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FIRE STATION DESIGN

From Blueprints to Bunk Beds: Expert Advice on Building & Outfitting a Fire Station

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Mike Boyer

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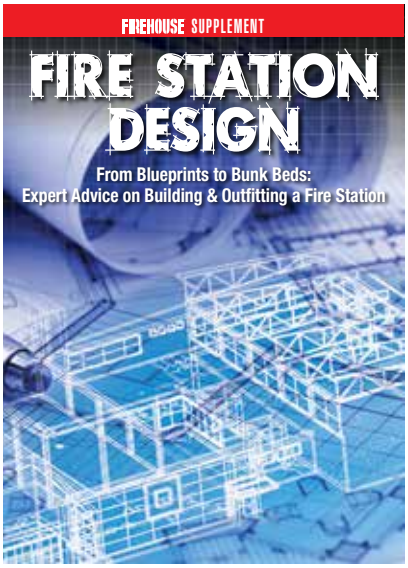

ABOUT THE COVER:

Fire station design is more than just how to decorate the firehouse. It starts with an idea and an architect and has many stages in between. The cover image, which depicts the blueprints of a new fire station, was designed and created in Photoshop by *Firehouse*® Art Director Marianne McIntyre.

Fire stations, like this one constructed in Ketchikan, AK, can be contemporary, energy efficient, functional and attractive all at the same time if communities take the opportunity to think about what they need and hire professionals to develop the designs.
Photo courtesy of TCA Architecture-Planning

Built to Last

By Ed Ballam

Keys to fire station longevity include the best materials and room to grow

Redmond, WA, tapped Brian Harris, a principal and owner of TCA Architecture Planning in Seattle, to build the city's Fire Station 17. *Photo courtesy of TCA Architecture Planning*

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Fire stations are among the most complex, heavily used municipal buildings found anywhere. Simultaneously, they are garages housing millions of dollars' worth of apparatus; they are dormitories; and they have expansive kitchens, training rooms and public meeting facilities as well as administrative office space.

And, they are expected to last decades – sometimes under around-the-clock, heavy-duty service. That's why it is important to ensure they are designed for the purpose in which they are intended and built using the best materials available.

Firehouse® *Magazine* interviewed several architects to compile their comments on best practices for how to design and build a fire station for today's (and tomorrow's) fire service needs. They were unanimous in their appraisals and comments – hire professionals with experience building complex, purpose-built fire stations; your community will be better off for it and future generations will be thankful you did.

In this supplement, you can find comments and advice from some of the nation's leading fire station architects, including Lawrence Enyart of LEA Architects in Phoenix, AZ; Brian Harris of TCA Architects in Seattle, WA; Bob Mitchell of Mitchell Associates Architects in Voorheesville, NY; and Dennis Ross of Pacheco Ross Architects, also in Voorheesville, NY. Between them, these professionals have decades of experience and have designed hundreds of fire stations across the country. Here's what each of these respected, award-winning professionals had to say.

Building "a home away from home for firefighters"

Lawrence Enyart founded LEA-Architects in 1975 and his firm has designed more than 150 fire stations in that time, many receiving high praise and awards. His philosophy about fire stations is straightforward – the buildings should be simple, highly functional and fit into the neighborhoods and environments in which they are constructed.

"A fire station is a home away from home for firefighters," Enyart said. "They're going to be cooking there, sleeping there, working there and responding from there. The building must be fully functional and be accessible to the public."

Above all else, fire stations must be simple to navigate. "In an emergency, you don't want to need a road map to find your way around," he said. "When just a few seconds count in an EMS medical response, being able to move quickly is paramount for helping a victim. Same is true in a structure fire. Everything should be very simple and designed for easy maneuverability."

For Enyart, function comes first and is just as important as

ED BALLAM is an associate editor for *Firehouse*®, a captain with the Haverhill Corner (N.H.) Fire Department and a National Registered EMT. He is also a Deputy Forest Fire Warden for the New Hampshire Division of Forests and Lands. Professionally, he has been a journalist for nearly 30 years working for a variety of publications, including employment as managing editor of a national fire service trade journal for more than a decade.

