David A. Ericksen
Attorney at Law
Direct Line: (415) 677-5637
dae@severson.com

One Embarcadero Center, Suite 2600
San Francisco, CA 94111
Telephone: (415) 398-3344
Facsimile: (415) 956-0439

A SUSTAINABLE STANDARD OF CARE?
MANAGING EVOLVING & INNOVATIVE PRODUCTS, PROCESSES & PERFORMANCE STANDARDS IN DESIGN DELIVERY

TABLE OF CONTENTS

David A. Ericksen
Attorney at Law
Direct Line: (415) 677-5637
dae@severson.com

One Embarcadero Center, Suite 2600
San Francisco, CA 94111
Telephone: (415) 398-3344
Facsimile: (415) 956-0439

A SUSTAINABLE STANDARD OF CARE?
MANAGING EVOLVING & INNOVATIVE PRODUCTS, PROCESSES & PERFORMANCE STANDARDS IN DESIGN DELIVERY

***David A. Ericksen*[1]**
***Severson & Werson*[2]**
December 2010

The "*standard* of care" is the prevailing benchmark of professional practice in architecture and design. For decades, it has been the threshold of protection under professional liability insurance for architects. For centuries dating back to the 1800s in the United States, and even longer for traditional English common law, it has been the legal criterion for professional liability in claims and lawsuits against architects.[3] Most recently in 2007, the "standard of care" was officially incorporated into the AIA contract documents as the contractual "benchmark" for professional performance and compliance. Through Section 2.2 of the B101 (2007), the AIA now formally adopts the prevailing standard for architectural performance to provide:

> *The Architect shall perform its services consistent with the professional skill and care ordinarily provided by architects practicing in the same or similar locality under the same or similar circumstances. The Architect shall perform its services as expeditiously as is consistent with such professional skill and care and the orderly progress of the Project.*[4]

Absent some extraordinary circumstance or commitment, this "standard of care" which guides and governs professional architecture and corresponding litigation exposure is drawn from an external perspective which makes internal or individual potential and capacity secondary (or even irrelevant) considerations for accountability. The design professional's standard of care is generally based on the performance of others characterized as the "reasonable", "ordinary", or "average" design professional, and not on internal or personal capabilities. As a result, the ultimate legal question is generally not, "What are you capable of?", but rather, "What would others do?" ("WWOD?")

The external performance focus works well where the project and related tasks utilize time-tested industry standards with a substantial history of application, success, and failure by others. However, what happens when there is no history? What happens when almost no one has undertaken the contemplated action before? What happens when the proposed product, process or criterion has no historical application for validation? Under those circumstances, is

there even a "standard"? Certainly, it is difficult to find a comparative "ordinary" performance for evaluation. Such is the challenge of architectural practitioners and leaders and the affiliated and interested communities, such as professional liability insurers, in the current age of rapid innovation and evolution.

We live in an age of ever-accelerating change and "advancement". Computer technology, bio-sciences, information systems, communication systems, manufacturing, and so much more become more powerful and diverse every day. We also live in an era where the design and construction industry is often at the focal point of shifting political and social imperatives for sustainability and universal technology. For society at large, these advances are almost universally regarded as positive steps toward a better tomorrow. For design professionals in the construction industry, the escalation of advancement presents a mixed blessing. On the one hand, technological advancement provides the lure and expectation of increased opportunities and efficiencies, as well as better ways of designing and building projects. However, those new (and, by definition, unproven) technologies, products, and approaches also present an increased potential for failure and disappointment. All too often, "disappointed" clients blame the design professional.

On the opposite side of the spectrum, design professionals also face increasing limitations on their design options or, at the very least, shifting objectives. We now have a much better understanding of how past innovation ultimately interacts with our environment, such that many preferred options of the past (*e.g.*, asbestos) are no longer available to the industry. The increasing tension between available resources and demand has driven the construction industry toward "green" and "sustainable" design, with all of the inherent limitations on those objectives. As a result of these dual forces, the design professional's options for tried-and-true materials, products, and processes are now often limited or relegated behind other prevailing objectives such as sustainability, energy consumption, and social/political agendas.

The latest round of AIA contract documents aptly demonstrates the expanding array of variations confronting architects today. Despite the progress exemplified by the inclusion of this simple standard of care provision, the AIA B101 included other provisions which referenced, but did not solve, the innovative evolutions within the design and construction industry. Specifically, the B101 references, but does not resolve, issues associated with "environmentally responsible design approaches",[5] "performance of equipment or systems",[6] "building information modeling",[7] "extensive environmentally responsible design",[8] "LEED Certification",[9] and "digital data for transmission to the Owner's consultants and contractors, or to other Owner-authorized recipients."[10] In doing so, the AIA intentionally (or accidentally) illustrated the dichotomy of a design industry measuring itself by references to "historic" and "ordinary", while at the same time embracing and pursuing innovative products, processes, and performance standards which are decidedly neither historic nor ordinary. Where these

revolutionary and innovative products, processes, and performance criteria are part of a project, the standard of care must necessarily exist and be definable, but it is **not** "business as usual".

These "opportunities of innovation" (sometimes better characterized as "crises of necessity") put design professionals in an extremely difficult position. Modern day design professionals are constantly expected to find new ways of building projects better, faster, cheaper and greener, while at the same time they are too often viewed as professionally and financially responsible if those new methodologies and materials do not succeed to the full extent of their hoped-for results. Where the claim does come from a disgruntled client who is dissatisfied with the results of the innovation, the client will necessarily allege a failure to meet the standard of care. However, what is that standard where there is no precedent, no clear standard for "WWOD?" with the innovation or requirement in question?

For architects, their colleagues in engineering and affiliated design fields, and the supporting industries of professional liability insurance, these challenges are currently manifested under two broad categories:

1. **Criteria & Objectives.** With expanding options in products, technology, and non-traditional objectives, the range of potential project objectives and architectural priorities has expanded geometrically. There is no longer a single or predominant architectural delivery model. Too often, such variations are not even recognized, much less clarified and confirmed. Absent such defined selections among the competing options, what is the "standard" for performance?

2. **Uncharted Performance.** By definition, innovative products and technology and new project objectives and standards (such as technology) lack a tested and proven history for performance, outcomes, and success. Experience clearly shows that not all will succeed and that there will be further evolution into the future. The challenge for architects is to define their current-day obligations for incorporation or validation of the "innovation", and their "responsibility" for the success of those innovations into the future.

This paper seeks to analyze and provide a framework to analyze these questions, provide practice management tools to manage the communications, performance, and related risks proactively and, finally, to establish a methodology of defense of claims associated with real or perceived "failures." In doing so, innovation will be evaluated in three distinct categories. These categories intentionally build on one another, with each successive category incorporating portions of its predecessor:

- **Products:** Innovative or evolutionary products, materials, or systems incorporated into construction of the project.

