



The newsletter of the ABA Forum on the Construction Industry

UNDER CONSTRUCTION

Building Information Modeling

By [Derek Cunz](#) & [Dwight Larson](#)
[M. A. Mortenson Company](#)

There is significant enthusiasm and discussion ongoing in the AEC industry regarding Building Information Modeling (BIM) and associated process improvements. Imagine being able to design and “construct” your project in detail in a virtual 3D environment before committing to “casting it in stone” in the real world? Design conflicts and change order disputes are efficiently resolved. The information that is currently fragmented between drawings, specifications, operations manuals; schedules and estimates could all be located in one database. 2D drawings become simply one of the reports of the database. Moreover, by including scheduling (4D) and costing (5D) information, the virtual model becomes a powerful planning and process tool. This is the promise of BIM.

There is little dispute that there is room for improving design and construction industry processes. Current practice is fragmented, characterized by 2D (paper)-based documentation, inefficient construction documentation, little automation, a nonintegrated supply chain, and a poor hand-off to the customer in terms of operations and maintenance.

The advent of 2D CADD in the 1970s incrementally changed the drafting process by allowing information to be replicated, electronically transferred, and, in some cases, automated. This was an evolutionary change wherein the drafting board was simply replaced by a computer. With BIM, CADD lines are replaced with intelligent objects. From our perspective, BIM can be summarized by project information that is digital, spatial, measurable, comprehensive, accessible, and durable. Instead of a beam being represented by a single static line, in a

fully realized BIM environment that beam would be represented by an intelligent digital object which might contain (when you click on it) the beam’s sizing, connections, the structural forces acting upon it, when it is scheduled for fabrication, its delivery schedule and cost. In the future, we expect the technology to automatically react to changes to the

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Appointment of Nominating Committee

The following people have been appointed to serve on the Nominating Committee, and to select and submit to the membership for election at The Forum’s Annual Meeting on April 12-13, 2007 the nominees for the positions of Chair-Elect and four Governing Committee Members at Large:

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Please forward your nominations or expressions of interest, along with a curriculum vitae including details of the nominee’s activities in the Forum, the ABA and its Sections and Divisions, and in the legal profession generally, to Mike Tarullo by January 12, 2007.



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MESSAGE FROM THE

CHAIR

[Mike Tarullo](#),
Chair-Elect

ELECT



Building for the Future with the Forum

The Forum is founded solidly on its Programs, Publications, and its People. The legacy of success for this organization and its members grows with each program, publication, and opportunity to meet others that share the experience of this profession. Success is not perceived but demonstrated, nor is it accepted with passing indulgence but celebrated with future planning. Finally, success is not dismissed but shared with each of our members - our legacy for each.

Known for their excellence, the Programs of the Forum continue in their popularity. The Fall Program in Scottsdale was blessed with great speakers and a fantastic venue. For the first time in its history the Forum had to restrict attendance, having exceeded the capacity of the facilities with attendance in excess of 460. Those attending, many of whom were first time attendees, heard presentations by some of the leading practitioners in the industry. As is the case with other Forum programs those in attendance received a "bonus" electronic version of the program materials along with the latest version of the "e-library".

Future programs will continue in this rich tradition with "all star" lineups of speakers on a broad spectrum of topics. The 2007 Annual Meeting in Puerto Rico can not be overlooked with programs focusing on "lessons learned" and sessions on a variety of subjects including ownership of project documents, structuring the project relationships, and owner

issues beyond just "writing the check". The 2007 Fall Program, "Another Perfect Storm" being held in Newport, Rhode Island, will focus on legal issues associated with managing the risks of the construction process. The 2008 Mid Winter Meeting will actually be held twice because of the importance of its subject matter, revision to the AIA Standard Contract Documents.

Forum programs are only part of what will help you build your legacy of success. Forum publications are renowned for their excellence. In the past two years the Forum has published books on a variety of subjects, including: 1) [Construction Damages and Remedies](#), 2) [The Construction Contracts Book](#), and 3) [Discovery Deskbook for Construction Disputes](#).

At the Fall meeting in Scottsdale the Forum's latest book was introduced, [Forms & Substance - Specialized Agreements for the Construction Project](#), a text that is a must for every practitioner's library. For the first time the Forum has produced an electronic publication, [Project Site Agreements](#). Both of these publications come with contract documents produced in electronic form easily downloaded to your own computer. All of these publications are available online at the Forum's Web Store.