Clockwise from left: Kaestle Boos Associates and Robert Mitchell Associates Inc. designed this apparatus bay for the Holden, MA, Fire Department. *Photo courtesy of Mitchell Associates Architects*;
Roomy kitchens with heavy-duty appliances and fixtures are important, like this one in the North Shore Fire Station 51 in Kenmore, WA. *Photo courtesy of TCA Architecture Planning;*
The award-winning fire headquarters for the Lethbridge Fire Department in Alberta, Canada, is nearly 35,000 square feet in size, cost $10 million and was designed by Pacheco Ross Architects. *Photo courtesy of Pacheco Ross Architects;*
The Issaquah, WA, Fire Department recently moved into Station 72, which features this modern kitchen, featuring lots of stainless steel and rugged fixtures designed to withstand constant use. *Photo courtesy of TCA Architecture Planning*

quality when it comes to public buildings. "These buildings are going to be occupied and used 24 hours a day, 365 days a year, so they need to be very well built," Enyart said. "They need to be able to withstand a lot of activity, so they need durable floors and masonry walls where appropriate. Quality is very important."

Quality and excellence do not mean the fire station needs to be "gold-plated or embellished" excessively, but it does need to have an understated excellence befitting a public building, typically paid for with taxpayers' dollars, according to Enyart. "These buildings typically have to last 50 to 100 years, so they have to be well built," he said.

Fire stations have many unique functions that must be considered. For instance, Enyart said, there aren't many buildings that house apparatus, training rooms, kitchens, dormitories, offices, meeting rooms, self-contained breathing apparatus (SCBA) maintenance shops and, in some cases, medical examination rooms. All of the uses must be considered when designing a fire station and determining how best to integrate all those functions and needs, he said. Fire stations are also exposed to all kinds of hazardous materials and blood-borne pathogens that must be dealt with appropriately and isolated from the public and the firefighters who live in the stations, according to Enyart.

That's where experience and expertise come in. Having an architectural firm that knows what it is doing when it comes to designing a fire station is vitally important in coming up with a fire station that firefighters and responders can live with for decades, Enyart said. He added that when he consults with fire officials, he is often able to sketch a conceptual design while conversing about the project, on the spot, just to get a visual feeling of what a building might look like based on needs, desires and lot size and limitations.

And, having architects who know the traditions of fire stations is important as well, Enyart said. While hose towers are essentially obsolete when it comes to drying hose, they are a symbolic design element of fire stations and communities often want to incorporate them into the structure.

"We tend to be on the contemporary side of design, but we realize there are some traditions that need to be maintained," Enyart said. "It's important to come up with a custom design that fits the community, keeping in mind function has to come first."

Enyart said a skillful architect will always consider location when designing a fire station. Seemingly minor considerations, like where apparatus headlights point when entering and exiting a building or the kinds of landscaping planted around the structure, and even how pedestrians encounter the station are all important considerations. Noise attenuation, lighting and outside speakers must also be considered to be thoughtful neighbors in residential areas.

"You want your fire station to be a welcome part of the community," Enyart said.

Embracing new technologies

Brian Harris, a principal and owner of TCA Architecture Planning, said fire stations must be resilient to withstand the kind of use and abuse they will be subjected to over the decades in which they are in service.

"They have to last 50 to 75 years," Harris said. "They have to be flexible to handle change and be 'green' (sustainable) and be able to keep energy costs in check. The most important thing, however, is they be designed for the next generation of firefighters and emergency workers."

As new technology becomes integrated in the fire service, fire stations must be able to accommodate those changes and needs. In the age of robotics and drones and who knows what in the future, fire stations ought to be easily configurable to meet the demands of an increasingly technological society. "Stations need to be as resilient as possible," Harris said, going back to his root philosophy.

The fire service is ever evolving and changing, he said, noting that firefighters are now more often responding to emergency medical calls than to actual fires. Communities need to take into account how their stations will be used over the decades when considering new fire stations. "Fire departments are going to have to say, 'We need X amount of space for the next 30 years,'" Harris said. "It's a different mindset. You have to look at the planning horizon."

Another consideration is geographic location, Harris said, noting that what fire departments are doing in Alaska is different from department needs in Texas. "Every region and community's needs are different," he said, adding that architects need to be mindful of that fact when designing stations.

In his 30 years of designing stations, however, Harris said most fire stations and emergency facilities will almost always need expansion. Therefore, designing for future expansions during the initial construction phase will almost always save money in the long run.

Long-term operational costs always need to be considered when designing a fire station, so durability is important when selecting materials to be used during construction of fire stations. Durability is achievable, and affordable, with new technology and techniques, according to Harris, adding that structural systems provide plenty of opportunity, not only for energy efficiency, but long life.

