

FIREHOUSE SUPPLEMENT

STATION DESIGN



INSIDE:

A3: Costs of a New Station

A8: Selecting a Site

A12: Balancing Public & Private Faces

A16: Renovate or Replace?

Photo Courtesy BRW Architects

GEARGRID FIRE

THE SMARTER, STRONGER STORAGE SOLUTION.

★ ★ ★
PROUDLY
Made in the USA



GSA *Advantage!*

Patented ©GearGrid Corporation. All rights reserved

GearGrid is the innovator in PPE storage and Firefighting Specialty Equipment handling and storage solutions. Developed by a firefighter for firefighters and proudly built in the USA!

Visit us online at www.geargrid.com or call (888)643-6694 to request a free quote!

Indicate 150 on Reader Service Card

By Ray Holliday, Dianne Jones & Jennifer Bettiol

A New Station Will Cost How Much?

Understanding costs types, available resources and how to work with your architect to stay on budget

A new station can be a complex—and costly—undertaking, but with clear cost expectations and strong communication with the architect, the end result can be a fantastic addition to the community.

Photos Courtesy BRW Architects



The time has finally come. Your city administration is ready to consider building the new station that your department desperately needs. Now, the city manager is asking for an estimated budget of what it's going to cost. Where do you start? How do you explain your needs without giving him sticker shock? It is vital to present a realistic number that you and the city can work with.

Project vs. construction costs

When creating your budget, consider the total “project cost,” not just the “construction cost.” In the construction industry, project costs are discussed in terms of hard costs and soft costs. Hard costs include the cost of materials and labor associated with the building of the new station. The construction budget is comprised of hard costs.

Soft costs contain a variety of other expenses, including design fees, site costs, management fees, legal fees, insurance and administrative costs. Also included in soft cost are all of the furniture, fixtures and equipment needed to outfit the station. If you are replacing an existing station, your soft costs may include relocation fees, like moving vans or temporary facilities. Too frequently the soft costs are overlooked when discussing the cost of a new station, resulting in under-planning for the budget.

Additionally, with the construction budget, it is important to add a contingency fund to the project cost. Even the best-planned projects encounter additional costs during construction. These costs may be associated with unforeseen conditions or even be from a few owner-added items that were not considered during the planning stage. It is typically recommended that the contingency for new construction be 5 percent of the

construction budget. The contingency will act as a slough fund to cover any unexpected costs that may arise during construction. Typically, renovation projects need a higher percentage of contingency due to unknowns that may be found hidden in the existing structure. Some people also recommend adding a small contingency to the soft costs to cover any additional changes or services required during design. The project cost represents the summation of hard costs and soft costs, including any contingency funds you may add.

Unfortunately, construction costs will vary over time depending on current costs of materials, fuel and labor, which can make planning difficult. The timing of a project can significantly affect cost, as the price of material and labor directly relate to availability. If the market is flooded with construction projects, the availability of products and labor is limited, increasing the cost of construction. Conversely, a shortage of construction projects creates competitive pricing. Understanding ideal times to release projects for bid will result in more competitive bids and the best return on investment.

The size of your project will also affect the cost per square foot. Smaller projects actually cost more per square foot than larger projects, as they still include the same mobilization and overhead fees as the larger projects and because material costs tend to run higher with smaller quantities. Identifying factors that influence the building costs will help you better prepare your budget.

Available resources


If this all seems overwhelming, don't worry, help is out there. Architectural firms offer services, such as those related to facilities programming and feasibility studies. These studies can help your department determine what spaces your new station needs in order to get a general square footage of your building. Included with this study is a “statement of probable cost,” which will be a cost-per-square-foot based on current construction costs.

When researching construction costs, there are resources available, such as construction magazines and websites like Design Cost Data (dcd.com), which can help with conceptual square foot cost estimating. Calling other departments in your area is also a great resource. Remember to inquire about both construction costs and project costs associated with their station. There is a strong network among fire departments. Use it and learn from others' experiences.

Budget maintenance

We recommend that you hire an experienced fire station design professional to help guide you through the process in order to make sure you start your project on the right foot. If you decide to go at it alone, keep in mind that your station is not a residential home, nor is it simply a garage. Your fire station is a 24-hour commercial facility that protects the community and the building costs will reflect that function.

Once design on your station has commenced, it is your architect's responsibility to help you maintain the budget.



**DESIGNING
AWARD-WINNING,
SUSTAINABLE,
FIRE STATIONS,
HEADQUARTERS,
EMERGENCY OPERATION CENTERS,
and TRAINING FACILITIES.**

**IT'S OUR COMMITMENT
TO FIRE SERVICE.**

Perlman
Architects of Arizona
A Collaboration of Excellence.

4808 N. 24th St., #100
Phoenix, AZ
480.951.5900
PerlmanAZ.com

Indicate 151 on Reader Service Card

However, there are a few key strategies that you can keep in mind to help oversee the project cost. For one, know that a simple building form will have a lower cost. Although your building should have visual appeal and meet your city's design standards, keep in mind that every corner or roof change costs additional money. A good architect will design a form that balances your budget, community image, and the function of your station. Your architect should employ simple cost-cutting strategies in the floor plan itself. For example, locating all of the restrooms together will cut down on plumbing. Having walls and corridors that align decreases structural and framing costs. Making sure that your exterior walls are dimensioned to meet masonry modules save material and labor costs.