Opportunities to meet and learn from others that share your passion for our profession and the construction industry is a hallmark of Forum events. These unique experiences provide lasting professional and collegial relationships. Where can one go to meet people like Pat O'Connor and Phil Bruner, authors of what is recognized as the leading treatise on Construction Law in the United States; leaders in the industry like John Hinchey, Holt Gwyn, Leslie O'Neal Coble,

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and Deb Ballati, and those with great wit like Jim O'Connor and subtle humor like Doug Oles. But intelligence, integrity and warmth reside in abundance throughout our organization.

I, like most of you have gained personally and professionally from those I have met at Forum programs. There are a lot of "scary smart" people in this organization that are always willing to share their knowledge and experience. These relationships help build a network that benefits you and your clients.

All too often we seem to be driving down the highway of life at warp speed. We all need to keep in mind to "be persistent but don't overdrive your headlights." Take time to learn about the Forum and become engaged in this organization. Join us in our future programs, share in the wealth of knowledge found in Forum publications, and enjoy the opportunities the "People" of the Forum can give you. Build your legacy of success with the Forum. ♦

Building Information Modeling

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model. Change the size or location of the beam, and the model automatically adjusts other building components to accommodate the change or allows you to automate the coordination of the change.

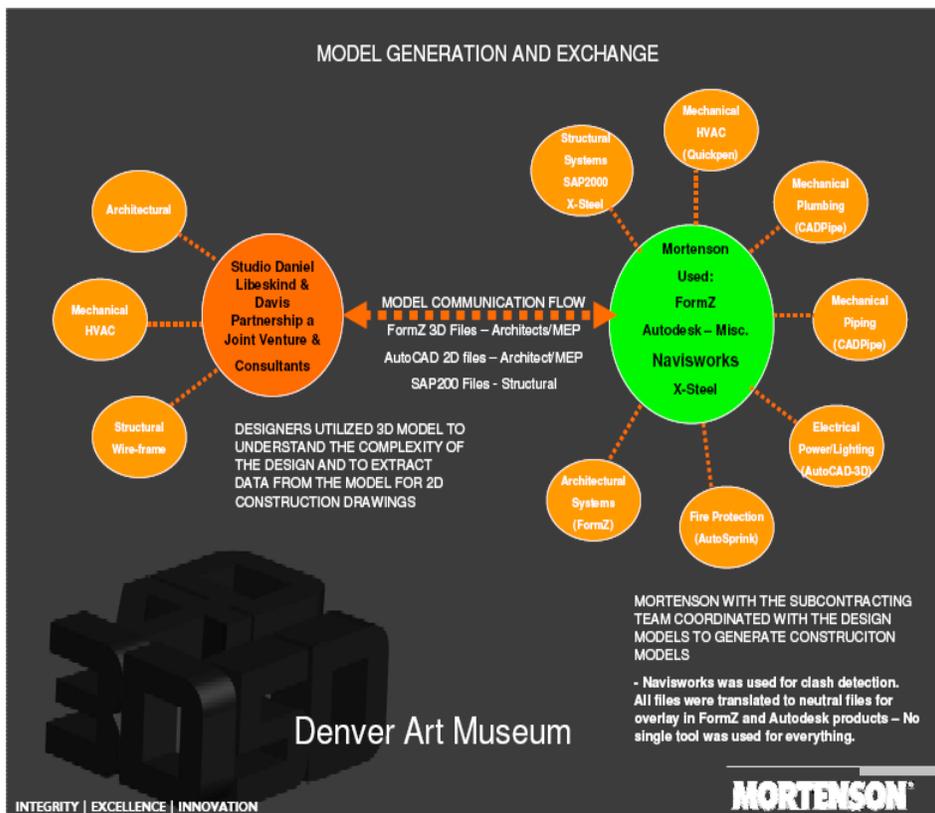
The industry is just beginning to reap the benefits of using BIM. At [Mortenson](#), we have already experienced the value of BIM but are just scratching the surface of opportunity. We have found that the new process allows project teams to better coordinate, collaborate, and visualize building systems to avoid costly field changes. (See graph below.) Other examples of successful implementation include the use of 4D scheduling where the project schedule information is tied to the 3D model and the schedule can be 'played' like a movie.

www.enr.construction.com. Our experience has shown that schedules viewed in an animation can be debugged faster, better analyzed, and more clearly communicated to a wide audience.

