

# National Fire Sprinkler Magazine

The Flagship Publication of The National Fire Sprinkler Association

January-February 2017  
No. 200

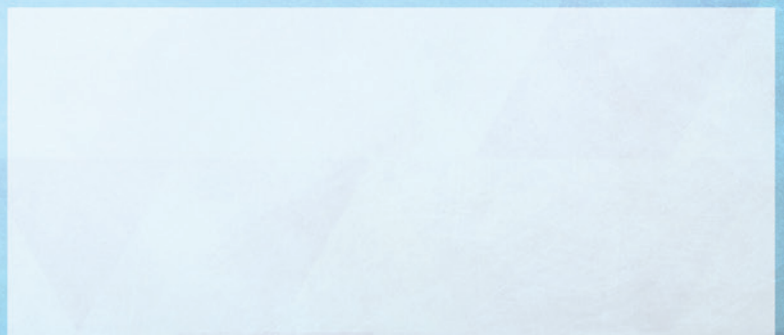
*Building on a strong foundation of the past, NFSA looks towards a future filled with promise and success. As we welcome 2017, we welcome a new logo, a new HQ and a renewed vigor to honor our mission.*



# NFSA

**NATIONAL FIRE SPRINKLER ASSOCIATION**

*The Voice of the Fire Sprinkler Industry*





### *A Letter from the President*

It's not just a new look, it's a continued focus on our mission and improved service to you as members, and to the overall fire sprinkler industry. The past 111 years have resulted in many advances in our industry and your National Fire Sprinkler Association has transitioned and improved.

Welcome to the next 100 years with NFSA! We hope you are excited to see the new look of our magazine and our new logo and, we send you this greeting from our new headquarters in Linthicum Heights, Maryland. We have relocated from New York to Maryland to better serve our members and our industry. We have also changed the name of our magazine from SQ, which stood for Sprinkler Quarterly. This name goes back to the time when the magazine was published quarterly, not bi-monthly. The **National Fire Sprinkler Magazine** is very descriptive of our organization and industry, most importantly, this allows us to adapt and improve over time, both in print and in digital formats.

Regardless of all the changes, NFSA is committed to assisting and supporting our members. With your involvement we can improve fire and life safety in a proactive manner. We will continue to advance our mission of saving lives and property through the widespread acceptance of the fire sprinkler concept. NFSA wants to create a more fire safe world, and works to heighten the awareness of the importance of fire sprinkler systems.

NFSA is an inclusive organization made up of dedicated and committed members of a progressive fire sprinkler industry. This life-saving industry manufactures, designs, supplies, installs, inspects, and services the world's most effective system in saving lives and property from uncontrolled structural fires. Our Board of Directors, Councils, Committees and staff members are made up from Contractors, Suppliers, Manufacturers, Engineers, Designers, Inspectors, Authority Having Jurisdiction (AHJ), and Friends of the Industry.

We are focused on engaging you as members, and we seek your involvement in YOUR association. Make sure you visit [www.nfsa.org](http://www.nfsa.org) and follow us via our social media presence on Twitter (@NFSAorg), Linked In (National Fire Sprinkler Association), and Facebook (Nat Firesprinkler) to stay in the loop on the latest events, many times shared in real-time.

Here's to 2017, your success and our Association. May we engage, involve and promote fire sprinklers with everything we do!

A grateful,

Shane Ray, *President*



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## **Combustible Concealed Spaces**

pg. 14

## **NFPA 13R Attic Protection**

pg. 23

## **Wood as a Construction Material**

pg. 29

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# National Fire Sprinkler Magazine

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January - February 2017 • No. 200



## ON THE COVER

The world's tallest wood building at 18 stories (about 174 feet)— University of British Columbia's Brock Commons student residence. photo courtesy of Acton Ostry Architects Inc. & University of British Columbia

## ADVERTISERS

Argco	25
Bull Moose	22
CST	3
Dewalt	15
Engineered Corrosion Solutions	6
Ferguson	5
Flexhead	28
FPPI	BC
Reliable	IFC
Tyco	IBC
Viking	2

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CONTENTS

## FEATURES

- 33 Notes from the Fire Scene**  
*by Vickie Pritchett*
- 35 Failure Is Not An Option**  
*by Scott Morris*
- 39 Collaboration is the Key to Successful Code Enforcement**  
*by Rob Neale*

## DEPARTMENTS

- 4 Calendar**
- 7 From the President's Desk** - by Shane Ray  
*Moving Forward with Vision, Mission and Values*
- 9 From the Chairman's Desk** - by Larry Thau  
*Are You Feeling Cynical?*
- 11 Contractor's Cue**
- 12 Education** - by James D. Lake  
*NFSA Launches Three Major Online Training Initiatives in 2017*
- 14 Technically Speaking** - by Mark Hopkins, P.E.  
*Combustible Concealed Spaces*
- 23 Code Corner** - by Jeff Hugo, CBO  
*NFPA 13R Attic Protection Addressed in 2018 IBC and NFPA 5000*
- 26 New Members**
- 27 Supplier's Showcase**  
*Newburgh Windustrial*
- 29 ITem** - by Jason Webb  
*Wood as a Construction Material: Where's it's been and where it's going*
- 40 Chapters in Action**
- 43 HQ News**
- 44 NFSA Social Scene** - by Joanne Genadio
- 45 People - In Memorium**
- 46 Sprinkling of News**
- 47 Regional Roundup**
- 54 Article Submission Guidelines**





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# CALENDAR

EVENTS OF INTEREST TO NFSA MEMBERS

January 10, 2017 <b>NFPA 13, 13R &amp; 13D Update 2016</b>	<i>Ventura, California</i>
January 11-12, 2017 <b>Sprinkler System Plan Review</b>	<i>Ventura, California</i>
January 17, 2017 <b>Coordinating NFPA 25 &amp; 72 Inspection, Testing &amp; Maintenance Requirements</b>	<i>Pomona, New York</i>
January 31-February 2, 2017 <b>Advanced Technician Training</b>	<i>Round Rock, Texas</i>
February 13-24, 2017 <b>Two-Week Layout Tech Training</b>	<i>St. Louis, Missouri</i>
February 14, 2017 <b>Standpipe Systems and NFPA 14</b>	<i>Pharr, Texas</i>
February 15, 2017 <b>Fire Service Mains &amp; Their Appurtenances</b>	<i>Pharr, Texas</i>
February 16, 2017 <b>Rough &amp; Final Inspections for Fire Sprinkler Systems</b>	<i>Pharr, Texas</i>
February 28-March 1, 2017 <b>Sprinkler Protection of Storage</b>	<i>Coppell, Texas</i>
March 2, 2017 <b>Sprinkler System Installation Requirements</b>	<i>Coppell, Texas</i>
May 15-May 26, 2017 <b>Two-Week Layout Tech Training</b>	<i>Orlando, Florida</i>
July 31-August 11, 2017 <b>Two-Week Layout Tech Training</b>	<i>Denver, Colorado</i>
October 16-27, 2017 <b>Two-Week Layout Tech Training</b>	<i>Baltimore, Maryland</i>





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## Moving Forward with Vision, Mission and Values

2016 provided our Association many challenges and opportunities. We have successfully completed our transition from New York to Maryland and we have engaged our staff, Board, councils, committees and members in the process. Because of that, I must begin 2017 with a heartfelt "thank you."

The importance of associations and the vital role they play to industries and professions are always highlighted following the election of the President of the United States and with the turnovers in Congress. The outcome of these elections ripple down to every statehouse and local government in our country. Rest assured that NFSA is present on your behalf to ensure a voice representing our industry and the vital role we play in fulfilling our mission of "saving lives and protecting property through the widespread acceptance of the fire sprinkler concept."

The current anti-regulation political environment will be a challenge as we work to maintain the progress gained over the past decades in the codes and standards process. However, the reformation possibilities of having the Senate and the House of the same party, could lead to tax reform, something we have been waiting on for a decade, and since our first push for the Fire Sprinkler Incentive Act in 2003. Your team at NFSA is working diligently to prepare for an action packed 2017 and beyond.

January 3, 2017 is the start date for the 115th Congress and January 20, 2017 is the inauguration of the 45th President of the United States (the first one with no government or military background). I don't mention his background because of my personal politics, but to share that our association has had experience with our President-Elect. Our past two presidents and our current Senior Policy Advisor Jim Dalton and current Common Voices Advocate Vina Drennan testified against Trump Towers being exempted from fire sprinkler requirements. We have more recently been in contact with fire marshals who encountered President-Elect Trump on the campaign trail. Luckily, we have, to this point, always prevailed.

Our strategy in Washington D.C. will transition as Congressman Brady (R) from Texas leads the House Ways and Means Committee and pledges to support Speaker Ryan's push for tax reform. We feel positive for the Fire Sprinkler Incentive Act because Senator Collins (R) Maine, is a major sponsor, thus we believe we will stand a great chance of being included in the changes to the tax code.

Despite the divided America during the election and even now, we are the United States of America, the greatest system of government on the planet. Let's all work to make the best of what has been provided and to carry out the best public policy possible.

I would like to share my excitement for 2017 and beyond. The National Fire Sprinkler Association is filled with a rich history. This association has made big differences to the fire sprinkler industry over the years and we are poised to expand on that with new ideas, approaches and member services.

We are rolling out a new online Learning Management System (LMS), which we believe will improve our training capabilities dramatically. We have a new logo, new magazine name and a new "branding" plan that will build upon the synergy we have with our transition. As Dr. Kevin Freiberg shared with us following our October 2016 Board Meeting, "We have a cause that is worth believing in."

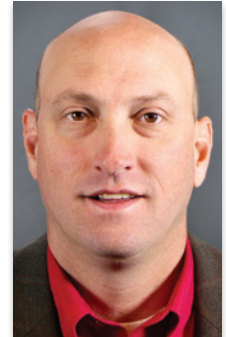
My request to you is that you join with us, become engaged and find a way to be part of the next level. We value your input, ideas and involvement. Our mission is to promote the widespread acceptance of the fire sprinkler concept and we are enthusiastic with our plans to do just that!

Let us hear from you! Welcome to the new NFSA... a place we hope you recognize as a great place to belong! We look forward to serving you and all of our stakeholders.

A grateful,



Shane Ray, President



*"Our strategy in Washington D.C. will transition as Congressman Brady (R) from Texas leads the House Ways and Means Committee and pledges to support Speaker Ryan's push for tax reform. We feel positive for the Fire Sprinkler Incentive Act because Senator Collins (R) Maine, is a major sponsor, thus we believe we will stand a great chance of being included in the changes to the tax code."*

# Please join 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 will join our team as an Advocate, Supporter or Corporate member (details are on our website).



*Our voices have joined to share  
our first-person real life stories...  
our hope is that future tragedies  
may be prevented by our sharing  
with you.*

[www.fireadvocates.org](http://www.fireadvocates.org)

*Fire Sprinklers Save Lives*



# Are You Feeling Cyclical?

*“Let’s remember that for a growth business nothing beats creating “market pull” from your future customers and for our adversaries, nothing turns them into allies faster than hard data.”*

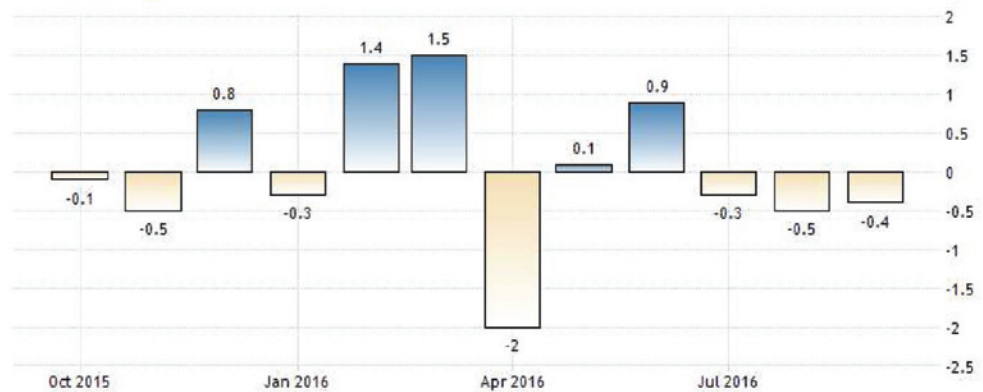
Because we spend so much time focusing on growing our industry and concentrating on why things aren't happening fast enough, it's easy to feel some frustration about our progress. Looking at business news doesn't help much, as we see stories about the current “high flyer” businesses which provide personal gadgets (like smart phones), social connectivity (like Facebook®) and brokering purchasing services (like Travelocity®). What we tend to overlook is that in the face of the current long-term lackluster U.S. economy, guess what? We don't look so bad! We may be the tortoise compared to the internet rabbits, but we're slowly and steadily growing our market. Following are some points to consider.



Cyclical industries are those whose performance consistently tracks that of a gross index like the U.S. GDP (Gross Domestic Product). These are considered safe, predictable, if not plodding, businesses. U.S. GDP reflects the economic output of the country. It's intended to be a snapshot describing how the world's largest economy is doing. GDP is defined as the sum of personal consumption, business investment, government spending and net exports. It is released quarterly by the Bureau of Economic Analysis. Lately, GDP has been bumping along below the historic average of about 4%. If we focus on the fire sprinkler industry using NFSA data, we've recently been in the longest sustained growth period for the industry since we began tracking sprinkler shipments in 1980.

If we want to get a little more specific with our baseline, we can look at U.S. construction spending. Construction spending in the United States is reported by the U.S. Census Bureau and for the past two years has been hovering below 1%. Recently, monthly data since July has been down. Needless to say, the only way we can be achieving the growth shown in our NFSA numbers is by a growing percentage of this new construction being sprinkled.

US CONSTRUCTION SPENDING



SOURCE: www.tradingeconomics.com / US Census Bureau

Knowing what a tough audience our membership can be and in an effort to keep things in perspective, our modest accomplishment noted above is a fraction of the growth ultimately attainable both in terms of protecting lives and property, as well as commercial value. Using other sets of data like total industrial, institutional, commercial and residential floor space and comparing this to coverage per head, we have just scratched the surface. This is where our focus must remain, visualizing fire sprinklers as an essential and unquestioned component of all classes of construction.

To obtain this higher objective we must continue our ongoing current efforts, but also hold up the mirror and acknowledge the factors which are slowing full acceptance. These are the often described

*continued on page 10*

## From the Chairman's Desk

Larry Thu

*continued from page 9*

as “foolish” beliefs held by the public which we can easily dismiss, but which, in fact, form their reality. This will require that we acknowledge limitations, address some realities and recognize the value of accurate and current data. Here are some examples many of us have heard from industrial, institutional commercial and residential customers:

- I've seen systems operate in movies, my entire building will be flooded if we have a fire. Why can't I just have fire extinguishers?
- We have forklifts, kids or employees who may hit a sprinkler. I'll take my chances with smoke detectors.
- We had a system in our warehouse and had the fire department respond to a false alarm three times. We turned it off two years ago
- A hospital nearby had a fire which one sprinkler put out but nobody knew how to turn off the water for over an hour later.
- I thought about a system for my new home. The system was surprisingly affordable but the water supply upgrade doubled the price.
- Our office is in Minnesota, I heard these things will freeze up and burst around here.

Sure, many are misinformed. However, if our only response is; “you don't have an option, it's required by code,” I submit, that response is a sure way to become cyclical. Let's remember that for a growth business nothing beats creating “market pull” from your future customers and for our adversaries, nothing turns them into allies faster than hard data.

*Thanks for your membership and support,*



Larry Thu, Chairman

# MEMBER DISCOUNT PROGRAMS



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- Special pricing for individual and group programs.

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## Could You Use a 'Stop Doing' List?

by: Inez Ng

One of the tried and true organization and time-management tools is the trusty old “to do” list. I was trained to diligently put one together at the end of the day for the following day and whatever tasks I failed to complete, to carry it forward. This system has worked well in helping me prioritize and focus. But I have also heard many of my colleagues complain about having too much on their list and feeling very discouraged and overwhelmed by the sheer number of items on their “To Do” list. To help ease the overwhelm, I want to introduce the concept of the “Stop Doing” list.

I first read about the “Stop Doing” list in *Good to Great*, by Jim Collins. He stated that one of the commonalities of the companies who were able to propel themselves from being just good to being great is that they all looked at what they were currently doing that they needed to stop doing. I am implementing this idea in a slightly different way, but I think a “Stop Doing” list can actually help your productivity and effectiveness.

So how do you decide what goes on your “Stop Doing” list? Here’s what I suggest you do:

For the next week or two, each time you work on your “to do” list (and if you are not using one currently, I strongly recommend you start), or blocking off time for specific tasks in your planner, ask yourself this question: “does this task add value or generate positive results for me and my organization?” If the answer is no, it should go right on top of your “Stop Doing” list.

If the answer is “yes”, ask yourself a second question: “am I the best person to do this task?” The first question tells you whether you can eliminate a task. This question tells you whether you can delegate a task. I know for solo-business people, you automatically think that you have no one to delegate any tasks to. But actually, that might not necessarily be true. Today, there is a whole network of virtual assistants who can handle a myriad of administrative work for you. Some accept work by the hour, and some accept work by the project. If you are interested in this resource, check out [www.assistu.com](http://www.assistu.com).

For some people, you may have to then overcome your resistance to delegating. I’ve heard many of the reasons. Do these sound familiar?

- “By the time I explain it to someone else, I could have done it myself.”
- “I can’t trust somebody else to do it right.”
- “It costs too much money.”