Your architect should provide you with several statements of probable cost throughout design, each one increasing in detail. When you receive these statements, openly discuss them with the architect. Are they using local materials? Where are the fixtures coming from? Items coming from overseas are going to raise the construction cost. Discuss long-term maintenance costs. What light bulbs are being used in your fixtures, and can you buy replacements at a local hardware store or will you have to special order replacements? It may be better to use LED fixtures in areas that are hard to access and fluorescent ones in areas where they can be easily replaced. Though it is



Firms offer facilities programming and feasibility studies that can help you determine what spaces your new station needs in order to get a general square footage.

important to never skimp on HVAC systems, keep in mind the type of service providers available in your area. Large commercial systems initially cost more but are more efficient; however, if no one in your immediate area services them, the HVAC in your station may be down for a week or more. We typically use a Split Direct Expansion Air Conditioning system. Bottom line: This is an important topic to discuss with your architect.

Working as a team with your architect and being well-



We Have the Right Sign For Your

Fire Station

Whether planning a new firehouse or remodeling an existing building, **don't forget the sign!**

A Stewart sign will help you communicate and increase public awareness:

- Fire Safety Reminders
- Emergency Information
- Community Events
- Firehouse Special Events
- Memorial Tributes
- Recruiting

Government grants and special programs are available to help you achieve this goal.

Call us for more information.

1.800.237.3928 stewartsigns.com



stewartsigns
America's Premier Sign Company

Indicate 152 on Reader Service Card

FIRE STATION DESIGN

informed of the current design and budget status are keys to a successful project. We find that one simple cost-saving measure is for the fire department to separately purchase equipment for the station that the contractor then installs. Oftentimes the department can utilize grants or donations from local businesses to purchase items like dishwashers, gear lockers, extractors and generators. By making appliances and some of the equipment “owner-purchased, contractor-installed,” the contractor overhead costs will be avoided.

During design of one recent project, we knew the project scope and budget were not aligning. We discussed it with our clients and decided to present a few different cost-saving options at the city council meeting. Due to the historic area, many extra exterior details had been added to help the station blend with its surroundings. Because of the craftsmanship required to construct, these extras were an obvious cut. However, when presented at the council meeting, a local historical society in attendance decided that they would donate funds to the department to help preserve the original historic details. By openly tackling the budget together, we were able to tap into unknown resources and maintain an award-winning design.

Be open about your budget with your design professional. It is the architect’s responsibility to provide a station for you to meet all of your department’s needs within the budget you have

set. Be upfront with what you *need* versus what you *want*. If there is concern that an item may cost too much, discuss with your design team the possibility of making this item an “alternate.” Alternates are items identified as possible additions or deductions from the construction documents. These alternates will be itemized separately in the bids for consideration to be included or excluded from the project. These changes to the scope of work can be as simple as switching out certain finishes and fixtures, or as complicated as removing bedrooms and reducing square footage. Alternates offer flexibility once the bids are received and a contractor is chosen, because you are allowed to select which combination of alternates to proceed with to maintain your budget. However, try to keep the number of alternates to a minimum, as they complicate the bidding process and may dissuade some contractors from bidding.

If a project comes in over-bid, there are usually opportunities to “value engineer” with the contractor to cut costs and realign the scope and budget without having to re-bid. Unfortunately, this is not true “value engineering,” and you generally will not receive sufficient compensation for the cuts you make to the project. Change orders, which are changes to the contract during construction, frequently contain inflated costs. Careful planning and drawing coordination during design can minimize the need for change orders. If there is something that



ARCHITECTURAL DESIGN
FOR PUBLIC SAFETY



Nationally Recognized • Experienced & Trusted • Proven Cost Controls

Banbury Place 800 Wisconsin Street • Eau Claire, WI 54703 • 715.832.4848

715 Pilgrim Lane N • Minneapolis, MN 55442 • 612.840.3773

FiveBuglesDesign.com

Indicate 153 on Reader Service Card

you want but are unsure about adding to the project, discuss it with your architect. The later changes are made, the more they will cost you.

In sum

All in all, it is important to start your project with realistic expectations. Research and careful planning at the inception of the project are critical to its success. Clear communication with your city administration and the citizens will help ensure community support as well.

Develop a list of priorities so that you can work effectively, as a team, with your architect and community members during design to maintain your budget and ensure that you are receiving the best facility for your city and department. Coordinate the timing of your project bidding. Avoid bidding during the holidays or during construction of large projects in the area. Preplan with a contingency during construction and continue to work with your architect and contractor as a team to problem-solve when issues arise during construction, coming up with creative solutions which meet budgetary and project needs.

Never cut cost when it comes to the safety and welfare of



Be upfront with your architect about what you need versus what you want, and consider making some items “alternate.”

your staff and community. Your station is not only housing some of the most expensive equipment that the city owns but also your local heroes. Your community wants to support you, so tap into any local support you can find. You have waited a long time to get this project started, so make sure it gets done right. ■

RAY HOLLIDAY, AIA, ASLA, LI, is an associate principal at BRW Architects and studio director of the firm's office in College Station, TX.

DIANNE JONES is an architectural designer at BRW Architects.

JENNIFER BETTIOL is an associate and project manager at BRW Architects.

