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- Non-Uniform Hydraulic Calculations – Stepped Ceilings
- Fire Sprinkler Plan Review – First Steps
- NFSA's Sprinkler System Hydraulics Training – Way Ahead

SQ

ELECTRONICS PLANT

SHEET 1 OF 1

CONTRACT NO. NOZZLE IDENT. AND LOCATION FLOW IN G.P.M.

EQUIV. PIPE LENGTH	FRICITION LOSS P.S.I./FOOT	PRESSURE SUMMARY
113.0	C=120	Pt 11.5

NOTES
 $K=5.65$
 $D=1.5/4$
 $Q=130 \times .15 = 19.5$
 $P=19.5^2 / 11.9$
 $Q=565 \sqrt{13.5}$
 $11=565 \sqrt{13.5}$

R.N. = 1:0"

OH Gp 2
 .18/2000 + 250 Hose
 120' = 21.6 gpm

DATE: 17 MAR 2010
 TIME: 9:55

Station	Loss (psi)	TOTAL Loss (psi)	RAW Loss (psi)	Water Vel. (ft/s)	Vel. Press. (psi)
100	3.203	120	3.22	0.0699	
101	17.409	120	6.96	0.226	
102	241	120	14.96	1.486	
103	8.1	120	14.86	1.486	
104	5.527	120	16.93	1.928	
105	8.723	120	16.93	1.928	
106	1.990	120	16.93	1.928	
107	11.557	120	24.15	3.925	
108	3.470	120	17.49	2.059	
109	0.804	120	11.35	0.897	
110	1.794	120	10.97	0.810	
111	0.807	120	7.34	0.353	
112	0.525	120	4.89	0.161	
113	1.456	120	9.80	0.446	
114	1.517	120	8.47	0.504	
115	1.322	120	7.31	0.360	
116	1.742	120	11.55	0.897	
117	0.846	120	9.94	0.612	
118	0.240	120	12.45	1.043	
119	0.397	120	9.29	0.581	
120	0.105	120	6.20	0.238	
121	1.452	120	4.18	0.117	

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ON THE COVER

Over the years, hydraulically calculating the water supply necessary to meet fire sprinkler system demand has become widely recognized as the most efficient, cost-effective design approach. As such, in recognition of the important role hydraulics play in the layout, function and efficiency of fire sprinkler systems, in large part, the articles in this issue follow a “hydraulics” theme.



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Appreciating Hydraulic Calculations

Russell P. Fleming, P.E.




One of the stated objectives of the International Fire Sprinkler Association (IFSA), the NFSA's sister organization founded in 1999 to advance the cause of fire sprinkler protection around the world, is to *"promote the competent use of hydraulic calculations."* When the IFSA embarked on this initiative, it recognized that it needed to develop training materials different from those available through the NFSA. What our training materials lacked was not the ability to effectively carry out hydraulic calculations, even with the use of metric units, but more basic information on why hydraulic calculations are advantageous. We have become so accustomed to calculated systems that we don't even think about their advantages over the old pipe schedule systems.

Hydraulic calculations were employed in open nozzle water spray and deluge systems long before they became commonplace in automatic sprinkler systems. Clyde Wood of "Automatic" Sprinkler Corporation of America, remembered as one of the pioneers of hydraulic calculations for our industry, recalled dusting off his college hydraulics textbooks in 1928 when asked to design 64 deluge systems for one of the world's largest aircraft hangars being constructed at Detroit's new municipal airport. But NFPA 13 was long silent on design criteria for automatic sprinkler systems, leaving it up to the authority having jurisdiction. The standard took a major step in the 1968 edition with the determination of standardized Hazen-Williams C-factors of 120 for black steel, 140 for copper tube, and 100 for unlined cast iron

pipe, but the density/area curves were not introduced until the 1972 edition of the sprinkler standard. This opened the door for the broader use of calculated systems, which quickly gained favor due to their economic advantage, particularly where strong water supplies were available.

The use of hydraulic calculations is generally considered to have reduced system costs by up to 40 percent overall, and most of that savings resulted from smaller pipe sizes. Lower system costs in turn reduced objections to widespread code mandates for sprinkler systems.

With all the attention being given to the sustainability movement today, it is also worth noting that the economic savings attributed to hydraulic calculations were essentially accomplished through more efficient use of materials. While the ultimate sustainability achieved by automatic sprinkler systems results from not having to rebuild following a fire, hydraulic calculations have clearly been one of the sprinkler industry's greatest advancements. This issue of **SQ** focuses on various aspects of hydraulic calculations, and our appreciation is warranted. 

A handwritten signature in black ink, appearing to read "Russell P. Fleming". The signature is fluid and cursive, written over a light gray background.

Russell P. Fleming, *President*

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EVENTS OF INTEREST TO NFSA MEMBERS

calendar

September 10, 2013	NFPA 25 Update	ONLINE
September 10, 2013	Hydraulics for Fire Sprinkler Systems	Dayton, Ohio
September 11, 2013	Plan Review Procedures & Policies	Dayton, Ohio
September 12, 2013	Inspection, Testing & Maintenance for the AHJ	Dayton, Ohio
September 17-19, 2013	Inspection & Testing for the Fire Sprinkler Industry	Baltimore, Maryland
September 23, 2013	Acceptance Testing & Hydraulics for Plan Reviewers	Tulsa, Oklahoma
September 24, 2013	Signs & Certificates	ONLINE
Sept 30-Oct 11, 2013	Two Week Layout Technician Training	Altamonte Springs, Florida
October 8-10, 2013	Inspection & Testing for the Fire Sprinkler Industry	Kansas City, Missouri
October 8, 2013	Foam-water Sprinkler Systems	ONLINE
October 22, 2013	Common Mistakes	ONLINE
Oct 30, 2013 – Feb 26, 2014	Advanced Technician Training-Distance Learning	ONLINE
November 5-7, 2013	Inspection & Testing for the Fire Sprinkler Industry	Raleigh, North Carolina
November 5, 2013	Protection of Aircraft Hangers	ONLINE
November 19, 2013	Exposure Systems	ONLINE
December 3, 2013	Sprinklers on Glass	ONLINE
December 10-12, 2013	Inspection & Testing for the Fire Sprinkler Industry	Los Angeles, California
December 17, 2013	Ask the Experts	ONLINE

These seminars qualify for continuing education as required by NICET. Meet mandatory Continuing Education Requirements for Businesses and Authorities Having Jurisdiction. To register or for more information, contact: Michael Repko at (845) 878-4207, E-Mail: seminars@nfsa.org. Or register ONLINE at www.nfsa.org.




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Introspective

Dennis C. Coleman



When I think of the impact that hydraulic calculations have had on the sprinkler industry, I am reminded of all of the many advances in technology that have taken place during my career in the sprinkler business. I started out at the young age of 14 working in my father's fabrication shop in the stockyards of East St. Louis, Illinois. That was an inauspicious start as I went through the slaughter houses and heard the pigs screaming on Thursday mornings as they were prepared for the meat markets. All of the fabrication in those days was threaded or flanged with a little bit of welding in some special cases.

I had an opportunity to work in the field on "permit" in the late 60's and I can remember vividly how I stood on a tall ladder and tried as a skinny 17 year old to "catch a thread" and start the process of screwing some 8" schedule 40 steel pipe into a tee 12 feet in the air. That was a tough job for a sprinkler fitter and especially tough for a young and relatively weak high school kid. But the money was good so I did my best and took some kidding from the older, more experienced fitters.

I remember when my father started buying grooved material from Victaulic. He was one of the first companies in St. Louis to use grooved fittings and I think it gave us a competitive edge for a while in St. Louis. Think of how the grooved fitting business has revolutionized the installation of fire sprinkler systems. The labor and fabrication hours saved, and even the changes in the grooved materials that we use. It took a while to get grooved end valves, headers, and other grooved products. But what a benefit to our industry it has been!

I have thought of the changes in sprinkler heads over the years. We have gone from brass upright with a couple of different

k factors to hundreds of various k factors and ESFR heads and all different varieties of finishes, orifice sizes, and response times. Truly, sprinklers have changed as much as anything as new fire challenges, new aesthetics, and new economies have spawned literally thousands of amazing sprinklers of every size and shape. Specialized sprinklers have been the wave that has taken us to amazing fire solutions.

The development of alternative types of piping in the form of thin-wall steel, plastic, copper, and other tubing options has helped to get us into more and more buildings and make sprinkler systems more and more affordable. Necessity and economy

"The use of hydraulic calculations has been an overarching benefit to our industry."

have been the mother of these tremendous advances. Of course, lighter materials and simpler joining methods have helped greatly. We have made a few mistakes and earned a few black eyes as we have tried new methods and materials. We can all think of troubles we have had with new products that have cost us money and time and have made sprinklers look like a bigger risk to put in buildings.

The use of hydraulic calculations has been an overarching benefit to our industry. The pipe sizes saved, the economies of design, and the mathematical certainty of our calculations have made sprinkler systems less expensive and more reliable. To be

>> CONTINUED ON PAGE 9

NFSA Regional Chart – September 1, 2013

Area	States	Regional Manager	Area Director
New England	Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont	Dave LaFond, NFSA 2 Burns Way Holyoke, Massachusetts 01040 (413) 326-0014	Donald A. DeLuca SRI Fire Sprinkler Corporation 1060 Central Avenue Albany, New York 12205 (518) 459-2776 FAX (518) 459-0068
New York	New York	Associate Director of Regional Operations - North Dominick G. Kasmauskas, NFSA 1436 Altamont Ave. Suite 147 Rotterdam, New York 12303 (518) 937-6589 FAX (518) 836-0210	
Mid Atlantic	Delaware, Maryland, New Jersey, Pennsylvania, Virginia, Washington, D.C.	Raymond W. Lonabaugh, NFSA P.O. Box 126 Ridley Park, Pennsylvania 19078 (610) 521-4768 FAX (610) 521-2030	Kent Mezaros Quick Response Fire Protection 77 Pension Road, Suite 5 Manalapan, New Jersey 07726 (732) 786-9440 FAX (732) 786-9443
Southeast	Alabama, Georgia, Mississippi North Carolina, South Carolina	Associate Director of Regional Operations - South Wayne Waggoner, NFSA PO Box 9 Andersonville, Tennessee 37705 (865) 755-2956 FAX (865) 381-0597	Ken Brinkley Music City Fire Sprinkler 238 Molly Walton Drive Hendersonville, TN 37075 (615) 826-7450 FAX (615) 826-9680
Tennessee	Tennessee		
Florida	Florida, Puerto Rico	Lorrell Bush, NFSA 2025 Droylsden Lane, Eustis, Florida 32726 (352) 589-8402 FAX (561) 327-6366 Cell: (954) 275-8487	Alan Wiginton Wiginton Fire Systems 699 Aero Lane Sanford, FL 32771 (407) 585-3205 FAX (407) 585-3282
Great Lakes	Indiana, Michigan, Ohio, West Virginia, Kentucky	Ron Brown, NFSA 1615 Cypress Spring Drive Fort Wayne, Indiana 46814 (845) 661-6534 FAX (260) 625-4478	Richard A. Ackley Dalmatian Fire, Inc. P.O. Box 78068 Indianapolis, Indiana 46278 (317) 299-3889 FAX (317) 299-4078
North Central	Minnesota, Wisconsin, North Dakota, South Dakota	TBA	Gregg Huennekens United States Alliance Fire Protection 28427 North Ballard – Unit H Lake Forest, Illinois 60045 (847) 247-4755 FAX (847) 816-0098
Illinois	Illinois	Tom Lia, NFSA 62 Orland Square, Suite 201 Orland Park, Illinois 60462 (708) 403-4468 FAX (708) 403-4771	
Central	Iowa, Kansas, Missouri	Chris Gaut, NFSA 207 Van Buren Rd. Branson, MO 65616 (636) 692-8206 FAX (636) 410-7700	Dennis C. Coleman - Chair Engineered Fire Protection, Inc. 1615 South Kings Highway St. Louis, Missouri 63110 (314) 771-0033 FAX (314) 664-1619 Jim Lewis – Alternate to Chair American Fire Sprinkler Corporation 6750 West 47th Terrace Shawnee, KS 66203 (913) 722-6900 FAX (913) 722-6969
South Central	Arkansas, Louisiana, Oklahoma, Texas	Cynthia Giedraitis NFSA 2013 Oakwood Trail College Station, Texas 77845 (979) 324-8934	John Kauffman III Kauffman Company 13225 FM529 – Suite A Houston, Texas 77041 (713) 937-4144 FAX (713) 937-4149
Great Plains	Colorado, Nebraska, Utah, Wyoming	Eric Gleason, NFSA P.O. Box 62157 Littleton, Colorado 80162 (720) 470-4894	Gene Postma Western States Fire Protection Company 7020 South Tucson Way, Unit A Centennial, Colorado 80112 (303) 792-0022 FAX (303) 790-3875
Southwest	Arizona, Nevada, New Mexico,	Bruce Lecair, NFSA 25417 West Hyacinth Street Corona, California 92883 (951) 277-3517 FAX (951) 277-3199	Aaron Bennett RCI Systems, Inc. 1220 West Geneva Drive Tempe, Arizona 85282 (480) 894-8711 FAX (480) 894-8740
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Who Pays for Job Acceleration?

Editor's Note: Stuart Zisholtz comments on New York State Law

Recently, I was contacted by a perspective client who performed work directly for an owner in New York.

The contract between the owner and the contractor contained a specific completion date.

During construction, however, the contractor was delayed various times due to changes in the work requested by the owner. The contractor requested an extension of time from the owner which the owner refused to grant. As the completion date approached, the owner demanded that the project be completed on time or cost overrun charges would be back-charged against the contractor.

As such, the contractor was required to perform the work in a shorter period of time than the time extension would have granted him and he incurred additional costs and expenses due to the acceleration. These costs included additional workers, overtime, etc.

Now, after the project was completed and approved by the owner, the contractor was seeking the additional costs associated with the acceleration.

The question is, Can the contractor who performed the work and completed the project recover the additional costs associated with the work even though those additional costs were not signed and approved by the owner?

