CONSTRUCTION LAW LETTER

Volume 31 • Number 2 November/December 2014

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LexisNexis®

GUEST ARTICLE

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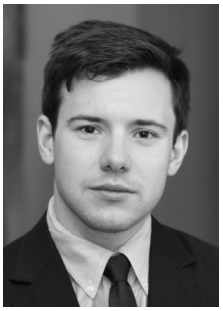

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BUILDING INFORMATION MODELING—CANADIAN DEVELOPMENTS

Design Liability: The Traditional Model

One of the most widely used models for construction projects in Canada is the design-bid-build model. In this model the owner hires an engineer or architect to prepare the design drawings for the project, uses these drawings to elicit bids from general contractors, and then incorporates the design drawings into the main contract between the owner and contractor. In the design-bid-build model, there is no privity of contract between the design professional and the general contractor. Therefore, the general contractor is precluded from using the contract to commence an action against anyone besides the owner. However, provided that the contract does not include a clause limiting the liability of the design professional, a general contractor can sue the designer in tort for damages caused by design flaws. In *Edgeworth Construction Ltd. v. N.D. Lea & Associates Ltd.*, the Supreme Court of Canada found that a designer who prepares design documents on which the general contractor relies when preparing its tender may be liable for negligent misrepresentation.

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Construction Law Letter is published six times a year by LexisNexis Canada Inc., 123 Commerce Valley Drive East, Suite 700, Markham, Ont., L3T 7W8, and is available by subscription only.

ISBN 0-433-40930-4 ISSN 433409304
ISBN 0-433-44380-4 (Print & PDF)
ISBN 0-433-44664-1 (PDF)

Subscription rates: $245
$345 (Print & PDF)

The liability of the parties discussed above reinforces the strict roles of each party in a design-bid-build project. The design professional is responsible for the design of the project, with the tortious liability reflecting this. However, the emergence of technologies such as Building Information Modeling blurs the strict roles defined in the design-bid-build model and the traditional apportionment of liability.

Building Information Modeling

A Building Information Model, or BIM, uses advanced computer technology to create a three-dimensional digital representation of a proposed construction project. This representation includes information on all the physical and functional characteristics of the facility and its related project/life-cycle information. A BIM is used both during the construction of a facility as a set of *smart* drawings that simulate the facility and after completion of the project as a repository of information for the facility to owner or operator to use and maintain throughout the life-cycle of the building.

The term smart drawings refers to the use of parametric objects in BIMs that simulate real objects such as steel beams, wooden framing, drywall, laminate flooring, and all of the other materials that go into the construction of the building. Further, these smart drawings operate on a set of geometric rules that allow changes to one part of the design to affect other parts of the drawing. So, for instance, if the architect wants to increase the height of a doorframe by 18 inches, the smart drawings would automatically increase the ceiling and walls in proportion.

The Collaborative Nature of BIMs

One of the most distinctive features of using a BIM is the ability to work collaboratively during the construction process. The smart nature of BIMs means that changes to the design of the project are most easily, and cheaply, effected at the start of the project before actual construction begins. As an example, General Motors used BIM in the construction of their Flint Global V6 Engine Plant expansion, bringing in

the general contractor and subcontractors early in the design process to make changes and develop a design. This collaborative process led to the construction of the facility 25 weeks faster than a typical design-bid-build model. Despite the various benefits of using BIMs and a collaborative design process, their use could also expose designers, contractors, and owners to additional liability.

