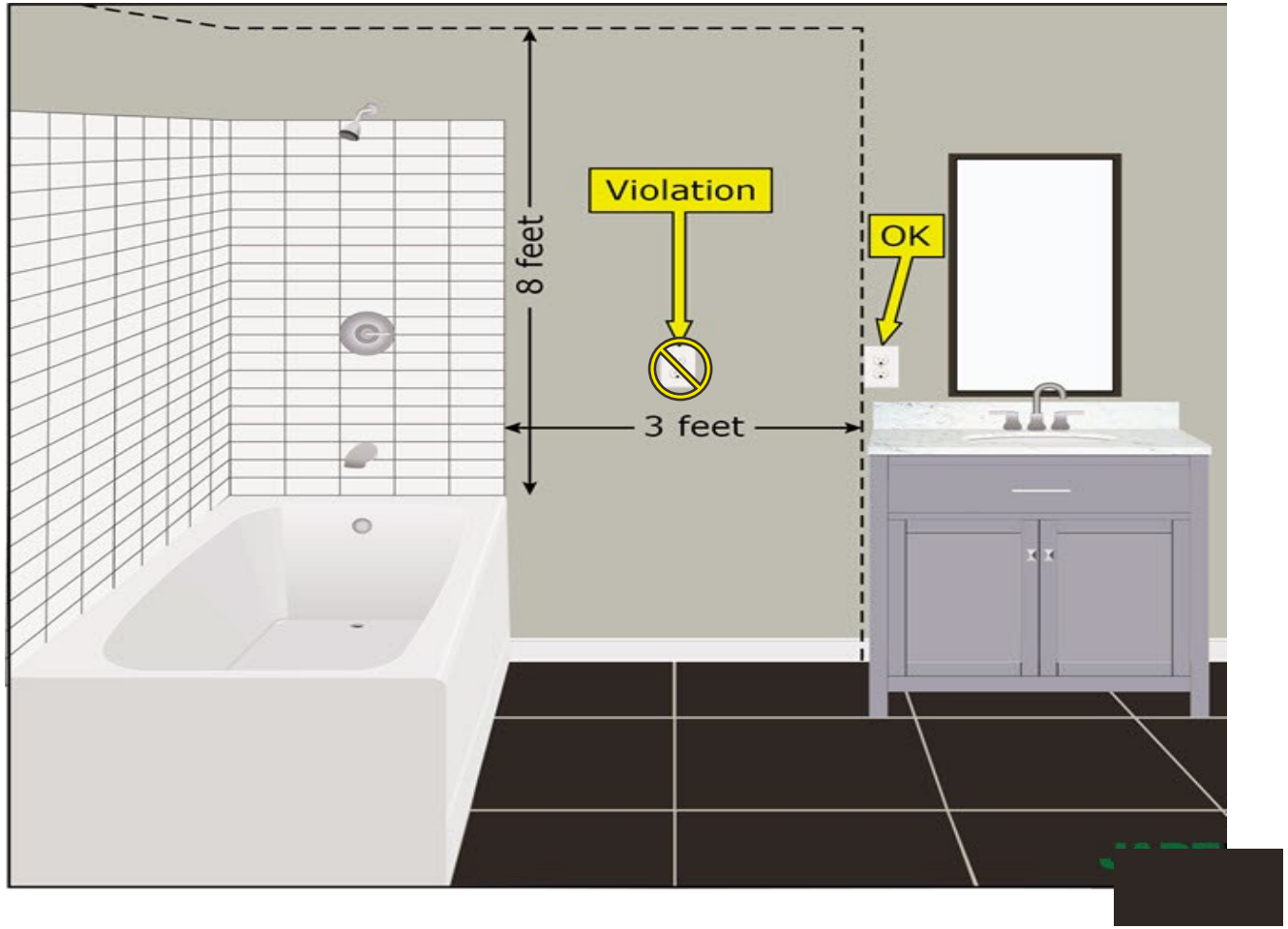
406.7 Attachment Plugs, Cord Connectors, and Flanged Surface Devices.

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.



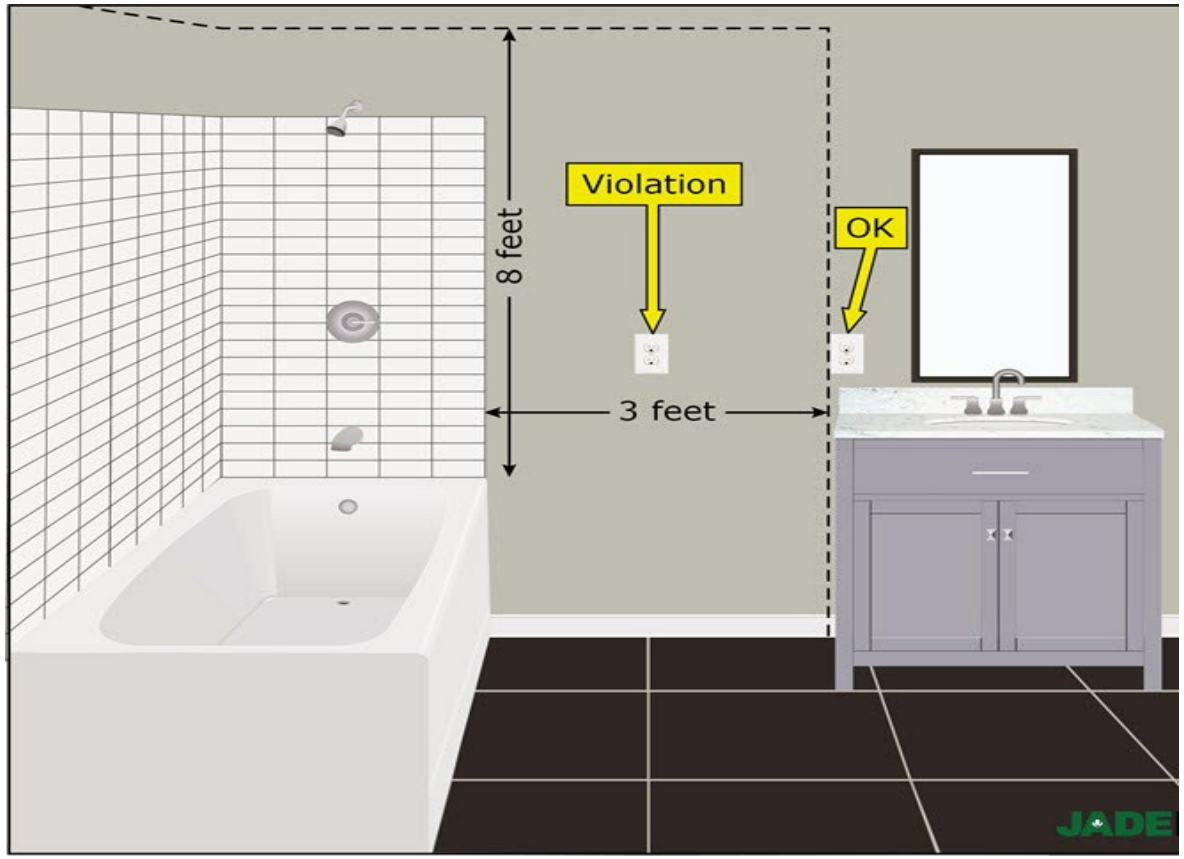
Receptacle Locations in 2020

- Receptacles are not permitted within 8 feet vertically and 3 feet horizontally of the bathtub rim or shower stall threshold.

- Receptacles are still required within 3 feet of the sink.

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

If a bathroom is too small and conflict exists between the bathtub/shower space and receptacle(s) being installed, an exception allows the receptacle to be installed on the farthest wall in the bathroom.

