



*“Pitfalls to Avoid
During Station
Construction”*



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There are people in the world that learn from their own mistakes and experiences, and there are those who learn from others mistakes and experiences. Those in the latter category tend to have a longer, less stressful life. If your future includes a new or renovated station project, it makes sense to learn how others have encountered challenges in the process so that you can attempt to avoid the same problems.

The planning, design, and construction of your station, whether new or renovation, is one of the most rewarding endeavors that you will ever take on. Yes, it will be stressful at times, but when all is completed you will hopefully look back on the process with satisfaction. If difficulties in the project are encountered, they are most likely to occur during the construction phase. It seems that construction phase challenges are more prevalent than ever before in today’s construction climate. There are many reasons for this, including but not limited to:

- The recent “Great Recession” was catastrophic to most building contractors and resulted in many quality companies going out of business. Many of the companies that did survive the recession lost their older, more experienced personnel.
- Now that the building industry is booming again, many builders have more work than they can proficiently perform.
- For the past several decades, the role of the general contractor has become more of a “broker” of subcontractor services than a “performer” of construction activities. This results in the project outcome relying less on the qualifications of the general contractor, and more on the quality of the specific subcontractor’s crew sent to the job site.
- The ever-increasing technology systems added to facilities require more pre-construction and construction coordination than ever before.
- The customer’s expectations are higher, including the demand for shorter construction schedules and project deliveries.
- Project delivery methods that only consider the lowest possible bid in the selection of the builder - often don’t result in the most qualified builder.

So let us consider some of the most prevalent construction phase pitfalls that municipalities and Fire Departments encounter, along with suggestions on how to avoid them.

Unqualified General Contractors

Just because someone can qualify for contractor’s license and bonding, does not mean that they are qualified to build your next station project. Like many citizens in your

community, many contractors have the misconception that building stations should be easy. After all, “they’re just a big garage for parking trucks in,” right? **Wrong!** Emergency response stations are more complicated than ever. Plus, they are facilities that should legitimately be expected to serve the community for 50 to 75 years. So taking all possible steps to vet the general contractor before they are awarded your project is paramount. Just because the contractor may be a master at building big-box stores doesn’t mean they will deliver you the best station project.

Many municipalities and Departments employ additional means of contractor evaluation, or even different project delivery methods in an attempt to ensure better general contractor selection. Some will “Pre-Qualify” bidders instead of allowing all who legally qualify to bid. Increasingly, project owners are using delivery methods such as Construction Management (CM) or Construction Management at Risk (CMAR) to evaluate the builder’s qualifications, and not just their bid day price.

While these and other processes or project delivery methods have proven value, none of them guarantee good results in selecting a qualified general contractor. Most of the “low-bid” general contractors who have disappointed the project owners, would have appeared qualified in the documents that they submitted in these other selection processes. Whatever selection process is used, additional vetting should be performed prior to awarding the project to any builder. For instance, almost any contractor can provide five “good” references. But how much more you would learn if you asked them for every public safety project that they have built over the past five years, and then actually speak with each of these references? You should consider going to visit those stations to evaluate the construction quality.

Qualified Design Team Construction Observation

There is much to be considered in this phrase. First is the importance of having the station designers involved during the entire construction phase. Some project owners employ separate managers or observers in an attempt to make sure that the design intents are met by the contractors. Most fire departments have one or more members with construction experience who will volunteer their oversight during this phase. While these can be valuable supplements to construction observation, they do not replace the value of having the design architects and engineers protect the original design intent. Necessary design interpretations, and even changes will occur in the field. The designers are most likely to identify all the ramifications of any modifications.

It is also important to ensure that the design team is *actually* qualified to perform construction observation. There are many, very talented designers that unfortunately, have very limited construction observation experience. Therefore, their cutting edge design solutions may lack constructability. Plus, the likelihood of them catching problems during construction also suffers. The Project Architect that worked with you throughout the design process knows why the design decisions were made. That person should be involved with construction coordination to help protect the project integrity. Often the design firm will also have a full-time Construction Administrator who will play

a major role in the process. That person's experience and credentials should be evaluated as well.

Setting the Proper Tone for Interaction

In order for the construction process to be successful, all participants - Owner, Architect, and Contractor - must be team players. Everyone must recognize and protect each other's goals in order for the project to be successful. The Owner's major goal is to get a quality facility with little to no additional expense. The Architect's goal is to help protect the Owner's goals and see a project built that they can be proud of. The Contractor's goal is to provide a quality product and to make a profit. If they lose their opportunity to make a profit, for whatever reason, the project is far less likely to go well. So the Owner and Architect should actually want the Contractor to make a justifiable profit.

