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The Importance of a Constructability Review

From the book “Construction Management: Understanding and Leading an Ethical Project Team” (available April, 2011)

Design schedules always seem to be pressed for time, which is the result of two primary factors. The most obvious factor is that owners always want to move their projects forward as quickly as possible, so they pressure design teams into abbreviated design schedules. Regrettably, architects frequently concede to this pressure and agree to unrealistic durations. The second primary factor contributing to compressed design schedules is much less obvious than the first. It is human nature. People of all professions have a tendency to procrastinate in their duties. This is why design teams routinely accelerate their pace in the final weeks of the design phase, as opposed to progressing at a constant pace from start to finish. In the end, issuance of incomplete design documents is the recurrent and regrettable result of these two unfortunate factors. *(In fairness to design professionals it should also be noted that human nature is a contributor to why the final weeks of construction always seem to be quite hectic as well.)*

With a compressed schedule the architect and each sub-consultant work feverishly toward the end date. The unfortunate result is that they quite often find themselves in a position for which there is no other choice but to simply issue whatever they have completed to date for bidding and construction purposes. This persistent problem of incomplete design documents is further aggravated by the fact that we also lose the ability to perform a final, comprehensive, quality control review (i.e. a constructability review) of the documents. Ideally, all of the design documents would be completed one or two weeks prior to the end date. At this point each member of the design team would have an opportunity to review their work for inconsistencies or errors and perform final modifications prior to issuing the design documents for bidding and construction purposes. Unfortunately, design schedules rarely afford the necessary time for this crucial design step. As a result, design errors, omissions and inconsistencies are constantly discovered throughout the construction process. Needless to say, many of these problems subsequently become change order issues.

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Experience has shown that when we do not have enough time to perform a thorough constructability review prior to issuing the design documents it is often disregarded altogether. This is not a good design practice. The unavoidable truth is that the problems are going to be discovered at some point and it is tremendously more beneficial to find them during the first few months of a project than it is to discover them sporadically as construction progresses. By identifying and solving problems early we greatly reduce the quantity of remedial work, eliminate many change order issues and decrease the magnitude of delays.

Another harbinger to performing a comprehensive constructability review is the routinely hectic transitions between design, bidding and construction phases. Design teams are consistently in such a time constraint that they can only just keep up with a project as it rapidly progresses. As a result, finding the time to sit down and focus solely on proofreading the massive stack of documents at times appears to be an impossible task. Nevertheless, the fact remains that the sooner problems are discovered, the sooner they can be resolved. The sooner problems are resolved, the lesser the chance that they will develop into change order issues. Plainly, the project team must find enough time for this crucial design step or, alternatively, employ a third party firm for the task.

Employing a competent and reputable third party firm to perform a constructability review is an excellent management practice. Depending on the size and complexity of the project, a thorough constructability review can take weeks or even months to complete. Further, comprehensive constructability reviews cannot be performed until the design documents are near completion. This is the main reason that there never seems to be enough time for a thorough review. As a result, project teams often perform either a half-hearted review or no review at all.

Notably, a constructability review must be performed by an experienced individual(s), which means an executive level person(s) must allocate a significant amount of their time for this task. In reality, finding executives with multiple weeks of available time is often deemed impossible. But the fact of the matter is that problems are difficult to find and take an experienced set of eyes to identify. This means assigning young project engineers, as smart as they may be, to this task is significantly less productive because the younger generation just hasn't yet gained enough experience to know what to look for.

A general contractor may directly employ 100 or more different companies for a construction project. There will be multiple bidders for each of these scopes of work, and the majority of these bidders will in turn receive bids from a variety of manufacturers, suppliers and other companies as well. Once a project is completed, it is not uncommon for nearly 1000 different companies to have been involved from the project's conception, through design, bidding, construction and eventually completion. This emphasizes the importance of the design documents. The only truly efficient and effective means of conveying coordinated direction to all of these parties is via the design documents.

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A notable misconception commonly held by design team members is that information they are unable to incorporate into the design documents prior to issuance for bidding can be quickly and simply added to the bid instructions. General contractors prepare and issue bid instructions to delineate the scope of work for each individual subcontractor. Although providing direction to the bidders via the bid instructions might appear equivalent to providing direction via the design documents, it is actually quite inferior. There are many reasons for this, but one is the unfortunate status quo in the construction industry that all members of a project team must recognize is that subcontractors will thoroughly read the bid instructions during the bidding phase, but they are highly unlikely to ever review them again after being awarded a project. Because of this status quo, it is actually much less efficient for the general contractor to issue direction in their bid instructions than it is to incorporate the direction into the design documents.

Again, it is a good management practice to perform a complete constructability review as early as possible, even though the review comments may not be incorporated into the design documents prior to bidding the project. It must be recognized and fully understood by all project team members that shortening or eliminating the constructability review process does not eliminate problems. Shortening or eliminating this crucial design step only delays discovery of the problems. It is always advantageous to identify and solve problems as early as possible. Identifying and solving problems early provides ample opportunity for resolution before delays are incurred and many times even before additional costs are incurred.

Jason G. Smith, Principal
Construction Analysis and Planning, LLC
5900 Wilshire Blvd., Suite 2600
Los Angeles, CA 90036
310-998-7781
Fax: 310-458-1641
www.constructabilityanalysis.com
jsmith@constructabilityanalysis.com