

HIGHER GROUND: Building Information Modeling's 3-D imaging is changing construction industry

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Building Information Modeling or “BIM” is rapidly finding its way into the design and construction of buildings --- and for good reason. BIM is a natural outgrowth of the information society that we have become, due in large measure to the geometric rise of tech advances founded on computers.

BIM is the process of creating a digital 3-D representation or model of the physical and functional elements of a building project. The model can include a vast amount and variety of information useful in planning and building a project. Examples of data include building elements, dimensions, quantities, light analysis, volumes, area, shapes, functions, spatial relationships, schedules, geographic information, costs and energy.

The model is usually created through the participation of various project team members which may include the architect, engineer, contractor, subcontractors, and suppliers. By merging information from all of these participants into a model, the parties can better visualize the project, detect clashes in components, embed useful information, optimize performance, define the project scope, and make changes. There are several different software options, each of which typically permits project changes to be quickly and seamlessly made once the user is properly trained.

However, use of BIM requires the cooperation and agreement of project team members on such matters as the software protocol, assignment of responsibility, designation of the model contributors or manager(s), designation of any applicable BIM standard, ownership and maintenance of the model, access to the model, liability for incorrect information, and allocation of intellectual property rights in the model or individual components of the model.

In 2008, two major organizations released documents designed to address the legal and other issues arising from BIM. The American Institute of Architects (AIA) issued AIA Document E202 - 2008, which is intended to be an exhibit to the contract contained in its Integrated Project Delivery (IPD) family of documents. However, this document may also be used for any other project delivery method. As an aside, BIM is a critical element of IPD aka “lean construction” and greatly enhances meeting the goals of IPD (more to follow in later articles).

ConsensusDOCS issued document No. 301 which is its BIM Addendum. Like the AIA's BIM document, this document is intended to be an exhibit to the main contract. Both sets of form documents cover the major issues, however, they do so utilizing a different format. In addition, each BIM document emphasizes different terms and reflects each association's differing priorities.

Although BIM has been used on many projects, many project team members are unfamiliar with BIM. There is also a common view that because of its cost and complexity, BIM is best used for larger projects. However, some say "not so."

I recently attended an excellent presentation by Larry Hill of Spence Brothers and Steve Hunt of Dee Cramer at a special meeting of the Washtenaw Contractors Association User Liaison Committee. They each made a strong case for using BIM on small scale projects based partly on actual BIM experience. They showed numerous examples of how project waste and costs can be reduced through use of BIM.

Anyone involved in new construction, especially commercial, industrial, and medical, should investigate BIM as an option and be sure that it has the appropriate BIM contracts in place.