Introducing the Next-Gen

G2 Room Remote 2

- Zoned, targeted alerts
- 10" LCD touch screen
- Built-in turnout timer
- Adjustable settings



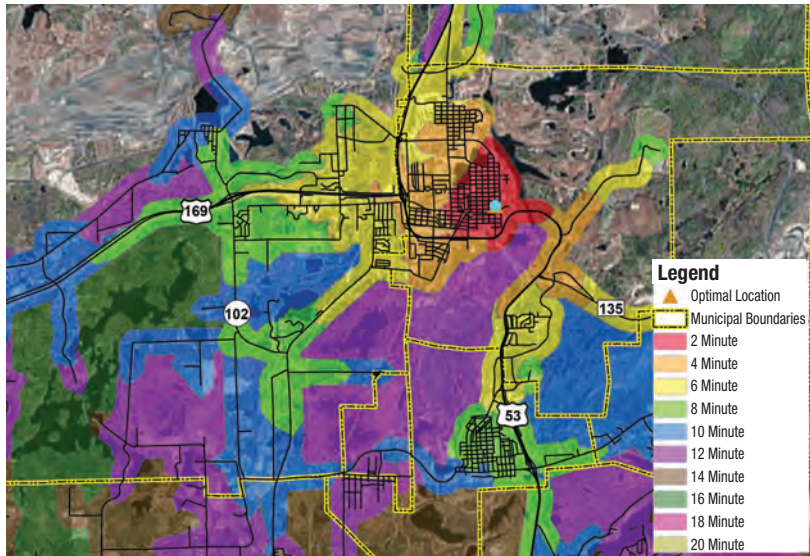
Learn more about Fire Station Alerting at
StationAlerting.com/start

Indicate 154 on Reader Service Card

By Ed Mishefske

Where to Build?

Key considerations for site selection and response times



A GRAEF map shows optimal site locations based on response time zones.
Image Courtesy Five Bugles Design Group/GRAEF

In my experience, the most important issue involved in either building a new fire station to replace an old, outdated station or building a new one in a growing area of the community is site selection. This decision drives all the subsequent decisions for the project.

Initial considerations

No single issue can derail a fire station construction project more than that of finding and obtaining an adequate site. Let's consider some of the factors that make this such a key issue:

- The costs of obtaining a site that meets the response criteria of the emergency services department can be an obstacle that oftentimes can't be overcome.
- There is usually no "perfect" site, but rather a series of compromises that provide a "good" or "workable" site.

- The process of site acquisition can be arduous. In a perfect world, the community owns the site, and site purchase costs can be rolled into the construction of the station itself. Most often, however, the site is privately owned and there may or may not be a willing seller, in which case the unpopular "eminent domain" option may be the only recourse to acquire the site.
- If a department identifies a site that meets all the response criteria but it is located in a busy commercial area, government leaders are extremely

hesitant to remove the property from the tax rolls.

- Then there is the donated land issue. My experience tells me that land donated by someone in the community seldom meets the response criteria, size or program requirements identified by department staff.

Regardless of the situation, getting a site that meets current and future emergency response demands can be a complicated process filled with a series of compromises. With that in mind, my advice is take your time and explore all the options that you have.

Response time factors

My previous experience as a fire chief underscored that when considering the construction of a new fire station, the terms "building site" and "response times" are virtually inseparable. A community can have a city-owned site with adequate square feet totals to meet the program requirements, literally no elevation issues that need to be addressed and all required infrastructure already on the site, but if it doesn't provide a reduced response time to its designated response area, that site fails to meet the most critical evaluation factor.

In considering potential sites within a community, acceptable response times within the station's geographic response area, along with other factors, will become one of the most critical factors. To achieve an acceptable response time, a careful analysis should be conducted that includes more than simply evaluating the distance from then proposed site to the borders of its response limits. Certainly this distance is very important to response; however, there are many other important factors that should be



A station site must be located on, or adjacent to, a main travel artery that provides good access, egress and visibility for responding fire department emergency apparatus.

Image Courtesy Five Bugles Design Group

considered in this review. The following information is offered to assist in evaluating potential sites:

- The site must be located on, or adjacent to, a main travel artery that provides good access, egress, visibility for responding fire department emergency apparatus, and adequate public alerting of the fire department incoming and departing fire equipment.
- The site location, and its proximity to a main artery, should provide acceptable access to secondary streets that allow the fire department to effectively respond throughout its response areas.
- The main response artery should have adequate street/shoulder width and shoulder construction for private automobiles, trucks with trailers, over the road truck/trailers, buses, etc., to safely pull off to the side of the road when a fire or EMS apparatus is coming up behind them.
- Try to find a site where the main response artery is not a funneling point for industrial traffic or on/off-loading of supplies, products or employees that can cause response delays.
- Look for a site in which the main response artery doesn't include an overabundance of traffic controls, such as stop signs or stop lights that could cause delays as a result of local traffic trying to find a safe place to get out of the way of responding fire apparatus.
- Unless it is impossible to avoid, the site should not have significant commercial development where consumer traffic congestion could hamper emergency response or commuter safety.

- Try to stay away from the main artery that have schools, churches or other population-dense developments that are located on it that may present a safety hazard for fire vehicles and the general public.
- Avoid railroad tracks that could impede fire apparatus from using main arteries or that could cause significant backups in traffic. If there are railroad tracks, will private vehicles be able to safely get out of the way of fire apparatus? On this note, another factor is whether the use of the rail line is a mainline track, where trains pass through the area, or one where there is a great amount of "switching cars" in industrial facilities that use rail transport systems for loading and off-loading supplies or merchandise. The time of the intersection being closed can greatly influence a site's desirability.