Liability and BIMs—The Problem of Design Liability

In a design-bid-build model, many of the parties contributing to and using the BIM may not have any privity of contract. Further, disclaimers often accompany BIMs that state that the BIM is only for "informational purposes" and that parties are not to rely upon the owner and the contractor. These two factors created an environment in which both contractors and designers were unsure of the legal effect of BIM use on the traditional design-bid-build model. In response, ConsensusDOCS, a coalition of design and construction industry organizations in the United States, issued the ConsensusDOCS 301 BIM Addendum (the "Addendum") on June 30, 2008. The Addendum is a product of industry consensus, with representatives from the design community, contractors, owners, subcontractors, construction lawyers, and other parties active in the drafting process. Rather than create a new standard form document that addresses BIMs specifically, the drafters decided to create a supplementary document, the Addendum, which would attach to and modify the traditional standard form agreements. One of the major purposes of the Addendum was to establish rules for the allocation of design liability when using 21st century technologies, such as BIM. The Addendum attempts to apportion liability with the following rules:

- Each party is responsible for any contribution it makes to a BIM or that arises from that party's access to that BIM.
- Further, each party is responsible for any contributions made by a party for whom it is responsible, such as a general contractor responsible for the work of a subcontractor.
- Each party agrees to waive claims against the other party to the governing main contract for consequential damages relating to, or arising out of, access to the BIM.
- Each party has a positive duty to use their best efforts to minimize the risk of claims and liability arising from the use of or access to the BIM.

The above features of the Addendum allocate risk directly to the parties contributing or accessing the BIM, while limiting other liability through waiving consequential damages and imposing the positive duty to minimize risks. Despite its existence since 2008 and recent revisions to the Addendum in 2013, the standard form does not appear to be in wide use by the industry.[1] In contrast, another standard form BIM contract, which came out of the United States and attempts to establish more rigid rules to dictate the liability of the parties involved, appears to be employed more frequently.

AIA Document E202 – 2008

Unlike the Addendum, the AIA Document E202 – 2008 (the "AIA Document") requires the creation of a structure of responsibilities and reliance geared to defined "levels of development" ("LOD") of the BIM. As the American Institute of Architects' reference material notes, "it establishes the requirements for model content at five progressive levels of development, and the authorized uses of the model content at each level of development". Each LOD is assigned a Model Element Author. Presumptively, responsibility for properly

preparing each LOD rests on the Model Element Author. The AIA Document does not invoke the traditional language of a design-bid-build contract but replaces it with stages that assign liability to the specific author.

Lastly, the project architect by default is the party responsible for acting as the "Model Manager" from the inception of the project. However, the AIA Document allows the role of model manager to be assigned to a different party at a particular phase of the Project, allowing management of the model to mirror the Model Element Author for each of the LODs. The "Model Manager" acts as a gatekeeper for the project's BIM by checking the correctness of the three-dimensional model, overseeing access rights of parties to areas within their expertise or to specific stages in the design and construction process, and updating the contract documents on a rolling basis to reflect changes in the BIM.

A Canadian Approach to Design Liability and BIM

While Canadian designers and general contractors have been slow to adopt BIM use for their projects, some high-profile BIM projects have been completed in Canada. Two such projects stand out: the Erickson condominium project in Vancouver and the Krembil Discovery Tower in Toronto. Each of these projects had multimillion dollar budgets and used BIM extensively throughout the project from the preliminary design phase through to delivery of the finished design documents. As well, a brief search turns up numerous other BIM projects in Canada either completed or currently in the construction phase. It appears that while adoption of BIM in Canada might be slow, it is gaining momentum in the design community.

Despite the growing popularity of BIM, at the time this article was written there was no standard contract equivalent to the AIA Document or the Addendum in Canada. Therefore, one of the main concerns about the use of BIM was the uncertainty of the legal framework and roles of the parties.

The Institute for BIM in Canada ("IBC") has been working on Contract Language Documents and has announced that those documents are now final and endorsed and will be available on the IBC website in November 2014.

Those documents, when used in conjunction with the Canadian standard form construction contracts, will help to apportion risks and liabilities of the parties using BIM. The IBC's Appendix will be reviewed and discussed in the next issue of *Construction Law Letter*.

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[1] *See* <http://constructionpronet.com/Content_Free/2012-07-23CPC.aspx>.