Fire stations are huge investments for communities that rely on them not only to house firefighters, responders and their equipment, but to provide emergency shelters for the public during disasters, Harris said. That's why they need space for disaster relief supplies, emergency power and lodging spaces. Stations built in the 1950s, '60s and '70s were not designed to meet the needs of today's society and fire departments, he said, noting that many communities consider remodeling older stations to save money.

"A lot of these stations are not designed for expansions," Harris said, encouraging communities to consider new stations when they are in the market for new emergency services space. And when they are, they really need to consider hiring professionals who know fire station designs to get the most for their money.

Conceptual designs, like the one provided for the City of Peekskill, NY, give taxpayers and community officials a vivid visual idea of what stations can look like. *Rendering courtesy of Mitchell Associates Architects*

"Fire stations were fairly simple years ago and could be built for about $30 per square foot," Harris said. "Now, they're $300 per square foot."

From concept to budget to design

Robert Mitchell is a designer, builder and architect with more than 30 years of experience in the field, much of it building fire stations and municipal emergency services buildings. He is the owner and founder of Mitchell Associates Architects.

Mitchell said he takes a holistic approach to building fire stations, preferring to walk clients through the entire station design process – from picking the site to developing a budget to selecting the kinds of tiles to be installed in the day room. He has an extensive PowerPoint presentation that serves as a road map from concept to occupancy when it comes to building fire stations. He said building a fire station generally is a two-year process from conception to completion.

"You need to go from an idea to a budget to a programming schematic design," Mitchell said. "It is the most important part of the process and you need to get it straight."

Committees need to be formed and meet routinely – as frequently as weekly or semi-weekly – to keep the focus on the tasks at hand, according to Mitchell. "It's important to keep a strong push on the process," he said. In committee work, community members must determine the budget and consider the cost of delaying a project. Waiting even only a few years to build a station can increase costs significantly, Mitchell said. "Construction estimates can increase by as much as two times the inflation rate," Mitchell said, explaining the real costs of delaying projects.

Subcommittees can work on programming needs, Mitchell said, noting that fire stations are sophisticated buildings, especially if the agency does a lot of EMS runs. Those kinds of stations will need decontamination rooms with specialized laundry areas to handle blood-borne pathogens, much like a hospital emergency room. Even structural fire turnout gear needs special consideration, Mitchell said, noting that bunker gear is loaded with toxins after fires.

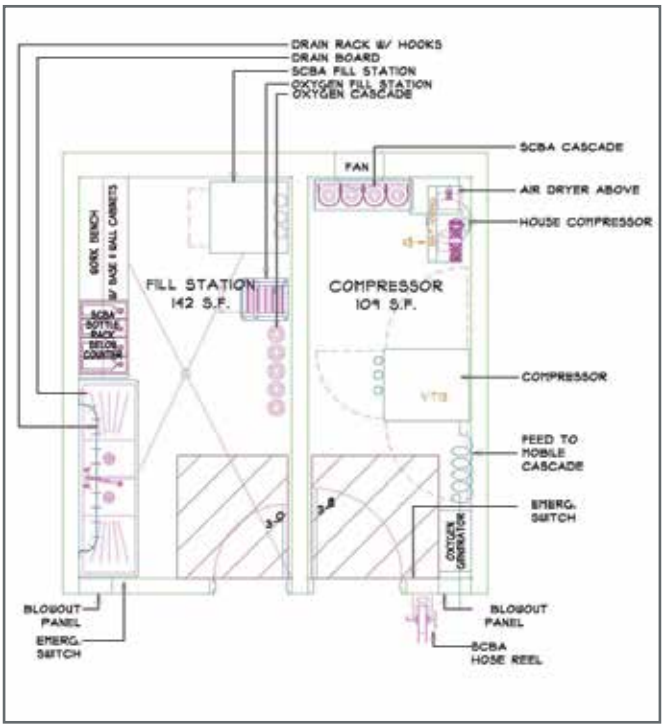
"Cancer rates for firefighters are two times the national average," Mitchell said, in support of his argument that fire departments need specialized areas and equipment to decontaminate turnout gear.

Departments that maintain their own SCBA need to have a clean area for that task and experience has shown light-orange countertops in the breathing apparatus work area help with maintenance issues, Mitchell said. Small parts and O-rings are more easily spotted on orange counters than ivory countertops.