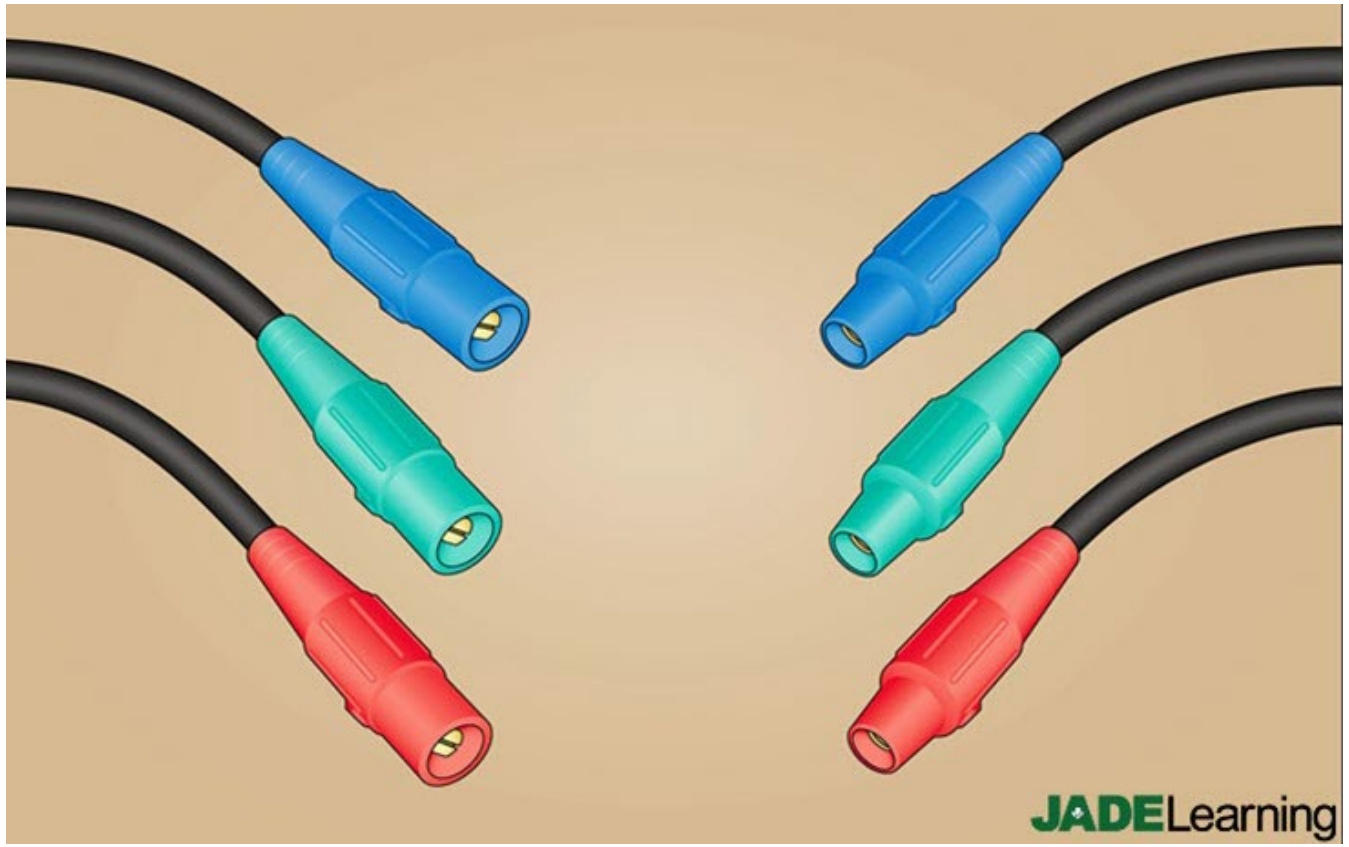


406.12 Tamper-Resistant Receptacles.

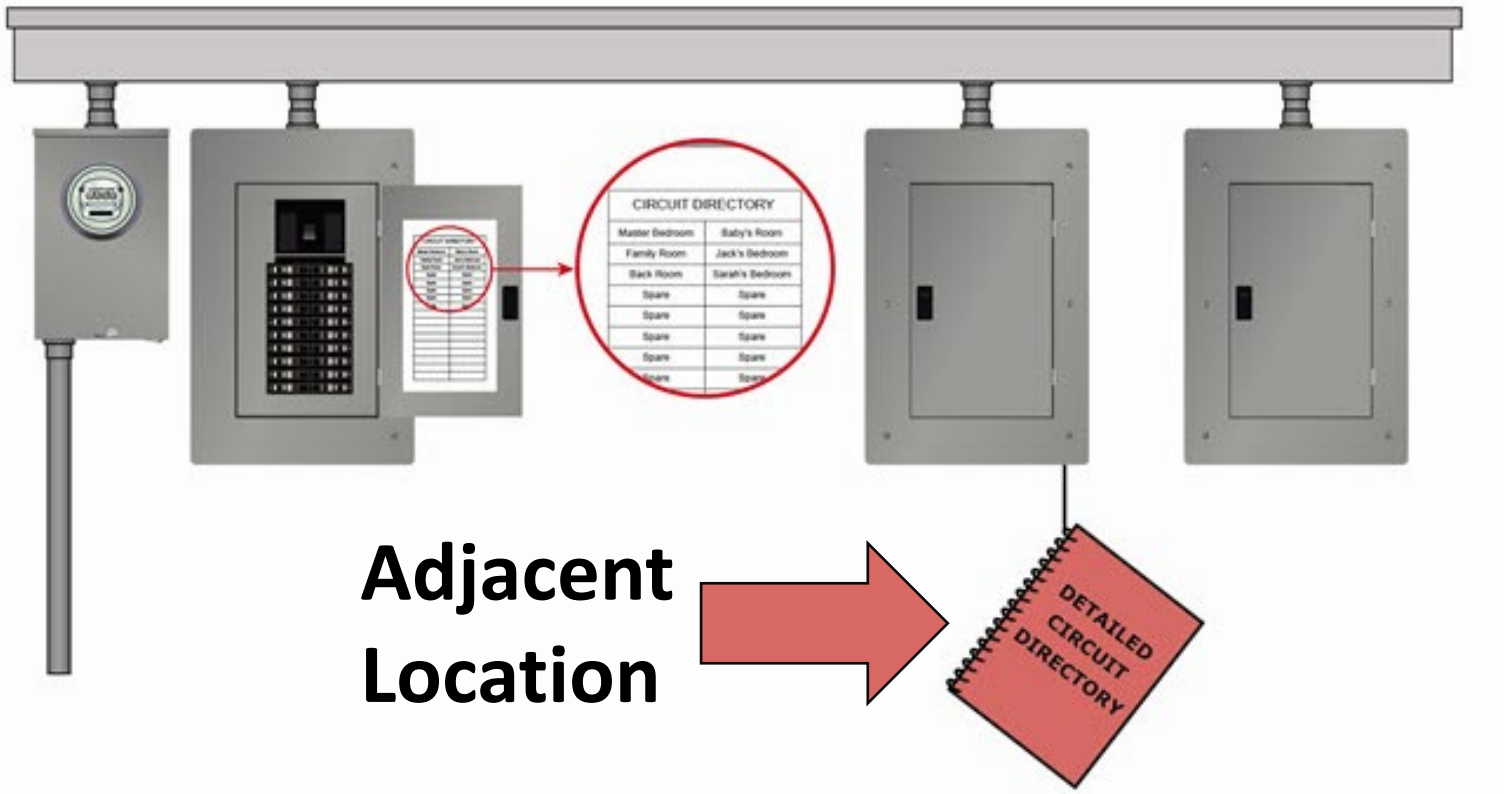
In the 2020 NEC, tamper-resistant receptacles are now required in additional locations including common areas of hotels, assisted-living facilities, accessory buildings, and detached garages.

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.

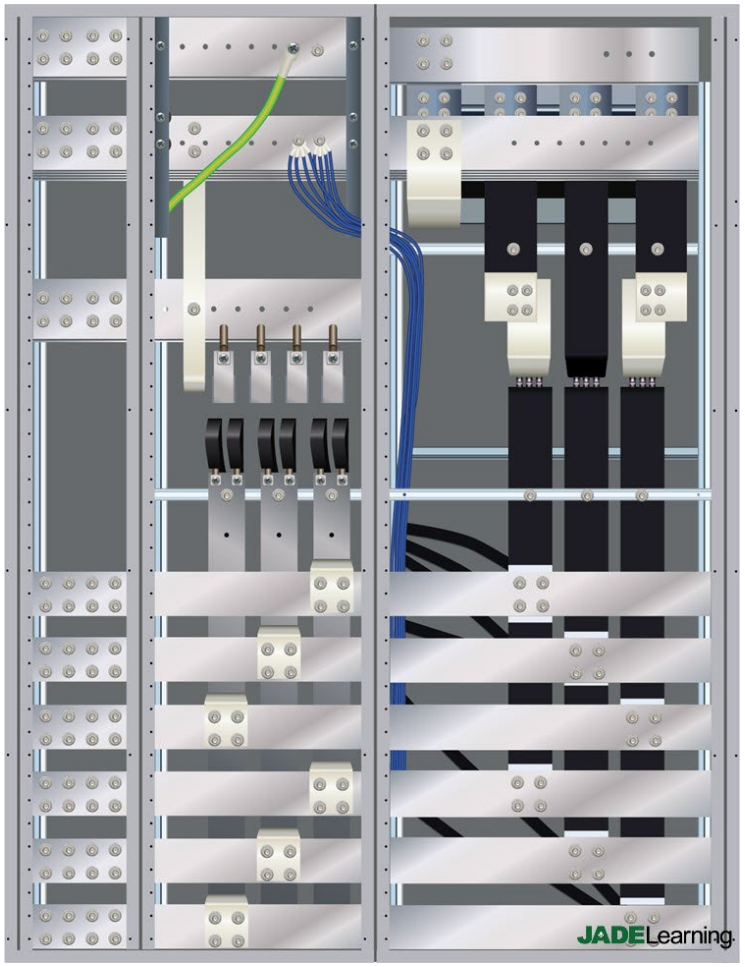


408.4(A) Field Identification Required. Circuit Directory or Circuit Identification.



- 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).

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

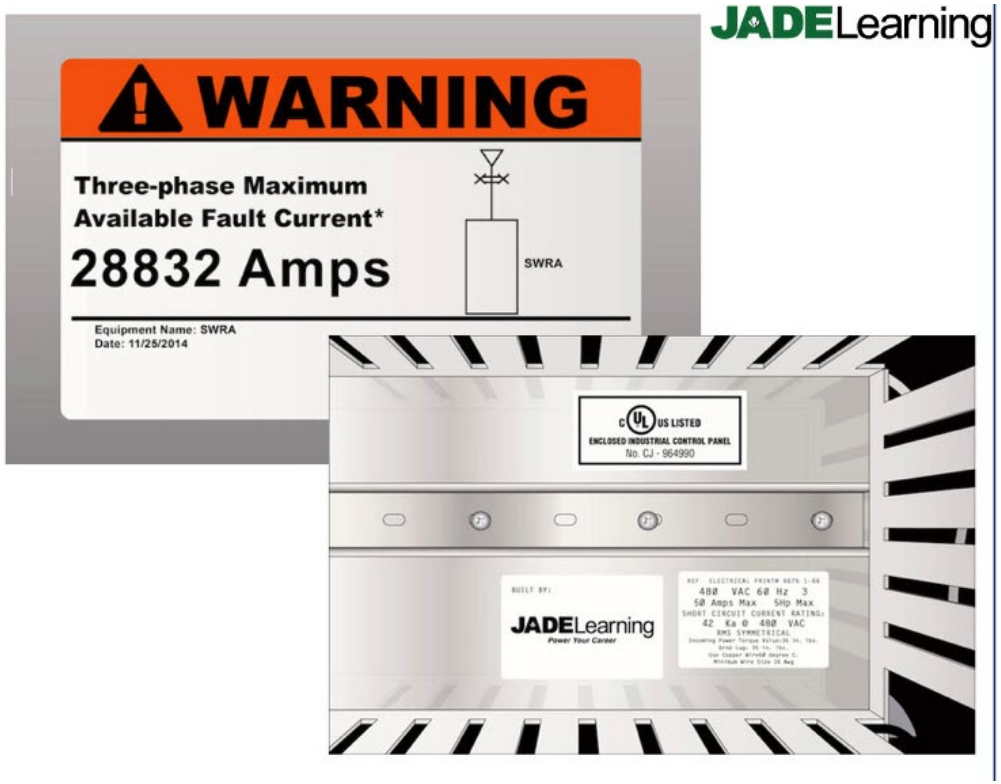


- New rules for the placement of grounded (neutral) lugs.
- Applies to switchboards and switchgear, but not panelboards.
- Different requirements for when single or multiple grounded terminals are installed.