Further, the site should provide rapid response to community "target hazards" that have been identified by the fire department. Target hazards can be defined as buildings that pose extreme threats from significant delays in response. This could include sites that use, store or handle hazardous materials; buildings that, because of their construction or materials that are stored at the location, can lead to rapid fire development; facilities that house community



Win the Ultimate in Gear Drying Technology!



The winner could be you!

But you can't win unless you enter.

ENTER TODAY AT
ramairgeardryer.com!

sponsored by:



Enter for a chance to win a Ram Air 4-MU gear dryer, subject to standard terms and conditions. Official Rules available at ramairgeardryer.com. NO PURCHASE NECESSARY TO ENTER OR WIN. Odds of winning depend on the number of eligible entries received. Sweepstakes only open to individuals who are employed by (or volunteer for) a fire department. The prize is for use in fire departments only and may not be resold. Shipping fees are not included in prize. Void where prohibited or unavailable.

Indicate 155 on Reader Service Card

T C A

ARCHITECTURE + PLANNING + DESIGN

250+ FIRE FACILITIES
[DESIGNED FOR PERFORMANCE]

WWW.TCA-INC.COM

Indicate 156 on Reader Service Card

members who have health- or age-related issues that may require fire department staffing intervention in escape; areas of the community where water shortage or inadequate water volume and/or pressure could overwhelm the fire department's ability to extinguish the fire; and areas of the community where construction of older buildings with common fire walls are located.

Downtown buildings normally fit into this category because they often share common firewalls, which in many cases have been breached in one form or another, and can cause significant flame spread to attached buildings. Additionally, older buildings that typically lack early warning fire detection systems with direct tie-in to 9-1-1 center communications systems or other monitoring facilities fit as well. This lack of warning provides an opportunity for a fire to expand significantly within a building or to an adjacent building before being reported to a communications center.

Clear traffic

There are technological tools to assist in making a high-traffic site more acceptable. One of those tools is the Opticom Traffic Intervention System. This tool uses an electronic beam to change traffic signals for responding fire apparatus in areas of

high-density traffic flows that are controlled by electric traffic signals. Typically, the beam coming from a responding piece of fire apparatus changes a traffic light for cross traffic to red and through traffic (or the responding apparatus) to green, thereby clearing the intersection in front of the fire apparatus. This option can be vital in traffic-congested areas. There are also hardline connections to traffic signal controls near the station to help clear traffic as emergency equipment clear the station.

In sum

Again, a "perfect" site location may be impossible, but a "good" site is not impossible to find in an established community that provides acceptable answers and compromises to the response issues previously noted. Take your time, and remember that this may be the single most important decision of the entire project. ■

ED MISHEFSKE completed a 35-year career in the fire service in 2002, with the last 23 years as a fire chief. He began a second career as a member of Five Bugles Design Group, an emergency services design team that has completed more than 200 emergency services projects throughout the country. Mishefske has written numerous articles in fire service periodicals and has served as an award judge for the Fire Station Design competition.

UNIT 131

UNIT 146

UNIT 144

THE SENTRY

**FIRESTATION
OUTFITTERS**

Recliners \$690
Sofas and
Loveseats \$1065

**QUALITY BUILT
MADE IN THE USA**

**XTREME
SEATING**

AMERICA STRONG

Call Toll Free:

888-380-2345

firestationoutfitters.com



For more information contact dave@firestationoutfitters.com

Furniture for all Firehouse & EMS applications:
recliners, day rooms, administration areas, equipment

Visit Our
Website To See
Our Full Line Of
Sofas, Loveseats
& Chairs

Indicate 157 on Reader Service Card

Maintaining & Storing Your PPE Gear / Equipment Since 1940

Scrub it.



Roto-Jet Washer

Dry it.



3 Ways To Dry It



Unmatched Quality, Performance & Service

VERSA=RACK
BY CIRCUL-AIR



AFG GRANT
APPROVED

(800)-795-1150
CIRCUL-AIR-CORP.COM

By Rob Quigley & Maryanne Welton

The Balancing Act

Two California stations show how departments can achieve the right balance between a fire station's public and private face



For its new Fire Station #1, the City of Santa Monica, CA, decided to invest time and money in a public transparency campaign. Starting with remodels of existing stations and now for the new main station, they began to look at how to connect with the community through design and programs. *Images Courtesy Rob Quigley Architecture*

A fortress.
Unfriendly.
Fort Knox.
Looks like
nobody is home.
Can't find the front
door. Closed off from
the community. What's
going on behind those
big doors?

All these descriptions are typical of how a neighbor or someone passing by might describe a modern-day fire station. Some fire departments are starting to change that perception, especially in downtown neighborhoods. More new fire stations are being located or rebuilt in urban centers, as reflected in the nationwide trend toward increased densification in downtowns. As functional and handsome as these new stations may be, there are challenges to blending optimal operations, civic presence and privacy for the firefighters—all factors that must come into play during the design process.

As seen in new fire station plans across the country, downtown fire stations are typically located on tight urban sites. Ground-floor apparatus bay doors can take up much of the street frontage. Although the stations may be full of personnel, a visitor may not know how to enter or contact anyone working there. Firefighting personnel (a generally gregarious group) may appear protected and

ensconced inside, while the public is curious about what goes on in the daily life of a fire station. Two new downtown stations in San Diego and Santa Monica, CA, turn that perception around by creating an open and friendly connection to the neighborhood.

