



NOTIFIER's Worldwide Communications Newsletter • Issue 1, 2003

the global view

A Burning Question

by Jean Dunbar
Reprinted with permission from *Preservation*, the magazine of the National Trust for Historic Preservation, November/December 2002.



Firefighters worked hard to save the Lexington, VA Presbyterian Church, but flames swallowed the steeple, and it fell.

Although a morning mist still hung in the air, July 18, 2000, promised to be another brutally hot day in Virginia's Shenandoah Valley. A crew of men repainting the roof of the former Rockbridge County Jail in the historic college town of Lexington got to work early, hoping to finish before the metal became a sizzling griddle. By 9:35 they were on the roof's south side, where they had a good view of the mighty Doric columns and soaring steeple of the 1845 Greek revival Lexington Presbyterian Church, half a block away. Perhaps one of them glanced up to check the time on the steeple's clock, as locals are wont to do. What he saw was smoke leaking from the steeple in a continuous stream, like steam escaping from a teakettle. Below, peo-

ple strolled along on the sidewalks, and cars waited for green lights at the intersection of Nelson and Main. The painters began waving their arms and shouting, "The church is on fire! Look up, look up! The church is on fire!"

The first fire truck appeared in moments, its siren screaming. Lexington's well-trained firefighters were soon on the attack, working in broad daylight with modern equipment and an ample supply of water. One by one, every fire department in the area arrived to lend its support. Still, at 12:30 the steeple toppled into the churchyard. Then the roof collapsed, taking the upper edges of the walls with it. What few spectators realized, but fire experts know, is that all

hope of saving Lexington's oldest surviving church—a building designed by Thomas U. Walter, one of the architects of the U.S. Capitol, and a place where Confederate Gen. Stonewall Jackson once taught Sunday school—was gone before the first truck arrived.

Modern methods of fire detection and fighting have reduced the number of people who die in fires each year, but the number of historic buildings and other cultural resources damaged by fire has remained steady for more than a decade, at about 2,000 annually nationwide. In recent years, fires have struck countless private residences as well as such landmarks as Chicago's Pullman Car Co., a factory and administration building where an 1894 strike helped inspire the organized labor movement; the 1932 ship-shaped S.S. Grand View Hotel in Schellsburg, Pa.; several historic New York City churches, including the Cathedral Church of St. John the Divine; and the newly renovated Engine House at Philadelphia's Fairmount Waterworks, a marvel of Greek revival architecture.

Everyone reads about these terrible losses, but too often the owners of historic properties seem to believe that fire is something that can't happen to them. "When preservationists focus on the rehab of buildings," says fire-protection engineer Jack Watts, who directs the Fire Safety Institute in Middlebury, Vt., "they fail to notice that fire safety is the problem" they should address.

Fire professionals know what most owners do

not: Once a blaze starts, no matter how skilled or speedy the fire department, an old building is going to be irreversibly damaged. Madison, Ind., has more than 1,500 19th-century structures in its historic district, the largest such grouping in Indiana. Stephen Horton has been Madison's fire chief for 18 years. "Everyone here thinks, 'My historic building will never burn—and, if it does, the department will be here instantly, and they'll put it out at the point of origin, no problem.' Wrong!" Within five minutes, a fire can reach 1,100 degrees Fahrenheit, hot enough to begin melting structural steel. Wood lath, sheathing, and antique finishes combust at far lower temperatures.

Historic buildings may well lack the compartmentalization that slows fire. Places of worship, with their wide spans, are particularly vulnerable. Lexington Presbyterian's blaze, started by a paint-removing heat plate, roared through the open attic, using the steeple as a convenient chimney. In remodeled old buildings, fire travels with sinister speed through voids—dropped ceilings, furred-out walls, utility chases. Channels created by balloon construction, the speedy method of timber framing invented in the early 19th century, offer unimpeded paths for flames from basement to attic. Tight stairs, furnaces located in cellars, narrow doors, and tiny attic hatches complicate firefighting.

Because fire consumes most everything in its path, and quickly, it is unlike any other risk, says

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Extend Your Reach with NOTIFIER at NFPA

At NFPA 2003 in Dallas, NOTIFIER is sure to score big with our powerful NFN WebServer and UniNet™ 2000 product line. Our football-themed booth will feature appearances by two of the world-famous Dallas Cowboy cheerleaders and former Dallas Cowboy star, Daryl "Moose" Johnston.

