

A Case Study Focused on General Contractors Doing More Self-Performed Work

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The exiting literature addressing the self-perform versus subcontract option for general commercial contractors is sparse and contradictory. Recent text books indicate that general contractors tend to subcontract virtually all work while recent industry reports reveal that general contractors are increasingly self-performing greater percentages of work. Many variables must be considered by general contractors when deciding to self-perform or subcontract work packages, including risk, fees, schedule, availability of labor and many more. This paper investigates how and why one general contractor decided to increase its level of self-perform work. Using case studies from multiple divisional offices, the scopes of work selected, reasons for selection and the outcomes of the self-perform process were analyzed. The reasons for self-performing varied by location, with some focusing on scopes of work requiring higher quality and others on work that subcontractors were not interested in performing. The cases did reveal that trust in the contracting process between general contractors, owners and subcontractors must be maintained and that skills required to successfully self-perform work differ from those to act as a general contractor. While the findings of this study are preliminary, they may help general contractors understand the risks and rewards associated with self-performing work.

Keywords: Subcontractor, Specialty Contractor, self-performed, direct hire

Introduction

Several texts used as part of the curricula in postsecondary construction management or construction engineering programs indicate that the current trend is that general contractors are subcontracting virtually all of the work required on a project (Gould, 2012; Gould & Joyce, 2014; Knutson, Schexnayder, Fiori & Mayo, 2004; Mincks & Johnston, 2017; Sears, Sears, Clough, Rounds & Segner, 2015). This case study may point to a new trend in the commercial construction industry. More general contractors may be self-performing work they previously had done by subcontractors.

The ways in which the owners of specific projects associated with the built environment use project delivery, procurement and contracting to go from concept, through design and construction, to the intended use of the facility, have changed throughout history. As we reflect on the history of the construction industry, Beard, Loulakis and Wundram (2001) provide an architectural historical perspective:

We recall the ancient *master builders* or *master mason*: Ictinus and Callicrates, builders of the Parthenon in Athens; Abbé Suger for his twelfth century Gothic Royal Abbey Church of Saint Denis outside Paris; and Filippo Brunelleschi for the Dome of the Florence Cathedral in the early fifteenth century. They each provided a seamless service that included what we now refer to as *design and construction* or more recently as *design-build*. (p. 13)

During the Renaissance period, in most cases, design and construction services were provided by a Master-BUILDER. Most likely most master-builders were masons since the majority of the construction effort was masonry. It was the master-builder's responsibility to hire the other trades (Knutson et. al., 2004), a single individual who was the architect and a builder. However, there were exceptions. "Leone Battista Alberti (1404-1472), a poet, philosopher, and papal secretary to Pope Eugene IV, convinced the Pope, that by way of drawings and models, he could direct a master mason to build a new façade on the Gothic church, Santa Novella in Florence" (Beard, Loulakis & Wundram, 2001, p. 18). As the Industrial Revolution spread from Great Britain to the United States in the 19th century, task specialization became increasingly common, accelerating after World War II to the point that "many contractors began to concentrate on certain types of work" (Knutson et. al., 2004, p. 29) such as mechanical and electrical aspects of the construction projects. Gould and Joyce (2014) state that during the majority of the 20th century:

General contractors directly hired carpenters, laborers, bricklayers, ironworkers, and painters. Superintendents, foremen, and lead workers were on the permanent payroll and would hire, lay off, and rehire tradespeople as needed. Only the mechanical and electrical trades were subcontracted. Today, general contracting is very different. Builders hire specialty subcontractors to do all the trade work. (p. 37)

There were many good reasons why general contractors would choose to use specialized subcontractors (Mincks & Johnston, 2017, p. 260):

- Specialized labor for particular construction tasks: Skilled craftspeople trained in the specific assembly perform the task correctly, enhancing quality of the installation and completing the task efficiently, minimizing invested man-hours.
- Lower cost for subcontract work: As the labor for the subcontractor is specialized and only a narrow range of work is accomplished, subcontractor costs are generally less. When utilizing subcontractors, the general contractor has reduced overhead costs and reduced labor and payroll costs.
- Reduced risk for the general contractor: Several areas of risk are reduced by subcontracting work rather than accomplishing the work with the general contractor's own direct hire forces. The risk of labor productivity is shifted to the subcontractor.

