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Construction Mis-Management: Can the Electrical Contractor Survive?

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As I drove east on the Schuylkill Expressway from the Philadelphia suburbs, I saw the vista of the Center City Skyline through my windshield and marveled at the tall structures below, shadowing the city with their girth, spires, and the individuality of each building. As I admired this magnificent skyline, I asked myself, "Where have all the electrical contractors gone that wired these architectural masterpieces?"

I know the answer and yet I ask myself each time I travel to the city for a business or social event. Each time, my mind wanders through the same details and each time I draw the same conclusion: **Construction Mismanagement!**

For the last 20 years, the construction industry has advanced exponentially from previous decades. New tools, techniques, equipment and processes have enabled contractors to perform their work faster, better, and safer than ever before, but all this advancement includes a price to pay.

That price is most often shouldered by specialty contractors and especially the electrical contractor.

The charge of the electrical contractor is to perform his contracted work in an expeditious manner, complete all tasks, and receive payment for his services. Any changes in the scope of work are to be completed and compensated for in a fair and agreeable manner. Any disagreements are to be resolved as specified in the contract documents. So where do things go wrong?

The answer is obvious, when we analyze the construction procedure:

Preconstruction
The owner and/or end user has a need and decides to build a building or structure. The owner reaches out to a group of professionals including architects and engineers to design his building. A construction management firm (CM) is chosen to manage the project.

The CM has the contractual and financial responsibility to deliver the project to the owner. The owner pays the CM and the CM pays the subcontracted specialty contractors.

The Planned Project Schedule
After the preconstruction and before the start of construction, the project schedule is developed. This schedule starts with the owner's desired completion end date. From there, a start date is chosen. In between the start and end dates, the construction activities and their allotted time durations are listed. This schedule is developed by the construction manager. Most construction tasks need to be completed in succession, finishing the present before enabling the next to start. The prepared schedule will contain "float time" or "float" which provides a cushion of time between major tasks if one should become delayed or slip past the scheduled duration. The float time is built into the tasks to ensure the contract is completed by the desired end date.

Construction
The new construction project begins with the site. At the start of the project, the electrical contractor (EC) is most often the first tradesman to arrive and begins installing temporary power for on-site construction offices, giving life to the new project.

After the temporary is installed, new building foundations are dug and poured. Masonry contractors build block walls and pour

concrete. The EC installs underground conduits for new distribution feeders and branch circuits. As the exterior and structural walls are constructed, rough-in for conduits and cabling are being installed for electrical distribution, branch circuiting, and specialty systems. At the same time, mechanical trades install piping and duct work.

As the project progresses, large sections of electrical switchgear, transformers, and emergency power back-up generators are installed. Large mechanical distribution such as

boilers, chillers, air handling units, pumps, and piping are installed. Interior floors are fitted out with studs, drywall, mechanical piping, and ductwork. The EC is busy installing lighting, power, control, data, and special systems. As the spaces are finished, new flooring, painting, cabinets and millwork are installed. The EC is often the last tradesmen on the site, completing the space by installing new lighting fixtures, wiring devices, cover plates, and special system components on freshly-painted walls and ceilings.

Preforming the Work

As described above, the EC's workers are onsite for the entire project duration, thus making the EC the most vulnerable and at-risk for suffering the greatest losses should problems occur. Often as one trade falls behind, there is a delayed start for the following trade. For example, early project tasks such as excavation, concrete, and steel can be delayed by weather and challenges in material availability.

These delays lead to carpentry, mechanical, and electrical construction late starts. Some trades can compensate for delays more easily due to the nature of the work being performed. Trades such as carpentry can make up for lost time by overloading the site with manpower and performing multiple tasks in multiple locations. Mechanical trades prefabricate much of their piping and components off-site leading to less time on-site for installation. The EC does not have the same advantages. Most of the EC's work is performed as a "follow trade," requiring other trades to complete their work before the EC can start his.

Electrical power and connection are integral to many components of the construction process.

The EC works in conjunction with the other building trades to complete mechanical systems, process systems, data, and security. The electrical requirements on projects vary from small and simple to large and complex, requiring days, weeks, and sometimes months to complete. When a delay is experienced in a predecessor trade, the EC is impacted, forced to perform his work in an inefficient manner. In the end, the same amount of work will be completed but not as originally planned. Performing the same work in a shorter time frame leads to premiums for overtime labor, more workmen on the job site, and stacking-of-the-trades. This results in additional supervision, tools, and equipment onsite. These additional costs are not included in the original project estimate and are often absorbed by the EC.

The Subcontract

The subcontract is issued by the CM to the EC and other specialty trades subcontractors. Most subcontracts are grossly one-sided favoring the CM. The CM drafts the contract and purposely includes language that binds the subcontractors for all liabilities, delays, back charges, surcharges, damages, etc., resulting from direct or indirect actions of the subcontractors while the project is in progress. This subcontract is the handy work of highly-paid and skilled construction lawyers with years of experience litigating project claims and settlement pay outs. Each contract clause contributes to isolating the CM from the responsibility of any wrongdoing. The contract provides the CM the protection to hide behind the "four corners of the contract" during a dispute. The subcontract is often part of the bid documents. While the EC has a choice to not sign the document, that will most often lead to the work being awarded to a competitor. The days of a handshake agreement are over.

