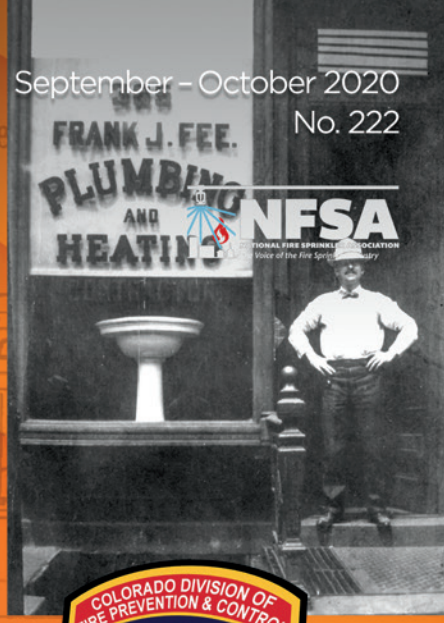
National Fire Sprinkler Magazine

The Flagship Publication of The National Fire Sprinkler Association

September – October 2020
No. 222

NFPA FIRE & LIFE SAFETY ECOSYSTEM



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3rd ANNUAL MEMBER TAKEOVER ISSUE

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September/October 2020 • No. 222

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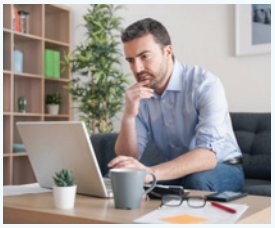

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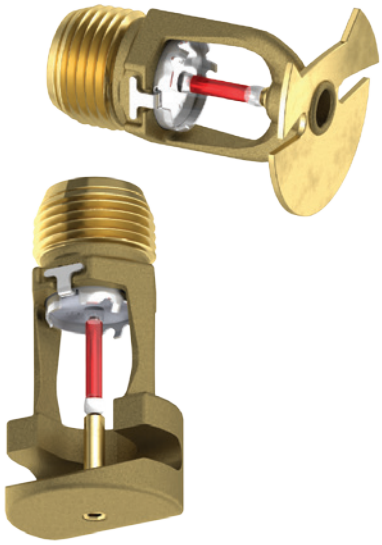

New Window Sprinkler Models Offer Spacing Advantages

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From the President's Desk
Shane Ray

Jim Pauley truly needs no introduction, but I would like to take this opportunity to share how much I enjoy working with Jim and his team on many national initiatives. I have met with Jim on many occasions and fully support the NFPA Ecosystem. Not only does NFSA support the Ecosystem, we play our part as an active participant in the standards making process as well with the coalitions and initiatives that NFPA has underway.

My first meeting with Jim Pauley was early in our tenure with both associations. I shared a copy of NFSA's minutes, which I have in my office, from a 1914 meeting where one of the agenda items was the status of NFSA's membership with NFPA. I was also able to present at the first ever Truman Fire Forum with NFPA's Vice President Lorraine Carli, where I shared minutes from NFSA's 1947 meeting that included preparation for President Harry S. Truman's Presidential Conference on Fire Prevention.

Our associations have a long history and the inclusion of fire sprinklers in recent NFPA programs is very helpful to all of us as we work to educate and share our mission. I'd also like to share on a personal note that Jim and I entered our roles during a similar timeframe, and it's been rewarding to cooperate, collaborate and see progress made across the nation. (we also both graduated from Kentucky colleges, so we have fun with that along the way – Jim from the University of Kentucky and me from Eastern Kentucky University).

*Our vision of **a stronger industry…a safer world** is one that I believe in and I'm proud to say NFSA has assembled a team that also sees that vision and is working hard to see it realized.*

Now, with no further rambling on my part, ladies and gentlemen, please welcome Jim Pauley as my "takeover" for this issue!

A grateful,

Shane Ray, *President*

Fire Sprinkler Advocacy and the Fire & Life Safety Ecosystem

By Jim Pauley, President & CEO, NFPA

A few years ago, the world watched in horror as the Grenfell Tower in London went up in flames killing 71 people and injuring many more; three days later, 66 people died as wildfires spread through Portugal. Shortly following, three people died in a high-rise fire in an unsprinklered apartment building in Hawaii. As news of this fire was unfolding, the Building Industry Association of Hawaii was celebrating what they considered a big win - the extension of a state law prohibiting local jurisdictions from adopting their own requirements for fire sprinklers in new homes until 2027.

What struck me about these cases and several others is that we were looking at each one individually. Alone they are tragic but taken together they are abominable failures. How could we continue to see such catastrophic loss when we have the means to prevent it? We were not connecting the dots for people and considering all the parts of a system needed to prevent these tragedies from happening. It was at this point we began talking about the Fire & Life Safety Ecosystem.

When we introduced the concept in 2018, it was a way for all of us to think differently about the work we do – that our roles are not embedded in silos, but rather an integral part of a larger system. There are both new and ever-present, often-complex challenges that impact fire and life safety. As safety professionals, we must put the protection of people and property first in every decision we make and allocate the necessary resources to address these challenges to help reduce losses from fire, electrical, and related hazards.

Sprinklers have and continue to have an enormous impact on fire safety. We could virtually eliminate home fires in the decades to come if every new home included sprinklers. But why isn't that happening? For more than a decade, model building codes have included the provision for fire sprinklers in new homes for two simple reasons: the majority of fire

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From the President's Desk

Jim Pauley

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deaths and injuries happen in homes, and today's homes burn faster than in years past. These facts underscore the need for sprinklers, as well as smoke alarms, to effectively reduce loss. But we face fierce opposition in getting sprinklers into new homes—opponents have argued for decades against this proven, life-saving technology.

Sadly, this type of action represents a breakdown in the Ecosystem. Jurisdictions are not using the latest versions of codes, they are not investing in safety, and there is an uninformed public. In the last year we have seen the deadly consequences:

- In Worcester, Massachusetts, a firefighter lost his life battling a home fire. In the wake of his death, fire safety experts have called for more sprinklers in residences. At this point those calls are falling on deaf ears.
- In December, five people died, and four others were injured when a fire spread through the 14th floor of an unsprinklered high-rise apartment building in Minnesota. We are now seeing movement towards sprinklers, but we are not there yet.

Still, there are cases that show us what a fully functioning Ecosystem looks like: California, Maryland, the District of Columbia, and hundreds of communities require all new homes to have home fire sprinklers. These jurisdictions recognize the importance of establishing a regulatory framework for codes and standards and using updated codes. The result is lives are saved and loss is reduced.

Sprinkler success stories do happen every day but to achieve more successes requires commitment and collaboration from everyone tasked with protecting people and property. Today, we are challenging everyone to go beyond their own roles and find ways to work with others toward sustainable, measurable change. As advocates, and the voice of the fire sprinkler industry, your role has an impact on safety. It is up to us to ensure that the Ecosystem around fire safety remains healthy and intact. How? By maintaining existing relationships and developing new partnerships with those who can help us communicate the impact of sprinklers to decision makers. We can also arm ourselves with research and facts that contradict the myths and false statements about sprinkler systems like installation costs, and water usage. Other ways we can help move more change:

Informed Public:

- Work together through the Home Fire Sprinkler Coalition to share fact sheets, infographics, and other important information to consumers, and develop and promote great campaigns that reach not only the public but policymakers as well.
- Conduct live fire sprinkler demonstrations to demonstrate the power of this life saving technology.
- Work with TV media and through radio appearances and public service announcements to reach local audiences to continue to raise the visibility.

Government Responsibility:

- Work with policymakers on both state and local levels to require sprinklers in new construction.
- Collaborate with local governments on incentive programs that further the installations of sprinklers.
- Communicate the financial burden to elected officials for injuries due to residential fires and how they can be avoided/reduced on a state and local level.

Skilled Workforce:

- Invest in classroom trainings, online learning, seminars, and more, that keep you and your teams well-informed and current on industry standards.
- Invest in resources that help you stay up to code and assist with regular inspection, testing, and maintenance of fire sprinkler systems.

Safety is everyone's responsibility. None of us wants to be having the same discussion decades from now. Home fire sprinklers must be part of the discussion—and of every discussion involving fire and life safety—on how to better protect first responders and residents. Let us work together on finding solutions. We may not be able to prevent every tragedy from occurring, but what we do together matters and together, we can make a difference.

For more information about the Fire & Life Safety Ecosystem, visit NFPA's website at nfpa.org/ecosystem.

From the Chairman's Desk
Kent Mezaros

And Here's ...Jim!

So, it's that time a year again when we turn it all over to you – the members - and we get the chance to hear what you have to say for a change. Hopefully, you will enjoy my choice to author this edition's Chairman of the Board Article – our beloved Vice Chairman of the Board, Jim Boulanger.

With any luck, Jim's crystal ball will not be as cloudy as mine has been recently. I'm sure he will at least bestow some Pacific Northwest wisdom upon us. If by chance he repeats something I may have uttered in the past – please forgive him as he rarely reads anything that I have written, so let's all let him believe he came up those great ideas all by himself!

Seriously though, I do feel Jim and I have made a good pair as Chair/Vice-Chair. Jim tends to reflect on things a little longer and his decisions often come about a tad more serenely than yours truly does. Probably the East Coast/West Coast thing we have going on. Make sure you let him know that you appreciate his thoughts, it may encourage him to want to take over the throne in the future.

Hoping all of you, your families, co-workers and employees are healthy and doing well. See you again next edition.

Respectfully yours,

Kent Mezaros, *Chairman*

The Magic Number

By Jim Boulanger

I have been associated with NFSA my entire career, serving on local committees, participating in labor negotiations and now, for the last 12 years, as a member of the Board of Directors.

I was recently asked by our Chairman Mr. Kent Mezaros if I would write his column for the Member Takeover issue. Writing articles is by no means on my wish list of fun things to do, but how do you turn down our fine Chairman?

Throughout the last 40 years I am sure at least 100 publications of The National Fire Sprinkler Magazine have crossed my desk. Unlike most of you, too many times over those years reading the Chairman's quarterly article was not always my highest priority, so please excuse me. Nevertheless, here I am presenting the Member Takeover issue, writing the column. The question I still have is, will anyone actually remember what I wrote? To all you readers, the magic number is 220. Next year, when I encounter individuals in the industry, and optimistically not just through MS Teams or Zoom, I am going to ask them if they know the number, let us see who is really paying attention besides my immediate family.

The first thing I did when asked to correspond was scrutinize the March- April publication to determine exactly what Chairman Mezaros conveyed when he wrote his article last March. Wow, what a difference a worldwide Pandemic can make to the best laid plans. Kent wrote about our May annual seminar planned in Arizona, the lack of a need to implement a recession plan this year, and how the industry was moving toward a new record year of sprinkler sales. He did pledge, anticipating the next two years of his term to take the "the good with the bad" in navigating the NFSA Board. Well Mr. Chairman, thank you sincerely for leading the last four months, you inherited quite the turmoil, I have to check that box as part of the "bad."

It is impossible to overestimate all the changes that have taken place in our country since mid-March. The United States had never shutdown before or witnessed tens of millions of our workers immediately unemployed. From construction sites to major league baseball, everything just stopped. Entire industries wiped out overnight with some on life support after being allocated millions of dollars printed by our Federal Government. To add to everyone's frustration, the senseless death of a Black man in Minneapolis, while in the custody of police, set off a national protest and hundreds of thousands took to the streets.

These are truly unprecedented times, none of us who are living through them will ever forget. How has it affected our

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From the Chairman's Desk

Jim Boulanger

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Association and our relentless goal to press for fire sprinklers in additional occupancies? Today, cities and states are under tremendous economic pressure precipitated by lost tax revenue caused by the shutdown. Over the next few years educating and pushing through additional fire sprinkler regulations will scarcely be on any legislator's priority list. In reality, it really should be.

On the night of May 30th in downtown Seattle criminal looters hijacked relatively peaceful protests for George Floyd, and while attempting to break into several buildings they started multiple fires. In the following days, this horrific exploit was imitated in multiple major cities across the United States. At 3:00 a.m., Sunday May 31st, our service department had received a number of calls to appear and restore numerous fire sprinkler systems. Those systems, which our abundant critics presume are too expensive, defended literally millions of square feet of downtown buildings from arson. Predominantly due to violence, fire departments were not even available to arrive and extinguish. In conversing with fire sprinkler companies all around the country, I heard the same story, "sprinklers saved the cities". So, the next time you hear someone say they are not needed or too expensive, remind them what numerous major U.S. cites would look like today if they were not significantly protected with fire sprinklers.

If you are like me, you can be very proud of the silent work we all accomplished.•

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An Especially Specific Conundrum

by Cary Webber

History

Early generation conventional fire sprinklers that split water flow between upward and downward discharge produced a somewhat irregular water distribution. These sprinklers served the industry well and play a supporting role today. In 1953, a new style of fire sprinkler was introduced to replace the conventional sprinkler. The deflector on these sprinklers provides a much more uniform spray pattern and, therefore, enhanced fire control. Until renamed "standard spray" sprinklers in 1958, these new devices were likely thought of as "special sprinklers." Standard spray sprinklers (with some limitations for sidewalls) are permitted to protect all occupancy hazard classifications and building construction types and remain the lead actor for most non-storage occupancies today.

Necessity, according to Plato, is the mother of invention. Construction methods and the needs of end-users have changed, and the ability of fire sprinklers to provide adequate control must evolve accordingly. One way this is done is through the NFPA 13 allowance (and often requirement) for Special Sprinklers. The formal definition of Special Sprinklers dates back at least to the 1987 edition of NFPA 13 and has changed little since then. In the 2019 edition of NFPA 13 Special Sprinklers are defined as "… sprinklers that are intended for the protection of specific hazards or construction features…" that "have been evaluated and listed" under a set of seven (7) prescribed conditions. Some well-known examples of Special Sprinklers available today are window sprinklers, attic sprinklers, and combustible concealed space sprinklers.

Listing Criteria

The K-factor, temperature ratings, and coverage areas of Special Sprinklers are constrained by Section 15.2.2 of NFPA 13 (2019) to maintain some level of uniformity with common sprinklers. Section 15.2.1 of the standard, however, essentially defines the intent of Special Sprinklers and requires evaluation of Special Sprinklers for performance under the following conditions:

Fire tests related to the intended hazard. Based upon a test standard (or outline) from an approved listing agency and/or sound engineering judgement, one or more representative mock-ups of the target hazard and proposed protection scheme are constructed and tested. In some cases, pass/fail criterion may be specified; alternatively, the results of the test(s) often define the performance characteristics of the sprinkler. While the arrangement of the test apparatus for window sprinklers and combustible concealed spaces is generally well established and consistent, the construction of attic spaces for testing is determined through negotiation with the listing agency.

Distribution of the spray pattern with respect to wetting of floors and walls. In most cases this would be directly tied to the ability of the sprinkler to meet the requirements of condition #1 above and provide adequate control of the unique fire challenge. This is also likely intended as a reminder that, just as we do for all sprinklers, the spray pattern be recorded and documented.

The spray pattern will most likely be driven by the unique nature of the fire challenge. While the flat pattern of a combustible concealed space sprinkler is similar to an extended coverage sprinkler, the pattern of a dual direction attic (ridge) sprinkler is quite unique. There are attic sprinklers available that cover an area of 5 feet wide (along the ridge) by 70 feet wide (eave to eave). Provided the maximum allowable coverage area of 400 square feet is not exceeded, the aspect of the coverage area may vary. And, while the concept of wall wetting can be applied to window sprinklers, the concepts of spray pattern and floor wetting are nebulous.

Distribution of the spray pattern with respect to obstructions. While the obstruction criteria available for other types of sprinklers is often the launch point for Special Sprinklers, the unique nature of the protected hazard will often include obstructions that are not anticipated and/or which affect the performance of the sprinkler to a different degree than standard sprinklers. Revised or new obstruction criteria, when necessary, becomes part of the listing of the special sprinkler. Combustible concealed space sprinklers provide an excellent example. When used at coverage areas not exceeding those for standard spray sprinklers, the general obstruction rules for standard spray sprinklers apply. When used beyond those coverage areas, the rules for extended coverage sprinklers apply. Finally, a special allowance that waives truss members (other than the top chord) and gusset plates as obstructions is provided. One can presume that this special allowance reflects an understanding by the listing agency that (1) a huge burden would be placed on the designer to account for the often undocumented and dense nature of the protected space and (2) control in shallow concealed spaces is achieved more by reducing heat from (and oxygen to) the fire than through direct water impingement.

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Evaluation of the thermal sensitivity of the sprinkler. Starting in 1996 all new light hazard installations require the use of listed quick response sprinklers, so Special Sprinklers proposed for light hazard use must meet that requirement. Special Sprinklers intended for other occupancies might eventually be listed as either standard response or quick response, or perhaps even special response, i.e., an RTI above 50 but below 80 (meters-seconds)1/2. To properly apply modifications allowed by NFPA 13 for the use of quick response sprinklers, the thermal sensitivity of the sprinkler must be established. Faster is not always better. For hydraulic designs based upon a set number of sprinklers operating at a set minimum pressure, the number of sprinklers in the design is generally based on the number of sprinklers that operated in the test plus a safety factor. In high heat release fires, it may be desirable to slow the activation time to limit the number of operating sprinklers while still achieving the control demanded by the test criterion.

Performance under horizontal or sloped ceilings. A tremendous amount of research is underway regarding the effects of sloped ceilings on the performance of fire sprinklers, and within a few years we will no doubt see related updates to allowances, requirements, and perhaps even listings for standard sprinklers. Extended coverage sprinklers and sprinklers used for protection of storage currently remain limited to slopes of 2:12 or less (the NFPA definition of horizontal); however, through proper evaluation as a Special Sprinkler it is possible to circumvent this rule.

Most special attic sprinklers have coverage areas exceeding those of standard sprinklers, yet are listed for slopes exceeding the 2:12 limit, therefore, it is technically incorrect to refer to them as EC sprinklers. Why then is there a 2:12 slope limit for most combustible concealed space sprinklers having coverage limits exceeding standard sprinklers? The answer to this can be found in condition #1 above. The test mockup (based on the listing agency outline) is flat, most likely in anticipation of a true "interstitial" floor space. When tested successfully, the sprinkler receives listing for horizontal installation which includes slopes up to and including 2:12. In other words, combustible concealed space sprinklers have not been evaluated under sloped ceilings. Attic sprinklers are specifically tested under slopes requested by the manufacturer.

Full scale fire testing, shown here for combustible concealed space sprinklers, is a fundamental requirement for listing of a "special" sprinkler.

Unique deflectors, such as that on this Metal Building EC sprinkler, often provide a clue that a sprinkler is "special," however, it is possible to test and list a common sprinkler for "special" use.

Area of design. Perhaps the most confusing piece of the Special Sprinkler puzzle to understand is the hydraulic design area. As mentioned in condition #1, fire tests may follow a prescribed outline, or they may be a result of a negotiated agreement between the manufacturer and the listing agency. For prescribed tests with strict pass/fail criteria the resulting hydraulic design requirements are generally prescribed as well; this maintains some level of consistency among competing products. For negotiated tests, the hydraulic design requirements most often are the result of the number of sprinklers that operated during the test(s) plus an appropriate safety factor. This can, and often does, lead to noticeable differences between competing products.

Combustible concealed space sprinklers again illustrate the often-complex nature of Special Sprinklers. First generation sprinklers were limited to draft curtained areas not exceeding 1000 square feet, and the test outline clearly specified a design area to include all sprinklers within the draft curtained area. A recent update to the outline now offers the opportunity for listing with draft curtained areas exceeding 1000 SF and even with no draft curtains. With these new allowances, new hydraulic design requirements were also provided: (a) not less than 150 percent of the maximum number of sprinklers the operated during the tests, but (b) never less than six sprinklers, additionally (c) never less than a 1000 square

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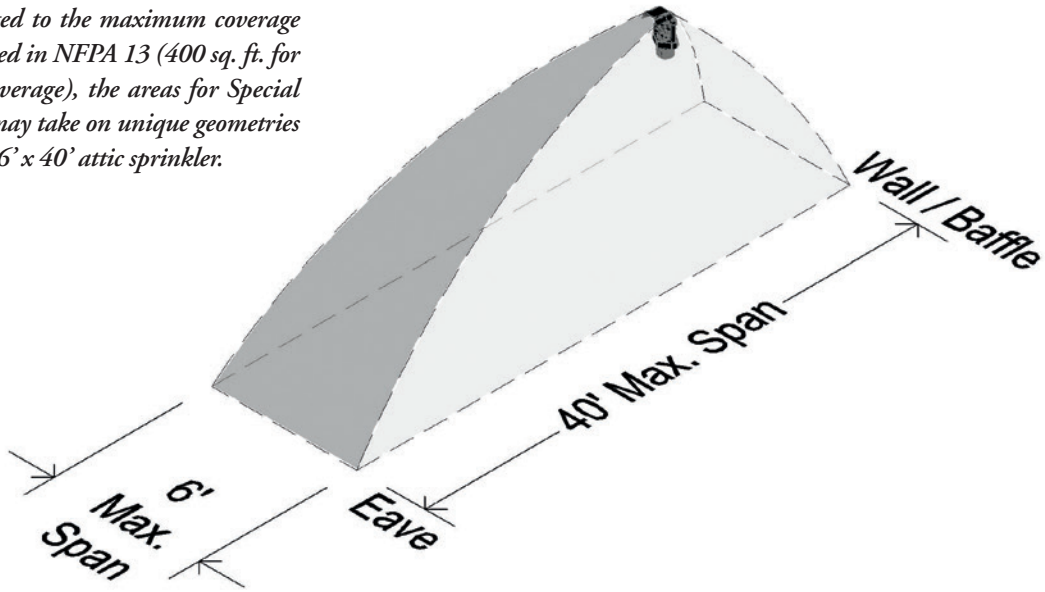
While limited to the maximum coverage areas outlined in NFPA 13 (400 sq. ft. for extended coverage), the areas for Special Sprinklers may take on unique geometries such as this 6' x 40' attic sprinkler.



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foot area or (d) all of the sprinklers within the draft curtained area. Complex? Somewhat, but think about how draft curtains might be a friend rather than a foe.

Allowable clearance to ceiling. Or, an odd way to say deflector distance. The distance of a sprinkler below the deck affects not only activation time but development of the spray pattern as well, and often these can often be at odds with one another. While the concept of activation of common sprinklers below a horizontal ceiling is well understood, the unique areas being protected by special sprinklers demand analysis and new understanding, particularly before commencing an expensive fire test. The primary characteristic of combustible concealed space sprinklers is a flat spray pattern since the umbrella pattern of a standard sprinkler does not have adequate vertical distance to fully develop. In these shallow spaces the sprinkler must be kept as high as possible to maximize the primary design feature of the sprinkler. This lends some consistency to competing products. Attic sprinklers, particularly those under very steeply pitched roofs must be located further from the deck to allow the pattern to open before water hits the adjacent deck(s). All sprinklers are not created equal, and since the deflector distances are not prescribed in the test standard the final listing requirements are derived from the results of the testing. This leads to differences between competing products.

Final Thoughts

Pet peeves—we all have them. Maybe it's when someone pronounces the "t" in the word "often," Try that with similar words like "soften," "fasten," or "listen." It just doesn't work. Or maybe it's the airline passenger behind you who can't seem to sit down or get up without grabbing the back of your seat and mauling you in the process. Those are a couple general pet peeves of mine, and with your permission I would like to rant on a "technical" pet peeve.

Words, they say, have meaning. Often, however, words describing different things, particularly technical things, can be so similar in sound and context that we often use them incorrectly. Then, to compound the issue, we use one set of words to help explain the other. Case in point: Special Sprinklers and Specific Application sprinklers.

Given the definition of Special Sprinklers and their very specific use, it seems quite natural to refer to these as specific application sprinklers. The problem arises, however, because we have also defined Specific Application sprinklers (note capitalization). Is this a major problem? Not really, and NFPA 13 (2019) is relatively clean on this having prefaced Specific Application with "Control Mode" on a global basis. Most regular users of NFPA 13 understand the difference between CMSA storage protection and Special Sprinkler protection. There are, however, a couple instances where confusion could arise. Part 1 of section 9.3.15 for Sprinkler-Protected Glazing states that "sprinklers shall be listed as specific application window sprinklers…", and (in my opinion) the references to CMSA sprinklers in chapter 24, Alternative Sprinkler System Designs for Chapters 20 Through 25, are suspect as well. (By the way, do you notice a slight problem with that last statement?)

My pet peeve? In normal industry conversation Special Sprinklers are far too offen *(misspelling intended)* referred to as specific application (or Specific Application) sprinklers which might confuse the casual user. Let's call them what they really are.•

Cary Webber is the Director of Technical Services at Reliable Automatic Sprinkler Company, and a 42-year veteran of the fire sprinkler industry. He has a Bachelor of Arts degree in Business Administration from the University of Washington and an Associate in Applied Science degree in Mechanical Engineering Technology from Spokane Community College. He has been SET certified by NICET, CFPS certified by NFPA, and is a member of NFPA 13, 15, 16, and 25 technical committees, as well as the NFSA Engineering and Standards committee and the USTAG to ISO TC 21/SC 5.

Differences Between NFPA 13, 13R & 13D

by Joe Meyer, P.E.

This month's Code Corner column is "taken over" by NFSA Professional member, Joseph Meyer, P.E. Joe writes online regularly with fire protection tools and resources for fire sprinkler designers and engineers, at www.MeyerFire.com. He is Fire Protection Engineer and Owner of MeyerFire, LLC, focusing mostly in fire sprinkler shop drawing design out of St. Louis, Missouri –Jeff Hugo

"Can we use 13R?"

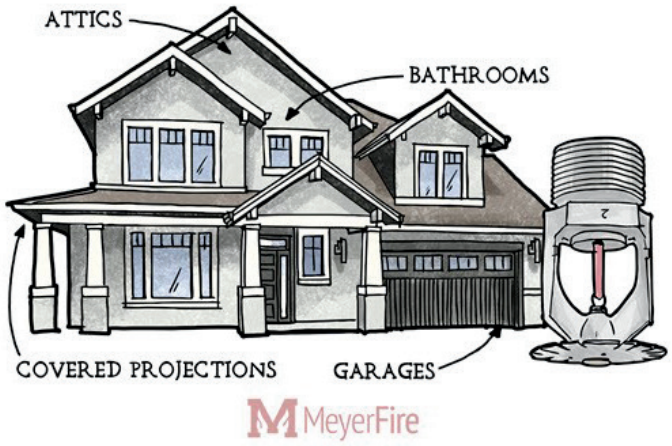
If you work around residential buildings, it's a question you get often.

It might feel laughable that the biggest driver for a system's design and cost can be so easily overlooked, but the choice of the sprinkler design standard is perhaps the most important aspect of sprinkler design.

For those involved in the daily nuances of sprinkler design or have been doing this for many years, perhaps it is easy to differentiate between NFPA 13, NFPA 13R, and NFPA 13D. Maybe it's easy to spit requirements for closets, bathrooms, elevator machine rooms, concealed spaces, or overhangs.

For me, recalling all the distinctions is not an instinct.

Unlike NFPA 13, NFPA 13R works to make the installation of the sprinkler system more affordable and accessible for residential occupancies by targeting the areas of highest fire risk. The goal of NFPA 13R is life safety. Swapping NFPA 13 and NFPA 13R is not simply a one-for-one exchange, as their goals are overall quite different.