As team players, all three parties must work together and not against each other. One of the Architect's roles during construction is to set the proper interaction tone between all parties. Mutual respect and honesty are a must. If one or three of the parties began to violate those principles, they should be called out and given the opportunity to correct their course. If the offending party or parties do not change their approach, the Architect's role of mediator will become prominent for the remainder of the project.

Submittal Reviews

Before the Contractor begins ordering all of the materials and systems – everything they will use to build the station - they are required to prepare and send in documentation to the design team. This documentation, also known as *submittals*, confirms that the Contractor is actually ordering and using what was specified by the designer. If some products are no longer available, then substitutions are suggested and approved. Some decisions like colors and styles are made during the submittal process. Sometimes the data provided with the submittals will reveal that a design modification is necessary to accommodate conflicting elements. By identifying these conflicts during this early phase, the design modifications can usually be made with little to no additional cost.

Because the submittal process is so important to the proper construction phase, there are two major principles that should be followed.

First, the Contractor must prepare and provide the proper submittals in a timely fashion. Because the submittal process can take time, and include multiple rounds before approval, the Contractor and their subcontractors should begin as soon as they are awarded the project. If not, the construction schedule will likely be adversely impacted. Also, the submittals should match what has been specified as closely as possible. Submitting non-specified items will guarantee delays in the process. Only if the specified items are truly not available should deviations be submitted.

Second, the Design Team should quickly review the Contractor's submittals for compliance with the specified items. If the Design Team finds that the submittal is not

accurate or that subcontractor submittals have not been reviewed by the General Contractor prior to sending them to the Design Team, they will reject the submittal and the process starts over. The Design Team should require the Contractor to submit items in the order of construction needs, then review the submittals in the proper order.

Early Identification of Scheduling Problems

Obviously, it is always advisable to make a completion date part of the construction contract. You add teeth to the requirement by establishing “liquidated damages.” Liquidated Damages (LDs) are normally set monetary penalties that the General Contractor pays or forfeits for each unexcused calendar day past the required completion date. Therefore, the required completion date is established as part of the contract. Shortly after the contractor is awarded the project, they are required to submit their construction schedule that shows all of their deadlines necessary for meeting the final completion date.

Each month, all parties should evaluate progress based on the contractor’s originally submitted construction schedule. Extensions to the schedule due to any defined weather delays are normally considered each month. If the onsite construction activities do not match the schedule for that month, then the contractor should be required to immediately submit a “make-up” schedule that shows how construction will be brought back into schedule compliance. Accurate, up-to-date construction schedules should be a requirement each month prior to the contractor’s payment application being approved. By identifying scheduling problems early and often, there will be much more opportunity for addressing delays in a manner satisfactory to all.

Identifying and Correcting Non-Compliant Work

Several parties will observe and safeguard the quality of the work performed during construction. First, the project Owner will watch the daily progress with unmatched interest. Second, the Design Team, as discussed previously, should have construction observation included in their scope of work – mandating that they safeguard the Owner’s interests during construction. Lastly, the governmental Authority Having Jurisdiction (AHJ) who provided a building permit for the project, will perform inspections at specified intervals. Most stations fall under the requirements of the building code that calls for “Special Inspections.” This will require the project Owner to hire a qualified, third party that will inspect specific structural components and systems. Even with all of these eyes on the work being performed, there is plenty of opportunity for non-compliant construction to occur.

“Non-compliant” work would be defined as any construction that does not satisfy the plans, specifications, or code requirements. The quicker that non-compliant work can be identified, the sooner that it can be corrected. Occasionally, it is beneficial to the project or project schedule to determine a work-around for some minor issue of non-compliance. However, when the contractor regularly produces non-compliant work, the other team

members should require correction in order for the design intent and/or code requirements to be met.

Payment Issues

Closely guarding the items previously discussed will help in avoiding many of the potential payment issues with the General Contractor. The General Contractor will typically submit a payment request each month. They should not request or be paid for more than the value of the work performed at the date of the payment request. Prior to the first payment request, the General Contractor should have to submit a Schedule of Values. This is a form that identifies all identifiable categories of materials and labor that will be utilized for construction. The payment application can be evaluated each month against the Schedule of Values in order to ensure that overpayment is not occurring.

