The Connecticut General Statues and Regulations and 2017 NEC Changes Limited Licensees

Instructor Introduction

Afternoon Class Schedule: 4 hours

- General Statues and Regulations, Ratio of Apprentices
- Connecticut State Building Code
- Safety
- 2017 NEC Changes
- Final Q&A

1

- This course is worth 4 hours of continuing education for Limited Licensees. (**C5, C6, L5, L6**)
- You will be emailed a copy of your certificate within 2 business days.

Questions? Concerns?
Call the office at 1-800-443-5233

2

Section 332b - Hiring ratios for apprentices, journeymen and contractors

Lower ratios of licensees to apprentices compared to previous law

Apprentices	Licensees (now)
3	3
4	6
6	12
8	18
10	24

(Ratio continues at 3 licensees to 1 apprentice)

3

Section 30-332-15a - Employment of Apprentices

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 by contractor who obtains the permit for the work

4

Section 332-15a (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 8000 total hours of training in multiple types of electrical work. Four years (minimum) of on-the-Job training is required.

5

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 his license without first informing the licensure board.

Records:
Licensed contractors must keep records of all employees, to be shown to the Commissioner (or his/her agent) upon request.

Lettering:
State license numbers must be displayed on all commercial vehicles in letters at least one inch high and legible.

6

Section 20-335 - License Fee, Continuing Ed. Requirements, Expiration & Renewal

Initial License Application Fee: Journeyman $90.00, Contractor $150.00

Annual License Renewal Fee: Journeyman $120.00, Contractor $150.00

Continuing Education Requirements:

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

Expired licenses:

Licenses can be renewed up to one month after date of expiration with no penalty. Failure to renew license within two years after expiration requires re-application and payment of associated fees.

7

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 a properly supervised and trained apprentice)

8

Section 20-338b - Building permit applications; Who may sign

- The contractor may sign the permit application personally.
- He or she may delegate this to an employee, subcontractor or other agent provided.
- A *dated* letter on *the contractor's letterhead* must be provided to the building official authorizing the agent to sign the permit application. The letter must include:
  - Name of municipality where work is to be performed
  - Job name or description
  - Starting date for the job
  - Name of both the contractor and the agent
  - The license numbers of all involved

9

Section 20-338c - Work not to commence until permit is obtained

No licensed contractor may begin work for which a license is required, prior to 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

10

Section 20-340 - Exemptions 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
- Stage and theatrical companies, carnivals, circuses, etc.

11

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 $3000.00 per violation.

12

Public Act No. 17-76 & Ratio Relief Form

Public Act No. 17-76 – repeals and replaces Sec 20-332b

Two important changes to laws:

- Apprenticeship ratio relief form
- Lower ratios of licensees to apprentices compared to previous law – *examples below*

Apprentices	Licensees (before)	Licensees (now)
3	5	3
4	8	6
6	14	12
8	20	18
10	26	24

(Ratio continues at 3 licensees to 1 apprentice)

13

Connecticut State Building Codes

The 2018 Connecticut State Building Code is based on the following model codes:

- The 2015 ICC codes and references:
- The ICC A117.1-2009 (accessibility) standard
- National Electrical Code (2017 NFPA 70)
- The 2018 State codes applies to projects with permit applications
- Amendments to the model codes can be found from this link: https://portal.ct.gov/-/media/DAS/Office-of-State-Building-Inspector/2018-CT-State-Building-Code---Effective-10-01-18.pdf?la=en

14

Safe Operating Rules and Procedures

Wear Personal Protective Equipment as needed for hazards identified.

Lift correctly. Lift with your legs not your back. Lift only objects that can be done safely.

Smoke in only designated areas.

Report all injuries. This is important, because the injury might prove to be serious later!

Inspect all ladders and scaffolding before use.

Always follow your companies LOTO program.

Correct and report all unsafe conditions.

Identify all hazards and mitigate as necessary.

15

Electrical

All electrical work shall comply with the current National Electrical Code adopted at the time of installation.

Job sites shall be provided with GFCI protection for personnel. This protection shall comply with OSHA, NEC and NFPA 70E current standards. In lieu, of GFCI protection an assured equipment grounding conductor program is permissible.

It is the responsibility of the company owner to guarantee no contact with energized conductors or parts. All employees will be notified where energized parts are located. Barriers shall be provided to notify personnel of the minimum approach distance as specified by OSHA, the NEC and NFPA 70E.