NFPA 13D, by extension, is the least restrictive standard and intended for one or two family residential properties.

The selection of the sprinkler standard is perhaps one of the least understood topics of fire protection for many architects, yet it has a major impact on allowable building area, building height, egress, fire ratings, and a host of other code implications.

Unfortunately, it's not as simple as running with 13R for residential, 13D for homes and duplexes, and 13 for everything else. It takes good planning upfront with the design team to be sure that code objectives are still achieved and the owner gets the system they need.

Are the owner's goals met if 13R is used? Does the building area allow for 13R to be used? Is the basement parking garage or first-floor retail separated sufficiently for pedestal-style construction?

The table below outlines many of the "big picture" differences between the three different standards for fire sprinkler systems. It was created it to help differentiate between the standards and have that that quick go-to resource when it's bid time and that client calls to clarify whether a sprinkler the 13R penthouse mechanical room needs protection.

I hope it can be as helpful for you when you get that "quick" client phone call.•

1 Refer to the applicable code section(s) for specifics on requirements

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CODE PLANNING

	NFPA 13	NFPA 13R	NFPA 13D
Objective	Life Safety + Property Protection [NFPA 13 2002-2019 Section 1.2.1]	Life Safety + Some Property Protection [NFPA 13R 2002-2019 Section 1.2]	Life Safety Only [NFPA 13D 2002-2019 Section 1.2.1]
Building Height Increases Permitted?	Yes [IBC Table 504]	Only for R-Occupancy [IBC Table 504]	No
Building Area Increases Permitted?	Yes [IBC Table 506.2]	No [IBC Table 506.2]	No [IBC Table 506.2]
Permitted in One & Two-Family, or Group R-3 & R-4 Condition 1 and townhouse R-Occupancies?	Yes [IBC 903.1.1]	Yes [IBC 903.1.2]	Yes [IBC 903.3.1.3]
Permitted in R-Occupancies up to 4 stories?	Yes [IBC 903.1.1]	Yes [IBC 903.1.2]	No [IBC 903.1.2]
Permitted in Mixed Use / Non-Residential Occupancies?	Yes [IBC Table 508.4, 508.3.1]	No [IBC 903.1.2]	No [IBC 903.1.2]

OMITTED AREAS

	NFPA 13	NFPA 13R	NFPA 13D
Omit sprinklers in Attics?	If non-comb., filled with non-comb. insulation, or meets other exceptions. [NFPA 13 2002 8.14.1.2, 2007-2016 8.15.1.2, 2019 9.2.1]	Yes [NFPA 13R 2002 6.8.5, 2007 6.9.6, 2010-19 6.6.6]	Yes [NFPA 13D 2007-10 8.6.5, 2019 8.3.5]

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Omit sprinklers in Unit Bathrooms less than 55 sqft??	Yes, if bathroom has 15-minute non-combustible lining. [NFPA 13 2002 8.14.8.1, 2007-16 8.15.8.1.1, 2019 9.2.4.1.1]	Yes [NFPA 13R 2002 6.8.2, 2007 6.9.2, 2010-19 6.6.2]	Yes [NFPA 13D 2007-10 8.6.2, 2013-19 8.3.2]
Omit sprinklers in Closets in Hotel or Motel w/ Non-Combustible Surface less than 24 sqft, or Hospital Less than 6 sqft?[1]	Yes [NFPA 13 2002 8.14.8.2, 2007-16 8.15.8.2, 2019 9.2.4.2]	Yes [NFPA 13R 2002 6.8.3, 2007 6.9.3, 2010-19 6.6.3]	N/A
Omit sprinklers in Closets w/ Non-Combustible Surface less than 24 sqft?[1]	No, Required	Yes [NFPA 13R 2002 6.8.3, 2007 6.9.3, 2010-19 6.6.3]	Yes [NFPA 13D 2007-10 8.6.3, 2013-19 8.3.3]
Omit sprinklers in Closets on Exterior Balconies or Breezeways & Exterior Access?[1]	No, Required	Yes [NFPA 13R 2002 6.8.6, 2007 6.9.7, 2010-19 6.6.7]	Yes [NFPA 13D 2013-19 8.3.8]
Omit sprinklers in Concealed Spaces?	Yes, if non-comb., filled with non-comb. insulation, or meets other exceptions[1] [NFPA 13 2002 8.14.1.2, 2007-2016 8.15.1.2, 2019 9.2.1]	Yes [NFPA 13R 2002 6.8.5, 2007 6.9.6, 2010-19 6.6.6]	Yes [NFPA 13D 2007-10 8.6.5, 2013-19 8.3.5]
Omit sprinklers in Concealed Spaces with only Ventilation Equipment?[1]	Required unless meets concealed space exceptions. [See NFPA 13 2002 8.14.1.2, 2007-2016 8.15.1.2]	Yes [NFPA 13R 2002 6.8.5, 2007 6.9.6, 2010-19 6.6.6]	Yes [NFPA 13D 2007-10 8.6.5, 2013-19 8.3.5]
Omit sprinklers in Elevator Machine Rooms?	No, required unless exceptions are met. [See 13 2013-2016 8.15.5.3, 2019 9.3.6.3]	Yes [NFPA 13R 2002 6.8.5, 2007 6.9.6, 2010-19 6.6.6]	Yes [NFPA 13D 2007-10 8.6.5, 2013-19 8.3.5]

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Omit sprinklers in Garages or Carports?	No, Required	No, Required	Yes [NFPA 13D 2007-10 8.6.3, 2013-19 8.3.4]
Omit sprinklers in Penthouse Equipment Rooms?	No, Required	Yes [NFPA 13R 2002 6.8.5, 2007 6.9.6, 2010-19 6.6.6]	Yes [NFPA 13D 2007-10 8.6.5, 2013-19 8.3.5]
Omit sprinklers in Porches?	No, required depending on construction type.	Yes [NFPA 13R 2002 6.8.5, 2007 6.9.6, 2010-19 6.6.6]	Yes [NFPA 13D 2007-10 8.6.3, 2013-19 8.3.4]

HYDRAULIC CALCULATIONS

	NFPA 13	NFPA 13R	NFPA 13D
Max Number of Adjacent Calculated Residential Sprinklers	Four[1] [NFPA 13 2002 11.2.3.5.1, 2007-16 11.3.1.1]	Four[1] [NFPA 13R 2007 6.7.1.2, 2007 6.8.1.2, 2010-19 7.1.1.3]	Two[1] [NFPA 13D 2002-10 8.1.2, 2013-19 10.2]
Hose Allowance Required?	Yes [NFPA 13 2002 11.2.3.5.5, 2007 11.3.1.5, 2010-16 11.3.1.6]	No [NFPA 13R 2007 A.6.8.2, 2010-19 A.7.2]	No
Include Domestic Demand for Combined Service Without Automatic Domestic Shutoff?	Yes, for Service Under 4-inch [NFPA 13 2013-16 24.1.3.3, 2019 5.1.3.3]	Yes [NFPA 13R 2002 6.5.5, 2007 6.6.5, 2010 9.5, 2013-16 9.6, 2019 9.3.1]	Yes, when serving more than one dwelling unit [NFPA 13D 2007 6.3, 2010-19 6.5.2]
Minimum Residential Density	New: 0.10 gpm/sqft Existing: Listing of Sprinkler [NFPA 13 2002 11.2.3.5.2, 2007	0.05 gpm/sqft or listing of sprinkler [NFPA 13 2002 6.7.1.1.2.2, 2007 6.8.1.1.1.2, 2010-19 7.1.1]	0.05 gpm/sqft or listing of sprinkler [NFPA 13D 2002-10 8.1.1, 2013-19 10.1.1]

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HYDRAULIC CALCULATIONS

	NFPA 13	NFPA 13R	NFPA 13D
	11.3.1.2, 2010-16 11.3.1.3]		
Calculation Method	NFPA 13 Hydraulic Calculations	NFPA 13 Hydraulic Calculation	NFPA 13D Worksheet Calculations

NEW MEMBERS

Contractor
Alan Carte
State Sprinkler Co. Inc.
Alpharetta, Georgia

Jacob Day
Modern Fire Protection, LLC
Enumclaw, Washington

Christopher Johnson
Southern Fire Control, Inc.
Pembroke Pines, Florida

Professional
Timothy Handley
Orlando, Florida

Subscriber
Adam Bloch
Fort Lauderdale, Florida

Kevin Brooke
Three Rivers, Massachusetts

Eric Center
Bradenton, Florida

Yvonne Clark
Humble, Texas

William Daywalt
Milton, Florida

Tobin Faciane
Milton, Florida

Duane Fox
Georgetown, Delaware

Zackary Green
Baltimore, Maryland

Chris Hengstenberg
Largo, Florida

Mike Italia
Allentown, Pennsylvania

Wesley Jolin
West Palm Beach, Florida

Ed Tiernan
Malvern, Pennsylvania

Norman Williamson
Missouri City, Texas

NOTES FROM THE Fire Scene

Partnerships & Relationships

by Brian S Geraci, Maryland State Fire Marshal

I've always been one to respect leaders who truly understand what it means to be a leader, the kind of people who know that taking a stand is important, and that they make the difference with their ability to share a vision, champion for the cause, and execute effectively. Chief Brian Geraci is one of those leaders!

I'm blessed to call him a friend and I'm continually inspired by his leadership within the Maryland State Fire Marshal's office. He believes in fire sprinklers and it shows every single day. He is not afraid to champion for the cause, and his leadership has ensured that Maryland maintains its residential fire sprinkler requirement.

I'd also be remiss to not mention the fact that leadership within our nation's fire service is so very important to our mission, vision and values. Our support of the fire service, our understanding of the important role they play, and our appreciation of them is key in our overall momentum and success. Please join me in welcoming Chief Brian Geraci, Maryland's State Fire Marshal to NFSM, and his takeover of my column "Notes from the Fire Scene".

Cheers,
Vickie

I speak with my staff every chance I get, and when I do I continue to remind them that we cannot do the job of protecting the great State of Maryland without partnerships and relationships with other agencies and our friends in the private sector. One of the most cherished relationships we have is with the National Fire Sprinkler Association, not only the national office but the local Capital Region Chapter.

Since becoming Maryland's fourth State Fire Marshal, the relationship and partnership with both has only become stronger and I cannot be more thankful for all that the Chapter and National office has done for the State of Maryland. All I have to do is pick up the phone or send a text and these folks are responsive and never say no to my many requests for help.

When the national office moved to Maryland we greeted them with open arms and knew that we had another partner in the state that could help us with our mission of protecting the citizens of Maryland from fire. I would like to highlight just some of what the chapter and national office have done here in the State of Maryland.

When I first met with the Chapter leadership, I asked if they could put on free training for all fire inspectors across the state and incorporate the sprinkler trade within the training to bring us closer so we could have a better understanding of each other and we could find common ground in accomplishing our mission.

Without hesitation the training was established and we were off and running. The training is done three to four times a year and we see up to 100 folks attend each session. In addition to the training, lunch is included, which is a great addition that helps make this so successful. The training has gone on over the last several years and continues to be one of the highlights for the fire safety inspectors across the state.

In addition to the training, the members of the Chapter have provided sprinkler protection within the National Fire Heritage Center in Emmitsburg, Maryland. This is where the nation's fire service history is stored, and now, protected forever. Just recently, and again with the gracious donors of material and personnel, the Fire Sprinkler Lab at the Maryland Fire and Rescue Institute was competely upgraded for students of the University of Maryland Fire Protection Engineering Department, Fire Inspectors and the entire Maryland Fire Service.

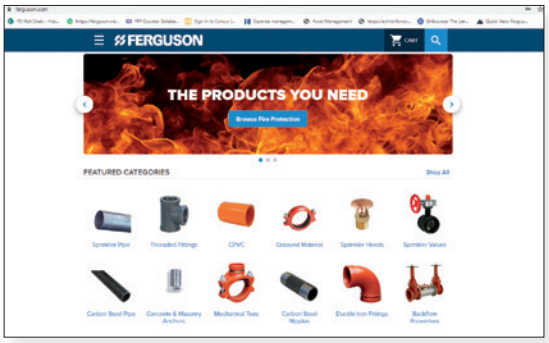
The Chapter also provides a yearly contribution to the Maryland Fire and Rescue Memorial Foundation. This foundation is responsible for the upkeep of the memorial grounds in Annapolis, where each year we honor those that have given the ultimate sacrifice to the citizens of Maryland. The National Office has been great with providing side-by-side burn trailers, space to hold meetings, and are there when we need them in Annapolis for legislative issues regarding residential sprinklers.

This year was no different in Annapolis when a bill was introduced in both chambers that would allow the Office of the State Fire Marshal to enforce the requirement for residential sprinklers in new one- and two-family homes. When the time came, the sprinkler industry was there in force to provide testimony in favor of the bill. The bill did not receive any opposition in either the House or Senate hearing and made it through the short session due to the COVID -19 pandemic, passing in both chambers and going to the Governor to signature. We are so proud and honored to be one of two states that require residential sprinklers in new homes. This legislation provided extra strength to this requirement.

In closing, I just want to say thank you to Shane, Vickie, Terin, Gary, Caleb, Dennis, the National Office, Terry, Josh, Rich, and the entire membership of the Capital Region and to the Chair of the Board Kent Mezaros for putting these folks in these positions because they get it and they have helped saved the lives of many Marylanders from fire!•

SUPPLIERS SHOWCASE

Get to Know Ferguson Fire & Fabrication



By Lauren Jacumin, Marketing Manager Ferguson Fire & Fabrication

About Us

Through a combination of organic growth and judicious acquisitions beginning in 1987, Ferguson Fire & Fabrication became the nation's largest Independent distributor of fire protection systems in 2005. Ferguson provides contractors a huge inventory of sprinkler heads and devices, special hazards equipment, fittings, pipe and hangers. Ferguson also supports fire protection contractors with the most locations and fabrication facilities across the United States with industry leading and highly trained associates. This means contractors can find the services and support they need, when they need it.

Quick Access to the Products Fire Protection Contractors Need

Ferguson Fire & Fabrication is proud to help their customers do their jobs every day. Ferguson has distribution centers strategically located throughout the U.S. and Canada. With more than six million square-feet of warehouse space and 95,000 unique SKUs, the company provides unparalleled fill rates with the industry's most comprehensive product selection. Ferguson Fire & Fabrication continually leverages vendor relationships to provide customers with the highest quality inventory that addresses the many needs of the fire protection industry:

- Fire sprinklers
- Steel pipe
- Galvanized pipe
- Grooved coupling and fittings
- CPVC
- Cast and ductile iron fittings
- Hangers
- Fire alarms and detection components
- Backflow Preventers
- A variety of engineered fire products

Industry-leading Associates

Ferguson is dedicated to providing the best, brightest and most

experienced associates in the fire protection industry. Hands-on product and process training is predominant throughout the company's business structure. It's Ferguson's associates who make the difference, meeting and exceeding customers' expectations day in and day out.

Industry-leading Fabrication

Ferguson has the most ISO 9001:2015 certified fabrication facilities, making the company the largest certified sprinkler fabricator in the country. Ferguson meets the most rigorous international quality standards in the fire protection industry. From training to skill validation, raw material procurement to sales and delivery, the company adheres to the standards and procedures that lead to top quality performance. ISO 9001:2015 certification is a continuous process that underscores Ferguson Fire & Fabrication's commitment to setting the industry-leadingstandard for quality in fire sprinkler fabrication.

Digital Capabilities

Ferguson Fire uses a few different digital technologies to meet the customer right where they are, and save them time by making it easier to get the information and products they need to keep their jobs rolling. FireList is our industry-unique program that allows our customers to send CAD files from many popular programs in the industry, and get quotes back faster on both loose material and lists of fabricated work (spool pieces) that FireList outputs

The Suppliers' Showcase feature is available to any NFSA Supplier and/or Manufacturer member in good standing. If you are interested in having your company featured here, please contact Joanne Genadio at genadio@nfsa.org or 443.863.4399. Features will be published on a first come, first serve basis.

FERGUSON
FIRE & FABRICATION

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Ferguson.com provides our customers with a view into their account with us for purchasing and accounting, as well as share all kinds of relevant information with just a click or two.

– Order History & Order Tracking
– Quotes & My Lists
– Pricing & Availability
– Spec Sheets & Install Guides
– Accounting Information & Electronic Bill Pay
… and so much more!

We also have a mobile Ferguson app that provides access to a lot of the same information as our website, in addition to offering barcode scanning for both easy order entry and help with basic inventory management Our new service, Text-2-Counter allows our customers to use their phones and text their inquiries, pictures, orders and more –directly to our sales teams in the branches, and our branches can respond with the same ease right back to mobile phones

Everything we do on the digital front is an effort to help our customers win more jobs, complete them faster, and have more information at their fingertips than ever before – allowing them to focus on their business and know that Ferguson Fire has their loose material and fabrication needs taken care of.•

FIRE SPRINKLERS IN ACTION

Blaine, Minnesota

Golf Course Clubhouse Saved by Single Sprinkler

Thank you to Maddison Zikmund of the Spring Lake Park/Blaine/Mounds View, Minnesota Fire Department for sending in this sprinkler save!

On Friday, May 22nd, a fire began in the clubhouse of the TPC Golf Club in Blaine, Minnesota. The call came in as fire alarm, no smoke, Fire Department Chief Anderson arrived to a lot of smoke. The cause of the fire was determined to be spontaneous combustion of grease-filled towels. One fire sprinkler activated and controlled the fire.

"Moral of the story, sprinklers save lives and property!" said Tony Scavo, Support Services Supervisor/Captain 10, Spring Lake Park/Blaine/Mounds View Fire Department.•

Greeley, Colorado

Single Sprinkler Saves Greeley, Colorado Condo Complex

Thank you to Greg Becker of the Greeley, Colorado Fire Department for submitting this sprinkler save.

On February 18th, fire department units were dispatched to a structure fire. Engine 1 arrived and reported a working basement fire. Attack and search were initiated, as well as water supply and ventilation. Crews found a bedroom fire with an activated sprinkler that had controlled the fire and limited its growth. Remaining fire was extinguished.

Primary search was all clear in fire apartment and then in all other units in the building. Air monitoring was also clear throughout the building after ventilation. Investigation took place and was conducted by GFD shift investigator and GPD officers. Red Cross was utilized for displaced occupants from fire apartment only. Other occupants were able to return to units.

"The activated sprinkler limited fire growth and allowed occupants to safely exit the structure," Greg Becker. •

Nuts and Bolts:

Type of System:	13R
Sprinklers Activated:	1
Value of Building:	$67k
Value Saved:	$14,820.00 was the restoration costs from the fire. $52,180.00 was saved.

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Caldwell, Idaho

Single Sprinkler Saves Caldwell, Idaho Apartment Complex

Thanks go to the Caldwell, Idaho Fire Department for submitting this sprinkler save!

Caldwell Fire responded to report of a fire at an apartment complex on the evening of June 6th. Upon arrival, crews found an empty apartment with evidence of smoke filling the unit. The fire initiated in the kitchen, activating the sprinkler system, which

confined the blaze to the room of origin.

According to the Battalion Chief, the activation of a single sprinkler successfully mitigated the fire, keeping the families that reside in the building safe. Fire Invsestigator Brad Johnson concluded if not for the sprinkler system activation, the room of origin would have flashed over within two minutes and quickly expanded to the apartments above and adjacent, blocking exits for those residences. "Even with our six-minute response time, we would have had a rescue scene upon arrival," he stated

Fortunately, due to the apartment complex having a maintained sprinkler system installed, there was relatively little damage, low risk to firefighters, and one family that was displaced.

"If there were not sprinkler system in this building, this would be a different situation. We could be out a building and 6 families could be out of their homes."- Complex Maintenance Management.

Nuts and Bolts

Sprinklers Activated: 1

Value of Building: $750K

Value of Contents: $450K

Value Saved: $1.2 million

Mooresville, North Carolina

Fire Sprinkler Controls Fire in Mooresville, NC Cardboard Packaging Facility

Thanks go to Ronnie Jason Workman of Mooresville Fire-Rescue for sending us this sprinkler save!

"The outcome this morning was a great example of why fire sprinklers in any building protect life and property. Because of this 'sprinkler save' the company will have minimal down-time with no loss of jobs as a direct result of the fire."

An early morning fire at a cardboard packaging facility in Mooresville was controlled by the fire sprinkler system limiting damage to a single piece of production equipment and sheets of raw cardboard material near the fire's location. All 30 employees were able to safely evacuate.

Mooresville Fire-Rescue was dispatched to a reported structure fire at and arrived eight minutes later to find the building's fire sprinkler system had contained the fire to a piece of equipment that feeds blank sheets of cardboard into a printing and cutting process. Once the scene was placed under control, firefighters provided assistance as WestRock safety and maintenance team members removed exterior panels of the equipment to confirm the fire had been fully extinguished. Damage was limited to one piece of equipment valued at $2 million.

Nuts and Bolts

Type of System: Wet

Number of Sprinklers Activated: 1-2

Value of Building: $150 million

Value Saved: $148 million

Better Late Than Never

by Jason Webb, *Director of Industry Affairs, Potter Electric Signal Company, LLC*

I chose Jason Webb to write an article for the Member Takeover edition of the Inspection, Testing, and Maintenance column of National Fire Sprinkler Magazine because of his vast knowledge of, and passion for, the fire protection industry. Jason has had various roles in the fire protection industry and now works for Potter Electric Signal. Potter continues to stay on the cutting edge of fire sprinkler technology and produces exceptional products. There is no doubt that his article will be very informative. –Vince Powers

If you ask facility managers about their biggest maintenance concern regarding their fire sprinkler system, many will tell you it's corrosion. Thankfully, as an industry, we have made tremendous strides towards designing in corrosion mitigation methods from the start. Many specifications today call out nitrogen generators as the source of supervisory air for dry and preaction systems. But what do we do about existing systems that have no preventative strategies in place?

Over the past decade or so, there has been a significant amount of research into corrosion in sprinkler systems and, more importantly, what we can do to mitigate its effects. Countless articles have been published and presentations made on the subject. Corrosion continues to plague our industry, causing maintenance headaches, turning facility managers attitudes about fire sprinklers negative, and sometimes even resulting in system failures. All this despite proven methods for successfully managing it.

Common sense tells us that corrosion doesn't happen overnight, but in reality, it does. While the results of corrosion may not be apparent for a while, the process begins almost immediately. Any time you bring together steel, water, and oxygen, corrosion will occur. Some factors, like heat and cold cycles or certain water supply characteristics even accelerate the process. But regardless, over time, corrosion will take place unless you completely remove one of those three components.

Corrosion is especially common in dry pipe systems since removing 100 percent of the water that comes from testing and condensation is all but impossible. That coupled with the fact that air compressors needed to replace escaping supervisory air bring in a fresh supply of oxygen as the operate. Often that oxygen brings with it added moisture from the atmosphere where the compressor is located.

All these are reasons why taking steps to reduce corrosion early on, at the design and installation phase, is so critical. Just because the initial installation didn't take corrosion prevention measures into account doesn't mean that it's too late. There are things you can do now to extend a system's life and reduce ongoing maintenance concerns. Like anything, the first step is establishing a baseline from which to start the corrosion prevention measures. A good place for that to begin is with an internal inspection.

The first reference to opening the system and looking inside on a regular basis went into NFPA 25 in the 2002 edition. This critical task helps ensure that corrosion or other obstructive material is identified so that steps can be taken to mitigate it. But with the changes to NFPA 25 beginning with the 2014 edition that took the prescriptive requirements out of the standard for opening up the system, it's more important than ever to adequately assess the actual conditions inside the system. This still often means looking inside the pipe.

Another option for trying to quantify the severity of corrosion is the use of corrosion monitoring stations. These devices are placed on the sprinkler system and are exposed to the same environment as the systems itself, thereby simulating the conditions inside. Corrosion stations come in a variety of configurations and usually have multiple means of detecting and measuring corrosion.

For existing systems, whether an internal assessment reveals corrosion, corrosion monitoring devices alert you to a problem, or something more ominous like pinhole leaks beginning to appear, the priority becomes taking action to slow the corrosion process. Just as with new systems, replacing the supervisory air with nitrogen can dramatically and quickly change the conditions inside the sprinkler system. Since nitrogen generators just replace the air supply, retrofitting a nitrogen generator onto an existing system is not a difficult task.

It's important to understand that adding a nitrogen generator to an existing system will not repair damage already done. If pinhole leaks or other serious corrosion is present in some areas of the system, those sections of pipe need to be replaced. But once that's done, and a nitrogen generator has been added to the system, the ongoing corrosion process begins to slow immediately due to the lack of oxygen. The added benefit of the extremely low dew point of the nitrogen being introduced is a reduction of the moisture available to support the process as well.

It's never too late to take steps to reduce the damaging effects of corrosion in sprinkler systems. The key is to take those steps as early in the system's life as possible. The earlier nitrogen is added to an existing dry or preaction system, the less corrosion will impact it.•

These Incentives Improve Community Safety and Provide Developer Savings

In exchange for installing home fire sprinklers in entire developments, authorities having jurisdiction can offer locally negotiated trade-ups as incentives to developers. These incentives may include:

- Street-Width Reduction
- Longer Dead-End Streets
- Tee Turnarounds Permitted
- Increased Street Grades and Building Setbacks
- Additional Units Permitted
- Expansion of Existing Water Supply May Not Be Needed
- Increased Hydrant Spacing
- Subdivision Single Access Point
- Gated Communities

HOME FIRE SPRINKLERS PROTECT THE ENVIRONMENT*

Reduce greenhouse gas emissions by 98%

Reduce fire damage by up to 97%

Reduce water usage to fight a home fire by as much as 91%

Reduce water pollution

* *Environmental Impact of Automatic Fire Sprinklers*, FM Global, 2010

Home Fire Sprinkler® COALITION
Protect What You Value Most™
HomeFireSprinkler.org

For more information about home fire sprinker incentives, including case studies, video testimonials, fact sheets and NFPA 13D information, visit our website at HomeFireSprinkler.org/crr.

Home Fire Sprinklers: A Win-Win for Your Entire Community

Home fire sprinkler incentives can reduce construction costs, while protecting residents and firefighters, and help to protect the environment.

Air Compressor Technologies Used in Dry Sprinkler Fire Protection Systems

by Bo Coffman, *Gast Manufacturing*

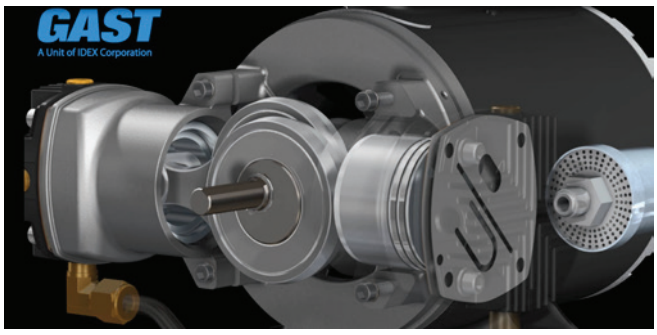
The role of an air compressor in a dry sprinkler system is vital. It's at the heart of creating and maintaining system air pressure, often working with pressure maintenance devices. Here I'll review some of the different air compressor technologies used in dry sprinkler systems and key attributes to account for when selecting one. First off, a compressor's airflow capacity (or displacement) needs to be complaint with NFPA-13 initial 30-minute fill requirements (NFPA-13 8.2.6.3). From that point, there are choices, and I'll talk about some of the differences. Many times, a site specification may call out a specific air compressor, but often equivalent alternatives will be mentioned as acceptable.