Opening their doors

Tom Clemo, deputy chief of administration for the City of Santa Monica, says that for their new Fire Station #1, they decided to invest time and money in a public transparency campaign. Starting with remodels of existing stations and now for the new main station, they began to look at how to connect with the community through design and programs.

First on the list is allowing the community to use the station's meeting or training room for public meetings. Any community member can schedule a meeting at the station and have access to the meeting room and restrooms. Windows strategically located between the apparatus bay and the community room make it transparent that there is an active fire station operating beyond the glass.

Fire department staff members provide station tours so they can educate the public on how they deploy, the types of personnel needed to run their operations, the variety of equipment they use, and how they maintain it. At the front entry of the new fire station, glass doors at the lobby and a display room for a historic engine and other artifacts will open up to invite the community in, feeling more like a restaurant and less like a government institution. The apparatus are on full display through glass doors. "The people's tax dollars paid for this station and this equipment," Chief Clemo explains. "They should be able to see it and ask questions about it from the people who use it. It takes the mystery out of what's inside the fire station when they can clearly see inside. The more they understand what goes on in our stations, the more it makes us part of their neighborhood. If they don't see it, they won't connect with it."

Clemo encourages the public to see the complexity as well as the time and cost investment that it takes to make a fire station operational. As guardians of the public's trust, the fire department's core values will be etched into concrete and non-reflective glass at the new station so their personnel and public can see them every day.

At Bayside Fire Station, a three-story station now under construction in San Diego, the site is located on the busy Pacific Coast Highway. The design reflects and connects to the historic County Administration Building across the street. Glass doors and lighting will emphasize views into the apparatus bay during both the day and night, highlighting and featuring the engines and rigs like a new luxury car display. Showcasing their equipment this way is one way for the firefighters to show their pride in the community's tax dollar investment.

Security and privacy

One potential concern about public access is security. Carefully choreographed design can maintain security inside the station.



At Bayside Fire Station in San Diego, glass doors and lighting will emphasize views into the apparatus bay during both the day and night, highlighting and featuring the engines and rigs like a new luxury car display.

Visitors are only invited into certain areas, such as the entry, displays, restrooms and meeting room. Dorm rooms, the dining and kitchen area, and watch room are off limits, so that privacy for personnel in both their domestic and professional lives at the station is protected.

At San Diego's Bayside Station, second- and third-floor balconies will be visible to the street, but there will be screen views into the kitchen, dining and living areas. Firefighters have the option of being seen barbecuing or socializing on the upper decks, a clear and neighborly indication that someone is home. These balconies and front entries, with staging area for visitors to gather, function like a domestic front porch, a semi-public space that encourages interaction with passers-by.

And when an alarm sounds? "The visitors are either quickly escorted outside or handed off to personnel staying in the station, the doors close, and we hit the road," Clemo says. This level of engagement makes them more accessible beyond calls to 9-1-1, since fire station operations involve much more than responding to calls. "It's a training center, it's a home, it's a library, a place to work and a place to sleep," he adds. Allowing people to see the department's daily operations has paid big benefits with the community, more than any public relations campaign could. "Being seen helps break down the image of

FIRE STATION DESIGN

Fort Knox; we don't need that in our fire stations," Clemo says.

Sustainability goals

Another benefit of increased visibility into and out of a fire station is rooted in achieving sustainability goals. An important part of the design process for

both the San Diego and Santa Monica stations was to explore how to enhance sustainability and reduce energy costs through the abundant use of natural light and ventilation throughout the stations. Window placement, high-performance glazing that reduces solar heat gain, and screening retain domes-

tic privacy in the firefighters' living quarters. With most municipal projects slated to achieve LEED certification from the U.S. Green Building Council, the amount of visual connection from inside the station to the outdoors earns credits toward certification. The small site at the Bayside Station has very little opportunity for landscaping. A living wall of plants shades the west-facing windows, filtering sunlight and reducing glare off San Diego Bay and providing privacy to the upper levels, while bringing landscaping and greenery onto the tight site. Public tours can showcase the fire station's environmentally friendly building strategies, providing another opportunity for public engagement and LEED credits. The fire stations become role models and stewards for sustainable design, by integrating water conservation, green roofs, energy efficiency, LED lighting and alternative energy sources, such as photovoltaic panels, into their designs.

In sum

Beyond program requirements, operational efficiency and sustainability, the modern fire station can also address the issues of engagement, privacy and neighborliness. The architect and fire department must balance a station's private and public face, aligning sustainability goals with the appropriately welcoming civic face a fire station shows to the community.

Lastly, Clemo reminds, "This connection with the public and our fire stations is long overdue in our business." ■

ROB WELLINGTON QUIGLEY, FAIA, has worked on myriad projects, from fire stations, libraries and transit stations to affordable and mixed-use market rate housing, since the firm was established in 1978. Sustainable architecture is a specialty. A recipient of more than 70 honors and awards, including the American Institute of Architects' prestigious Maybeck Award and the Firm Award, Quigley has been recognized for consistently producing distinguished design.

MARYANNE WELTON has worked with Rob Quigley since the founding of the firm. As vice president and project manager, Welton runs their Bay Area office. She is currently working on three fire stations—two in San Diego and one in Santa Monica.