BIM has also been successfully implemented for LEED analysis of buildings where the building model can be used for energy, mass, and lighting design. This heightened level of information leads to a new levels of collaboration between project stakeholders. Models have been used to create building sub-assemblies and prefabricate components or large portions of buildings; this allows buildings to be 'manufactured' with higher precision and improved schedules. See www.architectureweek.com.

One major misconception is that 'BIM' is one model in which all project data

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Building Information Modeling on the Menu at [2007 Mid-Winter Meeting](#).

If you found the information in our lead article interesting – and you should have as it's likely to be the "next big thing" to hit the AEC Industry – be sure not to miss our Luncheon Speaker, Derek Cunz, who will explain how modeling is changing the AEC Industry.

Take a peek at the future of design and construction – you will not view the industry we serve in the same way once you have!

resides. While this may be a future state, the current and near term BIM world will include multiple models built for specific project use.

Examples include analytical models for design, models used for simulation, design discipline models for specific design use, construction document models, and manufacturing models for various systems including steel, concrete, mechanical and electrical.

Tools have been developed and continue to evolve that allow these multiple models to be coordinated, merged, and analyzed. The glue to keeping all of this data together is the role of the project model integrator. This new role in the process is currently being defined but we have seen the role split between the architect during the design phase and the general contractor during the construction phase. The industry needs to better define these roles.

Achieving these process improvements do not come without challenges. The current framework of our contracts does not support a BIM 'database' based information process. Examples of pinch points include procurement, permitting, contracting, liability, and the hand-off of electronic information to the field. The transfer of BIM data will include orders of magnitude more information (spatial relationships, design information, manufacturing data, operational information, etc.) than simply the transfer of a 2D CADD file which is in essence an electronic file containing the same information we would see on a paper drawing.

As we transition to a full implementation of BIM, additional challenges will need to be overcome. Projects using BIM today typically employ a 'dual' process where the contract documents follow the traditional process including 2D information but the project team is using the BIM data to reap its benefits.

The ability to build a structure virtually during the design phase and the step-change enabled by BIM in the degree of collaboration among

owners, designers, contractors, and suppliers, among other advantages brought by the careful use of BIM, should reduce the liability exposure of all of the parties. Nevertheless, BIM raises a variety of legal issues.

Perhaps the most significant is the potential for blurring the traditional allocation of responsibility (and liability) between design and means-and-methods. The issue isn't conceptually different in the pre-BIM world, but the intense collaboration enabled by BIM, if carried out without appropriate process controls, could increase the risk of unintended transfers of liability among the parties.

In the non-BIM world, design liability can transfer to the contractor through carelessness in providing design evaluation or "value engineering," whereas means-and-methods liability can transfer to designers through carelessness in the shop-drawing process, and liability can transfer in either direction through carelessness in the RFI and change processes. The increased collaboration enabled by BIM, however, increases the potential for such unintended liability transfers.

Upon the completion of any stage of design, designers can deliver digital models to contractors and suppliers, which can immediately create (or update) means-and-methods models and "shop drawing" models. Owners, designers, contractors, and suppliers can then view their collective models in the virtual world to detect and solve problems, and they can do so in time for the solutions to be incorporated into the next stage of design. This process, which can continue through construction, is complicated by the fact that decisions are often made over digital models and initially documented in the virtual world, but the contract documents and approved drawings still generally consist of real-world, 2D documents.

Moreover, decisions could be based on outdated models, design solutions could be documented in construction models (and vice-versa), the

contractual changes process could be forgotten after changes are agreed to over a computer monitor, and 2D model print-outs that might be attached to paper change orders could lack relevant information contained in the models over which the changes were originally agreed to. As a result, BIM requires that the parties carefully define in the contracts the collaborative process (including who will manage the process at what stages and how) and that they carefully adhere to the process in practice.

These issues are compounded by the prevalence of an old-world practice: transferring electronic data to other parties with disclaimers of accuracy that go far beyond alterations by recipients or degradation of data during transfer. Because such disclaimers require that the receiving parties check the accuracy of the data received, they reduce the usefulness of electronic data and can dilute the efficiencies that BIM can bring. Of course, parties preparing and transferring electronic data should have reasonable contract protections, and they should be adequately compensated for their efforts. The industry can hasten the realization of BIM's full potential by developing appropriate terms for data transfer and by encouraging appropriate compensation for BIM deliverables.