The system air pressure range of most dry sprinkler systems is 10 PSI to 50 PSI. As the dry pipe architecture experiences pressure drop (no system is perfectly leak proof, and temperature changes effect pressure changes as well) the air compressor is depended on to maintain and restore system air pressure.

Two common air compressor technologies

For the required air pressure range of dry sprinkler systems, reciprocating air compressors are commonly used. The importance of industrial grade reliable performance and long life become essential with a sprinkler system. Two types of reciprocating compressors are covered here: Piston and Rocking Piston. Both types cover a size range that includes riser mounting, and floor mounted units with air tank storage.

Piston compressors have been used for decades on dry sprinkler systems. A piston head and rod are articulated in a cylinder. The



piston rod turns on a motor shaft with bearings, eccentrically located on that shaft so it moves back and forth in the cylinder. Piston heads using wrist pins and bearings travel up the cylinder, as air volume is decreased and pressure increases (Boyle's Law of pressure and volume and Charles' Law that accounts for temperature change are at work here, for the interested reader). Piston head seals, or rings, maintain that pressure difference as pressure increases. Rider, or stabilizer, rings are often found on piston heads to keep them straight inside the cylinder. These compressors need to be serviced over time. Some piston compressors require lubrication to operate, and others are rated for oil-less operation. Oil-less piston compressors obviously will not need lubricators or oil as part of regular service. In both types, piston rings and rider rings where applicable, air filters, and occasionally bearings are common service parts.

Air compressor reliability and service life is critical. Dry sprinkler systems with frequent pressure drops will result in the air compressor cycling on and off a lot. Run time of an air compressor in the life of a sprinkler system can reach thousands of hours. I strongly suggest using only industrial grade air compressors. Sometimes, consumer grade air compressors that you can find in retail home improvement and hardware stores are installed on dry sprinkler systems. The risk of sprinkler system failures or alarms can be much higher in these cases, as compressors in the consumer category will often require service much sooner. All Gast piston compressors are oil-less operation, built of rugged industrial grade construction, and run for thousands of hours before service. Another caution for consumer grade air compressors is that they can be much louder, which brings us to the second type of reciprocating compressor, rocking piston.

Rocking piston compressors are similar in design to piston compressors with a few key differences. Rocking piston has a simplified rod design, they can be quieter in operation to piston compressors, and industrial grade rocking piston seals can last even longer than piston rings. They use the same eccentrically placed rod design to travel up and down the compressor cylinder, but there is not a piston head at all in a rocking piston compressor. A cup seal folds over the flat top of the piston rod and is designed to fit the cylinder for achieving compression ratios in the same pressure range as articulated piston compressors. The compressor rod then "rocks" inside the cylinder as it travels up and down, hence the name. Gast rocking piston compressors also feature an innovative internal sound baffling design that makes them much quieter than piston compressors. Used in a wide variety of applications, including medical and environmental devices, Gast rocking

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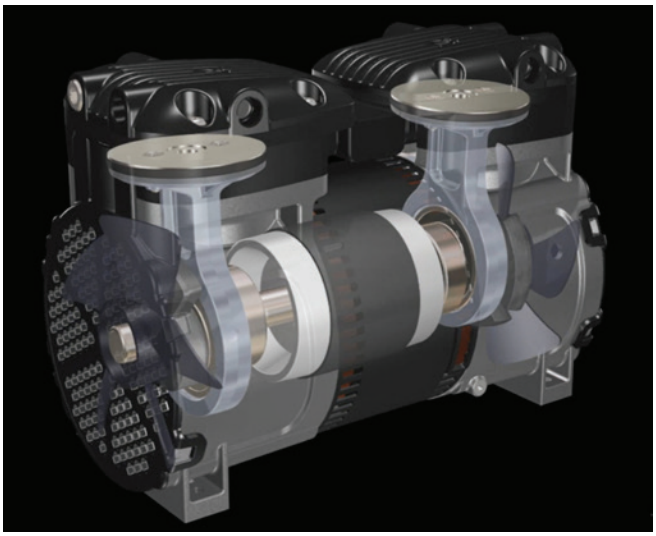
piston compressors are rugged for dry sprinkler systems and have cup seals that can live at least twice as long than piston rings for similar running conditions. All Gast rocking piston compressors



are oil-less and cup seals are easy to service when needed. A new innovative option called Sound Shield® will be available soon for Gast rocking piston compressors. Sound Shield can retrofit in the field and offer an even greater level of quiet operation for sensitive locations such as nursing homes and office buildings.

As NFPA-13 calls out (section 4.8 and 8.2.6.8 for example), sprinkler systems can alternatively use nitrogen, often when a higher level of corrosion protection may be called for. In addition to Gast's wide selection of piston and rocking piston compressors for dry sprinkler systems using air, Gast compressors are also used with nitrogen generator manufacturers in the dry sprinkler industry.

Gast product information on all piston and rocking piston compressors for dry sprinkler systems will show system capacity in gallons for each model to aid in specifying the right size. Lastly, remember that good air filtration is always needed to ensure reliable compressor operation. While compressor seals last much longer it's recommended that replacement filters and filter elements are put on a service interval that the compressor manufacturer recommends. Close attention should be paid to that, as simple filter service can really prolong the life of a compressor and ensure proper pressures and flows are achieved, avoiding alarm trips.

As the fire protection industry grows and use of air and nitrogen systems are on the rise, I hope this overview of common air compressors technologies is helpful. Gast is proud to be an NFSA member!

Bo Coffman is a business development manager at Gast Manufacturing Inc., a Unit of IDEX Corporation. He's worked at Gast for 27 years and for much of that time has contributed to the use of air compressors for dry sprinkler fire protection equipment. All Gast air compressors are designed and built in Benton Harbor, MI USA. Gast started in 1921 and we look forward to celebrating 100 years of business very soon!

Children Taking the Sting Out of Isolation

by Elizabeth Lafond Coppez

Editor's Note: Elizabeth is Dave Lafond's daughter. She writes for the Springfield, Massachusetts Republican, where this article was originally published.

Thank goodness I have kids during this pandemic. Many parents right now may think I'm outrageous- wishing for the opportunity to only worry about themselves. But for me, being trapped at home with a three and six-year-old relying on my every move is strangely comforting.

Let me explain.

As a society, we've never been more together, although physically apart. And by referring to "together," I mean that we're all experiencing the same feelings. Worry, anxiety, insomnia, fear, anger, frustration, sadness, acceptance, determination and hope.

Our children were abruptly separated from their beloved schools, teachers and friends; high school and college seniors are missing milestone events like prom and graduation; we cannot shop leisurely or dine out for celebrations; many jobs have vanished.

When you think society cannot possibility halt any further, more restrictions come via news, email, phone, text and social media.

The corona virus, or COVID-19, is a very scary invisible threat to all of us. Who knew we would be amidst a worldwide medical emergency? Although difficult, staying home is how we can all prevent the continuous spread of this highly contagious virus.

It's true that we lose track of what day it is and wake up each morning hoping this nightmare is over, but I know my purpose. My role right now in this moment in time, is to be brave for my children.

I'm diving into my role as mother deeper and deeper everyday —I'm baking like Betty Crocker, teaching like Mr. Rogers, and dancing like...well, like myself—not very well.

Google *'Toody Ta'* on You Tube and you'll catch my drift.

Truly, focusing on my children's needs is blurring the horror of this pandemic from my view.

But please know that my days in 'Mommy School' are not perfect. By week three, my three-year-old decided he was done with the projects I'm offering. Recently, he was having a day full of meltdowns and misunderstandings. In my frustration, I said aloud, 'I just don't know what's wrong with Joseph today.' My daughter's response was, 'Mommy, maybe he just needs a hug.'

How pure – the wisdom from a first grader should never be overlooked.

A hug is a simple gesture with the power to heal. My children's maternal and paternal grandparents want nothing more than a hug from Grace and Joseph. There are grandparents around the globe longing for that simple hug.

So many people in our world are sick with COVID-19 and they cannot get a hug from a loved one. So many are sick with other diseases or aliments, and they can't get a hug from a loved one because of visitor restrictions. And not to mention our elderly in nursing homes or rehab centers.

But our health care workers are giving everything they have to their patients - and I believe their care has roots of love. We extend our thanks to each and every one at the front lines of this threat.

My working mom friends have so much more to handle during this time. Working and homeschooling simultaneously is nearly impossible. My teacher friends are especially feeling the pressure to create online learning opportunities for their students – we are all grateful to you.

So the next time I lose my patience or really don't feel like playing a seventh round of Candy Land, I'm going to dig deep and keep going. My kids need routine, repetition and playtime, and a mommy being present.

This unusual worldly situation is temporary. Someday we'll be able to meet friends for coffee at our favorite bakery, attend group exercise classes, visit our libraries and support our local businesses without this invisible threat at the forefront.

Until then, we must try to sleep well, move our bodies, meditate, have faith, and find what gives us joy during this worldly pause. As for me, I must pour my energy into my kids, because their innocence and ignorance about the world is taking the sting out of this new reality of isolation. •

Reliable Automatic Sprinkler – A Proud History

by John Corcoran

The year was 1920. The short-lived League of Nations was formed in the hope of keeping peace in the aftermath of World War I. Black market liquor and speakeasies became the rage in the United States after passage of the Volstead Prohibition Act. [1] In a haunting parallel of 2020, the world reeled and struggled to find its way forward in response to the Spanish Flu, a deadly pandemic the likes of which it had never seen, and for which it was woefully unprepared. [2]

And on January 23rd, Frank J. Fee founded the Reliable Automatic Sprinkler Co., Inc.

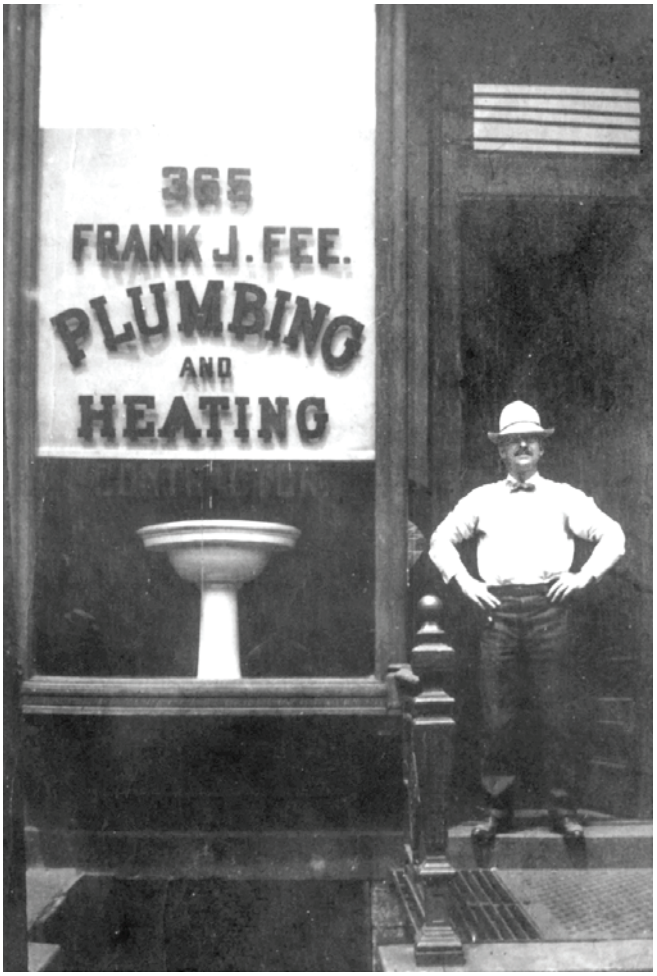
Frank was the youngest of nine children, born in County Monaghan, Ireland on July 14, 1872. In 1888, 17-year-old Frank departed from Liverpool, England on the S.S. Britannic, arriving on Ellis Island, New York on New Year's Day 1889. He settled in Manhattan, where he began as a laborer and completed an apprenticeship in the plumbing industry. Young Frank continued as a journeyman plumber and became a member of Local No. 2, Journeymen Plumber's Association, U.S.A. By 1896, he was a Master Plumber and operated a plumbing business on West 40th Street in New York City: Frank J. Fee Plumbing & Heating Contractor.

In the wake of tragic early 20th Century fires such as the Iroquois Theatre (Chicago, 1901) and the Triangle Shirtwaist Fire (New York, 1911), public outcry led to legislation and building codes mandating the use of automatic sprinkler systems in many manufacturing and public facilities.[3] Although there were over 50 manufacturers of fire sprinklers in North America and Europe at that time, many of the sprinklers in service in that period were deemed "unreliable" or "very unreliable". [4]

Recognizing the opportunity for an improved, stronger link sprinkler, Mr. Fee began to design and secure patents for automatic fire sprinkler devices as early as February 1916. His first patent application was awarded in January 1918. In February of the same year, he received a patent for a fire sprinkler with a strengthened fusible link element. By 1920 his new company was in production of the Issue "A" solder link sprinkler.

"My grandfather was a gregarious Irishman," mused Reliable Board Chair FJ Fee III. Combined with his grit and political savvy, Frank's personal and organization skills made him an effective leader not only of his company, but also by representing the young industry through political engagement and his dedication to professional associations.

Frank steered his foundling company through its early years, often bootstrapping it with personal capital and foregoing his sal-



Frank J. Fee, circa 1915

"The third generation of Fee family continues to support the fire protection industry associations that are devoted to saving lives and protecting property through the promotion of fire sprinklers. Frank J. Fee III served the NFSA and NFPA as a long-time Officer and Board Member including the position of Chairman of the Board at the NFSA."

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ary to allow the company to flourish, even during the depths of the Great Depression. By 1937, in a position of financial stability, Reliable moved its operations to 78 Bronx Street in Mt. Vernon, New York.

Son Frank Fee Jr., a recent Mechanical Engineering graduate from New York University, was the primary architect and engineer for the new facility. Operating from its new location, Reliable customers benefitted from both improved capacity and the expansion of its product line. After Frank Sr.'s death on March 23, 1945, Frank Jr. assumed the company presidency and oversaw the company's expansion by adapting Reliable to the booming global post-war construction market.

Frank J. Fee Jr. continued to promote and support the sprinkler industry by becoming an active member of the National Fire Protection Association. He served as Secretary-Treasurer, a member of the Board of Directors, Vice Chairman of the Board, and ultimately Chairman.

The NFPA's Board of Directors established the Frank J. Fee Jr. Scholarship, an academic scholarship in Fire Protection at the University of Maryland, which is still awarded to this day. He became a Charter Member of the Society of Fire Protection Engineers. Frank Jr. also supported the National Fire Sprinkler Association, serving on the Board of Directors and in the positions of Treasurer, President and Board Chairman.

In 1969, grandson Frank J. Fee III was named as Executive Vice President, and in late 1976, after his father's death, assumed the presidency. At the same time, Kevin T. Fee was elected as Executive Vice President, with Frank Jr.'s fourth grandson Michael joining the company shortly thereafter. During the late 1970s and 1980s, the first steps were taken to build international sales and distribution beyond what had been solely a Fee Family sales team in a single location in New York. Four U.S. Regional Managers: Tom Field Sr., Brett Sharpenter, Jim Curtis, and John Rogers, and one International Regional Manager, Dave Leonard, joined the company. Additional distribution centers in Atlanta, Chicago, and Los Angeles were also established. Today, the global sales, technical services, and marketing teams total over 100 professionals.

This period also marked the beginning of rapid growth in product technology in both the sprinkler industry and at Reliable. Use of fast response elements, larger K-factors, extended area coverage, and unique distribution patterns for warehouse protection and residential life safety was injected into sprinkler design.

"Lots of factors drove these changes," noted Reliable VP of Product Technology Steven Wolin. "Changes in warehouse commodities and how we store them, combined with the recognition of the life-saving properties of sprinklers with fast response elements were key," he continued. "And the ability to quickly and accurately calculate system hydraulics made these advances practical."

The third generation of Fee family continues to support the fire protection industry associations that are devoted to saving lives and protecting property through the promotion of fire sprinklers. Frank J. Fee III served the NFSA and NFPA as a long-time Officer and Board Member including the position of Chairman of the Board at the NFSA. In addition, Frank J. Fee III was presented

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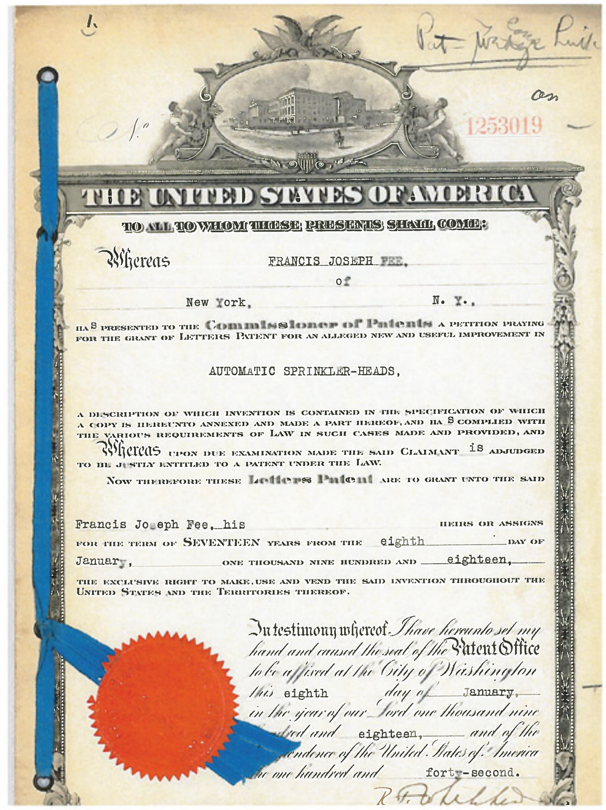


No. 1253019

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

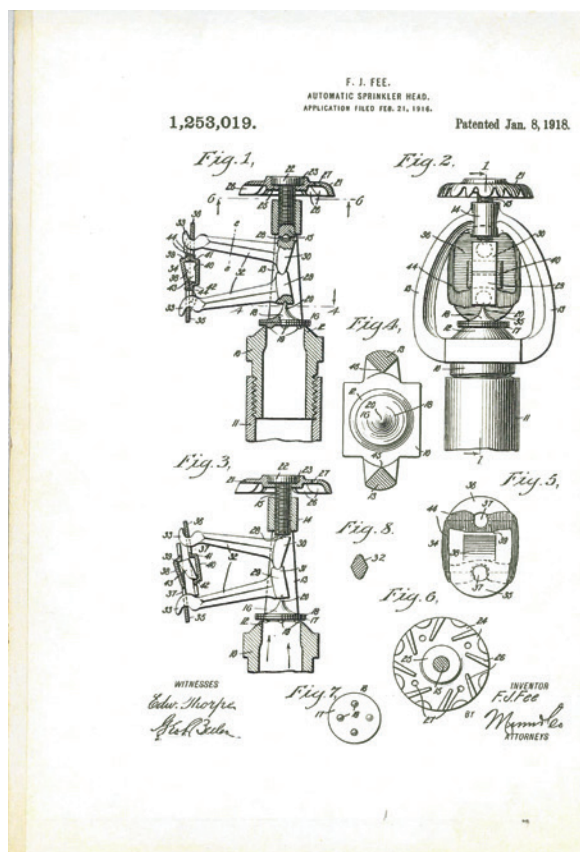
Whereas FRANCIS JOSEPH FEE, of New York, N. Y., has presented to the Commissioner of Patents a petition praying for the grant of Letters Patent for an alleged new and useful improvement in AUTOMATIC SPRINKLER-HEADS, a description of which invention is contained in the specification of which a copy is hereunto annexed and made a part hereof, and has complied with the various requirements of Law in such cases made and provided, and

Whereas upon due examination made the said Claimant is adjudged to be justly entitled to a patent under the Law.

Now therefore these Letters Patent are to grant unto the said Francis Joseph Fee, his heirs or assigns for the term of Seventeen years from the eighth day of January, one thousand nine hundred and eighteen, the exclusive right to make, use and vend the said invention throughout the United States and the Territories thereof.

In testimony whereof I have hereunto set my hand and caused the seal of the Patent Office to be affixed at the City of Washington this eighth day of January, in the year of our Lord one thousand nine hundred and eighteen, and of the Independence of the United States of America the one hundred and forty-second.

Frank J. Fee's 1918 Patent for
"…new and useful improvement in automatic sprinkler-heads."



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with the AFSA's Parmelee Award (1990), NFPA's Distinguished Service Award (1998), and NFSA's Golden Sprinkler and Hall of Fame Awards (1998 & 2018). Kevin T. Fee continues as the longest standing NFSA Board member and former Chairman who also has been recognized with the NFSA Golden Sprinkler Award (2008). Michael R. Fee served as a long-time member and Chairman of the AFSA Supplier Council.

It was clear in the early 2000s that capacity in the New York facilities would not be adequate for the next industry growth cycle. In 2004, the decision was made to relocate valve and sprinkler production, product development, and technical services to a new 305,000 ft^2 state-of-the-art facility in Liberty, South Carolina. The relocation decision embodied the Fee commitment to remain a U.S. manufacturing company, confident the new facility would allow Reliable to be even more cost competitive in a global market. Full operation in Liberty began in July 2007 and was expanded in 2018 to a total of 467,000 ft^2.

The 2010s also marked the beginning of the Fee family's 4th generation of leadership at Reliable, with Frank J. Fee's great-grandsons Kevin "KJ" Fee Jr. and FJ Fee IV joining the management team.

"My grandfather created Reliable with the core values that we produce quality products in the United States, treat our employees and customers as family, and to not compete with our contractor customers," concluded Reliable President Kevin T. Fee. "We are proud to adhere to those values today and tomorrow…just as he did when he founded Reliable 100 years ago."•

Reliable's Liberty, SC Manufacturing Headquarters

John Corcoran is the Digital Marketing Manager at Reliable Automatic Fire Sprinkler Co., Inc. He has worked in Marketing and Commercial Operations roles in the Fire Sprinkler Industry since 1993.

1. The People History, 1920. (http://www.thepeoplehistory.com/)
2. Ries, Julia, 2020. Here's How COVID-19 Compares to Past Outbreaks, healthline.com.
3. Solis, Hilda L. "What the Triangle Shirtwaist fire means for workers now" Washington Post (March 18. 2011)
4. Dana, Gorham, 1914. Automatic Sprinkler Protection, Thomas Groom & Co., Inc., Boston.

Evolution of Reliable sprinklers: 1921 Issue 'A', 1928 Issue 'B', 1948 Model 'C', 1982 Model G, 2020 Series KFR.

The Importance of Fire Sprinklers!

by Tommy Demopoulos, *Assistant Fire Marshal, Tamarac, Florida Fire Rescue*

"Smoke and flames showing from the alpha side, show Engine 78 with command and declaring a working fire!" Tamarac Fire Rescue sent this communication on February 20, 2019, when a structure fire broke out at a commercial warehouse. This warehouse was approximately 7,600 square feet, with business use in the front and storage/industrial use in the rear.

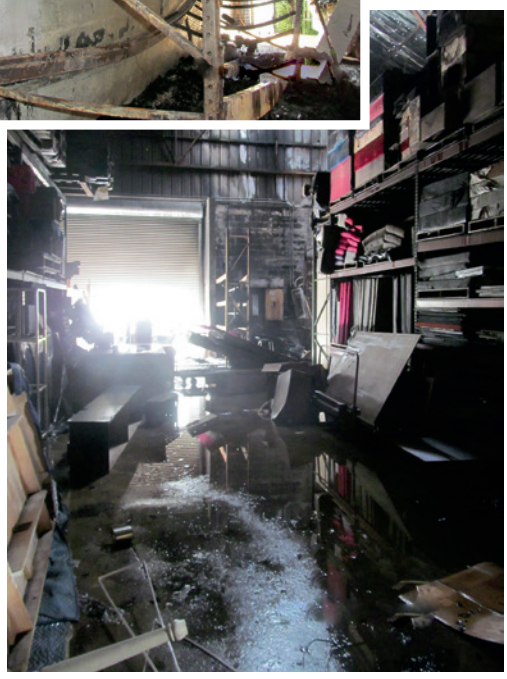
This firefight lasted roughly three hours and caused over $100,000 in direct fire damage. It caused a huge setback for the business, a party planning company. They lost most of their product, as well as time needed to set up at scheduled events. In addition, they faced the struggle of relocating their business.

Ironically, approximately one year later in January 2020, the same company had another fire in their second warehouse, located just two buildings down from the first. This incident went drastically different. For starters, the impact was limited to a single workstation in the warehouse with minimal water damage. The business was shut down for a few hours during the investigation but was then able to re-open later that evening.

Why such a difference in the damages? Two words, fire sprinklers! This second fire took place in an identical warehouse except for the presence of fire sprinklers, a requirement during the permitting process.

There are many great benefits of fire sprinklers such as tax incentives, insurance discounts and life-safety enhancements, not to mention property conservation and economic stability. Two fires, same company and type of building, two different results due to fire sprinklers. This is a perfect case study to highlight the importance of this life safety system.•

Pictures from the fire *without* fire sprinklers



Pictures from the fire *with* fire sprinklers

Remember Your Cause!

by Justin Gey, Senior Vice President, *Wayne Automatic Fire Sprinklers, Inc*

Believe it or not, there are a lot of people that don't know or see the value in what we do. That's why it's so important for us to continue educating folks on what we do and why minutes matter so much to us! We keep saying that we are essential; we are heroes; we are important, and we are saving lives, right? But what does that mean? Every decision we make today shapes our tomorrow, not only that, but we have the ability to save someone else's tomorrow.

In 2008, Wayne Automatic Fire Sprinklers, Inc. (WAFS) donated a 13D sprinkler system in a two-story special needs shelter in St. Cloud, Florida. The family that lives there is well known in the community; they take care of and recently have adopted children with special needs. It could have been just a normal day's work to us, but it wasn't, it was much more!

In these uncertain times, it might be easy to forget how important you are and what you do means to the lives that you protect. The importance for "what you do" became a reality to a family of eight on February 8th at 1:15 a.m. Six of the eight family members are special needs children.

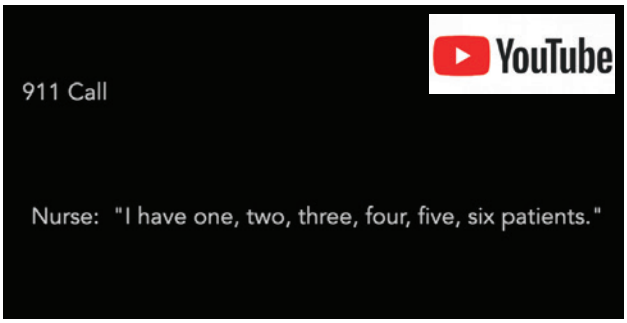
It started off as a normal evening; the mother had finished the nightly routine and after saying prayers, she had all the children tucked into bed. Shortly after everyone was asleep in the house, they were awakened by multiple explosions from outside. Oxygen tanks that were used for the children were stored on the back porch, and that's where a fire started that night. The fire attempted to enter through the first floor window behind one of the children's beds, but after breaking from the heat, the fire sprinkler that WAFS installed kept the fire from entering. This was repeated on other second story windows as the fire worked its way across the back of the house looking for a way to enter. While the life-saving fire sprinklers that WAFS installed were busy reducing heat and holding back the fire, the fire department (arriving 5 minutes after flames were noticed) was able to put all their focus on safely removing the family from the home. Minutes Matter.

