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“So you Want to Build a Fire or EMS Station?”
Part Four: Construction Types, Materials and Facility
Recommendations

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An old builder told me years ago, “*Son, when you’re painting a house, buy the best, most expensive paint you can find. Labor is the most expensive part of painting. And if you use cheap paint, you’ll just have to re-pay that labor cost a lot sooner than if you would have used the best paint.*” That’s the kind of common sense that’s not so common in construction anymore. This article is an attempt to provide a little sensible direction before you actually begin your project. We will raise a few important questions that you need to address to make your facility even better. The article’s subjects cover much more than we have space to address, so let’s try to hit some very general highlights of your new station.

Construction Types

Probably 95% of all stations fall into one of two construction types: standard or pre-engineered. First let’s define *standard construction* and *pre-engineered construction* for the purposes of today’s conversation.

Standard Construction is what most of you think about when you think of construction. The site is prepared and materials arrive on site to be assembled into a building. Brick, block, studs, trusses, shingles, etc., are put together piece by piece to finally evolve into a built structure. Most of your homes are *standard construction*. Almost all older stations are of this construction type: brick and block, or brick and stud walls, wood truss roofs with built-up or asphalt shingle roofs.

Pre-engineered Construction typically means that major portions of the building were manufactured elsewhere and delivered to the site to be erected. Most common for stations is that the structural frame of the building is pre-engineered as large, tapered columns with connected roof beams all made from heavy steel. When metal skins are used to form the outside walls of these large frames, the structure is commonly referred to as a *metal building*. However, more and more of these frames are wrapped in exterior, masonry walls.

Each of these construction types has its pros and cons. Pre-engineered structures are most economically efficient when designed in simple, rectilinear shapes. But they also can cut substantial time out of the construction schedule, thus saving money. Standard

construction structures are usually more acceptable to certain communities but they typically take longer to build and cost more. There are many factors to consider when contemplating your choice of construction. This decision is usually determined by your available construction budget.

Materials

Assuming that you and your designer will be able to satisfy your building program needs and the desired aesthetics, one of your most important goals for the new facility should be to use materials that are as maintenance-free and durable as possible. Many have fallen victim to a new facility that looks great for the first year but deteriorates quickly with normal use. Thank goodness for people who love to paint but I doubt your staff wants to spend most of their “non-call” time with a paint brush in their hand. Try to use materials that require very little maintenance. There are enough exterior finish choices that you should be able to select something that you will be happy with years from now. Keep in mind that emergency service personnel can be very abusive to buildings. Ladders, racks, hose, etc., all will challenge the durability of the building materials. It is difficult enough to get funding for the new project the first time. You sure don’t want to rebuild parts of it in a few years because durable materials were not selected.

The same arguments are true for the building’s interior. For example, if the budget will allow, use floor finishes that don’t require constant striping and waxing. Hard tile gives you a surface that only requires damp mopping. Some manufacturers make a recycled, hard tile can be used for just slightly more than vinyl floors. Also, emergency service personnel seem to carry about 10 pounds of “stuff” on their belts. This can really scar the walls while they are running to answer a call. Use wall materials or protection so that you’re not repairing/painting the walls every few months.

Facility Recommendations

This section is a laundry list of spaces that will likely be included in your facility and things to keep in mind as you design the spaces. Some of you will not house all of these activities and some of you will accommodate many more.

Apparatus Bays:

Doors: There are three major kinds; sectional, coiling, and bi-fold. Each has its place and its pros/cons. Most Owners chose between no glass, partial glass, or all glass. Your location and building orientation will play a major role in this decision. For instance, a coastal station may not be able to tolerate all glass due to potential hurricane winds. Also remember that an open door requires “stacking” space either overhead or at the side jambs. The three kinds of doors vary greatly in cost, which will likely be a factor in your decision.

Floors: For the Owner who wants color on the bay floors there are many products from which to choose. Color can add anywhere from \$1 to \$10 per square foot to the floor. When considering colored floor products be sure to get the manufacturer’s UV color fastness guarantee in writing. Most will not be able to provide such. There is a lot of advantage in just using plain sealed concrete.