It seems that reducing risk has been a primary factor in the general contractors' decisions to subcontract the majority of the work on a project. The various aspects of risk include: productivity and/or cost control, from the estimate to the project's completion; lack of expertise in specialized areas, control of potential liquidated damages; cash flow; poor quality from lack of experience or having the right craftspeople; and cleanup, warranties, and other aspects of the general conditions costs (Mincks & Johnston, 2017).

For these reasons, some commercial buildings projects are 100% subcontracted (Mincks & Johnston, 2017, p. 4). But it seems that the trend of general contractors subcontracting 100% of the work is changing. FMI Corporation, a construction industry research and consulting firm since 1956 stated that "In a 2015 study published by FMI, 45% of survey respondent across the construction industry indicated that they plan to increase the amount of work they self-perform in the future, with another 20% responding that they are considering expanding their capabilities" (Esler & Newcombe, 2016, p. 16). The FMI study went on to explain that "increasing the amount of self-performed work comes with its own risks – including hiring, training and retaining talent – but firms see the benefit of increased control over the project's schedule and quality" (Esler & Newcombe, 2016, p. 16).

Investigating the trends of general contractors' self-performing scopes of work has generated very little research interest. A literature search resulted in a single article that discusses the decisions general contractors make regarding whether or not to self-perform scopes of work. Nassar (2003) states that general contractors are subcontracting an increasing amount of work, yet discusses that such decisions are based on available resources and desired profitability. The timing of this paper misses the recession and market recovery that have occurred since 2003 and how the economic conditions associated with those periods have affected how general contractors make choices regarding self-performed work. This paper sets out to observe a particular general contractor, Swinerton Builders, which is a part of the trend being reported by FMI and report on its rationales for increasing self-performed work.

Research Methodology

This case study reports a few aspects of a single general contractor's, Swinerton Builders', strategic move to self-perform more aspects of construction projects. "A case study is an exploration of a bounded system or a case (or multiple cases) over time through detailed, in-depth data collection involving multiple sources of information rich in context" (Creswell, 1998, p. 61).

One of the researchers spent two months during the summer of 2016 observing operations at a high school construction project in Denver, Colorado. In addition to observing self-performed work on the project's foundation, qualitative data collection also included interviews with key members of the team responsible for the self-performed scope of work including the foreman, superintendent, project engineer, assistant project manager, senior project manager, and general superintendent.

This researcher also went to San Francisco, California and interviewed Swinerton's Vice President for Self-Performed Work to gain a better understanding of how Swinerton Builders is moving toward doing more self-performed aspects of their construction projects. The data collected in this day-long interview provided reliability, "demonstrating that the operations of a study – such as the data collection procedures – can be repeated with the same results" (Yin, 2003, p. 34).

The second researcher has worked with Swinerton Builders in their Sacramento office for multiple summers over the past seven years, predominately in preconstruction roles involving estimating, bidding and buyout. More recently, however, he transitioned into a project management role within the self-performed casework group.

A Vice President and Regional Manager for Swinerton Builders and the aforementioned Vice President for Self-Performed Work reviewed the results of the research to provide construct validity. Having key informants review the draft case study report provides construct validity, as does using multiple sources of evidence (Yin, 2003, p. 34).