The general answer to that question is yes. A contractor can recover from an owner the additional costs associated with accelerating the work by showing

that the contractor was ordered to accelerate and the owner refused to grant additional time, any delays in not meeting the completion date were excusable and that the Contractor did, in fact, incur additional costs. In some instances, the contractor may have to prove that he was specifically ordered, directly or indirectly, to accelerate. What constitutes an order to accelerate usually depends on the facts and circumstances of each case.

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from the BOARDROOM

>> CONTINUED FROM PAGE 7

able to prove that a system will deliver a specified density of water to a particular remote area of the building has made us all feel more confident in the design and effectiveness of our systems.

Finally, the advances in the design and coordination of sprinkler systems as they relate to all the other disciplines of construction through 3D modeling, CAD design, and the automatic generation of fabrication sheets and material lists has saved countless hours of time. We are now using GPS devices to ensure that we are installing our systems at the precise elevations and locations that will maximize our efficiency in the field and make cooperation with other trades a design and computer exercise rather than an expensive field argument.

All of these advances in technology in the sprinkler industry are admirable and fascinating. The productivity and cost

savings over the years are truly impressive. The improvements in fire protection and safety as it relates to saving property and human life make me wonder what will come next for our industry. Do the engineers, designers, inventors, and bright minds of the next generation have it in them to make even greater improvements and make sprinkler systems even more economical and even better fire protection? The obvious answer is a resounding, yes! Our ingenuity and drive will bring on more improvements, simpler methods, and safer buildings. We will do things quicker, better, and with more reliability and quality. Where will the new ideas come from in the future? What will drive the sprinkler market as we move forward? Will we be able to overcome the mistakes and problems that new ideas and technologies always bring? Will we be able to get more buildings sprinklered?

Will we suffer less from water damage and malfunctioning systems? Will death and destruction from fire continue to be reduced and finally eliminated? Will we be able to attract the bright minds and clever innovators that we need? I believe it will most certainly happen!

It is my hope that organizations such as the NFSA, UL, FM Global, NFPA, and countless others will facilitate and encourage this progress. I hope that we as an industry will strive for continuous improvement. I hope that we will all encourage this innovative process and not hinder it. I hope that we do it carefully, reasonably, and with wisdom. That we all continue to make the future of fire protection better and brighter is my hope!



Dennis C. Coleman, Chairman of the Board



SEPTEMBER 10, 2013

NFPA 25 Update

BASIC/INTERMEDIATE

Jason Webb

In order for fire protection systems to function properly over the life of the building, the inspection, testing and maintenance must be done on a regular basis. NFPA 25 is the standard that provides inspection, testing and maintenance guidelines. A new version will be published for 2014. Attend this program to learn what changes and updates have been made to the standard.

SEPTEMBER 24, 2013

Signs & Certificates

BASIC

Jeffery M. Hugo, CBO

NFPA 13 has numerous requirements for the installation of signage for fire sprinkler systems. NFPA 13 also has three certificates that are required for each fire sprinkler system: Owner's Certificate, Underground Piping Certificate and the Aboveground Piping Certificate. This seminar will discuss all the requirements for types and locations of signs along with the installation details that are needed to complete the certificates. Every contractor, building manager, and AHJ will not want to miss this seminar.

OCTOBER 8, 2013

Foam-water Sprinkler Systems

INTERMEDIATE

Victoria B. Valentine, P.E.

Although water is a great agent for controlling and extinguishing fires, some hazards benefit from the use of low expansion foam as the agent discharging from the sprinklers to achieve the desired level of control. These foam-water systems have similarities to standard sprinkler systems but are installed according to NFPA 16. This seminar will review the use and installation requirements of these systems.

OCTOBER 22, 2013

Common Mistakes

INTERMEDIATE

Roland Asp

Fire sprinklers have a long and successful history of protecting lives and properties.

The key to this success is a properly designed, installed and maintained sprinkler system. This presentation will focus on commonly encountered mistakes in fire sprinkler industry. The role of the layout technicians is to produce clear plans that will result in cost effective fire sprinkler systems while meeting the project specifications and the applicable requirements of the codes and standards. By highlighting common errors, the layout technician will learn to avoid the errors, saving time and money, yet helping to ensure the effectiveness of fire sprinkler systems will continue and improve.

NOVEMBER 5, 2013

Protection of Aircraft Hangars

INTERMEDIATE

Kenneth E. Isman, P.E. and Scott Enides

Fire protection system requirements for aircraft hangars are found in their own document, NFPA 409. The rules in this standard are very different from NFPA 13 or NFPA 16 regarding discharge criteria and water supply requirements. During the program, the differences between these standards will be compared and contrasted and the participant will be able to avoid the pitfalls often encountered in laying out, detailing and calculating a sprinkler system or foam/water system for an aircraft hangar.

NOVEMBER 19, 2013

Exposure Systems

INTERMEDIATE

James D. Lake

Exposure protection systems have different goals than water curtains or window/glass protection, yet they are often confused with these other types of systems. This program will cover the goals and objectives of exposure protection systems and show how their requirements differ from those of water curtains or window/glass protection systems. Information for this program will be taken from both NFPA 13 and NFPA 80A.

DECEMBER 3, 2013

Sprinklers on Glass

INTERMEDIATE/ADVANCED

Jeffery M. Hugo, CBO

A window sprinkler is a special sprinkler

according to NFPA 13 and this type of special sprinkler is intended for the protection of glazing in fire resistance rated walls for many types of applications. There are also times when standard spray sprinklers are used to protect glazing, such as in atriums. This seminar will cover how all these sprinklers comply with the requirements of NFPA 13, the building code, where and when to use specific sprinklers and the installation criteria for these products. This seminar will also discuss the recent changes in the International Building Code concerning using fire sprinklers in fire resistance walls.

DECEMBER 17, 2013

Ask the Experts

BASIC/INTERMEDIATE

James D. Lake, Moderator

The NFSA Engineering Department Staff have developed expertise in a wide range of fire protection activities including pumps, hydraulics, sprinkler spacing issues, seismic protection of systems, backflow, residential systems, and water supplies. Ask any question that you want of our experts on these or other topics. They will either answer the question live on the program or research the answer and get back to you and everyone that takes the seminar after the program is over. Reference standards for this session are NFPA 13, NFPA 13R, NFPA 13D, NFPA 20, and NFPA 25.



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NFSA Leads the Way on Training in Sprinkler System Hydraulics

By James D. Lake

To many people in and associated with the fire sprinkler industry, hydraulic calculations are those mysterious numbers spit out by a computer. But the knowledge of how the computer conducts its calculations is critical to making good decisions regarding the layout of the fire sprinkler system and in conducting an accurate plan review. Understanding how the water flows through the system and the variables involved are critical to system efficiency, can save a contractor serious amounts of money and provide better fire protection systems.

Recognizing the need for quality training in this crucial aspect of fire sprinkler system design, NFSA has developed a number of training seminars, both on-line and in-class, designed to take the mystery out of the hydraulic calculation process and provide guidance on how to review hydraulic calculations during plan review and acceptance.

Following Hydraulic Calculations Step-by-Step (NFSA.tv)

This on-line presentation follows the hydraulic calculation of a basic fire sprinkler system to demonstrate the simple step-by-step procedure that mirrors how the computer would calculate a system.

At the conclusion of this seminar the participant will be able to:

1. Discuss the key system components and their impact on hydraulic calculations.
2. Identify where the component information appears on the hydraulic calculations.
3. Discuss the variables that alter the impact of the components in the calculation process.

This 75 minute on-line seminar offered on NFSA.tv is good for 0.1 CEUs and 1CPD.

Next year look for a return of the multi-session on-line curriculum study on hydraulics offered through NFSA.tv. This seminar was first offered in 2012 and will be retooled for 2014.

Hydraulics for Fire Protection (In-class)

Hydraulic calculations are the foundation for supplying water-based fire protection systems with the appropriate amount of water. This seminar covers the procedures for hydraulic calculations in accordance with NFPA 13. The equations, principles and process will be reviewed in detail including selecting a design method along with finding the remote area and calculating flows and pressures. This program can be advantageous to those responsible for performing the hydraulic calculations as

well as those who review them.

At the conclusion of the seminar, the participant will be able to:

1. Explain and use hydraulic formulas
2. Describe the pressure types that apply to the hydraulic calculations
3. Identify and apply a design method from NFPA 13 for hydraulic calculations
4. Use a hydraulic calculation sheet
5. Evaluate a water supply for the system demand
6. Describe the friction loss for varieties of pipes
7. Describe the process of hydraulic calculations
8. Explain computer calculations input and output data

>> CONTINUED ON PAGE 12



Vice President of Training and Communications

James D. Lake

>> CONTINUED FROM PAGE 11

The seminar consists of 4 modules and 390 instructional contact minutes and is worth 0.7 CEUs and 7 CPDs.

Advanced Hydraulics (In-Class)

This program covers a wide variety of topics all having to do with making decisions regarding the discharge criteria for sprinklers and nozzles (flow, pressure, number of sprinklers in the design area, location of sprinklers in the design area) for advanced and complex situations in fire sprinkler and water spray systems.

This seminar assumes that the participant knows and understands the meaning of basic hydraulic terms such as density and design area as well as knowing the Hazen-Williams formula for calculating friction loss. Participants not familiar with these terms and formulas are certainly welcome to take the class, but they may find that they need to do more work to keep up.

This seminar is an excellent study session for people holding NICET Level II certification in Layout of Water-Based Fire Protection Systems who are preparing to sit for the Level III certification exams. This program will cover information from NFPA 13, NFPA 15 and NFPA 16.

At the end of this seminar, the participant will be able to:

1. Calculate the minimum required discharge for sprinklers non-uniformly spaced in a building or room.
2. Formulate the location of sprinklers in the design area in buildings where the sprinklers are non-uniformly spaced.
3. Recognize situations where the Room Design Method is advantageous to use to determine the design area and cor-

rectly identify sprinklers in the design area.

4. Calculate sprinkler systems with sprinklers in small compartments that can be omitted from the calculations.
5. Calculate C-factor for pipe and maximum water supply availability using the Hazen-Williams formula.
6. Calculate friction loss for fluid flow in pipes using the Darcy-Weisbach method of calculation.
7. Recognize where NFPA 15 and NFPA 16 require the use of velocity pressure calculations.
8. Calculate fire sprinkler and water spray systems using the velocity pressure method of calculations.

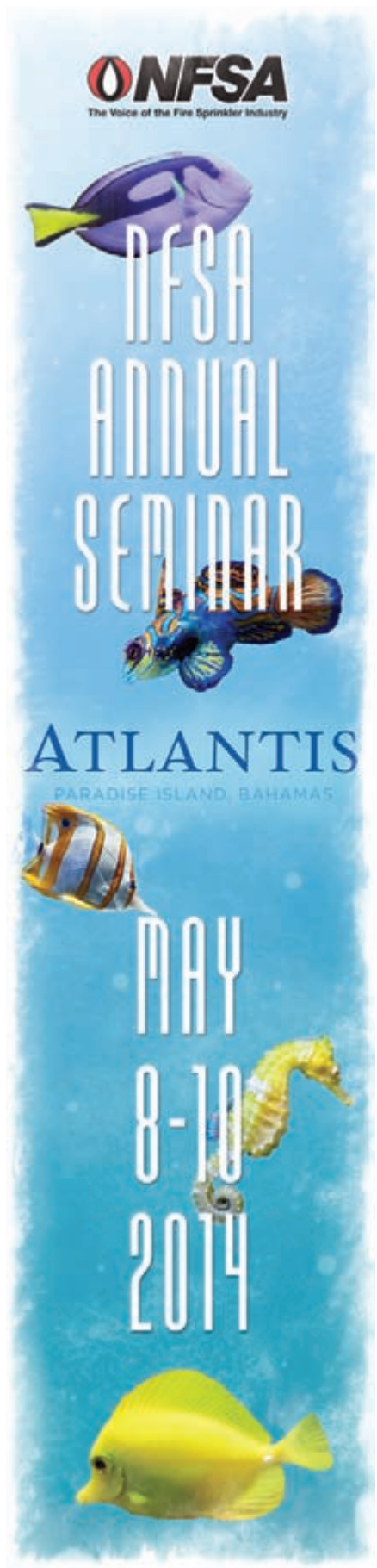
The seminar consists of 4 modules and 390 instructional contact minutes and is worth 0.7 CEUs and 7 CPDs.

Sprinkler System Plan Review

Hydraulics is also a major component of this 2-day seminar which provides attendees with vital information on how to conduct the plan review process for water-based fire protection systems.

In the final module of this seminar participants will review a submittal of hydraulic calculation presented with the plans and discuss the process of hydraulic calculations and identify the key pieces of information presented and the common errors that are made.

If you are interested in hosting one of these seminars or having one conducted for your staff, please contact me at lake@nfsa.org or 617-372-6214. ☎



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Part VI in a Series

Non-Uniform Hydraulic Calculations: Stepped Ceilings

By Victoria B. Valentine, P.E.

The variations in buildings when applying the hydraulic calculation regulations from NFPA 13 can raise many questions.

Actual building scenarios present challenges to even the most straightforward requirements. This series has covered many non-uniform scenarios that commonly arise. Assuming that the hydraulic calculations will be done using the area/density method, the following article will cover the situation where the remote area involves a stepped ceiling. This article is another segment in a series handling non-uniform arrangements and examining how the hydraulic calculations are impacted.

The area/density calculation method is a historical part of NFPA 13. For background on the process of laying out hydraulic calculation areas see "Non-Uniform Hydraulic Calculation Areas: Part 1" (November/December 2008). When a ceiling has an elevation change the conversation typically involves how the sprinklers need to be spaced for that. However, are there any changes to the hydraulic calculations when the density/area method is used for spaces that have a stepped ceiling?