It truly gives me chills to know that if there was not a sprinkler system in place and operational, these individuals would have lost their lives that night. The St. Cloud Fire Marshal that I spoke to said that he was in tears as he walked through the house the next morning because everything except for where the sprinklers (and children) were, was completely torched! He was even emotional while I was on the phone with him.

Take a look at this touching video and remember how important you are! Not only that, please share this life saving message and video with your family and friends via Facebook and any other ways you can.

https://youtu.be/DcMqGtqYKco

You all are heroes and are saving lives. Don't ever forget that.•



What's So Special About Specific Application Window Sprinklers?

by Manny Silva, *Chief Engineer and Fellow, Johnson Controls*

Specific Application Window Sprinklers are a type of automatic fire sprinkler used to protect glazing and windows in order to enhance the window's fire rating duration. Building codes typically require glazing that separates internal compartments in a building to reach a two-hour fire rating. Glazings with a two-hour rating are significantly thicker, heavier and more expensive than those that have shorter fire rating durations.

Two-hour rated glazing may also have embedded wire mesh or be tinted to enhance the fire rating; however, these features can reduce the window aesthetics, which may be undesirable to a building owner. In addition, fire-rated glass is generally heavier and more costly than regular glass. Specific Application Window Sprinklers allow for the use of clear glass as opposed to tinted fire-rated glass or wire mesh glass, which is also more cost-effective.

Specific Application Window Sprinklers are used to protect a variety of glazing assemblies including:

- Single-glazed (single pane)
- Double-glazed (double pane)
- Insulated
- Non-operable heat-strengthened
- Tempered
- Stronger glass window assemblies where each individual pane is a minimum 1/4" (6 mm) thick

Guidelines and Listing Criteria

NFPA 13 allows the development and use of a specification application sprinkler where existing codes lack a protection scheme or where a protection scheme can be improved. In order to be Listed, sprinklers are subjected to a series of tests and requirements. Section 9.3.15 of NFPA 13:2019 (see excerpt 1) provides the requirements for sprinkler-protected glazing and specific application window sprinklers.

Excerpt 1: NFPA 13:2019

9.3.15* Sprinkler-Protected Glazing. Where sprinklers are used in combination with glazing as an alternative to a required fire-rated wall or window assembly, the sprinkler-protected assembly shall comply with the following:

(1) Sprinklers shall be listed as specific application window sprinklers unless the standard spray sprinklers are specifically permitted by the building code.
(2) Sprinklers shall be supplied by a wet pipe system.
(3) Glazing shall be heat-strengthened, tempered, or glass ceramic and shall be fixed.
(4) Where the assembly is required to be protected from both sides, sprinklers shall be installed on both sides of the glazing.
(5) The use of sprinkler-protected glazing shall be limited to non-load-bearing walls.
(6) The glazed assembly shall not have any horizontal members that would interfere with uniform distribution of water over the surface of the glazing, and there shall be no obstructions between sprinklers and glazing that would obstruct water distribution.
(7) The water supply duration for the design area that includes the window sprinklers shall not be less than the required rating of the assembly

In order to achieve the specific application listing, window sprinklers are tested in accordance with the furnace test of UL199J and ASTM E-119 for a two hour duration. The standard time-temperature curve of ASTM E-119 is also used for validating two-hour fire-rated partitions. This test uses a 13-foot (4 meter) tall piece of glass and tests sprinklers in various locations relative to the glass.

To be deemed successful, no cracking or physical damage to the window is allowed and the internal and external window surface temperatures must be maintained below allowable limits. To achieve this, window sprinkler deflectors are designed to spray water in a pattern that covers 100% of the glass. Figure 1 compares water coverage of a window sprinkler to a traditional standard spray sprinkler. Note that in the case of the standard spray sprinkler, the upper corners of the glass are not wetted, whereas the glass with the window sprinkler is 100% wetted.

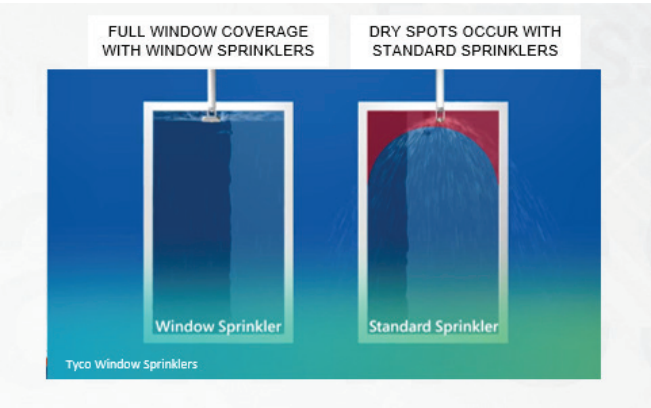


Figure 1: Depicts water distribution comparison between a window sprinkler and standard spray sprinkler.

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As aforementioned, in addition to no cracking or physical damage, temperatures during the testing must be maintained below the allowable thresholds. Figure 2 shows the temperature data from a typical UL199J test with a TYCO® Model WS window sprinkler. As shown, there are two temperature thresholds – the maximum allowable individual temperature and the maximum allowable average. The graph in Figure 2 demonstrates that all temperatures recorded during the test were well below both thresholds, establishing acceptability for a two-hour fire rated partition per ASTM E-119.

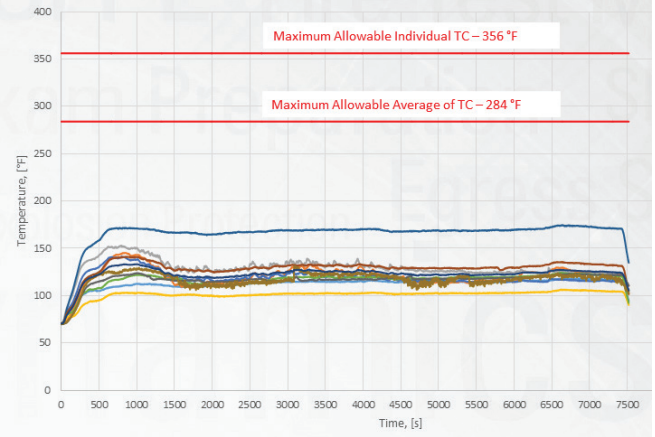

Figure 2: UL 199J furnace test temperature results

Window Sprinkler Installation Considerations

In order to achieve the desired protection, Specific Application Window Sprinklers must be installed in accordance with manufacturer requirements. Two of the most important requirements are the sprinkler position relative to the window and the spacing between sprinklers. The window configuration must be such that it allows the water distribution from the sprinkler to fully wet the window. For more than twenty years, Johnson Controls has manufactured Tyco Specific Application Window Sprinklers and now has recently launched the industry's first Concealed Window Sprinkler (Photograph 1).

Photograph 1: Tyco® Model CWS Concealed Window Sprinkler

The Concealed Window Sprinkler, Model CWS, brings to the market a higher level of aesthetics as the sprinkler is installed above the window so as there are no visual obstructions and both the sprinkler and piping are hidden. Figure 3 provides installation details for the new Tyco Model CWS.

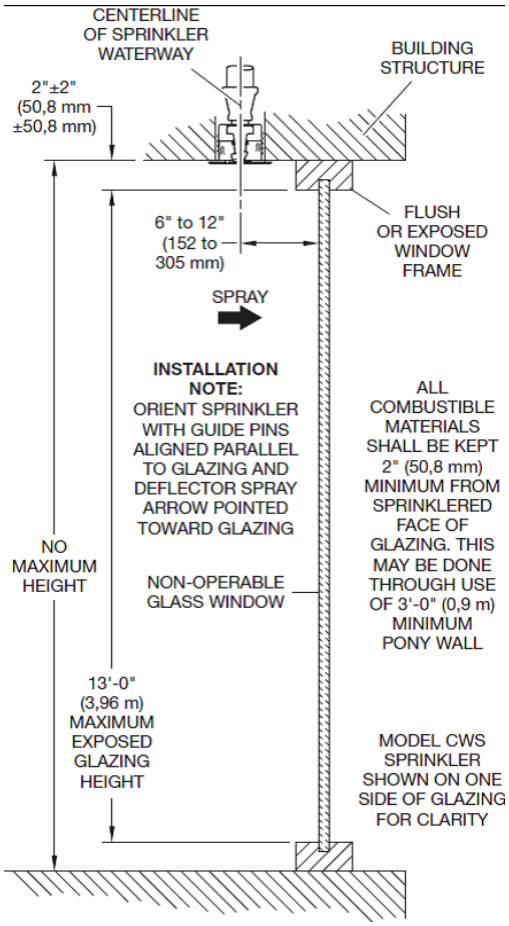

Figure 3: Installation requirements for Tyco Model CWS Concealed Window Sprinkler

When installing Specific Application Window Sprinklers, consideration needs to be given to the window framing features, such as mullions. Specific Application Window Sprinklers are not UL Listed to protect windows with horizontal or intermediate mullions since these features would prohibit water flow to the glass below the mullion. When windows contain vertical mullions, a Specific Application Window Sprinkler is to be installed on each pane of glass that is separated by the mullion.

Addressing Combustible Material Adjacency

One of fire tests conducted for the listing program involves the placement of a 40 kilowatt (kW) fire two inches from the glass: therefore, combustible material must be kept at least two inches from the glass. This can be accomplished by using a pony wall, which is a short wall placed at the base the window. Figure 4 provides an example of a pony wall.

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Depending on the location of the window or the facility specifications, the Authority Having Jurisdiction (AHJ) could give the design team and Owner the approval to use an alternative method to keep combustible materials two inches from the face of the glass without using a pony wall.

- If the window is located in a stairwell or a corridor where combustibles are not kept, the AHJ may allow you to omit the use of a pony wall.
- If the owner has a good housekeeping plan of action to keep combustibles away from windows protected with Window Sprinklers, the AHJ may allow you to omit the use of a pony wall.
- If the AHJ still requires some physical method to keep combustible materials two inches from the face of the glass, a rail or other creative/aesthetic alternative may be allowed

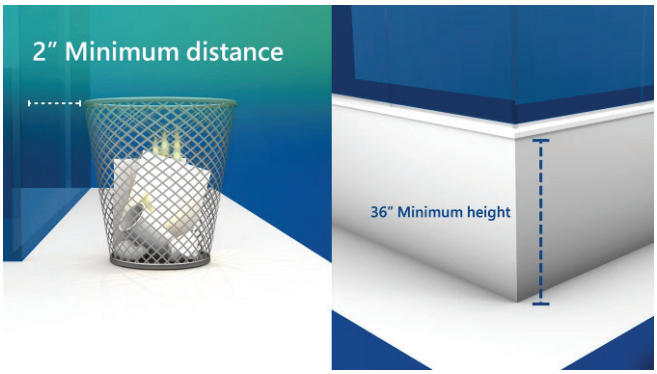
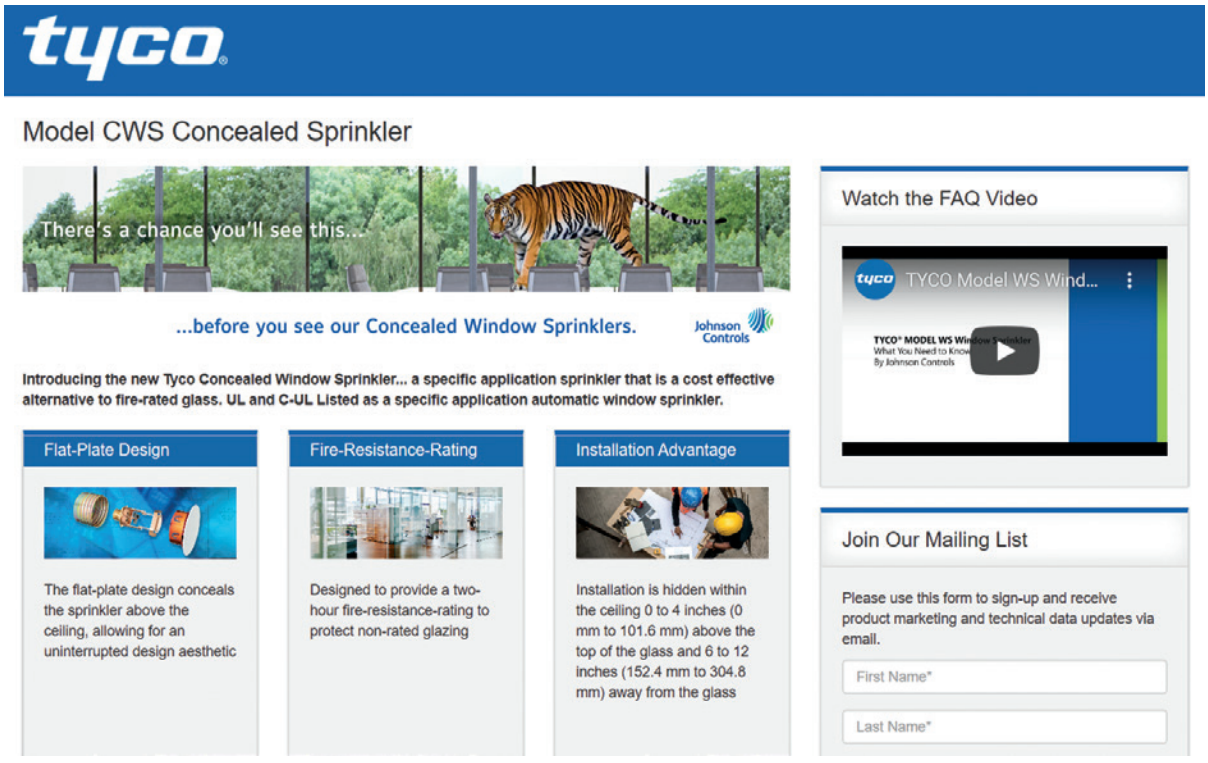


Figure 4: Pony Wall Requirements

The use of TGP FireLite Plus® laminated ceramic glass protected by Tyco Specific Application Widow Sprinklers eliminates the requirements for preventing combustible material from directly contacting the glass. This is allowed based on actual fire testing conducted using the following specifications resulting in a Listed configuration.

- Two (2) 3 feet wide by 8 feet tall panes of TGP FireLite Plus® butt-jointed together
- Pan with 40 kilowatt (kW) fire, in direct contact with window assembly, ignited and allowed to free burn for 5 minutes or until surface temperature reached 932°F
- Sprinkler is then activated and water discharged for 30 seconds
- At the end of the 30 second discharge, the FireLite Plus® ceramic glass did not have any cracks or through openings

Johnson Controls offers the most complete line of Specific Application Window Sprinklers, which now includes the first ever Concealed Window Sprinkler. Specific Application Window Sprinklers offer a variety of benefits including design flexibility, enhanced aesthetics, and cost savings. Visit **www.tyco-fire.com/cws-nfsm** to learn more about the technical details of the Tyco Models WS and CWS sprinklers.•



Maximizing Installation Flexibility and Storage Capacity Using ESFR Sprinklers

by Manny Silva, *Chief Engineer and Fellow, Johnson Controls*

Johnson Controls has been a pioneer in developing Early Suppression Fast Response (ESFR) Sprinklers for storage applications, beginning with the introduction of the first ESFR sprinkler, the K-14.0 ESFR-1 in the late 1980s and the K-25.2 ESFR-25 in the late 1990s. This line has expanded in the decades since and with the addition of the K-33.6 TYCO® Model ESFR-34, Johnson Controls now has the most complete ESFR line of storage sprinklers. This portfolio provides the most installation flexibility and maximum potential storage capacity when compared to other ESFR sprinklers.

The Tyco Model ESFR-34 is a "Storage Sprinkler" in accordance with FM Global Loss Prevention Data Sheets 2-0 and 8-9.

A major goal in developing fire protection products and protection schemes is to provide maximum flexibility for sprinkler system design, installation and maintenance. This is particularly important in warehouse applications where an effective fire sprinkler system is one that can minimize construction and installation costs while maximizing the economic benefit for the warehouse operator.

There has been significant progress in fire sprinkler capabilities since the 1990s. ESFR sprinklers can provide flexibility through ceiling-only storage protection. Ceiling-only protection, as the term implies, means there are no automatic fire sprinklers in the storage racks and fire protection is provided solely by automatic fire sprinklers installed at the ceiling.

While in-rack sprinklers are capable of providing effective fire protection, having the sprinklers and piping located within the racks minimizes storage and rack flexibility, takes up volume that could be used for valuable commodity and increases the risk of a sprinkler or piping being damaged. Ceiling-only protection schemes using ESFR automatic fire sprinklers now exist for ceiling heights up to 55 feet (16,8m) and 50 feet (15,2m) of storage with commodities as hazardous as cartoned non-expanded plastic.

Two important factors can allow for greater flexibility for installation and storage - the distance the automatic fire sprinkler is located below the ceiling and the minimum aisle width. Keep reading to learn more about both factors.

Sprinkler-to-Ceiling Distance

The late 1980s brought about the development of the first ESFR sprinkler. This sprinkler, the ESFR-1, launched by Johnson Controls (then Grinnell®) had a K-factor of 14.0 (200) and was able to provide ceiling-only protection up to a 40 foot (12,2m) ceiling height.

Approximately ten years later, the company developed the K-25.2 Model ESFR-25 automatic fire sprinkler that increased ceiling-only protection to 45 feet (13,7m). In addition to the increased ceiling height, the Model ESFR-25 provided another significant improvement over the Model ESFR-1 by increasing the deflector-to-ceiling distance from 14 inches (350mm) to 18 inches (450mm).

There are two major benefits of the additional deflector distance. First is increased installation flexibility with respect to allowing the pipe centerline to be lower and second, maximizing the ability to avoid roof support structures and equipment from other building systems such as ductwork from heating, ventilation and air conditioning (HVAC) equipment.

Whether installing per NFPA13:2019 or FM 8-9, ESFR sprinklers have some of the most stringent obstruction rules in order to ensure the critical components of maintaining proper response time and spray distribution pattern. These rules are essential for ESFR sprinklers installed at the ceiling to address a fire effectively. This means ESFR sprinkler installations must avoid obstructions such as ceiling support structures and HVAC ducts that could slow sprinkler response time or negatively affect spray distribution.

The Tyco Model ESFR-34 is FM Approved to a ceiling height of 55 feet (16,8m) and the installation requirements for this sprinkler are published in the January 2020 edition of FM Global Loss Prevention Datasheet 8-9. FM Global measures the position of the sprinkler relative to the ceiling by the sprinklers thermal element. The Tyco Model ESFR-34 is FM Approved with a ceiling to thermal element distance of 17 inches (425 mm), which is 4 inches (100mm) more than any other sprinkler approved at this ceiling height

Aisle Width

In addition to sprinkler-to-ceiling distance, aisle width is another key factor for an automatic fire sprinkler protection scheme for a warehouse. NFPA 13:2019 section 3.3.4 defines aisle width as

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"the horizontal distance between the face of loads in racks under consideration." Figure 1 depicts a typical double row rack storage array separated by aisles. Storage fire protection schemes shown in NFPA 13:2019 and FM Global Loss Prevention Data Sheet 8-9 identify the minimum aisle width allowed based on ceiling height, storage height, commodity type and sprinkler type.

Aisle width is an important factor in determining the amount of commodity a warehouse can store, which directly impacts warehouse economics. The more commodity that can be stored, the more potential to generate revenue.

The FM 8-9 2020 edition datasheet identifies Storage Sprinkler (what are commonly referred to as ESFR sprinklers) fire protection schemes with ceiling-only fire protection up to 55 feet (16,8m). At 55 feet the K-33.6 sprinkler is Approved with a 6 foot (1,8m) aisle width, two feet (1,8m) more than other sprinklers Approved at this height.

In order to be UL Listed or FM Approved, ESFR sprinklers must successfully pass full-scale fire testing as specified by the testing agencies. As ceiling and storage heights increase, so do the challenges of addressing a fire with ceiling-only protection. High ceiling heights increase the time for the sprinkler to operate, leading to an increased fire size. The delay in sprinkler operation can lead to a phenomenon called aisle jump.

Full-scale fire testing is conducted with a rack storage arrangement depicted in Figure 1. There is a main array consisting of double row racks. Across from the main array on either side running parallel with the main array are single row racks, referred to during the test as "target arrays." The distance from the main array to the target array is the aisle width. Aisle jump occurs when the fire in the main array has increased in intensity such that its radiant heat ignites the commodity in the target array.

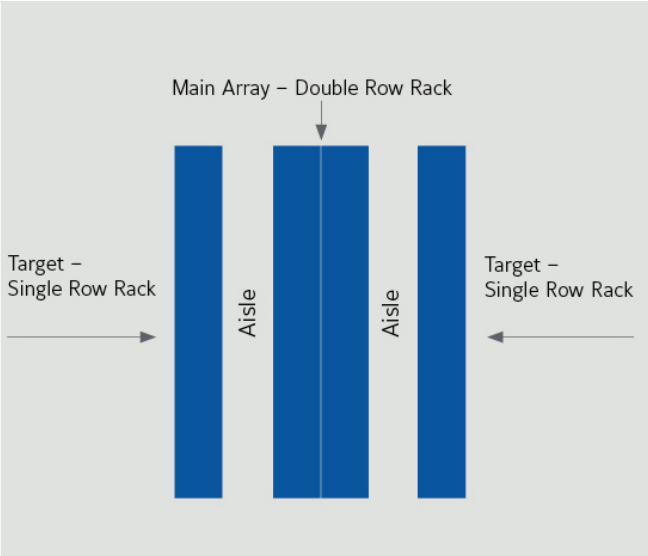

Figure 1 – Full scale fire test arrangement – Plan View

Commodity ignition in the target array significantly increases the fire's heat release rate and increases the challenge to the sprinklers' distribution patterns. The high intensity fire can redirect the water spray upwards and towards surrounding sprinklers, cooling them and delaying or preventing their operation – a phenomenon called "skipping." The combination of aisle jump and sprinkler skipping typically leads to an unsuccessful fire test. Increased aisle width mitigates the risk of a fire test failure by making aisle jump more difficult.

While the increased aisle width can improve the chances of a successful fire test, it can have a negative impact on the amount of commodity a warehouse can store. Warehouse capacity is estimated by calculating the number of double row racks that can be placed in a given area of the warehouse and subsequently calculating the number of pallet loads that can be stored in the double row racks.

Figure 2 depicts a theoretical warehouse that has a floor space used to house double row racks. For the purpose of simplicity, the space used for the calculation is a 200 feet (61m) by 200 feet (61m) area. Dimension B is the dimension available for the length of the racks and Dimension A is the dimension used to determine the number of racks that can be placed in the area.

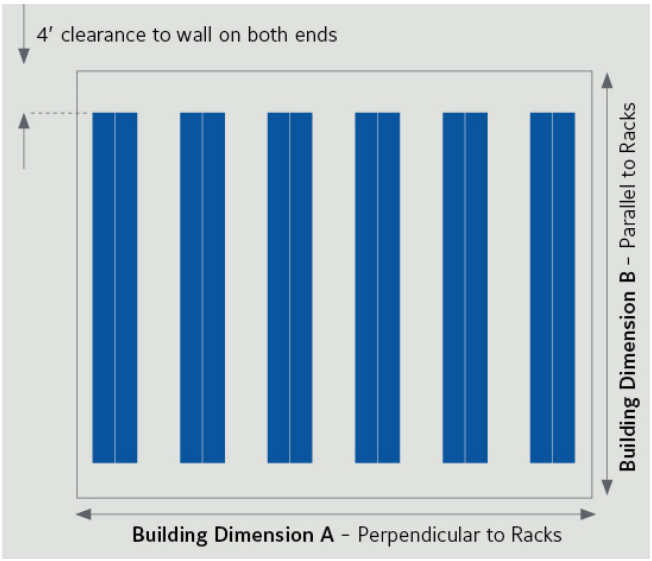

Figure 2 – Depicting theoretical warehouse area for placing double row racks – Plan View

To simplify calculations, there is an assumed 4 foot (1,2m) clearance at either end of the racks. Determining the number of pallets that can be stored in a standard double row rack is based on the length and the height of the rack.

The January 2020 edition of FM Global Loss Prevention Datasheet 8-9 now identifies FM Approved ceiling-only protection schemes at ceiling heights of 50 feet (15,2m) and 55 feet (16,8m) using quick response pendent storage sprinklers. The capacity calculation for these ceiling heights was performed based on FM Approved aisle widths and the results are shown in the Table 1.

While the storage capacity calculations in Table 1 are based on a 200 foot x 200 foot (61m x 61m) warehouse space, the relative difference in percent basis will remain approximately the same given a fixed rack length and varying the length across the racks.

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Ceiling height (ft/m)	Aisle Width (ft/m)	K-22.5 and K25-2 ESFR	K-28.0 ESFR	K-33.6 ESFR
50/15,2	6/1,8	12,960	12,960	12,960
55/16,8	6/1,8	N/A	N/A	14,400
55/16,8	8/2,4	N/A	12,480	N/A

Table 1 – Total number of pallets for ESFR sprinklers approved with 50 foot (15,2m) and 55 foot (16,8m) ceiling heights

In summary, the Tyco Model ESFR-34 automatic fire sprinkler provides for the most installation flexibility and offer the ability to maximize warehouse storage capacity.

- The Tyco Model ESFR-34 automatic fire sprinkler is FM Approved for use in ceiling-only fire protection schemes under both 50 foot (15,2m) and 55 foot (16,8m) ceilings with a thermal element-to-ceiling distance of 17 inches (432mm), which provides four (4) additional inches (102mm) of flexibility compared to other ESFR sprinklers approved at the same heights

- The Tyco Model ESFR-34 automatic fire sprinkler is approved for ceiling-only protection under a 55 foot (16,8m) ceiling with a minimum 6 foot (1,8m) aisle, which allows the most potential storage capacity of any Listed or Approved ceiling-only fire protection scheme

- Warehouses using the Tyco Model ESFR-34 automatic fire sprinkler at the maximum ceiling height of 55 feet (16,8m) and minimum aisle width of 6 feet (1,8m) can store approximately:
  - –10% more commodity than ceiling-only schemes Listed or Approved at 45 feet (13,7m), 48 feet (14,6m), and 50 feet (15,2m)
  - –13% more commodity than other schemes approved with a 55 foot (16,8m) ceiling and an 8 foot (2,4m) aisle.

Johnson Controls offers the most complete line of Early Suppression Fast Response Storage Sprinklers, which now includes the first ever ESFR-34 sprinkler. Visit **www.tyco-fire.com** to learn more about the technical details of the Tyco Model ESFR-34 sprinkler. •

Protecting and Reinvigorating Main Street, USA

by Timothy M. Ippolito, *Fire Marshal, Lewisville, Texas*

In 2015, Lewisville, Texas, a city of 102,000 citizens in the Dallas/Fort Worth Metroplex, embarked upon a critical component of an effort to revitalize our Historic District. Similar to thousands of cities across our country, our city grew from our Main Street in the 1800s to suburban growth with housing tracts and new office, retail, and service-oriented development moving to the suburbs, leaving our historic district in a declining state. Efforts to revitalize and create energy in our historic district included building our city hall and performance arts center, as well as extensive streetscape and utility upgrades. Millions of dollars were allocated to these projects, but we were not experiencing the reinvestment that we had hoped for.