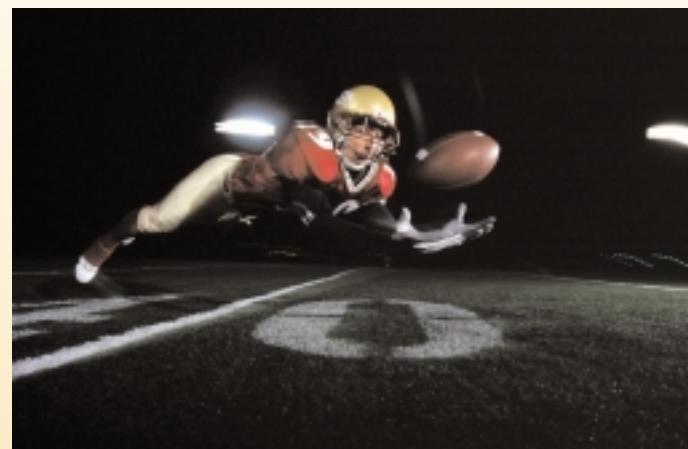
The show will kick off on May 19 and run through May 21. Themes for the show highlight some of NOTIFIER's competitive advantages. These include the many ways you can remove your boundaries with NOTIFIER's Web Server that offers remote fire alarm control panel read status via the Internet/Intranet. Plus, the Web Server ties into NOTIFIER's UniNet 2000's state-of-the-art client-server technology which allows easy upward migration and monitoring of both NOTIFIER and non-NOTIFIER fire alarm panels. With no penalties!

A few of the Dallas Cowboy Cheerleaders will be appearing at the booth on both Monday (11AM-1PM) and Tuesday (9AM-11AM). Attendees will be able to have their picture taken, and leave the booth with a signed photo. As a special bonus, the first 50 attendees will receive Dallas Cowboy

Cheerleader calendars.

Also on Monday, "Moose" Johnston, former star full-back on the Cowboy's Super Bowl teams of the early 90's, will be on hand for photo opportunities and picture signing. Johnston was a bruising blocking back who carved out running lanes for Emmitt Smith, and played on the same offense as Troy Aikman and Michael Irvin. His career cut short by an injury, Johnston is now an NFL commentator.

"This year's NFPA promises to be extremely exciting," said Honeywell Fire Systems' Vice President of Corporate Communications, Leslie Craddock. "While the NOTIFIER team gains yardage with one-on-one product presentation, attendees will also have the unique chance to meet some NFL stars from both on and off the field. And they will be able to see how NOTIFIER rushes and sacks the competition with its superior products." 1



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NEW Selectable Output Series!

Burning Question, cont.

Mark Gilberg, research director of the National Park Service's Center for Preservation Technology and Training in Natchitoches, La. "And, unlike earthquakes, fire is everywhere, no matter where you live. As a result, it gets 10 out of 10 points in any risk assessment" of a historic property.

Many owners of such structures figure that since old buildings have been around this long, why should they burn now? "The integrity argument—that because a structure has lasted 85 years, it's not going to burn—doesn't hold up," says architect Wayne Meyer, of Arcodect Code Consulting in Florence, Ky. "Fire doesn't know if the building is on the National Register or not." Danny McDaniel heads Colonial Williamsburg's security, safety, and transportation department and chaired the National Fire Protection Association's cultural resources committee. The association studies fires, keeps statistics, and produces codes. "The question is not will an old building catch fire," says McDaniel, "but when. Many last centuries only to be lost to, or severely damaged by, fire."

All structures are vulnerable. Brick and stone don't burn, but wood framing, sheathing, and flooring do. James Storm, the building inspector in Madison, Ind., recalls a recent house fire: "The floors and ceilings fell in, which put pressure on the exterior brick walls that they weren't meant to carry. And spraying water on a hot structure weakens mortar. You can save the superstructure if the walls aren't damaged much. In this case, the rear wall bowed out. The house had to be taken down."

In terms of fire, preservation is a Catch-22: A structure is most likely to burn during and immediately after rehabilitation. "Every time your building undergoes renovation there always seems to be at least one fire," says Mark Gilberg. A raging fire gutted his center's building, the former women's gym at Louisiana's Northwestern State University, halfway through its rehabilitation. "Opening up walls and floors and ceilings

tears up their fire resistance," says John Watts. "And, at the same time, more hazards are introduced—tools, equipment, heat-producing appliances."