Delimitations

Swinerton Builders has area offices in the following locations:

Austin, Texas	Los Angeles, California	San Diego, California
Concord, California	Oakland, California	San Francisco, California
Denver, Colorado	Portland, Oregon	Santa Clara, California
Honolulu, Hawaii	Sacramento, California	Seattle, Washington
Irvine, California		

The researchers were invited to collect data at the Denver, Sacramento, and San Francisco regional offices. It is hoped that more data can be collected at other locations in the future. Delimitations include data collected from one company at only three locations and observations were done at the general contractor's commercial buildings construction operations. The authors did not observe any of the company's renewable energy or government projects or operations.

Research Results

Swinerton Builders is an employee owned company and thus communicates its corporate strategy widely to employees. In an employee owners' meeting in June 2016 in the Colorado Area Office, Swinerton's executive leadership stated they are committed to doing more self-performed work, and that the various aspects of the work being self-performed would vary from location to location. For example, the Colorado area office is looking at self-performing concrete, specifically foundations for select projects. In San Francisco, Swinerton's regional office is self-performing metal stud and gypsum wallboard installation.

Swinerton's reasons for doing more self-performed work are very much aligned with the common reasons listed in the FMI study (Esler & Newcombe, 2016), including increased control over the project schedule and quality. In addition, the opportunity to enhance profit margin is a significant factor. Today's construction market is very much relationship based. Owners of construction projects are selecting design and construction firms based on their qualifications. The contracts, whether using Design-Build or Construction Management at Risk project delivery, are often cost plus with a guaranteed maximum price (GMP). This transparent form of contract and cost reimbursement is allowing owners to force the overhead and profit fee down to a percentage that only pays the contractor's overhead. This common type of contract and delivery method has become very competitive among General Contractors / Construction Managers so the fees presented often only cover overhead with very little or no profit margin. As such, general contractors are looking to find other sources of profit and self-performed work is one such potential source.

Colorado's Self-Performed Concrete

Swinerton's first project to incorporate self-performed concrete in Colorado was the second phase of a high school for a local school district. The contract type was cost plus with a GMP. The concrete foundation which was being self-performed was simple in design. This created a good opportunity for the concrete crew members to learn and improve efficiency with relatively low risk. The assistant project manager (APM) developed an excel spreadsheet tool to help monitor progress and project gain or loss on each of the budget line items being self-performed.

When the APM first used the labor cost control spreadsheet inputting labor hours and quantity of work put in place, several issues emerged. The most significant problem was that the foreman was not coding time to the correct budget line items. This miscoding was not intentional. The importance of accurate cost coding was explained to the foreman and the coding accuracy improved.

Multiple observations of the self-performed concrete work operations yielded emergent themes. The foreman was a very hard working "working-foreman" (in lieu of being a supervisory foreman). He was working so hard that it seemed hard for him to take time to train the crew members, or get out in front of the planning process. The foreman was bi-lingual which was very advantageous since the majority of the crew was Hispanic.

When the self-performed concrete foundation was approximately 70% complete, the foreman was interviewed to record his perspective on what was working well and what could be improved. He talked about his need for field engineering support in ordering material and forming accessories. The foreman indicated that he didn't feel as if everyone in Swinerton wanted him to succeed. He explained, "It's just easier to call a sub." The foreman expressed a lot of frustration. This interview was followed by interviews with the project engineer, the superintendent, and the APM.

All three of these project team members felt that the foreman should be able to manage the work very much like a subcontractor. The foreman's responsibilities would include scheduling manpower, material deliveries and activities, quantity take-off and ordering concrete form material and accessories for example. The project engineer and the APM had no previous experience with self-performed scopes of work. The APM had explained his expectations to the foreman, but the foreman did not seem ready to embrace all of those responsibilities. The superintendent was very experienced doing self-performed concrete scopes of work. He anticipated that the company's general superintendent and division manager would be asking him about the foreman's capabilities and whether or not he was well suited for that role. Therefore, he provided limited guidance to the foreman.

After the foreman's frustrations were shared with the general superintendent, he met with the foreman to let him know that the work was going well and that the company wanted to provide the support he required to be successful. The concrete work was completed very close to the original budget and the foreman and his crew have moved on to another Swinerton project doing the self-performed concrete scope of work.