First, rules for stepped ceilings or "vertical changes in ceiling elevation" are only called out under standard spray sprinklers in Section 8.6.4.1.1.3 in NFPA 13. Sprinklers, in that case, are spaced without alteration in the maximum allowable distance between sprinklers (noted as "S" throughout NFPA 13) when the vertical change is less than 3 ft (0.9 m). This is shown in Figure

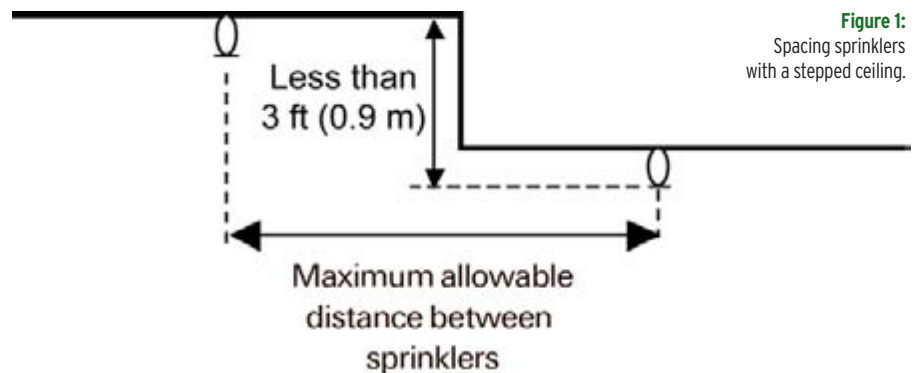


Figure 1:
Spacing sprinklers
with a stepped ceiling.

1. When the elevation change is more than 3 ft (0.9 m), then that vertical change is treated like a wall and the sprinklers to both sides of it are spaced up to one-half the maximum allowable distance between sprinklers ($\frac{1}{2} S$).

As indicated above the following information is only applicable to the density/area method of hydraulic calculations as the room design method needs full walls, with fire resistance ratings appropriate to the hazard, not just elevation changes that are treated like walls for sprinkler spacing purposes. Evaluating a reasonable worst case scenario for the hydraulically remote area can lead to options with and without the sprinklers protecting the opposite side of the step. The key is the piping arrangement that feeds the two elevations.

In scenarios where the sprinkler spacing can continue without regard for the elevation change, which is 3 ft (0.9 m) or less for standard spray sprinklers, then in general there is no need to alter the

hydraulics. In other words, the Committee has decided that sprinklers can be spaced in a standard fashion even with the elevation change, which indicates the hazard can be protected as usual. Now, it is important to recognize that some situations may not fit in the "box." Although generic applications with stepped ceilings are being discussed, some situations may need additional thought in order to properly protect them. The elevation change is not enough to need any additional calculation area or an alteration of the required density.

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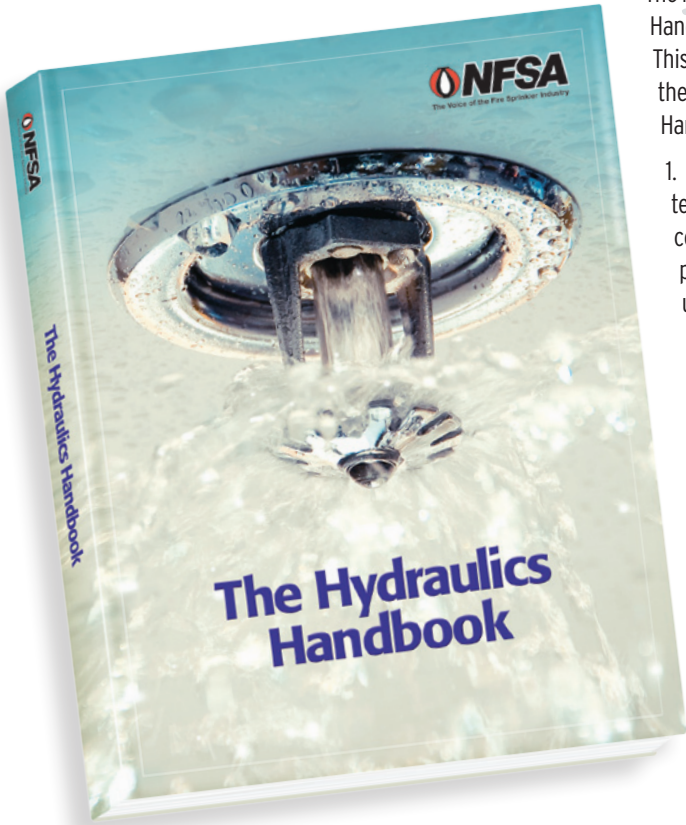
Victoria B. Valentine, P.E.

NFSA's Hydraulics Handbook

The National Fire Sprinkler Association is proud to announce the release of The Hydraulics Handbook, an overhaul and update of a publication originally put out in the early 1990's. This new updated edition is a comprehensive discussion of everything having to do with the hydraulic calculation of sprinkler systems. There are three distinct parts to the new Handbook:

1. Excerpts from the NFSA textbook Layout, Detail, and Calculation of Fire Sprinkler Systems that deal with hydraulics. These comprehensive chapters cover the methods and concepts involved with calculating a fire sprinkler system by hand or with a computer program. Each chapter ends with a series of questions to make sure that the user understood the concepts in the chapter.
2. A brief discussion of conducting hydraulic calculations from the perspective of a code enforcement official. This discussion is helpful for the plan review of calculations that have been submitted. A sprinkler technician can also use this information in spot checking the output from a computer program.
3. Friction loss tables. There are many different types of pipe and tube used in sprinkler systems. For each type of pipe, this book has a page with the friction loss per foot of pipe at a variety of different flows. Each page also contains the equivalent length of the fittings (tees, elbows, control valves, and check valves). These pages substitute for performing the Hazen-Williams friction loss calculation on a calculator and save time for people performing hydraulic calculations by hand or for people wanting to spot check calculations performed by a computer.

With almost 400 pages of text, this book is a "must have" for anybody that performs hydraulic calculations of fire sprinkler systems or performs plan review and approval of hydraulic calculations. **Order your copy at www.nfsa.org at the Resource Center or fill out and return the order form below.**



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For scenarios with standard spray sprinklers and an elevation change greater than 3 ft (0.9 m), what happens to the calculation? Still, no alterations are required. Each standard spray sprinkler is calculated based on the actual area of coverage. Therefore, even when sprinklers at the high and low elevations are closer to each other (in the plan view) than the spacing throughout each side of the elevation change, they are only calculated to flow the amount of water needed to cover the specific floor area protected. This means that for most cases the same amount of water would be needed to protect the space. The demand will more often be affected by the choice of sprinkler and piping arrangement.

It is possible that the sprinkler spacing relative to the elevation change could affect the hydraulic demand. A sprinkler is required to be calculated over its area of coverage. The area of coverage is defined as "S" times "L." This is the length along the branch lines and the length between the branch lines. Of course, each of those lengths could be taken as twice the distance to the wall, where applicable. Look at Figure 2. It shows the elevation view for a portion of a light hazard system. In the plan view, there are 14 ft (4.3 m) between sprinklers in the perpendicular direction of the slice shown (into and out of the diagram). Sprinkler 1 is 5 feet

from the left wall, 10 feet to the sprinkler on its left, and 7 feet from the elevation change to its left. The 7 feet to the elevation change wall is the value that needs to be used for this dimension and twice that value is 14 ft (4.3 m). Using the 14 ft (4.3 m) provided for the perpendicular direction of the slice, the coverage area for this sprinkler would be 196 ft² or 18.5 m² [14 ft by 14 ft (4.3 m by 4.3 m)].

It should also be noted that the pressure may increase the hydraulic demand for the system. This could come from one of two situations. First, it could come from something like the previous example, where the spacing to the elevation change (treated like a wall) requires a larger coverage area than other sprinklers in the system. The larger area will increase the amount of water needed from the sprinkler thereby increasing the pressure needed to deliver the water. The other situation is more pressure is needed just to overcome the elevation change in the piping. This, of course, will depend on the specific piping arrangement, but it will impact the hydraulic demand. If the higher elevation sprinklers are further away from the water supply than the lower elevation sprinklers, the higher pressure needed for the water to climb the additional height will increase the flow from the lower elevation sprinklers too.

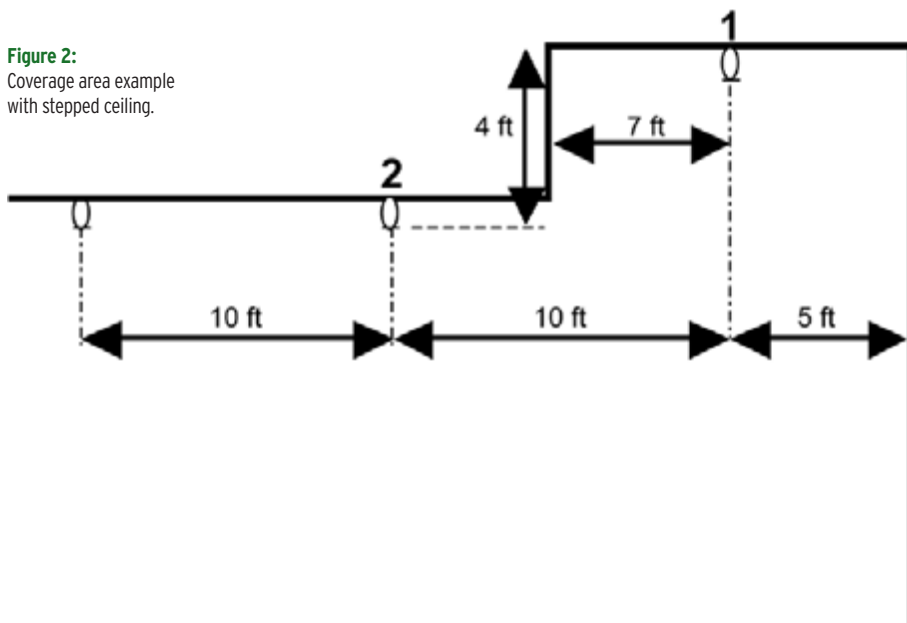
There is also the chance that there is a stepped ceiling in the building but not

where the remote area is being planned. This may need to be a second calculation area in order to determine which is actually hydraulically more demanding. Obviously, the hydraulic calculation area does not change because of the stepped ceiling, but the piping arrangement to feed the higher elevation may need to be considered. There are so many variations that are possible; it may just be a unique layout that has to be calculated.

Other types of sprinklers, even without specific statements about stepped ceilings, would treat an elevation change as a wall when it is higher than an acceptable distance from sprinkler deflector at the lower elevation to the upper ceiling. For example, extended coverage pendent sprinklers need to be 1 to 12 inches (25 to 300 mm) below the ceiling. Therefore, if the elevation change accommodates the lower elevation sprinkler being not more than 12 inches (300 mm) from the higher elevation, it would be acceptable. If not, then the spacing would be one-half the maximum allowable space between sprinklers from the point of elevation change. Spacing aside, the calculation area or required flow would not have to be altered from traditional calculations using extended coverage sprinklers. This also holds true for the calculation of other types of sprinklers.

In summary, a stepped ceiling will not change the hydraulic calculation area or the density that is needed to control the fire. However, the piping arrangement should be given thought so that the system is as efficient as possible. With the right arrangement, feeding a water-based system under a flat ceiling or a stepped ceiling can be done economically. ①

Figure 2:
Coverage area example
with stepped ceiling.



REFERENCES:

Valentine, Victoria B. "Non-Uniform Hydraulic Calculation Areas: Part 1," *SQ Magazine*, No. 151, National Fire Sprinkler Association, Patterson, NY, Nov/Dec 2008.

NFPA 13, Standard for the Installation of Sprinkler Systems, 2013 Edition, National Fire Protection Association, Quincy, MA, 2012.



The Fire Sprinkler Guide - 2009 Codes Edition

Produced by NFSA, this second edition of The Fire Sprinkler Guide defines those sections of the three model building codes, the Life Safety Code (NFPA 101) and International Building Code where fire sprinkler systems are required, including partial requirements and construction incentives. The guide includes comparison tables to clarify many of the code requirements. The guide is a valuable tool for architects and engineers, plan reviewers, fire and building inspectors, as well as sprinkler contractors, and serves well as a workbook for students at the NFSA's Design Advantage Seminar. With almost 400 pages of text, this book is a "must have" for anybody that performs hydraulic calculations of fire sprinkler systems or performs plan review and approval of hydraulic calculations.

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Submittal Review – First Step in Reviewing Fire Sprinkler Documents

By Jeff Hugo, CBO

The submittal review is the first step in plans examination. The submittal review of the plan review process is to ensure that all of the correct documents are available for the plans examiner to com-

mence the review. In this stage, the focus is not so much on the technical aspects of the documents, but on whether the documents are present. Performing a fire sprinkler plan review is getting into the mind and methods of the fire sprinkler layout technician. To do this, it is necessary for the plans examiner to have what the designer and layout technician had in front of them while laying out the structure and the piping.

Figure 1 is a submittal review checklist that outlines all that is needed to be submitted to the plans examiner. As mentioned above, the purpose of this portion of the plan review process is to get all the documents into the submittal package to the office of the plans examiner so that the process may proceed.

After evaluating the actual submittal and comparing to the review checklist, the examiner may or may not reject the submittal package at this point. If the examiner does not have all the necessary documents, it may not be worth the time to start the review. Fire sprinkler system submittals are a package of many items and it is often a disservice to start a review when part of that system is missing in the submittal. The plans examiner will have to write a correction letter, wait for more information, then re-commence when all the pieces are put together. Time is valuable on both sides of the review process and examiners should be cautioned against rejecting the submittal package at this point if minor

items (such as common cut sheets) are missing. The best outcome occurs when both sides work together to bring forth a productive review.

Architectural Plans

It is imperative for the plans examiner to obtain a sense of the structure and all of its nuances in order to perform the fire sprinkler review. This gives the examiner a sense of the building: areas, heights, concealed spaces, soffits, exempt areas, etc. There is a tremendous amount of coordination between the architectural and mechanical, electrical, and plumbing (MEP) teams with the fire sprinkler layout technician.

