



You Don't Have to Be an Expert to Maximize Your Campus Passive Fire Protection

Familiarizing yourself with fire codes, conducting well-timed assessments and making the necessary repairs can make an enormous difference in limiting the impact of a fire on your campus. **By Zach Winn**

THE UNFORTUNATE REALITY of fire safety systems on many campuses is that they're usually installed once and never thought of again. During installation or construction phases, schools, universities and hospitals follow fire codes as much as necessary to pass inspections, and then proceed to invest their resources and attention on seemingly more pressing matters.

Along the way, the emphasis on maintaining fire safety systems fades, in part because the everyday hustle on campus favors convenience over safety. If a fire door is hard to open and close frequently, someone may prop it open. When minor renovations are completed, often there's no follow-up fire safety inspection. Building managers can't see the fire ducts, so they forget they're even there.

"It's the kind of thing that's out of sight, out of mind," says Michael Lohr, director of marketing for Red Hawk Fire and Se-

curity. "Oftentimes, no one pays much attention after the initial setup."

Things get even more problematic when you talk about the student housing environment. Students are known to burn candles, remove smoke detectors and pull dangerous "pranks" that can compromise traditional fire safety systems.

These are the reasons campuses run into trouble. It's easy to fall into the trap of allowing the deterioration of fire safety systems or not noticing someone has tampered with them. That's what makes passive fire protection systems so important.

Along with active fire protection and education, passive fire protection is one of the three components to overall fire protection strategies. Passive fire protection focuses on containing or slowing fires using things like fire-resistant walls, floors and doors. Items like fire-proof wraps, paints and coating also count as passive fire protection.

"Passive fire protection is kind of a last line of defense, because it's mainly material to prevent fire, smoke or gas from spreading, so there's nothing that anyone has to do to activate it," Lohr says. "No one has to pull a pull station or anything like that. It works by itself if it's tested properly and maintained."

The purpose of passive fire protection is to work in conjunction with active fire systems or, if necessary, to work when other fire protection components fail.

"The thought process is that [passive fire protection] is not meant to replace existing fire protection systems, but to work in concert with those systems," Lohr explains. "So when all else fails, like sprinklers or alarms, at least I know I've got passive fire protection to prevent a quick spread of fire until first responders can arrive."

Ensuring that your passive fire protection systems are maintained might sound



This beam was covered in fireproofing material in an example of passive fire protection.

like an overwhelming task, but it's actually quite manageable. All it takes is an understanding of a few requirements, undergoing proper inspections and budgeting for regular maintenance.

GET TO KNOW YOUR CODES

Knowing what's required on your campus is the first step to establishing fire safety. Many compliance codes are developed by the National Fire Protection Association, or the NFPA. Understanding your area's Life Safety Code, also known as NFPA code 101, is a good first step. From there, certain codes focus on passive fire protection measures more than others.

The International Building Code, or IBC, is perhaps the most important passive fire protection standard to understand. This 700-page code has supplanted many other

codes, but mainly deals with fire prevention. It stipulates the materials to be used in building construction phases as well as standards for door, wall, foundation and roof construction. The code also gives criteria for interior finishes in new and existing structures, including outlines when using fire stopping material and other regulations.

When it comes to renovations and things involving electrical wiring, there's the National Electric Code, which is a regional code despite its misleading name. The code, also known as NFPA 70, gives standards for installing electric wiring and in some ways complements the IBC. It's important that schools, hospitals and universities understand their responsibility to inspect even minor electrical additions.

"If there are any holes in the wall, or any kind of remodeling where someone

tried to run wires or cables through, you have to make sure it's done properly," says Tony Yuen, the Fire Marshal for the City of Berkeley, Calif. "There are requirements to apply fire stopper if there's wall damage and make any repairs needed."

Other important NFPA codes to understand have to do with inspections. NFPA 80, for instance, states, "Fire door assemblies shall be inspected and tested not less than annually, and a written record of the inspection shall be signed and kept for inspection by the Authority Having Jurisdiction (AHJ)."

The yearly inspections are necessary because of the frequent problems inspectors see with fire doors.

"The most common violation you see is that fire doors are blocked open," Yuen says. "Basically, fire-rated doors have to be self-closing and self-latching, but a lot of times they're propped open or they remove the door closer so it no longer functions properly."

Building officials may see a door closing and assume it's fine, but if it doesn't latch properly, it can be blown open in the event of a fire. Other common issues with fire doors include dysfunctional magnetic locks and holes that can allow fire penetration.

Yuen served as the University of California Berkeley's fire marshal for 13 years before switching to his current position, so he's seen firsthand the sometimes-casual approach to fire safety on campus.

"Modifying fire doors is especially a problem in stairwells or heavily-travelled areas," Yuen says. "But it's so important to have those doors functional because it prevents fire and smoke from migrating from one fire compartment to another quickly. Oftentimes, it can go up the stairs and spread to other parts of the building."

NFPA 105 dictates that smoke doors (which in some cases double as fire doors) must also be inspected annually. The code also gives requirements for smoke dampers, which are barriers that prevent the spread of smoke in ventilation systems or other parts of buildings that may allow smoke to spread. The code requires dampers to be tested and inspected one year after they're installed, then tested and inspected every four years after that.

