

Workshop M3

Monday, October 27, 9:00 a.m.-noon and 1:30-4:30 p.m.

BUILDING INFORMATION MODELING (BIM)

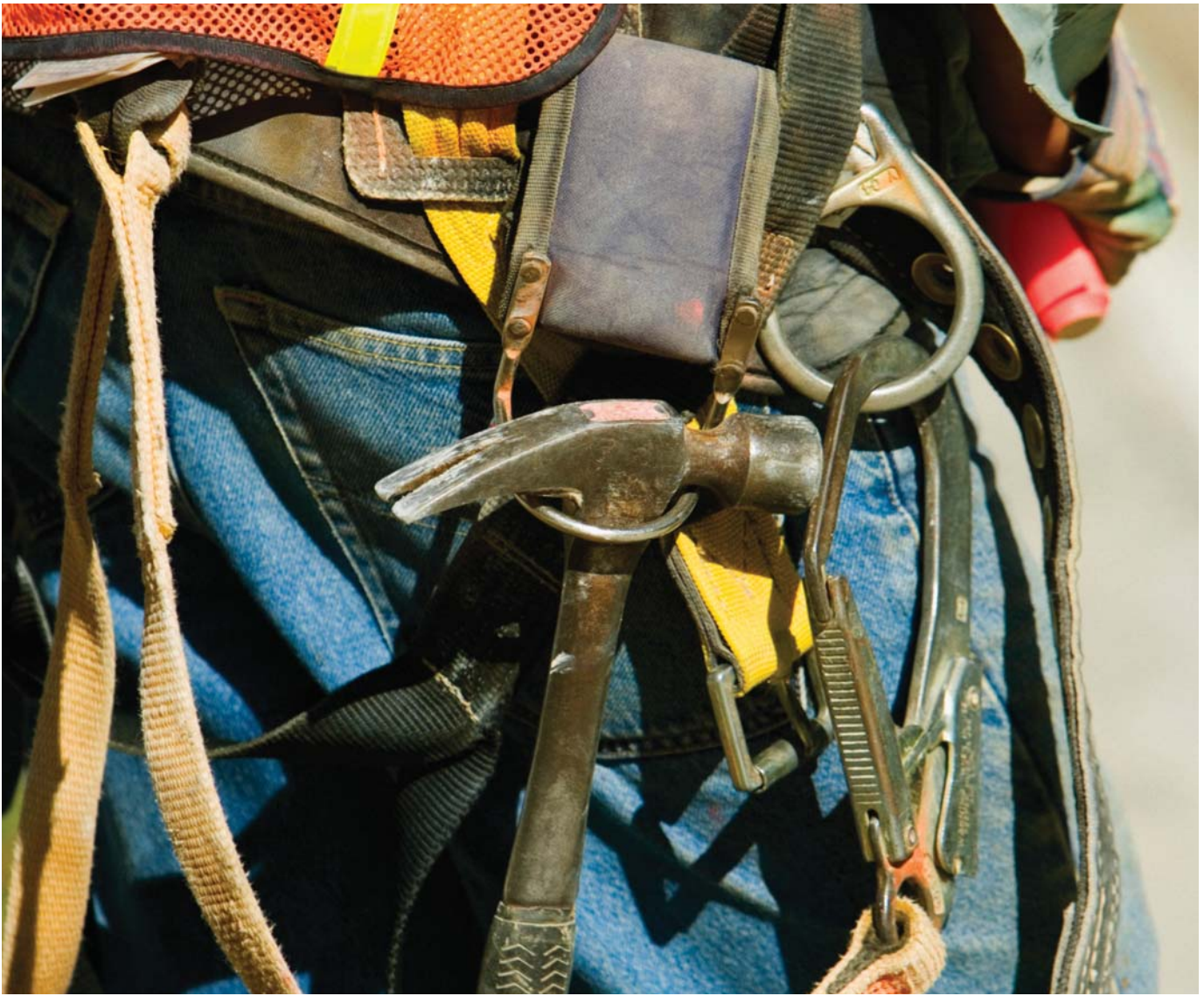
Presented by



Linda Morrissey, AIA
Senior Preconstruction Manager
Mortenson Construction

Building information modeling (BIM) has emerged as an exciting new technology for improving the way construction projects are built. While most construction and design professionals have heard of BIM, many are still trying to get their arms around what exactly it is; how it impacts their work as a designer, contractor, or project owner; and what its implications are for their risk and insurance programs. This workshop will get you up to speed on all of these aspects of BIM technology.

