FSCI

FALL 2021 QUARTERLY REVIEW

BUILDING PLAN REVIEW | FIRE SAFETY PLAN REVIEW | CONSULTING SERVICES

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

PRESIDENT'S MESSAGE

An FSCI update from Keith Frangiamore, FSCI President

Two Steps Forward, One Step Back

In the summer newsletter we reported that many more people have been vaccinated including nearly all our team members. We felt we had finally moved back into a "normal" business environment with the hope that the slowed economy would quickly recover. It appears now that may have been a little premature, and maybe a bit too hopeful. Many states have struggled with the spread of the Delta variant. Hopefully we can better control this new wave of COVID 19 cases and improve on the slow economic recovery.

On the plan review side of FSCI business, we are seeing a slower than normal activity. One of the complicating factors in my mind is the supply chain delays that are hindering economic growth, caused by many factors including challenging overseas shipping, lack of manufacturing supplies, lack of a consistent delivery system, and lack of available workers in all areas of the economy. We believe these challenges are being addressed and there is a considerable effort by the US government to re-shore production of many essential materials which should stimulate new construction, additions and remodeling across the country especially if the supply chain issues are adequately resolved.

On a positive note, the number of private consulting projects continues to grow with many projects related to logistics and hazardous materials. We have reallocated some of our staff to address the dramatic increase in consulting projects such as large cannabis manufacturing facilities from Ohio to California, and hazardous materials manufacturing and storage companies across the country and Canada.

We continue to adapt and flex with the changing business conditions. One thing that remains constant is our commitment to our clients, and to provide the best service possible.

Please stay safe, support each other, and help us all move toward a healthy future!

IMPORTANT REQUIREMENTS FOR FIRE PUMP ACCEPTANCE TESTING

Michael Carnduff, Fire Protection Consultant

Acceptance testing of pumps installed for fire protection systems is addressed in Chapter 14 of NFPA 20, Standard for the Installation of Stationary Pumps for Fire Protection. As described in a previous edition of the newsletter, a fire pump is a significant and expensive component of a fire protection system. It is imperative that the installation of this component meets the minimum standard requirements. The acceptance test is the last chance to evaluate that the pump's performance matches the shop test curve and design and that it will function as intended during a fire condition. This article describes some of the procedures and tests required as part of a fire pump acceptance test.

Before performing the acceptance test, the installing contractor must provide a certificate for the flushing and hydrostatic test of the underground lead-in water supply to the Authority Having Jurisdiction. Notification of the times of these tests must be coordinated with AHJ. Suction piping is to be flushed in accordance with section 14.1.1.1, and at a flow rate specified in Table 14.1.1.1 or at the greatest hydraulically calculated water demand of the systems, whichever is greater, before the installation of the fire pump. Flushing of this piping will lessen the potential for damage caused by rocks, tools and other foreign materials sometimes found in underground piping. These materials could critically damage the pump and prevent the proper operation of the system. Following the flushing, all suction and discharge piping is required to be hydrostatically tested for 2 hours at 200 psi or 50 psi over system working pressure whichever is greater.

Representatives of the pump, engine, controller and transfer switch manufacturer, the owner, the insurance company, the installing contractor and the AHJ shall be notified and present during the field acceptance test. This will ensure that any problems during testing are identified and corrected to the approval of all parties. Testing equipment shall be provided in accordance with section 14.2.6.1 to make sure results are accurate and minimize multiple tests. For example, calibrated test gauges, labeled with the most recent date of calibration, shall maintain an accuracy level of plus or minus 1%. Per section 14.2.3, prior to the startup of the pump, all electric wiring shall be completed and checked by the electrical contractor. Many equipment failures can be avoided by checking the entire installation before testing.

The pump shall be in operation for not less than a total of 1 hour for all required tests. Flow testing of the pump through test valves located on the outside of the building shall be performed and data recorded for minimum (churn), rated (100%) and peak load (150% or greatest system demand whichever is greater) of the fire pump. As a minimum, the pump must meet the greatest calculated system demand and 100% of the pump's rated flow. Other flow points may be required based on the type of pump or to help develop the performance curve. Recording of the pump rpm, suction and discharge pressure, gpm, amps and volts are required for each test point. It should be noted that water flow is not necessary for the entire 1-hour test duration. A copy of the manufacturer's pump test curve shall be provided to compare the field test results. During flow testing, vibrations that could cause damage to equipment shall be identified. In addition, overheating of any components shall be identified and corrected before any harm occurs.

Fire pump controllers shall be tested in accordance with requirements by the manufacturer. Acceptance tests shall include a minimum of six automatic and six manual starts for at least 5 minutes each. Pumps supplied with an alternative power source shall be tested at a minimum of half of the required starts. Automatic transfer to an alternative power source shall be tested with the pump operating at peak load. Transfer to the alternative power source should occur within 10 seconds and flow at peak loads should resume in 30 seconds.

The fire pump controller must also transmit signals to the fire alarm control panel for:

- → phase reversal
- → pump run
- → loss of power
- → alternative power source

These conditions may be simulated to demonstrate their operation per section 14.2.10.

Following an acceptance field test, manuals from the equipment manufacturer, a completed test report, and as-built drawing shall be provided to the building owner. Subsequent required inspection, testing and maintenance of the pump and related equipment are specified in chapter 8 of NFPA 25. In the event that replacement of a critical component of the fire pump such as the impeller, motor, controller, etc. is required, a complete field acceptance re-test shall be performed.