After speaking with potential investors, we realized the lack of automatic fire sprinkler systems in the buildings were a significant barrier to the revitalization we had hoped for. To convert from mercantile and small office uses to restaurants, taverns, and similar entertainment uses, fire sprinklers are required by the International Fire Code as amended locally by our city.

The addition fire sprinkler systems would allow many of the historic features of the buildings to remain in compliance of building and fire codes when being remodeled and converted to more intense uses. Given the fact that the majority of the buildings are attached or are adjoined, coupled with the age of the buildings, we knew that unless the fire department arrived during the incipient stage of a fire, we would not risk the safety of our firefighters by committing them to interior fire attack operations and would focus our efforts on trying to keep a fire from engulfing numerous buildings in a conflagration type fire. Given all these reasons, our city decided that we must act to install fire sprinklers in these buildings.

The Proposal

The proposal was to install fire sprinkler systems in 27 buildings, consisting of approximately 80,000 square feet in total. We studied similar projects across the country to learn how to best accomplish this goal. Our guiding principal was to try and take away any reason a business owner would have to not install fire sprinkler systems. We learned that to achieve success, we needed to mandate, through local ordinance, the installation of the systems. By requiring these systems, our city leaders realized the financial burden we were placing upon the business owners. As such, the decision was made to allocate approximately $900,000 from our city's risk fund to pay for the entire cost of the installation of the systems. Additionally, our city offered to pay for the ongoing costs

of the systems including fire alarm monitoring and the required inspections and maintenance of the systems. By doing this, we addressed the cost concerns of the building owners.

We next needed to address the many myths surrounding fire sprinkler systems. We held numerous town hall-type meetings, as well as individual meetings with the owners, to dispel the myths and to educate them on the value and reliability of fire sprinkler systems. Our City management met with the National Fire Sprinkler Association, who offered technical support and marketing communications about the project. We then hired a third-party project manager that was knowledgeable in construction and fire sprinkler systems in retrofit projects. This third-party manager would act as a liaison between the owners and the contractor to lessen the inconvenience of the installation process and answer any of their concerns. Lastly, we hired a fire sprinkler contractor that had experience in historic retrofit projects. Finding a contractor proved to be challenging within our budget, in that most fire sprinkler companies were hesitant to accepting the risk of not knowing the extent of construction to repair and maintain the historic components of the buildings. The company we selected had a long-standing relationship with a construction company, therefore they were able to analyze the cost of construction beyond the sprinkler systems to successfully offer a bid on the project.

A retrofit fire sprinkler project offers many challenges ranging from costs, myths, and the inconvenience of the installation process. However, by learning from other similar efforts and adopting the principle of "taking away all the excuses", a fire sprinkler retrofit program will protect the historic buildings from fire, allow the preservation of the historic components of these buildings through the code trade-offs that sprinklers provide, and protect the history of your city while eliminating a barrier to entry of business investment in these areas, helping to create an exciting and prosperous downtown historic district.•

Regional Fire Protection Services

Paying It Forward

by Burt West

I learned early in life that blessings or good fortune that comes our way is meant to be shared. Because of this belief, one of my greatest joys in life is to have the opportunity to see and meet a need. This overwhelming desire to help others has fueled my passion for the fire protection industry. Life safety takes on a whole new meaning when you consider those being protected.

Out of this desire to give back, my wife Missy and I have taken the opportunity to travel out of the country on multiple mission trips. There is a saying that states, "to whom much is given much is required." We have all been given talents, wealth, knowledge, time and so much more. What a blessing it can be to others, as well as ourselves, when we share what we have been given.

One of the first things that is quickly revealed when traveling abroad is that we live in a blessed nation. There are relatively few physical needs that Americans have that are not met. Even the less fortunate among us would be considered wealthy in most countries.

My first mission trip was to the mountain town of Cuenca, Ecuador. We were going there to assist with a building project. This project was to help with the expansion of a ministry that included a school, a family services outreach and care center, and a radio station. The new building was to house a job training program for adults. My wife and I looked forward to and enjoyed the physical aspect of the building project, but we had no idea that the interaction with the people and the exposure to their culture would be truly life changing. We were amazed at the level of happiness and contentment of the people there. Although their monthly income would amount to what we might receive for one day's pay, they seemed happier and more content than many in the United States.

Their gratitude for what they did have and the simplicity in which they lived their lives was quite enviable. No one seemed in a hurry. They took time to really talk to one another, spend time together, and to share with others even from their own need. We realized in comparison how we have allowed ourselves to become consumed with things in life that have no lasting value.

On another mission trip to Mérida, Mexico we had many opportunities to share our stories, our experiences and our beliefs. We traveled to several different churches to minister, pray for and encourage them in their faith. Instead, we found ourselves learning from them. One church in particular stood out on this trip.

We had to drive quite a distance to get to this church and when we arrived, we found ourselves in what appeared to be an empty lot. At the center of this lot, there was a group of people gathered on a concrete slab with folding chairs. They had brought these chairs from their homes and rigged long, tree-like, sticks as supports for their makeshift lighting. The closer that it got to service time, the more and more people poured out of the surrounding village to attend. It was hot, humid and buggy. This was a special service that was called because we were there to share with them.

Unlike most of our services at home, no one who attended this service complained about the volume of the music, the temperature, how long the service was or how uncomfortable the chairs were. They were eager listeners, even though most of us had to communicate through translators. It was refreshing and made me long for the same response at home.

The concrete slab where they met was evidence of their hope. They had been saving and praying for a church building. Thus far, they had raised enough money for a slab. They didn't wait for a building to be built to start meeting.

The service lasted hours and as it grew dark, the temporary

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lights were just enough to see to get around. Before the service, we noticed barrels with fire in them off to the side of the slab. During the service there were women who were busy doing something around these barrels. At the end of the service, the entire community pitched in to remove the chairs, take down the equipment and began setting up tables down the center of the slab.

This slab became the most beautiful dining room I have ever had the pleasure of experiencing. The women who had been so busy scurrying around during the service were now serving us meals they had prepared over fire barrels. They were showing us

"Our experiences on mission trips have taught us to appreciate what we have, prioritize what is important, and to seek in our everyday lives opportunities to live out our faith through loving others around us."

love and giving us the very best they had to offer, and it was some of the best Mexican food I have ever tasted. This was their way of honoring the gift they felt that they were receiving. Sharing our time, stories and faith was seen as a great gift. When I think about their hospitality, I am truly humbled. How often do we invite someone to our own homes or communities and honor them?

By far, my wife and I have found this to be one of the greatest ways we have ever spent our time off. Our experiences on mission trips have taught us to appreciate what we have, prioritize what is important, and to seek in our everyday lives opportunities to live out our faith through loving others around us. It has also fueled our desire to do and give more.

We have realized that although we enjoy traveling to other countries and learning from different cultures, we don't have to leave the United States, or our neighborhood for that matter, to find and fulfill needs. To truly minister or connect. you must first seek to understand and see value in those around you. Many of the problems in society could be solved by seeking to understand rather than to be understood.

I contend that using the gifts, talents, resources and time that you have been given in service to others will never leave you lacking. It will only serve to enrich your life and multiply the things that are really valuable and important. The quote by Craig Groeschel sums it up best. "What you keep is all you have. What you give, God multiplies."•

NFSA Member Burt West is the owner of Regional Fire Protection Services. Burt grew up in the fire protection industry and is passionate about life-safety and giving back to an industry that has shaped the person he is today. During his 35 years in the fire protection industry, he has had the pleasure of working with a variety of fire protection contractors and has spent part of that time traveling the world as a representative for a major fire protection manufacturer. These experiences have afforded him the opportunity to gain valuable knowledge from some of the best this industry has to offer. He feels a great responsibility to give back to this industry because of the impact it has had on his own life. •

Meet Reliance Fire Protection –Powered by APi Group

by Noah Koski, CET, *Fire Protection Engineering Technician*

Reliance Fire Protection is one of hundreds of licensed fire sprinkler contractors in the state of Maryland and one of hundreds of contractors across the country that are NFSA members. What you don't know is that Reliance is without a doubt one of the best fire sprinkler companies in Maryland, let alone the east coast. Yes, we're one of only 14 union fire sprinkler companies in Maryland, yes Reliance has been a thriving fire sprinkler company for over 30 years, and yes, we are known for our high-quality customer service. However, you probably didn't know that Reliance has been a part of the APi Group since 2010. What's APi group?

APi Group is a group of safety, specialty, and industrial companies with more than 200 locations across six countries, and 41 U.S States. APi has been ranked as the #1 Specialty Contractor for Fire Protection and Sprinklers in 2016, 2017, 2018, and 2019 by Engineering News-Record (ENR). APi Group's enduring purpose is "Building Great Leaders" and the group is made up of companies that are empowered to develop leaders across all levels of business. So, you might be asking yourself, "Why Reliance?".

Reliance Fire protection is very fortunate to have a team of very passionate individuals that contribute to a culture of improvement. One thing that makes many of these individuals so unique is that they share their passion with their families. Reliance currently has three fathers with sons that also work at Reliance: Matt Koski & Noah Koski, Roddy Ordakowski & Conrad Ordakowski, and Charlie Wilhelm & Matt Wilhelm, multiple team members that have fathers that have retired in the industry including : Peter McGann & PJ McGann (retired), Gary Bussenius & Gary Bussenius Senior (retired), and multiple team members that have or had other family members in the fire protection industry include Mark Kessler, Vince McQuaid, Derek Barnes, Mike Fotta, and Adam Miller. These individuals are extremely unique to our team because fire protection is more than a job. As Simon Sinek said, "Excitement comes from achievement. Fulfillment comes from the journey that got you there." Having the opportunity to share and pass on the journey in fire protection to other family members encompasses a completely different level of pride and dedication than you can't find anywhere else. Reliance's unique and high performing team is one of the reasons APi found the company as a good fit. APi has had a significant impact on Reliance through formal learning and development training opportunities for our team and by opening the network to other top-notch fire protection companies around the world.

Reliance values our membership with NFSA because the NFSA team has a passion for fire sprinklers that we see in Reliance's team. Our team is fortunate to be able to come together with a great group of individuals to protect the lives and property of those around us every day. When we work together with NFSA's team, we both know that we have an opportunity to make an impact on something bigger than ourselves through our work. Theodore Roosevelt said, "Far and away the best prize that life has to offer is the chance to work hard at work worth doing." When you look at NFSA's "Sprinkler Saves" posted on social media, and start noticing the impact that fire sprinklers have across the country, it's hard not to feel like your job is worth doing.

RELIANCE
FIRE PROTECTION
powered by APi Group

In addition to supporting the NFSA team as a corporate member, Reliance also volunteers to help with NFSA projects. Recently Reliance's team helped design and install NFSA's first Valve trailer and helped design and install the fire sprinkler system for Maryland State Firemen's Association project. There are even individuals such as Mark Kessler with Reliance that go further and serve as the NFSA Capital Region Chapter ITM Committee Chairman.

Similarly, to the involvement with the NFSA, Reliance is also involved with other industry organizations such as the American Society of Engineering Technicians (ASCET). Reliance has multiple active ASCET members, including the Vice President of the ASCET Greater Baltimore Chapter and Noah Koski who serves as the National Direction of ASCET Greater Baltimore Chapter.

If you are passionate about fire protection and looking for a group of individuals that are passionate about fire protection to work with, consider contacting Reliance Fire Protection or another proud APi Group company near you today.•

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"I'm From the State and I'm Here to Help... No Really..."

by Robert Sontag, MS, *Branch Chief, Colorado Department of Public Safety*

A Friendly Western "Howdy" from your Fire Inspection Staff

First, let me say that the State of Colorado *(as I am sure most states do)* always welcomes opportunities to partner with our regulated industry's professional organizations. We have traditionally enjoyed a great working relationship with the NFSA and when our regional NFSA Representative Rob Geislinger approached us about writing an article about our efforts to help streamline fire plan review and inspections for the member take-over issue we were pleased to participate.

A little about Colorado…

Colorado is somewhat unique in that we are one of the few states that do not specifically designate an official State Fire Marshal. Instead, many of the traditional functions of a State Fire Marshal's Office are delegated to the Colorado Division of Fire Prevention & Control (DFPC). DFPC is comprised of three sections of which the Fire and Life Safety Section (where my branch resides) is one.

And about the Colorado DFPC…

As the Fire Prevention Branch Chief for the State of Colorado, the oversight and management of the State's fire prevention activities falls to me and my incredible team of fire prevention professionals. Our branch manages such special fire prevention activities as: fire safety in health facilities, schools, casinos and waste tire facilities; oversight of fire safe cigarettes; regulation and enforcement of fireworks production, wholesaling, retail and display operators; and of course ensuring fire suppression systems in Colorado are installed appropriately by qualified professionals and inspected by certified and knowledgeable fire inspectors. We are proud to partner with the fire sprinkler industry as a whole on many efforts, including such projects as: statewide risk reduction meetings, participation in statewide and local fire marshal meetings, the State's residential fire sprinkler coalition, and coordinated efforts every year to host a fire prevention and safety rally (including a side by side burn) during fire prevention week.

So, how does this impact me as a fire sprinkler contractor?

As the State's lead agency for inspection of suppression systems, DFPC has taken several special initiatives to further the effective and efficient provision of plan review and inspections to our suppression contractor partners. I'd like to outline some of those efforts.

Development of the Professional Development Unit

DFPC has created a Professional Development Unit (PDU). This team of four fully qualified fire and building inspectors are tasked full-time with developing new certified fire and building inspectors and furthering the professional knowledge, skills, and abilities of the State's fire and building inspectors. The PDU partners with newly certified local fire inspectors to develop their plan review and inspection skills and frequently accompanies those inspectors on field inspections to mentor and demonstrate effective and efficient inspection skills. While this unit is just a year old, we believe the unit has already contributed to several success stories of fire jurisdictions increasing their local fire prevention activities.

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Integration of Unmanned Aerial Systems into Inspections

The DFPC is proud to host the Center of Excellence for Advanced Technology Aerial Firefighting (we just call them the COE), and while most of the COE's work is focused on aircraft, they have partnered with my staff to evaluate, implement, and utilize Unmanned Aerial Systems (UAS) in inspections and investigations. Currently DFPC has 22 inspectors and investigators licensed as FAA "Part 107" UAS pilots. Each of these staff members have a DJI Mavic 2 Enterprise drone to capture aerial imagery of inspection and investigation sites and to fly to hard-to-reach locations during inspections. Through use of special small movement settings on the UAS's and zoom lenses on the UAS cameras, these devices allow inspectors to fly in confined spaces and see installation conditions that it would otherwise be difficult or impossible for a full-sized adult to gain access to without destructive or time costly measures. This has allowed us to occasionally fly in confined and lengthy attic and interstitial spaces to verify corrections to rough inspections after the drywall has been fully installed.

We have used our UAS to fly the length of very long (some well over a mile) underground fire line installations to expedite rough inspections to verify installation conditions and inspect for seepage or joint separation after hydrostatic testing.

Recently, our UAS flights were used to verify pre-existing conditions of suppression systems in large convention center halls and to validate the condition of, and potential utilization of, those systems in the temporary conversion of those spaces into Alternate Care Sites for the provision of medical care to COVID-19 patients.

Integration of Other Technology into Inspections

DFPC utilizes technology to not only maximize the utilization of its inspectors, but also to speed the transfer of information and communications with its partners. A few examples pertinent to the fire sprinkler industry include: electronic plan review submission and tracking; integration of tablet-based inspection practices; and utilization of electronic document sharing and markup during inspections.

Electronic Plan Review

For the past two years DFPC has utilized an online plan review system and exclusively accepted electronic plans (in PDF format) for plan review. By taking the submittal process online we have been able to expedite the time to submit (no more mailing of physical prints and application materials). This process also allows us to put into the system some instantaneous checks of the submitted information and hence prevent delay of the review due to missing information. The system also allows for online payment of the plan review fees. The system allows for electronic submission of revisions or corrections, again absorbing the time delay associated with physical mailing of documents or plans. We are continuously making adjustments to the system to shorten plan review processes.

Tablet-Based Inspections

By leveraging the incredible breadth of the technology available to us on cellular connected tablets we have been able to reduce the inspection instruments we previously may have had to "run back to the car" to use.

All of our inspection forms are now electronic PDF formatted forms, allowing our inspectors to quickly open a new form, populate the data using cut and paste or pick/choose with minimal writing, collect signatures electronically and instantaneously email a copy of the report to the responsible party or parties. Our inspectors have online access to our entire library of rules and regulations, previous plan review and inspection documents, national standards (all NFPA codes) and adopted code sets to speed access to information.

We use tablet-based applications to perform activities which would have previously required another piece of equipment. For example, we can use the tablet to measure the incline of a drainage pipe, to take pictures in confined areas to verify conditions or ensure installed equipment is appropriately installed, to record video or pictures of testing procedures and results, and to video stream between inspection sites and the plan reviewers, or other experts on the team, for real-time consultation on how to resolve concerns or challenges identified in the field.

Electronic Document Sharing and Markup

Part of the process of implementing electronic plan review submittal entails posting the plan review documents in secure cloud storage, which can be made accessible not only to DFPC staff but

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also to the permittee or contractor. We use a shared folder with tight security restrictions to provide for document sharing. We have recently been moving our inspection documentation over to a software package which allows us to do markup during plan review, share those markup documents and view those documents jointly with the permitee to discuss challenges, accept revisions as part of the shared document set, and seal the document set once final.

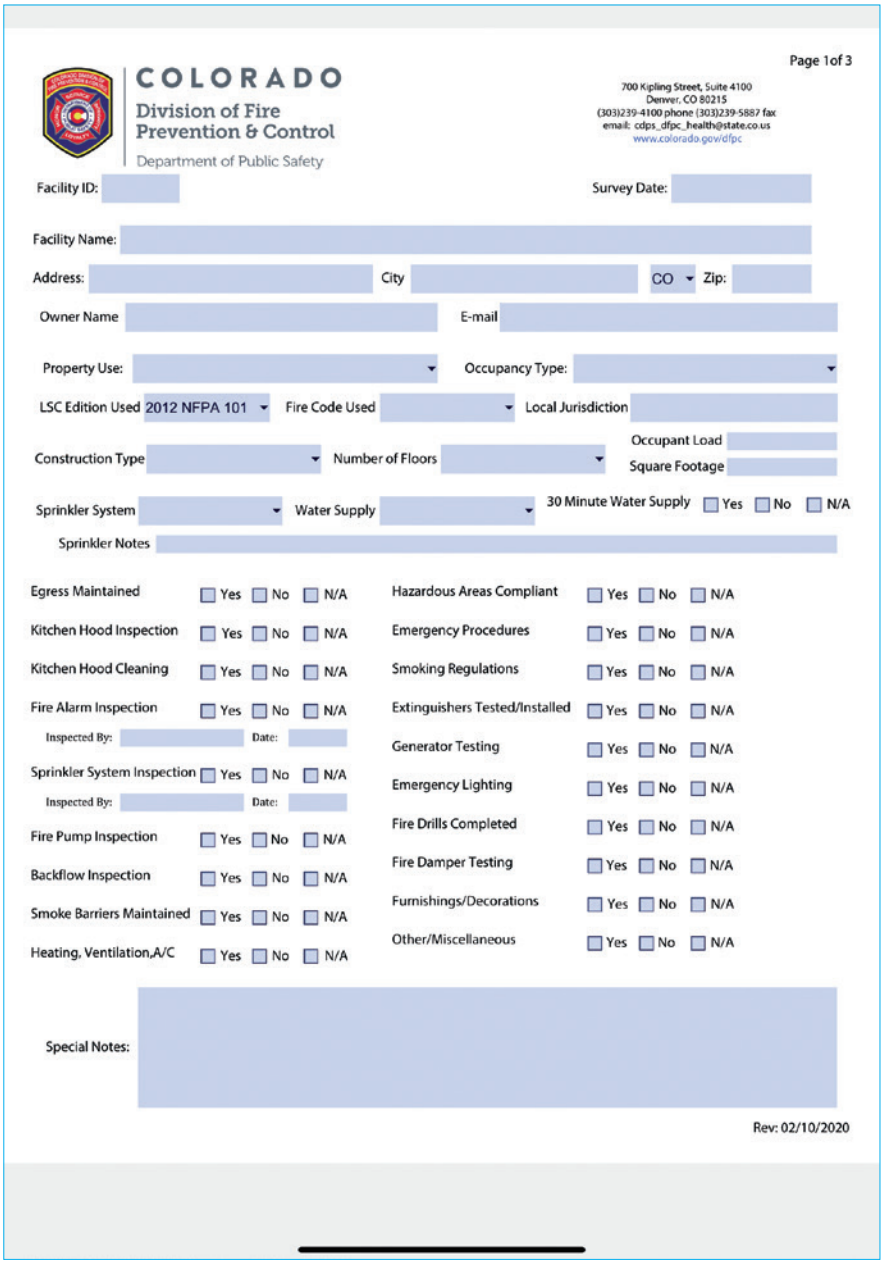
We can use the same software package in the field during inspections to make real time annotations of conditions and potential corrections. This marked up version of the drawings can be immediately shared with the contractor to ensure they get the corrections required and can quickly know they are in the correct location and addressing the correct condition.

"So Let's Partner, Pardner."

As you can see from our examples, your fire inspectors and plan reviewers are anxious to make your plan review and inspection processes as efficient, effective, and elegant as possible. If you are lucky enough to be working in Colorado, my staff and I look forward to working with you in the future and hope you will avail yourself of the opportunities to work with us and your NFSA staff to further refine our joint experiences. Reach out anytime we can help.

If your work has you in another part of the world, I encourage you to work with NFSA to partner with your local and state-based fire inspectors to build processes and tools which makes everybody's efforts more streamlined.•

Robert Sontag is the Fire Prevention Branch Chief, Fire & Life Safety Section, Division of Fire Prevention and Control, Colorado Department of Public Safety.



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COLORADO
Division of Fire Prevention & Control
Department of Public Safety

700 Kipling Street, Suite 4100
Denver, CO 80215
(303)239-4100 phone (303)239-5887 fax
email: cdps_dfpc_health@state.co.us
www.colorado.gov/dfpc

Facility ID: Survey Date:

Facility Name:

Address: City CO Zip:

Owner Name E-mail

Property Use: Occupancy Type:

LSC Edition Used 2012 NFPA 101 Fire Code Used Local Jurisdiction

Construction Type Number of Floors Occupant Load Square Footage

Sprinkler System Water Supply 30 Minute Water Supply ☐ Yes ☐ No ☐ N/A

Sprinkler Notes

Egress Maintained	☐ Yes ☐ No ☐ N/A	Hazardous Areas Compliant	☐ Yes ☐ No ☐ N/A
Kitchen Hood Inspection	☐ Yes ☐ No ☐ N/A	Emergency Procedures	☐ Yes ☐ No ☐ N/A
Kitchen Hood Cleaning	☐ Yes ☐ No ☐ N/A	Smoking Regulations	☐ Yes ☐ No ☐ N/A
Fire Alarm Inspection	☐ Yes ☐ No ☐ N/A	Extinguishers Tested/Installed	☐ Yes ☐ No ☐ N/A
Inspected By: Date:		Generator Testing	☐ Yes ☐ No ☐ N/A
Sprinkler System Inspection	☐ Yes ☐ No ☐ N/A	Emergency Lighting	☐ Yes ☐ No ☐ N/A
Inspected By: Date:		Fire Drills Completed	☐ Yes ☐ No ☐ N/A
Fire Pump Inspection	☐ Yes ☐ No ☐ N/A	Fire Damper Testing	☐ Yes ☐ No ☐ N/A
Backflow Inspection	☐ Yes ☐ No ☐ N/A	Furnishings/Decorations	☐ Yes ☐ No ☐ N/A
Smoke Barriers Maintained	☐ Yes ☐ No ☐ N/A	Other/Miscellaneous	☐ Yes ☐ No ☐ N/A
Heating, Ventilation,A/C	☐ Yes ☐ No ☐ N/A		

Special Notes:

Rev: 02/10/2020

Connecting the Disconnect: Miami-Dade Fire/Rescue Alliance with Sprinklermatic

by By Bill Gustin,
Captain Miami-Dade Fire Department [bill@gustinfiretraining.com]

A fire on the stove spreads to the kitchen cabinets in an apartment on the 15th floor of a 30-story building. Within moments, the fire is extinguished with one residential fire sprinkler. The sprinkler system performed exactly as it was designed to do; within 90 seconds of sprinkler activation, a water flow alarm is initiated and transmitted to a central station fire alarm facility which notifies the fire department.

Upon arrival, firefighters check the fire alarm system's annunciator panel, which is indicating "water flow-15th floor" on its display. Firefighters gain control of the elevators and ascend to the 13th floor; two floors below the reported fire floor as required by department procedures. Once firefighters reach the apartment, they find the fire extinguished, but with an open sprinkler head still flowing 25 gallons per minute. Frantically, they search for a valve to shut down the flow of water. Listening to desperate radio transmissions, an engine company driver-engineer transmits that he has found the valve to shut down the sprinkler system; a post-indicator valve (PIV) on the sidewalk in front of the building. What he does not know is that closing the PIV will shut off the water supply to the building's diesel fire pump, causing the pump and its diesel driver to overheat and self-destruct. Firefighters also do not realize that there are 15 floors of water column above them that, under gravity pressure, continues to flow water out of the open sprinkler head ; making its way into an electric meter room and elevator hoist-way; causing water to short circuit the hoist-way door interlocks, rendering the elevators out of service. To make matters worse, water entering the meter room flows into bus ducts and shorts out electrical panels.

A Serious Lack of Training

How did this comedy of errors occur? How is it possible that so-called "professional" firefighters know so little about how to locate and operate sprinkler zone/floor isolation valves and how to open a valve to drain the water remaining in the sprinkler piping between the closed isolation valve and the open sprinkler head? The preceding scenario is not a fantasy; it happens all the time because there is a disconnect between fire sprinkler contractors, fire department fire prevention personnel and fire sprinkler personnel. Today's fire departments are "all hazard" agencies, responding to medical emergencies, hazardous material leaks and spills, vehicles under water, vehicle and machinery entrapments and unfortunately, active shooters. Today's firefighter must be a "jack of all trades", a medic, a psychologist and skilled in hazardous materials and technical rescue. With such a wide array of disciplines, firefighters that respond to calls involving fire alarm and fire sprinkler systems receive very little training on how to operate with them. Whose fault is it? I believe it is the fire sprinkler personnel's fault for not reaching out to their brothers and sisters in their fire prevention bureau for advice and training in suppression and alarm systems. I have been a firefighter with Miami-Dade Fire/Rescue for 42 years and, up until my recent transfer to our Training Division, spent my career responding to emergencies.