Some of these are completely legitimate concerns. However, before you dismiss the idea, consider the following:

- Is the task repetitive so that the up-front time investment to

train someone is actually worth it 3 months down the road?

- Are you the most qualified person to complete the task, or could someone else do it in less time with less effort for better results?
- If you didn’t have to do the task, what would you choose to spend that time on and what impact will that have on your business, or your life?

So, after considering these tough questions, add your delegated tasks to your “Stop Doing” list as well and send them elsewhere and I guarantee you will feel better.

Even though I wrote this article for people struggling with overload at work, the same approach can be applied to create a “Stop Doing” list for home. Think of the possibilities - you can delegate laundry and cooking and yard work and cleaning and what else?

Seriously, the current state of our lives is that there is generally too much to do and not enough time. So, go through this exercise at least once and see what you can shed from your “to do” list. If you like the results, then establish a routine and do this every 6 months to a year. The point is, you want to spend your time on high impact tasks and work that you enjoy.

### Author Bio

*Inez Ng is a Leadership Team Coach. Find out what coaching with Inez Ng can do for your leadership team at [www.Realizationsunltd.com](http://www.Realizationsunltd.com) Want to know about saving time handling emails? Check out her ebook at <http://easyemailstrategies.com>.*

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# NFSA Launches Three Major Online Training Initiatives in 2017

by James D. Lake, **NFSA's Director of Training**



2017 is going to be a busy year for NFSA Online Training. Building on NFSA.tv, our previous initiative to develop interactive-live training in the virtual environment, NFSA is growing our online capabilities in three areas.

The first program was announced in the November/December issue of SQ, the *NFSA Layout Technician Training Course in a Blended Learning (online and in-class) Format*. This project is completing its pilot run. After a brief review time, it will be launched as an open-registration seminar.

The second initiative is necessitated by the development of the first. *The NFSA Learning Institute*, our new Learning Management System (LMS). In the world of online learning, a critical key to success is a learning management system or LMS. An LMS is a software program that provides a structure for not just delivery of electronic educational programs and materials, but also for the administration, documentation, tracking and reporting of completion of the programs. This is very important for those students keeping track of continuing education units or CEUs.

The NFSA Learning Institute will be the central point for managing NFSA training and educational records, as well as providing the platform for all on-line and blended learning courses, such as our new Blended Learning Layout Technician Training Course.

The NFSA Learning Institute will provide many functions to facilitate learning in the fast-paced environment of the e-learning experience. Using this system, NFSA will continue to provide top-notch course content delivery that utilizes both the NFSA.tv format, as well as self-guided and blended formats.

The NFSA Learning Institute will be your one-stop shop for all online training needs, capable of handling registration and administration automatically and efficiently. In the self-guided and blended learning formats, it will also provide training management in the form of scheduling and tracking progress, as well as evaluating skills and competencies along the way. The Institute will also be flexible and provide individuals with opportunities to build a tailored development plan to meet their professional goals and objectives, as well as keep a real-time running transcript of training.

Another function of the NFSA Learning Institute will be to pro-

vide an efficient and diverse resource center with information on fire sprinklers, from basic to advanced, that is available to anyone. Collaborating with various sources both inside and outside the sprinkler industry, the resource center will make vital information on fire sprinklers accessible in a one-stop shop, making NFSA the resource for fire sprinkler information.

Finally, the third major initiative will be developing online training modules in Spanish. This initiative, like many other training programs in recent years, comes from an expressed need of our members to provide training materials for their Spanish-speaking employees. Responding to this request and working with some of our members in that community, NFSA has developed a one-hour webinar on Coordinating the Requirements of NFPA 25 and 72 in a self-paced learning format. This will be followed by the development of an entire suite of self-paced learning products focusing first on subjects from NFPA 25, then viewing the possible expansion to other topics as well.

Come and experience the new and innovative programs NFSA is launching in 2017! As always, if you have any questions, comments or training ideas, don't hesitate to contact me at lake@nfsa.org. •

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January 17, 2017

### **Sprinklers Installed Outside**

*Robert Upson, MS FPE*

The sprinkler installation standards are generally concerned with where and how to install sprinklers inside of a building but sprinklers are sometimes required outdoors, too. Examples of sprinklers outside include exposure protection systems, assembly pavilions, eaves, and other projections. Concerns arise for corrosion, freezing, and other environmental conditions when sprinklers are installed in these applications. This lesson will review some of the situations requiring sprinklers to be installed outdoors as well as some of the special installation issues that must be considered.

February 21, 2017

### **Remote Monitoring and Remote ITM**

*Jason Webb*

The use of remote or automated systems are becoming more commonplace and because of that, ensuring the automated inspection/testing equipment performs as needed is more important now than ever. The 2017 edition of NFPA 25 now contains regulations and guidance for automated inspections and testing. In this presentation, we will take a look at some of the remote inspection and testing systems that exist and what should be done to ensure their proper operation.

March 21, 2017

### **Piping and Valve Installation**

*Louis Guerrazzi, EIT*

Pipe and valves are key components of any sprinkler system. They need to be installed correctly and with consideration of how they will be used over the life of the system, which includes the ability to perform

maintenance. Choosing the correct types components for the system at hand is a necessity. The detailed locations and trim for valves, including control valves, check valves and pressure reducing valves will be discussed. In general, this seminar will cover the installation requirements for pipe and valves for various sprinkler systems.

April 18, 2017

### **Tanks per NFPA 22**

*Roland Asp, CET*

Water-based fire protection systems need a reliable source of water. Stored water is a common and acceptable type of water supply for these systems. NFPA 22 is the Standard for Water Tanks for Private Fire Protection. This document describes the minimum requirements of the various types of tanks used for fire protection including gravity tanks, suction tanks, pressure tanks and break tanks. This seminar will highlight the requirements of this standard and will include valuable information on the various aspects of water tanks design and installation including: tank capacity, acceptable tank material, tank heating, pipe connections and fitting as well as acceptance test requirements and inspection testing and maintenance of water tanks.

May 16, 2017

### **Trade Ups in the IBC**

*Jeffery M Hugo, CBO*

The 1973 America Burning report encouraged the U.S. building codes to allow more increased active fire protection systems to reduce passive fire protection systems. This becomes the birth of the tradeoff, or when lives and properties are saved, it is better referred to as the "trade up". Since then, the NFSA and many allies have been involved

in the model code arena to promote the attributes of fire sprinkler systems. This program will highlight some of the long serving trade ups in the model codes, the financial benefits of trade ups for building designers and building owners, and tools to convince customers and communities that fire sprinkler systems and trade ups save lives, property and money which benefit everyone that uses current codes.

June 20, 2017

### **The Impact of NFPA 3 and NFPA 4 on Sprinkler Systems**

*Mark Hopkins, PE*

As part of the 2018 NFPA code cycle, two documents are changing in ways that will impact the way you do business. First, NFPA 3, Recommended Practice for Commissioning of Fire Protection and Life Safety Systems will become a standard. Both NFPA 3 and NFPA 4, Standard for Integrated Fire Protection and Life Safety System Testing are being incorporated through reference into the International Building Code, NFPA 101, Life Safety Code and NFPA 5000, the Building Construction and Safety Code. The important changes impacting how sprinkler systems are commissioned will be discussed as NFPA 3 becomes a standard. What will you need to do that you aren't doing now? How will this impact cost and time? The important changes impacting integrated testing will be discussed as NFPA 4 becomes more widely used. Will every sprinkler system supervised by a fire alarm system require integrated testing plans and written procedures? These important topics will be discussed.

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# Combustible Concealed Spaces: What do you do when there is no permitted omission for sprinkler protection?

by Mark Hopkins P.E., NFSA's V.P. of Engineering



The obvious answer to the question, “What do you do when there is no permitted omission for sprinkler protection?” is to install sprinklers. If it were only this simple. Requirements for the installation of sprinklers in concealed spaces are not provided in a consolidated, concise format, rather, the requirements are interspersed throughout Chapter 8 (Installation Requirements) of NFPA 13, 2016 edition, *Standard for the Installation of Sprinkler Systems* and are also provided as part of the special application sprinkler product data sheets. For those that do not design sprinkler systems for combustible concealed spaces every day, or at least on a routine basis, this subject can be quite challenging.

The protection of combustible concealed spaces has historically been a source of frustration and confusion for many people. This is evidenced by the number of Expert of the Day (EOD) questions that have been asked regarding this subject matter over the past several decades. When queried, approximately 70 editions of TechNotes identified subjects or questions related to concealed spaces over the decade spanning from 2005 to 2015.

Understanding how many EOD questions are actually received (approximately 2,600 per year) compared to the number of questions included in the “Best of” TechNotes (12 questions per issue) and considering the limited number of subjects being worthy enough to warrant an entire edition of TechNotes suggests that the number is much higher than 70. However, I have not undertaken the much larger effort of determining the specific number of questions asked. The subject has also been previously addressed in *SQ* four times since 1990.

## Previous Discussions on Concealed Spaces

The Spring 1990 edition of *Sprinkler Quarterly* featured a Technically Speaking article by Russell P. Fleming, P.E. titled *Dealing with Combustible Concealed Spaces*. This article discussed the changes to the 1989 edition of NFPA 13, Standard for the Installation of Sprinkler Systems, related to concealed spaces in section 4.4.4. The article focused on each of the available nine (9) exceptions to section 4.4.4 allowing omission of sprinkler protection in concealed spaces. Fleming drilled down into the practical reasoning and

used sound engineering practice to establish the rationale behind each omission.

- Over a decade later, the Spring 2002 edition of *Sprinkler Quarterly* featured a Technically Speaking article by Kenneth E. Isman, P.E. simply and aptly titled *Concealed Spaces*. Isman identified that concealed spaces remained a source of frustration for designers and installers of fire sprinkler systems at that time. He identified five questions routinely asked regarding concealed spaces. These questions, included:
  - What is a concealed space?
  - Are openings allowed in concealed spaces?
  - When is it permitted to omit sprinklers from concealed spaces?
  - Are combustibles allowed in unsprinklered non-combustible concealed spaces?
  - Under what conditions is the design area of the sprinklers required to be a minimum of 3,000 sq ft.?

Each question was separately addressed and criteria new to the 2002 edition was introduced.

Nearly another decade later, the March-April 2010 edition of *SQ* contained an article by Karl Weigand titled *Sprinkler Design Areas Adjacent to Unsprinklered Concealed Spaces*. Weigand identified that adding sprinklers in concealed spaces can be difficult and that most people are happy using the provisions that allow for the omission of sprinklers in these spaces. The focus of the article was on the hydraulic implications to areas outside of the unprotected concealed spaces. He identified that section 11.3.1.2 of the 2010 edition of NFPA 13 provided clarification that the increased design area of 3,000 sq ft. applied to all density/area calculated systems including those systems using residential sprinklers. The addition of systems designed using residential sprinklers was new to the 2010 edition and was previously considered to be a loophole. Weigand also identified the exceptions to the rule for using a 3,000 sq ft. design area.

More recently, the November-December 2016 edition of *SQ* featured a Technically Speaking article by Victoria B. Valentine,

*continued on page 16*



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continued from page 14

P.E. titled “*Back to Basics: Reviewing Concealed Spaces.*” Valentine reexamined the topic of concealed spaces, using the requirements of the 2016 edition of NFPA 13 to identify the current list of situations involving permitted omissions and when the rule for a 3,000 sq ft. design area is applicable. This article brings the subject matter to today’s standards and cautions about the many details to be considered when dealing with concealed spaces. The current edition of NFPA 13 provides 18 conditions permitting the omission of sprinkler protection, double the number identified in the 1989 edition of NFPA 13 as cited by Fleming.

### What’s the point of this article?

You may be asking, if all this information already exists, why is this article being written. Well it is this simple, the emphasis of the previously written articles focuses on the following; when and how sprinklers can be omitted, fire behavior in concealed spaces, the rationale for omitting sprinklers and the conditions requiring the use of a 3,000 sq ft. design area. The installation of sprinklers in concealed spaces can be likened to the installation of in-rack sprinklers, most people try to avoid installation, in a compliant manner, whenever possible. This is likely why there has been so much emphasis placed on the omission of sprinkler protection in concealed spaces. There is very little information available regarding the requirements to be used when sprinklers are required. The focus of this article will be on the identification of protection requirements when sprinklers are required in combustible concealed spaces.

### Current Requirements Specific to Concealed Spaces

Concealed spaces are included as a special situation in section 8.15.1. The charging statement for the section is included in section 8.1.5.1.1, which states “Concealed spaces of exposed combustible construction shall be protected by sprinklers except in concealed spaces where sprinklers are not required to be installed by 8.15.1.2.1 through 8.15.1.2.18 and 8.15.6.” Inability to comply with the requirements permitting omission of sprinklers as permitted in section 8.15.1.2 or 8.15.6, would trigger the requirement for sprinklers in the concealed space.

Section 8.1.15.1.3 establishes that sprinklers in concealed spaces having no access for storage or other use are to be installed in accordance with the requirements for a light hazard occupancy. This is the most common situation where sprinklers are required; interstitial spaces above ceilings, spaces above eaves and other exterior projects would therefore be protected as a light hazard occupancy.

Section 8.15.1.4 addresses the specialized scenario involving heat-producing devices such as furnaces and process equipment located in the joist channels above a ceiling. Having a heat producing device attached directly to the underside of composite wood joist construction that would not otherwise require sprinkler protection of the spaces, triggers a requirement for sprinkler protection of the joist channel containing the heat producing devices and in each joist channel, on each side, adjacent to the heat producing device.

Another specialized scenario involving either local protection of exposed combustible construction or exposed combustibles is considered in section 8.15.1.4. Situations having noncombustible

or limited-combustible concealed spaces that would not otherwise require sprinkler protection, would be required to have localized sprinkler protection, in accordance with one of two sets of protection criteria. These are as follows:

1. If the exposed combustibles are in the vertical partitions or walls around all or a portion of the enclosure, a single row of sprinklers spaced not over 12 ft. apart nor more than 6 ft. from the inside of the partition shall be permitted to protect the surface. The first and last sprinklers in such a row shall not be over 5 ft. from the ends of the partitions.
2. If the exposed combustibles are in the horizontal plane, the area of the combustibles shall be permitted to be protected with sprinklers on a light hazard spacing. Additional sprinklers shall be installed no more than 6 ft. outside the outline of the area and not more than 12 ft. on center along the outline. When the outline returns to a wall or other obstruction, the last sprinkler shall not be more than 6 ft. from the wall or obstruction.

Section 8.15.1.6 establishes the requirement for special application concealed space sprinklers in accordance with section 8.4.8. This section states, “Sprinklers used in horizontal combustible concealed spaces (with a slope not exceeding 2 in 12) with combustible wood truss, wood joist construction, or bar joist construction having a combustible upper surface and where the depth of the space is less than 36 in. from deck to deck, from deck to ceiling, or with double wood joist construction with a maximum of 36 in. between the top of the bottom joist and the bottom of the upper joist shall be listed for such use.” (underlined for emphasis)

Sections 8.15.1.6.1 and 8.15.1.6.2 identify that special application sprinklers are permitted to be used in accordance with 8.3.1.2. Section 8.15.1.6.1 identifies that special application sprinklers are permitted to be used where the space is less than 12 in. from deck to deck or deck to ceiling. Section 8.15.1.6.2 identifies that special application sprinklers are permitted to be used throughout the area when a portion of the area exceeds a depth of 36 in.

Section 8.15.1.7 identifies that sprinklers specifically listed to provide protection of combustible concealed spaces described in 8.15.1.6 shall be permitted to be used in accordance with 8.3.1.2 to protect composite wood joist construction with a maximum of 36 in. from deck to deck, from deck to ceiling, or with double composite wood joist construction with a maximum of 36 in. between the top of the bottom joist and the bottom of the upper joist.

### So, what is the cause of the confusion?

The absence of definitions for the terms “attic” and “combustible concealed space” could be partially to blame for the confusion. Locating appropriate protection criteria in NFPA 13 and knowing if specially listed sprinklers are required may also be to blame. Additionally, reference to concealed spaces in NFPA 13 actually intended to apply to attics adds to the confusion. There are some people that argue that the protection options for these spaces are clear. And there are many others that disagree. Let me provide some details and you be the judge for yourself.

continued on page 17



continued from page 16

### What is a combustible concealed space?

Rather than providing a definition for “combustible concealed space,” NFPA 13 provides criteria for “concealed spaces requiring sprinkler protection” and “concealed spaces not requiring sprinkler protection.” Therefore, combustible concealed spaces are determined through inference. It is left for the user to interpret if the specific situation requires sprinkler protection or if it fits into one of the situations permitting the omission of sprinkler protection. The conditions used to omit sprinkler protection in concealed spaces is not the central focus of this article. Readers are urged to see the articles by Fleming, Isman and Valentine if interested in these omissions.

Attempts have been made by the NFPA 13 technical committee to define “combustible concealed space,” but ultimately, consensus could not be reached on the need for a definition or what the definition should say. In instances where NFPA 13 does not provide a specific definition for a term, NFPA 13, section 3.1 identifies that the ordinarily accepted meaning as established by Merriam-Webster’s Collegiate Dictionary, 11th edition shall be used. When dealing with a “combustible concealed space,” the definitions of the three specific words must be pieced together to establish the meaning.

Per Merriam-Webster, the word combustible is defined as: “able to be burned easily.” This is still unspecific and can be easily misinterpreted, so alternatively, it is more useful to evaluate the materials against the criteria established for “limited combustible” and “noncombustible” as defined in NFPA 13.