Communities should give careful thought about space requirements and lot sizes, according to Mitchell. When considering square footage requirements, an architect can help fire department officials figure out the requirements for all the unnoticed elements of building design, like stairwells, elevators and mechanical rooms. Though often overlooked, these requirements increase the overall square footage needed.

Often, fire departments find they suddenly cannot afford the kind of building they think they need because they did not factor in all the ancillary components that add to the overall size of the building. A professional architect can help fire departments avoid those pitfalls, Mitchell said. There are a number of "soft costs," including professional fees for site evaluations, insurance costs, bonding and financing as well as furniture, fixtures and equipment (FF&E) that all have to be considered. "Those expenses are often overlooked," Mitchell said, noting that architects will help communities understand all the aspects of a new station.

Other expenses include air handling and diesel exhaust sys-



Computer-assisted drawings (CADs) can provide detailed schematic concepts of space needs and provide visual clues about what a building can look like. This CAD shows two rooms for SCBA filling, one with a fill station and one for the compressor to help with sound attenuation.
CAD image courtesy of Mitchell Associates Architects

tems, generators and kitchen equipment, all of which are important to the final station design and are vital for the people who will live and work in the facility for years to come, Mitchell said. Bunk beds, dormitories, exercise equipment and the like can add up to 20% of the total physical construction, he said.

During the initial considerations about constructing a new fire station, communities should consider whether to renovate and expand existing structures, Mitchell said. The feasibility of renovating existing space often boils down to the quality of the original construction. For instance, a 1914 fire station in Cortland, NY, was so well built that it made sense to renovate it and adapt it for today's use. Yet, a building in another community that was constructed in 1952 was unsuitable because of its design and materials used.

That's why when Mitchell designs a building for new construction, he calls for stainless-steel reinforcements in masonry work and anchor points to prevent concrete spalling. Even door hinges that attach to concrete ought to be made out of stainless to last the lifetime of the building, he said.

"Buildings should be constructed to last and be operable and low maintenance for their entire life cycles," Mitchell said.

Weighing the options

Dennis Ross is co-owner of Pacheco Ross Architects, a firm dedicated exclusively to the design of fire stations and emergency response facilities. Ross, who has 35 years of experience as an architect, said most fire chiefs and communities really don't know what to expect when it comes to building a new fire station. That's why he highly recommends those in the market for new emergency response facilities "do a little research" and find a qualified architect to walk through the entire process to make sure the department gets what it needs and expects. "I recommend attending one of the station design symposiums or going online to find a qualified architect," Ross said.

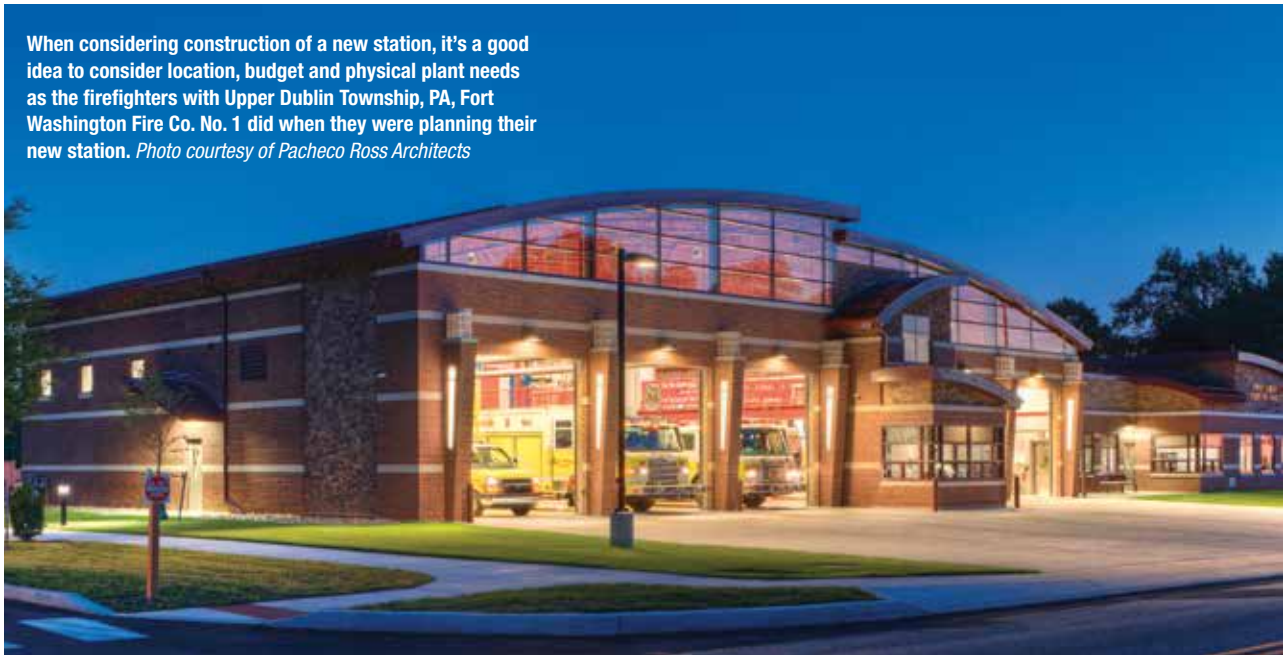
A third-party professional will help steer a project, Ross said, adding that hiring a professional is all part of doing "due diligence" and making sure the community gets a facility that it can use and will last. "We are going to come in and propose a feasibility study that is going to look at all the parts and pieces of the project," he said.