- **Processes:** Technology has now provided a great array of tools and processes which claim to provide the platform for a superior design product. Historically, these have involved issues such as CADD and project extranets. Today, the greatest challenge and allure for design professionals and their clients is Building Information Modeling ("BIM").

- **Performance:** While performance has always been a possible standard for design, it has now become much more widely so and with far different parameters through the pervasive focus on and requirement of sustainable design.

Nearly every innovation or evolution confronting design professionals today falls into one or more of these categories. When faced with that challenge, design professionals cannot simply adopt the "industry standard" of common practice. Instead, it must define the boundaries of their commitments consistent with their capacity to fulfill those commitments. This is the standard of care in uncharted areas.

THE STANDARD OF CARE: A PROCESS BASED MODEL

In a world of rapidly-changing design options, project objectives, and design tools, the standard of care for architects is best promoted, elevated, and defended by focused and strategic process management. Translated more simply, this means the process of information and communication management matters as much, or more, to a successful architectural practice as does the technical design itself.

From the perspective of practice success, client satisfaction, and risk management, a process-based model draws upon and acknowledges the reality that perfection is rarely, if ever, achieved in design and should not be expected by either clients or the architects themselves. Fortunately, it is not required by the law. For example, California law expressly disclaims any absolute requirement of architectural success and provides:

> *An architect is not necessarily negligent just because [his/her] efforts are unsuccessful or [he/she] makes an error that was reasonable under the circumstances. An architect is negligent only if [he/she] was not as skillful, knowledgeable, or careful as other architects would have been in similar circumstances.*[11]

Under this and similar standards, performance and the standard of care can best be explained and justified by reference to "knowledgeable" and "careful" planning and communication (*e.g.*, process management). Where ambiguities, omissions, and even errors do occur, reference to a thoughtful and strategic management process which meets and exceeds what others do (*i.e.*, the

issue was not the result of neglect, apathy, or incompetence) is the best means to demonstrate and validate the professionalism and performance of the architect.

A process-based practice model has multiple benefits for architects:

1. At its core, a process-based model seeks and is built on a common and confirmed set of client expectations and objectives. As such, it leads to client satisfaction, project success, and economic prosperity.

2. The design professional insurance industry reports that more than half of all claims against design professionals arise almost equally from technical design errors and non-technical practice management issues, rather than technical errors in design.[12] Process management focuses on the key, non-technical risk drivers.

3. Ultimately, many architects are "team leaders." Leaders of their internal teams, teams of consultants, and often even the "leader" of the project as a whole from programming, to design, and through construction. As such, they cannot be everywhere at once and with each team member at each critical juncture. Process management establishes a framework to guide each "team" through the project, regardless of the presence of the watchful eye of the lead architect.

4. Strategically applied and adapted, process management reduces both technical errors and non-technical failures.

The "PCAD" Model

The development of project and practice specific procedures and tools can and should be based on the application of four fundamental and sequential building blocks. They are:

1. **Procedures.** Successful architects can and should have core project types or sectors which dominate major portions of their practice. Generally and within specific project types, architects should have standardized procedures and tools to guide them as a default. In many ways, this is the equivalent of the AIA contract documents: a great reference and starting point, but one which must and should be adapted to the specific project.

2. **Contract.** While internal procedures are a solid basis for good design practices, there are many possible variations. With each variation comes the potential for a misunderstanding with the client. Clients often have (or later claim to have had) different expectations. Consistent with these "misunderstandings", approximately two-thirds of all claims against architects are brought by clients.[13] While unfortunate, the good news is that these misdirected expectations can often be avoided by the Service Agreement with the client. To that

end, contracts which best define and secure the standard of care in this rapidly-evolving world will include:

a. Defined and achievable goals/objectives/priorities, along with the relegation of other concerns;

b. Project assumptions and caveats;

c. Process and sequencing of project development; and

d. Obligations of each party, individually and collectively, within the process and sequence.

3. **Adapt.** "Standard" procedures and practices are only a starting point. They must be adapted to meet each project's unique demands and contractual commitments. This applies equally as much at the inception of the project as it does during the evolution of the project. Although standard models and procedures are fundamental building blocks for consistent practices, they must be strategically tailored to each project.

4. **Document.** Many architects are tremendous communicators. Unfortunately, such communications are too seldom documented and are, instead, left to a presumed consensus which often devolves to divergent recollections. With all of the immediately accessible tools for written communication which are available today, there is really no excuse for this. Effective process management architects will prioritize and commit themselves to consistent and effective documentation, with particular emphasis on the following:

a. Assumptions;

b. Priorities, pros/cons, risks;

c. Process/sequence concurrence;

d. Milestone concurrence; and

e. Internal evaluations versus external representations.

With this as a background, the "PCAD" (Procedure/Contract/Adapt/Document) model can be applied with specific background, analysis, and strategic advice and tools to each of three categories which dominate the evolving architectural practice. They are:

1. Innovative Products and Processes.

2. Sustainable Design.

3. Technical Design Tools and Structures (BIM, IPD, etc.)

A Framework of "Informed Consent"

On a number of levels, much of the PCAD model is predicated on a more developed level of informed consent or client concurrence in the design and construction process and decision making. After all, it is the client's project and as the number of significant project variations proliferate, the client's informed concurrence becomes all the more critical lest they later second guess a discretionary assumption or decision. Communication, contracts, and documentation are the keys to this process.

As anyone who has been to a medical office or emergency room in the last ten years can attest, a multitude of waivers and releases based on the concept of "informed consent" are inherent in the medical field. In fact, all fifty states have endorsed the concept of informed consent in the medical field such that it has become a part of each state's statutory code in one way or another. While design professionals have not received equal legislative endorsements for the use of informed consent, the concept is no less applicable there both as a part of fostering a positive and well-informed client relationship and ultimately avoiding claims.

Generally speaking in a professional service context, "informed consent" is defined as "the agreement by the person to a proposed course of conduct after the [professional] has communicated adequate information and explanation about the material risks of and reasonably available alternatives to the proposed course of conduct."[14] Drawing upon the multiple treatises and advisory codes for informed consent in various professional fields, a proper checklist for an effective informed consent would be:

- Project description;

- Proposed or recommended action or approach;

- Goals, purposes, and benefits of approach;

- Risks and consequences;

- Feasible alternatives with either a comparative evaluation or a statement that such comparison will be provided if requested.[15]

For purposes of the design community, the latter three elements are the most important and the steps too often omitted or resigned solely to oral communications which are often then left to varying recollections or denials. Accordingly, documentation becomes the key.