There are similar codes, both from the

Passive Fire Protection Basics
 Passive fire protection systems attempt to compartmentalize buildings to prevent or slow the spread of fires. Where active fire protection systems detect and suppress fires, passive fire protection systems aim to limit the spread of fires to minimize building damage. Passive fire systems also help firefighters attempting to put out a fire and give building occupants more time to escape. Examples of passive versus active fire protection systems are listed below:

<p>PASSIVE FIRE PROTECTION</p> <ul style="list-style-type: none"> ◆ Fire-resistance rated walls ◆ Fire-resistant glass ◆ Firestops ◆ Grease ducts ◆ Spray fireproofing 	<p>ACTIVE FIRE PROTECTION</p> <ul style="list-style-type: none"> ◆ Fire extinguishers ◆ Fire sprinklers ◆ Smoke detectors ◆ Firefighting foam systems ◆ Hypoxic air fire prevention
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NFPA and other organizations, that dictate standards for the main components of passive fire protection, such as caulking material, floors and walls. Some of these codes have been adopted throughout the United States while others are regional. Campus officials should know which ones they're required to follow.

GET INSPECTED BY THE PROFESSIONALS

Inspections, even when they're not enforced by the local AHJ, are a great way to get an idea of where you stand in terms of the compliance of your fire safety systems. Companies like Red Hawk can conduct campus-wide inspections to point out any deficiencies they find.

"We just educate them first so they realize fire safety's important and so they talk about it and budget for it," Lohr says. "Then when they start taking action, we take digital photos of everything we inspect before and after, so that has a lot of sizzle from a customer standpoint because they know it's actually been done and that the new devices were actually inspected."

Those photographs can also serve as valuable records for campus officials to reference at a later date.

"There can be a lot of turnover in some of these industries, so sometimes we go to the fire official and ask when the last time something was inspected, and they'll say 'I don't know, I don't have the records from the last guy,'" Lohr says. "So when we perform an inspection, it goes onto a website that they can access anytime they want. Our clients' records never go away."

Some fire safety inspection companies will also rank the severity of the issues they find on campus to give hospital, school or university administrators a better idea of where to start when improving their fire safety systems. The rankings help campuses budget for the most pressing needs, like when they're in direct violation of codes.

Another benefit of inspections is that they can correct common misconceptions of building managers. A common problem inspectors encounter with passive fire protection systems is the application of fire stopping material.

"Some building officials think they can

Learning From the MGM Grand Fire

On November 21, 1980, a fire broke out in a restaurant inside the MGM Grand hotel in Nevada. The fire moved to the parts of the hotel with no sprinkler systems, and smoke quickly filled the 23-story building. Despite heroic helicopter rescue missions that saved the lives of approximately 1,000 people, 87 others died that day and 700 more sustained injuries.

Although the fire was limited to the bottom floors of the hotel, the vast majority of the deaths occurred on the upper floor as a result of smoke inhalation. The tragedy opened the public's eyes to the importance of limiting the spread of smoke during building fires. Because of faulty smoke dampers inside ventilation ducts, toxic fumes travelled through the hotel's air circulation system rapidly.

The incident led to a major overhaul in fire safety codes, with particular emphasis placed on passive fire protection. "Smoke dampers are the last line of defense when all else fails," Red Hawk Director of Marketing Michael Lohr says. "I think MGM taught everyone that."

just pump a bunch of fire stopping caulking into a penetration and that takes care of it," Lohr says. "The reality is there's a real art to applying fire stopping materials. You've got to make sure it's the right kind of material for the type of penetration, and a lot of times you need to put mineral wool in the penetration as a foundation to keep the caulking from being blown out if there's a fire."

Another misconception is that fire alarm companies are testing the fire dampers. Alarm officials typically only test the output of a fire panel from an electronics standpoint, which falls short of the inspection requirements mentioned above (NFPA 105).

"In a lot of cases, schools simply don't even know there's a problem until we point it out to them," Lohr says.

It's always an easier outcome for campuses when inspectors find deficiencies before the AHJ does.

KEEPING CAMPUSES PREPARED

It's no secret that fire safety often takes a backseat to security systems like access control and video surveillance.

"Schools would just rather spend their dollars on security instead of fire systems," Lohr admits. "Security is just the hot-but-tonic topic right now."

That doesn't mean that schools can ignore fire safety altogether, however. Annual training is critical. For example, UC Berkeley holds fire safety training every year for all residential and custodian staff.

"It's basically just the dos and don'ts

of fire safety," Yuen explains. "It's mostly general stuff, but it doesn't necessarily have to do with passive fire protection."

Indeed, passive fire protection seems to be the safety system that gets thought about the least in the campus community. That's okay, however, as long as schools, universities and hospitals are keeping up with their code requirements.

For a campus to maintain effective passive fire protection, it doesn't take much more than a maintenance staff that knows what to look for.

"It all boils down to preventive maintenance so that all systems are working at peak performance," Lohr says. "Then, if someone does find an issue, they can call a locksmith or whomever they need to fix it."

But the relative ease of maintaining passive fire protection doesn't mean it's any less important than other life safety systems on campus. Passive fire protection can make a world of difference for firefighters trying to control a fire.

"Keeping flames contained is one of the keys to fire response success," Lohr says. "We really feel like we're helping schools do their job for the community."

It's also worth noting that passive fire protection's beneficiaries aren't limited to firefighters.

"If all other systems fail, whether its fire sprinklers or smoke alarms, what's going to give students a fighting chance to evacuate?" Lohr asks. "If fire doors, dampers and walls are working properly, that's what's going to give kids a chance to survive." **CS**