The first thing to look at is the lot upon which the new station is going to be built. Ross said communities should be looking at four- and five-acre parcels for new fire stations. Any facility that is going to have to last up to 70 years must have room for expansion.

A broad-based study that covers a variety of ideas and options would be the first step in constructing a fire station, Ross said, noting that an investment of about $25,000 would yield a very solid study upon which decisions can be based. When considering the cost of a new station, a study is a sound investment that could save a lot of headaches and costly mistakes in the future, he said, adding that any study should take into consideration existing facilities to see whether they are usable.

"There's no reason to go out and buy a $1 million piece of property if you don't need to," Ross said. "Or, you could learn that what you have is not worth saving and would be an unwise investment to save."

After the study has been completed, communities would



When considering construction of a new station, it's a good idea to consider location, budget and physical plant needs as the firefighters with Upper Dublin Township, PA, Fort Washington Fire Co. No. 1 did when they were planning their new station. *Photo courtesy of Pacheco Ross Architects*

move to a request for quotation (RFQ) to actually draft specifications and designs, Ross said. Much of what happens during the design and building of a fire station is based on relationships, so it is important to find the right partner. "It's going to be a two- or three-year-long road, so you are going to need to get along with your architect," Ross said.

As a relationship and trust is formed between the client and the architect, the real work begins with the designing of the facility, according to Ross. "You know how your department operates," Ross said. "You know what you need. You know what you

need for a meeting room. You know if you need an SCBA repair room." And then there are things the architect knows that the responders might not know, like the National Fire Protection Association (NFPA) requires four sinks for SCBA mask cleaning, Ross said.

There are many questions a fire station designer might ask like what kind of training the department does or if a special room for gear is required, he said. Pacheco Ross Architects has a "very detailed" questionnaire that runs about 20 pages that will help determine exactly the kind of facility that's required to meet individual department needs. "Everybody wants to jump straight to the big, beautiful pictures, but there's a lot of work that has to happen before those are created," Ross said.

As an overall budget is created, communities may realize that the size and scope of their project is more than they can afford. "The size, scope and budget may be too energetic, but that's OK," Ross said. Designs should be "living, working documents" that can be changed as necessary, he said.

Ross said that as the design documents are created, they need to be approved by elected officials or the resident voters themselves. Since 2006, Ross said he has helped with 77 public votes on emergency response buildings and every one of them has been approved. Once a budget has been set and a design selected, the process moves on to any land-use approvals needed, Ross said. Many communities don't exempt fire stations, sending them through local planning boards, design review boards and other land-use committees and boards for approval, just like a private-sector project. "They don't want to exempt themselves," Ross said.

After the new station gets green lights from all approving parties – from the financial end to the land-use end and any other committee that has to weigh in – the project goes to the construction phase, which can last from eight months to more than a year and a half, Ross said.

Selecting materials for construction to make sure the facility is durable can be tricky, but won't break the bank, he said, adding that communities should never skimp on public areas that will be subjected to heavy uses. However, if communities have budget constraints, perhaps they can consider composite tiles in administrative office areas rather than the more expensive, but more durable, polished concrete. "There are some perfectly acceptable substitutes if a community needs to save a bit of money," Ross said.