A Steep and Humbling Learning Curve

A building is never more vulnerable than when it is under construction. As fire officers we make it our business to pre-fire plan buildings under construction, and existing buildings as well. During one of my walk-throughs, I met a young man who was a superintendent for a fire suppression contractor; it was the beginning of a wonderful friendship and the upward spike in my learning curve about suppression and alarm systems. This young man has had a huge influence in my career as did my Dad; a "fireman's fireman." When my Dad was promoted to the rank of Lieutenant on the Chicago Fire Department, he was immediately transferred to the fire prevention bureau. My Dad missed the excitement of firefighting but, in retrospect, he told me time he spent in the "Bureau" made him a much better fire officer. This inspired me to reach out to our folks in Fire Prevention who are very familiar with suppression and alarm systems. In reaching out, I was blessed to have met a plans examiner in our department's fire prevention bureau that hung sprinkler piping for 33 years. Learning about systems from professionals who know their business had definitely taken me out of my comfort zone, when I realized how much I had to learn.

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Sprinklermatic University

My friend in plans review told me about a training facility at Sprinklermatic, a major fire sprinkler contractor in the state. The facility was amazing; with a wide array of risers, valves and sprinkler heads that can actually flow, controlled by solenoid valves. Every training prop at the facility functions because they are supplied by a diesel fire pump, complete with a functioning controller and jockey pump. When my fellow training officers and I first visited the facility, it was with the intention of duplicating it at Miami-Dade's Fire Training Center. Our intentions, however, changed when we met Sprinklermatic's president, Mr. Robin Collier, who assured us that we could conduct training at his facility. I am very proud to say that fire sprinkler system training at Sprinklermatic University is now in Miami-Dade's recruit training and officer development program curriculums, as well as several other fire departments in Southeast Florida. Sprinklermatic offers training for continuing education units approved by the State Of Florida. Sprinklermatic is expanding throughout the state and so is Sprinklermatic University; with one operating in the Tampa area and plans to build similar universities in the Orlando, Ft. Myers and Jacksonville areas.

Lasting Friendships Based on Mutual Respect

A wonderful by-product of our alliance with Sprinklermatic is lasting friendships forged between firefighters and fire sprinkler system technicians; friendships based on mutual respect for the roles we both play and protecting lives and property from fire. When I introduce our firefighters to Sprinklermatic personnel, I (tongue in cheek) caution them to never challenge a sprinkler fitter to an arm wrestling contest because, after years of working with massive pipe wrenches over their heads, the fitters are sure to win. •

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FIRE RESCUE DEPARTMENT

June 1, 2020

Robin Collier
President
Sprinklermatic
4740 Davie Rd,
Fort Lauderdale, FL 33314

Dear Mr. Robin Collier,

Please let me begin this letter by first saying thank you, to you and your staff for allowing all of the Lauderhill Fire Department personnel to attend the Sprinklermatic University on Fire Pumps. I would especially like to thank Captain Bill Gustin for taking time out of his busy schedule to pass on his knowledge to our personnel. His passion and vast knowledge of the fire service is apparent in his teaching style and the feedback we received from our personnel who attended this class. In August of 2019, over a three week period we rotated all of our on duty crews through a refresher on Fire Pumps. This class was long overdue and well received by all of our personnel.

A few weeks after the class, Lauderhill Fire Department personnel were dispatched to a reported High-rise fire on the sixth floor of a ten story building in our response district. This particular building is the tallest structure in the City of Lauderhill. The building is a ten story non-sprinklered apartment building with a standpipe system and fire pump. Fire-Rescue units arrived to smoke and flames showing from the center apartment on the sixth floor. Crews initiated high-rise procedures and connected to the interior fifth floor standpipe, as well as connecting a water supply to the FDC. Crews on the upper floors were experiencing low water pressures. One of the Lauderhill Fire Department Driver Engineers who recently took the fire pump class with Captain Gustin, had the intuition to check the fire pum
the Fire Pump was not activated, because it was red tagged due to an is
switch. The Driver Engineer knew to throw the manual transfer and act
then allowed the required pressures on the upper floors. It is because
from Captain Gustin that this Driver knew to go check the fire pump an
transfer and mitigate the situation.

I would like to apologize that it has taken me so long to send this letter.
however we were planning on recognizing you and Captain Gustin at ou
Recognition Ceremony that was planned for May, but has unfortunately
COVID-19, and I did not want to delay any longer.

In closing, thank you for providing the Spriklermatic University to the m
fire service. This type of training is invaluable to our personnel. If I can
assistance to you, please do not hesitate to contact me.

Respectfully,

Jeff Levy
Assistant Fire Chief
Lauderhill Fire Rescue

An AHJ's Experience Fire Sprinklering Her New Home

by Janet A. Washburn, *CFPS, FM, MS*
Fire Marshal in Lee County, Florida

Several years ago, I was speaking to a progressive Fire Marshal who told me why he chose to install fire sprinklers to protect his home. Besides it being the right thing to do to protect his family, he felt that if he were ever challenged by his City Commission as to if his own house was fire sprinkler protected, he would be able to answer with a powerful "Yes!" He practices what he preaches. I never forgot that conversation and I now choose to reside only in properties with fire sprinklers, as I believe in them too.

When I recently relocated to the West Coast of Florida to start my second Fire Marshal job in a small golf resort community in Lee County, Florida, it was also the time in my life to think about buying a new single-family home. As an AHJ, my home would have to be fire sprinklered. I want to walk the talk in all I do.

At the time of visiting several different builders' sales centers, none of them would allow fire sprinklers to be installed during construction. The sales agents did not even understand what I was asking. Some immediately said "no" and one said he would ask his superior. One big builder (after I walked away from their deal), called me back a few days later stating they would fire sprinkler any customer's home moving forward requesting such. That is certainly progress for our industry!

Unfortunately, I found out from the fire sprinkler contractor I chose to work with; if the builder did not allow the fire sprinkler installation during construction, his cost would increase significantly as building after the fact results in more labor costs and time spent on the job. Those costs are then passed on to the consumer. I then spoke to my chosen builder about the cost of fire sprinklers increasing due to their decision making. I requested they give me a substantial credit to compensate for my additional costs. After some discussion, they agreed to my request.

With residential fire sprinkler systems being much more universally accepted throughout the nation, I thought the home building industry was beyond outdated thinking and would gladly oblige a request for a fire sprinkler protected home. I even reached out to well-known lobbyists in the fire industry to employ their help speaking to the builders at the executive level, but that yielded no results.

Another hurdle I ran into was the local utility required a separate fire line, instead of branching off the domestic line which is common practice with adequate water pressure. After several conversations and emails with the local utility director, including sharing educational videos from the Home Fire Sprinkler Coalition and declaratory statements from the Florida State Fire Marshal Office, I was still required to install a costly separate fire line. It was disappointing senior leadership at the utility company was not open to new information.

Undeterred, I contracted to install the NFPA 13D fire sprinkler system, including the garage and all closets after receiving the certificate of occupancy. I can now feel safe sleeping and relaxing in my new home with fire sprinklers. I feel as a fire code enforcer, it is important we walk the talk.

I will continue to advocate for fire sprinklers. We still have much work to do as witnessed by my experience. I'm hoping the fire sprinkler contractor's truck sitting outside my new home for five days during the installation will generate some conversation about fire sprinklers with my neighbors. My home is the first home in this community with fire sprinklers. I will invite neighbors to my home to show them how easy the system is to maintain and educate them on the benefits. I have also updated the District's Fire Prevention webpage to include a link on why consumers should fire sprinkler their home. I encourage all fire marshals to do the same.•

New Guidance on Fire Sprinkler Life Cycles Based on the 2020 Edition of NFPA 25

by Amy Misera and Joshua Swann

Introduction

Since first being introduced in 1992, NFPA 25 – The Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems – has provided provisions to improve the successful operation of water-based fire protection systems. Annual sprinkler inspections and routine repairs are familiar to many building owners; however, requirements to test and/or replace sprinklers within a system are often overlooked. When a system reaches its designated lifespan, an owner has two options: conduct plunge tests on a representative sample of sprinklers or replace all sprinklers within the system. Plunge testing consists of subjecting a representative set of sprinklers into a standard temperature and velocity to assess its response time index (RTI). If all tested sprinklers pass, the system's sprinklers can remain in use until retesting is required. However, if a single sprinkler fails, all sprinklers within the represented area must be replaced. This article is a brief introduction to sprinkler replacement cycles found in the 2020 edition of NFPA 25, which was adopted as an Approved National Standard on August 25, 2019.

Standard and Fast Response Sprinklers

Standard and fast response sprinklers are almost identical in appearance but have a different RTI (standard response RTI values range between 80 and 350 $m^{1/2}s^{1/2}$ and fast response RTI values are less than 50 $m1/2s^{1/2}$). The qualities of both standard and fast response sprinklers make them suitable for commercial occupancies and the unique factors of each type make them ideal for specific applications. Standard response sprinklers are most commonly found in large commercial buildings such as warehouses and factories where property protection is most critical. The sprinklers activate individually and are designed to control a fire while also slowing the spread by wetting nearby combustibles. Due to their simplicity and reliability, standard response sprinklers can be installed for fifty years before reaching their first testing and/or replacement cycle. After fifty years, an owner may decide to replace all of the sprinklers or select a representative sample for testing in ten-year increments.

Fast response sprinklers – which include quick response, residential, and early suppression fast response (ESFR) sprinklers – are similar in appearance to standard response sprinklers. Although, as indicated in their name, fast response sprinklers are designed to activate faster than standard spray sprinklers to improve life safety and property protection. Fast response sprinklers often release water up to the ceiling to keep it cool which helps keep the fire close to the ground, ultimately allowing occupants more time to egress. These sprinklers are typically used in heavily populated occupancies such as hospitals, office buildings, schools, and malls but can also be found in residential occupancies as well. Due to the types of occupancies protected, fast response sprinklers must be tested and/or replaced twenty years after their initial installation; if all sprinklers pass the plunge test, subsequent testing shall be conducted every ten years.

Dry Sprinklers

Dry sprinklers serve a dual purpose in the world of fire suppression systems. In addition to being used in dry pipe systems, dry sprinklers enable a wet pipe system to be extended into spaces susceptible to freezing (below 40 °F). A primary motivator for NFPA 25 suggesting dry sprinklers to be tested and/or replaced every ten years was due to a relatively limited reliable lifespan stemming from worn or damaged rubber O-rings. However, the use of dynamic O-rings in the construction of UL listed sprinklers became prohibited in the past several decades. Furthermore, more recent operational tests have been conducted on dry sprinklers removed from various field applications since the prohibition of O-rings, which indicates an increased reliability of dry sprinklers. Based on recent improvements to dry sprinklers, the 2020 edition of NFPA 25 introduced an updated testing and/or replacement cycle. Now, dry sprinklers must be tested and/or replaced within fifteen years of their installation instead of the previous ten-year cycle. If returned to service after passing plunge tests, dry sprinklers shall be subsequently retested every ten years.

Sprinklers for Specific Applications

Harsh environments, such as corrosive atmospheres, as well as commercial-type cooking equipment and ventilating systems are prime examples of specific applications requiring the protection

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of sprinklers. Did you know that sprinklers used to protect commercial cooking equipment and exhaust systems are required to be replaced on an annual basis unless the annual examination displays no evidence of grease buildup? Similarly, sprinklers exposed to corrosive and other harsh environments are generally required to be tested and/or replaced on a five-year basis. However, a new clause was recently introduced in the 2020 edition of NFPA 25 to allow the testing and/or replacement cycle of listed corrosion-resistant sprinklers installed within harsh environments to be extended to ten years.

Corrosion-resistant sprinklers are generally fabricated with protective coatings and may also include materials less affected by the environment to provide varying levels of resistance. Protective coatings such as chrome or polyester ornamental finishes protect the sprinkler frame arm against degradation, however, do not protect the entire sprinkler assembly. Wax coatings provide enhanced protection to both brass sprinklers and polyester coated sprinklers through the introduction of a physical barrier which inhibits electrochemical reactions. Electroless nickel polytetrafluoroethylene (PTFE) synthetic coatings provide a complete coverage of the entire sprinkler assembly using an auto-catalytic process, ultimately improving its corrosion resistance. Additionally, alternative materials such as stainless steels are employed because they are less susceptible to deterioration and surface oxidation than brass alloys since they do not contain components such as zinc, copper, and tin.

Electronically Operated Sprinklers

Electronically operated sprinklers combine the tried and true reliability of water-based sprinkler systems with the advanced electronic sensing and control systems. Electronic sensors are employed to detect a fire by recognizing a specified rate of temperature rise instead of traditional temperature sensitive glass bulbs or fusible links. Once multiple sensors identify the minimum rate of temperature rise (which indicates a fire), water is rapidly discharged from an array of sprinklers. Electronically operated sprinklers provide enhanced protection for challenging environments – such as rack storage of Group A plastics – by reducing the time required to get water onto the fire as well as increasing the volume of water delivered to fight the fire and prevent flame spread. Due to the novelty of electronically operated sprinklers, the 2020 edition of NFPA 25 is the first issue of the standard to provide language addressing their existence in the marketplace. As such, the document provides no guidance on their testing and/or replacement intervals other than to follow manufacturer's requirements. However, it is expected that future editions of NFPA 25 will provide further provisions addressing testing and/or replacement cycles of electronically operated sprinklers as they become more widely used.

Summary of 2020 Changes in Testing and/or Replacement Cycles

Although many different types of sprinklers exist for many different applications, each with their own testing and/or replacement cycles, here are a few of the key changes introduced in the most recent edition of NFPA 25:

- Dry sprinklers – testing and/or replacement cycle increased from ten to fifteen years;
- Harsh environments – new clause permitting listed corrosion-resistant sprinklers to be tested on a ten-year cycle; and
- Electronically operated sprinklers – added language to acknowledge their existence.

Regardless of the type of sprinkler used to protect your valuable assets, always remember it is important to adhere to sprinkler replacement cycles even if the sprinklers are not visibly damaged. You never know when your sprinklers will be needed, so make sure they are ready when called upon.•

Amy Misera and Joshua Swann, Ph.D., are Associates in the Thermal Sciences practice at Exponent. Their work includes fire origin and cause investigations as well as fire protection engineering consulting.

RESOURCES USED:

NFPA 25 (2020 Edition)

NFPA 13 (2019 Edition)

NFPA 25 Public Input for the 2020 Edition

SFPE Emerging Trends Newsletter, Issue 1: Do Quick-Response Sprinklers Provide Better Fire Protection?

Viking Bulletin: Sprinkler Corrosion Resistant Finishes, Form No. F_012513

Sprinkler Age, What If Your Sprinkler System Could Think?, June 21, 2018

How to Keep Pace with a Supply Chain Hit by a Pandemic

by Daniel Wake, *Product Manager – Sprinklers and Devices, Victaulic*

The coronavirus pandemic has made online shopping more important than ever. Health and safety have become top priorities, and many people have turned away from grocery stores toward online platforms for their needs. While grocery shopping can still be done in person, some stores are considering switching processes to conduct a larger portion of sales online to reduce safety risks for workers who engage with a multitude of shoppers every day.

At-home shoppers are buying essential items – including toilet paper and hard-to-find cleaning products – and they want to receive those products as soon as possible. They expect rapid delivery from suppliers, which means online retailers are competing to deliver the fastest shipping times – an increasingly difficult goal in the face of the dramatic increase of shopping online.

Although the global health crisis instigated the recent surge in online purchases, the fact is the trend toward online shopping is not exactly new. Consumer behavior has been shifting toward online purchasing for some time. Today, with more people forced by circumstances to do their shopping online, attitudes and behaviors are changing. Heavier traffic online and a consistently high level of online buying is likely to be a long-term trend with lasting effects.

The impact on physical space

This transition has impacted commercial construction. Fewer brick-and-mortar stores are being built, while the number of distribution centers and warehouses is on the rise. The rising demand for storage space has created a host of new challenges for builders. Using or converting available and vacant retail spaces is something that will become more common to provide the space sooner. Taking advantage of new technologies allows this conversion to be simple and cost effective.

Storage facilities and warehouses are growing not only in number but also in size with warehouses today averaging 180,000 sq. ft. The size of these buildings impacts many construction elements, one of the most important of which is the fire safety system. Today's fire protection systems must be able to accommodate the new ceiling heights of warehouses built to optimize storage. In response to the new ceiling heights, Early Suppression Fast Response (ESFR) sprinklers are commonly used and are located

"Sprinkler systems must have the flexibility to be modified quickly to keep warehouses up to code as space is utilized differently."

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at the top of the protected space to quickly put out fires. These challenges and new fire protection developments have led storage protection systems to evolve.

Companies also are changing the way their warehouses are used. In some cases, a company may not need warehouse capacity year-round, so it sublets space during off-peak seasons. The use of a warehouse by multiple tenants changes the way the warehouses are built and what they need to accommodate. Therefore, these multi-tenant warehouses need the capabilities to store a variety of products and call for innovative and adaptable or flexible fire protection design. To keep up with these needs, fire protection system component advancements have been fast-paced, and system demands and standards have evolved.

Putting the system in place

In the past, welding, flanges, and threading were the main joining technologies used to connect mains and branch lines. With the introduction of grooved couplings in 1925, either rolled (cold-formed) or cut in the pipe ends, another option became available. Solutions have advanced since then, and grooved couplings are the predominant method for connection 11/4-in. to 12-in. pipe in fire protection systems. Roll groove technology allows sprinkler piping to be adjusted after being installed, with less time required for adjustment and less effort than welding and threading methods.

The days of low warehouse ceilings and in-rack sprinklers have given way to new ceiling heights to optimize storage capacity and the installation of Early Suppression, Fast Response (ESPR) sprinklers located only at the top of the protected space. Some warehouses held plastic components stored up to 25 feet high in buildings with only 30-ft ceilings, in order to meet previous design standards. Today, ESFR sprinklers have evolved such that ceiling-only sprinkler systems can protect buildings much taller with ceiling only protection, giving freedom to move storage arrangements below.

Sprinkler system design also adapted to the changing needs for warehouse fire protection. One of the ways this has been achieved is through grooving pipe ends and creating multiple sized threaded outlets that connect directly to the branch line. In addition to simplifying the branch-line connections, grooved Installation-Ready™ couplings make installation safer and quicker.

Another way installation is being expedited and risk reduced, is through standardization. For example, a standardized 1-inch Innovative Groove System (IGS) outlet is functional irrespective of sprinkler orifice size, which means one connection can accommodate grooved sprinklers from 0.5-inch up to 1-inch. This dramatically simplifies changing out sprinkler systems. Replacing a low-volume sprinkler with one with greater flow capacity is no longer complicated because the same grooved outlet can be used with a range of sprinklers.

Man and Machine

Change inevitably introduces the need to adapt, and advances in sprinkler systems are no exception. The use of ESFR sprinklers makes installing warehouse sprinkler systems faster and easier, but in large facilities, workers now are expected to install hundreds of them each day. This means pipe fitters are engaging in much more repetitive motion to wrench the ESFR heads, and this increased physical effort can lead to wear and tear on shoulders, elbows and backs. Worker health and safety is a top priority, so reassessing the installation process became critically important.

Applying technology like IGS, changes the effort to an impact tool while providing consistent sprinkler installation everytime. Changing to power tools decreases the possibility of over-exertion on both fitters and the sprinkler head. Since the sprinkler coupling is designed with bolt pad-to-bolt pad visual confirmation, fitters can see when the connection is complete and can work at the pace of the tool. Therefore, fatigue is no longer a factor.

Visual verification also allows installers to save a considerable amount of time. Leaks cause delays, and isolating them and repairing them can wreak havoc to the project schedule. In the case of ESFR systems, leaks most often occur at the frictional joint between the ESFR sprinkler and the branch line outlet. Recent studies show that when mechanical connections are used on ESFR sprinklers, the number of leaks can be reduced from two to three per system to zero because installers can visually verify correct installation.

Keeping Pace with Change

There is growing demand for warehouses that can be reconfigured quickly when tenants and space usage change. The shift toward digital purchasing is changing the way people live, and innovative fire protection solutions will be an essential component enabling warehousing and distribution centers to keep pace.•

NFSA Staff Weighs in On How They Kept Busy During Their Socially Distanced Downtime

The work life of many NFSA Team Members often involves 40-60 hours of travel per week. In fact, many of the NFSA staff were called Roadrunners for many years. COVID-19 has temporarily changed our travel and out-of-town hours to at-home work and virtual events. With these new and quite unexpected hours at home, many NFSA team members were not used to having hobbies and/or time to pursue non-work activities. Due to travel restrictions and cancelled meetings, your hardworking NFSA staff, used to a frenetic pace and frequent travel that often took up nights and weekends, found themselves with extra time that, while commonplace for most, was novel for us. As such, we are happy to present to our members…

HOW WE SPENT OUR SOCIALLY DISTANCED SUMMER

Suzanne Mayr

I've Discovered That Not All Libraries Are Sprinklered!

Northwest Regional Manager Suzanne Mayr visits the Little Free Library in her Tacoma, WA neighborhood to find another literary escape.

With COVID-19 restrictions curtailing travel, I have turned to books to take me on virtual adventures to fill the evenings I would normally spend on the road.

I am currently savoring the last few chapters of *"The Power of One"* set in World War II South Africa. As the young character navigates through the upheaval in his world, I've navigated my way through several history documentaries on YouTube® to understand how the cultures of the Boers, the English and the indigenous peoples all collided at this time and in this place. When author Bryce Cunningham describes hunting for rare plants on the hills of the lowveld or taking a train through the savannah, I can go there too with a little help from Google Earth. This is turning out to be one of my favorite "coming of age" tales, and I will be sad when I turn the last page.

I may have gained a few pounds when I devoured Peter Mayle's *"French Lessons."* (Full disclosure: I've been tres amoureaux with Mr. Mayle since I met him years ago at a Seattle book signing for *"A Year In Provence."*) His wry British observations on his adopted France and its many food and drink-related festivals provided me with a vicarious romp through France. If not for travel restrictions, I was ready to grab my dogeared middle school French/English dictionary and an elastic-waist frock and find the off-the-beaten-track Michelin-worthy eateries that Mr. Mayle constantly stumbles upon. While alternatively chuckling and drooling my way through *"French Lessons,"* I was surfing the internet for images of elusive escargot, rare truffles and quaint French villages.

Closer to home, I was both captivated and challenged by the conflicting journey of author Tara Westover's *"Educated."* Most of her autobiography takes place in rural eastern Idaho, and I realize how the grit and eloquence of this woman was shaped by the isolation, the climate and the culture of her home in Buck's Peak. I searched for archived news stories of government takeovers, religious sects and modern-day conspiracy theories to lend context to Ms. Westover's extraordinary story.

To find a book that makes me research history and language and music, all while unraveling a well-told tale—for me, that is hitting the literary jackpot. Amor Towles' exquisite *"A Gentleman in Moscow"* was the type of book I slow down reading just so the magic won't end. As the characters roam the elegant lobby and decrepit garret of the real-life Hotel Metropol during the rise of the Soviet Union, I refreshed my faint recollection of Russian history. My side reading helped me appreciate the sly attempts of the ever-graceful Count Rostov in some small part to stem the Bolshevik's destruction of centuries of proud Russian culture. I understand that a screen adaption of this book is in the making. If you cheat and watch the movie, you will miss out on the beautiful, clever, and witty writing that just can't translate to the screen.

While I miss all the people and places I regularly visit as part of the NFSA Field Ops team, I am grateful for being able to take a virtual journey to a different time and place after a long day in the home office! •

Cindy Giedraitis

Which Came First the Mint or the Mojito?

COVID-19 has been a learning experience in many ways. This virus with its very negative consequences to our health (mental & physical) and economy has forced me (and the entire world) to slow down and focus on some new hobbies that are home-based. At work, I have learned to use computer cameras and lighting, Microsoft Teams, and database software!

At home, I have mastered cutting hair, making pizzas & pitas, and riding my bike. Then I was challenged by my family to grow a garden. I have never been inspired to garden until my husband said why not plant a Mojito Garden? Well, he had me at "Mojito".

Our garden beds are almost done and before I commit to planting that first mint – I practiced making several types of Mojitos this past weekend. There is an art to mojito making. How do you muddle the mint? Below is my favorite Mojito making method (so far):

Texas Mojito *(Not Florida)*

Place 5-10 Mint Leaves in a tall glass (or Mason Jar) and 1 lime wedge.

Use a large spoon or "Muddler" to gently stir and release the mint oil and lime juice.

Add 2 tablespoons of white sugar and 2 more lime wedges and muddle to release the lime juice.

Fill the glass to the top with ice.

Pour ½ to 1 ounce of white rum over the ice and then fill the glass with club soda.

Stir, taste, and add more sugar if needed.

Garnish with lime and more fresh mint.

This is such a healthy drink and it can also be made without alcohol. And now, I am a mojito garden believer! Bring on the dirt.•

Joanne Genadio

It Ain't Summer Without Garden Tamatas!

It's my first summer in my new townhome. While I enjoy the maintenance-free lifestyle, I miss my backyard and my big garden! I lived in my home for over 30 years and had many beautiful perennials on my property that would greet me every spring and last until the first frost. My Memorial Day weekend was always spent planting my vegetable garden. While I loved growing my own produce, the tomatoes were my favorite. I'd watch them like my children, and when the first flowers appeared, I'd celebrate! I knew the fruit would not be too far behind.

This year, I don't have the room for as much as I'd like. Instead of perennials, I have planted beautiful flowers, herbs, and greenery in pots that I will be able to move indoors after the season ends. My vegetable garden is missing my usual cucumbers, broccoli and watermelon, but I've got hot peppers (love 'em!), snow peas, lettuce, swiss chard, zucchini, and my precious tomatoes. Gardening in a small space has been a challenge, but it is doable. I'm happy with what I've created and am appreciative of the added bonus of not having to shovel any snow come winter!

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Here's my favorite recipe for a delicious and easy tomato salad. Use garden tomatoes, or don't bother! Farmer's markets should still be in full swing by the time this issue is published. If you don't have your own garden, you'll get some great "tamatas" at your local farmer's market!

Garden Caprese Tomato Salad

Serves 2

1-extra large garden tomato, or two medium (beefsteak tomatoes work great in this recipe!)

Fresh mozzarella, sliced (Get the good stuff, not the ones encased in plastic-about six nice sized slices)

1 clove garlic, minced

½ small red onion, thinly sliced

½ cucumber, sliced

2 or 3 fresh basil leaves torn into small pieces

2 T extra virgin olive oil

Salt & Pepper to taste

About an hour before serving:

Slice the tomato in about ¼" slices. Alternate the tomato and the mozzarella on a large serving plate. Top with the red onion, cucumber, minced garlic, and the basil leaves. Drizzle with the oil and add salt and pepper to taste. Let stand at room temperature until ready to serve. Serve with some crusty Italian bread. Hint: If you have leftovers, don't throw them away! Store in fridge. Boil up pasta of your choice and pour the leftovers on the pasta. Toss and top with good quality grated Parmesan or Romano cheese. Two for the price of one! •

Dave Lafond

Chicken Soup for the Soul... and the Mind and Body!

For me, being cooped up in the house with stay at home orders, had the upside of honing my culinary skills. When I was a young firefighter, I became the shift short-order cook. Breakfast and lunch were my specialties. As time went on, it turned into a hobby.