- Provides a baseline overview of BIM, including benefits and risks for participants, how the technology is evolving, and a demonstration of how BIM facilitates the construction process.
- Examines legal issues associated with BIM, including contractual risks, and a review of how well standard contracts address these risks.
- Discusses insurance coverage issues, including general and professional liability exposures, and how insurance markets are responding to these risks.



LIKE A WORK BELT AND TOOLS
GOOD PARTNERS ARE STRONGER TOGETHER.

www.cna.com

**CNA AND CONTRACTORS:
A STRONG PARTNERSHIP FOR OVER 60 YEARS.**

CNA has helped construction firms manage their risks for over 60 years, offering critical coverages and risk management solutions that aren't readily offered by other carriers. We provide risk control services that help identify and reduce loss exposures. Our claim adjusters process claims quickly and fairly, and help injured workers return to work sooner. With CNA, you benefit from the strength of an A-rated national carrier with local industry expertise. If you're looking for a partner who can handle your toughest construction risks ... **we can show you more.SM**

**For more information, contact your independent insurance agent
or visit www.cna.com.**

CNA

Use of the term partnership and/or partner should not be construed to represent a legally binding partnership. CNA is a service mark registered with the United States Patent and Trademark Office. Copyright © 2008 CNA. All rights reserved.

Linda Morrissey, AIA
Senior Preconstruction Manager
Mortenson Construction

Ms. Morrissey is one of the presenters for Workshop M3, "Building Information Modeling," on Monday. She spent more than 20 years as a practicing architect in the Twin Cities prior to joining Mortenson Construction as a senior preconstruction manager in 2006. Ms. Morrissey has a broad understanding of the design and construction industry and is recognized for her ability to collaborate effectively with multi-disciplinary teams. As manager of Mortenson's Building Information Modeling team in Minneapolis, Ms. Morrissey works extensively with Mortenson's customers, design and construction partners, and industry organizations to further the use of BIM as a project delivery and communication tool.

Notes

This file is set up for duplexed printing. Therefore, there are pages that are intentionally left blank. If you print this file, we suggest that you set your printer to duplex.

Building Information Modeling

Technical Issues

IRMI Construction Risk Conference

October 27, 2008

Linda Morrissey, AIA

Mortenson Construction

Copyright M.A. Mortenson Company 2008

Agenda

- Defining Building Information Modeling (BIM)
- What is BIM, ideally? What is it realistically?
- Why are these different?
 - o Understanding project team members' use of BIM
 - o What works and what does not?

Copyright M.A. Mortenson Company 2008

2

Building Information Modeling

According to Wikipedia:

- Building Information Modeling is the process of generating and managing building data during its life cycle using three-dimensional , real-time, dynamic building modeling software to decrease wasted time and resources in building design and construction.
- This process produces the building information model (BIM), which encompasses building geometry, spatial relationships, geographic information, and quantities and properties of building components.

Copyright M.A. Mortenson Company 2008

3

Building Information Modeling

According to Autodesk:

- BIM is an innovative method to seamlessly bridge communication within architecture, engineering and construction industries. With BIM, architects and engineers efficiently generate and exchange information, create digital representations of all stages of the building process, and simulate real-world performance—streamlining workflow, increasing productivity and improving quality.

Copyright M.A. Mortenson Company 2008

4

Building Information Modeling

According to the National Institute of Building Sciences:

- A BIM is a digital representation of physical and functional characteristics of a facility. As such, it serves as a shared knowledge resource for information about a facility, forming a reliable basis for decisions during its life-cycle from inception onward.

Copyright M.A. Mortenson Company 2008

5

Building Information Modeling

According to the American Institute of Architects:

- Building Information Modeling is a model-based technology linked with a database of project information.

Copyright M.A. Mortenson Company 2008

6

What Is BIM, Ideally?