In some cases, the plans examiner has already performed the review of the structure by the time the sprinkler drawings are submitted for review. However, in some jurisdictions, the fire sprinkler review and architectural review may be performed by different departments or different examiners. At times, it may be

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SUBMITTAL REVIEW CHECKLIST

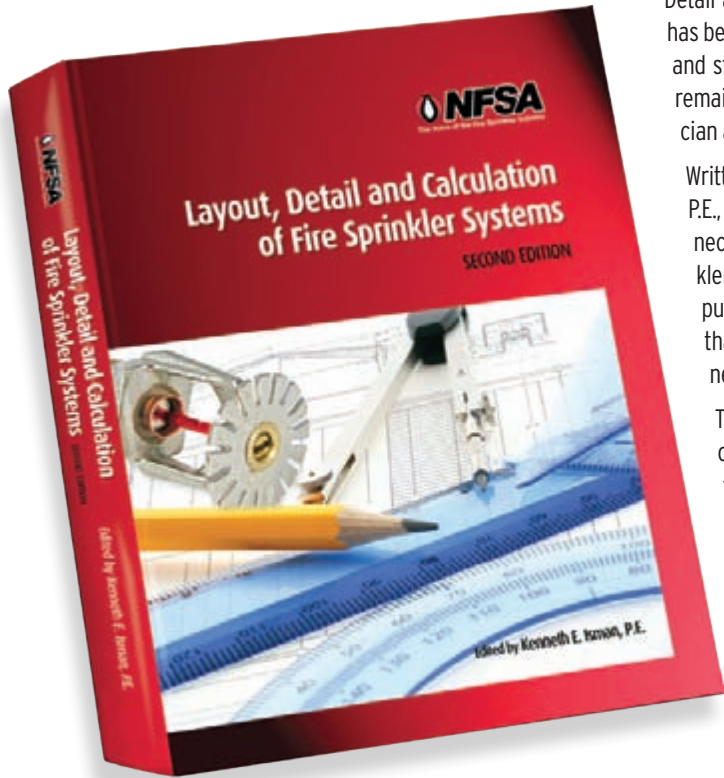
SUBMITTAL REVIEW CHECKLIST	
	Architectural Plans
	Owner's Certificate (4.3)
	Shop Drawings
	Water Supply (24.1)
	Water Supply Treatment (24.1.5)
	Pipe Schedule (23.5)
	Hydraulic Calculations (23.3)
	Summary Sheet (23.3.5.1.2 (a))
	Detailed Worksheet (23.3.5.1.2 (d))
	Graph Sheet (23.3.5.1.2 (b))
	Hydraulic Reports (23.3.5)
	Summary Sheet (23.3.5.1.2 (a))
	Graph Sheet (23.3.5.1.2 (b))
	Supply and Node Analysis (23.3.5.1.2(c))
	Detailed Worksheet (23.3.5.1.2 (d))
	Cut Sheets
	Sprinklers
	Piping
	Equipment
	Hangers
	Seismic Bracing



NFSA's Manager
of Codes

Jeff Hugo, CBO

2nd Edition of Layout, Detail and Calculation of Fire Sprinkler Systems



The NFSA announces the publication of the 2nd Edition of its popular textbook, Layout, Detail and Calculation of Fire Sprinkler Systems. This newly revised hardcover textbook has been updated to reference the 2007 and 2010 editions of NFPA 13 with more examples and student exercises and new chapters on contract issues and stocklisting. This text remains the most complete book ever written for the fire sprinkler engineering technician and it's available now!

Written by the NFSA Engineering Department staff and edited by Kenneth E. Isman, P.E., Vice President of Engineering, this text covers every aspect of determining the necessary details for a fire sprinkler system including: hazard classifications, sprinkler spacing, hanger and brace requirements, hydraulic calculations, water supplies, pumps and tanks. The text also contains a review of basic math and physical science that is helpful in understanding the scientific principles behind the requirements that need to be followed.

This text makes an excellent self-study guide for the NICET Automatic Sprinkler Layout and Detail certification program and covers all of the work elements necessary to achieve Level 2 certification and many of the elements needed to achieve Level 3 and Level 4 certification. Even if you are not studying for a NICET exam, this text makes an excellent self-study guide for anyone wanting to know more about fire sprinkler systems.

The text retails for \$95 (plus S&H) to members of the NFSA and \$145 for non-members (plus S&H). **However, as an extra added bonus, to reward the people that purchased the first edition of the book, if you clip Ken Isman's picture out of the 1st Edition back cover flap and send it back to us with your order (mail orders only, no fax orders for this offer), then you can take another \$10 off the price of a single book (\$70 + S&H for members and \$120 for non-members). To get your book, fill out the following form and return it with your payment.**

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crucial or proactive to obtain the civil, architectural, mechanical, electrical and plumbing plans from the examiner(s) who performed these reviews, along with the examiner(s)' comments. These plans hold many answers to questions asked during the fire sprinkler review stage. While most fire sprinkler shop drawings show cross sections and room layout, the more the plans examiner understands the structure the better the review is performed.

Owner's Certificate (NFPA 13: 4.3)

The 2007 edition of NFPA 13 was the first to require an Owner's Certificate and it has been required in all subsequent editions. This document is generated by the owner of the building and describes what the structure is, including:

1. Intended use of the building, including the materials within the building and the maximum height of any storage.
2. A preliminary plan of the building or structure along with the design concepts necessary to perform the layout and detail for the fire sprinkler system.
3. Any special knowledge of the water supply, including known environmental conditions that might be responsible for corrosion, including microbiologically influenced corrosion (MIC).

When the Owner's Certificate indicates corrosive properties are found in the owner's investigation, NFPA 13, Section 23.2.2 addresses a further list that needs to be inspected by the examiner:

1. Type of condition that requires treatment
2. Type of treatment needed to address the problem
3. Details of treatment plan

Plan examiners will want to obtain this document for several reasons. First, this certificate should have been completed and forwarded to the fire sprinkler lay-

out technician at the start of their design and layout. Second, this certificate aids the examiner in understanding the owner's intent for the structure. Third, this certificate is a valuable enforcement tool to keep in the file in the event the owner changes the storage arrangement, commodity, or use.

Shop Drawings

Shop drawings are the layout and network of piping that the fire sprinkler layout technician has determined to be the most efficient and effective method of providing fire sprinkler protection throughout the structure.

Shop drawings will consist of several pages of paper or electronic file(s). Pages will be dedicated to the underground piping (correlating to the civil drawings), each floor (or several pages of a single floor), cross sections, elevations, etc. will correlate to the architectural, mechanical, electrical and plumbing (MEP) drawings.

The 2012 International Building Code (IBC) Section 107.2.2 requires shop drawings to be submitted for review to the Authority Having Jurisdiction (AHJ). *"Shop drawings for the fire protection system(s) shall be submitted to indicate conformance to this code and the construction documents and shall be approved prior to the start of system installation. Shop drawings shall contain all information as required by the referenced installation standards in Chapter 9."*

Section 23.1.3 of NFPA 13 has a 46 item list of what is to be contained in the fire protection shop drawings. Furthermore, water supply information is also necessary to complete the review and shall be part of the submittals. NFPA 13, Section 23.2 has a 9 item list of requirements for the water supply information.

Although these lists appear daunting (and seem endless), remember, at this point in the submittal review the plans examiner is not getting into the detail of each item.

Some states or jurisdictions require the signature and seal of an engineer, while other states or jurisdictions require the shop drawings to be prepared by a

NICET Level III or Level IV fire sprinkler layout technician. The examiner should be aware of and enforce the laws regarding who can prepare shop drawings.

AHJs that arbitrarily require a signature and seal of an engineer in lieu of a full review by a qualified plans examiner should be cautioned. A seal of an engineer does not necessarily ensure that compliance is achieved and the responsibility of the plans examiner (and jurisdiction) is fulfilled. NFSA training programs and frequent continuing education will give the plans examiner the tools necessary to perform a competent review and ensure code compliance.

Hydraulic Calculations (NFPA 23.3)

Hydraulic calculations are typically generated by computer software, although some layout technicians may do and submit manual calculations. The 2007 edition of NFPA 13 has mandated that computer software be prepared in a uniform format. These calculation software packages are available from various vendors.

An examiner will need to look into the hydraulic submittals to ensure the information in the lists below is complete enough to review.

Because computer-generated reports are the most common type submitted for review, NFPA 13 Section 23.3.5 details what shall be prepared on form sheets:

- Summary Sheet
- Graph Sheet
- Water Supply Analysis
- Node Analysis
- Detailed Worksheets

Cut Sheets

A cut sheet is trade lingo for product specifications provided by the manufacturer for the installed equipment on the job. The fire sprinkler layout technician will need to provide this information to the plans examiner for review. Cut sheets or product specifications should be neatly packaged and organized. A plans examiner needs this information not only at plan review, but also in the field to ensure that

>> CONTINUED FROM PAGE 21

what was submitted and calculated for is in fact what is installed on site.

Cut sheets are needed for the following:

- Fire sprinklers
- Backflow preventers or RPZs
- Valves - gate, butterfly, etc.
- Piping
- Hangers
- Seismic - bracing, restraints, assemblies, etc.

The plan examiner uses cut sheets during the review to compare to the hydraulic calculations, for example; extended coverage sprinkler flow rates, residential sprinkler coverage area, and for friction loss through a device, such as a gate valve.

It is extremely important to verify that what the plans propose to use is actually used on-site. For example, a double check backflow assembly reduces the flow pressure, and this reduction

is reflected in the hydraulic calculations. If an on-site inspection reveals that an RPZ is installed instead, it must be noted that the RPZ has significant pressure loss over the double check backflow assembly. This may change the dynamics of the flow and pressure through the system and may not provide the minimum flow and pressure to the remote design area. In this case, the fire sprinkler layout technician will need to be notified and the hydraulic calculations redone.

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Further Submittal Review Details

In this article I've attempted to relay what is needed to perform the review so the reader now has the information to start reviewing fire sprinkler documents. As stated before, plans examining is the process of getting into the layout technician's frame of mind, while applying the examiner's knowledge and experience of the codes and standards.

Stay tuned to future SQ articles for the plan review process, and for a book published by NFSA for a complete guide to reviewing fire sprinkler systems. ①



NFSA is the leading source for news in the dynamic fire sprinkler industry. Stay informed by watching regularly updated newscasts relating the top stories from NFSA and the sprinkler industry. Visit us at www.nfsa.tv

NFSA Future Leadership Committee

By Jim Lake

Last year the NFSA surveyed its membership to find out what they believed the Association's strengths were, and perhaps more importantly, what they felt that the Association could do better. The responses to the survey proved to be insightful and a valuable tool as the NFSA looks to position the association towards the future and growth.

The survey uncovered a universal theme across the membership that underscored the need for younger members and current leaders to help close what some might consider a generational gap between the NFSA and young sprinkler professionals. The NFSA Board is fiercely dedicated to preserving the integrity of the Association among all fire sprinkler professionals, and for that reason, the very first meeting of the **National Fire Sprinkler Association's Future Leadership Committee** took place during the Annual Seminar on April 4th, in Las Vegas.

Key members of the Association were asked to identify emerging leaders from within their own companies to attend the session. The 14 members who were elected to the committee came from all over the United States as representatives of their companies, their regions and their respective demographics.

The closed session focus group was run by our public relations agency, R&J



Public Relations, and was not observed by any members of the NFSA other than those selected to be part of the committee, to ensure that participants were able to speak candidly about their experience with the Association and keep insight anonymous.

The session covered a variety of topics including the state of the industry, Association communication, organizational strengths, and interest in leadership. Attendees openly spoke about their experiences in these key areas and provided recommendations on how the Association can attract and engage younger members to ensure a strong future for the organization.

Based on the recommendations provided by those who were nominated

for the focus group and the Association's desire to both identify and groom future leaders, the Future Leadership Committee has received board sanction to participate in quarterly calls to discuss areas of importance to the future of the fire sprinkler industry and the Association itself. An executive summary of the focus group was provided to NFSA's leadership team as well as recommendations to move forward. The first quarterly call of the Future Leadership Committee will be held in June.

The NFSA strives for transparency and to provide the type of training and resources that fire sprinkler professionals of all ages can benefit from, and while we work to address the findings from our membership survey, we also want to thank our members for their feedback and participation in investing time in our Association and its future. 🙏



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of Training and
Communications

James D. Lake

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Hydraulic Calculations – Why We Need to Know How to Perform Them Manually

Hydraulic calculations are a mainstay of our industry today. These calculations determine the most important aspect of the fire protection system being designed; will the system, as designed and given the available water supply, be able to provide enough water at the required density to successfully control or suppress a fire? The majority of fire protection systems use hydraulic calculations to size piping, to determine the demand of the fire protection system and to determine the necessary size and adequacy of the water supply.

Today, most of us use computer-based software programs to aid us in performing these calculations. These capable and powerful programs streamline the hydraulic calculation process by taking our input information and running the calculations for us. As long as the correct information is inputted into the program, an accurate calculation can be produced in a fraction of the time of a manual or “old fashioned” hydraulic calculation. The advent of these calculation programs has certainly been an enormous benefit to the layout technician, but if the technician does not understand the formulas and procedures behind the calculation process, an important skill set can be lost.

Hydraulic calculation software is a valuable tool but it is the responsibility of the technician to verify the results. This is not possible without the knowledge of hydraulic principles and calculation methodology. The skills gained by performing manual hydraulic calculation are still vital

today, even if the majority of this process will be performed by computers.

Some guidance on hydraulic calculations were first introduced in NFPA 13 as early as the 1960s, but it was the 1972 edition of NFPA 13 which first included the density/area curves which we are so familiar with today. The density/area curves allows designers to fine tune the pipe network, through the use of hydraulic calculations, to provide adequate water flow and demand with smaller pipe sizes. The economic benefits of a hydraulically calculated system over a pipe schedule system are clear; smaller pipes cost less.

Layout Technicians

Layout technicians became proficient with the various concepts, methodologies and formulas that make up a hydraulic calculation. Using nothing more than worksheets and calculators, layout technicians routinely utilized the Hazen-Williams formula of friction loss, the formulas dealing with flow from an orifice, equivalent length of fittings and c-values to determine the most effective and cost efficient layout of a fire sprinkler system.