For obvious reasons, "informed consent" is most definitively established by a document signed by both parties. However, this is not always a practical reality on every point and often the real key is to demonstrate that the client has been adequately informed and implicitly gave their consent by proceeding with the project. For this reason, it remains in the architect's best interests to play the role of project "historian" as much as possible so that an adequate record can be created through project memorandum or meeting minutes with either a process for counter-signature or an invitation to report any discrepancies or disagreements. There are two important caveats to this approach. The first is that for purposes of most contacts, any such memorandum or understanding which precedes the actual agreement becomes ineffective if not included in or referenced in the agreement itself under either the common law "parole evidence" rule or a contractual integration clause, both of which provide that any pre-contract representation or agreement is void if not included in the agreement itself. The second is that the effect of post-contract documentation can be muted, but not necessarily defeated, by contract clauses calling for all variations in contract terms to be in writing.

NEW & INNOVATIVE PRODUCTS, MATERIALS & APPLICATIONS

By their very nature, design professionals are among the most creative and innovative members of society. As a result, they are often instinctively drawn to new technology, products and methods, much as a moth is drawn to the flame. Other times, they are led to new technology and products by either client demands or the need to appear to be "cutting edge", in order to secure that client's business. In doing so, design professionals often agree to incorporate an "unproven" product, application, or method which, virtually by definition, is not a standard practice and is therefore not consistent with the "standard of care". Despite any disclaimers or protests by the design professional and however unrealistic its expectations, most owners will look to the design professional first, last, and always if their expectations and hopes are not fully realized.

To make matters worse, design professionals seldom receive any compensation, much less **fair** compensation, for this "opportunity" to be either the owner's unacknowledged hero or demonized culprit. As with many situations in any design professional's experience, the financial upside remains almost solely with the owner, while the design professional toils for its hourly fee or bare bones, lump sum fee. The disparity of risks and rewards with respect to innovative products and processes is even further exacerbated because the prospective risk of failure, or even simple client dissatisfaction, is greatly enhanced.

Does this mean that design professionals should not use new products or apply existing products in new ways? Absolutely not. That is unrealistic. Client demands, progress, and even the standard of care dictate otherwise. Design practice and the construction industry always have

and always must move forward by accepting and embracing new products and opportunities. However, that does not mean design professionals can approach such situations as "business as usual" without appropriate procedures and protections. Where the product or application is neither "ordinary" nor "similar", the standard of care must become more about expectations, communications, and diligent process than it is in terms of technical outcomes. Such is the performance expectation for the "ordinary, but reputable" design professional. By definition, the use of innovative and "unproven" products involves equal parts of investigation, reliance, hope and risk.

The following sub-sections set forth a strategy for design services implementing new products and product applications. This strategy is intended to maintain a fair balance of risks and rewards, while simultaneously protecting the design professional's professional practices and economic survival. This strategy is drawn from numerous experiences in projects gone awry in conjunction with many successful contract negotiations which have prepared for the appropriate implementation of innovative technologies.

Client Expectations

One of the most frequent sources of failed client relationships and litigation is unrealistic, inappropriate, or uncommunicated client expectations. The threat of such expectations is significantly increased where a new and/or innovative product or application is considered for the project. Most owners (at least in retrospect) seem to focus solely on the potential for an enhanced outcome without any recognition of the potential for failure or shortcomings. Even when they recognize the risks, they usually regard those risks as belonging to the design professional. They generally will claim to be unsophisticated and relegated to an almost blind reliance on the design professional. Although this is an all too common experience, it is not fair or consistent with the design professional's common intentions.

The only way to control this risk is to educate and shape client expectations. Whenever using a new or innovative product or technology, or using an existing product or technology in a new or innovative way, the design professional should and must devote a significant effort to the education of the client. Unfortunately, there is no bright-line rule to distinguish when this discussion is required. However, these concerns are not limited to products and technologies being used for the first time. In reality, these considerations should come into play any time a design professional cannot characterize some component of the design as "standard practice".

Of course, the process of educating and shaping client expectations will vary by project, client, and application. However, some elements will consistently apply, or at least be worthy of consideration:

- Affirmative acknowledgement that the product or application is not the standard or traditional approach. In doing so, state that this means it has **not** been tested or proven.

- Express identification of the objectives of the product or application, and why they are being proposed over traditional products or applications.

- Express acknowledgement that there is the possibility that the product or application will not achieve the objectives.

- Seeking the client's affirmation that, given all of these considerations and the related risks, it elects to proceed as proposed. In many ways, this is the construction equivalent of "informed consent" in the medical community.

To any extent possible, each of the foregoing steps should be documented. Ideally, this documentation will take the form of correspondence or Meeting Minutes conveyed to the client. The issue can also be addressed by generic or very specific contract provisions, as set forth below.

Scope of Investigation/Analysis

The single and most critical strategic decision with respect to a new product, technology, or application is to determine what level of investigation into and analysis of the product or application the design professional will undertake. The strategic considerations and limitations are probably most acute with respect to the use of new products or patented processes. This is because the scope of investigation or analysis may run the gamut from rote incorporation of the product or process following the manufacturer's directions to a virtual re-design validating or even enhancing the product or process. As a result of this spectrum, the strategic options may be best assessed on a progressive basis.

At one end of the spectrum is the option of incorporating the product or process by simply adhering to the manufacturer's instructions and guidelines without anything more. The more innovative the product or process, the more appropriate this approach. Recent examples of such products and processes include advances in water treatment technology and reinforcement methods for structural concrete. If this is the chosen approach to the use of the product or process, it is best to be absolutely clear with the client that this is the method of evaluation and to confirm that approach in writing either by correspondence, memo, or in the actual contract. When using this approach, the design professional should refer the contractor to the actual manufacturer's instructions and guidelines as much as possible, rather than trying to selectively reinterpret the instructions and guidelines.

The next step in the progression of investigation would be to conduct a review of the development of the product or process, its testing, and any applications to date. Most experts agree that this approach best approximates the "standard of care" for the use of new products. It occupies an appropriate middle ground wherein the design professional does not seek to "re-engineer" the innovation, but does attempt to verify that the innovation was the result of a reasoned process and has not already been exposed as being prone to failure or disappointment. The simplest steps towards accomplishing these ends is to contact and interview the manufacturer, contact references for past applications, and review the available literature (*e.g.*, journals and the internet). If this is the selected approach, both the approach and the results of the investigation should be shared with the client.

