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BIM: Advances Continue But Risks Remain

The following material is provided for informational purposes only. Before taking any action that could have legal or other important consequences, speak with a qualified professional who can provide guidance that considers your own unique circumstances.

Building Information Modeling – or BIM – has experienced rapid and steady growth over the past decade. A large driver of that growth is project owner demand. Clients like BIM because it enables them to better visualize the overall design of the project as well as provide an illustrated manual for continued building operation and maintenance post-project completion. Design firms like it because it promotes collaboration among the major parties to the project and helps ensure that these parties are working with the same up-to-date design documents and specifications. The potential for fewer mistakes and realistic, shared expectations promises great satisfaction and rewards for all involved.

As with the adoption of any new process or technology, however, BIM did not arise without its problems. Early adapters often felt like they were the lone wolves on the BIM project, with other parties to the project ill prepared to fully participate in the process. That often resulted in design firms using the new BIM software internally for creating designs, but having to hand off more traditional design documents to contractors and subconsultants, thus severely limiting the potential collaborative benefits of the new modeling tools.

Today, BIM has moved into the mainstream of design. Not only are more clients demanding it for their projects, but designers and contractors are becoming more proficient in its use. What's more, A/E industry

associations are providing more and more guidance regarding how to best implement BIM while avoiding some of the risks and liabilities that plagued firms in the past.

The Basics of BIM

What is BIM? You'll find various definitions of Building Information Modeling but there is a growing consensus of what it entails. The US National Building Information Model Standard Project Committee developed the following definition:

Building Information Modeling (BIM) is a digital representation of physical and functional characteristics of a facility. A BIM is a shared knowledge resource for information about a facility forming a reliable basis for decisions during its life-cycle; defined as existing from earliest conception to demolition.

We also like this definition provided by the National Institute of Building Sciences:

BIM utilizes cutting edge digital technology to establish a computable representation of all the physical and functional characteristics of a facility and its related project/life-cycle information, and it is intended to be a repository of information for the facility owner/operator to use and maintain throughout the lifecycle of a facility."

BIM is centered on the development of a single project database containing complete real-time project data that can be displayed as three-dimensional pictures through the use of building modeling software. BIM includes all

architectural and structural information as well as electrical, mechanical and other building systems. BIM can also provide links to outside information resources, such as local codes and manufacturer specifications.

When BIM is fully employed, it becomes easier to manage the continuity and accuracy of data and integrate all aspects of the project design stage. Because all physical and functional elements are linked, when one element is changed, the program adjusts all other related elements. For instance, if the size of a project element is increased, schedule timelines and material requirements automatically update. This leads to real-time specifications, estimations, budgets and schedules, as well as detailed 3D models to simulate construction phases.

From the owner's standpoint, BIM offers the promise of a high quality project, as well as time and cost savings. Design issues can be addressed early on. If revisions are made, the database and model are updated as necessary and changes are integrated throughout the process. This should lead to fewer surprises, errors and omissions. Plus the owner benefits by having more detailed models and schematics on hand for the future operation, maintenance and renovation of the project.

During the construction phase, contractors should now have more complete and up to date design data as well as a more effective representation of design intent. Plus, the contractor can continue to add updates to the BIM model during construction, producing real-time "as-built" digital models. In the end, there is a greater likelihood that the finished project will look like the completed design.

Design firms that become proficient with BIM have the ability to substantially increase their scope of services and their fees. They become candidates for more projects as owners increasingly demand BIM services.

One of the greatest shared benefits is the improvement in communication among all parties. And, as we've often stressed in our risk management messages, good communications is the most important nontechnical factor for avoiding project errors, omissions and claims.

Truly, all parties to the design and construction process can benefit greatly from BIM. But these benefits are far from automatic.

Keys to Successful Implementation

Becoming proficient in Building Information Modeling can be a long and costly process, requiring perhaps two or more years of education, training and experience. BIM demands a shift in the overall design methodology, adapting a more integrated and collaborative approach. Everyone in your firm, from top executives down, needs to understand BIM and how it changes the way you operate.

Some firms have found it helpful to appoint a "BIM champion" who keeps abreast of new advancements in modeling software, maintains a BIM manual of standard procedures and puts on training and education programs for staff. A BIM champion can also work with clients to manage expectations and ensure that all parties to the contract have the necessary training and experience needed to meet expectations. Subconsultants, contractors and subcontractors need to be on board to gain the full benefits of BIM.