Although the manual procedures for hydraulic calculations were time consuming and, at times, frustrating, this “hands on approach” gave the technician an intimate understanding of the hydraulic process and the interaction between pipe-sizing, system type and layout, available water supply and orifice sizes of sprinklers. They learned the relationships of the different

factors involved in a sprinkler system and developed a “feel” for the system. This experience gave them a sense of the vital aspects of the sprinkler system. Over time, these technicians could quickly determine the likely hydraulically remote area, the most efficient piping layout, the proper type and orifice size of sprinkler heads and pipe sizes. The layout and pipe-sizing was determined by the technicians’ experience and knowledge and the hydraulic calculation was a means to fine tune these choices.

The technology revolution of the 1980s and the introduction of personal computers changed many aspects of our lives, and the fire sprinkler industry was no different. Hydraulic calculations slowly changed from pencil and paper to computer-based. Today there are numerous computer-based hydraulic calculation programs that make short work of the previously tedious process of friction loss calculations. The benefits of such programs are undeniable. Today we can perform complex calculations in a fraction of the time; a calculation that may have

>> CONTINUED ON PAGE 26



Manager of
Technical Services

Roland Asp

taken all day can now be performed in less than an hour. Math errors have been all but eliminated and changes to the system can be incorporated into the calculation easily without starting the process over. I originally learned hydraulic calculation procedures in a class in the late 1980s and still remember the frustration involved in learning to perform these calculations manually. My frustration only increased when I joined the work force and I began to perform hydraulic calculations. The company I worked for used a computer program to perform hydraulic calculations and I seldom performed a hydraulic calculation the "old fashioned way." Instead of calculating the friction loss using the

"The overriding reason to learn how to perform manual hydraulic calculations is to be a better layout technician and produce better sprinkler system plans and layouts."

Hazen-Williams formula, keeping in mind c-values, interior pipe dimensions and significant digits, I inputted data and let the program do the calculations. I believe these computer-based hydraulic calculations are a wonderful addition to the tools available to sprinkler system layout technicians and in all honesty could not imagine performing more than a simple layout without these programs.

Manual Calculations

Why then, if the computer-based hydraulic programs are so prevalent and capable, should a layout technician learn to perform calculations manually? A comprehensive understanding of hydraulic concepts, including the Hazen-Williams formula and the formula for calculating the flow from an orifice is not a prerequisite for performing a computer-based hydraulic. If the correct information is inputted into the software, these important values will be incorporated into the calculations. However, without this understanding, it is too easy to input incorrect information and nearly impossible to recognize inconsistencies in

the results. The overriding reason to learn how to perform manual hydraulic calculations is to be a better layout technician and produce better sprinkler system plans and layouts. The knowledge gained by understanding and practicing the manual hydraulic calculation methods will reinforce the basic concepts of hydraulics and the interdependency of the various aspects of the layout. This understanding of the concepts of hydraulic calculations will help the technician to develop the "feel" for the fire sprinkler system that cannot be learned through merely inputting data.

One aspect of hydraulic calculations that can be enhanced by understanding the calculation procedures is in determining the hydraulically remote area.

Although most hydraulic calculation programs can be utilized to determine the hydraulically remote area, this vital aspect of the design still must be confirmed by the technician. A thorough understanding of hydraulics that is gained from performing calculations the "old fashioned way," will give us insight into which portion of the system is truly the hydraulically most demanding area. This aspect of the design is not always obvious and can be difficult to determine. Once we have been "hands-on" with hydraulic calculations, the variables of flow from an orifice, design densities, pipe-sizing and their hydraulic effects, will become second nature and aspects of design such as determining remote areas to calculate will become easier to determine. This determination is vital to the sprinkler design and in the end is no more than a guess to be proved by the calculations. A working knowledge of hydraulics will help make this guess an educated one.

Correct determination of the best pipe-sizing and layout configuration is also a product of experience and understanding of hydraulic principles. It is the goal of the layout technician to produce the most ef-

ficient system, both hydraulically and economically. Again, the most efficient sizing of piping and system layout is not always obvious. It may be better to have larger mains and smaller branch lines or the opposite may make for a more efficient system. This can be determined by inputting all the various pipe-sizing possibilities and running numerous calculations.

Performing multiple calculations incorporating the various possible configurations can also help determine if the best layout for a given system is a simple tree system or a fully gridded system. Running these calculations, even with the use of the computer, will take a lot of time. However, as with remote area determination, the technician with experience in manually calculating systems will soon develop a "feel" for the system and the determination of the best pipe-sizing and layout will become second nature. This acquired understanding will save significant time in calculating all the various pipe-sizing and configurations possible in a system.

The AHJ

The hydraulic calculations will also be submitted for plan review. The Authority Having Jurisdiction (AHJ) will take the calculation printout and spot check the results to confirm the system's performance. It is the responsibility of the layout technician to explain and defend the results of the calculations. If the technician is comfortable with only inputting the data into the program and not the concepts behind the data, it will be difficult to defend the calculations. The general goal of the shop drawings and hydraulic calculation printouts is to communicate important information. If the technician cannot adequately explain the data on these printouts to the plan reviewer, the goal of communication has not been achieved. A perfectly acceptable sprinkler layout plan and hydraulic calculation could be rejected if the layout technician is not comfortable with the hydraulic principles and cannot effectively justify the calculations to the authority having jurisdiction. Those who have experience actually using the formulas and procedures in hydraulic calculations will be comfortable with the concepts and

>> CONTINUED FROM PAGE 26

be able to effectively explain and defend the calculation resulting in an approved sprinkler plan.


This knowledge and experience may also allow the sprinkler technician to avoid performing an unnecessary calculation in the first place. Revamping or making additions to an existing sprinkler system may require plans including calculations to be submitted for review. One with a working knowledge of hydraulic principles may be able to convince the AHJ that the work being performed will not increase the hydraulic requirements on the system. If the AHJ is not comfortable with this assertion, they will require that a hydraulic calculation of the revamped sprinkler system be performed. This process, especially on an existing sprinkler system, can prove very time consuming and costly to perform. If the technician, with the competency gained from performing hydraulic calculations manually, can prove that a new hydraulic calculation is not necessary, this

could prove to be significant boon to the contractor.

In this day and age, with the advent of capable hydraulic calculation software programs, why is it important that the layout technician learn to perform manually hydraulic calculations? The answer is to become a better layout technician and to truly understand the concepts of hydraulics as they relate to fire sprinkler systems. Manually calculating the systems will give an understanding of the hydraulic concepts that is not possible to gain by simply inputting information into a computer.

The best layout technicians will combine the best of both methods, using the software to quickly and accurately calculate the system with the knowledge that they gained from practicing the "old fashioned" calculation method. The manual method will help hone the technician's skill set and help them to gain the elusive "feel" that is a mark of good layout technicians.

I think a relevant analogy can be made in the field of photography: a good quality point-and-shoot camera can allow any of us to take perfectly serviceable pictures, but it takes more knowledge to take a great photograph. A photographer needs a more thorough understanding of the science of photography. Knowledge and experience with aspects such as f-stops, apertures, ISO speeds, and focal lengths will help the photographer to elevate his photos from serviceable pictures to superb photographs. Likewise, learning and practicing the manual hydraulic calculation method will give the layout technician the knowledge and experience to elevate the quality of their sprinkler system layouts and calculations from serviceable to superb.

The National Fire Sprinkler Association can help teach hydraulic calculation methods through various resources including books, classes and training seminars. The NFSA website contains details on these relevant resources. 



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By Terry Jones

4 Ways to Turn Your Company into an Innovation Machine

Travelocity, Kayak.com Founder Offers Tips for Culture Change

The world's future leaders overwhelmingly believe that today's businesses can grow only if they can innovate – and that today's business leaders aren't demonstrating they're up to the task.

While that's the thinking of nearly 5,000 millennials – the 20- to 33-year-old generation – at least one baby boomer, the innovator who transformed the U.S. travel industry with his creation of Travelocity and Kayak.com, agrees.

"The future for any business today depends entirely on its ability to innovate, and the youngest adults, 'the idea generation,' know that," says Terry Jones, author of *"On Innovation,"* (www.tbjones.com/terrys-book), a light-hearted but practical guide for fostering and innovation.

"The millennials are the group known for pioneering new ideas, rethinking processes, end-running hierarchies and solving problems by doing what simply makes sense to them. We need to listen to them; they're the innovators!"

But the worldwide survey of adults born after 1982 found that only 26 percent believe their bosses are doing enough to encourage innovation. The study by Deloitte Touche Tohmatsu Limited, published in January 2013, reported 78 percent believe innovation is crucial for growing businesses.

Jones says there are some definite steps business leaders can and should take to ensure their company is hearing employees' ideas, recognizing opportunities, and ensuring a clear path to execution.

1. Build a culture of experimentation. Not every project will succeed but you can't learn from mistakes if you don't allow them to happen. The corollary: Always

analyze what went wrong. Why didn't it work? To use a sports analogy, watch the "game films" to improve and learn as much from failure as you do from success. One fast and easy way to experiment is to test options out online. Whether it's polling customers, measuring which approach gets the best response, or allowing a segment of your customer base to test drive a new tool, the results can be invaluable.


2. Kill projects not people. In many companies, people stop offering up ideas and volunteering for projects because the punishment for failure is greater than the reward for success. Lunch with the boss or a \$100 bonus do not compensate for the risk of being demoted or fired, or suffering a tarnished reputation. When a project fails in a company with a culture of experimentation, the first thing you should do is say, "Bob, what would you like to work on now?!"

3. Break thru the "Bozone layer." Some of the greatest ideas for innovation will come from the employees on the front lines – those in direct contact with customers or production. But their ideas will never float up to the executive suite if you've created a "Bozone layer" by making it too risky for middle managers to experiment. (See No. 2.) While you're turning the culture around, find ways to reach down to the front lines to solicit ideas. Implement them and reward the contributors with a big, public shout out - which will help you start changing for the culture.

4. Install "sensors" to pick up customers' ideas. Don't just look to employees for innovation – learn from your customers. They have ideas for new products

and new uses for existing products, and their customer service complaints are a fertile source of ideas for improvement. Listen! Social media or a forum on the company website is a good sensor for picking up ideas; Glad Wrap's 1000 Uses site is loaded with them. For customer service complaints, Travelocity installed a lobby phone booth where anyone in the company could listen in on customer service calls. Once a month, everyone was expected to provide feedback on at least two of those calls, and suggest an improvement to eliminate similar future calls plus a work-around for the interim.

About Terry Jones

Terry Jones founded Travelocity.com in 1996 and led the company as president and CEO until May 2002. He is managing principal of On, Inc, a consultancy he co-founded to help companies in their transition to the digital economy, and serves as chairman of the board at Kayak.com, which he also helped found. Previously Jones had a 24-year career at American Airlines holding various executive positions, rising to Chief Information Officer at their SABRE Division. Jones is the holder of several patents, has served on the boards of directors of 10 companies and began his career as a travel agent in Chicago. He holds a degree in history from Denison University. 



Terry Jones

Terry Jones is currently the Managing Principal of On, Inc.

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Part I of IV

Roles and Responsibilities in NFPA 25

By Jason Webb

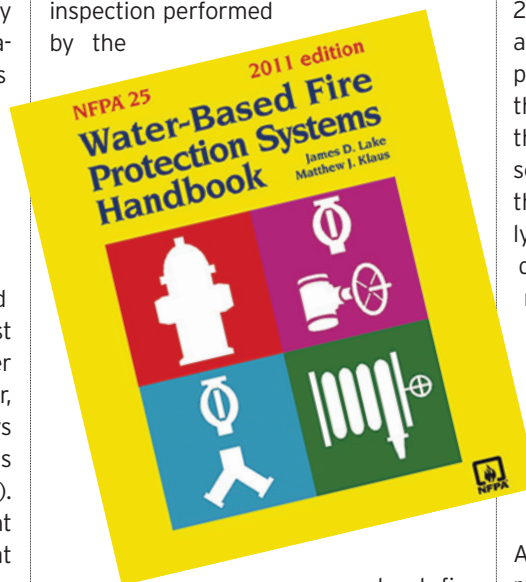
NFPA 25, the Standard for the Inspection, Testing and Maintenance of Water-Based Fire Protection Systems provides communities with an excellent tool to help protect against fire. But the reasons why the standard isn't uniformly applied across the country vary widely. Many times though, it comes back to a fundamental lack of understanding of the roles and responsibilities of the stakeholders involved in the ITM process.

The requirements of NFPA 25 have a direct effect on essentially three groups of people. The property owner (or designated representative) is the person responsible for ensuring that the covered systems are being maintained in the first place. Most of the actual work done under the standard is completed by a contractor, who is obviously a stakeholder and plays a major role in the process. The third is the authority having jurisdiction (AHJ). The AHJ's role is one of enforcement and consultation. NFPA 25 is somewhat unique in that it identifies these specific areas of responsibility and assigns them to a particular party. Sometimes, though, there are misconceptions about what exactly is the intent of the standard and to whom a particular section refers.

Uncertainty about responsibility can lead to one of two things. Either a required act goes un-done because someone incorrectly assumed that another stakeholder would do it, or the wrong party does something, thereby taking on the responsibility for it being done correctly.

When either of these occur, the result can be anything from simply confusing the other stakeholders to as serious as one resulting in a failure of the system.


Imagine the potential consequences if the owner incorrectly assumes, for example, that the annual routine inspection performed by the



local fire department satisfies the requirements of NFPA 25. While one could argue that it is the AHJ's responsibility to verify compliance with NFPA 25, that is not always possible. Under NFPA 25, the owner is ultimately responsible for the ITM of their system, but unless they know their role and understand it, problems can certainly ensue.

Sometimes those roles and expectations are changed by the actions of another. NFPA 25 is written in a manner

in which the system in question only has to conform to the requirements of the standard to be considered in compliance. So when one of the stakeholder's places expectations on another that are outside the scope of the document, the result can expose issues not contemplated by NFPA 25. Two of the most common examples are unsprinklered spaces and recalled products. While NFPA 25 does not place the expectation for identifying these on the ITM inspector (typically a contractor), some jurisdictions may expect or require them to be noted on ITM records. Certainly it is important that if these things are discovered, they get pointed out to the right people, but by tying them to routine ITM service, it completely changes the nature of the program.