In short, limited combustible materials have a potential heat value not exceeding 3500 Btu/lb (8100 kJ/kg), where tested in accordance with NFPA 259, *Standard Test Method for Potential Heat of Building Materials*, and either have a flame spread of 50 or less where tested in accordance with ASTM E84, *Standard Test Method of Surface Burning Characteristics of Building Materials*, or ANSI/UL 723, *Standard Test Method of Surface Burning Characteristics of Building Materials* and noncombustible base material or a material having neither a flame spread index greater than 25 nor evidence of continued progressive combustion.

Noncombustible materials will not ignite, burn, support combustion or release flammable vapors. Any material not complying with these definitions for limited combustible or noncombustible would be considered combustible.

Per Merriam-Webster, the word concealed would be defined as: 1) hiding something from sight or 2) to be placed out of sight. The word space would be defined as: 1) the amount of area, room, surface, etc., that is empty or available for use, 2) an area that is used or available for a specific purpose, or 3) an empty area between things. As an alternate, NFPA 96, *Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations*, section 3.3.47, provides a definition for “concealed space,” which states, “That portion(s) of a building behind walls, over suspended ceilings, in pipe chases, and in attics whose size might normally range from 1 ¾ in. stud spaces to 8 ft. interstitial truss spaces and that might contain combustible materials such as building structural members, thermal and/or electrical insulation, and ducting.”

The lack of the term attic also creates some confusion. Per

Merriam-Webster, an attic would be defined as a room or space that is just below the roof of a building that is often used to store things. Alternately, a definition for attic is provided in NFPA 101-2015, *Life Safety Code*, and NFPA 5000. NFPA 101, section 3.3.28 defines an attic as the space between the ceiling of a story and the roof directly above the habitable story. The same definition is provided in NFPA 5000, *Building Construction and Safety Code*, section 3.3.44. The primary difference between the Merriam-Webster and NFPA definitions is the reference to storage. These two terms (attic and combustible concealed space) are often incorrectly used interchangeably.

Isman identified that the term “concealed space” has come to mean “an area with limited or no access, not intended for building occupant use or storage, that is enclosed on all sides.” This was the definition used in Isman’s article and was used as the basis for NFPA interpretations of building codes and standards.

Fleming has argued that instead of using “limited or no access,” consideration should be given to adding “no planned routine access” or something similar. Especially within attic areas having an access hatch since the presence of the access hatch means that there is clear intent to access the area. This becomes especially important with regards to NFPA 25’s allowance to avoid inspections in concealed spaces. It would be a stretch to argue that it would be permissible to avoid looking at a dry pipe system protecting an attic because it’s a concealed space. Those access hatches are mandated by building codes where height exceeds 30 inches so that the fire department can access the space to at least look around. This is different than the concealed space above a lay-in ceiling for which there is no planned routine access, even though it might be easier access.

The interstitial spaces between ceilings and a floor deck above, wall cavities, eave spaces, areas below stages or prosceniums, areas over exterior projections, crawl spaces and other similar spaces constructed of combustible materials are considered combustible concealed spaces. These other spaces hardly resemble an attic and certainly do not meet the definition provided in NFPA 101 and NFPA 5000. In short, if a space has combustible finish material and is hidden by walls, a ceiling, in a pipe chase and cannot be defined as an attic, it is a combustible concealed space.

The distinction between an attic and a combustible concealed space is important because there are different protection requirements for these areas. Many manufacturers have special application sprinklers listed for protection of attics or special application sprinklers for protection of concealed spaces. The performance objectives and spray characteristics of these sprinklers are vastly different. Although both are used to control fires in normally unoccupied areas having combustible construction or used for storage of combustibles, the spatial geometry of the spaces, height and ambient conditions where these sprinklers are used are also very different. Sprinkler protection for attics will be the topic of a future article and will not be included as part of this discussion.

### Other Code Requirements Applying to Sprinkler Protection in Concealed Spaces

continued on page 19





continued from page 17

In general, NFPA 13-2016, requires protection throughout all areas of a building, except where omission of sprinklers is specifically permitted. This is established in the basic requirements of NFPA 13, section 8.1.1. These generalized requirements of NFPA 13, have a literal context that requires the installation of sprinklers everywhere, including interstitial spaces above ceilings, in wall cavities, attics and other areas of buildings which are not normally occupied.

Fortunately, there are exceptions to the rules, which consider the practical aspects of trying to install sprinklers and piping in small spaces, the inability for spray pattern development, the effect of obstructions and the inability to work in these areas. Other exceptions to the rules consider the use of materials that limit flame spread and smoke development or do not easily burn. These materials are those classified as limited combustible (see NFPA 13, section 3.3.16) and noncombustible (see NFPA 13, section 3.3.17) materials or are materials with limited energy potential or have flame retardants.

Sprinklers are required to be installed in accordance with their listing per section 8.3.1.1, except if construction features or other special situations require unusual water distribution. In these situations, listed sprinklers shall be permitted to be installed in positions other than anticipated by their listing to achieve specific results in accordance with section 8.3.1.2.

Upright sprinklers are required to be installed with the frame arms parallel to the branch line, unless specifically listed for another orientation per section 8.3.1.3. This applies to all listed concealed space sprinklers except the Tyco Model CC1 sprinkler, which requires the sprinklers to be installed parallel to the joists and not the branch line piping. This information is typically found within the installation details of the product data sheets or is stated within the installation requirements provided by the manufacturer.

NFPA 13 section 8.4.1.1 permits the installation of upright and pendent spray sprinklers in all occupancy hazard classifications and building construction types except situations where sprinklers specifically listed to provide protection of combustible concealed spaces are required in accordance with section 8.15.1.6.

The use of wording as provided in section 8.4.1.1 has contributed to the current confusion, since there is no definition for combustible concealed space to relate to for a given situation. The implication of this section is that anywhere these special listed sprinklers are used based on the geometry of the situation would be considered a combustible concealed space. But wouldn't these sprinklers also be the best sprinklers to use in a shallow accessible attic or crawl space used for storage?

### Special Application Sprinklers

Sprinkler manufactures have invested significant money and time researching the performance of fires and the interaction of sprinklers in combustible concealed spaces. This is evident in the number of specific application sprinklers available for use in the protection of concealed spaces. Five different manufacturers produce seven different specific application sprinklers, each with its own key attributes making it advantageous for a given scenario. Table 1 provides a concise list of the different sprinklers available.

Special application concealed space sprinklers have been designed for the specialized hazard associated with these construction features in accordance with section 8.4.8. Fire and water distribution testing has been performed to identify the design requirements for each special application sprinkler to determine protection area of coverage limitations, maximum and minimum spacing requirements. Table 2 provides a concise list of specific installation requirements for special application concealed space sprinklers.

Manufacturer	Model	SIN	K-Factor	Finish	Temperature	Operating Element
Globe	IC	GL5608	5.6	Factory Bronze	175, 200	3mm glass bulb (yellow or green)
Reliable	KFR-CCS	RA4454	5.6	Bronze	212	Fusible Link
Tyco	CC1	TY1189	2.8	Natural Brass	175	3mm glass bulb (Not specified)*
	CC2	TY2189, TY3189	4.2, 5.6	Natural Brass	175	3mm glass bulb (Not specified)*
	CC3	TY2199, TY3199	4.2, 5.6	Natural Brass	200	3mm glass bulb (Not specified)*
Victaulic	V25	V2502	4.2	Brass	175	3mm glass bulb (yellow)
Viking	COIN	VK900	4.2	Brass	175	3mm glass bulb (green)

Table 1.—Concealed Space Specific Application Sprinklers

\* Yellow or green bulbs would be assumed.

As shown in Table 2, separate requirements are provided by the manufacturers for each sprinkler based on the use of chlorinated polyvinyl chloride (CPVC) pipe, steel pipe and wet or dry pipe sprinkler system applications. All currently available special application concealed space sprinklers are limited to use in spaces with ceilings having a slope of 2:12 (rise over run) or less. Spaces with slopes greater than these would require use of standard spray upright or pendent sprinklers in accordance with section 8.4.1.1. In some instances, special application attic sprinklers will be necessary to achieve appropriate protection.

Manufacturer	Model	K-Factor	Minimum Operating Pressure (psi)	Minimum Spacing (ft)	Maximum Spacing (ft)	Maximum Protection Area	Design Area (ft <sup>2</sup> )		
							CPVC Pipe	Steel Pipe	Steel Pipe
							Wet	Wet	Dry
Globe	IC	5.6	7*	6	16	256	1,000	1,000	1,000
Reliable	KFR-CCS	5.6	7	6	14, 16**	196, 256	1,000	1,000	1,000
Tyco	CC1	2.8	10	6	10	100	1,000	1,000	NA
	CC2	4.2,	7	7	12	144	1,000	1,000	1,300
		5.6	7						
CC3	4.2,	7	7	14,	196,	1,000	1,000	1,000	
	5.6	7	7	16	256				
Victaulic	V25	4.2	8	7	12	144	1,000	1,000	1,300
Viking	COIN	4.2	8	7	12	144	1,000	1,000	1,300

continued from page 19

Table 2. – Installation Requirements for Special Application Concealed Space Sprinklers

\* Not identified.  
 \*\* Protection area limitations are dependent on specific construction conditions.

### Other Considerations Regarding the Use of Special Application Concealed Space Sprinklers

Use of special application sprinklers in combustible concealed spaces is limited to spaces with ceiling or roof slopes of 2:12 (2 in. rise over 12 in. run), which would be considered a flat roof/ceiling. These sprinklers, in general, are applicable to spaces having limited vertical height (12 to 36 in., sometimes more) and contain obstructions due to the combustible structural members.

Each sprinkler provides information regarding open space height limitations and limitations regarding the total allowed space height in which the sprinklers are permitted to be used. Both sets of height limitations are based on testing. Minimum open space heights vary from 6 inches to approximately 60 inches. This is the distance measured between the joists from inside edge to inside edge. Total space height limitations vary from 12 inches to 84 inches. This is the measurement from the top of the ceiling or floor to the underside of the ceiling or roof above. The limitations are specific to the construction method used, the type of pipe used (CPVC or Steel) and the presence of insulation. The specific limitations of each sprinkler are identified in the product data sheets, in a tabular form based on construction, a written description for each construction or pipe type or will be provided in the installation details.

All special application sprinklers have requirements for the concealed spaces to be sub-divided into areas no greater than 1,000 sq ft. either by full height walls or by draft curtains. This compartmentation is necessary for proper performance of the sprinkler protection in this spaces. This is an area that requires good communication with the general contractor, architect, engineers and other project members. Since the use of the special application sprinklers requires compartmentation, it is important to establish responsibilities to ensure the design and installation of the draft curtains or walls is coordinated with the sprinkler system layout. It is also important to establish the party responsible for paying for the draft curtains or full height walls during the bidding process to avoid issues during construction involving a failure to include these necessary components.

The use of draft curtains is especially necessary when working in a building having a residential occupancy use group classification. The International Building Code, section 903.3.1.1 requires draftstopping in floor/ceiling spaces in Group R-1 buildings, in Group R-2 buildings with three or more dwelling units, in Group R-3 buildings with two dwelling units and in Group R-4 buildings. The draftstopping is required to be located above and in line with the dwelling unit and sleeping unit separations. However, there are two exceptions that allow for the omission of the draftstopping.

The first exception identifies that draftstopping is not required in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1. The second exception identifies that draftstopping is not required in buildings equipped throughout with an automatic sprinkler system in accordance with

Section 903.3.1.2, provided that automatic sprinklers are also installed in the combustible concealed spaces where the draftstopping is being omitted.

The second exception causes confusion for architects and general contractors. Although the building code requirement for draftstopping is permitted to be omitted, special application sprinklers require draft curtains limiting the concealed spaces to areas no greater than 1,000 sq ft.. These are two separate requirements so it is important to communicate this to the project team.

Requirements for Position, Location and Protection Area for Slopes Greater Than 2:12

Position, location, spacing and protection areas of coverage for sprinklers used in applications with slopes exceeding 2:12 are required to comply with the basic requirements identified in Section 8.5 and 8.6 for upright and pendent sprinklers. Table 8.6.2.2.1(a) provides a list of protection areas and spacing requirements for light hazard applications, such as concealed spaces. The table provides limitations based on construction type and system design method (type). Table 3 provides a summary of this information in imperial units.

Construction Type	System Type	Maximum Protection Area (ft <sup>2</sup> )	Maximum Spacing (ft)
Noncombustible: Unobstructed or obstructed	Hydraulically calculated	225	15
	Pipe schedule	200	15
Combustible unobstructed with: no exposed members or with exposed members 3 ft or more on center	Hydraulically calculated	225	15
	Pipe schedule	200	15
Combustible unobstructed or obstructed with members less than 3 ft on center	All	130	15
Combustible obstructed with exposed members 3 ft or more on center	All	168	15
Combustible concealed spaces in accordance with 8.6.4.1.4	All	120	15 parallel to slope
			10 Perpendicular to slope*

Table 3. – Summary of Maximum Protection Area and Spacing of Sprinklers in Light Hazard Occupancy Based on Construction Type

\*See 8.6.4.1.4.4.

### Concealed Spaces with Ceiling Slopes of 4 in 12 or Greater

Sprinklers under a roof or ceiling in combustible concealed spaces of wood joist or wood truss construction with members less than 3 ft. on center with a slope having a pitch of 4 in 12 or greater are required to be positioned in accordance with Figure 8.6.4.1.4 and the requirements of 8.6.4.1.4.1 through 8.6.4.1.4.6.

Section 8.6.4.1.4.1 requires sprinklers to be quick response type. A row of sprinklers is required to be installed within 12 in. horizontally of the peak and between 1 in. and 12 in. down from



continued from page 20

the bottom of the top chord member in accordance with section 8.6.4.1.4.2. Sprinklers installed along eaves are required to be less than 5 ft. from the intersection of the upper and lower truss chords or the wood rafters and ceiling joists in accordance with section 8.6.4.1.4.3. A minimum operating pressure of 20 psi is required where the dimension perpendicular to the slope exceeds 8 ft. per section 8.6.4.1.4.4.

Section 8.6.4.1.4.5 identifies that the requirements of 8.6.4.1.4.3 or 8.6.4.1.4.4 are not applicable to sprinklers installed at the corner of the eave of a hip type roof where located directly under the hip line spaced in accordance with 8.6.3.2.3 or located along the eave spaced on the slope plane not less than 5 ft. from the intersection of the upper and lower truss chords or the wood rafters and ceiling joists. Section 8.6.4.1.4.6 identifies that the special requirements of 8.6.2.2.1 and 8.6.4.1.4 are not applicable when the exposed combustible sheathing in the roof or ceiling space are constructed of pressure impregnated fire retardant-treated wood as defined by NFPA 703.

While NFPA 13 also uses the “combustible concealed space” term in this section of the standard, the protection criteria is really aimed at tightening the spacing of sprinklers under steeply pitched joists and ensuring they are not too close to the eaves, so that fire control is achieved. In my opinion, the reference to concealed space in this context is really intended to apply to attics and other concealed spaces and is likely a contributing factor leading to the confusion regarding concealed spaces.

### Double joists

Special requirements are provided for situations where two sets of joists (double joists) are used in the structure. The basic requirement of section 8.6.4.1.5.1 is for sprinklers to be installed above and below the lower set of joists where a clearance of 6 in. or more is between the top of the lower joist and the bottom of the upper joist, as indicated in Figure 8.6.4.1.5.1. The figure shows that spacing starts where this 6 in. clearance is established. Section 8.6.4.1.5.2 identifies that sprinklers are permitted to be omitted from below the lower set of joists where at least 18 in. is maintained between the sprinkler deflector and the top of the lower joist and that there is no sheathing below the lower joists.

### Success or Failure is Up to You

The success or the failure of the design rests in the ability for the layout technician to review all parameters impacting the design prior to beginning the layout. This is usually accompanied by supervisors, general contractors and owners asking, “When will the shop/working drawings be done?” Or saying, “You are holding up the project!” Or, “Why aren’t you done yet!” These questions and statements are often riddled with expletives of one form or another. However, this is truly one aspect of a sprinkler system design in a building with combustible construction features where the devil is in the details. Both patience and communication are needed to ensure the design is carried out correctly.

One unfortunate reality is that many layout technicians working on new construction projects do pay attention to the details, select an appropriate sprinkler, layout the system properly, have

the drawings approved and then find out that there is a change. The architect, structural engineer, or one of the other contractors on the project, make a change that impacts the design, or there is a failure in the communication chain that results in a problem with the design. This is one of the worst situations to be in on a project, no one wants or likes to be in a finger-pointing game, facing scheduling delays, back-charges, or far worse, a lawsuit.

Pay attention to the details and communicate to avoid these possible outcomes. It is far better to be the hero at the end of the project than the scapegoat. •

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# NFPA 13R Attic Protection Addressed in 2018 IBC and NFPA 5000

by Jeff Hugo, CBO, NFSA's Manager of Codes



The purpose of the three-year code cycle for codes and standards is to address new technology and contemporary issues that arise between cycles. One of the current issues is the concern of the lack of fire protection in the attics of commercial residential occupancies. The fire sprinkler standard (NFPA 13R) that protects most of the up-to-four-story apartment and hotel buildings does not require fire sprinklers in the attic space. This article discusses

the text that addresses this current fire protection issue that appears\* in the upcoming 2018 edition of the International Building Code (IBC), International Fire Code (IFC) and NFPA 5000

In December 2015, NFPA hosted a summit to discuss the recent concerns of fires in unsprinklered residential attics (IBC R-1 and R-2 occupancies) in otherwise sprinklered buildings per NFPA 13R. The summit was prompted because of several recent fires that started in attic spaces that led to huge losses of property, but no loss of life. A complete summary of the NFPA 13R summit from NFSA staff can be found in the Mar/Apr 2016 (No. 195) issue of SQ. One of the major action items from this summit is to make changes to the building codes to provide attic protection. During the code development cycle in 2016, the text of the changes, shown in Figure 1, was submitted by the National Multifamily Housing Council and is also supported by the ICC's Fire Code Action Committee (FCAC). Code text, like Figure 1, was discussed in the NFPA 5000 BLD-RES committee for the 2018 NFPA 5000.