Other issues raised by BIM include those of intellectual property, the use of digital models as contract and record documents, software defects and data corruption, the "obsoleting" of generations of technology, discovery of and evidentiary procedure for digital models, and the use of models for building operation and maintenance.

With BIM, there are huge opportunities for a leap in productivity, collaboration and improved quality. It will take the efforts of the entire industry to fully realize these opportunities. ♦

Are Engineers Required to be Licensed in the Forum State in Order to Testify as an Expert Witness?

By [Axel Bolvig III](#) and [Jeremy Pope Bradley Arant Rose & White, LLP](#)

In many states, professional licensing statutes and regulations define “the practice of engineering” to include forensic work and expert testimony. Does this mean that an engineer must be licensed in these states in order to testify in their courts as an expert witness? In recent months, the supreme courts of South Carolina, Illinois and Alabama addressed this question. These courts have taken different approaches, with different results.

South Carolina

The South Carolina Supreme Court refused to interpret the professional engineer licensing statute to preclude the expert testimony of engineers not licensed in South Carolina.

In [Baggerly v. CSX Transportation](#), 635 S.E.2d 97 (S.C. 2006), the trial court excluded the testimony of a professional engineer licensed in California but not in South Carolina. The engineer had been retained as an accident reconstruction expert. In excluding the testimony, the court relied on [S.C. Code Ann. § 40-22-30](#), which governs the licensing of professional engineers and provides that:

“Practice of engineering” means any service or creative work, the adequate performance of which requires engineering, education, training, and experience in the application of special knowledge of the mathematical, physical, and engineering sciences to such services or creative work as consultation, investigation, expert technical testimony ...

The trial court concluded that the witness was not competent to testify because the plain language of the statute prohibited an individual from practicing engineering in South Carolina without a South Carolina license, and

because “expert technical testimony” was clearly considered to be within the definition of the “practice of engineering.”

The Supreme Court of South Carolina reversed the trial court’s ruling, stating that “however plain the ordinary meaning of the words used in a statute may be, [the Court] will reject that meaning when to accept it would lead to a result so plainly absurd that it could not possibly have been intended by the Legislature or would defeat the plain legislative intention.” The court acknowledged that the statutory language suggests that an engineer must be licensed in South Carolina before giving expert testimony, but it concluded that “this result could not have reasonably been intended by the Legislature.” The Court believed that requiring in-state licensing would “clearly contravene Rule 702 [of the South Carolina Rules of Evidence], which states that ‘if scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify.’”

Illinois

The Supreme Court of Illinois addressed this issue in the case of [Thompson v. Gordon](#), 2006 WL 1514378 (Ill. 2006). That case concerned a motor vehicle accident in which a car crossed a raised median and collided with another vehicle. The Plaintiff, a surviving passenger, filed suit against the designers of the intersection where the accident occurred. Her claims included negligence against the designers.

The Plaintiff filed a pleading that contained an affidavit from her

expert witness, who opined that the defendants failed to meet the ordinary standard of care in their design of the intersection. Plaintiff’s expert was a civil engineer licensed in the District of Columbia, but not in Illinois. The Defendant filed a motion to strike the affidavit.

The Illinois Supreme Court held that the lack of an Illinois license is not a bar to providing expert testimony in a civil case. Whether a witness has an Illinois license is but one of several factors that a trial court may consider in deciding whether to qualify an engineer as an expert witness. In reaching its decision, the court noted that there is no predetermined formula for how an expert acquires specialized knowledge or experience. Expert testimony is admissible if the expert is qualified by knowledge, skill, experience, training, or education and the testimony will assist the trier of fact in understanding the evidence.

In reaching this conclusion, the court acknowledged that an engineer who testifies in Illinois without a license may be committing a criminal violation (while this litigation was ongoing, the Illinois Department of Professional Regulation issued a cease and desist order against the expert; the order found that the expert was engaged in the practice of professional engineering without a license). It stated that a witness is not necessarily precluded from testifying as an expert just because the giving of such testimony could constitute a criminal act. The court reasoned that whether the engineer might be committing a criminal act by testifying is a separate issue to be decided in a separate proceeding.