LITTLE KNOWN FACTS

NFPA 13, 2019 edition

Deciding if additional sprinkler protection is required under soffits can present challenges for sprinkler system designers. When deciding if sprinkler protection is to be added under the soffit, the depth and width of the soffit would need to be accounted. These factors will determine if the adjacent pendent sprinkler(s) may be obstructed by the soffit. NFPA 13, 13R, and 13D has provided specific requirements for the adjacent sprinkler location to ensure it will not be obstructed by the soffit. Though introduced in earlier editions of NFPA 13, an aspect that may go unnoticed is the constant of the soffit width. As stated in section 10.2.7.1.2 for standard coverage sprinklers and 11.2.5.1.2 for extended coverage sprinklers in NFPA 13, 2019, these obstructions with a width under 30 in. are to follow the equation given in Figure 10.2.7.1.2(b) for standard coverage and 11.2.5.1.2(b) for extended coverage. With the changing designs seen in residential and even offices in commercial spaces, soffit widths greater than or equal to 30 in., that equation would not be applicable. For those soffits, Table 10.2.7.1.2 provides the distance the pendent sprinkler must be from the front edge of the soffit to ensure its spray pattern will not be obstructed by the soffit. The two main factors shown in table are the elevation difference between the bottom of the deflector and the bottom of the soffit, and the distance between the deflector and soffit. NFPA 13R and 13D use the extended coverage sprinkler figure and table for their system designs.

-Hetul Chokshi, Fire Protection Consultant

CPVC Updated Listings for 13D Systems

Many sprinkler contractors who work on 13D systems may rejoice as times have changed and they will not be so restricted on their designs and installations. Blazemaster has updated their Underwriter Laboratories (UL) listing for CPVC piping in unfinished basements. Whereas before the system mains had to run perpendicular to the joists and the branch lines had to run parallel with the joists, both the mains and branchlines are now acceptable to run parallel and/ or perpendicular to the joists. All that is required is following the manufacturer's installation guidelines regarding the joists depths, blocking, and using listed support devices.

Not only has the acceptable piping layout changed, but Blazemaster CPVC piping is the first sprinkler system approved for the use with 16- inch joists. They have also expanded the blocking requirement from 32 to 40 feet. Finally, the requirement of a 1,000 square foot protected area has been removed and the asymmetrical head layout is no longer required. All of these relaxed requirements should bring smiles to faces of contractors in such crazy times.

-Kyle Harding, Fire Protection Consultant

STAIR HANDRAIL CLEARANCE and MOUNTING HEIGHT DETAILS

In reviewing building, fire, life safety and accessibility codes for stairway compliance in new and renovated buildings, one of the most common mistakes we find involves handrail design. Specifically, the distance between the handrail and the wall or partition to which it is attached. The problem can be traced due to a difference in the requirements found in the model codes.

The 2012, 2015 and 2018 editions of the Life Safety Code, NFPA 101 (LSC), includes the requirement that clearance between a handrail, and the wall to which it is fastened, shall be not less than 2-¼ inches. The 2012, 2015 and 2018 editions of the International Building and Fire Codes (IBC), and the 2018 edition of Illinois Accessibility Code (IAC), require a clearance is not less than 1-½ inches. Where the codes indicated have been legally adopted in the same jurisdiction, which is often the case, the more stringent dimension of 2-¼ inches must be used.

The handrail mounting height remains the same of not less than 34-inches, nor more than 38-inches measured above the stair tread nosing and shall be uniform. This requirement is uniform in all editions of the LSC, IBC, and the IAC. The surface adjacent to the handrail and the handrail itself, must be free of any sharp or abrasive elements.

-Totie L. Leonardo, Sr. Plan Review Consultant

SEMINAR INFORMATION

Keep you and your staff up to date on the latest Fire, Building and Life Safety code changes and equipment by attending one of our seminars. Fire Safety Consultants, Inc. is teaching seminars throughout the United States, led by our experienced staff of Matt Davis, Keith Frangiamore, Brent Gooden & Warren Olsen. Whether you are a Contractor, Architect, Technician, Engineer or an Authority Having Jurisdiction, each seminar is full of practical insight and first-hand experiences to help you comply with applicable codes and standards. Fire Safety Consultants, Inc. can also provide custom seminars at your location. Be sure to check out our website to view our listing of available seminars or to check the schedule to see what we are teaching next! Contact us to learn more by emailing info@firesafetyfsci.com or by calling our corporate office at (847) 697-1300 x223.

EMPLOYEE SPOTLIGHT

Brent Gooden

Brent Gooden has been with Fire Safety Consultants, Inc. for more than 14 years. Brent works in our Corporate Office in Elgin as a Fire Protection Consultant which includes being involved in many aspects of the plan review process including inspections as well as supervising our Field Services department. He performs consulting services for many architects, engineers, and business owners. Brent is an active member of our Seminar division and he also develops and teaches many seminars for us throughout the year. Recently, Brent took charge of our Marketing division.

Brent holds a Bachelor's Degree in Business Administration, NICET certifications in water-based layout and fire alarms, and is ICC certified as a fire plans examiner. In his spare time, Brent enjoys going on bike rides, swimming and watching movies with his wife and 3 boys, ages 4, 6 & 11.

EMPLOYEE SPOTLIGHT NEWS

We would like to congratulate one of our employees on a great achievement since our last newsletter! Hannah Rodriquez received her NICET Level 1 certificate for Fire Alarm Systems on October 20th. Congratulations Hannah!

WE'RE LISTENING!

Tell us what you are interested in learning about!
Email us at: info@firesafetyfsci.com