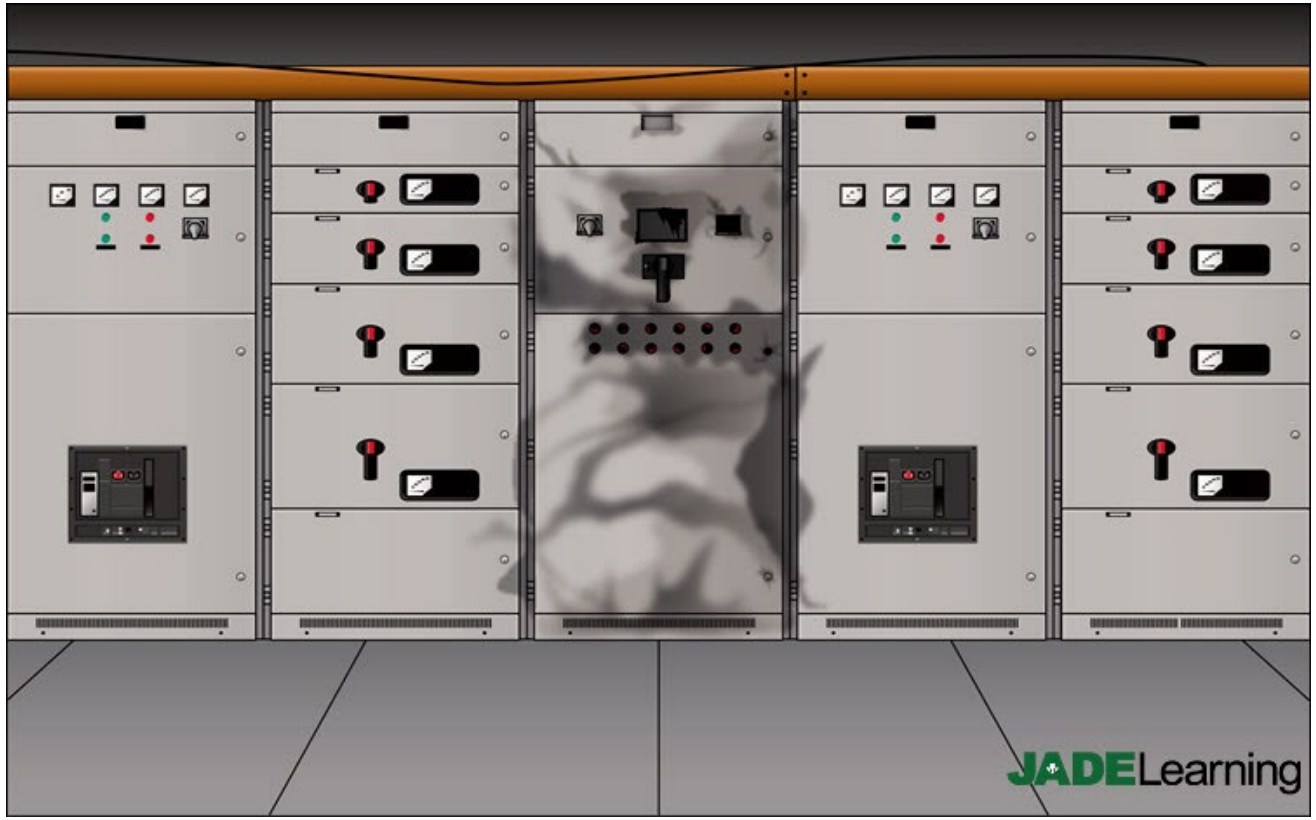
408.6 Switchboards/Panelboards. Short-Circuit Current Rating.

- 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.

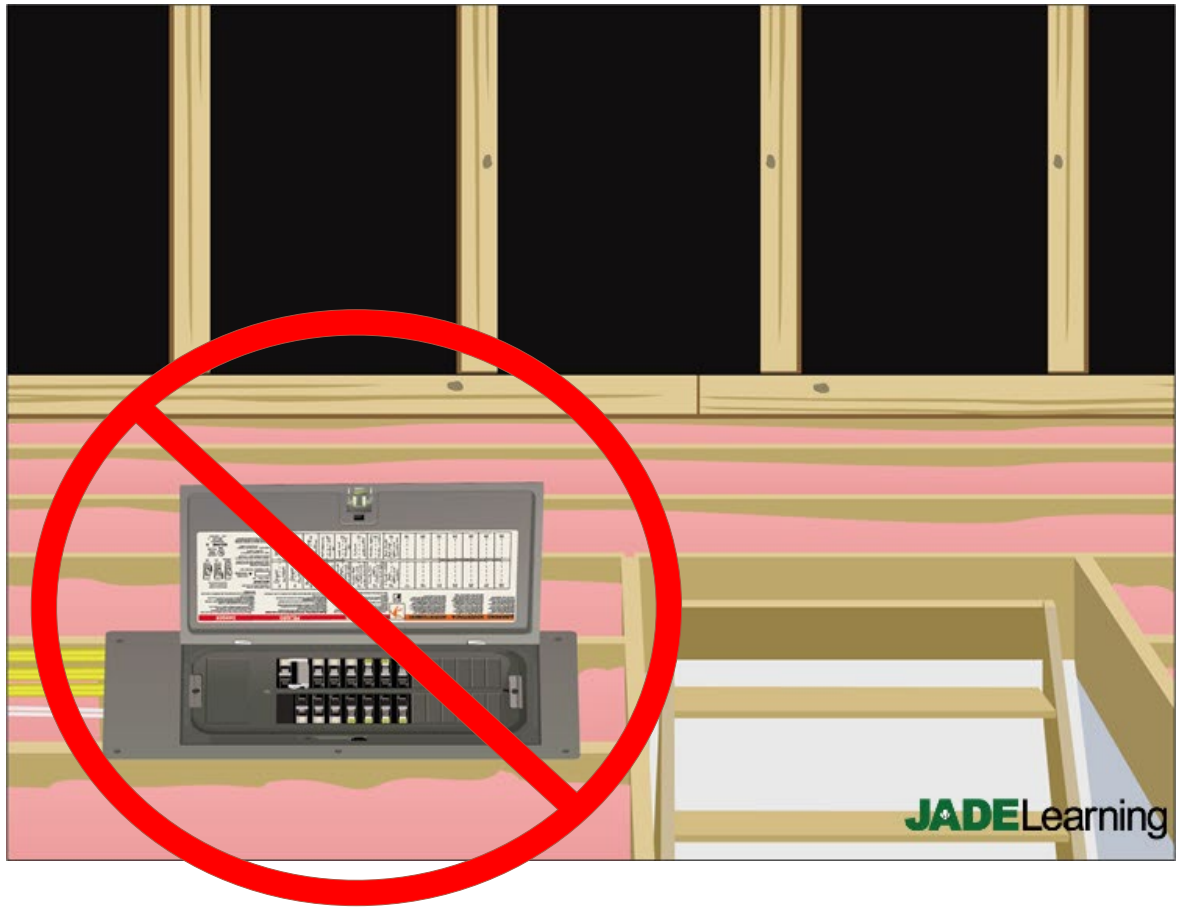


If switchboards, switchgear or panelboards are damaged by fire, fire-related contaminants or water, the equipment must be evaluated by the original manufacturer or a qualified testing lab (UL) before returning to service.

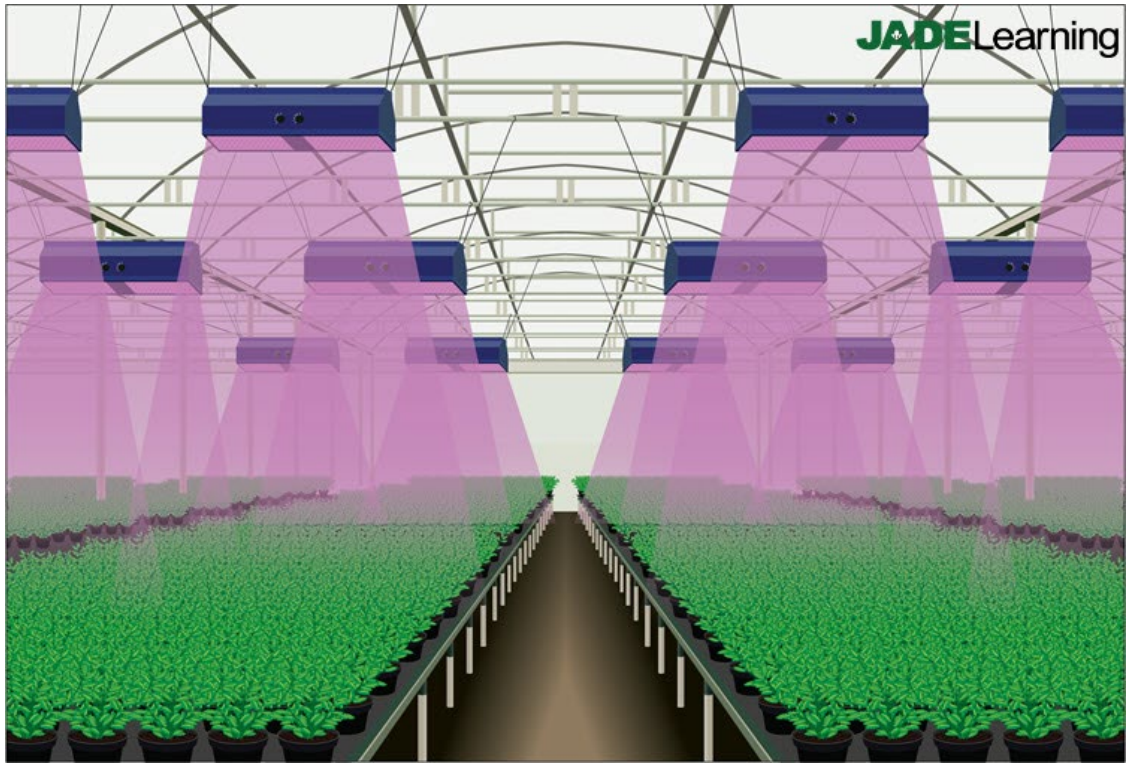
408.43 Panelboard Orientation.

- 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.