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Alabama

In *Board of Water and Sewer Comm'r v. Hunter*, 2006 WL 2089914 (Ala. 2006), the Supreme Court of Alabama announced a change to the requirements for expert engineering testimony in Alabama. The court's decision addressed a 1997 amendment to the engineering licensure statute, which added the word "testimony" to the definition of what constitutes the "practice of engineering" in Alabama.

In *Hunter*, the plaintiff alleged negligent design, construction, operation, and maintenance of a sanitary-sewer system. The plaintiffs offered, as an expert, an individual certified as an "engineer intern" by the Licensure Board. The defendant moved to strike the testimony. As grounds for its motion, the defendant cited the Alabama statute governing the engineering profession and the 1997 Amendment to that statute that added "testimony" to the list of acts constituting the practice of engineering. The defendant argued that the statute prohibits anyone from testifying in Alabama as an expert on engineering matters unless licensed in Alabama.

The trial court ruled against the defendant, and prohibited the application of "testimony" to the relevant statute. The Alabama Supreme Court reversed. That court found no merit to the plaintiff's arguments that the statute was unconstitutionally vague, in violation of the Equal Protection Clause of the Fourteenth Amendment, the Separation of Powers Doctrine, and the Interstate Commerce Clause, and also in violation of the Alabama Constitution's single-subject rule.

In Alabama, due to a 1997 law, a witness who will provide expert testimony on matters of engineering must be a licensed professional engineer in the State of Alabama. If a person is doubtful as to whether the substance of his testimony constitutes the "practice of engineering," he may obtain an advisory opinion from the Licensure Board.

Conclusion

It is possible that this issue will arise in other states. As the decisions in South Carolina, Illinois, and Alabama illustrate, it is not easy to predict how the courts will resolve this issue. Even if an out-of-state engineer is allowed to testify as an expert, most states, including South Carolina, Illinois and Alabama, provide criminal or civil penalties for the practice of engineering without a license. Many states include forensic investigation within the definition of the practice of engineering, which could require non-testifying expert engineers to be licensed, as well as testifying experts.

These cases do not provide much guidance at the limits of this issue. What about individuals whose work clearly falls within the definition of engineering but do not hold professional engineering licenses because they work in government or engineering departments of large corporations? What about individuals who have never been required to hold a license in their home state, but would be required to hold a license in the forum state? What about individuals who performed engineering work legally in a state, and that work becomes the subject of, or related to, litigation taking place in another state? The status of such individuals may not be easily solved through reciprocity. If they are not parties to the litigation, may they still testify about the products they designed?

In most cases, the problem of the unlicensed engineer can be easily avoided and perhaps cured if addressed soon enough. Ordinarily, through reciprocity, it is fairly easy for an engineer to become licensed in the state where he or she will testify. It is apparent from these cases that lawyers and experts alike frequently overlook this important issue until it is too late. The effort to address this issue at the outset and if necessary obtain an in-state license for the expert is well worth it. It could prevent larger problems for the expert, the lawyers and their client down the road. ♦

If You are Teaching Construction Law, Raise Your Hand!!!

To further its goal of encouraging education about the variety of ways in which the construction industry interacts with the law, the Forum has formed a Committee on Professional Education. Its long-term goal will be to encourage excellence in the teaching of construction law as a distinct subject in all professional schools of law, architecture, engineering, and construction management. [Lawrence Melton](#) an adjunct professor at the University of South Carolina Law School for the last eight years, and [David Senter](#), a member of the Governing Committee, are leading this effort. As a first step, they would like to identify all Forum members who currently teach construction law as adjunct or full time faculty in any professional program, or who have an interest in doing so. After those currently teaching or interested in doing so have been identified, the Committee will identify activities both to encourage the teaching of construction law at the professional level and to support members who are teaching or wish to do so. Please take a moment and e-mail Lawrence (lmelton@nexsenpruet.com) today with information about what and where you teach and share your ideas about how the Forum can support your efforts.

Want to be editor of Under Construction?

Yours truly is stepping down after the August 2007 issue. It has been a wonderful ride, but now it is time for someone else to climb behind the wheel. Do you want to be considered?

While serving as editor is quite rewarding, you need to evaluate whether you have the time and energy to commit to the position. As

editor you will be expected to attend most, if not all, scheduled Governing Committee meetings. These are held during the Annual, Fall and Mid-Winter programs. (Your air fare (coach) is covered and you will receive a modest per diem with each attendance.) You will also need to attend the Forum's yearly retreat held in June. (Again, air fare and per diem are covered.)

