



THE ACADEMY OF ELECTRICAL CONTRACTING

PAPER PRESENTED BY FELLOW
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EXPERIENCES WITH ENGINEERS ACTING AS
CONTRACTORS OR DESIGN-BUILDERS

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The traditional method of design-bid-build was our way of doing business for years, industry-wide and at Cogburn Bros. Electric. Multi-discipline engineering firms traditionally served as representatives for the project owners. But they have moved quickly into the role of serving as construction managers and then to being the actual contractors. Today, a majority of construction projects, especially in the municipal market, are managed by large engineering firms in a model that is referred to in the industry as design-build.

It is the intention of this paper to explain the experiences we at Cogburn Bros. Electric have had in working with engineering firms that act as contractors in this model and also to give some examples of the advantages and disadvantages of working with these groups. This is an ever-changing market model and while Cogburn Electric's experience may not be typical, it is based on actual projects. In my opinion, design-build is becoming an accepted practice for owners and engineers and, if handled correctly, can be an excellent way to increase the profitability of your company.

The traditional bid process is very straightforward. An owner contracts with an engineer who draws a set of plans. The plans are issued to bid, the project is awarded to a general contractor and the project is built. Design-build is more complicated, as you're about to see.

The unique experience of the design-build paradigm begins during the conception of the project. The owner has a need for a facility and a need to find a contractor to construct this facility. This is where having a good and trusted reputation becomes very important. Typically, we find that owners have a better relationship with engineering firms than with general contractors or electrical contractors. Thus, having a relationship with various engineering firms can become very helpful.

When the owner looks to put together the team, and when design-build is an option, having these relationships can move your firm to the top of the list. The best way to build these relationships is to be able to show that your firm is trustworthy, reliable and cost-conscious. Starting the project with people who know each other and are confident in each other's abilities will go a long way to having a successful project.

Our typical team will consist of the owner, the engineer (and his sub-trade engineers), a group of specialty contractors (electrical, mechanical, I&C, etc.), and possibly even an independent inspection firm. Once the team is established, the actual design work begins.

Initially, the engineer will meet with the owner to get the design requirements and parameters. This will lead to a design that is approximately 30 percent complete before the engineer brings in the specialty contractors. At this point, we review the engineer's design and, while working with the owner, make recommendations for changes or improvements. We also comment generally on the constructability of the project and start to work up budget estimates.

After many meetings with the team members, construction may get started while the design is still only partially completed. As work and design progresses, we have opportunities to comment to the owner and engineer regarding work items that could save the owner time or money as the project progresses. This leads to a complete and final design, while also allowing for an early start to construction and a way of making sure the owner gets a satisfactory project. With everyone working together, this eliminates a great deal of wasted time and miscommunication.

There are four key advantages to taking on the role of contractor. First, the engineer or owner will directly contract with the electrical

contractor. This means better communication and faster payment.

Second, the electrical contractor is made an equal player in the scheduling and construction process. Because of this, our input is considered and acted on, rather than being in the traditional position of having the whole project dictated to us, including scheduling decisions. In other words, schedule float now belongs to the project rather than the general contractor.

Third, the electrical contractor is brought in early. In this scenario, there is no competitive bidding for the electrical work, again demonstrating the importance of having existing, trusted relationships with engineering firms. This also means that the electrical contractor can assist the engineer with constructability and drawing layout, resulting in fewer surprises later on.

Finally, the owner purchases the equipment, which saves the owner sales tax, at least in certain states. For the electrical contractor, this means control over the order without any loss of quality and no concerns about having to pay equipment distributors.

Of course, with every advantage comes a disadvantage. In this case, the first disadvantage involves “Open Book” finances where costs and markups are freely shared among the team. Not only is construction accounting difficult to understand, especially for owners and engineers with limited accounting backgrounds, but there is also the risk that confidential financials could become public information once it leaves your hands.

This approach to finance management also can result in slightly lower markups, but this is partly offset by the reduction in risk and the avoidance of having to competitively bid the project.

Being able to avoid bidding harbors another trade-off: the electrical contractor must accept responsibility for quality, schedule, safety and customer satisfaction. Moreover, any additional costs required to meet these responsibilities fall to the electrical contractor, and contingency amounts may belong to the entire project rather than being budgeted for a single trade. This also means that the electrical contractor accepts responsibility for anything necessary to creating a functional system that is overlooked or omitted from the design, perhaps requiring the electrical contractor to carry some form of errors and omissions insurance.

There can also be issues to consider in the design phase. For example, not all owners are sophisticated enough to assist with the management and design of the construction project, and not all engineering firms like to have an electrical contractor review their designs before they are finished.

Finally, electrical contractors who choose to go this route should be aware that there could be ongoing efforts to ensure customer satisfaction after job completion, even above and beyond normal warranty periods: things like routine troubleshooting or service. While this can be an expensive and time-consuming prospect, it also opens the possibility of lucrative repeat business from the customer.