Heat plates and torches, commonly used in renovation, routinely burn buildings to the ground. "People insist on burning off paint," Horton says. "They've caused a long list of fires in Madison over 30 years. I shudder when I see people using torches on these old buildings. Combine flame and aged wood, and the wood's going to go." Rehabilitation exposes a building to open flames (including cigarettes), electrical malfunctions, and equipment failures. These heat sources cause 48 percent of fires that damage cultural resources—such as libraries, museums, and places of worship—many of which are historic buildings. (By comparison, arson proves to be the cause of 30 percent.)

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What's more, a building under renovation offers a smorgasbord of combustible materials: solvents, finishes, paint remover, sawdust, adhesives—not to mention oily rags, which deserve their bad reputation. Workers oiling kitchen counters in a c. 1840 Buckingham, Va., house threw rags into the kitchen trash, instead of dousing them. Heat generated by the rubbing set them afire.

William Dupont, the Graham Gund Architect of the National Trust, believes that any type of rehabilitation increases risk because the building is turned over to an outside contractor. "I spend a lot of time thinking about fire," says Dupont. Contractors working on Trust properties must follow the protective procedures detailed in a publication of the National Fire Protection Association for historic structures. It bans paint stripping with open flames, using heat devices without permission, and smoking. Since no one can police a project every minute, the Trust tries to persuade rehab workers to become protectors. Each worker takes a formal tour of the building to learn why it matters to visitors and deserves protection.

Preservation can also increase the risk of fire by changing a building's use. A three-bedroom

Queen Anne villa becomes an office building filled with lawyers, their support staff, and mountains of paper, greatly increasing the fuel load. Since old structures never have enough closets, flammable Styrofoam peanuts, half-full paint cans, and computers' original cardboard cartons rub shoulders with hot furnaces and water heaters. As occupants add copiers, faxes, and coffee machines, the risk rises. A residential electrical system may have served the building's original use adequately, but after renovation—as everyone e-mails, copies, microwaves, and air-conditions like mad—it overloads, it overheats, and the building burns.

Once a building does burn, it is changed forever. On Aug. 28, 1998, a fire began during rehabilitation work on the roof of New York City's 1872 Central Synagogue. Flames rushed through the attic. Fiery debris, smoke, and water from fire hoses caused heavy damage to architect Henry Fernbach's exquisite Moorish interior. Intricately painted plaster walls became so saturated with water that they had to be replaced; charred pews had to be replicated.

Central's reconstruction program, winner of a 2002 National Trust Honor Award, carefully matched many historic materials, such as encaustic floor tiles, and strove for comparable workmanship. "We always knew that we would rebuild something that would make people feel like they were coming home," recalls executive director Livia Thompson. "Still, our pews had the patina of 125 years of use: It's a wonderful thing that we have after rebuilding, but it's not the same." Architectural historian Samuel Gruber, an expert witness for Central during legal proceedings following the fire, agrees: "Knowing that what we see is old and original affects our relationship to a historic building because part of what we admire in it is integrity of materials and workmanship."

A rebuilt building might resemble the original, but steel trusses replace roof timbers, dry wall replaces plaster, machine-made moldings stand in for hand-planed ones. "What is restored is something distinctly different from what was there before," Gruber says. "A better name for 'historic preservation' might be 'positive transformation,' since every restoration changes the building." The most meticulous recreation is not a phoenix but a replica.

When buildings that survive fires are restored,

changes made over the years can complicate matters. Should the building look as it did on the day before the fire or as it did when first constructed? Should modern improvements be made? Lexington Presbyterian, now under reconstruction, retains architect William G. McDowell's 1899 spacious additions. After much discussion, Central's congregation decided to make changes—including better access for people with disabilities and movable pews—that deviated from historical precedent.