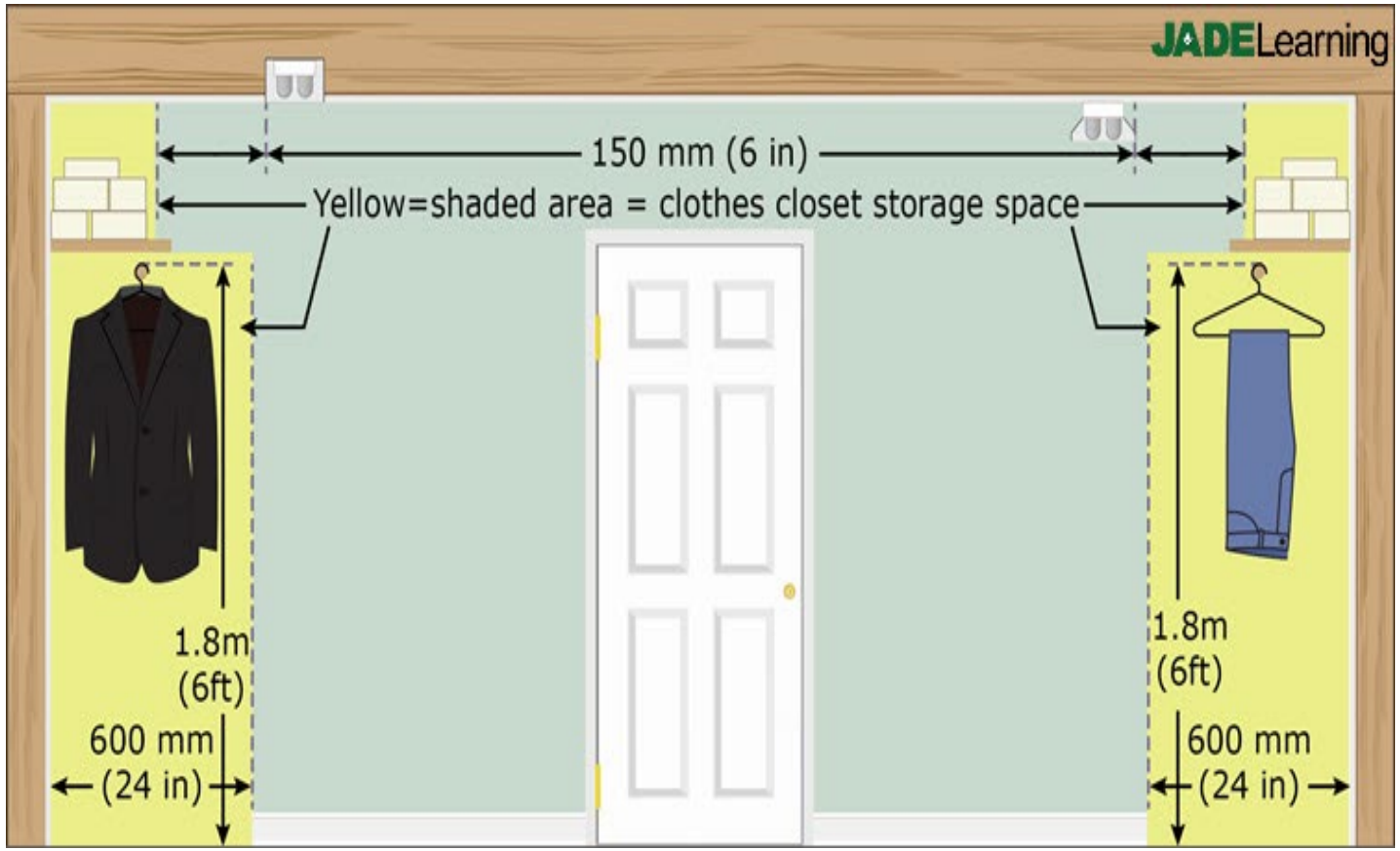


- Horticulture lighting equipment is now regulated by the NEC.
- Locations include greenhouses & nurseries.
- Listing, installation, location, fittings, flexible cord, and GFCI requirements are provided.

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.”

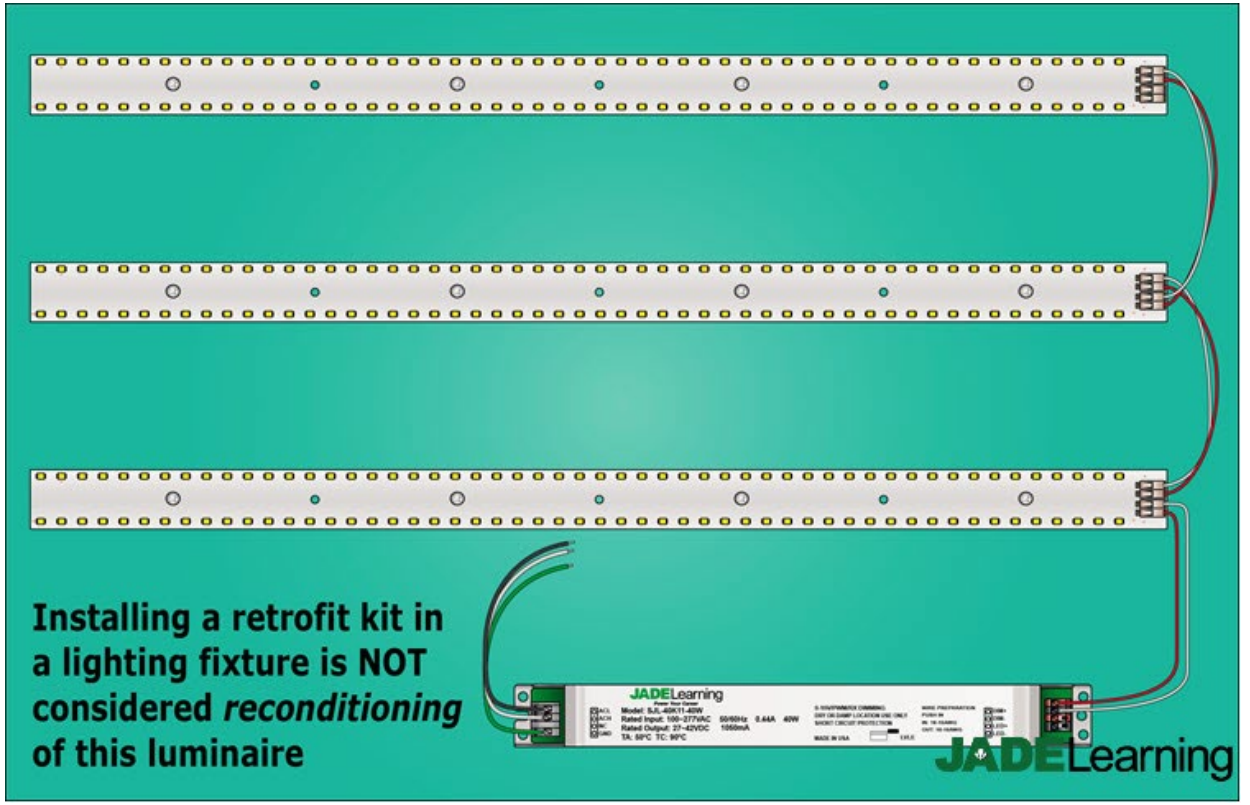
- Permitted locations of fixtures and dimensions of closet space is provided in Sections 410.16.



410.7 Luminaires, Lampholders and Lamps. Reconditioned Equipment.

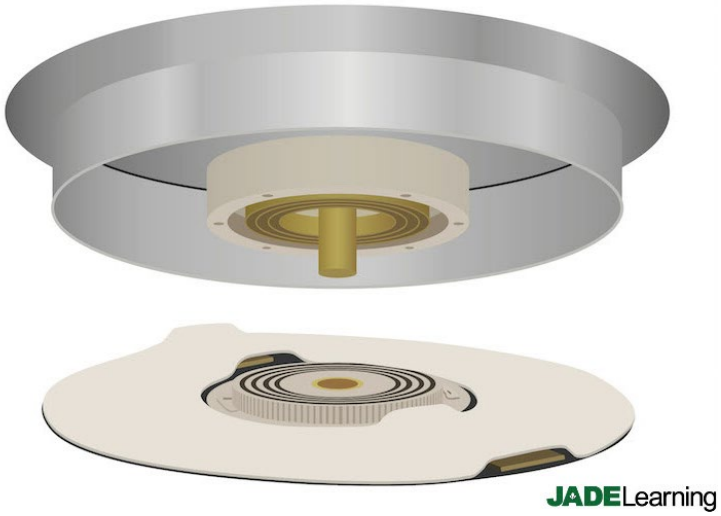
- Luminaires, lampholders, and retrofit kits are **not** permitted to be reconditioned.

- Installing a retrofit kit to a luminaire is **not** considered "reconditioning" when installed in accordance with instructions.



410.36(A) Luminaires Supported by Outlet Boxes.

Section 410.36 in the 2020 NEC now clarifies that locking support & mounting receptacle outlets used to connect luminaires *are* considered lighting outlets and can be used to satisfy lighting outlet requirements found in Section 210.70(A), (B), and (C).



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.

410.42 Luminaire(s) with Exposed Conductive Parts.

Revised for 2020 NEC, 410.42 also states:

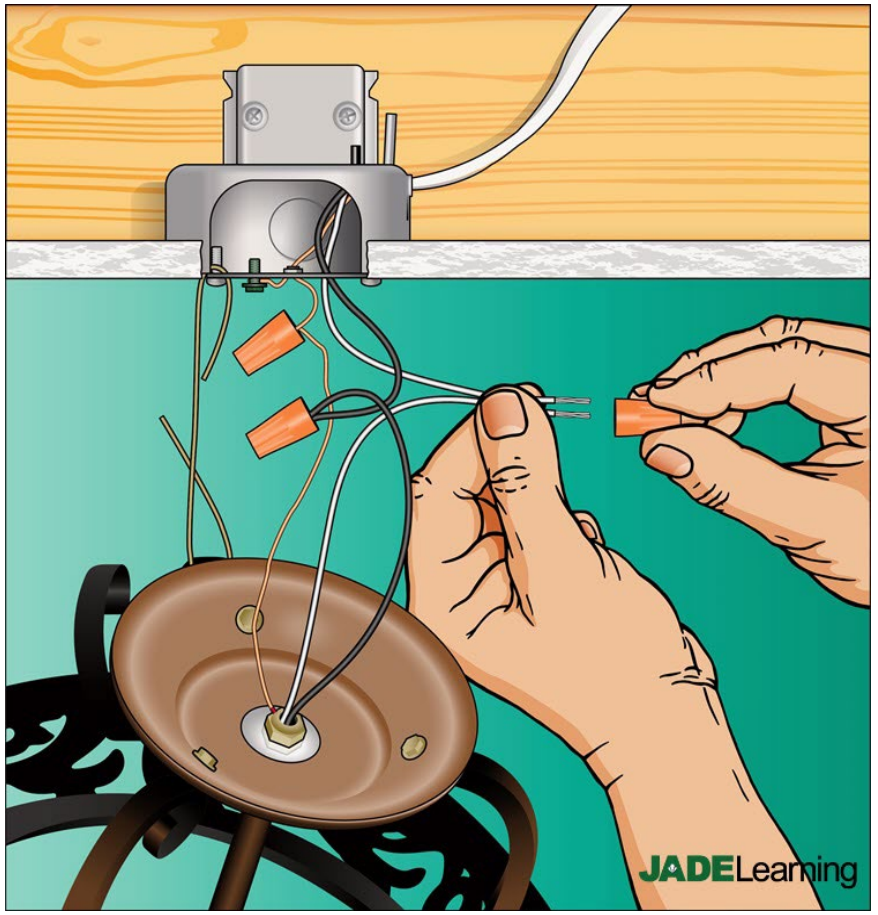
Portable luminaires with a polarized attachment plug shall not require connection to an equipment grounding conductor.