As with any paradigmatic shift, there have been plenty of lessons to learn. My hope is that by sharing them, we can help you avoid the same pitfalls and stumbling blocks.

I can't stress enough that the electrical contractor must learn to “think outside the box.” It can be a steep learning curve to gain the experience to deal with all the different ways of constructing a project. Being open to different ideas and methods can make all the difference in accomplishing a project successfully.

It's also important to remember that engineers are not accustomed to looking at a project in the same way as contractors. While contractors are always looking for ways to build projects faster and cheaper, engineers tend to be more concerned with maintaining functionality. Engineers will continue to be concerned with the design and development of the project, and will, initially, find working and consulting with an electrical contractor to be a relatively foreign concept. It's as important for you to be open to their approach as for them to be open to yours.

One of the hardest transitions for the engineering firm to grasp is workforce management. While an engineering group will likely spend thousands of dollars to recruit and train a new engineer, construction companies must bring on workers quickly, be able to manage them through the project, and then reduce the workforce as the project winds down. Many engineering firms simply do not have procedures and methods in place to respond quickly to the changing demands for labor on a construction site.

Similarly, very few engineers are accustomed to dealing with subcontractors. They are competent in dealing with owners and other engineers, but once they commence to build a project acting as contractor, the mechanics of a subcontract are quite hard for them to grasp.

Materials procurement is another challenge for electrical contractors turned general contractors. A missing part or material can bring a construction project to a complete halt, which can potentially lead to enormous project costs if the contractor does not have the ability to procure materials rapidly. For instance, if a field problem is encountered that requires a change in materials, a regular contractor can go out immediately and purchase the correct items. The new engineering/contractor

sometimes must struggle with a company purchasing department that is accustomed to ordering toner and computer supplies more than it is with ordering concrete or pipe.

There are special challenges to pricing and budgeting a project. It's possible that you may not be issued a complete set of drawings and specifications until the project nears completion. Meanwhile, you'll still be asked to provide various budget prices along the way. Because of this, you must put forth extra effort during the budget process to make sure that you review all the changes carefully; even the simplest line item in the specifications can have large impacts on the price of the project.

We have found that engineers are receptive to cost changes if you can show what caused the change; however, after the pricing is finalized, this can be very hard to do. Once the guaranteed maximum price is given to the owner, along with a set of plans and specifications, the owner will expect to get exactly what is in those documents. This is where record-keeping becomes particularly crucial as conversations and discussions not properly documented will end up costing the electrical contractor.

Be aware, too, that the engineer will develop the design to a high level: basic equipment layouts and one-line diagrams. It is usually up to the electrical contractor to come up with conduit routings, wire and conduit sizes, light fixture types and layouts, etc. These mundane details will be left up to the electrical contractor to complete, and these details often represent a substantial portion of the work.

Finally, to some extent, you will need to retrain your own field electricians. With your new role as equal partner in the project, your field electricians will have to understand and take advantage of the flexibility they will now have to suggest changes or modifications that

can make the project better, less expensive, and faster. This process will be different from their traditional job of simply following given drawings and specifications. It can be difficult to convince some employees to broaden their perspective on projects, but with your guidance and training, they can become even greater resources to you.

As difficult as it is to get a job today, anything we can do to set ourselves apart from other contractors in the market will make it easier to remain successful. Stepping away from the traditional methods of bidding work, and instead, moving into the design-build market can open up many opportunities that might otherwise pass by.

Still, it takes a certain attitude to transition from an engineer/contractor to a design-build model successfully. It's a change that's not for everyone. Done wrong, it can drag a project to a crawl, stalling all forward progress. But with the right techniques and personnel, with an understanding of the nuances and potential pitfalls, and with a studious eye focused on this market, you can find exceptional rewards, both in a monetary sense and in the relationships that can be formed with owners, engineers and workforce.

Larry Cogburn, who entered the electrical trade in 1970, is president and co-owner of Cogburn Brothers Electric in Jacksonville, Florida. He represents this firm to NECA's North Florida Chapter, where he has contributed his services and support for years.

He is also active in a number of other NECA-related pursuits. He has been a member of the ELECTRI Council of ELECTRI International-The Foundation for Electrical Construction, Inc. since 2002 and a member of the NECA Political Leadership Council since 2004. Widely recognized for his role in encouraging support for ECPAC and NECA's legislative activities, Mr. Cogburn is currently national chairman of the PLC.

Since 2003, he has also been a member of the NECA Codes and Standards Committee while serving as a highly respected participant on Code-making Panel (CMP) 4 for the National Electrical Code. CMP 4 previously handled NEC Articles 225 and 230 covering "Services, Outside Feeders and Branch Circuits," but solar photovoltaic systems and fuel cells code issues were added to the committee's purview during the development of the 2011 edition of the Code. In consideration of his many years of active participation in the ongoing formulation of the Code and his expanded responsibilities on CMP 4, Larry Cogburn was honored with NECA's McGraw Award in 2008.