The Conflict

At the start of the project, the CM will lead the charge with the goal of delivering the project to the owner on budget and on schedule. The CM is going to organize all tasks to the best ability of the project team. He will not be concerned about challenges of the EC nor the other subcontractors. A subcontractor might be held responsible for delays that were caused by slow-downs earlier in the project and yet these will be dismissed by the CM. The CM will state

that he has control of the "float" as defined in the contract which gives him the legal right to instruct the impacted subcontractor to work out of sequence and/or provide additional manpower, premium time, and any additional items needed to meet contracted completion dates. The CM will not recognize these additional costs nor compensate the impacted subcontractor.

In addition to issues with scheduling, additional project scope will be debated. Often the EC will be instructed to perform work not specified in the contract documents. The cost of this work is often quoted or performed on a Time and Material basis. The cost will be submitted as a Change Order Request. At the end of the project, this change request will be rejected. The CM will stand behind some "weasel words" in the contract documents alleging that the work is included in the contracted scope.

The final conflict usually ensues over payments. The CM controls payments to the EC and the subcontractors, often altering the amount at the last minute prior to submittal to the owner. This results in reducing payments to the EC and forcing him to finance the project.

The Solution

Construction Projects today are very challenging. Most projects are controlled by the CM. The EC signs on to self-perform his work, with a full understanding of the CM's contract that includes aggressive schedules, difficult language, and damaging liability clauses. When signing these contracts, the EC needs to be ready to work. He will need to preplan, organize, and execute his work to complete the project in a professional and profitable manner.

The EC needs to be prepared to be aggressive, assertive, and take control of his project from the beginning. The EC can no longer wait until the end of the project and ask to be reimbursed for cost overruns. The EC cannot survive going to court at the end of the project, prompting costly legal battles where no one wins except the lawyers.

To survive in today's world of construction and not become extinct as did his predecessors, the EC needs to manage his projects, be innovative, and control costs to preserve profits. The EC needs to utilize technology to manage his projects in conjunction with, and not against, the CM.

To be successful, the EC must first develop his project schedule and set obtainable goals. Software packages are available to assist the EC in assembling an accurate schedule of tasks taking into account:

1. Every step and all manpower required for a complete installation
2. The time required for each scheduled task based on the EC's years of on-the-job experience
3. Manpower loading plan for all tasks

The EC and CM need to agree on the new co-produced schedule and manpower loading plan. This will provide measurable milestones with completion goals that maintain a continuous project and promote a positive working atmosphere.

At the start of the project, the EC needs to complete as much BIM coordination and equipment modeling as possible. Ideally, this work is performed in the EC's office or off-site long before the boots touch the ground. The EC needs to layout and diagram all distribution equipment, power rooms and conduit installations. These drawings are to be printed or electronically transmitted to the field for installing craftsman. This pre-assembly will capture all work that needs to be performed and provide support if additional work is required.

With BIM and prepared layouts, much of the project work can be prefabricated off-site or at a designated site on the project. This prefabrication can be completed months in advance, packaged, stored, and ready for delivery when needed. When the scheduled

time is set, the prefabricated materials are transported to the project and installed with no need for additional man power or overtime.

As the project progresses, the EC needs to provide adequate onsite supervision. Each supervisor is to be responsible for a section or phase of work. Each supervisor is to monitor and document performance. All supervisors and tradesman need to be preforming the required tasks and be accountable.

To keep the project productive, the lay down area and storage sites need to be close to where the work is being performed. Tools and materials for each day's tasks need to be at the ready and in the work area at the start of each day. At day's end, tomorrow's work areas are to be stocked up and ready to go.

With modern project planning, scheduling, and management tools, the EC can survive and be profitable in the Construction Management world of today. The EC can avoid the downfall of his predecessors and preserve his business and our industry for the future.

About Franklin P. Holleran

Franklin P. Holleran is the President of H. B. Frazer Company, his professional home since 1985. Frank has a Bachelor's of Science in Electrical Engineering from Rutgers University. He is a licensed master electrician in New Jersey, Delaware, Maryland, Philadelphia and many Pennsylvania municipalities. He serves on NECA's Board of Directors and is past President and Governor for the Penn Del Jersey Chapter; he also serves as Chairman of the Labor Management Committee for NECA/IBEW Local Union 98N. Frank is a member of the Federated Electrical Contractors (FEC) and a Board Member for the Specialty Trades Insurance Company (STIC); he is also a member of the Knights of Columbus. His hobbies include boating, fishing, spending time outdoors and restoring muscle cars from the 60's and 70's.

Frank resides in Malvern, Pennsylvania, with his three sons and wife of more than 30 years, Barbara.

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