However, Ross said, he would never advocate skimping on areas where maintenance could be an issue. He said fire stations should be as low maintenance and energy efficient as possible. He is also an advocate of installing sprinkler systems in fire stations. The costs of sprinklers can be easily offset by savings in reduced fire-rated doors and drywall and other components. Besides, it sets a good example to have a station with a sprinkler system when firefighters advocate for residential sprinklers.

"There's a lot of good common sense that goes in to building a fire station," Ross said. ■

By Ed Ballam

Outfitting Your Fire Station

A sampling of what you need to get it up and running

When the bricks-and-mortar phase of building a fire station has been completed, many items still must go into it. Beds, recliners, garage doors, engine exhaust systems, alert systems and turnout gear storage systems are just a few of the items needed to outfit a fire station.

Firehouse® Magazine interviewed providers of fire station equipment and fixtures about their recommendations on what is needed to get a new emergency response building up and running.

Clearing the air

One of the most dangerous on-the-job hazards facing emergency responders today is engine exhaust emissions. It is no wonder that the National Fire Protection Association (NFPA) recommends that new fire stations have complete exhaust systems to remove fumes and particulates from buildings, according to John Koris, the sales manager for Air Vacuum Corp. AirVac is a manufacturer of engine exhaust removal systems headquartered in Dover, NH.

"Diesel exhaust contains nitrogen dioxide, VOCs [volatile organic compounds], benzene and known carcinogens," Koris said. "Those are things you don't want in your fire station." He said AirVac is a system that filters the air and is completely automatic with no hose connections to be made. It also operates automatically as vehicles enter and exit the station.

The AirVac system is completely automatic with no hoses to attach to apparatus.

"Ninety-nine percent of emergency vehicles today use diesel engines," Koris said. "The World Health Organization has said diesel exhaust is a carcinogen, not just a suspected carcinogen so, you have get it out of the station."

Koris said AirVac differs from other products in that it circulates and filters all the air in the station and does not require any hose connections. The company is the only one of its kind dedicated to fire and EMS stations, according to Koris.

Mike Johnson, vice president of sales for Cincinnati, OH-based MagneGrip, said there are more reasons to have exhaust removal systems than to just comply with NFPA recommendations. Magne-Grip offers a direct-capture system with hoses that attach to the trucks and ceiling-mounted filtration units.

"It's a matter of health and safety for the firefighters who are inside the station all the time," Johnson said. "They go out and fight fires and breathe in all kinds of bad stuff, so they shouldn't have to come back into the station and

ED BALLAM is an associate editor for *Firehouse®*, a captain with the Haverhill Corner (N.H.) Fire Department and a National Registered EMT. He is also a Deputy Forest Fire Warden for the New Hampshire Division of Forests and Lands. Professionally, he has been a journalist for nearly 30 years working for a variety of publications, including employment as managing editor of a national fire service trade journal for more than a decade.

breathe bad air there too."

When a station is being built is the time for fire departments to consider exhaust removal systems, Johnson said. "It's too difficult to go back to the community and ask for more money to install them after the fact," he said.

Johnson said MagneGrip has been making direct-capture exhaust removal systems for about 18 years with lines that grip on the apparatus exhaust to remove vehicle emissions at the source. About five years ago, the company acquired a line of ceiling-mounted systems to give fire departments complete coverage. That line is called AirHAWK air purification systems. "We sell a lot of dual systems with both the hoses and the ceiling-mounted systems," Johnson said. "It gives departments complete protection."

The hose system captures emissions at the source and exhausts them from the building while the ceiling-mounted systems pick up any remaining contaminants left in the building, Johnson said. Any leftover soot and gases from the vehicles and testing of small engines, like portable pumps and chain saws, is automatically picked up by the ceiling-mounted filtration system, Johnson said. Additionally, any off-gassing from turnout gear, hose or other equipment that has been contaminated at the scene of a fire is picked up by the filtration system, he said.

Too often, Johnson said, he has seen fire departments scratch exhaust removal and filtration systems from their station designs. He once had a department that had to cut its budget for a new station and three items were on the block – granite kitchen countertops, an automatic ice-melting system for the roof and an exhaust-removal system. The department took out the exhaust-removal system, which Johnson said was a mistake. "Firefighters are exposed to all kinds of toxins and gases on the job," Johnson said. "They shouldn't have to put up with it in their stations too."