Before proceeding beyond the foregoing and actually conducting any original analysis or modifications, any design professional should carefully consider the practicalities of doing so. The more an independent analysis is performed by the design professional, the greater the design professional's potential responsibility for the ultimate performance (and/or failure) of the product or process. Moreover, the design professional's capacity to conduct a useful analysis is often limited. Most often, the creators of innovative products or processes will defend much of the relevant information as proprietary. Therefore, any analysis is necessarily based on partial information. In addition, it is not realistic to think that any analysis of such a product could be as thorough as that performed by the creator or manufacturer. Finally, to the extent the analysis leads to any variation in the application, such a variation may unintentionally void any applicable warrantees or other responsibilities of the manufacturer and thereby make the design professional solely responsible.

Before proceeding with the project and the application of the new product or process, the design professional should consider the range of options for investigation and analysis, and make the strategic decision which is best for both the design professional and the project. That decision should then be shared with the client and confirmed in writing. Since this is truly a strategic decision driven by pragmatic realities of design options, the client should generally **not** have access to all options.

Contractual Affirmation

All of the foregoing is typically preparatory to execution of the client contract. As with any discussions and decisions which precede the actual contract, they are meaningless if not incorporated into the contract itself. Although they will vary by project and application, the key provisions for incorporation into the project are as follows:

- Confirmation that new or innovative products, technologies, or methods may be used on the project.

- Acknowledgement that, as such, the new or innovative products, technologies, or methods lack a proven history of successful application.

- Acknowledgement that, as such, the new or innovative products, technologies, or methods are being incorporated into the project in order to accomplish recognized objectives, but that due to their innovative nature, there is a significant possibility that they will not realize those objectives or have collateral consequences.

- Verification of the level of investigation and analysis, and a statement that this is the limitation of the design professional's obligation for the performance.

- Confirmation that the client has or will weigh the relative risks and rewards, and will accept the risks in order to incorporate the innovation into the project.

Such a provision may be either an all-inclusive provision incorporated into all Agreements, or a specially-modified provision applicable only to a specific project and application. Such a "standard" provision may provide:

> *New or innovative products, technologies, or methods maybe used on the Project. Client acknowledges that new or innovative products, technologies, or methods lack a proven history of successful application. Nevertheless, the new or innovative products, technologies, or methods being incorporated into the Project pursue other recognized objectives. Due to the innovative nature, there is a significant possibility that they will not realize those objectives or have collateral consequences. Consultant has and may rely on manufacturer's representations and directions without any further obligation. Client has or will weigh the relative risks and rewards, and will accept the risks in order to incorporate the innovation into the Project.*

The use of new products and processes will not always be apparent prior to contract execution, and will sometimes come into consideration as the project evolves. In these situations, the best approach is to execute a contract addendum reflecting the change in the project and incorporating the equivalent of the provisions set forth above. Often, this is the best of all possible options because it truly focuses attention and direct communication on the use of unproven products and processes. Where such an addendum is not possible, the move toward a new product or process should be verified in writing with an appropriate explanation that it is a new product, that its results cannot be guaranteed, the level of investigation, and the client's

acceptance of the possible risks as a part of the project. This is an example of the informed consent referenced above.

Project Delivery

Once the foregoing preparations are complete, the final step is to deliver a project consistent with the strategic approach selected by the design professional. In doing so, the design professional should seek out and exploit every opportunity to reinforce the strategic approach. Two of the most effective means of doing so are (1) frequent references to and incorporation of the manufacturer's instructions and guidelines in the design documents; and (2) validation of the design approach by the manufacturer itself. Many proponents of innovative products and processes are more than willing to become involved in the process and validate the application. Such a validation (ideally verified in writing) is often the single best risk management practice available to a design professional in using a new product or process.

Finally, even though the "official" project scope should be limited, a design professional using a new or innovative product or process should consider undertaking a thorough investigation, but solely for its internal purposes. For example, even if not required by its scope, the design professional should investigate the development and history of a new product before incorporating it into a project. However, where not required by the written scope, this "enhanced" investigation should be maintained as internal and not shared with others (and, particularly, the client). If shared with a client, it may create an enhanced duty through reliance.

NEW PROCESSES, TOOLS, & TECHNOLOGIES: BIM to IPD

New and innovative technologies, tools, and processes represent the next step in defining and managing the standard of care relative to innovation. While these are often new and proprietary to a particular provider such that the requisite combination of reliance and validation should be well thought out, they go further into the standard of care by actually becoming a part of how the design professional provides its service.

Design professionals have clearly been the beneficiaries of technological advances in the tools of their trade. The evolution from the slide rule to the calculator to computer modeling to CADD have all helped design professionals provide their services faster, better, and less expensively. As new tools and processes for design delivery are presented, design professionals face an inherent trade off between opportunity and risk. The opportunity to be, and to be perceived as, "cutting edge" and to provide services better and less expensively is obvious. The risks are less obvious:

- The first has to do with transition costs associated with moving the practice to the new tool and process, in comparison to the actual benefits attained and the staying power of the technology. For example, CADD has obviously established its staying power in the industry over the last quarter century, and has truly become the way practice gets done. By contrast, project websites and extranets, which were touted to be the wave of the future for all projects, have generally failed to become central and transformative in the industry.

- The second has to do with timing. Move to a new technology too early and a design professional may be plagued by defects and interoperability issues without significant recourse.[16] This clearly implicates the reliability of the provider, as well as the capacity of the professional to externally validate the technology and its output. Alternatively, if the design professional moves to the technology too late, the design professional may be deemed to be behind the curve of the "ordinary" professional and thereby below the standard of care.

As a generic rule for purposes of applying the professional standard of care to a new technology or process, the key is to embrace the available processes and technology no later than when they become "ordinary", but to retain and continue to apply the professional skill and judgment consistent with the training and licensing. The "tipping point" for these purposes is seldom a bright line, but may most easily be tied to some perspective that the technology or process is used more often than not under similar circumstances. At the same time, even when a tool of technology becomes part of common usage, it is imperative that the design professional continue to apply its experience, skill, and knowledge to verify and validate the output data. As a classic example, many structural engineers have been criticized for virtually blind reliance on structural design calculation programs without also applying the scrutiny and validation of their own professional learning and experience. Similar criticisms have arisen through the use of software provided by proprietary product manufacturers. In many ways, technology and processes which streamline the design process through actions occurring on microchips require more, not less, professional understanding, judgment, and insight.

The latest and greatest trends or demands with respect to the design process and innovative technology are unquestionably BIM and the related, but even more varied concept of "IPD". As a starting point, it is important to distinguish and identify three categories of the trends and demands:

1. BIM: A technology.

2. IPD: A process.

3. Alliance/Lean/Collaborative Contracting: An economic relationship

As the industry has addressed the issues, BIM has been treated as a separate and distinct concept which is then commonly implemented as a key component of the often-blended concepts of IPD and alliance contract models.