A basic premise of BIM is:

- Collaboration by different stakeholders
- At different stages of the life cycle of a facility
- To insert, extract, update or modify information in the BIM
- To support and reflect the roles of that stakeholder (NIBS Executive Committee Report 2006)

Copyright M.A. Mortenson Company 2008

7

What Is BIM, Ideally?

Ideally, Building Information Modeling results in one model that is:

- Created and used by everyone who touches a project, and
- Contains all the known information, and
- Has been developed so as to support a project's entire life cycle from preliminary analysis to building operation

So, what's wrong with this picture?

Copyright M.A. Mortenson Company 2008

8

What Is BIM, Realistically?

BIM, as ultimately envisioned, is only anecdotally possible in the current design and construction industry.

Why?

Each stakeholder utilizes BIM to advance those objectives that are critical to their own business interests.

In the current market, these business interests are not collectively shared between project partners.

Copyright M.A. Mortenson Company 2008

9

How Each Project Partner Uses BIM

Design professionals

Contractors

Building owners

Copyright M.A. Mortenson Company 2008

10

Design Professionals and BIM

Computer-Aided Drafting has replaced the pencil, and yet ... two-dimensional paper documents are still collections of manually created, non-intelligent lines and text.

- Project content is held by collective team
- The same information is reformatted over and over to produce contract documents

Copyright M.A. Mortenson Company 2008

11

Design Professionals and BIM

A BIM is, in essence, a graphic representation of a relational database.

- Content is manually imported and linked via relationships or “parameters.”
- “Parameters” define object behaviors that are dynamic and self-editing.
- Content is formatted as “reports,” which become the two-dimensional drawings contained in the contract documents.

Copyright M.A. Mortenson Company 2008

12

Design Professionals and BIM

Advantages to using BIM:

- Greater consistency of information
- Increased visualization of designs
- Better communication tool
- Shared understanding
- *Potential* for increased efficiency

Copyright M.A. Mortenson Company 2008

13

Design Professionals and BIM

If it's so great, why isn't everyone doing it?

- Software is inconsistently available across all disciplines
- File size limits the level of detail possible in a BIM
- Design professionals model only that content that is necessary to produce the contract-required deliverables

Copyright M.A. Mortenson Company 2008

14

Contractors and BIM

Contractors utilize BIM to:

- Understand the project
- Coordinate building systems
- Prefabricate elements
- Plan and communicate the work

Copyright M.A. Mortenson Company 2008

15

Contractors and BIM

Advantages to using BIM:

- Better communication
- Early identification and resolution of issues
- Shared understanding
- Decreased waste (time and materials)
- Improved quality

Copyright M.A. Mortenson Company 2008

16

Contractors and BIM

If it's so great, why isn't everyone doing it?

- The BIM contains multiple models from multiple "owners" created on multiple software platforms
- The ability to rely on data provided by others is limited
- A contractor's legal responsibility is defined in the two-dimensional contract documents

Copyright M.A. Mortenson Company 2008

17

Owners and BIM

Potential value and uses of BIM by owners:

Prior to occupancy:

- Better understanding of design
- Excellent communication tool

Post-occupancy:

- Information is organized and compact
- Information is able to be viewed, queried and modified
- Potential to link operations and management

Copyright M.A. Mortenson Company 2008

18

Owners and BIM

Potential value and uses of BIM by owners' team:

- *Potential* increase in document quality
 - o Better contractor and subcontractor understanding
 - o Fewer inconsistencies in documents
- Shared understanding leads to a better team dynamic
- Early identification and resolution of issues
- Quality of work is improved

Copyright M.A. Mortenson Company 2008

19

Owners and BIM

If it's so great, why isn't everyone using it?

- Interoperability—difficulty linking data from the BIM to the computerized maintenance management system (CMMS)
- Many owners do not possess the ability to access and utilize the information
- The value for owners is more difficult to recognize without the economy of scale

Copyright M.A. Mortenson Company 2008

20

End

Copyright M.A. Mortenson Company 2008

21

Notes

This file is set up for duplexed printing. Therefore, there are pages that are intentionally left blank. If you print this file, we suggest that you set your printer to duplex.