410.44 Methods of Grounding.

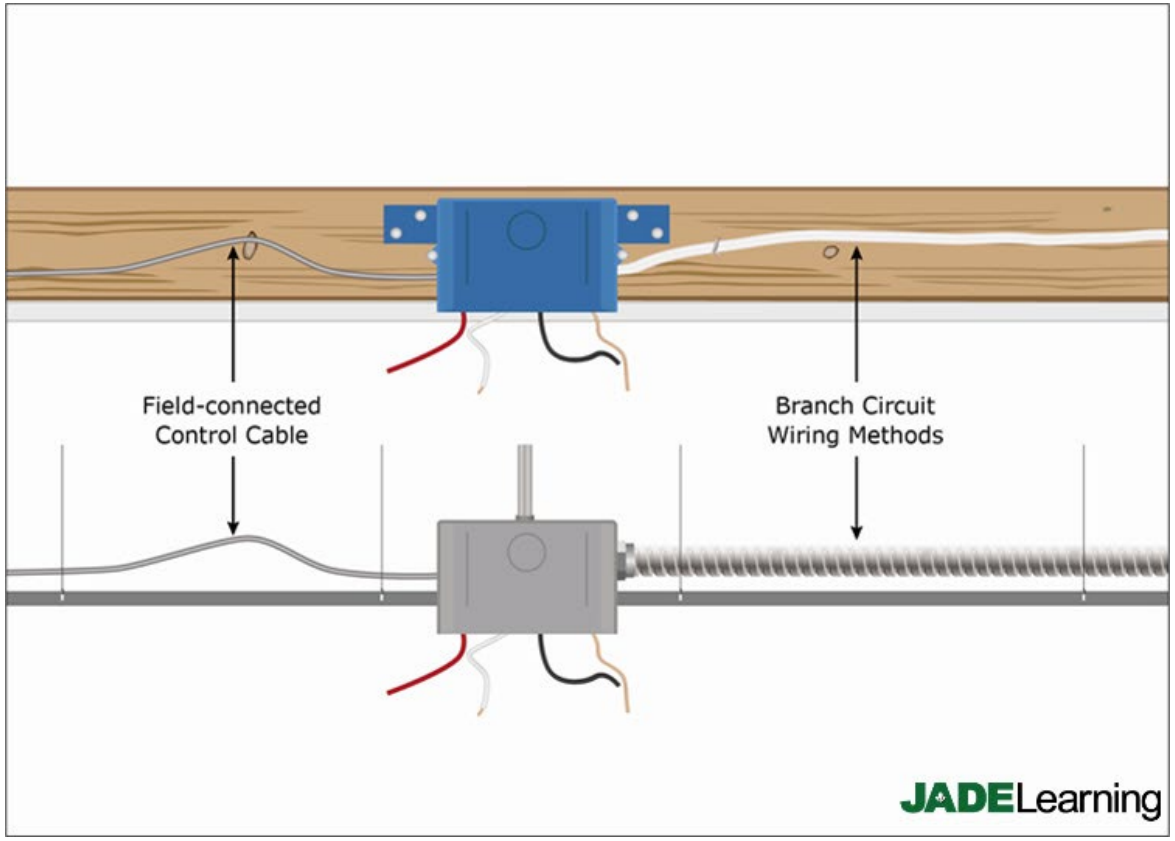
Grounding of Luminaires & Equipment at Outlets:
There are two revised exceptions for this 2020 Code cycle.

- Replacement luminaires are permitted to connect to an EGC in the same manner as replacement receptacles.

- If no EGC exists, luminaire must be GFCI protected or replacement luminaire must not have conductive exposed parts.



410.69 Luminaires/Lamps. Identification of Control Conductor Insulation.



Brand-New for 2020 NEC: Beginning January 1, 2022, field-installed control conductors in the same enclosure as branch-circuit conductors must have an insulation color other than colors reserved for neutral conductors or EGCs.

410.116(C) Installation in Fire-Resistant Construction.

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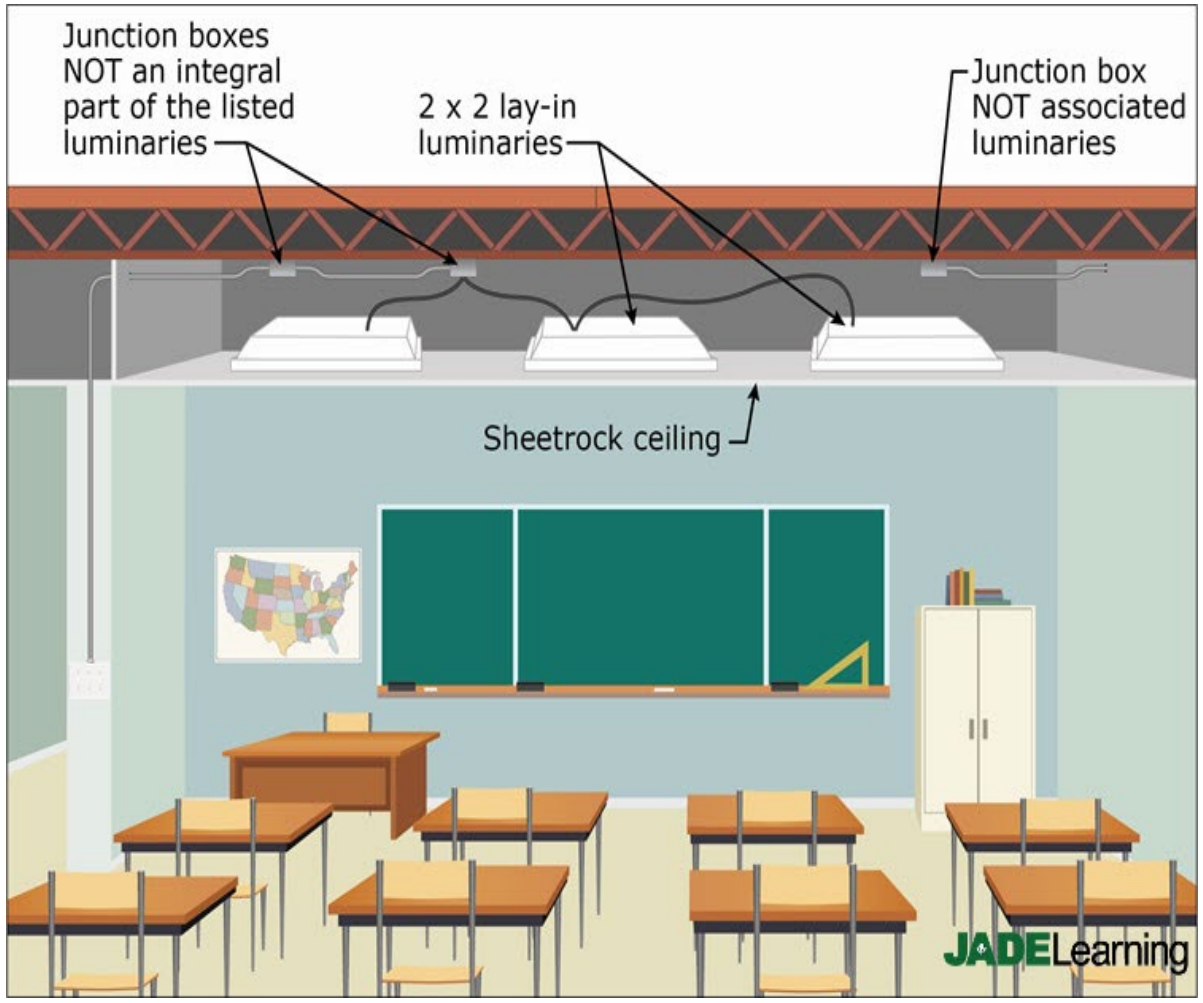
Brand-new for 2020:

- 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 <u>to ground</u>.

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(A),(A)(1),(A)(2) Appliances. Flexible Cords.

Section 422.16(A) was reorganized for clarity.

2017 NEC Section 422.16(A)

Flexible cord shall be permitted (1) for the connection of appliances to facilitate their frequent interchange or to prevent the transmission of noise or vibration or (2) to facilitate the removal or disconnection of appliances that are fastened in place, where the fastening means and mechanical connections are specifically designed to permit ready removal for maintenance or repair and the appliance is intended or identified for flexible cord connection.

2017

2020

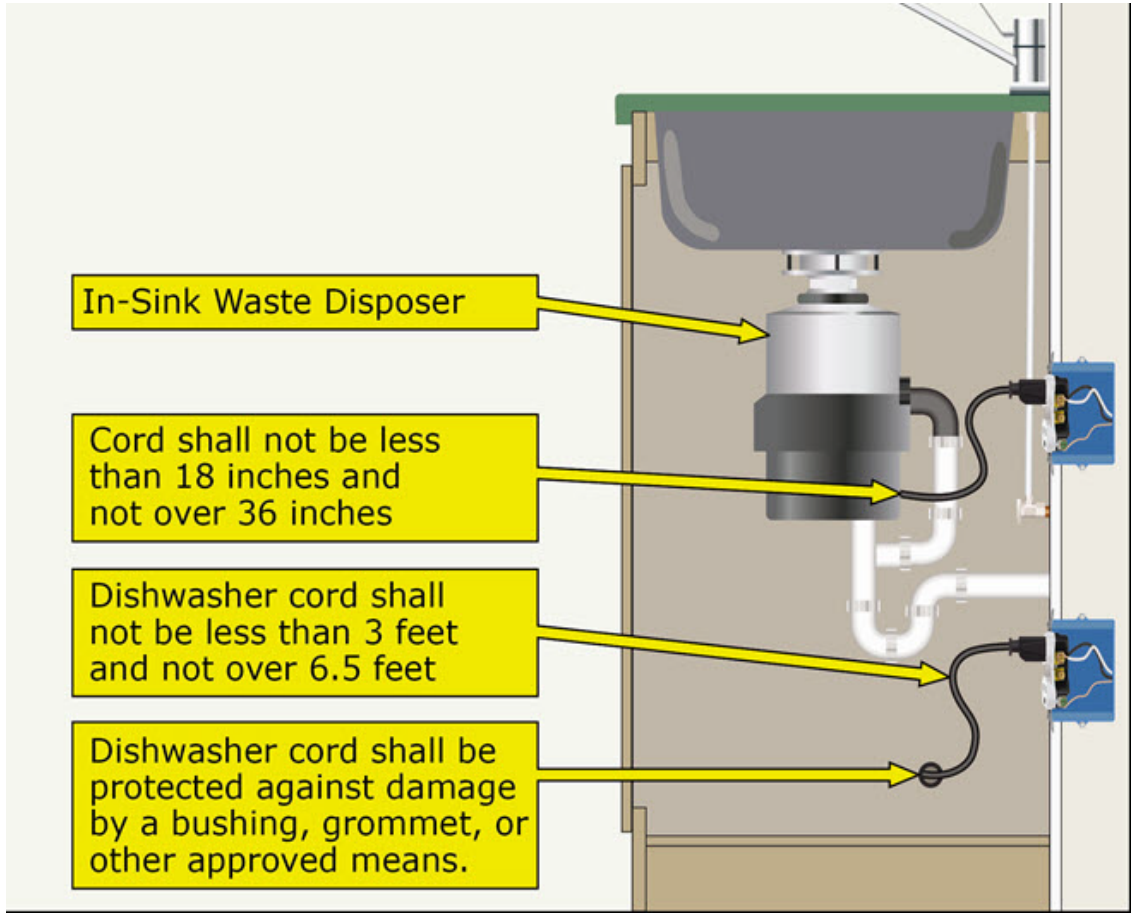
2020 NEC Section 422.16(A)

Flexible cord shall be permitted as follows:

(1) To connect appliances to facilitate their frequent interchange or to prevent the transmission of noise or vibration or

(2) To facilitate the removal or disconnection of appliances that are fastened in place, where the fastening means and mechanical connections are specifically designed to permit ready removal for maintenance or repair and the appliance is intended or identified for flexible cord connection.