HONOR YOUR BRAVEST WITH A BRONZE MONUMENT

LIBERTY ART WORKS, INC.

888-411-7744 libertyartworks.com

PROUDLY MADE IN THE USA

Indicate 159 on Reader Service Card

Speed-Guardian™ 4000 High Performance Roll-Up Door for Fire Stations



Cost effective alternative

✓ **Extremely fast and dependable**

Fast opening speed up to 80" / second. A 14'0" wide x 14'0" high door opens vertically in less than 3 seconds.

✓ **Energy efficient**

Highly insulated panel has R-value of 13.6 and U-value of ≤ 0.5 for energy savings and comfortable workplace.

✓ **Low maintenance**

Operates 100,000 plus cycles maintenance free.

✓ **Great-looking**

Door panel available in special colors to match any color scheme.

Hörmann High Performance Doors

Contact us ► 1-800-365-3667 / 1-724-385-9150
www.hormann-flexon.com • info@hormann-flexon.com



By Theodore Galante, AIA

RENOVATE **OR** REPLACE?

An experienced team can help you make the decision

The decision to renovate or replace an existing fire station leaves many things to be considered. Costs are often the biggest drivers in such a decision, but many other issues must be considered as well. Temporary quarters for equipment and personnel will weigh on the decision to renovate or replace a station. Sustainability is having greater influence on decision-making when it comes to our buildings, and some municipalities have set sustainable goals. In addition, local zoning ordinances define setbacks and building size—factors that could impact the decision. Historic preservation is also an issue, as a beloved station may only gain support if it is renovated and not replaced. Let's look at a few factors related to the decision to renovate or replace.

Historic preservation starts with the idea that the existing building is noteworthy enough to preserve for cultural reasons.

Photos Courtesy Theodore Galante AIA

Historic preservation

Historic preservation starts with the idea that the existing building—also known as “original building fabric” to regulatory agencies—is noteworthy enough to preserve for cultural reasons. Fire stations are part of our civic identity and, as such, may be worth preserving for future generations to come.

Preservation requires an architect with experience renovating historic structures and sometimes even a dedicated preservation consultant. One key is to understand how far to take the renovation, as many historic buildings could really use a total make-over. However, budgets don’t allow for complete renovations, and a project is often influenced by multiple structural requirements and various building code required upgrades.

Here are some examples of historic preservation issues: Foundations below historic buildings were built very differently than our modern-day facilities. They are often stone of varying sizes and shape, perhaps battered away from the building. It’s important to determine exactly how to sort this out before trying to place new columns or new foundations adjacent to the existing structure, or be subject to potential cost change

orders during construction. Historic buildings were also subject to much smaller forces than our buildings are today. For example, a full stable of horses weighs a lot less than the ASSHTO-rated fire trucks we use today. As a result, structural slabs were much weaker and often need to be replaced with slabs that can support modern-day rigs.


Preservation also involves careful treatment of the building envelope. Brick often needs to be repaired, re-pointed and occasionally replaced. Finding brick that is similar in size, shape, color or even structural density requires a lot of effort on the part of the architect. Moreover, mortar needs to be replicated in a way that matches existing conditions, but also structurally performs in equal capacity to existing mortars. However, historic preservation provides the opportunity to save beloved building elements like an old cornice line, a limestone carving or some other element that shows the public that we believe in preserving the department’s institutional heritage.

Further, many materials that were historically used in construction are now deemed hazardous materials. Removal and disposal of these items can be quite involved from a regula-



Historic preservation provides the opportunity to save beloved building elements that show the public that we believe in preserving the department’s institutional heritage.

tory perspective and quite costly from a remediation point of view. Preserving a building requires a battery of testing be done to determine the presence and quantity of specific materials to determine if abatement is necessary. One should operate very cautiously when it comes to considering which materials to change, use, match, etc., as these can run the gamut of environmental regula-



FRANK G. RELF ARCHITECT, P.C.
Designing with Vision and Purpose
 New York • Florida
fgrelf.com | fgr@fgrelf.com

WANTAGH FIRE DEPARTMENT
 STATION NO. 3

35 Pinelawn Road, Suite 207W | Melville, NY 11747 | 631.271.4432

Indicate 161 on Reader Service Card

tory hazards. In contrast, new facilities are built with materials that meet all modern-day environmental requirements and, if selected carefully, may also be 200-year materials made from recycled content—a good solution for a planet with limited resources.

Sustainability

One reason to consider preserving an existing building fabric is sustainability. Keeping a building in tact might also be understood as keeping all that material out of the landfill. If a city or town would like to pursue LEED (Leadership

in Energy and Environmental Design) certification, limiting material waste could be an easy set of points. This position is becoming ever more popular, and younger generations simply expect this approach.

An equally important sustainability factor is that most buildings being renovated perform well below modern-day energy standards. Specifically, fire and EMS stations built before the 1990s are likely cold and drafty in a number of places. Building envelopes were assumed to be nothing more than non-insulated places to store equipment and therefore designed for minimal energy performance. One clear result is that all of them need radical upgrades to perform in a way that meets current standards.