Overpayment can lead to several problems. If problems arise regarding the contractor's performance, prior overpayment can weaken the project owner's position in making sure the contractor remediates the performance issues. If the contractor happens to go out of business during construction, prior overpayment to him will decrease the funds available for hiring another contractor. If the contractor is overpaid for items assigned to his material suppliers or subcontractors, he may be tempted to utilize those funds on other projects, which may hinder his ability to pay his subcontractors when they are actually due the money. This points to another payment issue, non-payment of the General Contractor's subcontractors and material suppliers.

Non-payment of the subcontractors and material suppliers by the General Contractor happens far too often, and for a variety of reasons. Whatever the reason, it will almost always cause problems for the project and the project owner. The project owner may begin receiving legal notices, or getting phone calls from the subcontractors. The subs may begin filing liens against the project, and may cease performing critical work until they are paid. Before the General Contractor receives final payment on the project, they should always be required to provide signed lien waivers from all subcontractors and material suppliers. If during the course of construction the project owner begins to learn of non-payment issues to the subs, then they can consider requiring partial lien waivers from the subs with each month's payment request.

Surety Involvement

It is usually necessary, and always wise to require that the General Contractor provide a material and labor Performance Bond for the project. This brings a third party known as a Surety Agent into the project as an insurance factor to assure performance of the General Contractor. If the contractor defaults on the project, the Surety Agent is required to complete the contracted project. If the contractor fails to pay the subcontractors or material suppliers, the Surety Agent takes on that responsibility.

If significant performance or payment issues arise, it is often necessary for an agent of the project owner to contact the Surety Agent in order to solicit their involvement. The

Surety has a vested interest in making sure that the General Contractor performs adequately. Otherwise, the Surety will have to spend their funds to satisfy the requirements of the construction contract. Since the General Contractor's personal property or holdings is often the collateral for the Performance Bond, the Surety tends to have significant influence over the contractor.

Project Completion

One would think that after months of construction, project completion would be a fairly straightforward process. Just let the contractor finish, hand over the keys, then the project owner moves in, and all is finished - right? It can be more complicated than that. There are many processes that can be encountered from the time that construction is nearing completion until well after facility occupancy. It is helpful to understand some of these items, how to benefit from them, and how to avoid the problematic issues.

Temporary Certificate of Occupancy/Certificate of Occupancy: Before the project owner can legally occupy the facility, the Authority Having Jurisdiction (AHJ), or in this instance, the building inspector is required to issue a Certificate of Occupancy (CO) which indicates that to the best of their knowledge, the facility has been built to meet the building code and is safe for occupancy. Many jurisdictions offer a Temporary Certificate of Occupancy (TCO) which may allow limited occupancy. Sometimes a TCO will only allow utilities to get started and furnishings/equipment to be installed. Occasionally, the TCO will allow the owner to move into the building with the agreement that a few, insignificant items will still be completed.

Substantial Completion: By definition, it is "the date at which the construction has reached the point that the facility or project can be used for its intended purpose." This official designation is important for several reasons. If liquidated damages (penalties to the General Contractor for being late) are part of the construction contract, Substantial Completion (SC) is the date when those damages cease to accrue. Typically, it is the Architect who determines this date. Please note that the definition does not say "the date at which the project owner begins using the facility." It is most common for SC to be reached prior to the projects owner's occupancy. But sometimes the owner can begin gaining limited access to the facility prior to it achieving SC, in order to self-perform activities such as furniture or IT/communications installation.

An important point to make is regarding the relationship of the Certificate of Occupancy and Substantial Completion. While the facility can never be deemed Substantially Complete without a CO, the CO does not mean the facility is Substantially Complete. Remember that the CO only shows that the building official believes the facility to be safe for occupancy. There can still be unfinished items that keep the facility from being "used for its intended purpose." Examples of this in a fire station could be Apparatus Room floors that cannot yet be parked on, or Bunk Rooms and Shower Rooms that are not completed.

Warranty: Most construction contracts require that the General Contractor warranties all material and labor provided for a designated period of time, typically one year. Several items in the project should carry a much longer warranty, such as the roof and HVAC system. But everything in the project should be covered by the general warranty. Only normal wear and user abuse is excluded from the warranty. All warranties should be documented in writing and provided to the project owner prior to the project completion. After the project owner occupies the facility, but before the end of the warranty period, a warranty inspection of the entire facility should be performed in order to identify all items that require attention by the contractor.

The planning and construction of a building project is not something that most people have overwhelming experience. The typical project owner cannot be expected to know all the aspects of protecting their interests during construction. Utilizing a qualified design professional during this time will help guard against problems that can arise from these and many other construction pitfalls.