Insurance problems also complicate rebuilding. Historic buildings are often underinsured because the owners won't pay for more coverage or because they don't realize how much comparable materials and workmanship might cost. "These structures cost more to replace because of their historical features," says Eileen Braun, a regional loss-control manager for the Chubb Group of Insurance Companies, which specializes in historic properties. And there is the cost of bringing buildings up to code. A few insurance companies underwrite in-kind replacement. Other policies replace the roof, for example, but with asphalt shingles, not with slates as on the original. But fire protection isn't all about the money. "Unlike many modern structures, these buildings are important cultural assets, not just monetary assets that can be covered by insurance," says Watts, the fire-protection engineer. "Historic buildings require a higher level of protection to ensure that they stay intact."

Preventing fires requires knowledge of how they start and spread. But believe it or not, no one—including insurers—has ever kept statistics on fires in historic buildings. Almost no data about them even get recorded. From 1994 to 1998, 35 fires nationwide per year, on average, were reported as historic-structure fires, although state reporting forms provide fire departments with a code for identifying a historic building. Instead, each department typically identifies a building by use, say, as a church.

Last January, the Virginia Department of Fire Programs joined forces with the state preservation office and fire departments in Williamsburg and James City County to collect data about historic-structure fires for the first time. Plans call for cross-referencing a reported fire's street address with historic-properties databases. Once the system works smoothly, it can be used

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Putting New Things in Old Places

by Chuck Wilson, Executive Director, NSCA

One of the fastest growing sections of construction is historic building renovation and repair. Coincidentally, it happens to be one of the most difficult places to work. The conditions and requirements often leave contractors asking themselves, what went wrong? My experience tells me the answer is simply overlooking the extra time and care it takes to meet the customer's requirements.

In my former life as a systems contractor we were involved in many installations where we underestimated the scope of work based on the often-delicate working conditions. Poor construction documentation, twelve-inch thick walls, solid ceilings, dirt and dust, stained glass windows, plaster and decorative artwork awaited installers and technicians who were born around the time the building was being placed on the national register for historic places. The lack of experience with this type of work often costs systems contractors the price of a new ceiling or wall or worse.

To help alleviate some of these issues with historic buildings, try the following suggestions. First build a new relationship with a local architect. Look for someone who has experience in historic building renovation who can attend your site visits with you before you even bid the project. Many architects specialize in knowing how the older construction materials will hold up and withstand vibration, additional weight, etc. You might build a long-term relationship beyond just the project you are looking at.

Another recommendation is the NSCA Essentials CD-Rom. This resource offers a section called "Project Tracking Tools and Tips." What you will find is a guide on allowing enough time for unexpected things. If you combine these tips with the industry standard labor units for common devices,

which includes three levels of difficulty for estimating, your risk of losing money may be minimized. It may also serve as a tool to show your client the labor units and difficulty factors that need to be taken into account so that the client doesn't think you are just "padding" the labor.

In addition, Essentials provides an example "conditional" sales agreement. This special form is perfect for historic buildings where the documentation and work conditions are often questionable. It serves to protect both you and your customer. It can be used as a hold harmless agreement in the event that something bad happens when installing your systems. It essentially says that if things go according to plan the customer pays the base amount on the contract. If things don't go in accordance to the plan, then the contract allows you to bill extra, or in some cases (such as finding asbestos) stop work and be paid for your efforts to date.

Remember the time factor, having the right tools and necessary experience for these buildings. You might spend all day chasing down a three-foot long drill bit and the next day fixing the three-foot hole it left. Neither of which was factored into your labor estimates.

Although these types of projects may require a little more time and energy, they can be some of the most creative, prestigious and rewarding jobs for your company. If done with enough planning and foresight, projects that are challenging can often result in some of your best work. Good luck and next time you see me ask me what happened when we did the security systems in a prominent Governor's mansion, it's kind of humorous, now. 1

Chuck Wilson has been the Executive Director of the NSCA since 1996. As Director, much of his time is spent assisting contractors with the challenges of today's business environment.

Codifying Fire Protection For Our Cultural Resources

by Ron Mengel, V.P. Industry Affairs, Honeywell Fire Solutions Group

Attempting to establish a prescriptive set of fire protection requirements for historic buildings and for buildings that house cultural resources (e.g., museums, libraries, places of worship) is no easy task. In the case of historic buildings there is, of course, no such thing as "new construction". "Grand fathering" doesn't provide much assistance, as the building and fire codes in existence when many of these structures were built were rudimentary at best, if they existed at all. Another primary difference is that while the goal is still providing fire protection and life safety, this must be balanced with the need to protect the elements, spaces, and features that make these structures historically or architecturally significant.