Building Information Modeling

While the press is filled with reports of the rapid expansion of BIM usage by design professionals, contractors, and others, BIM has certainly not reached the tipping point of "ordinary" for purposes of the standard of care. Even the heaviest BIM users in 2008 generally used BIM on only 30-35% of their projects.[17] The AIA B101 from 2007 seems to make the non-prevalent application of BIM clear by making both Building Information Modeling and "preparing digital data for transmission" solely and exclusively additional services outside the scope of the Agreement.[18] Yet if current trends continue, BIM will become "ordinary" in some circumstances, and thereby dramatically redefine the tolerances of the standard of care in at least those specific settings.[19] At this point, such projects will likely be focused on heavy MEP-based projects such as healthcare and industrial/manufacturing, as well as repetitive design models such box stores and hospitality.

There is disagreement as to whether there have been claims against design professionals based upon the usage of BIM. However, many experts and publications claim: "It's only a matter of time." When they do, some predict that design professionals and their contracts and practices will be ill-equipped to deal with them:

> *. . . until new risk management techniques have been worked out and new contract language has been developed to allocate more of the risk to the project owner and other parties instead of leaving all the risk with the design firms, BIM poses a serious new risk to design firms and the insurance carriers that insure them.*[20]

To a great extent, such foreboding and worry comes from lack of clear boundaries of the design professional's responsibility and standard of care, as BIM initially evolved as a software model most aggressively "endorsed" by project owners and contractors. The attraction to and adoption of BIM by the design community has been varied and sometimes hesitant. In part, the perceived reluctance has been based on the reality that BIM-based designs can and do incorporate information from outside sources (*e.g.*, manufacturers, vendors, and contractors) as a part of the multi-dimensional model. Restricted to its simplest application as a tool of the design team alone, BIM should not create such concerns for external responsibility, and the product should be a better design product. Where there is earlier input and contribution to the model by

others, it is really little different than traditional issues associated with design-build elements, submittals, and substitution requests. In those situations, good risk management practices both establish the design professional's right to reasonable reliance and appropriately allocate ultimate responsibility to the proponent. Ideally, BIM-based projects or documentation will make this clear, but even where they do not, extension of these long-held principles may be the basis for containing the BIM-based standard of care for design professionals.

As a starting point, architects must contend with and manage potentially inflated client and public expectations for the promises of BIM. Without question, BIM offers and boasts a qualitative capacity to improve both design and construction, which is more dramatic and transformative that any technological innovation of the past. Most prior innovations in process and technology simply allowed design professionals to work faster and more easily. BIM proponents claim:

> *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 is intended to be* ***a repository of information for the facility owner/operator to use and maintain throughout the life cycle of a facility***.[21] (Emphasis added.)

By itself, this is a grandiose statement with both immediate and long-term implications. It promises a comprehensive compilation of information with intended uses running for the entire existence of the completed facility.

However, the real threat for purposes of the standard of care today is the promised improvements in the quality of the design and the corresponding benefits to the construction process, schedule, and expenses. For example, one industry advisor has unequivocally proclaimed:

> *With BIM providing better coordination and detection of conflicts in structures and systems, design firms can avoid many of the construction document problems that lead to delays and change orders during construction. Even on a traditional design-bid-build project, increased communication and collaboration, more efficient fabrication and delivery time, and improved documentation can reduce the overall liability exposure of the project participants.*[22]

Such declarations of having used BIM as a solution to some of the most common and expensive design errors and omissions are fertile ground for an owner or contractor impacted by expensive Change Orders, delays, and cost overruns. To those design professionals who do not even use BIM, they will say that with $10,000 and some training, all of these woes and damages could

have been avoided. For those design professionals who apply BIM resources to some, but not all, projects, the scenario will be even worse. Their work will be held up against other "similarly situated professionals" who have BIM capabilities, and even against their own work on other projects where BIM was used.

As a result, many experts, claimants, and industry pundits have and will declare that BIM has already changed the standard of care. Yet that cannot really be true, because BIM is not "ordinary". Economies of scale, technology investments, compatibility with project participants, and reasonable returns on effort maintain BIM as the exception rather than the rule. In fact, for some project types and locations, it may **always** be the exception. Nevertheless, the potential criticism based on the missed or ignored opportunity for a better design product will always remain significantly appealing to juries, judges, and arbitrators. It has become common in such claims for claimant experts to actually model the project using BIM and to visually demonstrate the multitude of issues which could have been avoided in advance.

Given the potential "after-the-fact" allegations and the reality that BIM is not now the "standard" for all projects, the starting point for application of the PCAD practice model to BIM should likely be a presumption that BIM will not be used for the project. However, such a presumption will have value only if affirmatively shared with the client. As a result, the issue should be discussed with the client and documented as a part of the project expectations in the Agreement. The AIA B101 has accomplished an implied form of this disclosure and confirmation by expressly making BIM and digital information "Additional Services" and, therefore, not a reasonable expectation. Even better would be a provision which expressly identified the hard-copy instruments of service as the project deliverable, and which eliminated any client expectation in the electronic design models for the project. Such a clause might provide:

> *Hard copies of the construction documents carrying Consultant's professional stamp shall represent the instruments of service and deliverable under this project. All other copies (printed or electronic) are for convenience only and shall not be relied on for any purpose. The use of any electronic drafting programs or other software in the preparation of the instruments of service is at Consultant's sole option for its own benefit and is not intended to create any rights or expectations on the part of Client.*

The combination of utilizing such a provision, with the AIA model expressly making BIM an additional service, should eliminate any reasonable expectation or claim that the client was entitled to the benefits of a BIM study.

Where BIM is used on a project, it is equally important to document the key assumptions, expectations, and procedures. The reality is that there is no single controlling definition or

standard for BIM, and the potential applications and uses are even more varied. The key would be to document the mutual expectations and future uses. Above all, it is important to reasonably temper client and contractor expectations by making clear that:

- BIM by itself is only a technology and does not equate to Integrated Project Delivery, which embodies another level of procedure.

- BIM is neither perfect nor a warranty of perfection. The client must understand there will still be conflicts, ambiguities, unforeseen conditions, and/or changes such that they must expect and establish reasonable contingencies for both cost and schedule.

- Participants in the BIM model must be identified along with their roles, contributions, and rights of access, modification, and use. This process becomes dramatically more complicated as the circle of participants expands beyond the design professionals.

- Responsibilities must be established. Most often, this will focus on a single entity responsible for the model or a collaboration with each contributor responsible for its content, along with a process and schedule for input and validation.

