



## IN THIS ISSUE

- 1 PRESIDENT'S MESSAGE**
- 2 FIRE ALARM SYSTEM WIRING**
- 3 EMPLOYEE SPOTLIGHT**
- 4 SEMINAR INFORMATION**
- 5 LITTLE KNOWN FACTS**

**OUR GOAL IS TO COMPLETE ALL PLAN REVIEWS WITHIN 10 BUSINESS DAYS**

# SUMMER 2018 QUARTERLY REVIEW

 BUILDING PLAN REVIEW

 FIRE SAFETY PLAN REVIEW

 CONSULTING SERVICES

## PRESIDENT'S MESSAGE

*An FSCI update from Keith Frangiamore, FSCI President*

### Communication, Improvements and Involvement!

#### Communication

As a division of PSI, the FSCI management team joined PSI for their annual "Coordinators' Meeting" in Elk Grove Village, IL. Larry Robbins, vice president of PSI, led the all-day meeting which included employee awards, training from both PSI staff members and outside presenters, as well as various management related discussions. We delivered a half-hour presentation introducing our team and services.

#### Improvements

This Spring and Summer, FSCI embarked on two major customer service improvements included within the FSCI website. First, the Online Fee Schedule will enable contractors to estimate FSCI fees for various projects. Second, the Pay Now, powered by PayPal, feature allows clients and customers to pay using credit cards. Look for these new features coming soon.

#### Involvement

In follow-up to the tragic events at the Parkland, Florida school shooting. Sadly, the shooter manually activated the fire alarm to draw students from the classrooms into the hallways.

As a result of this event, school and fire officials met to find solutions and alternatives, such as delaying the fire alarm signal. V.P. Warren Olsen was invited to speak to school and fire officials. He educated the leaders on the fire code and shared potential alternatives to manual fire alarms.

As a member of the Education and Day-Care chapters of the Life Safety Code this issue is of great interest. Our NFPA Committee is working to include new code changes for the 2021 edition in August. This issue will now be specifically addressed by a separate, new standard, NFPA 3000 Standard for an Active Shooter/Hostile Event Response Program (ASHER). NFPA 3000 just recently became available from NFPA (May, 2018).

In May, I also participated in the NFPA 1201 Standard for Providing Fire and Emergency Services to the Public and NFPA 1250 Recommended Practice in Fire and Emergency Service Organization Risk Management first draft meetings for the upcoming 2020 editions in Denver, CO. In June, Warren Olsen presented a seminar at and participated in the NFPA annual conference in Las Vegas, NV.



# FIRE ALARM SYSTEM WIRING

*Warren E. Olsen, CFPS CBO, Vice President Building and Life Safety, Chairperson NFPA 72, Chapter 26 Supervising Station Alarm Systems*

Final inspections of fire alarm systems often are centered on the required inspection and testing of 100 percent of all installed equipment as this is a requirement of Chapter 14 of NFPA 72, National Fire Alarm and Signaling Code. While getting this completed is a noble accomplishment for often short-handed authorities having jurisdiction (AHJ), very often the final inspection does not include a critical look at the wiring which connects the fire alarm control unit (FACU) with the devices, appliances and control equipment. The following looks at the some of the key circuit and pathway requirements for fire alarm systems.

NFPA 72, Chapter 12 (Circuits and Pathways), provides the performance requirements, including survivability, for all fire alarm circuit classes (A, B, C, D, E, N and X). For the installation of the circuits NFPA 72 references NFPA 70, National Electrical Code (NEC). The exact referenced edition of the NEC is dependent on the edition of NFPA 72 being enforced within a jurisdiction. We will look at the requirements from the 2017 edition of the NEC which will be referenced in the 2019 edition of NFPA 72 which will be published in September of 2018.

NEC, Article 760, provides the requirements for the installation of fire alarm system wiring and equipment including all circuits controlled by the fire alarm system (760.1). Within this article are references to other articles and section within the NEC. Since most fire alarm circuits are currently metallic conductors, this article will concentrate on the requirements for these types of circuits. However, some of the requirements mentioned might also apply to non-metallic conductors.