Over the next three installments of the *ITeM* section of *SQ*, we'll examine how NFPA 25 assigns very particular roles to each stakeholder and how those roles interact with each other. A clear understanding of the roles and responsibilities of everyone involved in the ITM process can make the standard more effective and ultimately improve its application and enforcement. 



Director of
Inspection, Testing
& Maintenance

Jason Webb



Inspection and Testing for the Fire Sprinkler Industry

This comprehensive text will cover the basic inspection and testing requirements for fire sprinkler and standpipe systems including fire pumps and water tanks that serve as water supplies for these systems. Beginning with a history and development of the rules of inspecting and testing systems and continuing with an explanation of the common terms and basic components, the book includes a complete discussion of the inspection and testing requirements of these fire protection systems. This is an excellent study guide for NICET Level I and Level II certification in the Inspection and Testing of Water-Based Fire Protection Systems.



To pre-order please go to
<http://bit.ly/nfsaitm>

Notes from the Fire Scene...

2013 continues to find Public Fire Protection "on the road," spending time with many of our national fire service partners. In order to help you understand the various groups that we collaborate with, those who know me know I always have a camera. To prove it's true when they say a picture is worth a thousand words, I'd like you to enjoy a few snapshots from the Public Fire Protection archives!

Our efforts are on-going to make connections with various initiatives and find ways to highlight how fire sprinklers work and the role they play. Following are a few photos that capture those examples.

International Society of Fire Service Instructors partners with the National Institute of Standards & Technology and the South Carolina Fire Academy to conduct scientific research on fires and what the fire service can expect when they arrive on the scene of a residential structure fire. Previous research has documented that today's fires are different from those in the past because of what we keep inside our homes. (As Jim Dalton would say, all the stuff that Maude, Claude, and the Claudettes would accumulate!) Take a look at the photos from the research in Spartanburg, South Carolina. It's easy to see what flashover means to firefighters. No one survives flashover.

Now, let's take a look at one of the research tests that provided a scenario with a fire sprinkler present. Yes, we know the outcome. The sprinkler activated in 1 minute 20 seconds and extinguished the fire. My commentary on the scene that



Flashover, from research in South Carolina.



The screen in the photo shows the NIST cameras inside and outside the house as the fire grows and the fire sprinkler activates.

day was "give me a mop and a new mattress and I can sleep here tonight!" It is so simple, and for those of us who work to advocate for fire sprinklers and their installation, we get excited when we add additional resources that highlight the technology that makes such a difference. As you can see in the photo of the television screen, the NIST cameras show both

the inside and outside of the house as the fire grows and the fire sprinkler activates.

Thank you to two NFSA members, Reliable Automatic Sprinkler Company for providing the sprinklers for this research project, and Wayne Automatic Fire Sprinklers for doing the actual fire sprinkler installation. This provided another great example of how we partner together to

help educate and inform everyone about the benefits of fire sprinklers. The final report of this project will add greatly to our resource toolbox and is available at www.isfsi.org.

As always, side-by-side burn demonstrations continue to provide opportunities for us to bring to life how quickly fire grows to reach flashover and also how quickly a fire sprinkler puts it out! Take

>> CONTINUED ON PAGE 34



Director, Public Fire Protection

Vickie Pritchett

>> CONTINUED FROM PAGE 33

a look at this graphic created by former IAFC President John Buckman following a side-by-side burn demonstration conducted for the National Association of State Fire Marshals. He points out that it is not often that Fire Departments can make it to the scene of a fire in one minute, 43 seconds, the time flashover occurred during the demonstration. John did an excellent job of summarizing what he witnessed!

As the photos show, flashover was intense in one minute, 43 seconds, and the sprinkler activation occurred within 25 seconds during this comparison. It's always great to see the "ahas" in the audience, and this one had a great crowd and excellent news coverage in conjunction with the Fire Team USA workshop presented in Indianapolis. NFSA member Rich Ackley of Dalmatian Fire built a display to show the different types of sprinkler heads and how the system looks within the walls. I have included a photo that shows the display, along with Rich and the Fire Team USA team that delivered the workshop (Wayne Waggoner, Shane Ray, Vickie Prichett and Jeff Hudson of NFPA)

Until next time, let's take advantage of every opportunity to share our fire sprinkler story, making a difference with each and every outreach. Upcoming events include partnerships with the US Fire Administration and the National Fallen Firefighters Foundation. Our involvement is helping to advance our message by increased collaboration with other relevant fire protection groups.

Stay Safe, Vickie 🕒

NFSA member Rich Ackley of Dalmatian Fire built a display to show the different types of sprinkler heads and how the system looks within the walls. (l. to r. Wayne Waggoner, Rich Ackley, Shane Ray, Vickie Prichett and NFPA's Jeff Hudson)



Graphic created by former IAFC President John Buckman following a side-by-side burn demonstration conducted for the National Association of State Fire Marshals.



Upson Joins NFSA's Engineering Team

The National Fire Sprinkler Association (NFSA) is pleased to announce that effective September 1, 2013 **Robert Upson** has joined its Engineering Department as Manager of Installation Standards.

Robert comes to the Association with over 30 years experience in the fire service, the last 11 of which serving as Deputy Fire Marshal for the Town of New



Robert Upson

Hartford, Connecticut. As a department Captain and Training Officer, Bob was responsible for development and delivery of a broad array of training programs to a large cross section of fire protection and public interests. His experience as a researcher is well documented having published studies working in conjunction with the Fire Protection Research Foundation and NIST.

When asked about Robert's appointment, NFSA President Russell Fleming said, "Robert has an impressive resume highlighting service to public fire protection. His skills, experience and educational background will be a tremendous asset to the Association as we continue to move the fire sprinkler industry forward and reinforce the Association's leadership position as 'The Voice of the Fire Sprinkler industry'."

Robert is expected to complete his M.S. later this year in WPI's Fire Protection En-

gineering program, a degree he will add to a B.S. in Fire Science Technology from Charter Oak State College, B.S. in Fire Service Administration from SUNY Empire State College and a B.A. in Psychology

from the University of Connecticut.

After September 1st, Robert can be reached at NFSA Headquarters in Patterson, New York; 845.878.4200; email: Upson@nfsa.org.

New NFSA Marketing Program Debuts

NFSA is proud to announce our new marketing campaign, **Is Your Fire Sprinkler Contractor an NFSA Member?** We are kicking off this initiative with a new ad that will be placed in various Construction Industry Magazines to appeal to General Contractors and in Fire Sprinkler Industry Publications, such as FPC. The campaign is designed to raise the profile of NFSA membership and appeal to non-members of the Association.

This two-pronged approach will raise the Association and its members to new levels by:

1. Familiarizing general contractors with the benefits of hiring an NFSA contractor.
2. Making non-members aware that GCs may soon begin to ask if they are an NFSA member prior to hiring them.

Our first ad will appear in the Nov/Dec issue of Contractor magazine and the November issue of FPC. Stay tuned for further details as the campaign evolves through 2014.



IN MEMORIAM

Dennis E. Reilly

On Thursday, August 29, 2013, **Dennis Reilly** passed away peacefully at home surrounded by his loving family. He was born in Danbury, CT on February 22, 1961 the son of former NFSA President Edward Reilly and his wife Marjorie of Pine Plains, NY. Dennis grew up in Pawling, NY where he graduated from Pawling High School. He attended college at Buffalo State University and received his Bachelor's Degree in Science Engineering Technology from Oklahoma State University. He worked in the fire sprinkler industry for over 30 years, most recently as a project manager in Naugatuck, CT for long-time NFSA contractor member SRI Fire Sprinkler Corporation. Those who attended NFSA's Annual Seminar & North American Fire Sprinkler Expo® earlier this year will remember Dennis received induction into the Fire Sprinkler Hall of Fame on behalf of his father Edward who was unable to be in attendance. He will be missed.

Running a job brings enough stress to my life. But I've got one less thing to worry about. My fire sprinkler contractor is an **NFSA member**.



REDUCE THE STRESS IN YOUR LIFE.

Make sure your fire sprinkler contractor is an NFSA member. To find an NFSA member contractor in your area, go to <http://bit.ly/searchNFSA>.



Members of the National Fire Sprinkler Association

- Make use of the best training available in the industry
- Have a nationally recognized team of experts at their disposal to help solve the most demanding installation challenges
- Hold themselves to a higher code of standards and ethics



The Voice of the Fire Sprinkler Industry

>> CONTINUED FROM PAGE 35

Buddy Dewar Receives Outstanding Fire Prevention Service Award



NFSA Vice President of Regional Operations, **Buddy Dewar** is the recipient of The Olin Greene Outstanding Fire Prevention Service Award. The Award is a lifetime achievement award

that was established by The National Association of State Fire Marshals (NASFM) in 2008. The first recipient of this award was Olin Greene, former U.S. Fire Administrator, a former State Fire Marshal and one of NASFM's founders. It is awarded to those who have dedicated their career to fire prevention and public safety, and have achieved substantial accomplishments. It is one of the highest awards presented by the NASFM. Buddy was surprised and very humbled by this award. All of us at NFSA are proud of you, Buddy!

Roland Asp Awarded NICET Level III Certification



Roland Asp, NFSA Manager of Technical Services, has been awarded his NICET Level III Certification in Water-Based Fire Protection System Layout.

Not only is Roland now recognized as a NICET Level III Technician, he is also one of the first people to achieve this level of recognition with the new NICET Computer-Based Testing.

We offer our heartiest congratulations to Roland on this outstanding achievement!

NFSA Accepting Nominations for Awards

The National Fire Sprinkler Association's Awards Committee is currently accepting nominations for awards to be given out in conjunction with its 2014 Annual Seminar, to be held May 8-10, 2014, at the Atlantis Resort on Paradise Island, Bahamas. Please consider nominating an individual for one of the following:

GOLDEN SPRINKLER AWARD – The NFSA's highest award, the Golden Sprinkler is given each year to acknowledge an individual who has worked within the fire sprinkler industry and made outstanding personal contributions toward the betterment of the industry through participation in the NFSA.

TECHNICAL SERVICES AWARD – Given each year to an individual in recognition of significant contributions to the engineering, standards, codes, research and other technical activities that enhance the reputation of the Association and serve to benefit the entire fire sprinkler industry.

LEADERSHIP IN PUBLIC SAFETY AWARD – Given in recognition of vision, dedication and substantial contributions to the protection of the public from the threat of fire through support of the fire sprinkler concept.

FIRE SPRINKLER HALL OF FAME – Induction is intended to recognize individuals who have concluded careers of substantial and lasting contribution to the fire sprinkler industry. While originally intended to remember those individuals who had passed on, recognition is now also available for those who have been retired from active service in fire protection for a minimum of three (3) years. *(Note: Receipt of the NFSA Golden Sprinkler Award or Technical Services Award results in an automatic nomination in the first year of eligibility.)*

NOMINATIONS:

Nominations should be on the letterhead of the submitter, signed by the submitter, and should include a statement of the nominee's achievements and contributions. The nomination should clearly state the award for which the individual is being nominated, and should be limited to 50 words or less. All nominations should be mailed by September 30, 2013, to:

**Awards Committee
National Fire Sprinkler Association
40 Jon Barrett Road
Patterson, NY 12563
or fax to 845-878-4215**

IN MEMORIAM

George L. Church, Jr.

NFSA longtime member **George L. Church, Jr.** passed away on June 26th after a 16-month battle with lung cancer. George was 58 years old. He leaves behind a wife Cathy, daughter Margaret (Meg) Ames, son-in law Dave Ames, his mother and four sisters.

George's sprinkler career started in 1974 with Automatic Sprinkler Corporation of America. In 1998 he started Rowe Sprinkler with his wife Cathy. He served on several NFPA committees and valued the many friends he made along his journey. His humor, enthusiasm, and passion for the sprinkler business will be sorely missed. •

Home Fire Sprinkler Coalition Welcomes New Board President

The nonprofit Home Fire Sprinkler Coalition (HFSC) has appointed **Lorraine Carli** president of its Board of Directors. Carli will preside over the Coalition's regular meetings and oversee HFSC outreach activities. She has been a member of HFSC's board since 2007.

Carli is VP of communications for the National Fire Protection Association (NFPA) and also manages NFPA's Wildland Fire Operations and Public Education divisions. In addition, Carli is a member of the Board of Directors for The Phoenix Society for Burn Survivors and Electric Safety Foundation International (ESFI).

Carli succeeds Gary Keith, formerly vice president of field operations and education at NFPA and now vice president-engineering standards manager for FM Global. Keith had led the Coalition since its founding in 1996 by NFPA, the American

Fire Sprinkler Association (AFSA) and the National Fire Sprinkler Association (NFSA). The three groups created HFSC to fill the need for a united and focused educational organization that would improve awareness of the life-safety benefits of home fire sprinkler systems.

Reliable Appoints Michael Billstroem and Ed LaCoste

Reliable is pleased to announce the appointment of **Michael Billstroem** as Director of International Technical Services. Michael comes to us with over 25 years of experience in the fire protection industry. Prior to working with Reliable, Michael has owned and operated independent contracting and consulting companies across several market areas and in several International jurisdictions.

Michael has a Master's degree in

Aeronautical Engineering and is a graduate of the NFSA 'Certificate Program for Fire Sprinkler Technicians'. His design experience encompasses commercial, storage, special hazard and heritage sprinkler installations as well as foam and suppression systems.

Michael will report to Graeme Leonard, Vice President International Sales & Operations, and will be a valued member of Reliable's team providing excellence in product offering and service across the industry.