The AIA Digital Practice Documents

The American Institute of Architects has developed a set of Digital Practice Documents to help design firms address the unique risks of BIM and other types of project delivery systems that rely heavily on the shared use of digital data. Currently, these documents include:

- AIA Document E203-2013: Building Information Modeling and Digital Data Exhibit
- AIA Document G201-2013: Project Digital Data Protocol Form
- AIA Document G202-2013: Project Building Information Modeling Protocol Form.

The primary purpose of E203-2013 is to initiate a discussion among all project parties as to their expectations and responsibilities regarding the extent to which BIM and other forms of digital data and models will be utilized, shared and relied upon. It also promotes agreement as to what, if any, post-project uses of BIM the project owner anticipates. The document, which is in the form of an exhibit to be attached to the master client contracts, specifies agreement as to what data will be modeled, who has responsibility for creating the models, and what the models will be used for.

E203-2013 also requires project participants to meet soon after the work agreement is executed and agree upon the protocols to be used to develop and use digital data and apply BIM. These protocols are set forth in G201-2013.

G202-2013 protocols establish how models will be developed and the extent to which they may be relied upon. These forms set forth a framework for five separate levels of development, each including the minimum model content requirement and the maximum permitted level of reliance.

In a nutshell, then, these documents help all project participants define the level to which BIM will be utilized, who will be responsible for creating the models, and the approved level of use for the models and underlying data. Additional information, including samples of Digital Practice Documents, can be found at www.aia.org/digitaldocs.

Other Areas of Contractual Concern

Regardless of whether your project incorporates the AIA's Digital Practice Documents, there are important areas of concern that need to be addressed by you and your attorney when drafted your client agreements:

Allocation of Responsibility and Risk. When all parties to the design and construction process contribute to and work on the same set of plans, responsibilities and liabilities become blurred. It becomes imperative, then, that each party's roles and responsibilities are clearly spelled out in the contract documents. As a rule, each party should be responsible for its contributions to the documents and models, and the party in the position to best control a risk should be liable for that risk.

Ownership of Design. When all parties to the project contribute to a common database that houses all design information, the question becomes, "Who owns the design?" Typically, contract documents should clearly spell out that the lead architect owns the design and any models up to the close of the project. Once the project is complete and signed off, then the designer may transfer ownership of the documents or models to the client, but only for specified purposes such as operations and maintenance. The owner should never be given the right to change the design or model, nor reuse them on other projects, without the express

written consent of the lead designer and, hopefully, an adequate additional fee.

Privity of Contract/Waiver of Consequential Damages.

Under the concept of privity, a design firm is only liable to parties to the project with which it has contractual agreements. With BIM, however, a designer may not be able to rely on this concept since all parties, including contractors and subcontractors, must rely upon the design documents and models. Work with your lawyer to determine whether it makes sense in your jurisdiction to claim the lack of privity or to require mutual waivers of consequential damages from other project participants.

Standard of Care. To meet the prevailing standard of care, a design firm must be able to render their services with the ordinary degree of skill and that would be used by other reasonably competent practitioners of the same discipline under similar circumstances. That means a design firm that takes on a lead role in a BIM project should be able to render services equal to those of other like designers who take the lead role in other BIM projects. This standard has risen as the use of BIM has grown and will continue to rise in the future. Make sure your level of BIM skills and training continue to grow with the industry, and your contract doesn't promise a level of service or expertise beyond that standard.

Legal and Insurance Issues

One of the biggest continuing unknowns with BIM is how the insurance and legal industries will handle claims on these projects. As the use of BIM continues to grow, precedents will be set to help insurers, attorneys, judges and juries sort out responsibilities in the event of a claim.

Meanwhile, BIM and similar high-tech approaches to design and construction will continue to evolve at a rapid pace. The insurance and legal fields will be challenged to adapt to current practices while continuing to play catch-up as new standards develop. In the meantime, staff training, frequent client communications, project team collaboration and appropriate contract language are your best defenses against project upsets and claims.

Can We Be of Assistance?

We may be able to help you by providing referrals to consultants, and by providing guidance relative to insurance issues, and even to certain preventives, from construction observation through the development and application of sound human resources management policies and procedures. Please call on us for assistance. We're a member of the Professional Liability Agents Network (PLAN). We're here to help.