Swinerton's division manager said that they are planning on including a field engineer in the general conditions costs associated with doing self-performed concrete scopes of work. The field engineer would assist the foreman in tracking work in place, layout and ordering material. The increase to fees would stay with the project and for the foreseeable future, the concrete crew doing self-performed concrete work would be integrated into the project team and not be treated like a subcontractor.

The division manager also addressed how they would compete for the self-performed concrete work on projects while maintaining relationships with concrete specialty contractor partners. First of all, the majority of the concrete work Swinerton is self-performing is "junk work" that most concrete specialty contractors are not interested in doing. Secondly, since most owners want to see three bids on these transparent contracts, such as cost plus with a GMP, Swinerton would submit their bid for the concrete work one day before the subcontractors' bids are submitted. If the concrete subcontractor's bid is the low responsible bid, the subcontractor will be awarded the work. The subcontractors will develop trust in the process, knowing that the bids are being treated fairly with honesty and integrity.

Sacramento's Self-Performed Concrete

The Sacramento self-performed concrete group was formally established in 1999 as a self-performing arm of Harbison-Mahoney-Higgins Builders (HMH), a year before Swinerton purchased HMH. The Sacramento self-performed concrete group was spun out as a separate company, Concrete Services, complete with its own offices, in 2010. This was done for multiple reasons, most notably to eliminate any potential conflicts of interest with regards to bidding its services to outside general contractors.

Concrete Services, which is signatory to the carpenters, laborers, and cement masons unions, does not compete for projects on a low cost basis, but rather focuses on technically challenging projects. As such,

the company has developed a reputation for technical proficiency and high levels of quality. The combination of positive reputation and being a separate stand-alone subsidiary of Swinerton has made Concrete Services a viable subcontractor for other general contractors, even some who compete directly with Swinerton.

Concrete Services' management of highly skilled craftspeople also allow for great flexibility in terms of self-performed work. On a current multi-story mixed use project with narrow tolerances for concrete floor flatness, Swinerton presented the owner with multiple concrete subcontractor bids. While Concrete Services was not the lowest price, the owner allowed Concrete Services to share the concrete bid package with another subcontractor while providing the labor and equipment necessary for finishing the floors. This combination provided the project with the highest finish quality at an acceptable price to the owner.

San Francisco's Self-Performed Metal Stud & Drywall

Vice President for Self-Performed Work, Jim Watson, worked for a national interiors subcontractor for 25 years, 10 years as president before coming to Swinerton. Watson's expertise in metal stud and drywall systems makes him well suited to help guide the various regions within the Swinerton organization as they take on more self-performed work.

According to Watson, Swinerton will self-perform the metal stud and drywall work on up to 50% of Swinerton's projects in the Bay Area. Swinerton will solicit bids from qualified specialty contractors when the metal stud and drywall work on a project is too specialized (thus posing high risk), the design requires a proprietary system, or the owner requires that three bids be submitted for each work package. Swinerton will self-perform the metal stud and drywall work when the project owner has trust in Swinerton's efforts to control schedule and quality through self-performing.

Watson's strategy for avoiding conflict with specialty contractor partners is to not bid against them for metal stud and drywall work on any projects. If Swinerton's estimators send plans and specifications out to metal stud and drywall specialty contractors for bid, Swinerton will not submit a bid to self-perform that scope of work. This strategy is intended to maintain strong relationships between Swinerton Builders and their specialty contractor partners.

Sacramento's Self-Performed Casework Refinishing

Swinerton's Healthcare Division formed a self-performed casework team for projects involving the repair of nurses' stations, wardrobes and similar casework, as well as headboards and column wraps, as a means for expediting tenant improvement projects. Because the replacement or addition of casework in a hospital setting oftentimes triggers an onerous regulatory review, casework is oftentimes refinished rather than replaced. Because casework, particularly nurses' stations, is heavily used and cannot be taken offline for long periods of time without creating logistical issues, a fast turnaround for these scopes of work is necessary. Furthermore, because these features are highly visible to doctors, nurses, patients and visitors, quality of craftsmanship is of utmost importance.