In the past, code officials had few options, and were often resigned to exempting the structure from many of the local building code requirements. Cost considerations and existing technology left few other choices, other than shutting down the building. Fortunately, this is no longer the case. In the past few years, very significant progress has been made in establishing both prescriptive and performance-based requirements for these unique structures.

The National Fire Protection Association first organized the Committee on Libraries, Museums, and Historic Structures in 1940. The first committee document, a manual titled *Protecting Our Heritage: Historic Buildings, Museums, and Libraries*, was published in 1948. In the following years the Committee developed a series of recommended practices for these unique buildings and sites. By 1996, five separate documents governing libraries, museums, places of worship, historic structures and historic sites were published. These were all published and maintained as guides or recommended practices.

In early 1993, the committee began work to consolidate the requirements for churches, museums and libraries into a common document, and the need to deal with the unique properties of historic structures was identified. The consolidated document was issued in 1997 as NFPA 909, *Standard for the Protection of Cultural Resources, Including Museums,*



Libraries, Places of Worship, and Historic Properties. A separate recommended practice was developed which became NFPA 914, *Recommended Practice for Fire Protection of Historic Structures.* In 2001, both documents were designated as codes, a recognition of their restructuring to provide clear guidance in mandatory language suitable for adoption in law by local jurisdictions.

The 2001 edition of NFPA 909, *Code For The Protection of Cultural Resources*, now defers to the 2001 edition of NFPA 914, *Code for Fire Protection of Historic Structures*, for the protection of these structures. Both documents stress the need for a well-structured fire prevention program as an integral part of the fire protection solution. In addition, NFPA 914 contains both a prescriptive approach as well as a performance-based approach.

New technologies in active fire detection and suppression systems have enabled fire protection system designers and facility owners to utilize the advantages of these systems as part of the solution today. New early warning detection systems and water mist suppression systems are but two examples. New developments in fire simulation are also playing an active role in identifying the viability of various designs. With these new codes and tools, designers, owners and AHJ's are all better prepared to take on the challenge of protecting historic structures and other cultural resources while providing a reasonable level of safety. 1

Ron coordinates the involvement of Notifier and the other Honeywell Fire Solutions Group companies in code and standard development, industry organizations, and industry sponsored research and educational programs. He holds a Certificate in Fire Protection Engineering from Illinois Institute of Technology, is NICET Level IV in Fire Detection, and a member of four NFPA Technical Committees.

Honeywell Completes Purchase of Shanghai Company

On December 30, 2002, Honeywell's Fire Solutions Group completed a 100% asset purchase of a fire alarm manufacturing company in Shanghai, China. The entity will be called Honeywell Fire and Security Systems (Shanghai) Co. Ltd., and will manufacture a complete line of conventional and intelligent fire alarm systems to service China.

"There are two markets in China: the import and the local," explains Mark Levy, President of Honeywell's Fire Solutions Group. "Buying this company allows us to penetrate and immerse ourselves in the local China market. By using local manufacturers, we are better equipped to meet customer demands. Instead of providing a product that has been adapted or modified, we now offer products that are customized to meet the standards and specifications of the China market."



The Fire Solutions Group's initial foray into China was its warehouse in Shanghai's Waigaoqiao Free Trade Zone, just south of downtown Shanghai. It was while incorporating this warehouse into its China distribution network that the Fire Solutions Group saw the tremendous opportunities presented by the local market.

Honeywell's Fire Solutions Group will bring its technology, quality control and methodology into the Shanghai operation to make it one of the leading brands in that country. Additionally, Honeywell's China operations will be taking advantage of the field devices manufactured by System Sensor Xi'an.

Levy continued, "China is one of the fastest growing markets in which we participate and presents a huge opportunity for growth. As China becomes more established in its own manufacturing capabilities, the local providers are gaining more market share. A local presence allows Honeywell, with our advanced technology and high quality standards, to be seen as the most sophisticated supplier in the market." 1

NOTIFIER has offices worldwide in the following locations: Australia, Benelux, Brasil, Canada, Chile, China, Germany, Hong Kong, India, Italy, Jordan, Mexico, Netherlands, Poland, Singapore, South Africa, Spain, Sweden, and UK. Visit www.notifier.com for contact information.