Clean air at the station is important for firefighters who are exposed to gases and particulates at fire scenes. MagneGrip offers systems to remove contaminants from station air.

Storing the equipment

Fire departments make substantial investments in equipment and personal protective equipment (PPE) and it makes sense to take care of it. GearGrid, headquartered in Lake Forest, MN, designs and manufactures open-air, durable steel tubing and wire products for a variety of storage applications. Bob Foht, president of GearGrid, said fire station storage has evolved tremendously in the past 15 years. Firefighters and chiefs now better understand the value of taking care of their gear and equipment, which can represent a significant investment for a community.

Open air storage systems, like the ones made by GearGrid, help keep personal protective equipment of the floors, ventilated for drying and organized for easy deployment. The systems can be mounted on walls or on wheels for portability.

For decades, Foht said, PPE was stored in what amounts to wooden boxes or sometimes even school locker systems. Neither allowed gear to dry out and both systems collected the off-gassing of materials collected on the gear – not a good situation for the firefighters. "Firefighters around the world may call their PPE different names, but they all want it to be dry," Foht said.

Because there is so much gear and equipment to be stowed – not just the PPE, but items like hoses and SCBA bottles – storage is needed throughout a fire station. Foht said astute architects and designers can integrate storage systems into the design of the fire station and make it an aesthetic element. "They can become a focal point of the design," Foht said, noting that gear hanging in the apparatus bay is an iconic

Ready Rack, made by Groves Inc., offers open-air storage especially well suited for personal protective equipment (PPE) to keep it off the floor and provide circulation for better drying.

image of a firehouse. "Given the fact that the storage system is so prominent in the station, they can be designed to be complementary with other elements."

Foht said fire chiefs know the high cost of the equipment they purchase and the gear issued to firefighters. It just make sense to build in ways to take care of it when they are building new stations.

"Fire chiefs are building 50-year stations," he said. "They want things they put in it to last just as long. That's why it's important to include high-quality, open air storage systems."

Groves Inc., the maker of Ready Rack, has made a business out of manufacturing and distributing open-air storage and drying rack solutions for more than two decades.

John Groves, founder of the Woodstock, IL-based company, said the business started nearly 30 years ago with a simple hook on the wall to meet the need to get PPE off the floor. From there, the company developed an open-air rack system that has wall-mounted components as well as portable and wheel-mounted storage systems. The systems can be used for turnout gear, hose and any of the myriad other items found in a fire station.

"This is a way to get everything up and off the floor and store it neatly," said Groves, who added that turnout gear dries better and lasts longer when it is stored in open-air racks. Groves said open-air racks are simple, "not very expensive" to use and install, help maintain order in the station and preserve and protect equipment.

The first "ready rack" system Groves built was constructed 27 years ago for Gary, IL, and is still in service, Groves said as a testimony for the durability of the system. Ready Rack systems are constructed of tubular steel, with wire grid shelves in zinc chromate finishes or virtually any powder coat finish, Groves said. He said fire stations today have started to incorporate turnout gear rooms to isolate potentially contaminated PPE from the rest of the facility and to give a place for the gear to be cleaned and dried. And Ready Racks are good for those uses too. "Things have changed over the years," he said.

Furnishing the fire station

No fire station is complete without furniture and All A Board has rugged chairs, beds, storage cabinets and wardrobes that will stand up to the use and abuse firefighters can dish out, said Andy Barth, the co-founder of the Richmond, VA, manufacturer. "When it comes to firehouses, twin beds, bunk beds and under-the-bed storage bins and wardrobes are very popular," he said. As a manufacturer, Barth said, All A Board can custom-make cabinets and wardrobes to fit any height, width and depth. Shelving and hanging units are also popular, he said.

Because station beds are often used by different people, responders often do what is called "hot bunking," where they strip their own linens and store them for later use, a practice that requires a clean storage place, Barth said. And because firefighters and responders work hard at their jobs, a quality mattress is not only a nicety, but should be a requirement, he said. "They don't want a cheap mattress when they get back from a call," Barth

Fire Station Outfitters knows one size doesn't fit all. That's why the company carries a full line of upholstered furniture for a variety of body sizes.

All A Board is a maker of tough furniture, including wardrobes, for use in fire stations.

said. "Firefighters should have a quality mattress." He added that vinyl-covered mattresses for easy cleaning and to minimize bed bug infestations should be considered.