The tags for LOTO shall be visible and legible.

16

Lockout/Tagout Procedures

Before any maintenance, construction, demolition, tie-in, inspection or servicing of equipment (electrical, mechanical steam or other) that requires entrance into or close contact with machinery, equipment, power sources or line breaking, the power shall be disconnected and locked out.

Lock out at the source, not control devices.

All energy sources shall be rendered inoperative, pneumatics, hydraulics, moving equipment, etc.

Locks and Tags will be removed only by the person directly responsible for the safe operation of the equipment.

17

Aerial Lifts

Aerial lifts include the following: Extensible and articulating boom platforms, vertical towers, aerial ladders, or any combination thereof!

Lift controls shall be tested everyday prior to use.

You must be authorized to operate an aerial lift.

Do not attach your fall protection to adjacent structures. A body belt must be worn and the lanyard attached to the lift.

Brakes shall be locked when outriggers are used on a solid flat surface, wheel chocks, shall be in place

Do not move the truck when the boom is extended. Controls for the boom shall be both upper and lower.

The insulation value of the bucket shall have integrity.

18

2017 NEC Changes Chapter 7

19

Article 725 Scope

Article 725 covers remote-control, signaling, and power-limited circuits that are installed in or on buildings or structures.

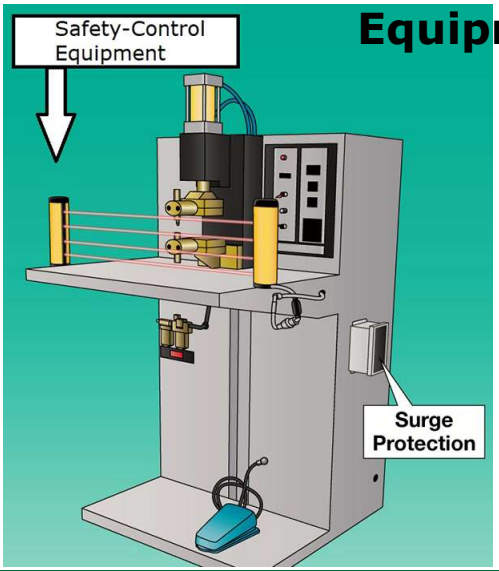
20

Article 725 – Systems and Applications.

Systems covered by Article 725 include security and burglar alarm systems, nurse call systems, intercom circuits, and audio sound systems.

21

Article 725 Section 725.31 Safety Control Equipment.



Section 725.31 requires remote-control circuits for safety control to be considered Class 1 circuits where the failure of the equipment to operate introduces a direct fire or life hazard.

22

725 Part IV. Listing requirements for Class 2, Class 3, and PLTC Cables.

All Class 2, Class 3, and PLTC cables installed within a building or structure must be listed and labeled.

23

725.21 Access Panels

Access to electrical equipment above a suspended ceiling must not be blocked by an accumulation of low-voltage cables.

24

725.24 Mechanical Execution of Work.

Cables installed parallel to wood framing must be installed at least 1.25 inches from the nearest edge of the framing member in accordance with 300.4(D).

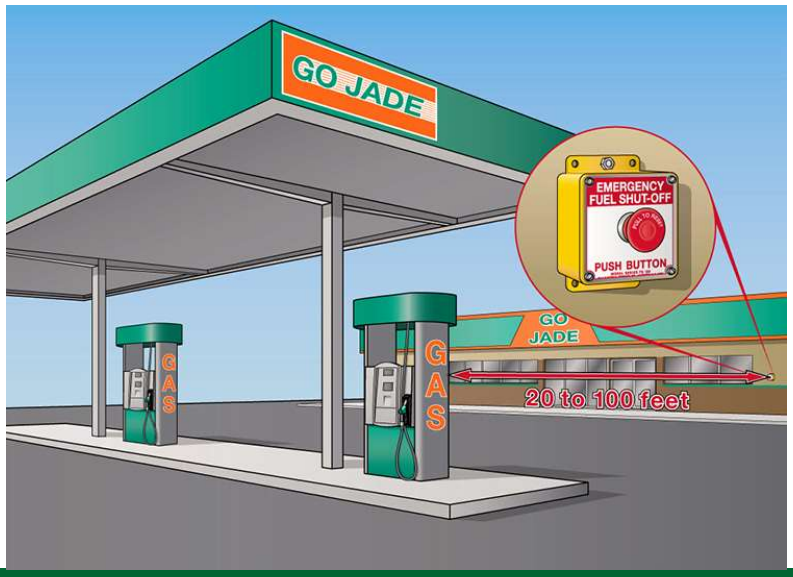
25

725.2 and 725.25 Abandoned Cables.