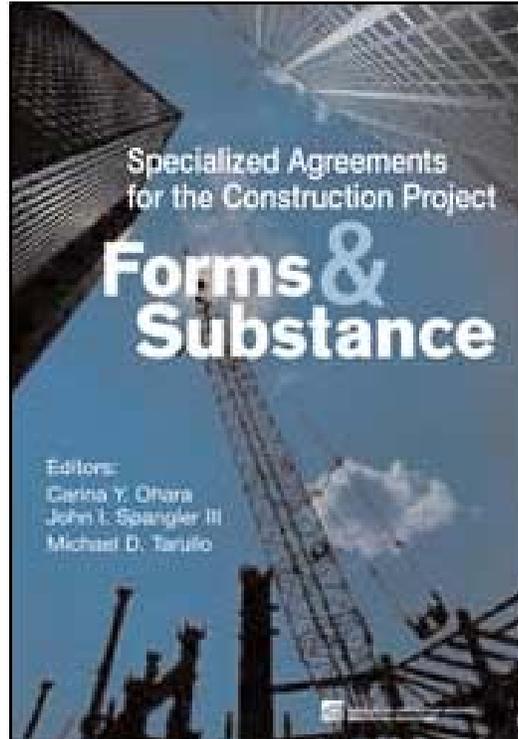
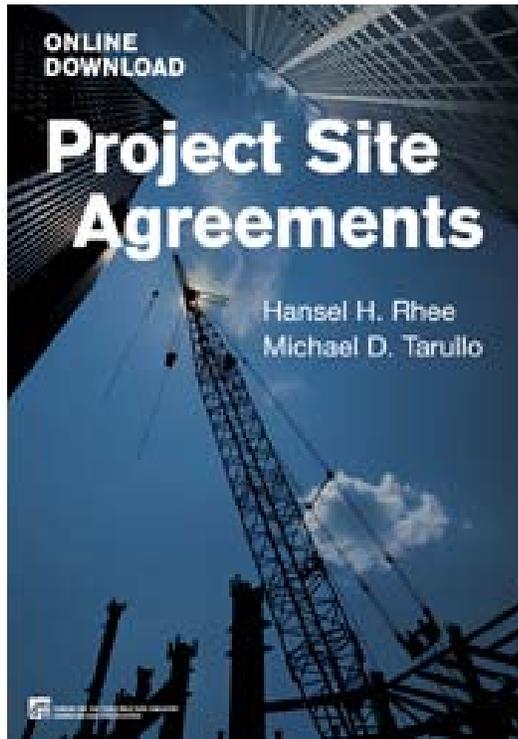
As editor you are responsible for the tone and content of the newsletter. As a general rule, you will need to arrange for three articles to be written for each of the three issues (March, August and December). You

are responsible for editing all content. You will also work closely with ABA staff, particularly [Alanna Sullivan](#), regarding advertisements for upcoming programs, publications and announcements. Fortunately, you will have the expert aid of my associate editor, [Morgan Holcomb](#), to guide and assist you.

If you are interested, send your qualifications and a short statement of intent to Mark Heley at mheley@chvv.com.

Please contact me at poconnor@faegre.com with any questions.

New Publications



These books and more can be ordered at the ABA Web Store at <http://www.abanet.org/forums/construction/home.html>

Join Us in San Francisco For Our 2007 MidWinter Meeting!



WHEN: January 25, 2007

WHERE: [The Westin St. Francis Hotel](#)

335 Powell Street
San Francisco, CA 94102
(415) 397-7000

To ensure availability, please make your reservation by December 18, 2006 and refer to the ABA Midwinter meeting.

TITLE: Withstanding the Tremors: The Golden Rules for a Rock-Solid Design/Build Project

TELL ME MORE: This program is designed as an advanced primer on the implementation of design-build. Whether you represent providers or procurers of design-build services, or just want to learn more about this project delivery system, this program will provide you with unique perspectives and insights into the use and misuse of design-build.

As if these topics, preeminent speakers, and first class materials alone weren't worth the price of admission, beautiful San Francisco has an allure all itself with tourist attractions, cultural amenities and some of the country's best restaurants, museums and historic sites. Napa Valley is also a very short drive away.

Register by January 11, 2007 for advance registration rates. To register for the program online or to download a registration form, please visit the Forum's website, at http://www.abanet.org/forums/construction/featured_program/home.html



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December 2006

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