The text of the changes for attic protection, in Figure 1, apply only to NFPA 13R systems, hence the new Section 903.3.1.2.3 only applies to attics in buildings protected by NFPA 13R systems. What exactly is an attic? NFPA 13R does not define what an attic is, but the IBC does. The IBC defines an attic as: "The space between the ceiling beams of the top story and the roof rafters." While this definition could be argued to limit to specific construction techniques and terms, the intent is clear; an attic is the space above the topmost story and the roof framing structure. It applies only to the spaces above the topmost story, meaning, because of this definition, the fire protection requirements herein only apply to the attic and not other concealed spaces, such as floor/ceiling

*continued on page 24*

## NEW 2018 IBC/IFC Section 903.3.1.2.3 for Attics

Attic protection shall be provided as follows:

1. Attics that are used or intended for living purposes or storage shall be protected by sprinklers.
2. Where fuel-fired equipment is installed in an unsprinklered attic, at least one quick-response intermediate temperature sprinkler shall be installed above the equipment.
3. Where located in a building of Type III, Type IV or Type V construction designed in accordance with Section 510.2 or Section 510.4 of the International Building Code, attics not required by Item 1 to have sprinklers shall comply with one of the following if the roof assembly is located more than 55 feet (16 764 mm) above the lowest level of required fire department vehicle access:
  - a. Provide sprinkler protection.
  - b. Construct the attic using noncombustible materials.
  - c. Construct the attic using fire-retardant-treated wood complying with Section 2303.2 of the International Building Code.
  - d. Fill the attic with noncombustible insulation.
 

The height of the roof assembly shall be determined by measuring the distance from the lowest required fire vehicle access road surface adjacent to the building to the eave of the highest pitched roof, the intersection of the highest roof to the exterior wall, or the top of the highest parapet, whichever yields the greatest distance. For the purpose of this measurement, required fire vehicle access roads shall include only those roads that are necessary for compliance with Section 503.
4. Group R-4 Condition 2 occupancy attics not required by Item 1 to have sprinklers shall comply with one of the following:
  - a. Provide sprinkler protection.
  - b. Provide a heat detector system throughout the attic that is arranged to activate the building fire alarm system in accordance with Section 907.2.10.
  - c. Construct the attic using noncombustible materials.
  - d. Construct the attic using fire-retardant-treated wood complying with Section 2303.2 of the International Building Code.
  - e. Fill the attic with noncombustible insulation.

continued from page 23

assemblies or other concealed spaces.

The first and second requirement of attic protection in the new Section 903.3.1.2.3 (Figure 1) correlates to the 2016 NFPA 13R. These requirements will apply to all attics protected by NFPA 13R. Section 6.6.6 of the 2016 NFPA 13R does require attics that are used for living space, storage or that have fuel-fired equipment to have sprinklers. However, both the code (IFC/IBC in Figure 1) and standard (NFPA 13R) will not require complete attic sprinkler protection for fuel-fired equipment. Where an attic has fuel-fired equipment, only the equipment in the attic is sprinklered, with at least one quick-response of intermediate temperature (175-225 °F) sprinkler installed above.

The third requirement of attic protection in the new Section 903.3.1.2.3 (Figure 1) comes out of the discussions held at the NFPA 13R summit from December of 2015. The following requirements for attics only apply to the special provisions in the IBC for pedestal or podium style (Figure 2) construction found in IBC Section 510.2 and 510.4:

1. The special fire protection requirements for the attic in the building located on the pedestal top applies only to mixed combustible or combustible type of construction (Type III, IV, and V) protected by NFPA 13R systems. It is important to repeat: this portion of the new requirement will only apply to pedestal buildings, meaning, this section does not apply to standalone NFPA 13R residential buildings.
2. The special fire protection requirements are only required when the roof assembly is more than 55 feet above the required fire vehicle access road. The 55 feet to the roof assembly is measured to: the eave (Figure 3), the intersection of the roof to the exterior wall (Figure 4), the top of the highest parapet (Figure 5). The reason for the threshold of 55 feet is because manual suppression by the fire department becomes more difficult at this height. The 55 feet requirement is also used in the IBC/IFC as a threshold for sprinkler installation (Section 903.2.11.3) for any building that exceeds this height. The bottom of the measurement starts at the “required” fire apparatus access road, meaning, the measurement is specific to the required apparatus road, not to any or every paved surface adjacent to the building.

Where the roof assembly exceeds the 55 feet threshold the choice of fire protection in the attic is similar to some of the exempt sprinkler areas in NFPA 13. The choices for attic protection in tall

FIGURE 2

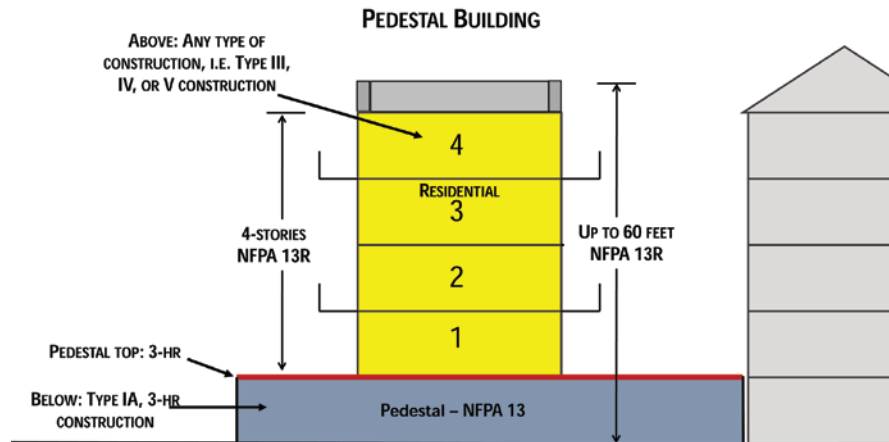
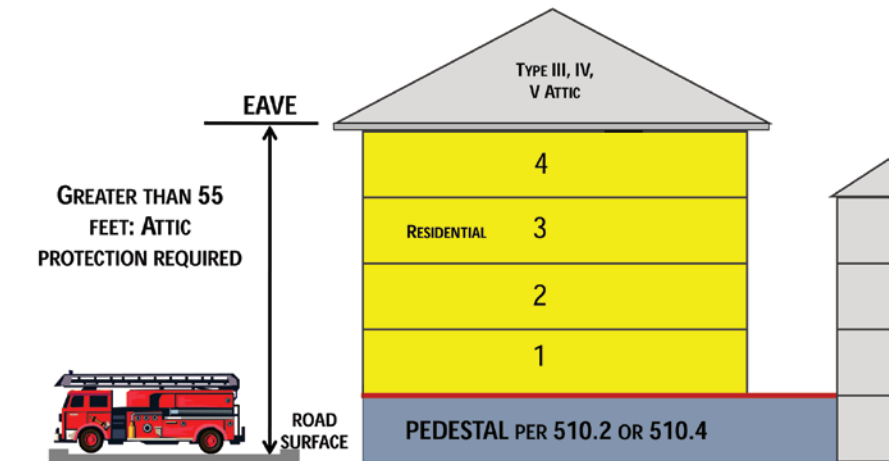


FIGURE 3



pedestal buildings protected by NFPA 13R are as follows:

- a. Provide fire sprinkler protection in the attic space. Follow NFPA 13R or NFPA 13 for fire sprinkler installation in the attic space.
  - b. Construct the attic using noncombustible materials. A Type III, IV or V building is permitted to have materials that are more restrictive, such as steel roof trusses and fire retardant treated roof sheathing.
  - c. Construct the attic using fire-retardant-treated wood.
  - d. Fill the attic with noncombustible insulation. As in NFPA 13, there is no limit to the volume or area of attic space filled with noncombustible insulation.
3. The fourth requirement of attic protection in the new Section 903.3.1.2.3 (Figure 1) is not new to the 2018 edition but is moved from the 2015 Section 903.2.8.3 for Group R-4 Condition 2 attic spaces. The attic fire protection options are nearly the same as explained above, but for R-4 Condition 2 attics, a heat detection system is permitted, whereas it is not an option for the tall pedestal attics above.

continued on page 25



FIGURE 4

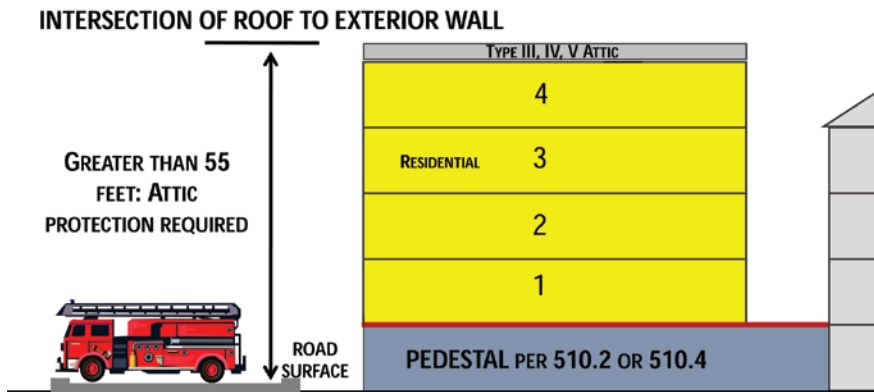
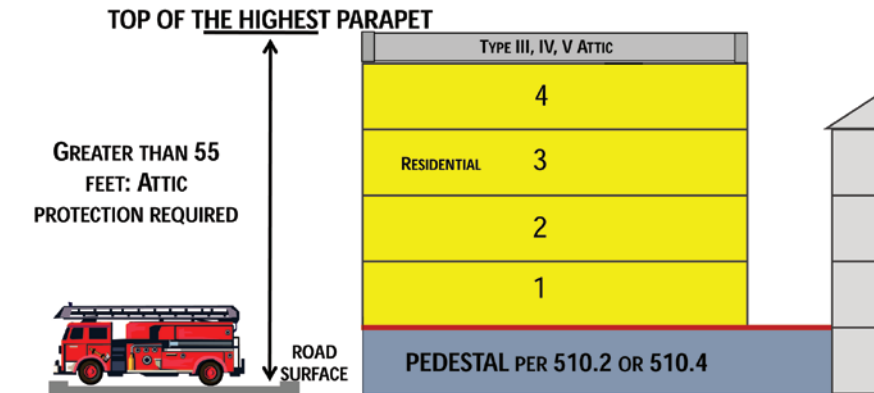


Figure 5



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The changes explained here for buildings protected by an NFPA 13R system are to provide additional protection against fires that originate in the attic. These increases also provide additional protection for tall pedestal buildings that may slow down or delay access to attic fires from the responding fire department. •

*\*It should be noted here, while at the time this article is published, both ICC and NFPA 2018 editions are not yet ratified by their membership, however, because of the wide support of these changes for attic protection, it is presumed to be code when published. Contact NFSA's Public Fire Protection Department and Manager of Codes, Jeffrey M. Hugo for more information.*

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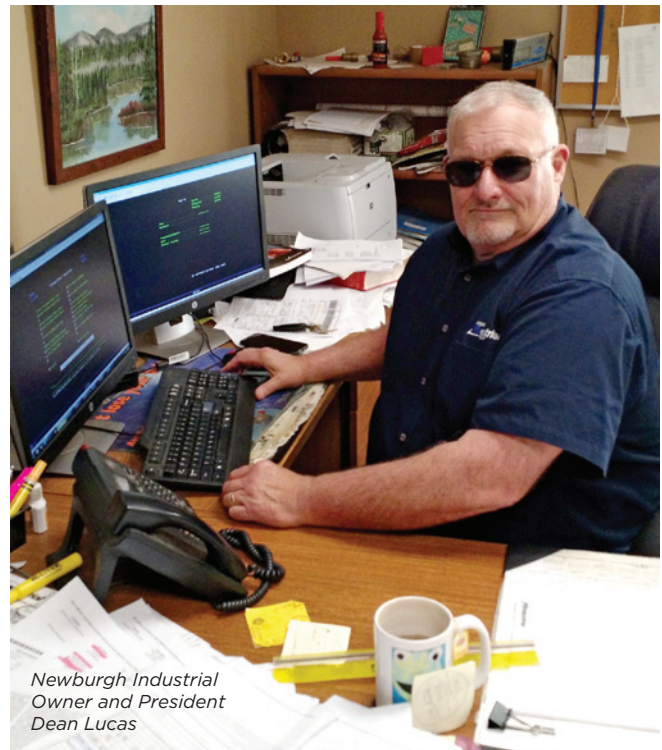
by Joanne Genadio, NFSA's Marketing Manager

An NFSA member for almost six years, **Newburgh Windustrial** is a fire sprinkler fabricator and distributor of fire sprinkler products located in the mid-Hudson valley. It is one of the largest distributors of Victaulic brand products and Wheatland pipe in the Northeast. From its 60,000 sq. ft. facility in Newburgh, New York, Newburgh Windustrial provides products and services to customers throughout New York, New Jersey, Eastern Pennsylvania and New England. The company employs over 70 people and has a fleet of eight trucks.

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NFSA membership plays an important part in the company's ability to seek new business and engage with current customers. The biggest value Newburgh Windustrial finds in its association membership is the opportunity to engage with contractor members at regional chapter meetings and chapter sponsored events. Newburgh Windustrial actively supports the NFSA Chapters in New Jersey, Pennsylvania, New York and Connecticut. Annual Chapter events such as the Area 2 seminar and the joint NewYork/Connecticut Chapters golf outing continue to be very informative and well-attended. Earlier this year, the New Jersey Chapter sponsored a fundraiser to benefit the American Legion in Lodi, New Jersey. To support the event, Newburgh Windustrial donated a brand new Generac brand generator, raising over \$2,500 for the legion hall.

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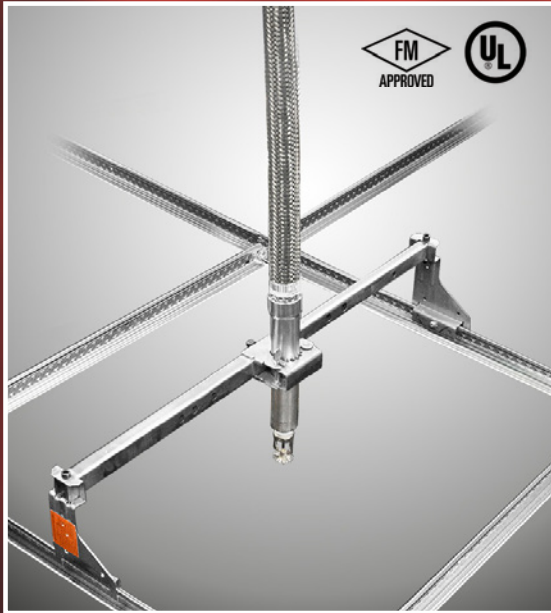
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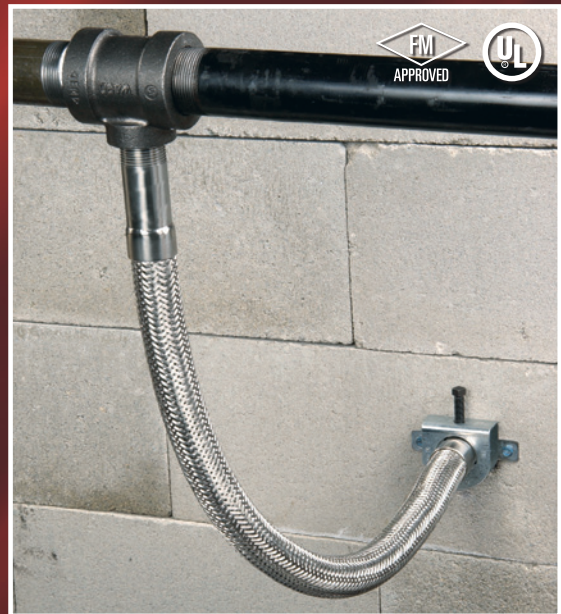
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# Wood as a Construction Material: Where it's been and where it's going

by Jason Webb, NFSA's Director of Public Fire Protection



People have been using wood as a building material since before recorded history. It has the virtue of being plentiful in many parts of the world, it is relatively easy to shape and can be surprisingly durable when it is protected from the elements. Unlike other natural building materials, wood has the benefit of working as a structural element in both compression and tension giving it the ability to support long horizontal spans without complex architectural arches.

The history of wood's use reflects the development of tools and techniques for shaping it, along with its availability as a natural resource. Early uses shaped felled trees the least; often utilizing whole logs as structural members or shaping them minimally into squared posts, beams and rafters. Today, wood products used in construction still include heavy timber elements. However, more and more engineered wood products are growing popular in the industry. Even by-products that would have previously been considered waste, such as sawdust and wood chips, have found their way into wood products like particle board (chip board), medium density fiberboard (MDF), and oriented strand board (OSB). Plywood, the original engineered wood product, was introduced to the United States in 1865 but was just the first of the engineered veneer products, including laminated veneer lumber (LVL) and parallel strand lumber (PSL).