The accessible portion of abandoned cables must be removed if not identified for future use by a tag.

26

725.3 Other Code Articles



Class 2 and Class 3 circuits installed in a hazardous (classified) location must comply with the applicable requirements in Articles 500 through 516 and Part IV of Article 517.

27

725.3(A) Conductors in Raceways.

TABLE 1 PERCENT OF CROSS SECTION OF CONDUIT AND TUBING FOR CONDUCTORS AND CABLES

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

Limiting the number of cables in a raceway will provide for the ready installation or withdrawal of the conductors.

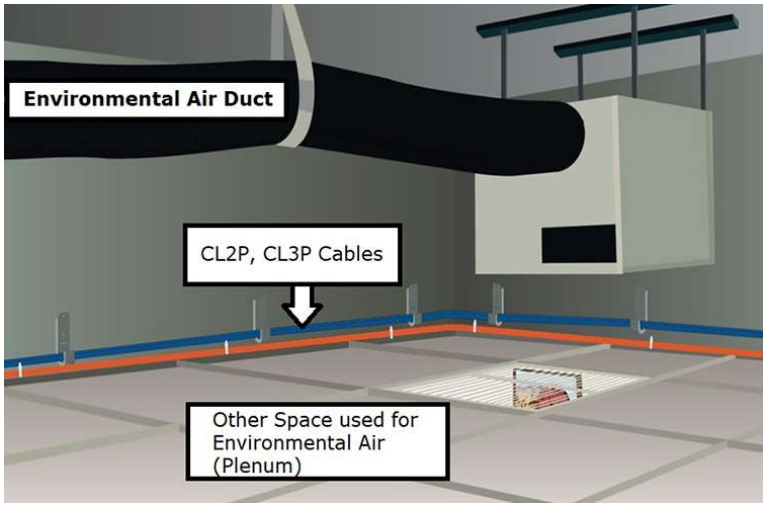
28

725.3(B) Spread of Fire and Products of Combustion.

Openings where cables or boxes penetrate a fire-rated floor, wall, or ceiling must be fire-stopped to maintain the fire resistance rating of the assembly.

29

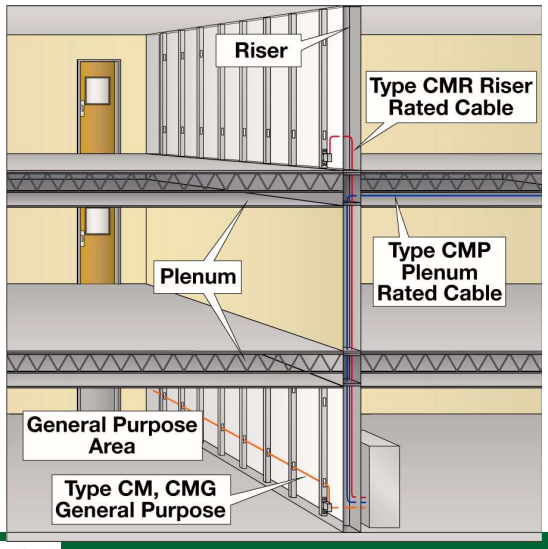
725.3(C) Ducts, Plenums, and Other Air Handling Spaces.



Only CL2P, CL3P or other plenum-rated cables can be installed outside of a raceway in an above ceiling air-handling space.

30

725.3(M)(N) Cable Routing Assemblies, Communications Raceways.