When it comes to budgeting for fire stations, unfortunately, furniture is often skimped when financial constraints hit, Barth said, adding that he thinks that is a mistake.

Dave Woods, the owner and founder of Fire Station Outfitters, based in Empire, CA, said recliners and comfortable upholstered furniture are popular in fire stations. His company makes not only recliners, but upholstered love seats and sofas for fire stations. "I have six different-sized recliners to fit all body types," Woods said, noting that small men and many women find very large recliners cumbersome and difficult to operate. "There are a lot of women in EMS and they like things built for their comfort."

When fire departments are considering recliners, it is tempting to go to the local discount furniture store and buy something there, a decision its members may come to regret. "They're just not meant for the kind of use they'll see at a fire station and they won't stand up," Woods said. He added the furniture his company makes has hardwood frames with heavy-machined reclining mechanisms.

Woods said Fire Station Outfitters also carries furniture provided by other vendors as a service to his customers, but recliners are his specialty. "When it comes to comfortable recliners, one size does not fit all," said Woods, who has been in business since 2008. "My focus has been on customer service. It's important to make sure responders get what they need."

Specifying the bay doors

Apparatus bay doors are an important feature of fire stations. They must work quickly, they must be energy efficient and they must look good. Hörmann Flexon is a company based in Leetsdale, PA, that makes a wide variety of high-speed doors for fire stations, according to the company's marketing director, Alice Permigiani. There are several door designs for fire stations, from solid designs, to ones with windows, to all glass panes, Permigiani said.

"Doors need to be low-maintenance and high speed," she said, noting that Hörmann Flexon doors open at a rate of 80

Doors need to be fast opening to let emergency vehicles out and fast closing for climate control. They should also be aesthetically pleasing. Hörmann Flexon offers a full line of doors for fire departments' needs.

inches per second. For vehicles responding to emergencies, door opening speeds are important and, for energy conservation in hot or cold climates, doors that close quickly too are an important feature. Door insulation and "R" values are important as well, she said. Doors also can add a lot to the look of a fire station by design and color, Permigiani said. Doors with lots of windows and glass provide lots of light in the apparatus bay and the building, which may have an aesthetic appeal that appeals to a department or chief, she said. Solid doors offer other benefits and design elements, she added.

"Doors contribute a lot to the façade and function of a building," Permigiani said. "That's why it's important that fire chiefs are involved. They'll have to live with them a long time."

Alerting the crews

Station alerting is one of those critical items that sometimes is overlooked when communities are building new fire stations, said Westnet's marketing director, Kelly McGeorge. "We often get these calls from fire departments who say, 'We've got this beautiful, new fire station, but we forgot the alerting system,'" he said. "When you're building a new fire station, that's the time to think about installing a station alerting system…when all the walls are open."

Westnet, based in Huntington Beach, CA, is the maker of First-In Fire Station Alerting Systems used to create an intelligent and interactive fire station. McGeorge said the company's station alerting system is an advanced and updated version of the one featured on the 1970s television show "Emergency." The system alerts firefighters in a station to a call through a master control unit in the station, which is activated by a dispatcher when a call is received. It alerts firefighters and medics to calls, McGeorge said.

Many fire departments are going to an individual dormitory sleeping quarters system when building new stations and the system is so sophisticated that it can alert individual firefighters to calls rather than waking up everyone in the station, McGeorge said. "It's good where the medics and the firefighters are housed together," McGeorge said. "Eighty to 85 percent, or more, of the calls these days are for medics, so there's no reason to wake up the firefighters too and have them experience that adrenaline pump when they don't need to."

The number-one cause of firefighter deaths is heart attacks, so there is no need to startle firefighters in the station. Westnet's system is gentler with red lights instead of white lights at night. Another feature is the system sends the call to an LCD screen for firefighters to instantly see the call information, cutting response times, McGeorge said. The system also works as a public address system, eliminating the need for redundant speakers through the station, she said. Westnet will work with individual stations and firefighters to make sure they get what they need, McGeorge said.

Westnet Station Alerting Systems have a variety of systems to notify firefighters in the station of calls, including systems that can transmit on television screens (below) and individualized dorm room alert systems and lighting (left).

"Unless you've pulled up a pair of bunker pants and gotten ready for a response, there's no way you can know what responders need," she said, noting that the business, founded by and run by firefighters, installed its first system 19 years ago. "We work with departments large and small to get them what they need." ■

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