422.16(B) Specific Appliances.



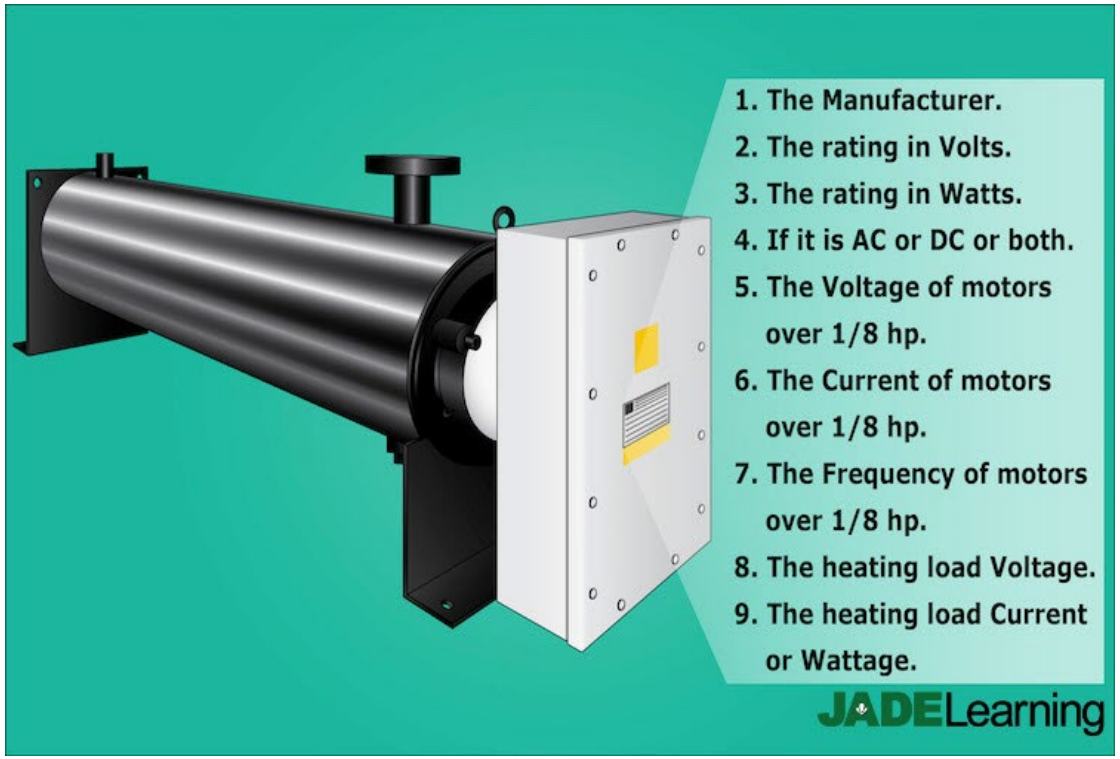
2017 NEC said flexible cords shall terminate with a grounding type plug.

2020 NEC says flexible cords shall 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.



430.2 Definitions. Electronically Protected.

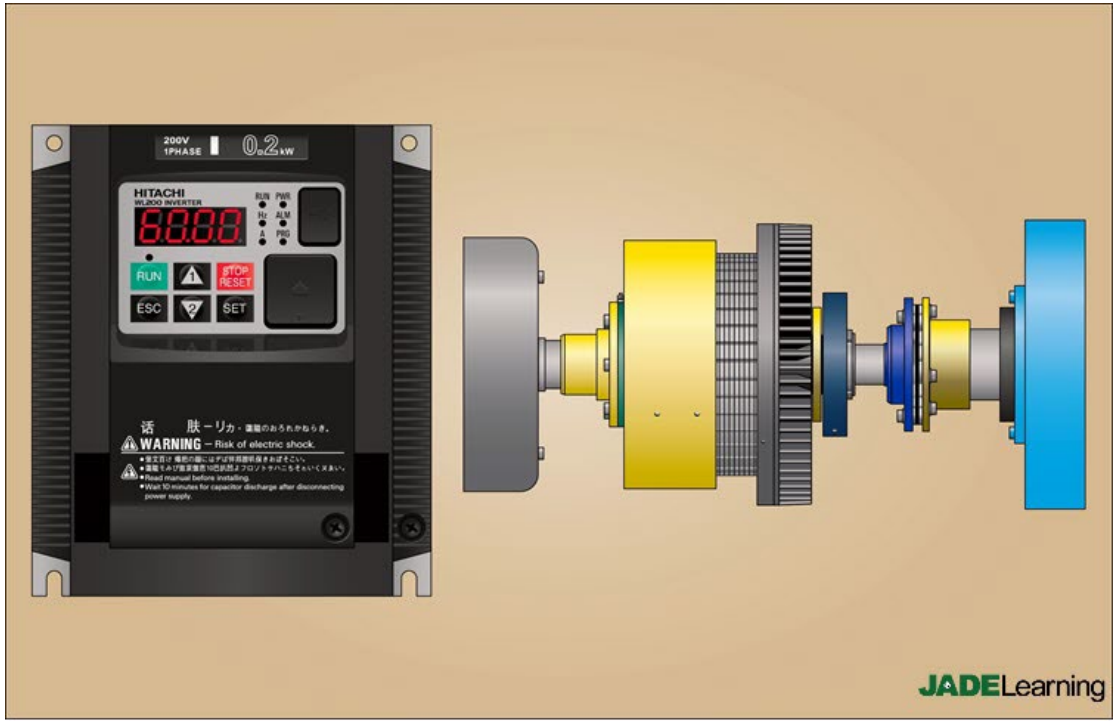
The 2020 NEC has a new definition for electronically protected when applied to motors:

A motor that is provided with electronic control that is an integral part of the motor and protects the motor against dangerous overheating due to failure of the electronic control.

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

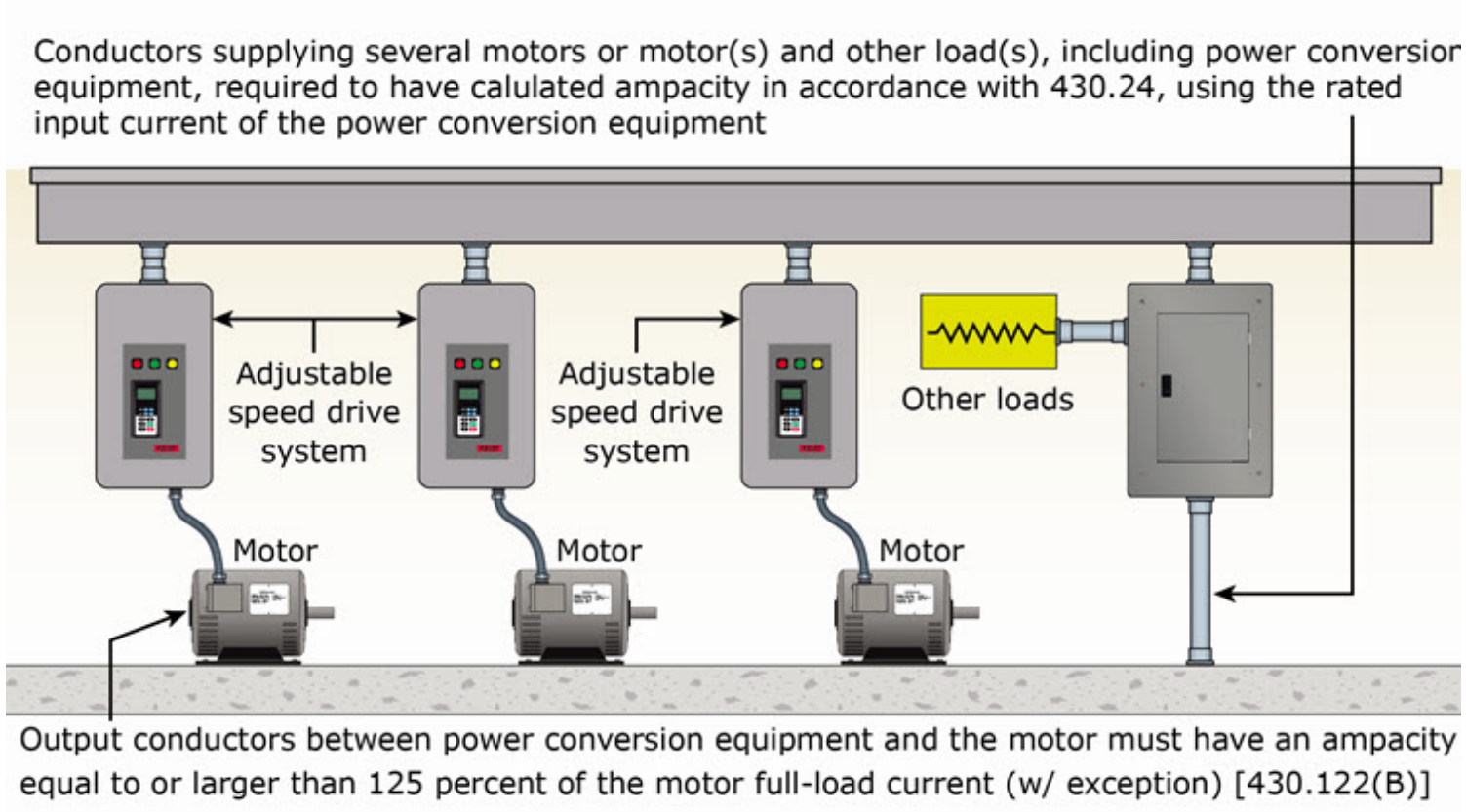
- The 2020 NEC now distinguishes between branch circuit/feeder and output conductors.

- 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.