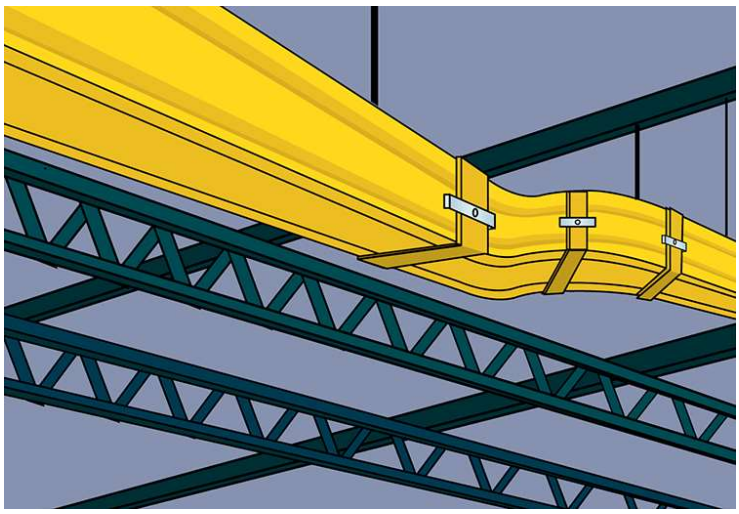


Cable routing assemblies for Class 2, Class 3, and PLTC cables are covered by Table 800.154 (c).

Communication raceways are covered by Table 800.154 (b).

31

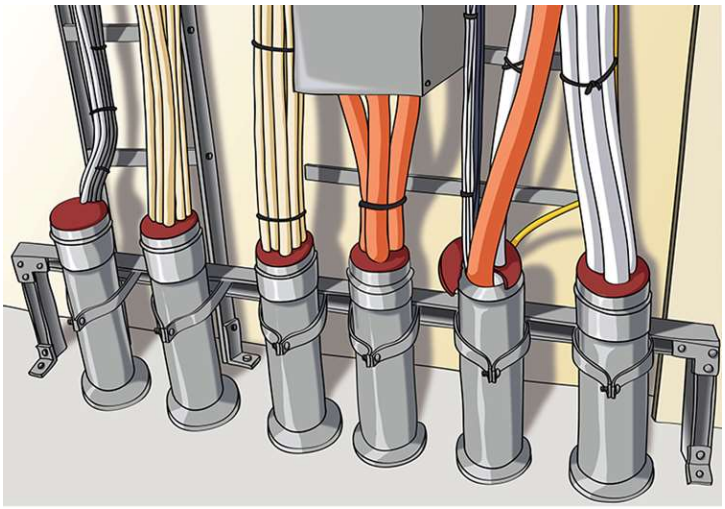
725.135 Installation.



Section 725.135 includes the general requirement that all Class 2, Class 3, and Type PLTC cables used within buildings be listed, but also provides a number of cable type options for specific applications.

32

725.135(D) and 725.135(E) Risers.

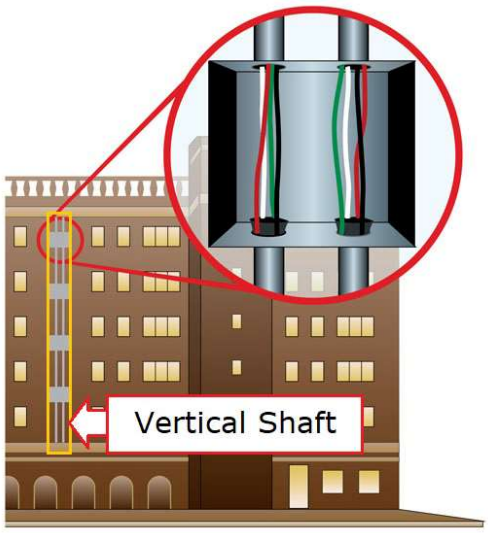


Riser cables penetrating one or more floors must be fire-stopped at each floor penetration.

Section 725.135(E) also permits communications raceways to be installed inside of the metal raceways.

33

725.135(F) Risers in Fireproof Shafts.



The IBC requires vertical shafts connecting 4 stories or more to have 2-hour fire resistance rating.

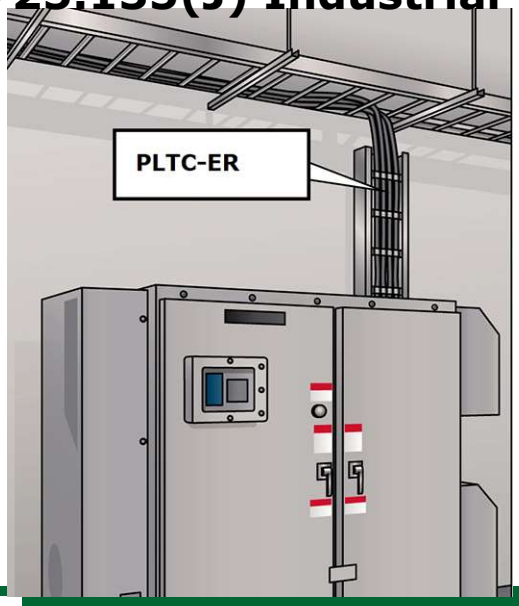
34

725.135(G) and 725.125(M) One- and Two-Family Dwellings.