I saw this recipe for chicken soup on one of my favorite web sites. Food Wishes with Chef John. I gave it small tweaks. It is by far the best chicken soup you will" evah" have, period. If your skeptical, go ahead and give it a try. You will not regret it.

There are two parts to the recipe, however. The first is to make the roasted chicken broth. The second is to then make the chicken soup. So here it goes…

Roasted Chicken Soup

Roasted chicken broth: Roast a 3 ½ lb. chicken in the oven for 45 minutes at 400 degrees. Yes, your right, it's not quite done, but no worries. Let it cool, then remove the breast meat and refrigerate until later.

In a pot with two quarts or so of cold water add the following:

6 unpeeled carrots cut in large pieces.

1 large onion quartered.

3-4 celery stalks cut in large pieces.

3 cloves of garlic, paper and all.

The secret ingredient, a squirt of ketchup.

Put in the carcass of the chicken, all of it.

Cover and bring to a boil, then a simmer for three hours.

When done, strain it and discard the other ingredients.

Save one tbs of the chicken fat for later.

I usually refrigerate the broth for when the chicken soup will be made. It can be frozen for up to three months until ready to use.

The Chicken Soup

Melt one tbs of butter in a large pot, add in the reserved tbs of chicken fat.

3 large sliced carrots about the size of a quarter.

½ diced onion.

2 ribs of diced celery.

Sauté until soft.

Add in ¼ tsp of fresh thyme or a pinch or two of dried thyme.

Salt and pepper for sure.

Add in the roasted chicken broth and bring to a boil, then simmer.

Cut up the chicken breast meat into small chunks and continue cooking for 45 minutes.

Add in a handful or two of large wide egg noodles.

Let it cook until noodles are soft.

Enjoy.

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Vickie Pritchett

The Secret to the Famous Breakfast Casserole Revealed!

For those of us within NFSA who used to be on the road the majority of the time, a worldwide pandemic sure knows how to put the brakes on! For the past several years, I've been a 200+ nights-away-from-home kind of team member. I began the quarantine with a heavy heart because I was so sad that our Annual Seminar and Business & Leadership Expo was canceled, but by the time that date rolled around and we did it virtual I was finding a new "pandemic-style" vibe!

You know the old saying is true, you can find a positive in any situation, and this pandemic is no exception. Let me share what I've treasured... the extra time with family and friends is at the top of my list! Enjoying summertime with those people is extra special! So, I'm sharing a pic from the 4th of July... time on the water with family and friends was priceless and I had to cook a much requested recipe for breakfast that I'd like to share with you all!

Breakfast Casserole

2 cans Pillsbury Crescent Rolls

1 lb. sausage, browned and crumbled (drain grease)

2 cups shredded cheese (use your favorite, Cheddar or Velveeta works great)

salt and pepper to taste

1 Tablespoon minced onion

5 eggs

Preheat oven to 350.Take one can of crescent rolls and spread out on bottom of 13 x 9 baking pan. Mix remaining ingredients in mixing bowl and pour over bottom layer, top with remaining can of rolls and bake for 20-25 minutes or until golden brown.

Slice and serve!

I always like to accompany this breakfast treat with "Cini-Minis" because they can bake along with the sausage casserole

2 cans Pillsbury Crescent Rolls

1/2 stick butter, melted

1/2 cup sugar

2 teaspoons cinnamon

Spread half of a roll of crescents on counter, dab butter to cover, then sprinkler sugar and cinnamon. Roll and cut (like miniature cinnamon rolls) Do the same process for the remaining 3 sections. Place cut rolls in 13 x 9 inch pan and bake for 20-25 minutes or until golden brown. Top with icing – I use 2 cups powdered sugar, 1 teaspoon vanilla and enough milk to make it creamy)

YUMMY enough to say go away COVID! •

Lorrell Bush

On the Road, One Way or Another

Being at home all the time when you've been on the road for 12+ years has not been easy. I love being on the road and visiting our Florida and Puerto Rico members. I love training classes and Area Interest Meetings. I just really love my job. Being near beaches that were closed due to COVID was hard to handle. Sometimes you just have to break free, we feel most free either on the Harley or on the water. I will be glad to get back on the road again but until then riding on the back of a Harley or hanging out by the water isn't so bad. •

Roland Asp

On the Water-Chesapeake Style

One activity that Lisa and I enjoy is boating on the Chesapeake Bay. This is the perfect "social distancing" activity and certainly enriches our lives. We have always felt at peace on the water and when NFSA decided to move from New York to Maryland - we were hesitant to move away from the Hudson River, but we have found that the boating culture in Maryland and the beauty of the

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Chesapeake Bay is first-rate and have not regretted the move to this new locale.

Rob Geislinger

As Seen on TV...but better!

Homemade "Hot Pockets™"

My kids have always been fans of these sticky, gooey concoctions. Stuck in the house for weeks, I decided to try to come up with an alternative that satisfies their cravings while providing better nutrition. This quick and easy recipe was the result. The whole family loves them.

Homemade Hot Pockets

8 – Frozen dinner rolls – Texas size

1 – Medium onion, chopped

2 – Garlic cloves, chopped

2 Tbsp – Butter

1 Tbsp – Corn starch

3 cups – Chopped chicken (pre-cooked)

3 cups – Chopped, frozen broccoli

½ cup – Chopped bacon (precooked)

8 oz – Cream cheese, cubed

4 oz – Processed cheese, cubed

1 cup - Milk

2 Tbsp – Ranch seasoning mix

Salt & pepper to taste

Thaw the dough according to package direction. Once they have doubled in size, roll them on a floured surface. They should be about 8" in diameter. Let them rest (covered) for at least 5-10 minutes. (Incidentally, this is also a great way to make personal pizza crusts so that everyone can add their favorite toppings!)

Preheat the oven to 400°. Melt the butter in a medium saucepan on medium. Toss in the onions, garlic, and a pinch of salt. Sweat until the onions are translucent. Add the corn starch and whisk to form a roux. Add the milk and whisk often until it begins to steam. Add the cheese, ranch seasoning, and salt and pepper to taste, whisking until a thick sauce is formed. Combine the chicken, broccoli, bacon and sauce mixture in a bowl.

Place one of the dough disks on a greased cookie sheet. Place 1/8 of the chicken mixture onto one side. Fold the other side over, crimping the edge with a fork. Puncture the top with a fork. Place the cookie sheets into the oven on a middle rack for about 15-18 minutes, until the top is golden brown. Let them cool for a few minutes before serving as the insides are very hot. *Enjoy!*

Michael Wilson

A Yankee's Guide to the Sazerac

The classic sazerac has its roots in New Orleans and is widely regarded as one of the oldest mixed drink recipes in U.S. history. If you were to order this drink out, I would recommend only doing so at whiskey bars. It's okay to go by looks with this, by the way; don't go to a beer and a shot place and order a sazerac. If the bar has exposed brick, industrial lighting, and a tattooed and mustachioed bartender, odds are the sazerac will be good. Don't be afraid if the drink is not on the menu, since most bartenders know how to make it. If the bartender claims they never heard of the drink, promptly leave the establishment.

For us Northerners, expect the quality of this mixed drink to improve the farther south you are; Baltimore bars produce fine sazeracs, whereas upstate New York's iterations of the drink are wretched and should be avoided. Brooklyn probably has some good sazeracs, but I would imagine their bartenders getting too trendy with it, e.g., putting rosemary in the drink or setting it on fire.

Philadelphia bars produce this drink with mixed results, with the Khyber Pass on 2nd and Market making a terrible sazerac, and bars such as Fette Sau in Fishtown and the whiskey bars along Broad

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Street by City Hall making very good and liberally portioned drinks. I had a sazerac at Johnny Brenda's in Fishtown once, but I cannot attest to its quality because it was late in the night and I was very tired. Congress Hall in Cape May, New Jersey has been know to make a good sazerac as well.

A sazerac and absinthe cupcake served at a speakeasy in Jim Thorpe, Pennsylvania.

For Southerners, I cannot offer much advice, but I will tell you that the quality of the drink will improve significantly the closer to Louisiana you are. I would also imagine a state like Kentucky having good sazeracs, though I cannot say for sure.

This is all sounding a bit fussy and bougie, isn't it? This isn't rocket science after all. Let's make this drink ourselves and save paying the hefty bar tab.

"But you're just a Coastal Elitist! What business do you have talking about a Southern drink!"

Easy there, Hoss. If I were writing about jambalaya or a crawdad boil that criticism would be valid. This is basically an old-fashioned with a few different ingredients.

We'll need:

- 2 ounces of Bourbon or Cognac (the original recipes called for cognac, but bourbon is more common nowadays)
- 3-5 dashes of Peychaud's Bitters (Angostura or any other bitters will work, too)
- A dash of absinthe
- Simple syrup or a sugar cube
- A lemon peel

Making the sazerac:

- Start by pouring the bourbon into a tall glass filled with ice and the sugar cube/simple syrup. Put in around three but no more than five dashes of bitters.
- Stir the mixture for around 20 seconds, but no more than 30.
- In a separate, smaller glass put a little dash (and I mean a little, this stuff is potent) of absinthe. Swirl it around in the glass and toss the excess out. I usually prefer to keep it in there.
- Strain the contents of the first glass into the second, making sure the ice doesn't fall in. You many include one ice cube if you like.
- Twist the lemon peel so the juices go into the drink. You can throw the peel in the glass or discard it.
- Note: There's some contention as to whether or not one should put the lemon peel in the drink. The same goes with adding an ice cube. Do what tastes best to you.

And there you have the sazerac. If you ever see me on Bourbon Street in New Orleans or in a bar in Fishtown, Philadelphia, be sure to buy me one. Laissez le bon temps rouler! •

FUTURE DATES FOR NFSA ANNUAL SEMINARS AND BUSINESS AND LEADERSHIP CONFERENCES

May 12-14, 2021
Cosmopolitan
Las Vegas, NV

May 3-6, 2022
Sheraton Sand Key
Clearwater Beach, FL

May 3-6, 2023
Marriott Marquis
Austin, TX

May 7-10, 2024
Wailea Beach Resort
Maui, HI

SOCIAL SCENE

by Darby Oswald,
Marketing Communications Specialist
Viking Group, Inc.

New Virtual Showcase Approach Brings the Industry Tradeshow Floor to Participants

Thanks go to Viking's Darby Oswald for taking over my Social Scene column for our Member Takeover issue. Darby is a great writer, her subject matter is timely and should be of great interest to our readers! –Joanne Genadio

Originally packed full of events, tradeshows and social plans, most of us felt that 2020 had the potential to be a year filled with busy moments – a potential that this year has most certainly not lived up to. A trial that many organizations faced in the midst of a global pandemic involved changing or moving major events for the year. This past June, with countless industry tradeshows canceled or postponed, Viking and Viking SupplyNet's innovative approach to such a challenge offered a brand-new idea about what large events such as tradeshows can look like in the future.

A company first, Viking held a Virtual Fire Protection Showcase utilizing Microsoft Teams, a video conferencing and presentation tool, that featured speakers from Viking, Viking SupplyNet, and trusted business partner brands. The virtual showcase allowed for a conversation among participants, offered product discussions and overviews, shared exciting company news, and provided information about upcoming products or digital tools. The conversation-style showcase gave viewers the chance to share their commentary and questions throughout the duration of the event and allowed for participation among guests.

"Three national tradeshow events featuring new innovations within the fire protection industry canceled their events for this year," says James Golinveaux, President and CEO of Viking Group, Inc. "Viking worked with trade partners to bring the virtual exhibit to our customers and interested parties."

The show, which featured live discussions between Viking team members and industry partners including AGF, Anvil International, Watts, Potter Electric Signal Company, LLC, General Air Products, FireFlex Systems, Inc., Lubrizol, Zurn, and Kennedy Valve, offered a more efficient tactic for product-related information than traditional tradeshow settings allow. Tim Freiner with Potter Electric Signal Company, LLC noted that the event highlights Viking's advanced ideologies and allowed for Potter to share crucial information about its products. "Viking continues to be an innovator and leader in this industry. With most trade shows cancelled, the virtual training event gave Potter the opportunity to introduce our new wireless technology, and it was a huge success. We are very thankful that Viking gave us the opportunity to participate."

Viking's creative teams spent weeks preparing for the live Virtual Fire Protection Showcase, editing videos, creating content and product information, testing technology and prepping speakers for their interviews. Ray Fremont Jr. of General Air Products notes that his company was very pleased to be part of something so unique.

"Challenging times call for innovative solutions – we were excited to be asked to participate in Viking's virtual event! It challenged us to find a new way to reach out to the industry and the feedback from attendees tells me that this new approach was a success."

Because participants were able to watch from the comfort of their own home or desk, and traveling was no longer a factor in attendees' ability to attend, Golinveaux has high hopes for the future – he believes that the digital event will be a beneficial option for any upcoming events. "While not being able to physically communicate with friends and key customers was a downside to the event, the virtual exhibit hall will be tough to beat in the future due to its convenience and accessibility." In addition, Golinveaux mentioned that Viking "can now provide advanced product demonstrations in the virtual world more proficiently than on a trade floor. We can cover the same demonstration that would typically take 25 minutes in a physical booth space in about ten minutes."

Although 2020 has so far not been the year that many had hoped for, the obstacles that presented themselves during the last few months offered opportunities for technological advancements and innovative growth – a concept that Viking is no stranger to. As we draw nearer to the end of 2020, the industry can now look to a future filled with more opportunities for continued technology growth and the confidence that our community has the tools and creative minds necessary to tackle any future challenges.

To view the live event, please visit **youtube.com/vikingsprinkler.**

MEMBERS IN ACTION

FUN TIMES AT RELIANCE FIRE PROTECTION

Having a little Halloween fun in the neighborhood: Reliance Fire Protection's Keith Millard channels Mr. Rogers, while Keven Jenson is fresh from the slopes of Crystal Mountain in a vintage 80s ski suit that turns out to be older than he is!

Ever since the Seattle Supersonics left Seattle, super fan Jason Arriaga waits for the opportunity to sport his Sonics gear. The Reliance Fire Protection Halloween party presented just the right opportunity!

On Halloween, Reliance Fire Protection's Ramona Landreth greets customers with a big, bracing smile and a good look at her new clownfish, a la Darla from Finding Nemo.

DELTA FIRE MAKES A DIFFERENCE

submitted by Suzanne Mayr with the Team at Delta Fire

As it became apparent that the COVID-19 restrictions were hurting small businesses, Steve Cartales, President, and the team at Delta Fire, Inc. wanted to do something positive. Providing a free annual inspection to area businesses seemed like a natural fit for the family-owned and operated contractor located in the greater Portland, Oregon area.

Delta Fire staff reached out through personal contacts, social networks, and area fire marshals to spread the word. As Oregon began a slow phased reopening, word spread.

One of the first companies to take Delta Fire up on the offer was A.R.E. Manufacturing, Inc. of Newberg, Oregon. A.R.E. opened its doors in the 1980s and in addition to its design and manufacturing capabilities, it partners with a local high school to run a complete training program that offers paid internships. During the "stay at home" order, A.R.E. had employees sharing hours, and it suffered a loss of business due to a decrease in orders. Its fire sprinkler inspection involved a single wet pipe sprinkler system.

Another local organization, 5Rock Ranch, reached out to Delta Fire. 5Rock Ranch is a non-profit organization providing for single moms and kids, fatherless young men, and floundering adults. They had to cancel their camps and functions due to COVID-19. Owners Scott and Christy work tirelessly to provide a safe place, and Delta Fire was able to make sure that their building was safe also.

Josh Nix of Delta Fire, Inc., and Alvin Elbert of A.R.E. Manufacturing, Inc. of Newberg, Oregon are smiling under their masks. Delta Fire provided a free annual inspection to area businesses such as A.R.E. that were affected by COVID-19 shutdowns.

Aside from helping area businesses ensure they are protected from fire, there is another goal to providing these complimentary annual inspections. "This not only may help some business owners during this tough time but will keep our craft people working as well," Steve said.

Founded in 1987 by Steve's father, Delta Fire believes its employees are key to achieving its core values of workmanship and quality service. Delta Fire, Inc. is a full-service contractor that provides all aspects of fire protection to its clients with "in-house" expertise. Most employees that started with Delta in 1987 are either still with the company or retired. Numerous family members work at Delta Fire, including Steve's mother, brother, wife, sister-in-law, and son.

While inspection work slowed down in Oregon during the months-long "stay at home" order, new construction was considered "essential." The Fourth & Montgomery Building is a good

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example of a project that was deemed essential. This building is a collaborative effort to house the PSU Graduate School of Education, the OHSU/PSU School of Public Health, the PCC Dental Programs, and the City of Portland Bureau of Planning and Sustainability. Another such project is Raleigh Slabtown, a six-story apartment building with ground floor retail space.

"We will make the offer of free inspections available through Labor Day or until our service coordinator says 'enough'" Steve said.

VIKING GIVES BACK

By Rob Hash, President/Co-Owner of Portland and Seattle-based Viking Automatic Sprinkler Company

Viking Automatic Sprinkler Company has been fortunate to be involved with the non-profit Seattle Fire Foundation since its inception in March of 2019.

The Foundation's mission is to harnesses the power of private philanthropy to respond to the needs of the Seattle Fire Department—much in the way the department unfailingly responds to the needs of our communities. The goal is to raise supplemental funds for safety equipment, public education and other resources that the city budget cannot provide.

Rob Hash, President and Co-Owner of Portland and Seattle-based Viking Automatic Sprinkler Company (left) and Seattle Fire Chief Harold Scoggins (right) discuss how the fire sprinkler industry can support the newly-formed Seattle Fire Foundation at the Foundation's March 3 kickoff event.

As a private organization, the Seattle Fire Foundation has the flexibility to raise and allocate resources more nimbly than the city budget process—enabling them to identify and quickly fulfill the Seattle Fire Department's pressing needs, such as additional ballistic gear that allows firefighters to enter dangerous situations with greater speed and confidence, better equip EMTs and paramedics to save more lives in a medical emergency and prevent and mitigate catastrophes through fire and disaster preparedness education.

On March 3, 2020, Rob and Terri Hash of Viking Automatic Sprinkler Company and Suzanne Mayr with the National Fire Sprinkler Association were invited to attend the Foundation's first fundraiser which was a meet and greet with the City of Seattle's Fire Chief Harold Scoggins and Police Chief Carmen Best. The event was a success and raised over $41,000 to support the brave women and men of the SFD.

THIS IS WHY I LIKE BEING A PART OF NFSA!

Brad Anderson, Firetron Sprinkler Inspections Manager

Hi, I am Brad Anderson, Fire Sprinkler Inspections Manager for Firetron, Inc. out of Houston, Texas. I am also a frequent user of NFSA's EOD – Expert of the Day. In the past month, I have asked many questions of NFSA's Expert of the Day and every time I get both a national code or engineering interpretation from the national NFSA staff and many times I also get a regional point of view from my NFSA Regional Manager.

MEMBERS MAKING A DIFFERENCE

Lance Calvo (left) from Western States Fire Protection in Seattle, WA, partnered with his friend Thai Dunsdon (right) to bring happiness to those in need at a local hospital that specializes in trauma.

Thai serves as Program Coordinator in Palliative Care Services at Harborview Medical Center. When Thai told Lance's wife, Sarah, that patients were unable to see or communicate with their families due to quarantine, Sarah brought that information home to Lance, who quickly sprang into action.

Lance worked with his branch leaders to gather eight iPads from the branch's Inspections and Service departments, which were donated to Harborview Medical Center.

These tablets have allowed families to be together as they journey through this pandemic.

Thank you, Lance, for seeing the need and taking on an active role in supporting the communities that we serve!•

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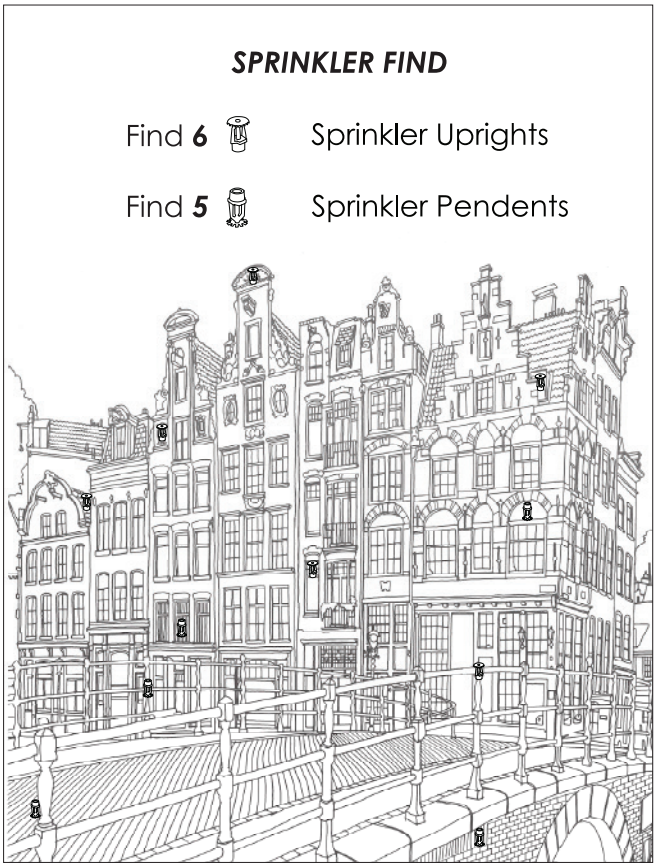
FIND THE FIRE SPRINKLER

Nicole Michael, Sprinkler Designer with JCI, made this *"Sprinkler Find" for Take Your Son/Daughter to Work Day."* We had extras and passed them around the office, it was a hit with the adult engineers as well," said Nicole.



RED HAWK FIRE PROTECTION TACKLES COMPLEX PROJECT IN SEATTLE

Submitted by David Fox, Partner, Red Hawk Fire Protection in Puyallup, WA

When it comes to a list of challenges, the voter-approved King County Children and Family Justice Center in Seattle's Central District, ground-up design-build project, checked all of the boxes: complex design requirements, multiple plan changes, budget issues, Chinese steel tariffs, and a half a decade long timeline, to name a few.

Red Hawk Fire Protection of Puyallup, Washington has been able to maneuver through these difficulties to help complete this community asset under the guidance of design manager Travis Kinne and the incomparable patience of several Local 699 pipefitters.

The new Center was needed to replace an outdated and poorly-constructed unwelcoming structure that correctional staff agreed sent the message "We don't care about you" to the families it served. The new facility had to accomplish a lot. It contained not only detention space but also housed childcare facilities for families on court business. It had to be flexible enough to handle changing community priorities, and it was required to be eco-friendly, and LEED Gold certified. It even needed to support the values of the community and include bike and pedestrian paths.

During the initial design of the project, which began in October of 2015, Red Hawk had to design the systems and fire pump to supply an additional two stories that could be built in the future.

In March of 2017, this fire pump was incidentally removed during this process to comply with a revised budget. With the system design being mostly complete, removing the fire pump and adjusting all the hydraulic calculations meant a majority of the project had to be redesigned.

With the Center serving multiple uses, the design was a bit more complicated than many other projects. The 137,000 square foot courthouse contains ten courtrooms; the 92,000 square foot juvenile detention center contains 112 detention beds; an additional 10,200 square feet of youth program space round out the main structure. This main structure fire protection systems consist of seven wet systems protecting the courthouse and detention, six pre-action systems to protect the data and security rooms, six vertical standpipes, and a total sprinkler headcount 3,343.

In the detention center, each of nine cell blocks has isolated solenoid valves installed and controlled by the security command center. It allows the onsite officers' control of sprinkler discharge

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in case of mechanical damage from inmates.

In addition to the occupied building, there will also be a four-level, 360-stall parking garage that will include three dry systems protecting it and two vertical standpipes. The original design of the parking structure was to be a steel beam building with pan deck floors. The architectural team changed the design to a concrete post-tension deck and beam construction. This change, once again, required the sprinkler design to be scrapped entirely and redesigned.

The existing correction facility was demolished in early 2020, and the construction of the new parking garage has begun at that location. Barring any complications, the parking garage is to be completed and opened in early 2021. At the end of this project, it will have spanned nearly six of Red Hawks' ten-year history as a sprinkler company.

All of that hard work and perseverance was recently recognized when Red Hawk Fire Protection and the King County Children and Family Justice Center Phase 1A project won a National Award of Merit in the Federal, State, County, Municipal category from the Design-Build Institute of America. As a result of this honor, the project is automatically a nominee for the National Award of Excellence, which will be announced in October.•

Gast Supports Sprinkler Fitters Local Union 281 UA And the Northern Illinois Fire Sprinkler Initiative (NIFSI) With 87R Riser Mount Dry Sprinkler Compressor

In the world of fire protection and safety, sprinkler systems are critical for saving lives. Burn Trailers, as they're referred to, provide mobile training and education for the importance of sprinklers to help prevent damage and loss of life in fires.

Gast Manufacturing is honored to work with Sprinkler Fitters Local Union 281 UA in Alsip, Illinois to support a new burn trailer for the Northern Illinois Fire Sprinkler Initiative (NIFSI). This brand-new trailer has a state-of-the-art equipment compartment, making it fully capable for a rural and City application 13D system, and a working dry sprinkler system. As a result, it needed a dry sprinkler air compressor to help complete it, and Gast was more than happy to support this effort. The new Gast 87R-110S riser mount compressor system was a perfect fit for the equipment compartment of the new trailer. Bo Coffman, Business Development Manager with Gast commented, "As our company plays a small role in the advancement of the fire protection industry, we're so glad to support Local 281 and NIFSI, who do incredible work to provide vital training and education in fire safety and equipment".

Pictures of the new Northern Illinois Fire Sprinkler Initiative (NIFSI) burn trailer and what this kind of on-site training looks like follow. For more information about the new Gast 87R-110S Riser Mount Dry Sprinkler Compressor, go to www.gastmfg.com or contact Bo Coffman at (941) 416-0252 BCoffman@idexcorp.com

The below left image shows a stationary side-by-side staged during a live supervised education session. The new mobile burn trailer will allow demonstrations like this to be made in multiple locations.

New NIFSI Burn Trailer. These rooms will be staged with furniture for demonstrations. The equipment compartment is behind the wall on far left.


The new Gast 87R-110S Riser Mount Dry Sprinkler Compressor installed in the equipment compartment

New Jersey Chapter Anticipates Great Turnouts with Event Marketing

With COVID having pushed many events back, the NFSA New Jersey Chapter anticipates a busy fall and winter. The Atlantic Builders Convention has been rescheduled to September 29th to October 1st, 2020. This event sees thousands in attendance and offers the NFSA NJ Chapter the opportunity to have a continued dialogue with those in the building industry.

After the Atlantic Builders Convention comes the Triple Play Realtors Show from December 7th to 10th, 2020. This event involves real-estate professionals from the tri-state area who wish to learn more about trending and developing topics in their field. At the Triple Play Realtors Show, the New Jersey NFSA Chapter is pleased to offer itself as a free resource to any and all real estate professionals who wish to learn more about residential and commercial fire sprinklers.

While COVID has pushed the Atlantic Builders Convention and Triple Play close to each other—and both events occur around the busiest part of the burn trailer season— staff at the NFSA New Jersey Chapter will keep up its energy and work enthusiastically to educate professionals and promote the fire sprinkler industry. The NFSA New Jersey staff eagerly awaits the opportunity to man its booth again to promote its members' work to professionals— and to give out plenty of its NJFSAB hot sauce in doing so!