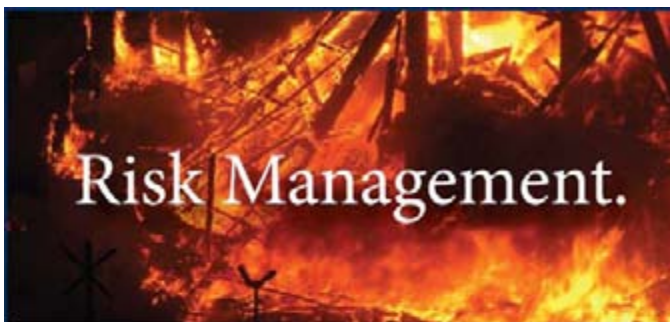
Ed LaCoste has been hired by Reliable as Sales Rep-

resentative for Indiana and Ohio, reporting directly to Dave Rosso, Midwest Regional Sales Manager. Ed began his career in the fire sprinkler industry in 1984 as a welder and within 3 years became a foreman, then field superintendent for a mid-size sprinkler company. In 1998, Ed and a partner started Lifeguard Fire Protection in Oceanside, California. With 35 years in the industry working in all levels of the fire sprinkler business Ed brings great experience to his position. He is looking forward to the opportunity and challenge of meeting the needs of our customers while promoting and enhancing Reliable's products and services.

EBL Engineers, LCC Personnel Announcements

EBL Engineers, LLC (EBL) is pleased to announce the recent licensure of **Luis Belisario** in the State of Maryland. Mr. Belisario received his Bachelor's Degree in Mechanical Engineering in 2007 and his Master's Degree in Engineering Management in 2010, from University of Maryland Baltimore County, and has been with EBL for two years. He has a broad background in mechanical engineering from both an investigative and design perspective. Over the years, he has been involved with many projects that require a high level of field investigation and knowledge of installed systems and equipment. Throughout the course of these projects he has field verified system installations, gathered existing system data, and led field engineers in the establishment of baselines for projects.

Robert W. Baker, Jr., CET, has been appointed to the Board of the National Automatic Fire Alarm Association (AFAA). Mr. Baker has over 30 years of experience in the design, review, and acceptance testing of fire alarm and electrical systems. Mr. Baker has been a member of the National AFAA and local association since 1995. He held several board positions with the local AFAA, MD-DC-VA Association and is the current President of the Association.



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REGIONAL ROUNDUP

NEW ENGLAND REGION



DAVE LAFOND
Regional Manager

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

Sprinkler Save at Portland, New Hampshire Police Station

Officials are investigating a second alarm fire at the Portsmouth police station that broke out in the indoor shooting range on July 30, 2013.

According to Fire Chief Steven Achilles, a fire activation came in at about 7:48 p.m. and was categorized as a "working fire." A second alarm was struck for mutual aid. At least six area fire departments responded to assist local firefighters. Chief Achilles stated that the fire was kept in check by the fire sprinkler system.

Because of the fire sprinkler system, the fire was contained to the shooting range and five individuals working in the dispatch center were able to exit the building without injury.

David LaFond is the NFSA Regional Manager for the New England Region. He can be reached at lafond@nfsa.org or Phone: 413.326.0014.

NEW YORK REGION



DOMINICK KASMAUSKAS
Associate Director of Regional Operations - North

NEW YORK

Governor Cuomo Signs Fire Sprinkler Notification Act

Governor Andrew M. Cuomo signed legislation that would require public and private colleges in New York State to provide written information on fire safety and fire sprinkler systems to students residing in college-owned or operated housing.

Under current law, colleges are required to publish fire safety standards as part of a federally required annual report. However, they are not required to notify resident

students about such standards as part of the housing process. The new law (A. 5715-A/S. 4180-B) signed by the Governor would require that public and private colleges in New York provide a written fire safety notification to each student living in a college-owned or operated housing facility, both on and off campus. This notification would include a description of the fire safety system for the student's housing facility, including whether or not the housing facility is equipped with a fire sprinkler system. This notification would also include information on how to access the college's campus fire safety report required by federal law. The new law takes effect immediately.

The legislation is known as the Kerry Rose Fire Sprinkler Notification Act. Kerry Rose Fitzsimons was a student at Marist College who died, along with two others, in a January 2012 fire in her off-campus housing unit. Her family and friends have started the "Kerry Rose Foundation" to educate college students about fire prevention and safety.

Visit: <http://kerryrosefoundation.org/> for more info on the Kerry Rose Foundation.

Dominick Kasmauskas is the NFSA's Associate Director of Regional Operations-North and Regional Manager for the New York Region. He can be reached at Kasmauskas@nfsa.org or 1436 Altamont Ave. Suite 147 Rotterdam, New York 12303, Phone 518.937.6589, Fax 518.836.0210.

MID-ATLANTIC REGION



RAYMOND W. LONABAUGH
Regional Manager

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

NFSA Area II 2013 Annual Seminar, October 3-5, Atlantic City, New Jersey

The 2013 NFSA Mid-Atlantic Area II Seminar will be held on October 3rd - 5th in Atlantic City, New Jersey at the Water Club, which is located at the Borgata Hotel and Casino in the Marina District.

>> CONTINUED ON PAGE 40

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HASS The leader in computer software for the design and analysis of sprinkler systems. Now includes *HASS HOUSE* and *JOB COST ESTIMATOR* in addition to *Darcy Weisbach*, *Hammer*, *System Volume*, *Gradient* and many other helpful utilities. Available in English (English and Metric units) and Spanish (Metric units) versions.

COOSA Computer software for calculating two phase flow for high pressure and low pressure CO₂ systems in English or metric units. Now includes *JOB COST ESTIMATOR* for quick CO₂ system installation cost calculations.

HASS HOUSE Fast accurate way to calculate residential sprinkler systems in accordance with NFPA 13, 13D and 13R.

JOB COST ESTIMATOR Quickly develops sprinkler system cost estimates from direct data entry or quickly generated grid or tree systems.

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208 Southside Square, Petersburg, TN 37144
931-659-9760 E-mail: hass@hrssystem.com
(fax) 931-659-9763 www.hrssystem.com

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The deadline to reserve accommodations is September 18th. If you plan to attend, we recommend that you register as soon as possible, as the room block will fill up quickly.

This year's program has something to offer for everyone and the guest speakers are once again some of the best in the industry. Keep in mind that we will be supporting the International Code Council and their final action hearing that is going on at the same time. The NFSA will be providing training at the Atlantic City Convention Center on October 3rd-4th.

This training will aid in drawing code officials from around the country.

For more information, go to the links on the NFSA Mid-Atlantic Web Page and click on any Mid-Atlantic state.

Raymond W. Lonabaugh is the NFSA Regional Manager for the Mid Atlantic Region. He can be reached at: lonabaugh@nfsa.org or P.O. Box 126, Ridley Park, Pennsylvania, 19078. Phone: 610.521.4768

SOUTHEAST REGION



WAYNE WAGGONER
Associate Director of Regional
Operations - South

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

Pleasant View, Tennessee Leaders Debate Sprinkler Ordinance

The Pleasant View, Tennessee Board of Mayor and Aldermen once again deferred action on an ordinance that would reduce the town's sprinkler regulations on commercial development.

This was the second time in the past month that the board has voted to defer the ordinance.

The changes are being pursued in hopes to make Pleasant View more business friendly for potential developers.

Pleasant View Volunteer Fire Department Deputy Fire Chief Derek Noe said the department does not support the proposed changes as they would likely require the department to have to purchase additional equipment to help protect large commercial structures that are not equipped with sprinklers. In addition, he said it also has the potential to raise the ISO rating, which could result in higher homeowner insurance premiums.

He also voiced safety concerns for citizens who will be occupying the new commercial buildings as well as for the firefighters who will be protecting them.

Noe cited a letter from the National Fire Protection Association, which supports the proactive stance on fire sprinklers in Pleasant View. The letter stated that reducing the sprinkler requirements would be a step backwards. In the ordinance under discussion, it removes the sprinkler requirements for commercial buildings under 12,000 square feet.

Alderman Danny Rediker, who made the motion to defer, said there is still more work to be done on the ordinance before it is approved.

Mayor Perry Keenan said, based on the information he has compiled from insurance representatives, the changes would have a minimal effect on the ISO rating.

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REGIONAL ROUNDUP

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Editors note: Pleasant View has had this ordinance in place for several years, new mayor voted in and made a campaign promise to reduce the fire sprinkler requirement.

Wayne Waggoner is the NFSA Associate Director of Regional Operations+South. He can be reached at Waggoner@nfsa.org or PO Box 9, Andersonville, Tennessee 27705, Phone 865.755.2956, Fax 865.381.0597.

FLORIDA & PUERTO RICO



LORELL BUSH
Regional Manager

FLORIDA, PUERTO RICO

Hawk's Cay 2013 – October 20th–24th

Hawk's Cay 2013 is open for registration. There is a new and exciting line up of all new classes and a very special keynote speaker, former NFL Quarterback Doug Flutie! Make plans to get all 32 CEUs including mandated CEUs at beautiful Hawk's Cay Resort in the Florida Keys. Dinner on Tuesday night, bus to Key West on Wednesday. Breakfast and lunch included each day. Sign up at www.floridafiresprinkler.com.

Lorrell Bush is the NFSA Regional Manager for the Florida Region. She can be reached at bush@nfsa.org or 2025 Droylsden Lane, Eustis, FL 32726. Phone: 352.589.8402 Cell: 954.275.8487 Fax: 561.327.6366.

GREAT LAKES REGION



RON BROWN
Regional Manager

INDIANA, MICHIGAN, OHIO,
WEST VIRGINIA, KENTUCKY

Northern Indiana Community Considering Residential Sprinkler Ordinance

A community in Indiana is interested in adopting an ordinance requiring fire

sprinklers to be installed in new and remodeled residential construction. Great Lakes Regional Manager Ron Brown is working with local officials to help accomplish the adoption of the ordinance. The community adopted an ordinance in 2002 that was recently challenged. It was determined to be unenforceable in 2011 because it had not received final approval of the State Fire Prevention Building Safety Commission (FPBSC) as the law requires. As a result of this court ruling, the community is considering moving an ordinance similar to the previous ordinance forward for adoption and review by the Indiana FPBSC. The approval of the Commission will require much support from the community. Updates will follow.

Ron Brown is the NFSA Regional Manager for the Great Lakes Region. He can be reached at Brown@nfsa.org or 1615 Cypress Spring Drive, Fort Wayne, Indiana 46814, Phone 845.661.6534; Fax 260.625.4478.

ILLINOIS REGION



TOM LIA
Regional Manager

ILLINOIS

Illinois Fire Marshal Withdraws Sprinkler Proposal

On August 2nd, Illinois State Fire Marshal Larry Matkajtis withdrew a proposed rule that would have required the installation of fire sprinklers in residential high rises. A source said the rule was withdrawn because the proposal did not have enough support in the Joint Committee on Administrative Rules, the legislative body in Springfield tasked with adoption or rejection of various code changes.

Lawmakers had been increasingly pressured by outraged condominium residents, who feared massive assessments for sprinkler installations. Supporters of the initiative said it fell victim to a rampant campaign of misinformation, which frightened residents with predictions of

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REGIONAL ROUNDUP

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absurdly high installation charges. Aldermen had circulated flyers, predicting installation costs of as much as \$50,000 per apartment. Two town meetings held this week, were packed with angry residents, and a fire marshal's representative was shouted down at one of those sessions.

NBC Chicago asked USA Fire Protection of Lake Forest to perform a formal estimate on a high-rise for comparison with the numbers being distributed to area homeowners. Their determination: the 25 story building would have cost \$1,760,000 to retrofit, a unit cost of approximately \$8.90 per square foot. A company official said that cost included cosmetic work to conceal pipes and other sprinkler features. Some aldermen had been warning residents of retrofit scenarios in the same neighborhood, more than ten times that amount. The City of Chicago had also opposed the proposed rules, insisting that their so-called Life Safety Evaluations of high rises provided equivalent protection to sprinklers. The LSE's require surveys by licensed architects, and feature elements like two-way communications, hard-wired smoke detectors, and systems to prevent elevators from traveling to fire floors.

Tom Lia is the acting NFSA Regional Manager for the Illinois Region. He can be reached at lia@nfsa.org or 62 Orland Square Dr Ste 201, Orland Park, IL 60462. Phone: (708) 403-4468, Fax: (708) 403-4771



NORTH CENTRAL REGION



DOMINICK KASMAUSKAS
Associate Director of Regional
Operations - North

MINNESOTA, WISCONSIN, NORTH DAKOTA,
SOUTH DAKOTA

Sprinklers Contain Fire to One Unit at Woodbury, Minnesota Apartment Complex

Firefighters credited a sprinkler system for sparing other units from serious damage after fire broke out at an apartment Friday night at The Classic at the Preserve in Woodbury, Minnesota.

Woodbury fire department Cmdr. John Wallgren said tenants on a first-floor apartment were cooking with oil and walked away from the stove when the contents of the pan caught fire and spread quickly into the surrounding cabinetry.

Wallgren said no one was injured in the fire, which was contained to one unit.

Just one sprinkler activated and was able to contain the fire, which Wallgren called "very fortunate," adding, "It could have been ugly."

The North Central Regional Manager is TBA.

CENTRAL REGION



CHRIS GAUT
Regional Manager

IOWA, KANSAS, MISSOURI

Springfield, Missouri Fire Code to Use Color Coded Tagging System for ITM

As NFSA continues to increase the awareness level of Inspection, Testing, and Maintenance of Water Based Fire Protection Systems, the Springfield Missouri Fire Department has adopted a local ordinance to require ITM inspectors to be certified and to use a color coded tagging system.

In Missouri unfortunately, the State does not have a Fire Code or ITM Law in place to ensure Fire Sprinkler Systems are annually inspected. At most local level jurisdictions, manpower and time does not

allow NFPA 25 to be properly enforced. Putting in place a local ordinance such as this is a great way to ensure compliance.

Chris Gaut is the NFSA Regional Manager for the Central Region. He can be reached at gaut@nfsa.org or NFSA Central Region Office, 207 Van Buren Rd. Branson, MO 65616, Phone 845.803.6426, Fax 636.410.7700.