Class 2 and Class 3 circuits installed in one- and two-family dwelling are not required to have the same resistance to fire spread as Class 2 or Class 3 cables installed in other locations.

35

725.135(J) Industrial Establishments.



In industrial locations unsupported lengths of Type PLTC-ER cable not exceeding 6 ft. are permitted between cable tray and equipment.

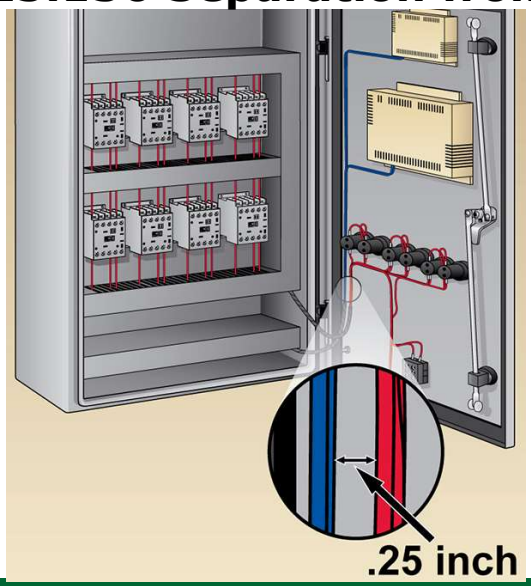
36

725.135(L) Multi-Family Dwellings.

The limitations on the type of cable used in multifamily dwellings are stricter than for one- and two-family dwellings

37

725.136 Separation from Other Systems

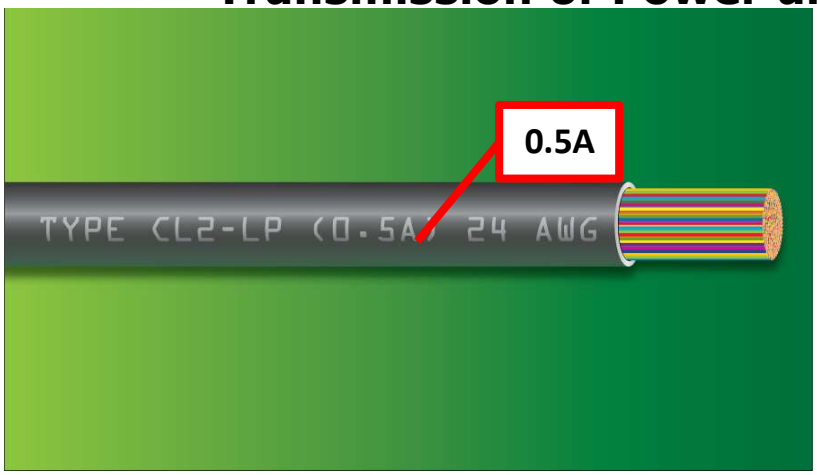


Inside an industrial control panel, one option is to route Class 2 and Class 3 cables so that a 0.25 in. separation is maintained from conductors of other systems.

38

Connecticut 2017 NEC Changes for Limited Licensees

725.144 Class 1, Class 2, and Class 3 Remote-Control, Signaling, & Power-Limited Circuits. Transmission of Power and Data.



Cables with the suffix LP are marked with an ampere limit. Use Table 725.144 for cables without an LP suffix.