For these purposes, architects will be well served to use the Building Information Modeling Protocol set forth in the AIA E202 as a starting point for both planning and contracting.[23] First and foremost, the E202 provides a realistic and limited definition of BIM which provides simply:

> *A Building Information Model is a digital representation of the physical and functional characteristics of the Project.*[24]

This definition avoids both any promise of being completely comprehensive and an open-ended expectation running for the entire lifespan of the structure. The E202 then provides an even more valuable recognition that there are many "levels" of BIM with many possible areas of potential uses. Specifically, the E202 defines no less than five separate "levels of development"[25] as a demonstration that there is a wide spectrum of potential definitions to BIM and then specifically identifies the authorized uses with specific focus on:

1. Analysis.

2. Cost Estimating.

3. Schedule.

4. Construction.

While a specific level of development may not be precisely applicable for a particular project, the E202 provides a good checklist of the range of options which may be expressly modified to the particular needs of the project.

The E202 provides three other components which are critical to the successful identification and management of the BIM process.

1. The E202 breaks the Model into "Model Elements" which it defines as "a portion of the Building Information Model representing a component system or assembly within a building or building site."[26]

2. The E202 then goes on to say that "Model Element Authors" are both responsible for that element and retain all ownership rights in that element except as necessary for the design and construction of the particular project.[27] There are no ongoing rights or duties.

3. Finally, the E202 establishes a protocol for coordination of and reliance on elements set forth in the Model as it is developed.[28]

With these expectations and procedures in place and documented, architects are well positioned to both successfully manage a BIM based project and to modify the process as necessary.

Integrated Project Delivery & Alliance Contracting

Perhaps no evolution in the design and construction industry has received more attention, commentary, and contractual "recommendations" in the last five years than the area of Integrated Project Delivery, or "IPD". Publicly, IPD has been extolled as the transformational reorientation of the construction industry with the potential for superlative outcomes and relationships. The AIA/AIACC has been at the forefront of extolling these virtues by defining IPD as:

> *A project delivery approach that integrates people, systems, business structures, and practices into a process that collaboratively harnesses the talents and insights of all participants to optimize project results, increase value to the owner, reduce waste, and maximize efficiency through all phases of design, fabrication, and construction.*[29]

The AIA/AIACC Guide then goes on to premise IPD on nine principles[30], including virtues such as:

1. Mutual Respect and Trust.

2. Collaborative Innovation and Decision Making.

3. Open Communication.

4. Organization and Leadership

The remaining five principles then blend a mix of procedural and organizational models with economic incentives, commitments, and protections. Those principles are:

5. Mutual Benefit and Reward.

6. Early Involvement of Key Participants.

7. Early Goal Definition.

8. Intensified Planning.

9. Appropriate Technology

Functionally, IPD does not require all of the harmonious aspirations set forth above. Reduced to its common functional elements, IPD is and should be defined by:

- Early and more detailed planning and expanded identification of goals and criteria.
- Design phase input/participation by contractors, manufacturers, and suppliers.
- Non-design considerations during design (schedule, cost, construction, products).
- Technology based communication, planning, and documentation, often using BIM as a base platform.

These elements are common to all of the "IPD" contractual models which have been promulgated in recent years. (See the AIA A195, A295, C195 and AGC Consensus Document 300, Sutter Health Model, Lean Construction Institute.) However, each of these models also recognizes that these shifts in timing, participation, and technology alone are unlikely, by themselves, to achieve the desired shift toward common interest, mutual respect and trust, and collaboration. Accordingly, each model moves beyond pure IPD and incorporates some elements of alliance or collaborative contracting. In this regard, there are as many approaches as there are contract forms.

By way of contrast, the AIA A295, A195, and B195 combine owner, contractor, and architect into a "Single Purpose Entity". Typically, this is done by the creation of a new limited

liability company which inherently invokes challenges for joint responsibility, record keeping, finances, and insurance. The AGC Consensus 300 counters with a three-party agreement of owner, contractor, and architect. All three entities maintain their separate status, but form a "Management Group" for decision making. The AGC also creates a "Collaborative Project Delivery Team" to include all needed team members. Each such structure comes with its own challenges and opportunities. The organizational structure is actually secondary to the other dynamics which are intended to facilitate the trust, respect, and collaboration among the team members, which are:

- Mutual financial incentives which link key or all project participants' financial success on the project to one another.

- Waiver of internal claims and conflicts for purposes of cost, schedule, and (sometimes) defect issues.

In reality, these contracts are complicated and must be carefully tailored both to the project and the project partners. For architects considering such agreements, they should place particular focus on:

- The selection and commitment of all project team members. Since financial rewards and success are linked, the dependence on others is more heightened than ever.

- The availability of insurance and other resources to apply to internal issues as well as third-party claims.

- Scope of design responsibility and autonomy, as opposed to collective decision making and reliance on others.

EVOLUTIONARY PERFORMANCE MODELS & STANDARDS: SUSTAINABILITY AND BEYOND

Finally, design and construction projects are no longer necessarily "business as usual" with traditional, quantifiable, and verifiable objectives. Instead, secondary and more qualitative performance and utility standards are increasingly driving project designs. When they do, varying issues of product innovation, innovative systems, and long-term performance become relevant.

Traditionally, design professionals' work product has been evaluated on no more than five largely quantifiable criteria:

1. Technical accuracy and completeness.

2. Aesthetics.

3. Cost of construction.

4. Stability.

5. Function for intended purpose.

Those limited criteria have now been joined, and even supplanted, by far more ethereal objectives most often tied to some less immediate and tangible performance standard. Such varied standards may include redevelopment, historic preservation, job force training, or functional adaptability. However, by far the most significant and prevalent performance standard which is dramatically affecting and influencing architects has to do with green or sustainable design.

The demand for sustainable, green design projects is unmistakable. Since 2003, the General Services Administration of the United States Government has required all of its construction projects to be certified through the Leadership in Energy and Environmental Design ("LEED") Green Building Rating System of the U.S. Green Building Council. Similarly, with a benchmark of 2007, California Executive Order S-20-04 requires all significant State buildings to be LEED-certified and retrofitted for sustainable performance, while at the same time reducing overall energy consumption by State operations by 20% within eight years. As of July 2008, *Engineering News Record* reported that nearly 70 jurisdictions in 28 States had enacted some form of "green building" requirement.[31] Those figures continue to grow.