As our ability to shape and standardize raw timber into useful construction materials has improved, the trend through history has been to move away from heavy timber structural elements towards wood products that are both lightweight and less reliant on taking very large trees to produce. Recognizing that the availability of such large trees is finite and the desire to use smaller and more renewable trees to produce long span structural elements has been part of the incentive to develop wood structural elements like lightweight trusses and composite joists. Even though the wood industry has striven to become more "green" with its production efforts and implementation, it cannot be forgotten that wood is combustible.

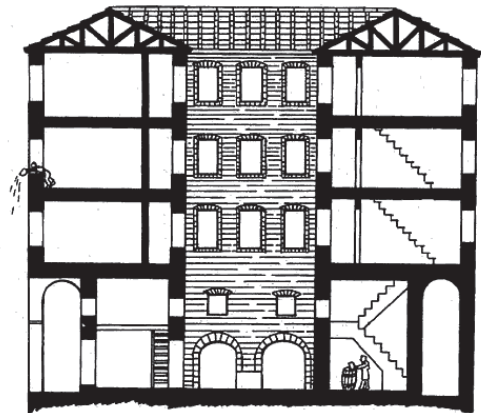
## Building Codes and Wood

The oldest known building code is contained in the Code of Hammurabi written in Babylonia sometime in the 18th century

BCE. It only contains six paragraphs relating to building. It starts with a simple performance based requirement about the proper construction for a house:

If a builder builds a house for someone and does not construct it properly and the house which he built falls in and kills its owner, then that builder shall be put to death. (Hammurabi, 229)

The Code may seem a bit draconian by modern standards but it does remind us that building codes have been evolving for almost 4,000 years. Notably absent in the code is any mention of fire. The people of ancient Babylonia seem to have been more concerned with problems of houses collapsing than they were of them burning. Ancient Rome was another matter.



When we picture ancient Rome, we tend to think of all the massive stone architecture that survives, in part, today. The reality of Rome, however, is that a good deal of the city was filled with residential neighborhoods consisting of private homes and multi-story tenement buildings. Their construction was a mixture of masonry and wood along with that great Roman invention; concrete. In a series of 1st century CE reforms, Augustus limited the height of these tenements, to 70 Roman feet (about 68 feet) (Strabo, 5.3.7). There was no limit on stories and as many as eight stories could be squeezed in with the upper stories having progressively lower

*continued on page 30*

*continued from page 29*

ceilings as well as fewer amenities like water or sanitary facilities. In a classic example of changing prescriptive codes in response to disasters, Nero lowered the height limit to 60 Roman feet (about 58 feet) after the Great Fire of Rome in 64 CE reduced a significant portion of the city to ash and rubble over the course of six days – including a portion of Nero’s own palace. (Griffin 2000) As building codes have evolved, combustible construction has continued to be limited to just 5 or 6 stories in height throughout most of the time ever since.

### **Combustible Construction in the Modern Age**

Modern construction retains wood structural elements in three of the main construction types identified by the International Building Code (ICC 2014) and NFPA 220: Standard on Types of Building Construction (NFPA 2014) identified in both as Type III (“ordinary”); Type IV (“heavy timber”); and Type V (“wood frame”). (The two standards-making bodies divide each main construction type into subtypes slightly differently so the rest of this article will use the International Building Code (IBC) designations only for clarity.)

Both the heavy timber and ordinary construction types use a combination of masonry and timber elements, with the only real difference between them being the size and thickness of their walls and timbers. Ordinary construction can reasonably be characterized as a lighter weight and less robust version of heavy timber. Heavy timber construction arguably reached its heyday in the 19th century in the form of the “standard mill construction” and “semi mill construction” commonly used in large industrial buildings of the era. Both of these construction variations relied on long spans of heavy timbers to provide large open interior spaces with a minimum number of interior columns – ideal for mills and warehouses. Although most commonly limited to 5 or 6 stories in height, examples of mill construction buildings up to 9 or 10 stories can still be found from up until around the turn of the 20th century as noncombustible steel framing elements replaced combustible heavy timbers in popularity.

Wood frame construction developed alongside heavy timber, but was more popular in areas where all timber construction was more practical than the combination of masonry and timber. An early form of wood frame construction, traditional timber frame or “post and beam” construction, can still be found in some of the oldest existing wooden buildings in the United States, found mostly in New England, and built as long ago as 1637 (Fairbanks House Historical Site). Post and beam construction, which was often hand hewn, gave way to the use of standardized mill sawn dimensional lumber leading to the advent of “balloon frame construction” or “Chicago construction”. The first example, credited to George Washington Snow, is believed to be a Chicago warehouse constructed in 1832 (Miller 1996, 84). Balloon frame construction is characterized by the use of multi-story studs used for the exterior walls with floors supported on horizontal cleats let into the studs. From a fire safety perspective, balloon frame construction is characterized by continuous combustible concealed spaces from basement to attic and often open to the interstitial spaces between floors as well.

Balloon frame construction fell out of favor after WWII to be replaced by platform construction where floor levels are built one at a time, stacked on top of each other. This method does not require the very long timber studs needed for balloon frame nor does it create multi-floor concealed spaces that could promote fire spread. Most of the modern wood frame we see today is platform construction. The most modern twist is that solid wood joists and rafters are more and more frequently replaced with engineered wood products in the form of composite joists and lightweight trusses. These engineered structural members create their own fire protection challenges. In recognition of these challenges, the fire sprinkler installation requirements in NFPA 13 have several specific sections devoted exclusively to their installation in conjunction with light weight engineered wood elements.

All of these combustible construction types are limited in height by the IBC depending on the type of occupancy they will contain. None of them are permitted to exceed 5 or 6 stories in height regardless – not much different from the limits of the fire codes imposed by Nero almost two centuries ago. That, however, may be about to change.

### **The International Building Code and Tall Wood Buildings**

In response to requests from the construction industry, the International Code Council (ICC) established an Ad Hoc Committee on Tall Wood Buildings in December of 2015 for the purpose of “exploring the building science of tall wood buildings and investigating the feasibility of and take action on developing code changes for tall wood buildings” (ICC 2016, 2). This line of work has been strongly motivated by environmental concerns promoted by the United States Department of Agriculture (USDA) through the US Forestry Service (USFS) in the interest of encouraging building with wood. Wood construction is “green” compared to the concrete and steel construction that currently dominates tall building construction. (Marshall n.d.) The notion of constructing tall buildings of wood is largely possible because of one of the newer engineered wood products to reach the market: Cross Laminated Timber or CLT.

CLT is a factory produced mass timber panel product composed of lumber glued together in orthogonal layers much like plywood. The difference is that the layers are not thin veneers but dimensional lumber ranging from ¾ to 2 inches in thickness. By alternating layers of lengthwise and crosswise lumber in three or more layers, the resulting panels can be used as structural floor panels or as shear walls. In combination with Glued Laminated (glulam) columns and beams, wood can be used in exactly the same way concrete panels and steel columns are used in construction. CLT is not the first engineered wood panel product but it has strength and production cost advantages over predecessors like the Nail Laminated Timber (NLT) sometimes found in old mill construction floors.

CLT has already gained popularity in Europe and Canada and has inspired research by the National Institute of Standards and Technology (NIST) (Buchanan, Östman and Frangi 2014), the creation of a new ANSI standard on CLT (APA 2012) and a

*continued on page 31*



photos courtesy of Acton Ostry Architects Inc. & University of British Columbia



July 2015 glulam columns and steel connectors for mockup



July 2015 erection of mass wood structural mockup



August 2016 concrete construction underway

theoretical design investigating the feasibility of constructing a 42-story tall wood structure building compared to constructing the same building using traditional concrete and steel methods (Skidmore, Owings, and Merrill, LLP 2013). Tall wood buildings have started to spring up all over the United States; some built using the traditional heavy timber code requirements already in place in the IBC and others using alternative method code provisions and performance-based design to exceed the limits of existing prescriptive codes. The ICC has challenge its Tall Wood Buildings Committee to investigate changes needed in the IBC to address this new evolution of building with wood.

### What Can We Expect in the Future of Tall Wood Buildings?

As of this writing, the Tall Wood Building Committee has met twice in person and conducted dozens of conference calls among work groups dedicated to code concerns, fire protection, structural and product standards. The current direction is in favor of incorporating prescriptive language into the IBC for the construction of new sub-types of heavy timber construction based on the use of fire resistance rated mass timber products. Proposals vary, but it would not be inconceivable to see new code language permitting the construction of wood buildings as high as 12, 20, or even 40 stories, depending on the level of fire protection provided to the combustible wood structural members. Rest assured, fire sprinklers will be a part of that fire protection, along with robust passive protection features to ensure a reasonable degree of safety even in the unlikely event of a sprinkler system failure. •

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# The New NFSA— Off to a Strong Start with Our New Logo!



by Vickie Pritchett, **Director of Outreach & Government Relations**

*2017 brings much to be excited about for our National Fire Sprinkler Association (NFSA) team!* We have a new office up and running in Maryland, we have a new logo that promises to help us roll out a branding campaign for our Association and we have a new National Fire Sprinkler Magazine! Lots of NEW going on around here!

Team NFSA participated in the creation of our new logo and also our new magazine title and format. This collaboration provides us all with an excitement and momentum for our future. However, with that excitement comes the calm of knowing that we build on a foundation that is strong. With every decision we've made we have remembered the work of those who've gone before and we have focused on our values as we plan for our future. Our hope is that you can sense that, feel it, if you will, and that you join with us in our outreach to the world.

We believe that the synergy between our new programs and initiatives will help us grow our team. Whether it's a *Fire Team USA*



delivery, a side-by-side burn demonstration, an energized Chapter meeting, or a project led by our Future Leadership Committee, Team NFSA is uniquely poised to be a difference-maker. Our outreach creates opportunities to convince all stakeholder groups that our cause; fire sprinklers and their life-saving technology, is worth rallying around!

Speaking of stakeholder groups, we remain committed to turning adversaries into allies and all of the “new” described above helps us with that. We are determined to find measurements that matter, to know that we add value to our members and to serve with a passion second to none. We hope you realize that with every contact you have with us, NFSA is here to help you! If you have a specific need, please reach out and let us know. Have an idea for something new? We'd love to hear from you.

As you can tell with this re-designed flagship publication, we kind of like shaking it up and we embrace challenging the status quo! There is no better way to do that than with direct input from you, our members. So, we look forward to hearing from you soon! Need my email? It's pritchett@nfsa.org. Need my phone number? It's 615.533.0305.

Cheers to 2017... may our journey take us where we've never

been, in a way that saves more lives and provides some fun along the way for our team. Yes, that team includes all of us—Staff, Board, Councils, Committees, and all members!

As the theme for our upcoming **Annual Seminar and North American Fire Sprinkler Expo™** states — *Bet on a Sure Thing.... Fire Sprinklers Save Lives.* •

*Until next time, stay safe!*

Vickie

Registration for the **2017 NFSA Annual Seminar & North American Fire Sprinkler Expo™** at the fabulous Red Rock Resort in Las Vegas is LIVE! Visit [www.nfsa.org](http://www.nfsa.org) and click on the Red Rock banner to gain access to our conference website, which includes registration info for the conference itself, Red Rock Resort room block, sponsorship info, and **2nd Annual Common Voices Golf Classic** information, held at TPC Golf Course.

We are excited that, once again, we'll be spanning the continent by bringing the National Fire Sprinkler Association (NFSA), Canadian Automatic Sprinkler Association (CASA) and Mexican Fire Sprinkler Association (AMRACI) members together for the **3rd Annual North American Fire Sprinkler Expo™, May 3-6, 2017.**

Simply stated, we want you, your family and your team to be with us for this annual event that holds more unlimited opportunities to grow your business and expand your relationships than ever before! Internationally renowned speakers, the wildly popular Top Tech Competition, Leadership & Business sessions from industry greats.... all available at the stunning Red Rock Resort in Las Vegas. We anticipate a record crowd, so book your spot early and share the information with friends, family and colleagues. *Early-Bird Discount pricing is available through March 3, 2017 – but don't delay... register today!*

Interested in playing in the 2nd Annual Common Voices Golf Classic? Information is available and registration is open!

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We hope to see you in Vegas.... where we know you'll agree you can **“Bet on a Sure Thing.”**



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# Failure is not an Option

by Scott Morris,  
EVP Marketing and Product Development  
Bull Moose Industries

No one sets out to design, build or install a sprinkler system that fails. There’s far too much at stake: company reputation, property value, financial liability and – of course – human life. But certain decisions that take place in the design, build and installation phases can lead to early (and potentially avoidable) system failure. One such decision involves the selection of sprinkler pipe.

Recently my company, Bull Moose Tube (BMT), surveyed sprinkler-pipe installation contractors across the country to gauge what drives their purchasing decisions when sourcing sprinkler pipe. We talked to sprinkler-system-installation companies across the country ranging from \$1 million to more than \$10 million in annual sales.

We noticed two trends in the responses we received: First: there appeared to be an “education gap” between larger contractors (those who dealt directly with sprinkler pipe manufacturers) and smaller contractors (those who purchased through third-party distributors), as larger companies tend to have access to more

information that aids their decision-making. Second: despite a broad range of knowledge among those surveyed – and despite our efforts as sprinkler pipe manufacturers to convey the importance of such aspects as high quality standards, proper storage and the importance of anti-MIC (microbiologically influenced corrosion) coating – the purchasing decision typically came down to two top criteria: price and availability. Respondents did cite pipe quality and other aspects – particularly when prompted, but price and availability topped the list among the contractors surveyed.

It is important to remind – and in some cases, inform – those who use our (or our competitors’) products what’s at stake, as well as what the industry as a whole is doing to help ensure that the systems they install are as reliable as possible.

We shared the idea of a sprinkler pipe “tutorial” with some of the survey respondents, and the concept was universally well-received. For that reason, we have dispensed with competitive claims and salesmanship to provide what we feel are key factors all contractors should consider when sourcing sprinkler pipe – regardless of

*continued on page 36*

Certifying/Standards-Identification Organization	Standard	Description/Requirements
ASTM*	<b>A135</b>	Standard Specification for Electric-Resistance-Welded Steel Pipe (intended for conveying gas, vapor, water or other liquid)
ASTM	<b>A795</b>	Standard Specification for Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Fire Protection Use
ASTM	<b>A-53 (types F, S, and E Pipe)</b>	Standard Specification covering carbon steel alloy, used as structural steel or for low-pressure plumbing. Includes furnace-butt-welded (type F), electric-resistance-welded (type E) and seamless (type S) pipe.
UL**	<b>Various</b>	Independent third party verification
FM Global***	<b>Various</b>	Independent third party verification
NFPA****	<b>NFPA 13</b>	Standard for Installation of Sprinkler Systems
NFPA	<b>NFPA 13R</b>	Standard for the Installation of Sprinkler Systems in Low-Rise Residential Occupancies
NFPA	<b>NFPA 14</b>	Standard for the Installation of Standpipe and Hose Systems
USGBC*****	<b>LEED v4</b>	Leadership in Energy and Environmental Design Standards for Building and Design Construction

**List of Organizations and Associated Standards Regarding Steel Pipe**

\* American Society for Testing and Materials

\*\* Underwriters Laboratories

\*\*\* Formerly Factory Mutual

\*\*\*\* National Fire Protection Association

\*\*\*\*\* United States Green Building Council

the source.

### Industry Standards:

Many of the survey respondents cited both industry standards and specifications as factors in purchasing decisions – particularly when prompted by the interviewer. While compliance with industry standards seems like common sense, it isn't always commonplace.

Industry standards – whether in the form of American Society for Testing Materials (ASTM) specifications, Underwriters Laboratories or FM Global certifications, or National Fire Protection Association (NFPA) standards – are put into place to protect not only end users (owners and inhabitants of the buildings serviced by sprinkler systems), but also those who design, build and install sprinkler systems using those compliant products. A list of organizations providing requirements or regulations regarding the manufacturing and use of steel pipe is provided in Table 1 (*previous page*).

Thousands of research hours go into setting and adjusting each of these standards. Any attempt to circumvent the certification process – whether through counterfeit or missing certification stamps – is not only unethical and potentially illegal, it also exposes all involved to massive financial liability or – in the case of a potential failure – criminal negligence.

*In short: be on the lookout for all necessary certifications, and take the time to ensure they are genuine.*

### Addressing Microbial Corrosion/deterioration

Much has been said about anti-MIC coating since the issue of microbial corrosion/deterioration was identified as a leading cause of sprinkler pipe failure about 20 years ago. Among our survey respondents, attitudes regarding anti-MIC coating were mixed. Some felt it was an important factor impacting their purchasing decisions. Others did not. Still others – including those who were forced to find a new pipe supplier following the recent departure of a key manufacturer amid MIC-related legal issues – had a very negative view of anti-MIC coating as nothing more than a “sales tool.”

While reviews of anti-MIC coatings remain mixed, the role of microbial corrosion in sprinkler system failure continues to be studied by industry experts, as is the degradation rate of current anti-MIC coatings (over the course of repeated draining and filling of sprinkler systems). Meanwhile, sprinkler pipe manufacturers, with input from the National Fire Sprinkler Association (NFSA), continue to work on solutions to combat microbial corrosion without unintended consequences (see next section on component compatibility).