SOUTH CENTRAL REGION



CYNTHIA GIEDRAITIS
Regional Manager

ARKANSAS, LOUISIANA,
OKLAHOMA, TEXAS

Upcoming Regional Events

Louisiana Automatic Alarm Association

BASIC ALARM SEMINAR

September 18-19, 2013

FIRE ALARM & SPECIAL LOCKING PLAN REVIEW

September 20, 2013

Louisiana State Fire Marshal Offices,
8181 Independence Boulevard,
Baton Rouge
Ron Case, ronaldjcase@aol.com
678-454-3473

Oklahoma Fire Sprinkler Association

HYDRAULICS AND ACCEPTANCE TESTING FOR PLAN REVIEWERS

September 23 & 24, 2013

Tulsa Technology Center
Raymond Lawson
Email: raymond.lawson@wsfp.us

FSCATX Inaugural Charity Golf Classic

Benefitting Texas Scottish Rite Hospital for Children

Monday, September 30, 2013

Trophy Club Country Club
Trophy Club, TX
Fire Sprinkler Contractors Association of Texas
Carol McCain, Executive Director
Tel: 281-361-8069
Toll Free Phone: 877-894-3011
Fax: 281-360-6732
fscatx@embarqmail.com

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Oklahoma Fire Safety Day

October 12, 2013

Lowes Home Improvement
Stillwater, Oklahoma
Sean Morrison
315.730.6819
sean.morrison@okstate.edu

15th Annual Texas Fire Marshal Conference

October 21-25, 2013

Austin, Texas
Rachel Moreno
512-305-7503
Rachel.Moreno@tdi.texas.gov

Cindy Giedraitis is the NFSA Regional Manager for the South Central Region. She can be contacted at giedraitis@nfsa.org or PO Box 10403, College Station, Texas 77842. Phone: 979.324.8934.

GREAT PLAINS REGION



ERIC GLEASON
Regional Manager

Colorado, Nebraska, Utah, Wyoming

Opinion Editorial
by Eric Gleason

"Unfunded Mandate"

We hear a lot about this phrase "unfunded mandate" in the news, but what does it really mean? When I am in meetings where a breadth of interests are represented (builders, fire officials, building officials, fire suppression contractors, code officials, legislators, etc.) I see an opportunity to learn and educate myself and share that information with others.

What is an 'unfunded mandate'? Generally speaking it is where a state, city, county or other government (local or federal) entity is required to do something (enforce) without any funding by the authority requiring it. Arguably the three most common federal mandates are The Clean Air Act, American's with Disabilities Act and Medicaid.

As we (me and the mouse in my pocket) think about fire suppression systems and the model codes (ICC, IRC, IEC, IPC, IFC,

etc.), they are NOT an unfunded mandate. A state adopting a minimum requirement within the state for 2012 adoption of the Code whereby cities, counties, towns may not allow for less than what the code requires is not an "unfunded mandate." Code enforcement currently exists in all major cities throughout the United States. Build a hospital or a school in a rural area and code enforcement exists.

Where the argument is coming from is rural areas, where sometimes there isn't a permit required to build nor the litany of inspections that code requires that would require population-challenged counties to inspect Mr. Smith's 3,000 square foot home on his 150 acre ranch, 3 hours from the closest M.S.A. (Metropolitan Statistical Area)

The question I pose, is how Mr. Smith getting inspections of a home where Mr. Smith intends to reside and possibly have others reside isn't worthy of the county to verify that it is indeed inhabitable? And how many buildings need to be inspected annually? And the county could charge fees associated with the cost to inspect based on how many buildings were anticipated in their annual budget. The need of the County to know what is being built in their county will generate tax revenue more accurately and serves the public interest and the national security of the United States of America.

What is often coined "unfunded mandate" is really a decoy to say that my grandfather who was born in Hazard, Kentucky didn't deserve the same level of safety as his friend who lived in Louisville. Or that my father who was born in Greeley, Colorado didn't need any inspections because Greeley was a farm town. "This ain't Denver..." he used to say. As with anything in government, there are few, if any, absolute unfunded mandates. Here's an article about Medicaid and a state's ability for federal aid. <http://www.hhs.gov/recovery/programs/medicaidfmap.html>

Nothing is as in-your-face as someone saying "requiring fire sprinklers is an unfunded mandate." Keep your wits and ask them if the entire ICC book is an unfunded mandate or is it just the parts they don't

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REGIONAL ROUNDUP

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like? There are a lot of really smart people at ICC that have considered hundreds if not thousands of things before requiring something in the code.

Eric Gleason is the NFSA Regional Manager for the Great Plains Region. He can be contacted at gleason@nfsa.org or P.O. Box 62157, Littleton, CO. 80162. Tel: 720.470.4894

SOUTHWEST REGION



BRUCE LECAIR
Regional Manager

ARIZONA, NEVADA, NEW MEXICO, CALIFORNIA,
HAWAII

Fire Sprinkler Contractors Association of Southern California Donate to Fallen Firefighters

In a special announcement in early July, the Board of Directors of the Fire Sprinkler Contractors of Southern California Association (FSCA) announced the generous donation of \$5,000.00 to the United Phoenix Fire Fighters Association benefiting the 19 fallen Granite Mountain Hotshots from Prescott Fire Station #7. The firefighters were tragically killed on June 30th when a devastating windblown wildfire overcame them near the small town of Yarnell, Arizona.

The FSCA announcement further added, "The FSCA remembers with great sorrow and the utmost respect. Sincerely, Board of Directors and Members, Fire Sprinkler Contractors Association of Southern California."

Bruce Lecair is the NFSA Regional Manager for the Southwest Region. He can be reached at lecair@nfsa.org or Phone: 951.277.3517, Fax: 951.277.3199.

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REGIONAL ROUNDUP

>> CONTINUED FROM PAGE 44

NORTHWEST REGION



SUZANNE MAYR
Regional Manager

ALASKA, IDAHO, MONTANA, OREGON,
WASHINGTON

Investment in Bremerton, Washington Public Housing Sprinkler Systems Pays Off

A resident of a West Bremerton housing complex apparently suffered a medical emergency while smoking in bed the morning of July 24th. She was not awakened by the smoke alarms in the unit. Neighbors reported hearing the alarm for about 10 minutes prior to the fire sprinkler system activating.

The fire sprinkler system both extinguished the fire and activated the building fire alarm system, which then notified the fire department.

The occupant was treated by medical

personnel and fire crews assisted building managers with salvage operations. According to the Bremerton Fire Department, the occupant did not suffer any injuries from the fire.

This case brings to light how valuable fire sprinklers are when occupants are incapacitated. Due to a medical condition, the resident was not able to respond to the smoke alarms. "I can say that in this case, were it not for the fire sprinkler, this person would not have survived," said Bremerton Fire Marshal Michael Six. "This would have been a fatality."

Greg Rogers, Chair of the Washington State Residential Fire Sprinkler Coalition, pointed out that this housing complex was the site of a side-by-side burn to demonstrate the effectiveness of fire sprinklers before these units were built.

Suzanne Mayr is the NFSA Regional Manager for the Northwest Region. She can be contacted at mayr@nfsa.org or 3411 North 19th St. Tacoma, Washington 98466, phone: 253.208.8467.

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April 30 -
May 2, 2015



New NFPA report: U.S. Experience with Sprinklers

NFPA recently released its yearly U.S. Experience with Sprinklers report, documenting the presence and performance of fire sprinklers during reported fires for all occupancies, including homes. This report is available at no cost.

The presence of residential fire sprinklers has increased, especially in the last four years. As found in the report "...4.6% of occupied homes (including multi-unit) had sprinklers, up from 3.9% in 2007, and 18.5% of occupied homes built in the previous four years had sprinklers."

Sprinklers are still rare in homes (6%), where most fire deaths occur. There is considerable potential for expanded use of sprinklers to reduce the loss of life and property to fire. With wet-pipe sprinklers

the fire death rate per 1,000 reported home structure fires was lower by 82% and the rate of property damage per reported home structure fire was lower by 68%.

Sprinklers operated in 91% of all reported structure fires large enough to activate sprinklers, excluding buildings under construction and buildings without sprinklers in the fire area. When sprinklers operated, they were effective 96% of the time, resulting in a combined performance of operating effectively in 87% of all reported fires where sprinklers were present in the fire area and fire was large enough to activate them. The more widely used wet pipe sprinklers operated effectively 89% of the time, while dry pipe sprinklers operated effectively in 76% of cases.

Go to www.sprinkler.blog.nfpa.org for more information.


NFPA Launches Authenticity Program to Help Users of NFPA Codes and Standards

The National Fire Protection Association (NFPA) announced the initial launch of its Authenticity Program, through which users and customers can ensure that digital copies of NFPA documents have not been altered in any way. The NFPA Authenticity Program was developed in response to growing concerns about maliciously altered, counterfeit or unauthorized copies of NFPA digital documents. Now, with this program, users can assure themselves that they have authentic materials by downloading them only from NFPA.org or its authorized resellers and by always finding and clicking on the Authenticity Stamp on any NFPA document they plan to use.

The NFPA Authenticity Stamp contains a customer's identification number, and is a live link to a verification database that includes NFPA documents in this program. By clicking the link, a verification process will begin, redirecting the user to a website that displays customer and code information. If the document does not have the Authenticity Stamp, or if any of the information is incorrect, or there is no link to www.nfpa.org, the downloaded document is unauthorized and may be inaccurate. Use of that digital code or standard should be discontinued and NFPA's customer service department should be contacted to report the problem and get help in obtaining genuine NFPA codes and standards.

While the stamp will appear on documents each time they're downloaded, the new program will not impact usage rights, downloading or the storage process in any way.

The final phase of the NFPA Authenticity Program was completed in January 2013; the program is fully implemented online.

For more information about the NFPA Authenticity Program, visit www.nfpa.org/authenticate. 

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■ Viking Adds FM Approved, Braided Hose to FSC Line and Launches "K22 ESFR" Storage Sprinkler

Viking Corporation introduces a new, FM Approved, flexible sprinkler connection featuring a braided hose. The Model FSC-28B product is offered in addition to Viking's existing cULus Listed (non-braided) flexible sprinkler connection, Model FSC-25U which was announced last year.

Viking's FSC line of flexible sprinkler connections features a pre-assembled, ready-to-install bracket assembly. The installation bracket provides a secure fit to the suspended ceiling grid and offers generous lateral adjustment for precisely locating sprinklers, which is particularly important for "center-of-tile" installation requirements. Additionally, the center bracket design allows for substantial vertical adjustment to accommodate both semi-recessed and concealed sprinkler installations.

Viking's flexible sprinkler connections are factory-assembled and ready-to-install out of the box, without additional loose parts. They are also offered pre-assembled with most of Viking's commercial sprinklers. When the pre-assembled product is ordered, the sprinklers are factory installed onto the flexible connections' outlet reducer fittings. The pre-assembled drops are 100% pressure tested at the factory.

The new model FSC-28B braided flexible sprinkler connections are packaged five (5) per box and are available in standard lengths of 39-3/8" (1,000mm) and 59" (1,500mm) with either a 1/2" or 3/4" NPT sprinkler connection. Additional hose lengths are available with an extended lead time.

Also being introduced is a new Early Suppression Fast Response (ESFR) pendent sprinkler with a K factor of 22.4 (320) for use in warehouses and other storage applications. The new model VK506 sprinkler uses a fast response fusible element and is approved to protect most common

storage materials, including encapsulated and unencapsulated class I-IV commodities as well as expanded and unexpanded plastics.

Viking's K22 ESFR is cULus Listed and FM Approved for buildings up to 45 ft (13,5 m) high and storage heights up to 40 ft (12,2 m), without the use of in-rack sprinklers. The VK506 sprinkler can be installed with the deflector located between 6 and 18 inches (152 - 457 mm) below the ceiling. The sprinkler is also dimensionally shorter than competitive products, which provides for additional flexibility when installing the product.

The new VK506 has a 1 inch NPT (25 mm BSP) thread size and is available in 165°F (74°C) and 205°F (96°C) temperature ratings. With a K Factor of 22.4, the new VK506 provides ESFR storage protection at lower pressures compared to K14 and K17 ESFR sprinklers, and often requires a lower overall water demand when compared to a K25 ESFR sprinkler. As a result, the new VK506 may allow for reduced pipe sizes, smaller storage tanks, and the elimination of a fire pump in many storage applications.

For more information visit www.viking-groupinc.com or call 800-968-9501.

■ Potter Announces New Sprinkler Monitoring Panel

Fire alarm panel designed specifically for sprinkler monitoring offers much needed solution.

Potter Electric Signal Company, LLC announces the PFC-6006 Sprinkler Monitoring Panel, the newest addition to their complete line of fire systems. The PFC-6006 is the solution to the industry need for a small, inexpensive, yet highly robust, fire alarm panel created specifically to handle flow, pressure, and tamper switch notifications.


The first zone of the PFC-6006 is selectable as a Class A or Class B water

flow input and the other five zones are selectable from a menu of options including two-wire smoke detection. The panel has a 1.0 amp power supply that powers the panel, charges the batteries and supplies 0.5 amps to a notification appliance circuit and 0.5 amps of auxiliary power. Potter's exclusive Quadrasync technology allows the PFC-6006 to synchronize A/V devices from Potter/AMSECO®, Wheelock®, Gentex®, and System Sensor®.

The Potter PFC-6006 also meets the new requirements of NFPA 72 2013 which calls for systems monitored with phone lines to be backed up by an alternate means of communication. In addition to communicating over IP right out of the box, the PFC-6006 can also send emails with status updates or to download configuration files. Email can also drive service and revenue with reminders that an inspection or test is due.

■ Accent Fire Engineering Announces Scholarship Program

NFSA Professional member Accent Fire Engineering Int'l. Ltd. in Santa Fe, New Mexico, announces it has partnered with the University of Maryland and The School of Fire Protection Engineering in providing financial support to female, on-campus undergraduate students in the FPE Program. The Charles D. Watts, Jr. Memorial Endowed Scholarship Funds are named after the late "Chuck" Watts – a 40-year veteran of the Fire Sprinkler Industry in Los Angeles, California (Viking Automatic Sprinkler Co. and Grinnell Co.) He was also a decorated World War II Veteran of the United States Navy.

Accent is a full-service Fire Protection Engineering and Consulting firm with clients in 36 States and is licensed in twelve U.S. States. President and Co-Founder, Jerry D. Watts, is the son of Chuck Watts and attended the University of Maryland – College Park. 



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- RALPH WALDO EMERSON

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5	1/2" Angle Valve	1
8	Miscellaneous	

NO.	DES	P/N
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21	1"	CH
22	1/2" Union	CH

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