

Construction

Document gaps cause construction headaches

Construction documentation, such as drawings and material specifications, are enormously helpful in understanding the intent of a construction project and setting realistic expectations for the contractor's performance. Documents must be sufficiently complete to fully describe the design intent and enable the contractor to produce a reliable bid, but they are never perfect. Documentation needs can vary widely based on the complexity of the project. Providing complete and accurate design documentation is critical because there are many problems that poor or insufficient construction documentation can create.

Lessons learned during construction and litigation of prior projects typically drive the level and influence the completeness of documentation required for future projects. This reactive approach helps to ensure that past mistakes are not duplicated, but it may not prevent new problems. Owners should play an important role in identifying what they want their designer to include in the documents. Architects need to ensure that documentation has enough information to meet their internal standards as well as identify the priorities of the owner. A third-party review can add an outside set of eyes to confirm the documents provide enough information to convey the owner's and architect's vision.

Many designers have standard details that are included on all of their projects. However, they may not thoroughly review how their standard documentation integrates with specific new project needs. Many times, the



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conditions shown in the standard details do not apply or even contradict the actual project conditions. In these cases, significant modification is necessary. Without careful review and updating, standard or nonexistent information provides a breeding ground for cost increases during construction.

Costs are prepared after the construction documents are completed, so pricing accuracy relies on the quality of the documentation. In some cases, specific product installation details and procedures are priced before being fully understood by the project team. If designers cannot develop the design to a point that eliminates much of the uncertainty, the contractor will be unable to price critical aspects. These exclusions may not be obvious until construction is well underway, when the cost is higher.

When design decisions are not made until the project mock-up stage, the design team has its hands tied. At this point, assembly components and installation methods have been selected by the contractor. These selections may not be consistent with what the designer or the owner had in mind. In these situations, the subcontractor who priced the materials controls the direction of the installation. Changes to the installed condition will result in increased cost, so the design team may be forced to make



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the undesirable decision to accept less-than-optimum materials or installation.

There can be many reasons why necessary details are not included in the documents. For example, a proposed system or material may have an open specification where system

requirements are shown as "per manufacturer." Sometimes allowing for open specification means that the manufacturer required details are excluded until the system is selected. This may be much later in the project and may defer some design decisions to the contractor. However, an open specification provides opportunity for competitive pricing, which can be beneficial. In contrast, a closed specification limits the contractor's choices, which can lead to higher costs since alternatives are not considered; but a closed specification allows the design team to make critical design decisions earlier in the process. When possible, contractors should have some opportunity to suggest alternatives if they provide similar quality at a lower price. In these instances, a third party can intervene to ensure that the needs of team are met while maintaining the established standard of quality and cost.

Cost increases, also known as change orders, can arise during construction due to gaps in the construction documents or through

inadequate clarification of the design intent. It is advantageous for a design team to cover any documentation gaps before additional costs are incurred and, preferably, before construction begins. When documentation is incomplete, the project may end up with undesirable solutions since a portion of the design may have been based on the lowest-cost solutions rather than the owner's intended standards. When the owner's standards are implemented as a change during construction, the associated cost can be significant.

Future repair costs to a project due to documentation gaps and poor construction solutions can be a significant burden to the operational budget of the project. Repairs may be initiated by tenant complaints about water infiltration damage, systems performance or thermal discomfort; and they may be a direct result from missing critical information in the documentation. Documentation gaps also can lead to premature maintenance issues and systems or material failures.

Architectural and engineering documents are prepared to describe design intent of the project. Where documentation is limited or missing, those aspects of the design will be left up to the contractor. Critical to the success of any project is to identify where gaps in documentation could lead to execution of work that is inconsistent with the design intent. Using internal quality programs or third-party review strategies can provide an added layer of protection against confusion or delays and additional costs during construction can be mitigated. ▲

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