NFSA PenJerDel Chapter Unveils New Burn Trailer

The staff at the NFSA PenJerDel Chapter has been hard at work designing and planning events for the chapter's first burn trailer. This fire sprinkler burn trailer will function similarly to the New Jersey Chapter's trailer, but will feature an interactive antechamber, complete with infographics and other educational material to inform the public on fire protection and safety.

This new burn trailer will be available to fire departments, schools, community event planners, and any other organization throughout the Delaware Valley looking to promote fire safety. The PenJerDel Chapter eagerly awaits this trailer's completion and hopes to take it to numerous events this upcoming October.

For all those interested in learning more about this trailer, or if you are interested in making a burn trailer for your local NFSA chapter, feel free to reach out to our staff today. We are experienced in the process of creating and designing these trailers and would be happy to help you in the process!

NFSA Texas Chapter Virtual Discussion

NFSA Texas Chapter hosted a virtual discussion meeting about Fire Sprinkler Licensing & Certification in Texas on June 17, 2020. NFSA Texas Chapter Chair Tate Hitzeman moderated the meeting and guest speakers represented NICET, NFSA Training and the Texas State Fire Marshal Office. Several key issues were addressed:

– What is the most common cause of NICET Test question failures?
– Should full NICET certification - instead of just the test – be required for Texas Licensing?
– Has Texas licensing gotten easier and do we as an industry want the licensing to be more rigorous?
– Will Texas Fire Sprinkler Licensing be online?

Chip Hollis, NICET Senior Director of Customer Success, presented an overview of NICET's new customer portal that allows more capabilities and access for candidates and certificate holders, credential types, how they are used and the importance of continuing education. He promoted the value of NICET certification to technicians, employers, contract specifiers, AHJs and other stakeholders. Chip also explained how the fire sprinkler industry participates in the development of NICET certifications. NICET strives to create a customer friendly environment and improve processes while preserving the rigor and integrity of NICET certifications.

The most common cause of incorrect responses to NICET Test questions is *"overthinking the questions"* and looking for a more complicated answer. Chip explained that they do not try to include "trick questions" – instead, they include common on-the-job, real scenarios.

Ernest McCloud, Assistant State Fire Marshal provided an update to the Texas Fire Sprinkler Industry Licensing including online licensing, to NICET testing and CEUs.

Holly Garvey, NFSA Training Coordinator shared NICET approved training classes for the sprinkler industry including the Layout Technician Classes and several online classes including

Irregular and Nonuniform Hydraulic Areas
September 15, 2020 9:30 a.m.

Understanding the Fire Pump Acceptance Test
October 20, 2020 9:30 a.m.

ITM and Fire Pumps
November 17, 2020 9:30 a.m.

Manual Hydraulic Calculations
December 15, 2020 9:30 a.m.

With COVID-19 Cases still greatly increasing in Texas – more virtual meetings and trainings will be available. •

We hope you'll choose to support our Advocates' Coalition as we work to create Fire Safe Homes

Working together, we can create resources to educate those who make the decisions regarding community fire protection.
Our goal is to be a go-to resource for community leaders who need a first-person account of the devastating impact fire can have on a community and a family. We can prevent future tragedies, and we believe that our stories help everyone understand in a way that makes a difference. Visit our website for additional resources and information. Order our Media Kit for a complete package of PSAs, media information, talking points, statistics and actual examples of resources used in communities. Your support is greatly appreciated, and as a non-profit 501(c)3 we are now ready to grow our mission and expand our efforts. We hope you'll support our team as an Advocate, Supporter or Corporate member (details on reverse side, along with form).

Common VOICES

An Advocate's Coalition Determined to Create a Fire Safe America

Did you see us on Fox & Friends and Good Morning America?

FOX & friends

abc GOOD MORNING AMERICA

CommonVoices1

CommonVoices1

fireadvocates.org

Fire Sprinklers Save Lives

AGF Manufacturing Introduces New-and-Improved Universal 3-Way Valve

AGF Manufacturing has introduced a new-and-improved Universal 3-Way Gauge Valve. AGF's Model 7600 Universal 3-Way Valve is heavier duty than most gauge valves on the market, has a 300 PSI Rating, and is UL listed. The repositioned and redesigned handle creates better flexibility and accessibility on preassembled manifold risers. The Model 7600 is used as a component on RISERPACK Manifolds and select TESTANDRAIN models and can also be purchased on its own.

When pre-assembled to floor control assemblies, most 3-way valve handle positions are oriented for access from one side of the manifold. Depending on how the contractor installs the manifold, the valve handle could end up on the back side of the unit, making it difficult to access. The handwheel of the new Model 7600 is accessible from either side. The handwheel was also re-designed with a new, mushroomed shape to create an easier grip.

The new Universal Model 7600 3-way gauge valve will be used on select versions of TESTANDRAIN valves, all AGF NFPA 13 and NFPA 13R RISERPACK Manifolds, and can be purchased with the AGF Model 7500 Pressure Gauge or by itself (Item ID #660UA). To find a distributor in your area or to download specifications, please visit www.agfmfg.com.

Anvil International® Offers Versatility with new Afcon® Seismic Bracing Solutions

Anvil International has added two new seismic bracing solutions to the industry-leading Afcon® line. The cULus Listed and FM Approved figure AF700 Universal Swivel Attachment and figure AF730 Longitudinal & Lateral Seismic Clamp are designed to provide seismic bracing in fire protection systems.

The figure AF700 is the transitional component of a rigid seismic brace assembly. It swivels to form the angled connection point of a brace to the structure. Due to the figure AF700's unmatched prying factors, it supports greater design loads in concrete and can reduce the amount of bracing required. It offers flexibility by working with 1" through 2" diameter brace pipe, allowing distributors to stock one SKU and installers to make last minute changes in the field. The AF700 is available with 1/2", 5/8", and 3/4" fastener holes for use with a variety of anchor sizes.

The figure AF730 clamp is the system pipe attachment component of a rigid seismic brace assembly. It can be used to form either a lateral or longitudinal brace, for system pipe sizes from 1" up to 12" in diameter. It has the same flexibility as the AF700 as it works with 1" through 2" diameter brace pipe.

Both new items feature break away fasteners that provide a visual indication that torque values have been achieved during installation by tightening until the head shears off. Both products are now available in Anvil's SeisBrace® seismic bracing design software, which allows for fast, accurate zone of influence calculations.

Both of these new products are proudly made in the U.S.A. AF700 and AF730 are cULus listed, FM approved, and comply with these standards, NFPA 13, ASCE 7, & MSS SP-127.

For more information on Anvil's full line of seismic solutions, visit https://www.anvilintl.com/products/seismic-bracing.

Potter Announces Web Integration of Fire Alarm Systems into Intelliview

Potter Electric Signal Company, LLC announces the integration of Potter fire alarm systems with the IntelliView™ Dashboard. The web-based dashboard allows the user to monitor their Potter fire alarm control panels in addition to the IntelliGenTM nitrogen generators from anywhere in the world. A mobile app is also available in the iOS and Google Play stores and provides increased functionality.

A free Standard version of IntelliView for fire alarm systems is available with limited features that allow for high level panel status and information. The Premium version integrates with the mobile app to send push notifications for any off normal signal, give access to all signals on all fire panels, provide system data and display historical activity. In addition, the Premium version supports a One-Person walk test that can control the panel and provide the needed data for NFPA reports.

Please visit www.PotterIntelliView.com for more information on IntelliView and all products and services that Potter offers.

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Johnson Controls launches new TYCO® Pressure Control Valves for fire protection systems

Johnson Controls announces the launch of two new TYCO® pressure control valves for fire protection systems: the TYCO® Model RV-1A Pressure Relief Valve and the TYCO® Model PRV-1A Pressure Reducing Valve. The new valves offer simple, low-maintenance solutions for controlling and maintaining optimal water pressure within commercial fire protection systems.

The TYCO® RV-1A Pressure Relief Valve automatically relieves excess pressure in fire protection systems to maintain a relatively constant system pressure as flow demands change. Its simple design eliminates the need for users to bleed trapped air from the diaphragm chamber. The valve offers users a nominal relief "set pressure" range of 30 to 250 psi (2.1 to 17.2 bar).

The TYCO® PRV-1A Pressure Reducing Valve reduces a higher inlet pressure to a lower outlet delivery pressure in water-filled pipes. It automatically maintains the outlet "set pressure" (static and residual) within a close range, regardless of fluctuations in the higher-pressure inlet line or varying flow rates.

The RV-1A and PRV-1A valves are UL and ULc Listed and FM Approved. Both valves are factory assembled and fully trimmed. They are available in sizes ranging from two inches to eight inches, with flange-by-flange and grooved-by-grooved end connection options.

For more information on TYCO® valves and accessories for fire protection systems, go to www.tyco-fire.com.

Zurn Expands Connected Backflow Preventer Portfolio

Zurn Industries, LLC announces the expansion of its Zurn Connected Backflow Preventer product line with the Zurn Connected Pressure Monitor (ZCSM-PF) and Zurn Connected Flow Meter Option (ZCSM-BTM).

Backflow preventers are designed to safeguard the water supply. Zurn Connected Backflow Preventers provide real-time data via a mobile-friendly web portal, plumbSMART™, on system pressure changes, water consumption, relief valve discharge. The Zurn Connected Flood Control system features remote water shutoff capabilities.

The expanded product line includes the Zurn Connected Pressure Monitor (ZCSM-PF) and Zurn Connected Flow Meter Option (ZCSM-BTM). The new Connected Pressure Monitor tracks incoming water pressure and allows the user to set real-time alerts for preset high and low pressure. The pressure monitor is available for all large DC and RP backflow preventers. Zurn will connect all Zurn Wilkins large RP backflow preventers purchased after March 1, 2020 for free, which includes the pressure monitor hardware and ethernet or LTE gateway.

The Connected Flow Meter Option (ZCSM-BTM) is an available upgrade combined with the Zurn Connected Pressure Monitor. The Flow Meter Option tracks the system's flow rate and total water consumption. Real-time alerts can be set for water waste. This upgrade option is available for all DC and RP backflow preventers 2-1/2" to 12". The Zurn Connected Pressure Monitor and Zurn Connected Flow Meter Option combine pressure and flow monitoring within one solution.

For more information, visit Zurn.com.

New TYCO® ESFR-34 Sprinkler provides industry's tallest ceiling-only warehouse protection with added flexibility

Johnson Controls announces the release of the new TYCO® Model ESFR-34 Pendent Sprinkler (TY9286). This early suppression, fast response sprinkler provides the tallest ceiling-only fire protection and narrowest aisle width currently available. The ESFR-34 sprinkler helps protect storage arrangements of 50 feet (15,2 m) with a ceiling height up to 55 feet (16,8 m) and aisle widths as narrow as six feet (1,8 m). It can be installed with a maximum element-to-ceiling distance of 17 inches (432 mm), the

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farthest distance in the industry. These features make the ESFR-34 Pendent Sprinkler suitable for warehouse and storage operations seeking design flexibility for increased storage.

With a nominal K-Factor of 33.6, the ESFR-34 sprinkler is especially advantageous as a means of eliminating the use of an in-rack sprinkler system when protecting high-piled storage. The sprinkler uses a fast-response fusible link available in both 165°F (74°C) and 212°F (100°C) and is approved for Class I-IV commodities and cartoned unexpanded plastics stored in single or double row racks.

For more details about the TYCO® Model ESFR-34 Pendent Sprinkler, please contact your local sales representative or visit www.tyco-fire.com.

Johnson Controls expands GRINNELL One-Bolt coupling portfolio with new smaller sizes

Johnson Controls is expanding its GRINNELL G-Fire One-Bolt coupling product line by adding two new sizes: 1.25 and 1.5 inches. The new, smaller couplings allow contractors to perform quicker installations on smaller diameter piping and in tight spaces. As part of the One-Bolt family, both couplings feature the unique, single-bolt design that eliminates alternate tightening while resulting in more consistent installations and dependable product performance.

The One-Bolt couplings allow fast and easy push-on installation thanks to a pre-lubricated gasket and pre-assembled design. The couplings can be used in both vertical and horizontal applications across wet, dry and freezer systems. They feature 360-degree contact for an exceptionally rigid joint and a grooved, rigid coupling design to make joining pipe faster and easier. A low-profile spine allows for installation in tighter spaces and a center-stop gasket ensures proper positioning on pipe. The couplings are UL/ULC Listed and FM Approved, with a pressure rating of up to 365 psi.

For more information about the GRINNELL One-Bolt coupling, visit www.grinnell.com/onebolt. For questions or support, contact technical services at 1-800-381-9312.

Harrington, Inc.-Made in USA

Harrington, Inc. is the Universal Connection manufacturer for the U.S. Fire Industry. Founded by Hal Harrington, our family owned business has been serving customers for over 32 years, we pride ourselves on highest quality materials and workmanship. Day after day we ship emergency orders to complete building fire systems on schedule. Water handling equipment include: Storz, threaded, and flange adapters, gate valves, Hydrant Storz adapters, gated wyes, and drafting & suction equipment. Looking for the best connection, look no further than Harrington, Inc. Our Harrington brand products are proudly Made in USA with Made in USA raw material and machined in USA. We maintain an extensive inventory and strive for prompt shipments of product so no long lead times. Web site: https://www.hydrantstorz.com/•

REGIONAL NEWS

From Maine to California, and every place in between, NFSA Regional Managers bring the best of the Association right to your doorstep.

Helping our members is Job #1.

NEW ENGLAND NEWS

Sprinkler System Controls Fire on 9th Floor of Worcester, MA High-Rise

Thank you to Deputy Chief Martin Dyer of the Worcester Fire Department for alerting us to this great sprinkler save! Chief Dyer was also interviewed and quoted in the article.

On July 16th, Worcester firefighters responded to a downtown building just before 1:30 p.m. It was reported that a couch was ablaze in an apartment on the ninth floor.

The burning couch set off the building's fire sprinkler system, which contained the fire.

Fire companies entered, hooked up to standpipe hose outlets in the hallways and finished putting out the fire with a hand line, Dyer said.

There were no injuries to firefighters or civilians.

FLORIDA NEWS

Making Quality Training Safe

COVID has certainly made us rethink how to get quality training and keep everyone safe. How can we make sitting in front of a virtual class more interesting and encourage participation?

After several discussions with the FFSA Board of Directors, and with the support of our national office, NFSA/FFSA offered a combination of in-class training and live virtual training. This concept offered the best of both worlds; a live instructor with students to interact with, and live, virtual students throughout the state of Florida.

The training offered in-class and online students to ask real time questions, offer opinions and provide feedback. Reviews from in-class and online were very positive. Additionally, Academy Exams offered attendees the option to test on day four at multiple locations throughout the state. The live virtual concept will be offered again soon! If you have members of your team that need to get qualified as a water-based inspector watch our website for details. www.floridafiresprinkler.com.

ILLINOIS NEWS

Sprinkler System Controls Fire at McHenry, IL Petroleum Products Manufacturer

"This was a text book example of exactly the manner that sprinklers are designed to work," said MTFPD Fire Chief Tony Huemann. "The sprinkler system suppressed the main body of fire until the firefighters arrived and completely extinguished the fire. The activation of the sprinkler system protected the business that produces plastic petroleum products that could have easily become out of control that would have destroyed the entire business and building."

Crews were dispatched at 8:12 p.m. on July 18th for an activated fire alarm at the manufacturing plant. Upon arrival, firefighters encountered heavy smoke and located the source as a processing machine and used water pump cans and a dry chemical extinguisher to completely put out the fire before ventilating the building.

"We are pleased that the sprinkler system did exactly as it is intended to do and minimized the damage by controlling the fire," said Chief Huemann.

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WISCONSIN NEWS

Sprinkler Saves Recognition

Two recent fire sprinkler saves included strong statements from fire officials on the advantages of fire sprinklers:

On Saturday, June 13, 2020 Hartford (WI) Fire & Rescue Department was dispatched for a flow alarm at local manufacturing facility. Upon arrival, fire crews discovered the fire had been controlled to the area of origin by the activation of the fire sprinkler system. Business owners spend money on alarm monitoring systems and fire sprinkler systems hoping to never need them. This was a great example of the benefits of these systems. This unoccupied building would most likely have suffered a $1 million loss without these systems. With all systems operating as designed the estimated loss is less than $10K and no loss of valuable production time.

On Saturday June 20 at 3:00 p.m., the Fitchburg, WI Fire Department responded to a report of smoke on the second floor of an apartment building. The arriving crew found that a cooking fire was extinguished by the fire sprinkler system. Because of the limited amount of damage to the apartment, the manager was working with the resident to keep them in their apartment.

The fire department added the following statement: "Despite what you have probably seen in the movies, and maybe even some prime time shows, a small fire that activates a sprinkler system only activates the sprinkler head closest to the fire; not every sprinkler head in a building, on the floor of a building, or even within one unit such as an apartment. According to a U.S. Experience with Sprinklers report published by the National Fire Protection Association (NFPA) in July 2017, "sprinklers operated effectively in 88% of the fires large enough to activate them." The sprinklers "are designed to control fires until the fire department arrives," which can significantly reduce how far into a given space a fire can extend."

SOUTH CENTRAL NEWS

Here is a snapshot of the NFSA South Central Area State COVID-19 statistics and significant fire sprinkler issues as of June 24, 2020.

Arkansas – 7 Deaths/100,000 people, 16,678 Total Cases
Some construction jobs were delayed at beginning of the COVID-19 Outbreak, but most construction projects kept going. Inspections of health and assisted living occupancies were delayed in March/April 2020; but are now back on track.

Louisiana – COVID Death Rate: 60 Deaths/100,000 people; 51,595 Total Cases
Louisiana (New Orleans) was one of the hardest hit states in the NFSA South Central region and is now entering Phase 2 of their reopening. Fire Sprinkler contracts and plan submittals decreased by at least 30% according to the Louisiana State Fire Marshal's Office. Inspection and repairs decreased substantially even though the Louisiana State Fire Marshal took early actions to enforce and maintain ITM schedules in all occupancies: "Life safety and property protection is an essential function and it is a business decision on their part as to the services they choose to perform. The SFM stood strong in their belief that LSPP is essential in fire and building safety."

Oklahoma – 9 Deaths/100,000 people; 11,031 Total Cases
Oklahoma Licensing via the Oklahoma Department of Labor is having short delays due to many employees still working remotely. The ODOL Headquarters in Oklahoma City reopened their licensing office effective June 15, 2020. The ODOL Alarm, Locksmith and Fire Sprinkler Advisory Board is meeting monthly (first Wednesday morning of every month).

During June 2020, the Oklahoma City Fire Marshal's Office has proposed both a Single-Family Fire Sprinkler Ordinance for undeveloped city lands and ITM Software Reporting to their City Council. NFSA staff have been assisting the Fire Marshals with both initiatives.

Texas – 7 Deaths/100,000 people; 122,932 Total Cases
Texas began re-opening its economy and businesses as of June 5, 2020. Somewhat 3 weeks later, COVID-19 greatly resurged with increased cases and hospitalizations in most Texas jurisdictions. On June 16, 2020; 8 of the largest Texas City Mayors requested the Texas Governor to implement a Statewide Mandatory Mask Law. Governor Abbott said he could not enforce a mask law on individuals and that any mask laws would need to be implemented via Texas Local Jurisdictions and their businesses. Local mask ordinance laws interpretations are now being reviewed by area judges.

Most NFSA South Central Area Fire Sprinkler Companies are still operating, watching, and waiting.

MISSOURI NEWS

St. Louis Returns to Live Training

It didn't take long for St. Louis area fire and building code officials to get back to business after Missouri Governor Parson completely reopened the state following the COVID-19 crisis. 24 people attended a June training course on how to conduct a systematic plan review process of water-based fire protection systems utilizing NFPA 13, Standard for the Installation of Fire Sprinkler Systems. The intensive two-day course gives fire code enforcement personnel the knowledge required to determine whether a submitted set of plans meets the requirements of NFPA 13 as adopted by law in their jurisdiction.

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Instructor Brad Cronin brought both technical and practical insight to the class. "It's the plan reviewer who ultimately identifies inadequacies found in the plans and sets the stage for compliance using citations from the applicable code," said Cronin. "This is the class that prepares the plan reviewer for that task."

Class participants were given full sets of system plans and learned how to conduct a complete hands-on review, including how to identify key pieces of information, common errors and accurate hydraulic calculations.

The course was held at the Sprinkler Fitters 268 Training Center and was sponsored and funded by the St. Louis Fire Sprinkler Alliance.

NORTH CENTRAL NEWS

Fire Sprinkler System Contains Car Fire at University of Iowa Hospital Garage

Fire crews in Iowa City responded to a car fire at UIHC Sunday. The Iowa City Fire Department responded to an automatic fire alarm at UIHC parking ramp around 6:00 a.m. The first unit arrived on the scene five minutes after notification and found a car on fire in one of the underground levels of the parking ramp. The fire was contained by the fire sprinkler system and then fully extinguished by fire department personnel. No civilian or firefighter injuries were reported. No other vehicles or property were damaged.

GREAT PLAINS NEWS

CFPA Virtual Expo

Because of COVID-19 restrictions, the Colorado Fire Protection Association (CFPA) cancelled its annual Training Expo, originally scheduled in May. This event has traditionally been the source of continuing education units (CEUs) required for sprinkler fitters seeking to renew their registrations with the Division of Fire Prevention & Control (DFPC). About 100 sprinkler fitters and many contractors have attended this annual event.

To ensure that sprinkler fitters would have ample opportunity to acquire the CEUs they needed for renewal, the CFPA Board voted to hold a virtual training expo over four consecutive Mondays in June. CFPA also applied for certification as an ICC Preferred Education Provider to ensure that training would comply with DFPC requirements. The expo was offered free of charge to CFPA members and their employees.

The virtual expo was a success with an average of about 30 attendees each week and 240 CEUs provided.

Side-by-Side Demonstrations

The pandemic has had a significant impact on the NFSA side-by-side demonstration trailer. While it is stationed out of Centennial, Colorado, the trailer is available for use throughout the six-state region. Last year, this trailer was deployed to 19 demonstrations in both Colorado and Wyoming and it was anticipated to be used at about the same level this year. As of this writing, many of the previously scheduled events have been cancelled with only five currently scheduled for the remainder of the year.

We would love to deploy the trailer this year! If you have an event where it would be of value, please reach out to me at geislinger@nfsa.org.

SOUTHWEST NEWS

Fire Sprinkler System Controls Fire in Riverside, CA Warehouse, Firefighters Finish the Job

On July 19th, firefighters made quick work of a fire inside a warehouse in Riverside, California that was held in check by the building's fire sprinkler system.

Firefighters were dispatched at 7:16 a.m. to Prudential Overall Supply and reported a working fire in the warehouse held in check by the fire sprinkler system, Riverside Fire Department Battalion Chief Bruce Vanderhorst said.

"The fire is knocked down and crews are on scene overhauling," Vanderhorst said. "Crews are working on ventilating, shutting down the sprinkler system and mop up." No injuries were reported.

NORTHWEST NEWS

NFSA's Northwest Region presented a webinar in June to help members get better acquainted with certification options available through NICET and ASSE, as well as NFSA training resources and regional opportunities. Be sure to check out the recaps on the NFSA website under "blogs."

In Washington, the State Building Council held a special meeting to vote on an extension of the effective date of the 2018 codes to Feb. 1, 2021, a seven-month delay from the state's normal July 1st implementation date. This delay affects the new townhouse sprinkler requirement and other sprinkler gains made in the 2018 IBC/IFC. Proponents of the delay cited economic challenges, difficulty in getting code-compliant materials/equipment for the new codes, concerns about delayed and canceled training, budget cuts to AHJs and interruptions to the supply chain as reasons for postponement.

Due to the uncertainty around COVID-19 restrictions, the Fire Sprinkler Advisory Board of Puget Sound and UA Local 699 decided to cancel the 2020 Sprinklerman Shootout. We hope to be back on the links next summer for this annual charity event.

The Columbia-Willamette Chapter Board continues to work towards fire sprinkler contractor licensing legislation in Oregon. Based on the recent Oregon special legislative session, it is anticipated that the 2021 regular legislative session will focus on corona virus mitigation, the budget shortfall, and evolving social issues so it uncertain whether a licensing bill will be sponsored. In the meantime, the Chapter Board will continue to reach out to stakeholders.

Both the Columbia-Willamette and Puget Sound NFSA chapters plan to hold their annual Fire Marshal Forums in October. This is a great opportunity for area fire districts and departments to share updates, and contractors and suppliers to ask questions. If COVID restrictions permit, we hope to hold this in-person to facilitate networking. If not, the forums will be held virtually. Watch your inbox or go to the NFSA website for more details.•

National Fire Sprinkler Magazine
The Flagship Publication of The National Fire Sprinkler Association

NFSM Article Submission Guidelines

National Fire Sprinkler Magazine (***NFSM***), a members-only publication of the National Fire Sprinkler Association, is published six times a year. It offers Fire Sprinkler Industry news and articles of interest to Association members.

Query

Send an e-mail or letter briefly describing your article proposal, why the topic is important, and how it is relevant to our audience. Say something about the sources of your information *(personal involvement? interviews?)* and about your present position and background. Tell us what types of photographs and graphics are available to illustrate your story. Be sure to include an email address and a daytime phone number.
NFSM runs full-length feature articles of approximately 800-1200 words.

Feature Articles

Articles for ***NFSM*** should be on a topic of significant interest to the industry. Articles promoting a specific product or service will not be published. We have advertising opportunities available to boost your sales.

Writing Guidelines

NFSM tries to maintain a straightforward style. Accuracy is vital. All facts should be double-checked before a manuscript is submitted. All manuscripts must be submitted as Word docs, single-spacing between sentences. *Images must be submitted as separate hi-rez jpegs*. Charts and tables must be submitted as separate pdfs.

Each manuscript should be accompanied by a list of resources on the topic at hand: relevant books and reports, conferences, and/or contact people and their phone numbers. To settle points of style, use *The Chicago Manual of Style* (University of Chicago Press).

Illustrations

NFSM uses a variety of photographs, line art, charts, and maps.
We prefer to receive artwork electronically, and all illustrations should include credit and caption information.

Copyrights

Articles must be exclusive to ***NFSM*** magazine and not submitted to any other industry publication, unless prior agreement has been reached. Author is responsible for the accuracy of article and that it does not infringe on any other copyright. All published submissions become the property of NFSA.

Payment

NFSM does not pay for articles; we do recognize an author with a byline and credit. NFSA reserves the right to reject any submission at its own discretion.

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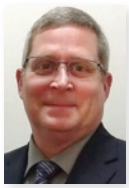

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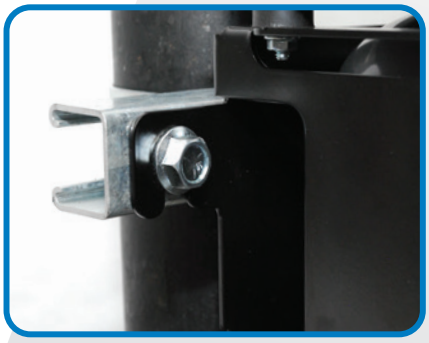

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