



Board use only
Provider Number assigned: _____

State of New Hampshire
OFFICE OF PROFESSIONAL LICENSURE AND CERTIFICATION
DIVISION OF LICENSING AND BOARD ADMINISTRATION
7 Eagle Square, Concord, NH 03301-2412
Phone: 603-271-2152

REQUEST FOR 30- HOUR COURSE APPROVAL

Submitted By:	Date:
Location of Course:	
Course Title:	
Instructors Name(s):	
Contact Name:	Contact Phone:
Contact E-Mail:	
Education Hours Per Day:	Number of Days:
<u>Method of Presentation</u>	
Types of audio equipment utilized:	
Types of visual equipment utilized:	
<input type="checkbox"/> Virtual Classroom: Please Note Maximum Virtual class size is 25 students,* plus no more than 2 students attending to make up absences.	
<u>For all Submissions Please Include:</u>	
<input type="checkbox"/> The provider's resume(s). (This includes all providers' instructing the course). <input type="checkbox"/> A copy of the provider's electrician license(s). (This includes all providers' instructing the course). <input type="checkbox"/> If not licensed in NH, a certified letter from the licensing agency verifying that the provider has a valid license in good standing. <input type="checkbox"/> A course outline with the significant changes made in the instruction for the current code cycle. <input type="checkbox"/> A course curriculum, which shall include the name of the program or the course material utilized. A sample course certificate that includes the following: <ul style="list-style-type: none">➤ Provider's name, business address and telephone number;➤ Year of the code change;➤ Name and electrician number of the electrician completing the course;➤ Date of code completion;➤ Number of hours provided in course; and➤ Provider's signature.	
<input type="checkbox"/> I agree to cover the NH Laws, Rules, Common Deficiencies and an awareness of NFPA 70E as part of or in addition to the 15 hours required.	
<input type="checkbox"/> I grant the Board permission to visit the program site for the purpose of assessing compliance with the Board's requirements for approval of licensing courses.	
Signature:	

State of New Hampshire
OFFICE OF PROFESSIONAL LICENSURE AND CERTIFICATION
ENFORCEMENT DIVISION

7 Eagle Square
Concord, N.H. 03301-2412
Telephone 603-271-2152

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Electrical Licensing, Installation Concerns and National Electrical Code Amendments (NEC-NFPA 70, 2020 Edition)

The Electricians' Board (Board) in conjunction with the State Electrical Inspectors, municipal electrical and building inspectors and other representatives of the electrical industry in the State of New Hampshire, have assembled this bulletin to educate and assist the public. Included are issues encountered by the Office of Professional Licensure (OPLC), Enforcement Division office staff, relative to the state's electricians licensing law (RSA 319-C) and the Electricians Board's administrative rules (Elec. 100-400) along with current amendments to the 2020 National Electrical Code, NFPA-70. The Board welcomes any input from instructors, inspectors, licensees, and other concerned parties relative to this list or any other items of concern.

TO ALL LICENSEES: All licensees should have completed their 15 hours of continuing education on the 2020 NEC code changes by June 30, 2021. **All licensees are required to complete their 15 hours of code change continuing education on the 2023 NEC between January 1, 2023, and December 31, 2023, regardless of when they renew their license. All licensees who renew in 2023 will have the entire year to complete their 15-hour code update. Any licensee who does not complete the required 15-hour update with a NH approved provider by December 31, 2023, will have their license listed as invalid on January 1, 2024.**

The **2020 NEC was adopted on July 1, 2022**, as part of House Bill 1681 and the State Building Code (RSA 155-A), specifically RSA 155-A:1 IV.¹ There are (19) New Hampshire amendments to the NEC which were adopted along with the 2020 Code.

¹ [Current Legislation Search \(state.nh.us\)](https://www.state.nh.us/legislation/)

Although adopting electrical installation codes and standards is the responsibility of the NH Legislature, Journeyman and Master Electricians should be aware, that continuing education for license renewal is the responsibility of the Electricians' Board. No matter which edition of the NEC is adopted as the state's electrical installation code, the Electrician's Licensing Board will base the continuing education requirements for license renewal on the most current edition of the NEC as published by the National Fire Protection Association. Only Board approved continuing education courses based on the changes to the 2023 NEC will be accepted.