Current guidelines established by the NFPA can be found in the 2016 edition of NFPA® 13, Standard for Installation of Sprinkler Systems, which have evolved since being added to the 1999 edition:

### Chapter 24: Water Supplies

24.1.5.2 Water supplies and environmental conditions shall be evaluated for conditions that contribute to unusual corrosive

properties. Where conditions are found that contribute to unusual corrosive properties, the owner(s) shall notify the sprinkler system installer, and a plan shall be developed to treat the system using one of the following methods:

1. Install water pipe that is corrosion resistant
2. Treat all water entering the system using an approved corrosion inhibitor
3. Implement an approved plan for monitoring the interior conditions of the pipe at established intervals and locations
4. Install corrosion monitoring station and monitor at established intervals.

Pipe manufacturers (including BMT) have spent countless man hours to research and develop a variety of proprietary anti-MIC coatings to address the NFPA criteria. This research is ongoing as the industry continues to learn more about how to best combat microbial corrosion.

### Component Compatibility

While virtually absent from our recent survey discussions, the issue of component compatibility is perhaps the most critical of all topics covered in this article, as it incorporates elements of each of the issues discussed thus far.

Component compatibility deals with the interaction of all elements that make up a sprinkler system – from the pipe to the various couplings, hangers, fittings, sprinkler heads, drops, etc. This list will incorporate a variety of source materials as well – from steel to aluminum, CPVC, Teflon, etc. Compatibility with other products not only is required of the pipe itself, but of any substance that touches the pipe. This list could include mill oil, lubricant, anti-MIC coating, etc.

Because so many variables are involved, this has been the toughest issue for the industry to tackle, in terms of establishing – and meeting – standards for compatibility. To date, only FM Global has tackled the issue, in the form of a compatibility protocol/certification process that is currently limited to CPVC compatibility. UL is currently working on its certification protocol and working with NFSA, manufacturers and certification entities alike to arrive at a workable industry standard.

A lot is at stake here – not just for manufacturers, but also for contractors and building owners. Products and practices (anti-MIC coatings, use of mill oil or other similar proprietary coatings to protect from heat and corrosion) all must be thoroughly tested to ensure that the benefits they provide to the sprinkler pipe does not come at the expense of compromising another sprinkler system component. Recent system failures, and resulting lawsuits, have taken their toll on well-meaning manufacturers and have caused the rest of the industry to take a step back and redouble efforts to ensure compatibility.

This is a painstaking process that is currently being undertaken by our company, along with a handful of other manufacturers. Current efforts include, but are not limited to:

*continued on page 37*



continued from page 36

- Ensuring stand-alone strength, integrity and reliability of their products
- Ensuring compatibility of their pipe (and all related substances) with other sprinkler system components<sup>2</sup>
- Supporting their products once they are in the field

**Current Industry/Certification Organization’s Positioning on Component Compatibility -**

Current guidelines for compatibility outlined in the NFPA® 13 Standard for Installation of Sprinkler Systems are as follows:

UL	Language on compatibility currently pending
FM Global	Tested and approved a list of anti-MIC coatings and other fluids/substances used by various manufacturers for use with CPVC in fire protection systems (consult <i>FM Global Guide 1630</i> or sprinkler pipe manufacturer for FM Global approvals)

Chapter 6: System Components & Hardware

6.1.1.6 Materials and components shall be installed in accordance with material compatibility information that is available as a part of a listing or manufacturer’s published information.

6.3.9.2 When nonmetallic pipe is used in systems utilizing steel piping internally coated with corrosion inhibitors, the steel pipe coating shall be listed for compatibility with the nonmetallic pipe materials

6.3.9.4 When nonmetallic pip is used in systems utilizing steel pipe, cutting oils and lubricants used for fabrication of the steel pipe shall be compatible with the nonmetallic pipe materials in accordance with 6.1.1.6

6.4.3.1 When nonmetallic fittings are used in systems utilizing internally coated steel piping, the steel pipe shall be listed for compatibility with the nonmetallic fittings

6.4.3.3 When nonmetallic fittings are used in systems utilizing steel pipe, cutting oils and lubricants used for fabrication of the

steel piping shall be compatible with the nonmetallic fittings in accordance with 6.1.1.6

**Conclusion**

Again, our goal in sharing this information was to inform and educate users of our (and our competitors’) products about the efforts that are made throughout the industry to deliver products that not only are durable in their own right, but also ensure the integrity of the systems that incorporate them.

Price and availability will – and should – always be important considerations in selecting components. We simply urge you to consider asking the following questions of your supplier before

scheduling your next sprinkler-pipe purchase:

Does your product carry all of the required certifications and specifications?

Do you have valid paperwork to back up the stamped certifications?

What efforts has the manufacturer undertaken to address microbial corrosion?

Ensure compatibility with other sprinkler system components?

Which components have been tested for compatibility?

What companies have participated in the tests?

The answers to these questions may still lead you to the best price or most readily available product. Regardless, the knowledge of what to look for in sprinkler pipe can be an invaluable tool in protecting your sprinkler systems against system failure. For many in our industry, failure is not an option. •



**Every second counts during a fire.**



# *NFSA Annual Seminar and 3rd North American Fire Sprinkler Expo™*

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# Collaboration is the Key to Successful Code Enforcement

By Rob Neale,  
Vice President, International Code Council

The late Frank Brannigan, author of *Building Construction for the Fire Service* and University of Maryland professor of fire protection, was famously quoted as saying “the building code is a political document written in technical language.”

While Mr. Brannigan devoted a substantial part of his professional life to improving fire in the built environment, his comment rings true about the importance of working together in the development of codes and standards that guide how buildings are constructed and used.

The International Code Council (ICC) publishes a complete set of building construction and fire prevention codes that are adopted in 50 states, the District of Columbia and used by many Federal agencies. ICC’s International Building Code is the predominant construction code adopted by states and local jurisdictions.

The ICC is a U.S.-based non-profit organization with more than 60,000 members representing all parties who might be interested in public safety. About one-third of its members are local building, fire, plumbing, mechanical and other code officials.

Developed through a consensus process, ICC codes adopt by reference many of the National Fire Protection Association design, construction, inspection, testing and maintenance standards for water-based fire protection systems.

It is through this consensus process that ICC members become acquainted with and appreciate the work performed by representatives of the National Fire Sprinkler Association (NFSA) and its members.

Dominic Sims, president and CEO of the International Code Council, stressed the importance of collaboration in the code development process. “All interests bring value to the table,” he said. “Not only does the sprinkler industry provide technical expertise, they help us understand how important it is to be sure what is printed in the codes can be reasonably applied in the field. ICC members depend on the expertise of industry to assure the codes are adoptable and enforceable.”

Code development is a process where proposals from all interest groups are put before a panel of professionals who weigh their merit about improving public safety while simultaneously assessing the financial impact on construction and renovations. ICC prides itself on its “open and transparent” code development method where public and private entities have numerous opportunities to review, comment on and perhaps amend code proposals.

With its online portal [cdpACCESS™](http://cdpACCESS™) ([www.cdpaccess.com](http://www.cdpaccess.com)),

ICC has modernized the ability to submit code change proposals, collaborate or debate related issues and even vote. Online voting is especially important to local governmental representatives who may not have the financial means to attend any or all of the code-change related public hearings.

The importance of NFSAs participation in this process cannot be overestimated. As the sophistication and complexity of water-based fire protection systems grow, code officials rely on professional associations like NFSAs to explain their operating features and performance capabilities. For example, when NFPA 13R “*Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height*” (its original title) hit the streets, there was confusion among code officials about how

*“It is through this consensus process that ICC members become acquainted with and appreciate the work performed by representatives of the National Fire Sprinkler Association (NFSA) and its members.”*

it could be used to substitute for various building requirements. The fire sprinkler industry was instrumental in helping explain the standard’s capabilities and limitations. Now, with almost 30 years of experience, code officials and industry are working together to make regular improvements to protect life safety and property protection.

So, how else can code officials and NFSAs work together? NFSAs highly regarded regional and local training programs are a significant benefit for code officials who, because of time or budget constraints, can’t travel to national schools or conferences. The courses keep code officials current with the latest information in water-based fire protection systems.

Likewise, code officials and sprinkler contractors are on the leading edge of changes in building construction and use. Emerging issues such as tall wood structures, short term rentals in single-family dwellings (such as AirBnB), extra-high rack storage buildings, reduced oxygen storage buildings and the tiny house movement provide challenges on how to apply existing codes and standards

*continued on page 40*

continued from page 39

to these facilities that contemporary codes may not address clearly.

Finally, as it is important to code officials, contractors and developers alike, finding consistency in the application of codes and standards is important. The age-old complaints of “I’ve never had to do that before” or “They didn’t make me do that in [you can fill in the blank]” help no one. As the US moves toward consistency in a single family of building and fire codes, having predictability in how they are enforced helps everyone. NFSA members can work with local code officials to find solid technical solutions without compromising public safety or economic vitality.

So, are codes – as Frank Brannigan claimed, political? To the extent that politics can be described as the “art of collaboration”,

the answer with NFSA and local code officials is “yes.”•

### About the Author

A regular contributor to fire protection trade journals, Rob is the Vice President for Government Relations for National Fire Service Activities at the International Code Council in Washington, DC. A former municipal fire marshal and deputy superintendent at the National Fire Academy, Rob’s assignment at ICC is to get the fire service more involved in code development, adoption and enforcement while striving to strengthen the working relationships between building and fire code officials. •

# CHAPTERS in ACTION

## New York and Connecticut Chapters Work (and play) Together to Benefit Phoenix Society

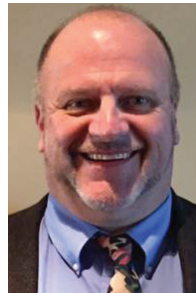
The Connecticut and Empire Chapters raised more than \$10,000.00 at a recent Golf Tournament held at Candlewood Valley Country Club, New Milford, CT.

Close to 80 participants enjoyed an absolutely beautiful day.

Making a profit of over \$10K is significant as this is only the second time the co-chapters have joined together to raise money for the Phoenix Society for Burn Survivors.



## New Illinois Chapter Vice Chair



Congratulations to **Ken Klimasz**  
(F.E. Moran Inc.)

Elected Sept 15, 2016 to  
NFSA Illinois Chapter Vice Chairman

## NFSA Illinois Chapter Presents Recognition Award to Allen Metcalfe for his Service as Chapter Vice Chair



*Pictured left to right: Matt Treutelaar, Allen Metcalfe, Ed Kadlec, Dave Rosso, Kim Prusa*

continued on page 41



continued from page 40

## South Plainfield, New Jersey Fire Department Uses Grant to Conduct Side-by-Side Burn Demo

During Fire Prevention Month, NFSA's New Jersey Chapter did a side-by-side burn in South Plainfield, New Jersey, which drew a big crowd. The South Plainfield Fire Department participated in a new side-by-side grant program which gives \$1,000 to fire departments who conduct a side-by-side burn demonstration in their community.



In attendance was Mayor Matthew P. Anesh of South Plainfield, along with Assemblyman Robert Karabinchak and State Senator Patrick J. Diegnan, Jr., representing New Jersey's 18th legislative district. All of the officials were very impressed with the demonstration.

## New Jersey Chapter Presents Check to Phoenix Society

NFSA's New Jersey Chapter attended the Phoenix World Burn Congress, held in October of 2016. During the chapter's 2016 golf outing, \$6,000 was raised to benefit the society. A check was presented to the Phoenix Society of Burn Survivors during the Congress. The gathering was extremely successful and the chapter was delighted to help out such a wonderful cause.



(left to right) **Amy Acton** – Executive Director Phoenix Society for Burn Survivors,

**Lorraine Carli** – President of Phoenix Society for Burn Survivors Board of Directors,

**Pat Horran** – Past President of Phoenix Society for Burn Survivors Board of Directors,

**Gary Lederman** – Fire End & Croker Sales Manager and member NFSA NJ Chapter / Golf Committee,

**Billy Leabe**y – NYC Fire Fighters Burn Foundation and Member Phoenix Society for Burn Survivors Board of Directors

## Pen/Jer/Del Chapter Side-by-Side Demo Educates College Students

On September 30th, 2016, the NFSA Pen/Jer/Del Chapter conducted a side-by-side burn demonstration during the University of Pennsylvania annual Public Safety Day. Despite the weather, the event was a huge success and the university staff was very pleased



that it turned out so well. Local 692 was extremely helpful in setting up the side-by-side units the day before the event and cleaning up after the event concluded.

The event drew a crowd of approximately 300 people which included students, fire officials, fire safety professionals and com-

continued on page 42

munity leaders. The event was instrumental in showing how rapidly a house fire can spread and why residential fire sprinklers are crucial in saving human lives.

The NFSA Pen/Jer/Del Chapter would like give a big thank you to Chief Fire Marshal John Waters of Upper Merion Township who did a fantastic job narrating the burn in such great detail. Also, we would like to give a big thank you to the Philadelphia Fire Department who was on scene to extinguish the fire.

**Welcome to Our St. Louis Chapter!**

During the October NFSA Board of Directors meeting, the petition request to establish the St. Louis Metro Area Chapter was approved. Historically, St. Louis has been a significant part of NFSA's roots.

On November 22, 1905, three specialty contractors met in St. Louis to establish the National Automatic Sprinkler Contractor's Association. In doing so, John Moore of the General Fire Extinguisher Company, W.G. Allen of Niagara Sprinkler Company, and George M. Myers of Standard Fire Extinguishing Company became the founding fathers of what is today the National Fire Sprinkler Association.

Almost to the date, 111 years later, on November 14, 2016, the first official meeting of the newly established St. Louis Metro Area Chapter was held. Approximately (20) individuals representing sprinkler contractors and suppliers/manufacturers were in attendance.

One of the primary tasks for the Chapter was to elect a Board of Directors and an Industry Promotion Committee. The following individuals were unanimously selected to fulfill the respective positions:

**Chapter Board of Directors**

- Chairman – **Andy Bill**, *Abern Fire Protection*
- Vice Chairman - **Rich Boyer**, *Boyer Fire Protection*
- Secretary/Treasurer - **Ed Musket**, *Simplex Grinnell Chapter IP Committee*
- Chairman - **Rich Boyer**, *Boyer Fire Protection*
- Vice Chairman - **Lou Grasse**, *Grasse & Associates*
- Secretary/Treasurer - **Mat Coleman**, *Engineered Fire Protection*



(l. to r.): John LaVenture, Wally Miller & Chapter President Andy Bill

**FFSA's Side-by-Side Demo at Patrick Air Force Base**

On November 18, 2016, the Florida Fire Sprinkler Association, a chapter of NFSA, was invited to Patrick Air Force Base (PAFB) to do a side-by-side fire sprinkler demo. FFSA President Mark Peters thanked the service men and women for what they do and thanked PAFB for having us there for this very important educational demo. Mark then introduced Florida Regional Manager Lorrell Bush to narrate the demo.

The audience consisted of airmen and airwomen, as well as civilian family members and Patrick Airforce's very own fire department was there to support the demo. Flashover occurred in three minutes. Lorrell explained that the Air Force Fire Department has a response time of 3.30 minute. Even with their amazing response time, they would not have even been on the scene yet at time of flashover.

**Quotes from our audience:**

- I had no idea that fire sprinklers worked like that, it was awesome
- Do we have fire sprinkler on the base? A: Yes – I am going to check when I get back to by workspace. I never noticed.
- Fire sprinklers make a huge difference, why did we not know this?

FFSA has been invited back next year and all involved can't wait to do it again! •





## NFSA Welcomes Miaishia McKenzie

Miaishia McKenzie has joined team NFSA in the Finance Department. She will be working out of our new headquarters in Linthicum, Maryland. Miaishia has varied experience and a strong foundation in bookkeeping and has ‘hit the ground running’. She demonstrates a strong desire to learn and an eagerness to master her new position.

Miaishia oversees the accounts payable function. Going forward, all expense reports, check requests and invoices should be sent to Miaishia at [mckenzie@nfsa.org](mailto:mckenzie@nfsa.org).



Side by Side burn demonstrations were held daily

## Firehouse Expo

NFSA was on scene at Firehouse Expo in Nashville, Tennessee and conducted side by side burn demonstrations daily. This netted us television coverage by 4 television stations and the opportunity to show exactly how fast fire sprinklers work!



Pictured left to right: Wayne Waggoner, Vickie Pritchett and Shane Ray

## Fire Service Day

NFSA was honored to be a part of the 2016 Fire Service Day for Congressional Staffers held at Maryland Fire Rescue Institute. President Shane Ray narrated a live fire side-by-side burn demonstration for the 50+ congressional staffers on hand. Director of Outreach & Government Relations, Vickie Pritchett, was also on hand and shared information about the Fire Sprinkler Incentive Act with the group.

“We welcome opportunities to be involved with education & outreach about fire sprinklers, especially to legislative staffers who we work with on Capitol Hill,” said President Ray. “We love showing the effectiveness of fire sprinklers and how fast fire grows in the modern environment.” •

## NFSA Sponsors Community Risk Reduction Pre-Con

NFSA was happy to sponsor the first Firehouse Expo Community Risk Reduction pre-con which focused on strategic planning for communities and utilizing fire sprinkler messages into community outreach. NFSA President Shane Ray and Director of Outreach & Government Relations Vickie Pritchett participated and spoke, along with Common Voices advocate Sher Grogg. Sher set the tone as the opening keynote for the pre-con by sharing the story of her family’s tragedy in Annapolis, Maryland. She ended with a challenge to all fire service leaders to engage in the code process and work hard to include fire sprinklers in their communities requirements.