Drains: If you have access to sewer it is very advisable to provide drains in the bays. Your local building inspections department will have much to say over many details of your bay drains. Talk to them about what they will allow before proceeding very far. It makes sense to provide the drains under the vehicles so that personnel are not walking across wet floors.

Exhaust: Vehicle exhaust must be addressed. Systems range from piped systems to filtered systems to overhead exhaust fans. You can be sure that regulations regarding exhaust will only grow more restrictive. If you cannot afford the more expensive systems now, at least provide space, structure, power, etc., for them to be added later.

Sprinkler Riser: Assuming that you are sprinkling all or part of the building, in or adjacent to the bays is where the riser will likely be. This is another issue that the local building inspector will have many requirements. Putting the riser out in the open makes it available as a training prop but be sure to protect it from vehicles with bollards.

Apparatus Support Spaces: There can be many other activities that relate to the equipment in the bays. The proper relationships between these spaces are critical. Some of these spaces are:

- Turn-Out Gear Storage
- Shop/Maintenance Space
- Decontamination
- Air Compressor/SCBA Space
- EMS Storage
- Hose Drying
- Laundry/Extractor
- Outside Equipment Storage

Because the proper relationships between these spaces are critical, having a design professional with extensive station design experience is of utmost importance.

Public Spaces

There should be clear definition between Public and Private Spaces in the station. This doesn't necessarily mean that they should be on opposite sides of the Vehicle Bays. They may simply be zoned in different parts of the building with limited access between them. Below is a short list of some of the more common Public Spaces found in typical stations.

- Lobby – a good place for plaques, trophies, patch boards, etc.
- Receptionist – often combined with Radio/Report Room.
- Offices – at least one, usually more. Consider some “open office” plans with cubicles.
- Training/Community Room – giving limited community access can garner support.
- File/Work Room – often combined with Offices.
- Conference Room – sometimes combined with, or in place of, a Training Room.
- Library/Study – may be a room or simply a closet to keep training materials.
- Public Restrooms – got to have them unless you want a visitor in your shower room.
- Vending – usually in Public area unless you don't have Training/Community Space.

Private Spaces

There are many reasons that you would not care for John Q. Public to walk by the Dayroom and see your personnel kicked back in Lazy-Boys, watching a big screen TV. This example and many others are why Private Spaces should be protected from public access. Below are some of the more typical spaces that you may find “behind the line” in stations.

Dayroom – comfortable furniture and a big TV. Enough said?

Kitchen – your mom doesn’t work here, so make it heavy duty and easy to clean.

Dining – sometimes in the Kitchen or Dayroom or by itself.

Sleep/Bunk Room(s) – way too many issues and opinions to discuss in this article.

Toilet/Shower/Locker Room(s) – many philosophies to choose from.

Exercise Room – dumbbells in the truck bays just doesn’t get it anymore.

Linen Closet – often forgot, always needed.

Janitor’s Closet – two or three of these spread around the station would be beneficial.

Site Issues

Identifying your site requirements prior to selecting the site gives you an idea of what property is appropriate. For many the site is already a given. Keep the following in mind with your site.

Parking: It is best to keep emergency vehicle traffic and car traffic separate. This will also allow you to use regular paving for car traffic and heavy duty paving in limited areas.

Signage/Flagpoles: Local ordinances will likely control your signage. Typically your choices are yard signs or signage mounted to the building. You should consider lighting both the signage and flag pole(s).

Patio: This is usually just outside your Dayroom or Kitchen. Your people will put a grill somewhere whether you provide for it or not. If you are to have gas as a utility consider piping it to the patio for the grill.

Generator: If you can’t afford a generator now, at least plan for its future procurement. Think about how it will be fueled and don’t put it outside of the Bunkroom window. Who can sleep with that thing going?!

Training/Staging: Your on-site training may be as complicated as building a drafting pit or as simple as setting up the outriggers on the ladder truck. Think about what you will or could do and allow space for it. The more training you do on-site the more you are available for calls.

Conclusion

There are much too many station spaces and activities to discuss in detail in this short format. Hopefully, we have discussed enough to make you at least consider options that you have previously not. Good luck with your project and remember. It’s never too early to involve a design professional.