Items for Consideration:

1. Licensees and apprentices must notify the Board's office if you have a change of address **within 30 days**.
2. Apprentices should be aware that in order to perform electrical installations for heat, light and power purposes they must be employed (receive a W2 at the end of the year) by a master electrician or other employer who is not in the primary business of performing electrical installations, but also employs a NH master electrician from whom the apprentice electrician receives direct supervision. High school students between 16 and 18 years old can obtain an apprentice card by providing identification and proof of enrollment or home schooling. For more information see Elec 304.02, Apprentice Qualifications.² **Apprentices cannot perform installations on their own or as a subcontractor.**
3. Master and journeyman electricians should be aware of the following:
 - a. Master electricians **cannot obtain a permit** for a journeyman electrician to perform an electrical installation. Even if the journeyman is receiving direction and supervision from the master electrician, as defined in RSA 319-C:2 IV, a journeyman electrician must be employed by the master electrician (receive a W2 at the end of the year)³. The Board considers procuring a permit for a journeyman electrician who is not employed by the master electrician, as unprofessional conduct that affects the practice of the trade. As noted in RSA 319-C:12 II, misconduct sufficient to support disciplinary proceedings includes (c) any unprofessional conduct or dishonorable conduct unworthy of and affecting the practice of the trade⁴.
 - b. Journeyman licensees should be aware that in order to perform electrical installations for heat, light and power purposes, they must be employed by a master electrician. **Journeyman electricians cannot perform installations on their own or as a subcontractor.**

² http://www.gencourt.state.nh.us/rules/state_agencies/elec100-400.html

³ [Section 319-C:2 Definitions. \(state.nh.us\)](#)

⁴ [Section 319-C:12 Disciplinary Action. \(state.nh.us\)](#)

4. The master license who employs electricians/apprentices, or the master of record for a corporation should be aware they are responsible for:
 - a. Verifying those licensees in their employ have valid licenses and all apprentices have active apprentice ID cards. This includes verifying the license status of any temporary electrician or apprentice.
 - b. Verifying the ratios of licensees to apprentices performing electrical installations on the job site (including temporary help) comply with **RSA 319-C:2-a Supervision of Apprentice Electricians**.⁵
 - c. Periodically inspecting the work of the journeyman licensees in their employ and performing a final inspection of the journeyman's completed installation.
5. The New Hampshire Building Code Review Board (BCRB) provides beneficial information to all licensees including a list of the Codes and Standards that have been adopted as part of the State Building Code of RSA 155-A, as well as a list of municipalities that have locally adopted amendments.⁶
6. Frequently, there appears to be confusion regarding the applicability of permitting requirements from municipality to municipality. As such, the responsibility lies with the electrician to ascertain the local requirements and their applicability per RSA 155-A:4⁶ Failure to obtain proper permitting under this statute can result in disciplinary action from the Board per Elec. 405.01(a)(2)⁷.

⁵ [Section 319-C:2-a Supervision of Apprentice Electricians. \(state.nh.us\)](#)

⁶ [Chapter 155-A NEW HAMPSHIRE BUILDING CODE \(state.nh.us\)](#)

⁷ [Elec 100-400 \(state.nh.us\)](#)

State of New Hampshire Electrical Installation Concerns

(Updated June 2022)

1. Following the Manufacturer's Installation Instructions.

Section 110.3 (B) requires equipment that is listed, labeled, or both shall be installed and used in accordance with any instructions included in the listing or labeling. When specific installation requirements are provided by the manufacturer, they must be adhered to by the installer. All too often, the information provided on or with electrical equipment is disregarded by the installer. A common example found by inspectors is included below:

Installation and securing of expansion fittings in runs of Rigid Polyvinyl Chloride (PVC) Conduit. When expansion fittings are installed, they are frequently secured on the wrong end. The manufacturer's installation instructions require the expansion fitting to be secured on the "bell" (fixed) end. Care should be taken when mounting the fitting in a vertical position as the fitting must be installed with the "bell" end above the sliding or expanding end. An example of the installation instructions for one manufacturer's expansion fitting can be found here: [Expansion-Coupling-Usage-Guide.pdf \(cantexinc.com\)](https://www.cantexinc.com/Expansion-Coupling-Usage-Guide.pdf)

2. Proper Securing and Supporting of Raceways and Cables

Frequently, the securing and supporting of raceways and cables do not meet the requirements found in their respective (.30) code sections or applicable tables. A common example of this is the securing of different sizes of PVC conduit, found in Table 352.30. The maximum spacing between supports on ½" - 1" PVC conduit is (3) feet; the maximum spacing between supports on 1¼" - 2" PVC conduit is (5) feet; etc.