In response to these market forces, as well as its own collective social conscience by both implication and express obligations, the AIA has now made "environmentally responsible design" a primary consideration and focal point for all of its members and, by extension, the design community as a whole. During the Schematic Design Phase, the standard terms of the AIA B101 now require:

> *The Architect shall present its preliminary evaluation to the Owner and shall discuss with the Owner alternative approaches to design and construction of the Project, including the feasibility of incorporating environmentally responsible design approaches.*[32]

By this provision, the architect becomes, in equal parts, a sustainability conscience and resource to its client. However, it is very clear that even the AIA is uncomfortable with the extent and implications of this obligation since "extensive environmentally responsible design" and "LEED

Certification" are later expressly characterized as additional services **not** included in the Agreement.

The National Society of Professional Engineers ("NSPE") has taken a even more proactive approach which moves the sustainability issue beyond mere discussion and closer to action. In the "Professional Obligations" section of NSPE's current Code of Ethics, NSPE states:

> *Engineers are encouraged to adhere to the principles of sustainable development in order to protect the environment for future generations.*[33]

NSPE then takes the concept even further beyond the AIA by defining "sustainable development" as:

> *. . . the challenge of meeting human needs for natural resources, industrial products, energy, food, transportation, shelter, and effective waste management while conserving and protecting the environmental quality and the natural resource base essential for future development.*[34]

As a result, it is now difficult to imagine any architect who would not be compelled to at least explore the sustainable requirements for a project on both the client interest level and the governmental requirement level. Based on the admonitions of the architect societies, it is easy to argue that this now is the new minimum standard of care.

The great challenge is exactly what professional obligation follows the exploratory discussion. The threshold question is easy and focuses on whether or not some element of sustainable design or project performance is required by regulation or statute. If so, the sustainable elements of the project design almost rise to the level of the Uniform Building Code, but with very important limitations and caveats. Some regulatory requirements can be accomplished and satisfied by design (*i.e.*, sustainable building products, recycled content, and hazardous materials). Others are often a function of project maintenance and operation (*e.g.*, energy consumption). Architects should appropriately limit their obligations to a standard based on reasonable expectations of product performance and project maintenance and operation, with an appropriate disclaimer of any performance guarantee.

Where a sustainable design and project is only governmentally incentivized or encouraged and is therefore not required, or is only a product of an owner's desire or conscience, the design professional's obligations are much less clear. Neither AIA nor NSPE standards presents a clear standard which can be definitively achieved. Similarly, individual and even corporate perspectives can and do vary widely. The lack of any reasonable or recognizable boundary for the opportunities and obligations of a "green" project is the single greatest obstacle

to the defense of a design claim based on "sustainability" issues. Even judges' and juries' interpretations and applications of "green" standards of care and design obligations will likely vary widely as a function of personal taste and perspective.

For this reason, architects will be best served by avoiding the broad use of the generic terms "green", "sustainable", "environmentally responsible", and "sustainable development" in their own Agreements, documentation, and work product. Instead, wherever possible, the sustainability references and discussions should be reduced to more definitive concepts and clearly-expressed goals, expectations, and commitments. Similarly, attorneys and insurance companies defending architect "green" claims should seek to move beyond the platitudes and buzz terms to find a more concrete level of roles, decisions, and responsibilities with respect to sustainability issues as a means of creating definition to and, hopefully, boundaries to the green design-related standard of care and responsibility. Such defining limitations and warnings may sometimes be found in scopes of work, submittals, Meeting Minutes, correspondence, project management plans, product analyses and recommendations, value engineering proposals, manufacturer information and product data sheets, and more.

However, even this approach may lead to the Pandora's Box most feared by architect insurance carriers and public commentators. That is the fear that architect participation in and commitment to the "green" process will be transformed into express or implied guarantees or warrantees of project performance or environmental certification. Both issues may be outside of traditional understanding of the standard of care and architect errors and omissions insurance coverage. Therefore, they present a concern for conflict between architects and their carriers, as well as significant uncovered liability risk. In fact, claims based on failed or substandard environmental certifications or projects failing to meet performance expectations (especially with respect to energy usage) represent the majority of significant claims to date against architects with respect to "green" design issues.[35]

Performance Standards, Design Limitations, & Innovation

As a result, the introduction of the green or sustainable design imperative, as articulated by both design professional organizations and the many regulatory programs promoting or requiring "green" projects, presents a complex and non-traditional project delivery challenge for the architect on at least three levels:

1. **Performance Standards.** Instead of the traditional five objectives referenced above, many "sustainable" projects introduce competing standards and criteria which may actually adversely impact some of the traditional standards and how the building ultimately comes together and performs. Either the failure to meet such standards, or the collateral impacts of doing so, have been among the most common "green" design claims.[36] The unforeseen collateral impacts often come as an unwelcome surprise to project owners who respond with

claims against the design team as a solution to their dissatisfaction. One such common surprise is the basic cost of construction. Even though there may be long-term cost savings, higher initial costs are a frequent source of complaints. However, it need not and should not be a surprise in that most industry reports indicate that a "green" project typically costs 20% more for original construction and equipment. Even where the "performance" standard or rating is achieved, many owners have been dissatisfied with other operational issues in the project or its aesthetics, and have pursued their design team as a result. Even when the only objective is a certification such as LEED, ultimately attaining that goal may rest on issues in the future and outside of the architect's control.

2. **Design Limitations.** Environmentally-sensitive designs and projects often limit the resources which can be used on the project. If so, there is typically a tradeoff of performance, cost, or implementation.

3. **New & Innovative Products, Systems, & Applications.** Often, a sustainable design depends on newly-created products, systems, or applications which lack a proven track record for success. As a result, the goals may not be achieved and there may actually be adverse side effects. To satisfy the standard of care, the architect must manage each of these issues through client communication and education, documentation, research, and performance. For these purposes, the architect standard of care becomes as much or more about process, communication, and definition as it does about the actual work product delivered.

Regulation, Communication, Contracts, & Products

The successful management of a sustainable design project and the related standard of care is really a process to manage the three challenges referenced above. The four primary sequential steps to facilitate this process may be as follows:

1. **Regulatory Incentives & Obligations.** As indicated above, sustainable/green project design performance necessarily begins with an understanding of the governmental requirements and opportunities. Unfortunately, this is not a simple process since the range of potential issues is constantly shifting and expanding. The process is not as simple as merely checking with the local building official. It may also extend to review of public utility issues, potential tax credits, land use and zoning enhancements and limitations, and more. It may involve local, State, and Federal issues. As a result, this process should be documented both internally and for the benefit of the client, with an express disclaimer of any further duties of related investigation. Oftentimes, additional services provisions can be a helpful tool in limiting the obligatory extent of such an investigation.

