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Texas Fire Chiefs Academy - Austin
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Form Follows Function in Firehouse Design Site Selection

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One of the celebrated architects of our time is Louis Sullivan. He is considered one of the early fathers of the “American Skyscraper.” But, what does Mr. Sullivan have to do with fire stations, you may ask? He coined a pragmatic truth that is always present in firehouse planning. Mr. Sullivan is known for the brief, but powerful saying, “Form follows function.”

Call it function, force, or factor, every firehouse built is a result of numberless issues acting sometimes together and other times against each other. There are growing department needs, budgetary cuts, ISO requirements, increasing politics, grant restrictions and so forth. From the site, to your community, and your own department’s philosophies, all of these characteristics are the backbone to every decision the design team must make. During the next couple of months my
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colleagues and I at BRW Architects would like share with you some of the creative solutions to these “forces and factors” we have developed during our 14 years of designing firehouses.

Where to Start?
A rookie has to start somewhere, and it’s not at the middle or at the top. In firehouse design, we must also start at the “bottom” and focus on finding the right site. With NFPA 1710, ISO, and other entity requirements, fire station locations are mapped to address response criteria. We recommend that once a service area has been identified; locate more than one plausible site. Having several sites that work in the service area is always a good starting point. Develop a list of criteria and expectations. Use this checklist to guide your site selection.

Working with an architect, whose specialty is fire stations, can assist you in sorting through all the unique conditions of each site. As you are aware, fire stations are unique and specialized buildings. Each part of the firehouse, affects your service to the community and response time. An architect, who can bring the kind of specialized knowledge and understanding that is required for firehouses, can be a great asset to your team. They can assist you in determining the right type of site and building for your needs.

Land Ho!
Finding land, amidst the sea of decisions can be a challenge. We always recommend looking at what you might already have, before hitting the real estate market. Often, an entity will already have land that currently is not used or might be underutilized. In urban areas, there are current market trends for redevelopment of downtown areas. If demand requires a new or upgraded facility to meet modern challenges, property can be reused. Also, urban redevelopment often involves clearing abandon sites. This can pose a challenge, but if done properly, it can yield great rewards. In suburban neighborhoods, large planned developments should set aside land for emergency services. Remember that land set aside for purposes other than profit; more often than not, will come with some baggage.

Also, consider a word of caution regarding abandoned property. Property is abandoned for a reason and often they come with surprises. Sometimes, those surprises constitute what is called a Brownfield site. A Brownfield is land that has some type of environmental pollution or contaminant, which requires remediation. The remediation process can be challenging, but also rewarding. Restoring land for use is a great benefit and service to the environment and the community. Your architect can assist you through this process. Also, several grants are available to assist in the remediation. However, keep in mind that if budgetary funds are limited, it might not be the right time to tackle such an issue. Last, beware of free land, it is never “free”.

Do Your Homework
The ideal site does exist, but the more information available at your disposal, the better you’ll know if the “ideal” is a good deal. One client had the opportunity to purchase a property from a developer for a minimal amount. The price was a steal, but it came with some unique challenges. Though somewhat triangular in shape, it was a large amount of property.
Typically, you’ll need 1 acre for every 5,000 square feet of building. As we worked to maximize the use of the property, it was realized that several large utility easements, such as gas, power, and storm sewer, crisscrossed over the site. Easements are unique. They give the right of an entity to use your property without actually owning the property. It also means that they can come in and remove, tear down, dig up, and/or modify your improvements (i.e., building, pavement, landscaping) legally if it exists in their easement. For example, 3.2 acres would traditionally be more than needed for a 12,600 sf. fire station but with the easements we were left

The perfect fire station site will require review by an architect as there are a lot of requirements that a site must meet before construction can begin.
with a very small portion of buildable site. (See site plan above.) Nevertheless, BRW Architects worked out a solution within the given constraints, providing the client with a good design for the new fire station. Unfortunately, due to the size and amount of easements, future expansion or additional facilities will be challenging due to the lack of usable land on their property.

**Beauty is Only Skin Deep**

So you’ve found the perfect site. It’s square or slightly rectangular, and relatively flat (8 percent max on drives). It’s large enough to handle the minimum turning radius requirements (35’ for inside wheelbase). It has sufficient street frontage for sight lines. A good rule of thumb is about 160’ of street frontage. The main exits will be at least 100’ from the nearest intersection and they’re on a side street to avoid the busy intersection and traffic. It’s deep enough (50’-0” deep setback minimum) to allow a truck to pull in and out completely before negotiating a turn on to the street. Best of all, it was given “free” for the benefit of the community. Before you sign on the dotted line, consider what is underneath your site.

The best way to verify soil conditions is to have a geotechnical or soil report performed. It will provide bore samples and determine the basic soil conditions of your future property. To save money, work with your architect to develop a preliminary site plan with a building layout. You’ll need multiple bore samples and by having a basic site layout, it will help in identifying the soil conditions relative to the building and pavement.

It’s not fun to be surprised when it comes to soil conditions. For example, I can recall one experience when a fire department contacted our office with a new project. They were excited to construct a new fire station. Part of their excitement was that they had received “free land.” With budgets tight these days, any perceived savings can make or break a project. As the project progressed, we realized that the “free land” had been a dump site. Let’s just say that the foundation was very expensive and the construction process more costly than needed.

Just remember, when it comes to the perfect site, beauty is sometimes only skin deep. (By the way if anyone needs a recently “unearthed” refrigerator, we have one; Free!)

**We Can Work It Out**

“Life is very short, and there’s no time for fussing and fighting my friend,” wrote Paul McCartney and John Lennon. This lyric applies to any type of challenge. There is always a way to work it out. Site selection for a fire station can be a challenging, but rewarding experience.

One such challenging “opportunity” came our way recently. Our client’s department was in transition from volunteer to full-budget has to be used in the acquisition of land. Responding to the program requirements and exponential growth of surrounding communities, a facility was designed to tackle those challenges. It required us to look at the land creatively, in order to manage storm water, provide adequate apparatus maneuverability, as well other issues that arise with a small site.

**Fire stations are unique and specialized buildings. Each part of the firehouse, affects your service to the community and response time.**

We resolved the inadequate site drainage characteristics by providing an underground detention area under a small parking lot. Due to its downtown location, we were able to acquire a variance to the building code to allow for additional employee parking on adjacent streets. The property was also rezoned to have Zero Set backs which allowed us to utilize the entire site to its fullest.

Despite the challenges, as a team with the department and the city we were able to utilize what we had and maximize its use. We were even able to preserve and incorporate the Chief’s favorite pecan tree into an out door patio off of the kitchen. It was a successful and award-winning fire station.

**Many Hands Make Light Work**

Site selection and development can be a challenging process. The size, shape, and various restrictions of your site will determine the form of your overall facility and can limit the design if you start a project unprepared. Remember that there are many factors to consider and address during the site review process. The best approach involves working together as a team to flush-out the needs and wants for projects, develop criteria to identify the feasibility of each potential site and find solutions to confront the challenges that will come.

We, at BRW Architects, hope that some of the insights shared with you have been helpful. Join us in the next issue of *Texas Fire Chief Magazine* where we will discuss the opportunities that arise as your community and other entities become involved in shaping your fire station’s form.