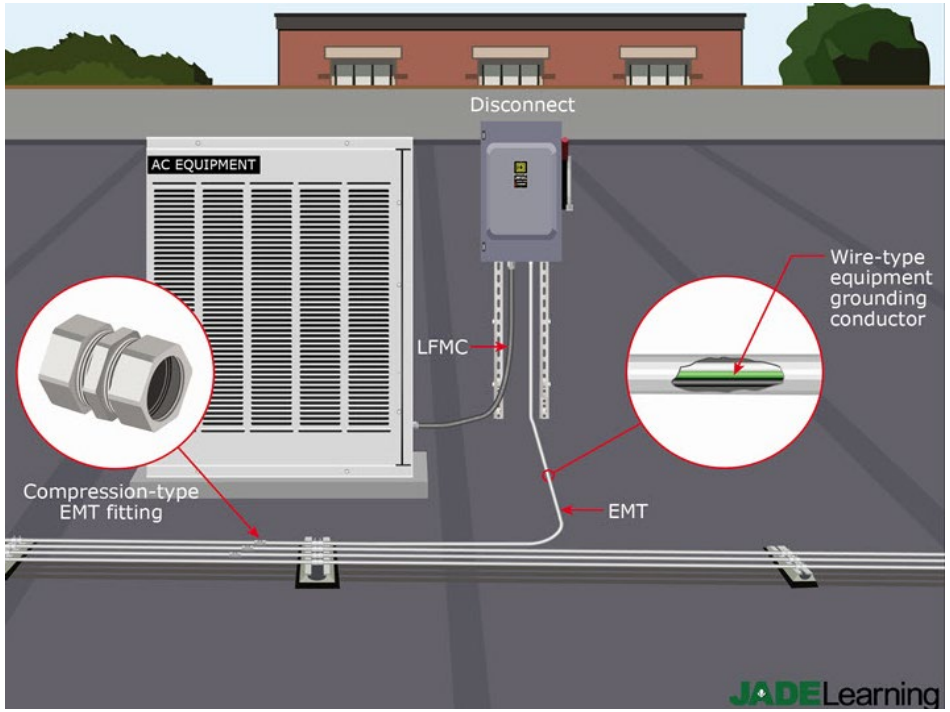
- Section 430.122(D) is new in 2020 NEC and sends electricians to Section 430.24.
- Motor circuit conductors must be chosen based on the sum of the motor and non-motor loads listed in Section 430.24.



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.



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

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

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.

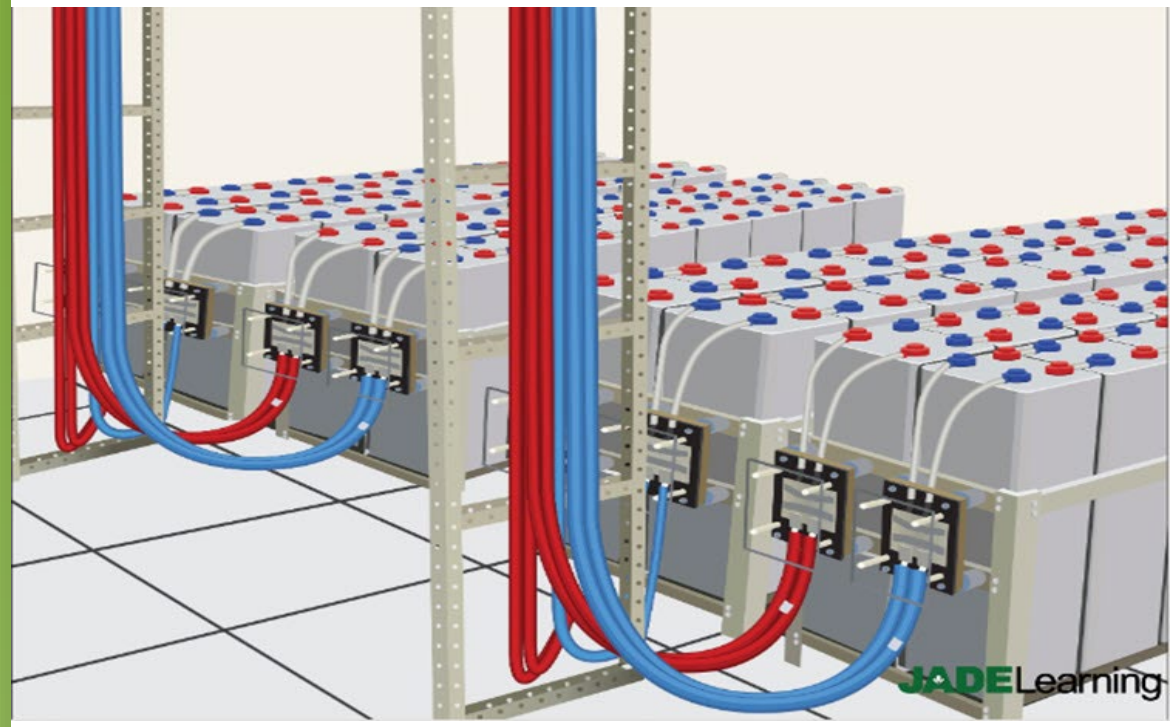
450.9 Transformers. Ventilation.

The 2020 NEC States:

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.

480.2 Storage Batteries. Definitions. Storage Battery.

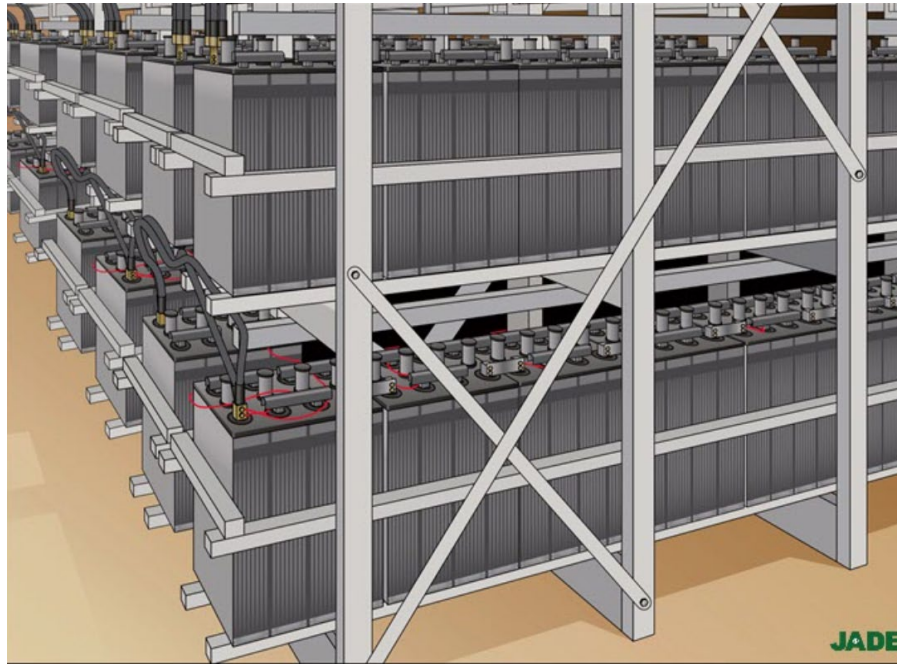


- The 2020 NEC provides an updated definition for a *Storage Battery*.
- The 2020 NEC clarifies that batteries may be linked together in series or parallel and may be single or multiple cells.

480.7(B),(C),(F),(G) Storage Batteries. DC Disconnect Meth (1 of 2)

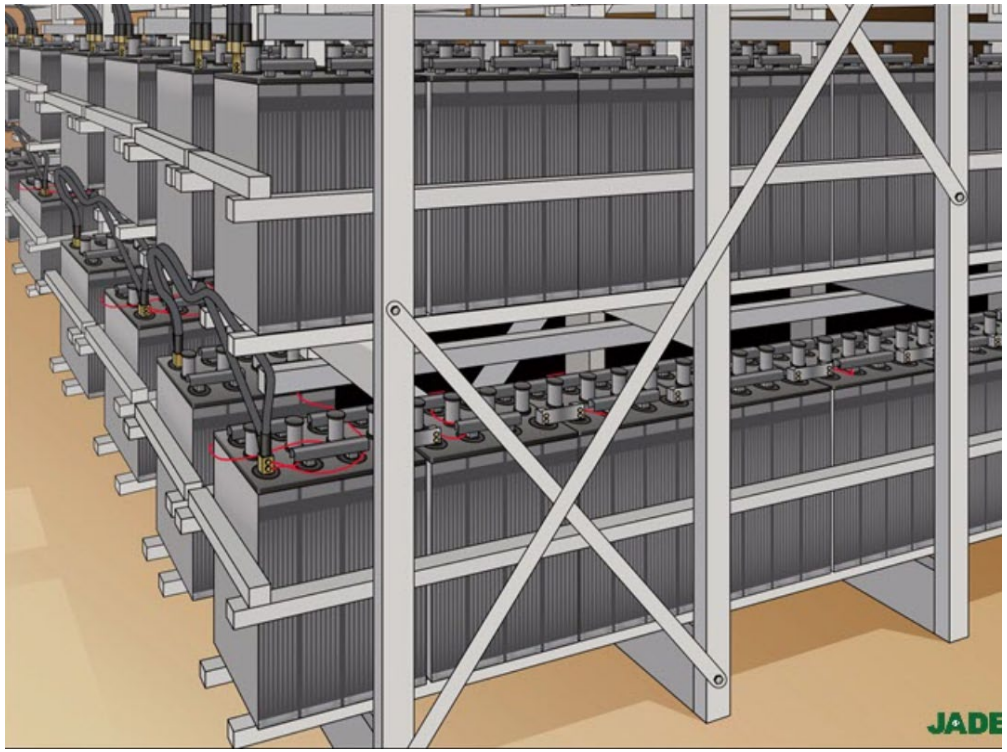
480.7(B): Storage battery systems in one- and two-family dwellings must have a marked emergency disconnect in a readily accessible location outside of the building.

480.7(C): The 2020 NEC now requires series battery strings to have disconnecting means installed between strings when exceeding 240 volts.



480.7(B),(C),(F),(G) Storage Batteries. DC Disconnect Methods. (2 of 2)