39

Connecticut 2017 NEC Changes for Limited Licensees

725.154 Cable Applications.

Information extracted from Table 725.154		CABLE TYPE					
Applications		CL2P & CL3P	CL2R & CL3R	CL2 & CL3	CL2X & CL3X	CMUC	PLTC
In fabricated ducts per 300.22(B)	In fabricated ducts	Y*	N	N	N	N	N
	In metal raceways-300.22(B)	Y*	Y*	Y*	Y*	N	Y*
In other spaces used for environmental air as described in 300.22(C)	In other spaces used for environmental air	Y*	N	N	N	N	N
	In metal raceways-300.22(C)	Y*	Y*	Y*	Y*	N	Y*
	See NEC TABLE 725.154 for more.....						
	Supported by open metal cable trays	Y*	N	N	N	N	N
	Supported by solid bottom metal cable trays with solid metal covers	Y*	Y*	Y*	Y*	N	N
In risers	In vertical runs	Y*	Y*	N	N	N	N
	See NEC TABLE 725.154 for more.....						
	In one and two-family dwelling	Y*	Y*	Y*	Y*	N	Y*
Within buildings in other than air-handling spaces and risers	General	Y*	Y*	Y*	Y*	N	Y*
	In one and two-family dwelling	Y*	Y*	Y*	Y*	Y*	Y*
	In multifamily dwellings	Y*	Y*	Y*	Y*	Y*	Y*
	In nonconcealed spaces	Y*	Y*	Y*	Y*	Y*	Y*
	Under carpet	N	N	N	N	Y*	N
	In any raceway per Chapter 3	Y*	Y*	Y*	Y*	N	Y*
	See NEC TABLE 725.154 for more.....						

Cables types with higher fire resistance are permitted to be used in place of cables with a lower fire resistance, but some locations require specific specialized cables for the application

40

Article 760

Article 760 of the NEC covers Fire Alarm Systems.

Fire alarm systems include fire detection and alarm notification, guard's tour, sprinkler waterflow, and sprinkler supervisory systems. Circuits controlled and powered by the fire alarm system include circuits for the control of building systems safety functions, elevator capture, elevator shutdown, door release, smoke doors and damper control, fire doors and damper control and fan shutdown, but only where these circuits are powered by and controlled by the fire alarm system.

Two key definitions to understand and differentiate are those of "power-limited fire alarm circuits" (PLFA) and "non-power-limited fire alarm circuits (NPLFA). The requirements are similar in many respects but very different in other respects

41

Article 760

A PLFA is one that's powered by a source which complies with 760.121 [760.2]. You can boil it down to the fact that the power supply is a Class 3 transformer or Class 3 power supply. If listed equipment is marked to identify an integral power source as PLFA, that also means you have a PLFA circuit.

You might think a non-PLFA means "everything else. A non-PLFA source must meet the requirements of 760.41 and 760.43. Again, we must ask, "What does that mean?" Basically, the power supply must comply with the requirements of Chapters 1 through 4. It's not that you have to go through those line by line looking for specifics, but that your installation is expected to meet Code. So if it's not a Class 3 power supply but otherwise does meet Code, you can use it to power your fire alarm circuit. That usage will, however, bring about additional requirements in Article 760.

42

NFPA 72 – Placement of Detection Equipment

- Install smoke alarms inside each bedroom, outside each sleeping area and on every level of the home, including the basement.
- On levels without bedrooms, install alarms in the living room (or den or family room) or near the stairway to the upper level, or in both locations.
- Smoke alarms installed in the basement should be installed on the ceiling at the bottom of the stairs leading to the next level.
- Smoke alarms should be installed at least 10 feet (3 meters) from a cooking appliance to minimize false alarms when cooking.
- Mount smoke alarms high on walls or ceilings (remember, smoke rises). Wall-mounted alarms should be installed not more than 12 inches away from the ceiling (to the top of the alarm).
- If you have ceilings that are pitched, install the alarm within 3 feet of the peak but not within the apex of the peak (four inches down from the peak).

43

Article 800

The telephone company provides the cable to a terminal box at the building and installs a ground wire to the grounding electrode system [90.2(B)(4) and 800.40]. The dividing line between the telephone company and premise phone wiring is the primary protector unit. Wiring from that point into the premises for the telephones is where Article 800 applies. It also applies to wiring for other communications purposes, such as local area networks (LANs) and alarm systems connected to central stations.

Don't attach incoming communications cables to the service-entrance power mast. It's critical to determine the "point of entrance" for these circuits. Ground the primary protector as close as practicable to the point of entrance. Keep the grounding electrode conductor for the primary protector as straight and as short as possible. If you locate communications cables above a suspended ceiling, route and support them to allow access via ceiling panel removal.

44

New Product Development

NEW! Enhancements have recently been made to the Single Gang Low Voltage Bracket - SC100A. These changes were made to enhance the Structured Cable Management System product line and provide our customers with a more versatile/application-friendly product.

Easily mounted to wall or ceiling surface
High impact anti-static ABS
Omni-directional, within 30' diameter circle
May be located up to 1000' from the Lourie base station
Sensitivity switch: normal/low

45

Questions?

For additional instructor support, please contact instructor@jadelearning.com
For questions about your continuing education, please contact registrar@jadelearning.com

46