3. Clearances: Working Space, Clear Space, Headroom and Dedicated Equipment Space.

A number of the clearance requirements of 110.26 are often overlooked in the field. This section requires that access and working space be provided about electrical equipment to provide ready and safe operation and maintenance of the equipment.

The depth of working space described in 110.26(A)(1) is required about equipment operating at 1000 volts or less to ground that *may require examination, adjustment, servicing, or maintenance while energized*. The depth of the space must be determined in accordance with Table 110.26(A)(1) which is based on the conditions described in the table notes.

Section 110.26(A)(2) Width of Working Space requires the working space to be at least 30 inches in width or the width of the equipment whichever is greater. This section further requires that in all cases, the door or hinged panel of the equipment must open at least 90 degrees.

Section 110.26(A)(3) Height of Working Space requires the height of the working space to be at least 6 feet 6 inches, measured from the floor, grade, or platform, or the actual height of the equipment itself whichever is greater. Other equipment or support structures, such as concrete pads, associated with the electrical installation and located above or below the electrical equipment shall be permitted to extend not more than 6 inches beyond the front of the electrical equipment.

Section 110.26(B) Clear Spaces requires the working space to be kept clear by not allowing it to be used for storage.

Section 110.26(E) Dedicated Equipment Space requires that switchboards, switchgear, panelboards, and motor control centers are located in dedicated spaces and be protected from damage.

Section 110.26(E)(1)(a) Indoor installations require a clear space, only for equipment listed in 110.26(E), that is the depth and width of the equipment that extends to a height of 6 feet above the equipment or the structural ceiling, whichever is lower, for equipment installed in indoor locations. Only equipment associated with the electrical installation is permitted in this space.

The area above the dedicated space required by 110.26(E)(1)(a) shall be permitted to contain foreign systems, provided protection is installed to avoid damage to the electrical equipment from condensation, leaks, or breaks in such foreign systems.

Section 110.26(E)(2) provides guidance on outdoor installations. A new exception in the 2020 NEC states that structural overhangs or roof extensions shall be permitted in this zone.

4. The Sealing of Raceways.

Although often overlooked, there are several sections of the *Code* that list the requirements for the sealing of raceways to prevent water – usually in the form of condensation due to temperature differences – from entering the equipment via the raceway system. The sealant used shall be identified for use with the cable insulation, conductor insulation, a bare conductor, a shield, or other components. An explosion proof seal shall not be required for this purpose.

See 230.8; 300.5(G); 300.7(A)

5. PVC Installations Subjected to Physical Damage.

Unfortunately, the *Code* does not define the terms, “Subject to Physical Damage.” As such there are constant interpretive variations from municipality to municipality. Schedule 80 conduit is to be used whenever the installer assumes the location could possibly be subjected to physical damage. Examples of these locations are to include grassy areas which may be subjected to lawn mowing and weed whacking, areas in which snow removal is common, and areas of high foot traffic. Installers are encouraged to err on the side of caution and install Schedule 80 conduit in an area that may be subject to physical damage, especially when emerging from grade. In some cases, other means of protection, such as metal or stone barriers, may be used in lieu of Schedule 80 conduit.

See 352.10(F); 300.5(D)(4)

6. The Use of Flexible Cords and Flexible Cables.

Flexible cords and flexible cables, located in Chapter 4 of the *Code*, are not a Chapter 3 General Wiring Method. Unless specifically allowed elsewhere in the *Code*, the usage of flexible cords, flexible cables and power supply cords must adhere to the requirements in the “Uses Permitted” and “Uses Not Permitted” sections. The three most common violations are:

- Flexible cords, cables, cord sets and power supply cords run through holes in walls, structural ceilings, suspended ceilings, dropped ceilings, or floors
- Flexible cords, cables, cord sets and power supply cords concealed by walls, floors, or ceilings or located above suspended or dropped ceilings (a new exception to this has been added to the 2020 *Code*)
- The installation of Electric Discharge and LED luminaires are permitted to be cord and plug connected but the installation must comply with the requirements in 410.62 as applicable.

See 400.10(A)(1)-400.10(A)(11); 400.12(1)-400.12(7); 410.62(A)-410.62(C)

7. Ductless Mini-Split Wiring

With the advancements in heat pump technology, the installation of mini-split cooling and heating systems has increased exponentially. Consequently, there has been an increase in licensing and installation concerns.