## New Year, New Look



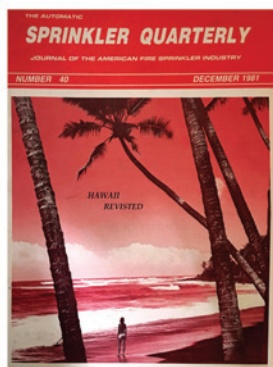
Your NFSA member magazine just got a whole new look and a whole lot better! The new **National Fire Sprinkler Magazine** (formerly *SQ*) has gone through a redesign and has added a new column, Chapters in Action, starting with this issue.

For those of you that were not aware, *SQ* was a shortened version of the magazine's original name, *Sprinkler Quarterly*. When NFSA went from publishing the magazine four times a year, to the present six times, it was changed to remove the "Quarterly" from the title. Still, something seemed missing, *SQ* didn't quite fit. It seemed to still stand for something that no longer was. This being our 200th issue, the consensus was that it was the perfect time for a change. With input

our new *Chapters in Action* column. A call was put out to all NFSA Chapters to get involved. We know how busy our Chapters are. Outreach is put forth on a continual basis. Now, chapters have the opportunity to showcase their good works, share ideas and see what is going on in other chapters around the country.

As newly named editor of NFSM, I look forward to adding new ways to showcase the good works our Association does every day. I welcome staff and member input as we deliver a product that delivers! I want our members to see the value of their membership and to truly take pride in being part of the association that works diligently, day after day, to fulfill our mission and share our vision.

Our contributing authors are among the most respected names in the fire sprinkler industry. Our technical articles are beyond



from staff and Board, and considering the image we wanted to portray, the **National Fire Sprinkler Magazine** (NFSM) was born.

You will notice a new look on the cover, new layouts for our columns and an excitement that permeates the entire magazine. You can feel the energy of our association in each feature article, columns from our staff and even the ads from our faithful SAM member advertisers. We are excited to debut the new magazine with the inaugural issue of 2017 and look forward to increased participation by our members.

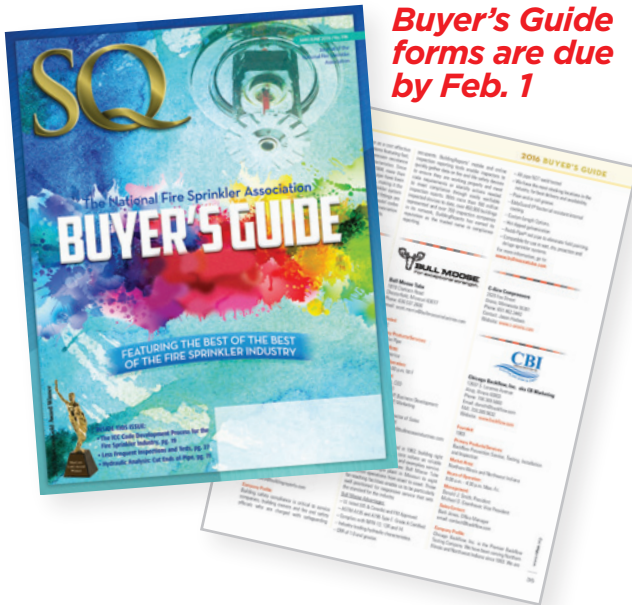
One way we decided to increase member participation is with

compare and deliver what our readers most want... answers to questions that make running their businesses easier, more efficient and keep them on the cutting edge of new codes and technology. We will retain the best parts of NATIONAL FIRE SPRINKLER MAGAZINE, the nuts and bolts that have delivered a first-class industry magazine for so many years, while, with the help of our staff and stakeholders, add value for our members and give them a reason to pass on the magazine to friends and acquaintances (and non-members too!) and be able to say, "Just look what we do!" I couldn't be prouder of our new magazine. I'm hoping you agree. •

***We are always on the lookout for fresh material of interest to the fire sprinkler industry. Article submissions from outside sources are always welcomed. Please refer to page 54 for details.***



# Now is the Time!



**Buyer's Guide forms are due by Feb. 1**

## Attention SAM and PRO Members

2017 Buyer's Guide information forms must be filled out by February 1, 2017 for your FREE listing in our **2017 Buyer's Guide**.

Information Forms may be filled out and submitted online. You will also have the opportunity to purchase a logo header for your listing.

Follow these simple instructions:

- Go to [www.nfsa.org](http://www.nfsa.org)
- Log into your member account
- Choose "About NFSA"
- Mouse over "Advertise with NFSA"
- Choose the appropriate form, fill and submit.

**Questions? NFSM Editor  
Joanne Genadio  
at [genadio@nfsa.org](mailto:genadio@nfsa.org) or  
443.863.4399**

## Sharon Gey

NFSA extends condolences to former NFSA Chairman of the Board Wayne Gey and family on the passing of his wife, Sharon. Sharon was an advocate for many and had a vision for causes that make a difference. She changed lives and is respected for choices she made that inspired us all. She helped to create movements, like Common Voices, joining advocate voices to educate about life safety and saving lives.

She is survived by her husband Wayne and children Teri Cloutier (Don), Kristy Raulerson (Weaver), Tracy Hadley Averill (Gary), Cathy DeSimone (Pete), Clark Gey (Lisa) and Meladie Gey-Burke (Andy); grandchildren Justin Gey, Ryan Shaughnessy, Valerie Gey, Dillon Dery, Conner LaMontagne, Logan Dery, Trey Cloutier, Lauren Volland, Amrah DeSimone, Allison Burke and Natalie Burke; great-granddaughter Peyton Gey; brother Wayne Smith & sister Corliss Smith.

Sharon was the daughter of Sydney & Maxine Smith born in Xenia, Ohio on July 20th, 1947. At the age of 2, they moved to Florida. Even in her childhood she began to paint the picture of her life with all of its vibrant color. Her strong defining brush strokes created a foundation of good, compassionate and loving strength.

Sharon had a natural ability to bring people together and inspire them to fulfill dreams beyond their wildest imaginations. This was one of her greatest gifts. Those who knew her witnessed her love for people, nature and animals. Using all of these, with love and care, she lived her life to the fullest.

One example of Sharon's wild and crazy visions was building a lodge in North Carolina where people and horses live together under the same roof. Those unused horse stalls were later converted into a grandchildren's bunk house. She had a vision and could see the end result before Wayne ever knew what hit him. Her dream of a family vacation has become an annual tradition.

Sharon started with a pallet, painted a picture and expanded on it until it depicted her true family mural.

*Contributions in memory of Sharon may be made to Cornerstone Hospice Foundation, 2445 Lane Park Road, Tavares, FL, 32778 or Common Voices - A Fire Safety Advocacy Coalition, PO Box 162, Pleasant View, TN, 37146.*

## Rick Brown, Brown Sprinkler Corporation

Rick Brown of Brown Sprinkler Corporation passed away on Monday, November 14th. Rick was a strong supporter of the NFSA and a frequent attendee at our national conferences. He maintained the involvement of Brown Sprinkler in NFSA activities that his father Frank had begun by joining the Association in 1967. Next year will be Brown's 50th anniversary as a member. In addition to his involvement at the local level, Rick served as a member of our Contractors Council and Board of Directors from February 1994 until February of 2000. He was elected to that office by his fellow contractors in the Midwestern States, and represented their interests at the national level.

# SPRINKLING OF NEWS

## Ask for Them!

Reliable Automatic Sprinkler New England Manager Mike Cauley provided NFSA's New England Regional Manager Dave LaFond with 100 residential sprinklers. The sprinklers were to be given to Massachusetts Fire Chiefs to be used for public speaking and media events. The fire service officials are being encouraged to hold up the sprinkler during public speaking and news worthy events.



90 sprinklers were given to 90 Massachusetts Fire Chiefs on November 16, 2016. This picture represent the Western Massachusetts Fire Chiefs Association holding up the sprinklers and saying "Ask For Them!"

## Reliable Announces Additions and Enhancements to Sprinkler Line

A Flat Cover Plate, Concealed Pendent version has been added to Reliable's Model LT56 Series pendent sprinklers. The LT56 sprinklers are cULus listed for light hazard occupancies and designed specifically for corridors and hallways. Requiring a minimum flow per sprinkler of only 23 gpm for 8' wide coverage and 28 gpm for 10' wide coverage, they allow substantially reduced water demand than traditional extended coverage sprinklers. The new LT56C is a flat cover plate concealed sprinkler with a nominal K-Factor of 5.6, has a fusible link, maximum working pressure of 175 psi and requires a Model G4 concealed cover plate.



Dry Horizontal Sidewall Sprinklers have been added to Reliable's line of F3QR80 and F3-80 Dry Pendent standard coverage sprinklers. These cULus listed sprinklers have a nominal K-Factor of 8.0, a 1" NPT or ISO7-1R1 inlet fitting, and are available in a variety of styles and finishes. White polyester and black polyester finish sprinklers are cULus Listed as Corrosion Resistant.

Model names for the F3 and F3QR 5.6 K-Factor dry sprinklers have been updated to F3-56 and F3QR56, respectively, to include K-Factor and to avoid confusion with their other sprinklers which have names starting with F3. The 250 psi UL Listing has been added to both these sprinklers.

## New Plastic Universal Hose Valve Caps from FPPI



FPPI announces the launch of its Universal Hose Valve Cap, the newest addition to its line of plastic hose valve caps. The new valve cap helps contractors save time as it is designed to fit most regional threads and can be installed on most 2½" sized hose valves by simply pushing it onto the outlet. No tools

required, and the cap can be removed and put back in place several times without compromising the protection it provides the threads.

The plastic caps have been introduced to meet the increasing demand for an alternative to brass and aluminum caps for hose valves with regional threads. This is particularly important in areas where metal parts are subject to theft. In these situations, contractors need a solution that is immediately identified as "low to no value", to deter theft and vandalism. The new hose valve caps are made from red plastic, and are unlikely to be stolen.

FPPI's Universal Hose Valve Caps are equipped with a chain, and will fit most 2½" sized hose valves with the exception of the Richmond regional thread hose valve (RCH). They are not suitable for pressure testing,

For more information on FPPI Hose Valves and Accessories and an overview on available regional threads, please go to [www.fpfi.com](http://www.fpfi.com).

## Newburgh Windustrial Supports Breast Cancer Awareness Month Walk

On a "nippy" October morning at Woodbury Commons in Harriman, New York, with the surrounding hills ablaze in fall colored foliage, a team from NFSA SAM member company **Newburgh Windustrial** assembled to support the Hudson Valley Making Strides Against Breast Cancer walk. Drawing in over 10,000 participants for a walk through the commons, which has become an international tourist attraction, and raising an estimated \$750,000, the event is a celebration of survivorship and an occasion to express hope and shared determination to eradicate breast cancer. •





**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 Region

**DAVE LAFOND**  
Regional Manager

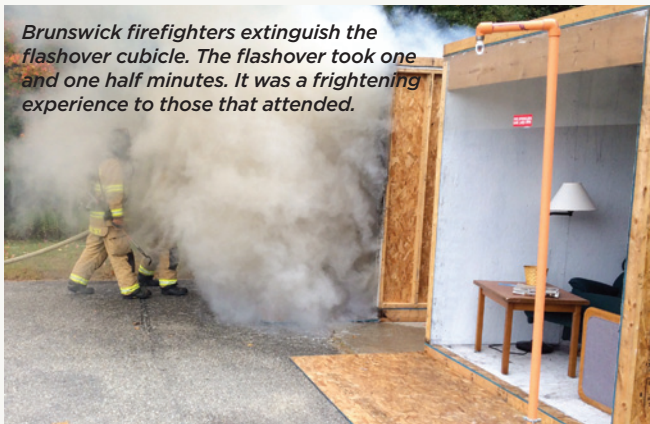
CONNECTICUT, MAINE, MASSACHUSETTS,  
NEW HAMPSHIRE, RHODE ISLAND, VERMONT

### Training in Maine

On October 13, 2016 NFSA New England planned and organized a 1/2 day seminar on NFPA 13D. The class was in collaboration with NFPA, Maine Fire Service Institute, Southern Maine Community College, Maine State Fire Marshal and offices, and the Maine Fire Sprinkler Coalition.



*Brunswick Maine Fire Chief Brilliant providing narrative for the live burn event.*



*Brunswick firefighters extinguish the flashover cubicle. The flashover took one and one half minutes. It was a frightening experience to those that attended.*



*NFPA Dave Hague presenting the 13D class.*

The class featured NFPA's Dave Hague who gave a lively presentation on residential sprinklers in an effort to debunk myths and misconceptions. Participants included members from the fire and building officials community, insurance industry representatives and representatives from the fire sprinkler industry.

The event culminated with a live side-by-side educational burn that was well received by all attendees. All who witnessed the burn event quickly realized that *"Fire is Fast, but Fire Sprinklers are Faster!"*

The Maine Fire Sprinkler Coalition had decided to use science and data to educate policy makers and citizens on the life- and property-saving qualities of fire sprinklers. These type of educational events go a long way in turning adversaries into allies.

### Followup

In the November / December 2016 SQ magazine, there was an article titled the *"Sprinkler Industry, Protecting Those that Protect Us"*. Due to the dynamics on the writing of the article and the project development, some credits were not included. John Steele and Terry Victor were instrumental in acquiring special TYCO only, dry pendant sprinkler heads for the attached garage, along with Darren Palmieri. Troy Orsini from Connecticut based K&M Fire protection and Bob Eldridge from New Hampshire's K&M Fire protection, took the lead with project management and installation. Chrissy Michael, Operation Manager from TALCO Fire Systems, and Long Island Pipe's Brain Coyle, were also instrumental with the Home Hydrant System delivery. All in all, this worthy project went smooth due to the tremendous team work between the professionals in the sprinkler industry.

Dave LaFond  
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*continued on page 48*



## New York Region

**DOMINICK KASMAUSKAS**

Regional Manager

NEW YORK

*Editor's note: The following article is reprinted with permission of the publisher, The Somers Record and the author, Tom Bartley.*

### Somers Sticks with More-Stringent Fire Barrier

By TOM BARTLEY

October 24, 2016 at 8:21 AM

SOMERS, N.Y. - It can take Somers' volunteer firefighters more than 20 minutes to respond to an alarm and reach a burning home, Fire Chief Jody Leverich warned last week.

Scattered as they are throughout the town and beyond, at the sound of an alarm, firefighters have to drop what they're doing—working, playing, sleeping—and travel to their fire station. Once there, after equipping themselves, they mount up for a ride that can be 8 to 10 minutes long, the chief told Thursday's Town Board meeting.

All told, Leverich said, the multiple steps could mean firefighters need more than the 20 minutes Albany has now set as the required length of time some building materials must resist a blaze. The new standard, embodied in a revision of the state building code, represents a reduction of more than 55 percent in the required fire-retardation time.

Speaking at a public hearing on fire safeguards in building construction, Leverich supported an effort to retain stricter standards than the state requires. While a municipality can impose more-stringent conditions than the state, it needs Albany's permission to do so.

A change in the state building code, effective this month, reduces the length of time some building materials must retard a blaze. Under the new state code, minimum fire resistance drops from 45 minutes to 20 in the drywall and doors that separate a home and its occupants from their garage. Given the potential lag in response time, Leverich said, "A 25-minute difference [in fire resistance] is a very big thing."

By the time firefighters arrive, he said, "you're already looking at a fire burning outside of that [garage] separation," Leverich warned. Flames could be threatening the occupied portion of a home. In addition, he said, "people might be sleeping and you don't traditionally have any warning devices inside a garage."

In addition to leading Somers' all-volunteer firefighting force, Leverich is a fire inspector for the village of Port Chester

*Statement from New York  
Regional Manager Dominick Kasmauskas:*

"This is the sad reality when state entities mess with the national

model codes," Kasmauskas noted, "It is amazing that 17 people in a room, three or four times a year for a few hours, can override the hard, diligent work of dozens of national committees, where hundreds of people spend thousands of hours developing and negotiating codes and standards. The New York Codes Council removed the fire sprinkler sections for both the one- and two-family and townhouses requirements in the adopted 2015 IRC. There may have been some sections in the national model where fire separation was reduced because there are fire sprinkler requirements in the model IRC. When those life-saving requirements were struck by the New York State Code Council, it's a possibility that not all the trade-ups for fire sprinklers were properly addressed to revert back to and increase the pricey fire separations."

Kasmauskas has been in close communication with many municipalities, state organizations, including the Build Safe New York Alliance, and state agencies, to identify some shortcomings when New York State transitioned from the 2010 New York State codes to the 2015 I-Codes and New York Supplement.

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## Mid-Atlantic Region

TBA

Regional Manager

DELAWARE, MARYLAND, NEW JERSEY,  
PENNSYLVANIA, VIRGINIA, WASHINGTON D.C.

### *Dave Kurasz's Letter to the Editor of CentralJersey.com*

**Hillsborough: Bills would help to prevent fire tragedies**

Nov 2, 2016

*To the editor:*

For at least four hours on the evening of Oct. 24, dozens of residents watched helplessly as flames consumed four apartments in the Hillsborough Garden Apartments complex. The fire spread from a corner apartment, through the roof and into three other apartments so quickly that residents were unable to assist those in the apartment where the fire originated. Three lives were lost as a result. We are greatly saddened by this loss, knowing that it was preventable.

For the past eight years, we have diligently spread an urgent message among residents and lawmakers about modern construction materials and homes with furnishings and contents composed of primarily synthetic materials: these homes burn hotter and faster,

*continued on page 49*



continued from page 48

and they fail sooner than homes that were once built with legacy construction materials. Our heart aches for this family and this community. We must take steps to prevent this terrible tragedy from repeating itself.