The decision to initiate the casework team came after careful consideration. First, due to a robust construction market in northern California, there were few subcontractors available to create a competitive bidding environment, nor was there confidence that the available bidders could complete the necessary scopes of work in a timely manner. Second, the project owner had cost information from past projects, so Swinerton would be required to demonstrate that they could complete the scopes of work at a competitive

price. Lastly, Swinerton would need to be able to demonstrate the capability to deliver a high quality of work. Once the Swinerton Casework team was able to demonstrate a competitive price and requisite quality and assumed the schedule risk associated with the tight project timeline, the owner agreed to accept Swinerton as a sub-to-self for 11 projects.

Upon acceptance by the owner, Swinerton invested in an off-site casework refinishing shop for drawer fronts and other casework components that could be removed from each project site and refinished away from the active hospital site. Next, a crew of carpenters experienced in casework was assembled by the team's superintendent, who was specifically identified to lead the team. By assembling a strong team and providing mock-ups that demonstrated work quality and allowed the team to practice before starting the project work, many of the risks associated with self-performed work were mitigated and the owner received the desired quality of work at a demonstrated fair price.

Conclusions and Discussion

The previously presented case studies present some common themes between them, primarily centered on trust. First, Swinerton went through extraordinary efforts to ensure that owners were getting a fair and competitive price for the scopes of work being self-performed, typically by soliciting competing bids and providing their own bid in a sealed envelope manner. Secondly, Swinerton worked to maintain trust within the subcontracting community in various ways. Similarly to building trust with the owner, Swinerton would provide closed envelope bids when competing against other subcontractors, and in some cases even located self-perform operations in a separate office as to eliminate the opportunity for providing Swinerton an advantage when they were acting as a general contractor. In other cases, Swinerton only pursued self-performing in cases where other subcontractors were unavailable or unwilling to perform the scopes of work. Because Swinerton is primarily a general contracting organization, creating and maintaining trust between owners and the subcontracting community is paramount and these methods help ensure that is the case.

The cases also demonstrated some challenges Swinerton will have going forward. When developing new self-perform divisions, new personnel, with skill sets that differ from those required of general contracting, will need to be developed. Developing superintendents, foremen and field engineers who can manage crews and perform scopes of work profitably given the associated risks yet remain competitive enough as to not give owners the impression of insider dealings are important.

As previously mentioned, general contractors typically subcontract work in an effort to gain access to specialized labor, lower costs and reduce risk. By sticking to specific scopes of work and developing the skills required of those scopes of work, Swinerton has gained access to specialized labor that they can use on most of the projects they pursue. Additionally, Swinerton will have shown that it has the capability of demonstrating that their costs are in line with other subcontractors meaning lower costs for the owner are maintained. Lastly, by self-performing scopes of work vital to the projects they deliver, namely concrete, framing and drywall, Swinerton can control scopes of work that impact project schedules and quality, reducing risk while still enhancing their own fee.

Future Research

While these case studies demonstrate how one general contractor is self-performing scopes of work on a limited basis, this is nonetheless an important topic of research. If this trend continues, it will be directly counter to the past trends of increased subcontracting. Future work includes investigating, on a wider scale, whether the trend of general contractors increasing their self-performed work capabilities is real and significant.

From an education standpoint, understanding this trend is important. In most construction management curricula, the focus is on training students to perform typical general contracting scopes of work, with minor emphasis on specialty contracting. If general contractors increase the amount of self-performed work they accept, the personnel they hire will need field management skills, such as those typical of a field engineer, and they will need to be able to estimate the cost of work in a competitive market. This creates a challenge for construction management programs that do not currently teach those skills.

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