- There seems to be confusion among the electrical and HVAC installers regarding who is responsible for the installation of the interconnecting wiring from the indoor unit(s) to the outdoor unit(s). According to the definition of an electrical installation

found in RSA 319-C:2 III⁸, **all of the wiring** (with the exception of low-voltage thermostatic controls) associated with this system is to be installed by licensed electricians.

- Tray Cable (TC) is commonly employed as the wiring method between the indoor and outdoor units. Installers must be aware that type TC cable has very limited usage outside of a raceway or cable tray system per section 336.12(2). In fact, there are only (4) conditions where type TC cable is permitted to be used in this fashion:
 - **336.10(4)** – In outdoor locations supported by a messenger wire
 - **336.10(7)** – Between a cable tray and the utilization equipment or device(s), provided items (a) through (f) are met.
 - **336.10(9)** – In one- and two-family dwelling units, Type TC-ER-JP cable containing both power and control conductors shall be permitted for branch circuits and feeders.
 - **336.10(10)** – Direct buried, where identified for such use.
- When using type TC cable in a one- and two-family dwelling, installers must be aware that the interior wiring must comply with Part II or Article 334 and the exterior wiring must comply with Part II of Article 340.

See 336.10(1)-336.10(11); 336.12(1)-336.12(3); 334 Part II; 340 Part II

The requirement for a service switch to open all ungrounded conductors at the indoor unit has been deleted per NH amendment #EL-20-17-21⁹.

8. Septic Pumps.

There are several different compliance issues surrounding septic pump installations:

- First, 430.102(A) requires the installation of a disconnecting means in sight from a motor controller location that disconnects the controller. In the case of the typical residential septic pump installation, the controller would be the float switch in the pump tank.
- Second, section 430.102(B) requires a disconnecting means in sight from a motor location to disconnect the motor.
- Article 100 defines "in sight from" to be visible and within 50'. Therefore, there must be a disconnecting means that is visible and located no more than 50' from the pump motor and motor controller. In most residential cases, the cords for the pump

⁸ [Section 319-C:2 Definitions. \(state.nh.us\)](https://www.state.nh.us/rsa/319-C/2/Definitions.htm)

⁹ [EL-20-17-21.pdf \(nh.gov\)](https://www.nh.gov/EL-20-17-21.pdf)

and controller are supplied by a receptacle located near the tank, permitting the attachment plugs for the controller and pump to serve as the disconnecting means.

Frequently and for different reasons, the attachment plugs are cut off of the pump motor and the motor controller and hard-wired into a junction box located inside the tank. In most cases, this method is not permissible by the manufacturer's installation instructions and would be a violation of section 110.3(B).

Before making this kind of installation, consideration should be given to the issues of accessibility and corrosion. Also, depending on the size and type of the system, there may be sufficient hazardous vapor in the pump chamber to consider classification of the location. Classified locations are more common in commercial and industrial applications.

See 430.102(A); 430.102(B); Article 100; 110.3(B)

9. Signs or Marking of Equipment.

Due to the dangers inherent to electrical installations, the *Code* requires signage and labeling to warn of potential hazards and provide important information to individuals that may come into contact with the electrical equipment. It is common knowledge that the "purpose of the *Code* is the practical safeguarding of persons and property from hazards arising from the use of electricity¹⁰." Perhaps less well known is "this Code contains provisions that are considered necessary for safety. Compliance therewith and proper maintenance result in an installation that is essentially free from hazard..."¹¹ It is essential to understand that an installation is not fully compliant with the *Code* until the proper signage and labeling are posted in their appropriate locations. The following signage and labeling requirements are frequently overlooked by installers in the field:

- **110.16 Arc-Flash Hazard Warning.** Labeling is required on equipment that may require servicing while energized and on service equipment in other than dwelling units.
- **110.24 (A) and (B) Available Fault Currents.** Service equipment in other than dwelling units shall be labeled with the available fault current and the date when fault current calculation was performed.
- **700.7(A); 701.7(A); 702.7(A).** The *Code* requires that signage shall be placed at the service-entrance equipment that indicates the type and location of additional on-site power sources.
- **700.7(B); 701.7(B); 702.7(B).** A warning sign is required to identify the shock hazard if the bonding jumper or grounding electrode conductor is removed while the source is energized.