Last year, Gov. Christie conditionally vetoed bill A-1698, a bill that would require all new single- and two-family homes in New Jersey to be equipped with sprinkler systems. Gov. Christie then removed the single- and two-family homes from the bill and charged the Department of Community Affairs with determining whether “the marginal benefits” provided by the installation of fire sprinkler system outweighed its cost in townhomes, which he deemed to be at higher risk of spreading fires than other non-attached homes.

Today, two bills that would save lives and protect property await consideration. Bill A-2251 would require builders to provide information about fire suppression systems to new homebuyers, while bill A-3334 would require fire suppression systems in new single- and two-family homes. Both bills would provide the framework for preventing terrible losses such as this one.

We believe that the loss of these three lives to a home fire is simply unacceptable. A fire sprinkler system is not a frivolous investment with minimal impacts, it is a life-saving device that can protect our neighbors, friends and loved ones from ravaging fire and devastating loss.

## Southeast Region



**WAYNE WAGGONER**  
Southeast Regional Manager

ALABAMA, GEORGIA, MISSISSIPPI,  
NORTH CAROLINA, SOUTH CAROLINA, TENNESSEE

## Side-by-Side Sprinkler Demonstration in Clinton, Tennessee

With the help of NFSA and the Tennessee Fire Sprinkler Contractors Association, the Clinton, Tennessee Fire Department demonstrated the effectiveness of a residential fire sprinkler system in a side-by-side demonstration during Fire Prevention Week. The department’s Fire Prevention Officer, Daniel Adams, attended a Fire Team USA presentation in Murfreesboro, Tennessee in July and saw an NFSA sponsored side-by-side demo at the Tennessee Public Fire Educators Conference. Adams contacted Wayne Waggoner to seek NFSA’s help in getting a residential fire sprinkler program started in Clinton. It was decided that the demonstration would be a great way to educate the public and city officials. Over 200 citizens and several public officials attend the demonstration.

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NFSA’S Regional Manager / Southeast  
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## Florida & Puerto Rico



**LORRELL BUSH**  
Regional Manager

FLORIDA, PUERTO RICO

## The Construction Workforce Shortage

Your Regional Manager, Lorrell Bush, along with FFSA Board Member, Brad Kinsell, were invited to join an open discussion on Workforce Shortage sponsored by The University of Florida in Gainesville. According to The Bureau of Labor Statistics Industry, the need for workers will grow more than two times as the average for all industries will face a workforce shortage of 1.6 million workers by 2022.

Brad and Lorrell joined general contractors, HVAC, plumbers, masons, electricians and other interested parties, as well as University of Florida professors, building officials, NCCER representatives, and U.S. Congressman Ted Yoho.

The discussion touched on a great concern for finding skilled labor and dealt with the fact that it is harder and harder to recruit the “next generation” to do construction work. More than 50 representatives from various fields offered suggestions, as well as frustrations. We will receive a summary of the discussion and will be invited back for the second round of discussions in the near future.

In the interim, FFSA is meeting with a few key parties that were at the meeting. We realize there is a shortage in our industry and we are actively working within our education committee to tackle some of these issues.

Lorrell Bush  
NFSA’s Regional Manager / Florida & Puerto Rico  
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2025 Droylsden Lane, Eustis, FL 32726  
Phone: 352.589.8402  
Cell: 954.275.8487 Fax: 561.327.6366

## Great Lakes Region



**RON RITCHEY**  
Regional Manager

INDIANA, MICHIGAN, OHIO, WEST VIRGINIA,  
KENTUCKY

## Partnering for Life Safety at its Best!

Long-time NFSA member, Ryan Fire Protection Executive Vice President Mark Riffey, of Noblesville Indiana, recently approached executives at Angie’s List with a proposal for partnering to provide

continued on page 50

continued from page 49

a public education initiative in the Indianapolis area. Angie's List enthusiastically embraced the proposal and arrangements were made for a side-by-side burn demo that was professionally videoed on September 26th at Ryan Fire Protection Headquarters. The video was featured across the United States via social media and showcased the life- and property-saving value of installing fire sprinklers.

The impact of this seemingly small act of "ally building" that occurred as a result of this initiative has resulted in even greater exposure. In their October 2016 news magazine, Angie's List featured this headline; *"Fast Fires – Why home materials burn more quickly today."* In an article entitled Material Menace, they highlighted the fact that the time available to escape a home fire has reduced from 17 minutes, 30 years ago, to 3-4 minutes today.

Mark Riffey was featured and quoted in the article stating, "It's not the house that's burning, but the stuff inside... a candle sets a curtain on fire; the heater sets the couch on fire; an outlet short circuiting sets the furnishings on fire. It starts there, breaks through the windows, flashes over and sets the structure on fire." The article goes on to feature information about the benefits of residential sprinkler systems and was very well done.

This is a great example of the power of "building allies" in our efforts to continually educate the public on the life- and property-saving benefits of residential sprinkler systems.

Ron Ritchey  
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handouts & actual presentation. They covered the pertinent areas of both NFPA 25 and 20.

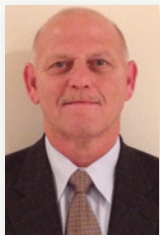
- Apex Pump (NFSA member) – bringing their portable fire pump trailer and their

expertise!

- Chief Richmond, Springfield Fire Department – for the facility and all of his staff members assistance in preparation and throughout the seminar.
- FJ Murphy & Son (NFSA contractor member) – Bob Shaver provided expertise, material/labor to assemble the feed / suction connection to the hydrant at no cost!
- Zach Burgeson (Wilkins rep / NFSA SAM member) – providing the 6-inch RPZ back-flow valve on loan.
- Eaton Fire Pumps Controllers (NFSA SAM member) – provided added information on fire pump controllers and contributed to the presentation.
- Apex & Eaton providing lunch for all attendees – 16 pizzas and then some!
- FJ Murphy – providing morning donuts for all attendees.

Overall, the seminar evaluations were extremely favorable. This new Fire Pump Seminar provided a half day of classroom, followed by an actual pump test practical on-site. This seminar was the first of its kind and was conducted on a trial basis in consideration of adding it to the array of NFSA seminars.

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## Illinois Region

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State Coordinator

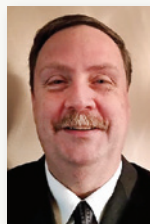
ILLINOIS

## New Inspection and Testing of Fire Pumps Seminar

NFSA's Illinois Chapter responded to a request from one of our central Illinois member contractors to provide a training seminar that would better prepare local contractors and AHJs on how to properly witness or conduct a fire pump test.

NFSA's new seminar, *Inspection & Testing of Fire Pumps* was conducted in Springfield, Illinois. It was very well-received and went great. Preparation, contribution and cooperation were key factors in the success of this class. It took a great deal of coordination to make it happen. The class would not have been the success it was without the following.

- Ron Ritchey (NFSA Instructor) and Vince Rodriguez (Apex Pump) – in the preparation of the class presentation, visuals,



## Wisconsin Region

MARTY KING  
State Coordinator

WISCONSIN

## Madison, Wisconsin Sprinkler Save

An automatic sprinkler system saved a downtown restaurant from significant damage after a kitchen fire. A passerby noticed the

continued on page 51



continued from page 50

fire and called 911, said fire department spokesperson Cynthia Schuster. The caller said the fire was in the back kitchen and that the sprinkler system had already been activated.

Firefighters extinguished the fire, turned off the burner and the fire sprinklers. Fire damage had been well contained and there was no water damage to the restaurant because of a floor drain under the activated sprinkler.

The restaurant was able to open for business the following day. All that needed to be done was to replace a sprinkler head and do a bit of cleanup.

### Milwaukee Side-by-Side Demo

A side-by-side demo took place at the Milwaukee Fire Department Annual Muster on September 10th, 2016. The project was sponsored by NFSA's Wisconsin Chapter in cooperation with the Professional Firefighters of Wisconsin and the Wisconsin Fire Sprinkler Coalition. Though the weather was cold and rainy, there was a turnout of about 400 people for the event. The demo had over 200 people watch, some of them state and local politicians involved in the PFFW's Fire Ops 101. The event was also live-streamed and posted on the Coalition's and Wisconsin Chapter's Facebook pages.

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## Minnesota Region



TOM BRACE

State Coordinator

MINNESOTA

### Eden Prairie Assistant Chief Cites Difference Fire Sprinklers Would Have Made in Residential Fire

Eden Prairie Assistant Fire Chief Rik Berkbigler said that fire crews responded to a fire at a multi-family residential building and arrived only four minutes after the call for fire was received. Firefighters noticed heavy smoke from the rear of the building upon arrival and saw fire coming from a second story window after checking around the building.

The fire was confined to an upstairs bedroom and there was no damage to nearby structures. Fire crews were on the scene for approximately three hours. The Eden Prairie Fire Department received mutual aid from Minnetonka, Edina, St. Louis Park and Excelsior, Berkbigler said.

"A sprinkler system would have reduced the damage significantly. This structure was built before sprinklers were required," he said.

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## Missouri Region



RANDY L. COLE

Field Service Coordinator

MISSOURI

### Congratulations to the New St. Louis Metro Area Chapter!

A petition to establish the St. Louis Metro Area Chapter was approved by the NFSA Board during their annual meeting in October. The St. Louis area has a strong historical bond with NFSA. Randy Cole is excited to assist in the formation of the Chapter and its future success!

### ICC Code Hearings held in Kansas City

One of the key successes during the ICC Code hearings related to a proposal intending to place residential fire sprinklers back into an appendix of the 2018 International Residential Code. However, the IRC committee disagreed with the proposal at the Louisville ICC hearings forcing a floor vote in Kansas City.

Thanks to all the hard work by many individuals, the overwhelming majority of voting members on the floor agreed with the IRC Committee and disapproved the proposal.

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## Central Region



RANDY L. COLE

Regional Manager

IOWA, KANSAS

### Sprinkler Save at Topeka, Kansas Apartment Building

A trash fire started on the second floor of a downtown Topeka apartment building. The fire activated one sprinkler, which controlled the fire until the Fire Department arrived.

continued on page 52

continued from page 51

Fire officials at the scene said there was no major damage associated with the fire, which was believed to have started as a result of improper disposal of smoking materials.

No injuries were reported.

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## South Central Region



CYNTHIA GIEDRAITIS  
Regional Manager

ARKANSAS, LOUISIANA, OKLAHOMA, TEXAS

### Promoting Fire Sprinkler Success Stories In Texas

Did you know that 171 Sprinkler Saves were in Senior Living Occupancies, or that 144 Sprinkler Saves were in hotels/motels?

**SprinklerSaves.org** is the one stop shop website for sprinkler success stories and accumulated data. Jeff Norton, Executive Vice President of Marketing for Viking SupplyNet and Manager of the SprinklerSaves.org website and Fred Durso, Communications Manager for the NFPA Fire Sprinkler Initiative, presented "Promoting Fire Sprinkler Saves in The Media" to the Texas Fire Marshals Conference. Over 200 Texas Fire Marshals attended the conference and Fire Sprinkler Presentation.

To better recognize fire departments who report fire sprinkler success stories; the Texas Fire Sprinkler Coalition presents annual awards for "Outstanding Media Reporting" and "Highest Number of Sprinkler Success Activations" at the Texas Fire Marshals Awards Banquet. The 2016 Award Recipients were:

#### Conroe Fire Department

*Outstanding Media Reporting & Dedication  
to Protecting the Citizens of Texas*

AWARD RECIPIENTS:

**Mike Legoudes, Jr.**, Assistant Fire Chief, Conroe Fire Department for 15 years.

**Andy Nokes**, Lieutenant/Deputy Fire Marshal, Conroe Fire Department for 29 years.

#### Farmers Branch Fire Department

*Highest Number Of Sprinkler Save Activations In 2016*

AWARD RECIPIENTS:

**Tim Dedear**, Deputy Chief / Fire Marshal, 22 years at Farmers Branch Fire Department

**Wendi Kimpton**, Fire Prevention Training Coordinator, 22 years at Farmers Branch Fire Department



Texas State Fire Marshal Chris Connealy, Roland Garcia, Assistant Fire Chief of Pearland, Texas/Co-Chair of the Texas Fire Sprinkler Coalition, and Cindy Giedraitis, NFSA Regional Manager presented these annual awards.

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## Great Plains Region



ERIC GLEASON  
Regional Manager

COLORADO, NEBRASKA, NORTH DAKOTA,  
SOUTH DAKOTA, UTAH, WYOMING

### Regional Updates

Nebraska is looking to update from the 2006 to the 2012 iCodes. NFSA has met with the State Fire Marshal and Contractors Association to discuss amendments. Stay tuned.

Colorado is moving quickly on revised fitter, contractor, inspector and plan reviewer regulations for all areas in the state. At the time of this writing, a public hearing was anticipated for November 2016.

North Dakota legislative session (every two years) is back. NFSA is working with contractors on state oversight of fire suppression in areas without a fire department able to review and inspect fire suppression systems.

Major cities in the region have new fire chiefs or are seeking them including; Colorado Springs, Colorado; Unified Fire Authority in Utah; Omaha, Nebraska and others.

In Colorado, fire authorities and districts are continuing to acquire other jurisdictions to assist citizens, balance mill levies and increase the all-hazard response that fire departments are now covering.

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NFSA's Regional Manager / Great Plains

continued on page 53



continued from page 52

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## Southwest Region

**BRUCE LECAIR**  
Associate Director of Regional  
Operations - WEST

CALIFORNIA, HAWAII, NEW MEXICO,  
NEVADA, ARIZONA

## 2016 California Building and Standards Code Effective Dates

January 1, 2017 is the statewide effective date, established by the California Building Standards Commission (CBSC), for the 2016 California Building Standards Code. All applications for a building permit that occur on or after January 1, 2017 are subject to compliance with the 2016 Code. The 2013 California Building Standards Code remains in effect and is applicable to all plans and specifications, for, and to, the construction performed where the application for a building permit is received on or before December 31, 2016.

## Fire Team USA Seminar Coming to the Valley of the Sun in January

The Fire Team USA Seminar will be held on January 17th in Phoenix, Arizona. The seminar is an important opportunity to bring Fire Chiefs, Fire Marshals, Elected Officials, Building Officials and members of the community and media together from the Phoenix area and throughout the state of Arizona to learn and share about fire sprinklers, fire prevention methods and alternatives.

The purpose of the Seminar is to enhance the quality of life and safety of those who live, work and play in Arizona. As part of the event, a live burn demonstration will be held displaying the significant difference between a room with fire sprinklers and a room without, when a fire occurs. Plan to attend this great event, it's not to be missed!

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## Northeast Region

**SUZANNE MAYR**  
Regional Manager

ALASKA, IDAHO, MONTANA, OREGON,  
WASHINGTON

## Washington Coalition Develops "Best Practice Guide"

In an effort to remove barriers to the voluntary installation of fire sprinkler systems, the Washington Residential Fire Sprinkler Coalition is developing a "Best Practices Guide" to assist local jurisdictions. A draft of the guide was debuted at the state's fire marshal education institute with a call for stakeholder input. The guide covers design criteria, plan submittal, plan review procedure and inspections as well as an annex of supplementary materials. As more areas begin to require fire sprinkler systems, the guide should help create consistency across jurisdictions. This resource encourages fire marshals to take a "customer service" approach, which will be appreciated by fire sprinkler contractors and builders alike. Please contact Regional Manager Suzanne Mayr for a copy of the document and/or to provide input.

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# 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-res 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 NFSM.

### Payment

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

### NFSM EDITOR:

**Joanne Genadio**

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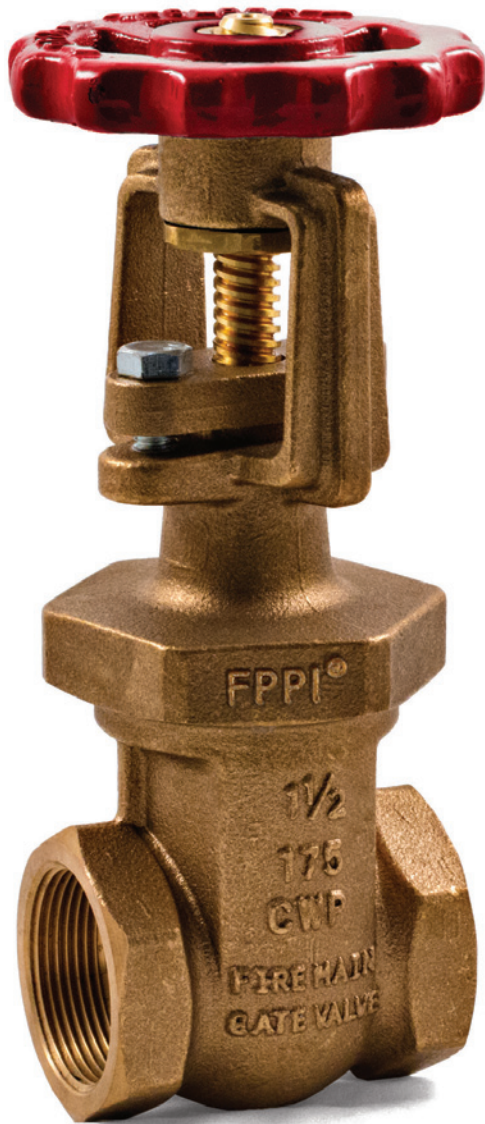




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