Article 760 is divided into four sections:

- Part I – General
- Part II – Non-Power Limited Fire Alarm (NPLFA) Circuits
- Part III- Power-Limited Fire Alarm (PLFA) Circuits
- Part IV – Listing Requirements

Part I includes requirements from other articles within the NEC which also apply to fire alarm system circuits. For instance, Article 300.4(E) states that cables, raceways and boxes installed concealed or exposed under metal corrugated sheet roof decking shall be supported with not less than 1.5 inches separating the lowest part of the roof surface and the top of the conduit, raceway or conduit. This is to prevent roofing nails from piercing the roof deck and penetrating wiring and boxes. Typically, this is relatively easy to observe from the floor or

by lifting ceiling tiles, but not always.

Article 300.22 requires that wiring used in ducts, plenums, and other spaces used for environmental air (un-ducted plenums) must be appropriately listed for use in these areas. Normally, FPLP cable is used for these installations, but the inspector must first understand if the space being inspected requires plenum cables in the first place. To do this, a review of the approved plans should provide assistance with determining the need for plenum cable assuming that the mechanical system was installed as originally shown during the plan review process.

Other sections which might affect the fire alarm system identified in Article 760, Part I, include those covering Articles 500 through 516 and part of Article 517 covering hazardous (classified) locations. Additionally, Sections 110.11, 300.5(B), 300.9, 310.10(G) would cover applications where fire alarm circuits or pathways may be exposed to wet, damp or corrosive situations or locations. An example of this, would be where fire alarm circuits extend beyond a building to an outside post indicating valve. FPL cable (the commonly used “red fire wire”) is not approved for direct burial applications or outside even when installed in conduit or a liquid-tight raceway unless specifically listed for this application.

Circuits associated with emergency control interfaced systems (Phase I elevator call, fan shutdown, etc.) are often regulated by Article 725. Where circuits are exposed to differing temperatures such as pathways entering large refrigerated or freezer enclosures, Section 300.7(A) requires that raceways and sleeves shall be filled with an approved material to prevent warm air from mixing with cold air and producing condensation on the wiring.

Section 300.19 requires vertical support of conductors and fire rated cables. The NEC provides Table 300.19(A) for guidance on when support is required. For cooper fire alarm conductors up to 18 AWG, support bushings or cleats must be provided for vertical support every 100 feet.

While often not a problem for most fire alarm circuits, there are fill rules which must be adhered to when conduit, or other raceways, are used to enclose fire alarm conductors. The NEC limits the number of conductors which may be pulled through a certain sized conduit or raceway based on the conductor type. Fire alarm de-

[Click here to continue reading...](#)



## EMPLOYEE SPOTLIGHT

Congratulations to Warren Olsen for being awarded the NFPA Special Achievement Award! Warren was recognized for his active role as Chair of the Technical Committee on Supervising Station Fire Alarm and Signaling Systems, for NFPA 72, National Fire Alarm and Signaling Code. Warren received his award and was recognized at the 2018 NFPA Annual Conference & Expo this past June.

In addition to Warren, Fire Safety Consultants Inc. other staff successfully completed on-going certifications that include:

- Totie Leonardo passed both the ICC Building Plans Examiner and Inspector exams.
- Scott McBride and Scott Kunzie passed the NICET Level 1 Fire Alarm exam in January and March of 2018 respectively.
- Scott McBride and Hannah Kinney passed the NICET Level 1 Water Based Systems exam in May and June of 2018 respectively.



Warren Olsen





## SEMINAR INFORMATION

Stay up to date on the latest Fire, Building and Life Safety code changes and equipment by attending one of our seminars. FSCI is teaching seminars throughout the United States, led by our experienced staff of Matt Davis, Keith Frangiamore, Brent Gooden, George Michehl & Warren Olsen. Whether you are a Contractor, Architect, Technician, Engineer or an Authority Having Jurisdiction, each seminar is full of practical insights and first-hand experiences to help you comply with applicable codes and standards. FSCI can also provide custom seminars at your location. Be sure to check out our schedule of upcoming seminars on our website. Contact us to learn more by emailing [info@firesafetyfsci.com](mailto:info@firesafetyfsci.com) or by calling our office at (847) 697-1300.