The newest additions to System Sensor's SpectrAlert® product line are the Selectable Output Series strobes, horn/strobes and speaker/strobes. These units are unique in many ways.

The new SpectrAlert Selectable Output Series offers the multiple candela settings of 15, 15/75, 30, 75, and 110. The 15/75 candela is a setting that cannot be found on other competitive selectable candela products. A slide switch on the back of the unit allows for easy selection of the desired candela and once it is secured to the wall, with System Sensor's patented Quick Click design, it is virtually tamper proof. A window on the side of the strobe allows the AHJ/installer to view the setting even after it is locked into place. This allows AHJs and installers perform inspections and maintenance without removing the unit from the wall.

Each device operates at either 12 or 24 VDC. These units automatically adapt to the proper

Introducing - A New Selectable Output Series

by John Fitzgerald, System Sensor

setting depending on the voltage of the loop on which they are placed.

System Sensor's Selectable Output Series horn/strobe units offer a three selection DIP switch that allows the installer/user to choose between low or high volume, temporal or non-temporal, and 3000Hz or electro-mechanical. The DIP switch is located on the back of the unit and can be easily manipulated with a screwdriver.

The tradition of low current draw for the SpectrAlert product line has been upheld as well. When compared to other brands, the Selectable Output product has a lower current draw at all candela settings.

With the advent of the Selectable Output Series, System Sensor will be able to reduce our wall-mounted strobes, horn/strobes, and speaker/strobes SKU count from 38 to 6. This will not only make ordering easier, but will allow customers to carry a smaller, yet more thorough inventory.

MODULES

All four versions of the new multiple-input and multiple-output modules are now available: Six

Supervised Control Module, Six Conventional Detector Interface Module, Six Relay Control Module and Ten Input Monitor Module.

The Six Conventional Detector Module is currently two-wire compatibility listed with only System Sensor conventional detectors. We are in the process of collecting information in order to list the module with competitive devices.

In order to easily synchronize strobes and horns on the output of the new multi-control module, an add-on sync card (model number SYNC-1) is also available. This card is designed to plug into the control module and sync System Sensor SpectrAlert products in order to meet NFPA 72 requirements.

These multiple-module products are designed to mimic the performance of individual modules and therefore can be effortlessly incorporated into fire alarm control panel manufacturer's product lines. The modules are competitively priced and can provide cost-effective design solutions where multiple modules are needed. The use of these modules can allow you to be more competitive in retrofit applications. 1

Burning Question, cont.

statewide. Quarterly reports will make fire-reporting history by analyzing the data. But even this information will be partial. Because no national, state, or local requirements mandate reporting, only 60 percent of Virginia's fire departments even report fires.

Guthrie, Okla., has preserved a trove of late-19th-century buildings; its downtown is a National Historic Landmark. (The town of 10,000 also claims both the state's oldest fire department and the National Lighter Museum, which chronicles firemaking from flints to Zippos.) "We're flexible," says planning director Ronnie Ford. "We adjust, to avoid damaging the integrity of historic structures. As long as restoration meets the code's intent, then the mechanical means isn't important—there are several ways of doing something." But an architect or contractor must first determine how much protection a proposed use requires and then design the rehabilitation to provide that protection.

"Of course, when you've met the code, you haven't done anything particularly great," says Colonial Williamsburg's McDaniel. "The regulations set the absolute minimum I can do to make a building reasonably safe. That's why building officials are loath to modify codes: They'd reduce protection to less than minimum."

A recent fire in Madison, Ind., shows what McDaniel is talking about. On the snowy evening of Dec. 19, 2000, as dinner was ending at Hinkle's Sandwich Shop, the restaurant began to fill with smoke. A fire in a second-floor apartment had spread so quickly that one fleeing occupant leapt from a window, landing on an awning. Owing to shared walls, narrow lots, and abutting rear walls, fire could dispose of downtown Madison in a heartbeat. Horton recalls that "a breeze strong enough to push the fire through half a city block" accompanied the snow. After hours of tense work, the fire service contained the blaze to the building, which was not equipped with sprinklers. A sprinkler or two could have extinguished the flames in minutes.