¹⁰ NFPA-70, The National Electrical Code, 2020 Edition, Section 90.1(A)

¹¹ NFPA-70, The National Electrical Code, 2020 Edition, Section 90.1(B)

- **Photovoltaic Systems.** The signage requirements for these systems is extensive and found in multiple sections of the *Code* including, but not limited to the following:
 - **690.13(B).** Marking the PV system disconnect.
 - **690.31(D)(2).** Marking PV system DC circuits on or in a building.
 - **690.56(A)(B) & (C)(1) – (2).** Labeling the rapid shutdown.
 - **705.10; 712.10.** Marking or directories of multiple power sources.
 - **705.12(B)(3)(2) & (3).** Load side source connection labels.
- **New labeling requirements for emergency disconnects on one- and two-family dwelling units.** Depending on which method for disconnecting the ungrounded conductors is chosen, the appropriate signage is required.

See 110.16; 10.24(A); 110.24(B); 700.7(A) & (B); 701.7(A) & (B); 702.7(A) & (B); 690.13(B); 690.31(D)(2); 690.56(A), (B), & (C)(1) -(C)(2); 705.10; 712.10; 705.12(B)(3)(2) & (3); 230.85(1)-(3).

10. Branch Circuits Supplying Emergency Lighting.

In general, the misunderstandings surrounding the requirements for the installation of branch circuits supplying emergency lighting occur in stairwells. This section explains how emergency lighting branch circuits are to be installed and to clearly identify the sections that apply to branch circuits. *What* is required for emergency lighting is specified in 700.16, and *how* it is to be provided is specified in 700.17. Part B of 700.16 is really the crux of the situation, and the impetus behind everything that follows in the remainder of the section.

- **700.16 Emergency Illumination.**
 - **(A) General.** Emergency illumination shall include means of egress lighting, illuminated exit signs, and all other luminaires specified as necessary to provide required illumination.
 - **(B) System Reliability.** Emergency lighting systems shall be designed and installed so that the failure of any illumination source cannot leave in total darkness any space that requires emergency illumination.

- **700.17 Branch Circuits for Emergency Lighting.** Branch circuits that supply emergency lighting shall be installed to provide service from a source complying with 700.12 when the normal supply for lighting is interrupted. Such installations shall provide either of the following.
 - (1) An emergency lighting supply, independent of the normal lighting supply, with provisions for automatically transferring the emergency lights upon the event of failure of the normal lighting branch circuit.
 - (2) Two or more branch circuits supplied from *separate and complete systems with independent power sources*. One of the two power sources and systems shall be part of the emergency system, and the other shall be permitted to be part of the normal power source and system. Each system shall provide sufficient power for emergency lighting purposes. Unless both systems are used for regular lighting purposes and are both kept lighted, means shall be provided for automatically energizing either system upon failure of the other.

The most common application of 700.17(1) is where a single branch circuit has been used to supply the normal lighting in a stairwell and unit equipment or luminaires with self-contained ballasts have been installed to provide the emergency lighting. In this case, there are provisions for automatically transferring to the emergency lighting upon failure of the normal lighting branch circuit.

The most common compliant application of 700.17(2) is where two branch circuits have been installed to supply the lighting in a stairwell. One branch circuit is supplied from the normal lighting panelboard and the other is supplied from the emergency lighting panelboard. Each of the circuits individually must supply a sufficient number of luminaires to provide the minimum required emergency egress lighting.

See 700.16(A) through (D); 700.12; 700.17(1) through (2).

11. Prime Mover Shutdown for Permanently Installed Generators.

Generators with greater than 15 kW rating shall be provided with a remote emergency stop switch to shut down the prime mover. *The remote emergency stop switch shall be located outside the equipment room or generator enclosure* and shall also meet the requirements of 445.18(B)(1) and (B)(2).

A new requirement in the 2020 *Code* requires an emergency shutdown outside for a generator installed at a one- or two-family dwelling unit.

See 445.18(A) through (D).

12. Flush-Mounted Box Installations.

314.20 Flush-Mounted Installations. Installations within or behind a surface of concrete, tile, gypsum, plaster, or other noncombustible material, including boxes employing a flush-type cover or faceplate, shall be made so that the front edge of the box, plaster ring, extension ring, or listed extender will not be set back of the finished surface more than 6 mm (1/4 in.).

Installations within a surface of wood or other combustible surface material, boxes, plaster rings, extension rings, or listed extenders shall extend to the finished surface or project therefrom.

The installation of common non-metallic 4" round ceiling boxes with the mounting nails on the side must meet the 1/4" maximum setback and be properly secured to the framing member. Nailing boxes on the very edge of the framing member may not meet the minimum setback and could result in the splitting of the lumber, compromising the attachment of the box to the joist.

See 314.20.