Upgrading a building envelope is a costly and complicated endeavor. If the building is masonry, changing the building's thermal properties will most likely have major implications on overall performance—structural, moisture absorption, air barrier, etc. Masonry is dry and brittle; both water and air particles enter through its surface, and they need reasonable paths of travel. A properly designed wall allows this water and air to enter, but more importantly, provides ways for it to get back out. One could say the wall breathes in order to keep the building healthy. Performance requirements are being put on these older masonry buildings as energy codes become more stringent and what was a reliable system of construction is simply less able to keep up. For a number of years, people thought adding spray foam to the interior of a masonry wall was a viable solution. It was easy to install, it provided great thermal insulation, and it even helped with moisture entering the building—or so they thought. Soon, cracks started to appear and mold started to build up between masonry and insulation. The energy code requirement is still high, but design professionals who renovate older buildings now know how to insulate a masonry wall so it complies on all levels and does not end up cracking.

If the building is wood-frame, there are more opportunities to increase sus-



M.

PRESS HERE

BREAK GLASS

Your Fire Design Specialists

Early planning and analysis prevents the majority of design and construction cost overruns and sets the stage for success. Let our specialized team help you get started.

- Space Needs Assessment
- Site Selection and Analysis
- Pre-Bond and Grant Assistance
- Seismic Assessment and Retrofit
- Station-to-Incident Travel Time Analysis
- Project Cost Estimating
- Due Diligence Reports
- Feasibility Studies

MACKENZIE.

503.224.9560 ■ mcknze.com

Indicate 162 on Reader Service Card

tainable performance; however, providing a proper air and moisture barrier requires extensive work on both sides of the building envelope. If not handled properly, air and moisture do an equal amount of damage to these wall types and could significantly increase costs.

Renovating to achieve these levels of thermal performance is not necessarily something to shy away from, as it has merit on many levels. Further, it may be mandated by the municipality. However, if not carefully managed, costs are likely to escalate quickly, not to mention costly repairs a few years down the road if things are not renovated properly. If you do go this route, the best approach is to consult a professional, specifically one with years of experience renovating fire and EMS stations. Of course, it's also important to keep in mind that simply replacing the station may be the better approach. Putting money into a response time is money better spent than trying to patch up an old, drafty wall. A new building may well be a better use of public funds.

Zoning setbacks

Another little understood reason to consider keeping an existing station is that most buildings standing for 25 years or more are located well outside of required setbacks. The buildings are known as "existing non-conforming." Zoning ordinances are legal regulations that establish use of a particular parcel of land, but also define how far a building needs to be set back from property lines on all sides of the parcel. They also identify allowable heights of a building and how much of the property it is allowed to cover. Because these ordinances are updated periodically, and setbacks increased to minimize new building size on a parcel of land, most existing buildings sit outside of newer setback lines and are therefore under the category of "existing non-conforming."

The implications of this for renovation are a bit more favorable. If the building is existing non-conforming, it is often easier to expand that building farther outside the setbacks, as it already does not conform. Trying to construct

a new building outside the setback lines is often more of a regulatory hurdle. The theory seems to be that if an existing building was built before regulations were imposed, then the regulations do not apply as stringently as they do to new construction that comes after adopting

new setback lines. Sometimes municipalities want to lead by example, and gaining zoning relief on newer buildings may be difficult. However, it is always best to have your architect check with local authorities on this one, as public safety buildings are often exempt from zoning ordinances.



Twenty years ago we didn't know the hazards of carcinogens and soot. Today, studies reveal the real risk of dirty turnout gear with firefighters twice

as likely to develop testicular cancer and significantly higher rates of non-Hodgkin's lymphoma and prostate cancer than other professionals. The proper washing of gear will help reduce those risks—ensuring your safety and the safety of those you serve. Let us show you how to properly clean your gear! **Continental laundry equipment qualifies for the Assistance to Firefighters Grant (AFG) Program. Contact us for grant writing assistance!**

CONTINENTAL
GIRBAU®

(800) 256-1073
www.continentalgirbau.com

Indicate 163 on Reader Service Card



Do-it-Yourself Floor Coatings
for a durable, protective finish.



UCoat It floor coatings offer an easy to clean,
chemical and abrasion resistant finish
with a lifetime warranty against peeling and lifting.

Let us help you today!

UCoatIt.com | 800-826-2848

Indicate 164 on Reader Service Card

FIRE STATION DESIGN

Costs

In general, it is often much more expensive to renovate a fire or EMS station than it is to replace one. Taking down a building is inexpensive, and replacement is a very cost-effective approach. Renovation requires much more time from the professionals to the contractors, as there is time involved with measuring and re-integrating pieces of the building with the new elements planned to be added.

We all know that there are many heating, air conditioning, exhaust, electrical, plumbing and fire protection systems intertwined within our stations. In decades of experience, I have never seen these systems not completely entangled with one another. Untangling them and determining which to save and which to replace is a very difficult and messy task that runs the risk of costing more as the project develops. Replacing these systems wholesale is very costly, and usually requires that expensive solutions be developed to allow each system full integration in and around an existing building. Contrast this with a new facility where all conduit, ducts, exhaust and related systems can be planned and organized from the start. It is much easier for all professionals, architects, engineers, contractors and service personnel to understand and document these systems in all their detail.

Historic preservation is the most expensive renovation

ARCHITECTURE
ENGINEERING
INTERIORS
PLANNING

KZF DESIGN

Designing Today's
Public Safety
Facilities



513.621.6211 | www.kzf.com

Indicate 165 on Reader Service Card

**DEPENDABLE.
RELIABLE.**

QUALITY WHEN IT
MATTERS MOST IN
YOUR FIRE STATION.