Most old buildings, however, are not equipped with sprinklers. Many have never had the change of use that obligates owners to install them to meet code. Others are low or small enough that sprinklers aren't required. Left to their own discretion, owners balk at a system's hefty cost or assume it has to be unsightly and invasive. Given the resistance to sprinklers, experts have developed affordable alternatives. "If the building has structural problems, a leaking roof, or an outmoded heating system, you can't necessarily find money for sprinklers," says architect and code consultant Marilyn Kaplan of Preservation Architecture in Valatie, N.Y. "Fortunately, there are many ways to make buildings safer." Kaplan investigates a building and its problems, including fire hazards. She then recommends cost-effective upgrades, such as a hard-wired central-station fire detection system. An electrician checks panels, circuitry, outlets, and fixtures—and corrects hazards. Moving out storage, enclosing mechanical systems with fire-rated partitions, and installing lightning protection reduce other risks at reasonable cost.

Acknowledging a building's own strengths and offsetting its weaknesses, rather than simply forcing the owner to meet stated requirements, is the latest approach to fire. Fire-protection engineers, using computers to predict fires' growth and spread, study ways to improve a building's overall fire resistance. They look at how each structure performs as a self-contained system.

Pursuing regulations better suited to historic buildings, codemakers are now creating performance-based fire codes. An engineer, working with the property owner and the building official, determines the specific safety features that suffice in protecting the structure. Risk indexing offers a similar strategy without the cost of hiring an engineer. A risk index, such as boca's, assigns values to a building's protective features and sets performance goals. When a building scores high enough, it meets code.

Performance-based thinking, carefully balancing pluses and minuses, has already suggested new ways to stop fires.

The key to preventing extensive fires," according to Guthrie's planning director, Ronnie Ford, "is regular inspection—and remedying hazards immediately." Chubb inspectors scrutinize each National Trust property once or twice a year and give tips to the staff. Thermographers and electricians use infrared cameras to find and rate electrical hot spots. ("Level One," says Braun, "means, fix it by the end of the day.") Anyone can create a checklist of potential hazards with a loss-control consultant, the fire department, or an inspection form from the National Fire Protection Association and inspect a building weekly. The list should include obvious threats, such as trash buildup and temporary heaters, wiring, and electrical cords.

Guthrie has taken this performance-based approach communitywide. Thanks partly to inspections, the town had no large historic-structure fires for 15 years before 2000, when the downtown suffered two conflagrations, one the biggest in its history. On the mezzanine of a Chinese restaurant's kitchen, metal chairs were resting on a live electrical wire. The fire that resulted got such a head start that, in less than an hour, the fire department gave up the building to concentrate on saving the rest of downtown. Only the facade survived—but, after hours of hard work, no other buildings burned. "We came so close to losing everything," says fire marshal Lester Branch, who directs Guthrie's Fire Prevention Bureau. Since then, he says, the city has focused even more on preventing fires.

Branch has a mission: making Guthrie fire free. Once he and his inspectors have gone over every commercial building in town, they will inspect highly hazardous ones (including restaurants) twice a year and safer ones every two years. The bureau also inspects residences when invited by owner or tenant. "I'm not policing," Branch explains. "We go by code, but I work to get the most bang for the smallest buck. I show people how to make themselves safer and get a better price on insurance." Guthrie's tough inspection standards should boost its fire insurance rating, dropping commercial premiums further. Meanwhile, Branch nudges owners into doing more than they have to. In buildings not required to have hard-wired alarm systems, for instance, he promotes simpler, cheaper versions.

Owners are buying into this voluntary fire protection, perhaps because cities across the country—including Lexington, Madison, and Guthrie—have a new reason to protect buildings: Their economy depends upon it. As heritage tourism increases, more downtowns find that intact landmarks attract tourists. "If your primary industry is tourism," says Branch, "when you lose a block of these buildings, you lose your draw." Although preservation unwittingly increases the threat of fire, it also gives communities the will to conquer, or at least contain, it. In the wake of the church fire, Lexington's government, fire department, two universities, Downtown Development Association, and Historic Lexington Foundation are working together on a protection program similar to Guthrie's.

Basing fire protection on performance has inspired a new confidence that fires in treasured buildings not only must be, but can be, stopped. "If we have a fire, I'm not doing my job," Branch insists. "Even if no lives are lost, a fire can put a lot of people out of business. I'd be embarrassed to lose a landmark, knowing we can do better. When we have a fire, I take it personal." 1

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