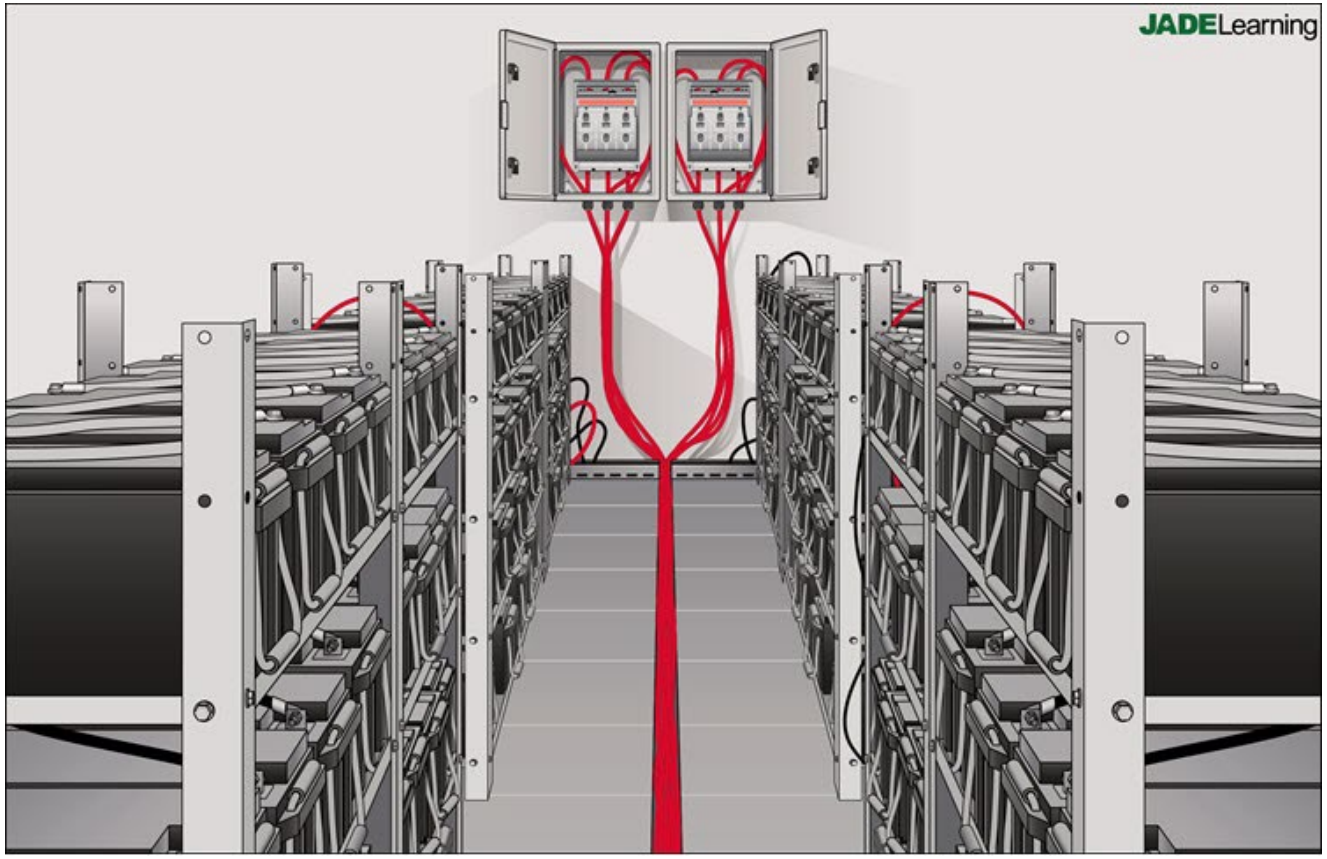
- 480.7(F): The phrase “available fault current” now replaces “maximum available short-circuit current” on notification labels.
- 480.7(G): Provides new identification requirements for power sources in facilities that have storage battery disconnects.



480.10(A) Storage Batteries. Battery Locations.

- Section 480.10(A) addresses the venting requirements of storage batteries.

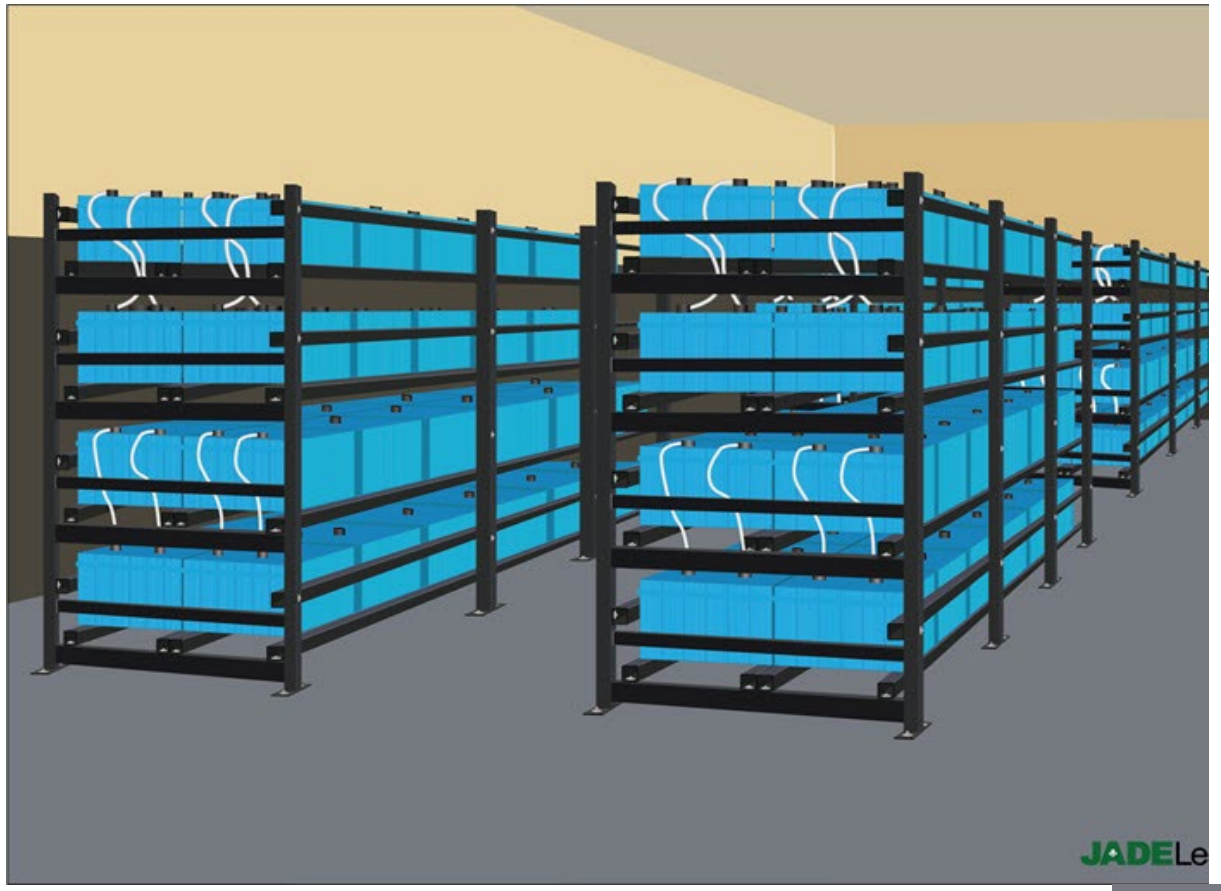
- NFPA 1 (The *Fire Code)* requires the concentration of gasses to be 25% or less of the lower flammable limit of gas.



480.10(C) Storage Batteries. Battery Locations. Spaces About Battery Systems.

- Battery systems of 1000 volts or less must adhere to the working space requirements in Section 110.26.

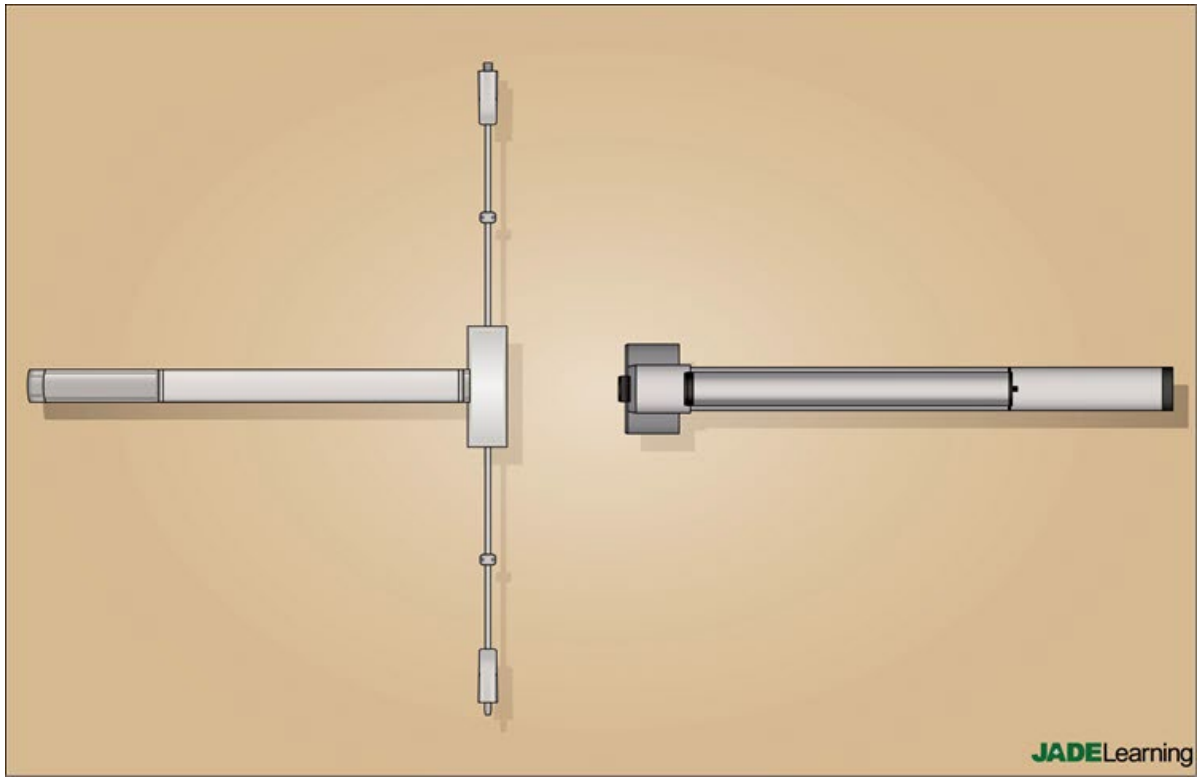
- Battery systems over 1000 volts must now follow the more stringent working space requirements in Section 110.34.



480.10(E) Storage Batteries. Battery Locations. Egress.

Section 410.10(E) now lists two types of hardware permitted to be installed on doors for storage battery rooms:

1. Listed panic hardware
2. Listed fire exit hardware (new in the 2020)



How to Seek State Building Code Interpretations

Interpretations of the Connecticut Building Code may be issued at the request of a local building official or by the public. The final interpretations are the opinion of the State Building Inspector.

- To request a formal interpretation, submit a written request the State Building Inspector.

- Upon receipt of the request, the State Building Inspector will research the applicable codes and send a written response back.

Mail written requests to:

Office of the State Building Inspector
Department of Administrative Services
450 Columbus Boulevard – Suite 1303
Hartford, CT 06103

How to Find 2020 NEC Tentative Interim Amendments

1. To locate Tentative Interim Amendments (TIAs), first navigate to the NFPA website via this link:
   https://www.nfpa.org/codes-and-standards/7/0/nfpa-70

2. There, you can scroll down to see a list of Proposed and Issued Amendments beneath the title **Tentative Interim Amendment** (TIA). The Proposed and Issued Amendments are listed separately by date – Closing Date for Proposed Amendments and Issued Date for Issued Amendments.

How to Find 2020 NEC Errata

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1. To locate the Errata, first navigate to the NFPA website via this link:
   https://www.nfpa.org/codes-and-standards/7/0/nfpa-70

2. Here, you can scroll down to see an index under the title **Errata**.
   The index is organized by **Document Title** and **Issued Date**.

3. If you click on the red **View** button next to each document, you can download a PDF of the details.

THANK YOU FOR ATTENDING!

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