[Click here for the latest seminar information](#)



## LITTLE KNOWN FACTS

### ***NFPA 17A – Field Verification Issues***

When doing plan reviews for wet chemical fire systems using NFPA 17A, Standard for Wet Chemical Extinguishing Systems, there are frequently items that cannot be verified until the final inspection. Verification of the appliance location, nozzle type and aim point are the most common items to be checked in the field. Perhaps two of the most overlooked items are found in Section 4.4.3.2 which requires that the manual pull station activate the system with not more than 14” of movement. Many times when testing a system the activation is done as one quick action and the cable length is not always noted by the inspector. Also overlooked on many inspections is Section 5.6.4 which states that movable cooking equipment shall be provided with a means to ensure correct repositioning in relation to the appliance nozzle. Floor guides are a way to ensure that the equipment is returned to the correct position. Movable does not mean that the appliance has to have wheels. Many appliances without wheels can be easily moved. Floor guides are often installed on the back legs/wheels to reduce the amount of debris build up from cooking operations. When placing the floor guides, it is often a best practice to use the sticky tape provided for initial placement only. Then, use the permanent fasteners provided to secure the guides to the floor. As with any plan review and inspection, one is reliant upon the other to ensure that the system is designed, installed and operational as required by the applicable code and the manufacturer’s published instructions.

***Angie Dayfield, Fire Protection Consultant***

### ***NFPA 72 2016 - Total (Complete) Detection Coverage***

The 2016 addition of NFPA 72 includes many changes, additions and clarifications. One of these changes includes a change to the areas to be protected under terms total (complete) detection as it relates to smoke and/or heat detection. The 2013 edition of the code defines total coverage as providing detection in all “rooms, halls, storage areas, basements, attics, lofts, spaces above suspended ceilings, and other subdivisions and accessible spaces, as well as the inside of all closets, elevator shafts, enclosed stairways, dumbwaiter shafts, and chutes”. In Sub-section 17.5.3.1 of the 2016 edition, the following areas have been removed: “...inside of all closets, elevator shafts, enclosed stairways, dumbwaiter shafts, and chutes.” The

explanatory material in the NFPA 72 Handbook explains that the reason for the change by indicating that “closets are generally small limited content areas and can be served with adequate detection by other total coverage detectors located outside any closets”. The Handbook also states that “elevator shafts, enclosed stairways, dumbwaiter shafts and chutes are unique for different buildings and are subject to special detection requirements and should not be subject to requirements for total coverage”. Design criteria for elevator shafts can be found in Section 21.4 and is aligned with ANSI A17.1.

***Scott Kunzie – Fire Protection Consultant***

### ***NFPA 17A – Wet Chemical Systems; Additional Things to Field Verify***

There are 10 key points per the 2013 edition of NFPA 17A, Section 6.4 that an inspector should remember. These points include: 1) Verifying the appliances, hoods and ducts are properly protected and installed per manufacturer’s specifications; 2) Verifying the piping and nozzles are properly sized and secured; 3) Verifying the appliances and their locations are the same as on the approved drawings; 4) Witnessing of the piping integrity test which consists of checking the tightness of all piping followed by introducing nitrogen or dry air at normal operating pressure into the piping system to verify that all nozzles can discharge the gas. No hydrostatic test is required; 5) Verifying required labels and instructions are provided; 6) Verifying that the system is connected to the building alarm system, if one is provided within the building; 7) Verifying that the manual release devices are readily accessible and properly identified; 8) A witnessing of the system operational tests which shall include the operation of all automatic detection and manual releasing devices, the automatic gas shut off, the shunt-tripping of electrical power, and the shutdown of makeup air supply to the hood; 9) Verifying that the releasing control panel is on a dedicated circuit and labeled, readily accessible with limited unauthorized access; 10) Verifying that the system is placed in full service by the contractor, which includes the reconnection of the extinguishing agent tanks, notifying the monitoring agency, providing the owner with a copy of all manufacturer’s specifications and manuals and, if applicable, providing a signed acceptance test report to the AHJ.

***Scott McBride – Fire Protection Consultant***



**WE’RE LISTENING!**

**Tell us what you are interested in learning about!**

Email us at: [info@firesafetyfsci.com](mailto:info@firesafetyfsci.com)