EVERY TIME.



- WASHDOWN
- AIR SERVICES
- POWER SOURCE AND MORE



FOR OUR COMPLETE LINE OF HOSE, CORD, & CABLE REELS:
800.269.7335 | INFO@COXREELS.COM
WWW.COXREELS.COM

MADE IN THE
US
SINCE 1923

Indicate 166 on Reader Service Card

JOINER ARCHITECTS

THE FIRE STATION DESIGN EXPERTS

approach as compared to replacing the structure with a new building, which is the most cost-effective. However, replacement with a building that tries to replicate a historic design is also very expensive due to costly materials and details, needing to move mechanical, electrical and fire protection systems to unused spaces, like attics and eaves. Recent construction cost trends have driven many projects designed this way over budget, sending a few architects back to the drawing board.

Because the construction industry is set up for speed and efficiency, modern buildings are the most cost-effective solution. Fire and EMS departments that use modern construction methods for their buildings will be the ones able to put the most money back into personnel, equipment and provide the best services to the public. Further, efficient use of construction funds on a building allows for a larger facility, more room for growing equipment as well as more durable materials, furniture, fixtures and equipment for living spaces.

Temporary quarters

Renovating an existing fire or EMS station will take quite a bit of time, which translates to relocating each company to temporary quarters for the duration of renovation. Setting up a temporary fire station is not an easy task and can be quite an expense. Any renovation project budget needs to carry costs for



attentive
to our clients.



accountable
to the community.



40 Years
and counting.



281.359.6401 JOINERARCHITECTS.COM

Indicate 168 on Reader Service Card



Redstone Architects
Public Safety Specialists



EVERY DEPARTMENT IS DIFFERENT



EVERY BUILDING IS UNIQUE

WWW.REDSTONEARCHITECTS.COM
(248) 418-0990

Indicate 167 on Reader Service Card

**WE CAN MAKE YOUR FLOORS
LOOK BETTER THAN NEW AGAIN.**



Replace your damaged, stained, chipped or flaking floors with
DURABLE INDUSTRIAL GRADE PVC FLOORING.

Our industrial 7mm tiles are our toughest tiles, easily handling Fire Fighting and EMS equipment. These sturdy tiles handle up to 20,000 lbs. and are available in Coin, Diamond Plate, and Textured surfaces.



73-946-8400 • OneAndDoneFlooring.com



You don't have to put up with floors like these anymore.

Indicate 169 on Reader Service Card



Renovating to achieve a certain level of thermal performance is not necessarily something to shy away from, as it has merit on many levels.

temporary quarters, the design involved to plan for them, and costs associated with moving twice. In general, it is most often cost-effective to build a new station—and to do so while equipment and personnel operate out of the existing structure. This approach relies on continuation of SOPs given years of experience working in and responding from the facility, and at the same time, allows a new facility to be built and commissioned in an organized, timely manner.

A hybrid version might include placing rented trailers on adjacent land while keeping equipment in quarters. This assumes land is available and renovations are to living areas only and not the apparatus floor. However, by placing trailers next to a facility, only a portion of station operation is impacted, and response times can be maintained with proper design and construction management. This takes a bit of preplanning and coordination

with contractors during actual construction periods, but is a proven strategy with many successes behind it.

In sum

A fire or EMS station is a specialty, and each one needs to be designed to fit needs of the department. At the same time, renovating a historic building is also a specialty. Finding the right professionals with this experience is essential. ■

THEODORE (TED) GALANTE has designed renovation and replacement fire and EMS stations for FDNY, Boston Fire, Davenport, IA, as well as many smaller municipalities. He has decades of historic preservation and new facility experience. Galante's work has received many awards, and is included in design excellence books and other publications. His practice is in Boston, and has a record of delivering public safety buildings in many settings. Most recent is an EMS/homeland security building in Boston. Galante has been a professor of architecture, frequent speaker at national fire station design conferences, as well as a jurist for fire and EMS awards programs. He can be reached at tg@galantearchitecture.com.





MITCHELL ASSOCIATES ARCHITECTS

Public Safety is All We Do

www.mitchell-architects.com

Indicate 170 on Reader Service Card



Aluminum Specialty Cabinets



- Fire Stations
- Law Enforcement
- Command Centers
- Mobile Utility Units
- Specialty Vehicles

Home of
QuikDraw
Single Action Latch System
Pat # 9,149,117

LIFETIME
WARRANTY

GSA

Proudly Made
in the USA

Call or click for your FREE Catalog or consultation:
(888) 343-4463 www.modulinecabinets.com

Indicate 171 on Reader Service Card

We're the Guys You Want to Hang With... After the Call!



STRUCTURALLY SUPERIOR STORAGE SYSTEMS

It's a proven fact that PPE lasts longer when properly cared for. We created the first commercially successful PPE storage system in 1984 and have been developing innovative new products to help you

care for your gear ever since. In the Fire Service, you trust your partners, and that's why more firefighters hang with Ready Rack® after the call.



Mobile Red Rack™
*Shown with security option



PPE / Hose Dryer



Freestanding Ready Rack®



**We take care of the gear
that takes care of you!**

800.991.2120

www.ReadyRack.com



WESTNET

IT TAKES A TEAM™

DISPATCH AND NOTIFICATION SOLUTIONS



www.FirstinAlerting.com



800-807-1700