2. Communication & Education. With the governmental and regulatory framework in place, the next and most important step is to reach a mutual understanding with the

client as to the client's desires, objectives, and tolerances. Ultimately, they must be realistic and achievable. This often comes down to a matter of examination, education, testing of boundaries, and ultimately drawing lines. Many clients want a sustainable or environmentally-sensitive design without really understanding the implications. The client expectations may not be fully developed, realistic, or even feasible. In addition, electing to make a project sustainable, environmentally-sensitive, or LEED-certified will have impacts which the client needs to understand and accept as its choice and risk and **not** that of the architect. For that reason, the impacts of the sustainable election should be clearly documented and, ideally, in the contract itself.

At the outset, this paper extolled the "wisdom" of learning from the mistakes of others. On that basis, some of the green issues which have been the focal point of prior design-based claims which should be considered as a part of the education and reality process include the following:[37]

- LEED or similar certification is uncertain, time-consuming, and expensive.
- Green or sustainable projects do not have long-standing performance records, if any. Actual performance may not meet expectations.
- Sustainable products may extend construction schedules.
- Green or sustainability standards and available products should be expected to change over time.
- Sustainable construction requires participation by others, including contractors.
- Sustainable projects require sustainable actions in operation and maintenance which are *post*-construction and, therefore, not the design team's responsibility.

3. Contractual & Project Documentation of Limitations & Responsibilities. All of the foregoing education and establishment of realistic expectations and goals is virtually worthless if not appropriately documented. Ideally, it will be predicted and provided for in the contract. Such a provision might provide:

> *Client has elected to pursue this project applying principles of sustainable design consistent with the standards published by <insert name of entity>. Client has established this as a primary project objective and recognizes that in doing so, it*

> *has limited the available design and product options. These limitations may impact the overall project cost, schedule, and performance. Client has accepted these potential impacts in recognition of the importance it has placed on the values of sustainable design.*

Where the discretionary limitations cannot be fully anticipated in advance of the project (*e.g.*, value engineering), they must be dealt with as the project proceeds. Here, the objectives are to essentially accomplish the ends of the provision set forth above. That is:

- Affirmative identification of the bases of selection (*i.e.*, cost, schedule, appearance, etc.) that should be disclosed in writing.

- Affirmation that these bases have been given priority over other considerations, including possible variations in performance, cost, schedule, appearance, and operation.

4. Product Selection & Application & Certification Processing. Where the goal is not just an "environmentally sensitive design", but an actual certification through a program such as LEED, the architect should avoid any guarantee or promise that that goal will be achieved since such ratings often depend on factors far outside of the architect's control. Such a provision might provide:

> *While Client has identified a desire to secure a LEED rating of Silver or better for the Project and Consultant has committed to work in good faith and consistent with professional standards towards that goal, Consultant cannot and does not control all elements necessary for that rating (e.g., maintenance, operation, system performance) and therefore cannot guarantee such a rating will be achieved.*

If the proposed design includes a new and innovative "sustainable" product, the architect will have two concerns for the standard of care. The first is to apply some of the principles discussed above with respect to innovative products. The second will be to make sure that there is no guarantee as to the actual performance of the product. That obligation should appropriately remain with the manufacturer or proponent of the product, system, or application.

Finally, even though there are now nearly 50,000 LEED-accredited professionals in the United States, LEED accreditation does not necessarily equate to a professional capacity to create a sustainable, environmentally-sensitive project for all purposes. As stated above, the threshold issue for any architect standard of care focuses on education, training and skill. Specifically, the architect must generally "have that degree *of learning and skill* ordinarily possessed by reputable [professionals], practicing in the *same or* similar locality and under

similar circumstances". In the field of sustainable design, the requisite learning and skill will always be a moving and advancing target. As a result, the architect should conduct a realistic assessment of its capabilities and seek outside assistance where appropriate.

CONCLUSION

The new opportunities and evolving products, processes, and performance standards are unlikely to slow down and will only continue to challenge architects in more intense and rapid ways in the future. Under those circumstances, the traditional external standard of care based on how others have performed falls away in favor of standards for communications regarding expectations, realities, reliance, and investigation, along with a process of implementation. This will become the defining standard for the "ordinary, but reputable" architect. The hope is that the principles discussed above will provide the bases of a strategy to keep pace with these changes for the mutual benefit of architects, their colleagues, clients, and insurers.

---

[1] David A. Ericksen is a principal shareholder in and President of the law firm of Severson & Werson in San Francisco, California, and leads the firm's Construction and Environmental Practices. For nearly twenty years, Mr. Ericksen has specialized in the representation of architects, engineers, construction managers, design-builders, and other construction professionals. Mr. Ericksen's expertise covers all aspects of such professional practice as lead litigation and trial counsel, as well as being an active resource for risk management, strategic planning, and transactional matters. He is a trusted and valued resource to design and construction professionals and their insurance carriers across the United States and beyond. He is a graduate of Boalt Hall School of Law, University of California, Berkeley, a former law clerk to the Washington State Supreme Court, and a member of and resource to numerous construction and environmentally-related professional organizations. Mr. Ericksen is a frequent speaker before construction professional organizations such as the AIA, SEA, ACEC, CSI and others, as well as providing in-house training seminars for firms.

[2] Severson & Werson has provided legal services throughout California and the country for more than fifty years. The firm provides counseling and litigation support to all members of the construction process, including design professionals, construction managers, environmental professionals, owners, contractors, and insurance carriers.

[3]While the standard has become more refined over time, it has been widely recognized by Courts in the United States for well over 100 years. In 1896, the Maine Supreme Judicial Court provided the classic statement: The undertaking of an architect implies that he possesses skill and ability, including taste, sufficient to enable him to perform the required services at least *ordinarily and reasonably* well; and that he will exercise and apply in the given case his skill and ability, judgment and taste, reasonably and without neglect. (Emphasis added.) *Coombs v. Beede*, 89 Me. 187 (1896).

[4] AIA B101 2007, Article 2.2.

[5] AIA, B101 2007, Article 3.2.3.
[6] AIA B101 2007, Article 3.6.4.2.
[7] AIA B101 2007, Article 4.1.6.
[8] AIA B101 2007, Article 4.1.23.
[9] AIA B101 2007, Article 4.1.24.
[10] AIA B101 2007, Article 4.3.1.5.
[11] California Standard Jury Instruction No. 602 (modified).
[12] XLDP Risk Drivers Study which links 49% to technical issues & 51% to non-technical issues as of 2009.
[13] XLDP Risk Drivers Study
[14] *In re Collmar*, 417 B.R. 920, 923 (Bankr. N.D. Ind. 2009).
[15] See for example the standards issued by the Joint Commission on Accreditation of Healthcare Organizations.
[16] As an example of technology-related risks of reliance, the Washington Supreme Court upheld the liability limitations in a software license agreement even though an alleged defect in the software caused a contractor to underbid a project by $1.95 million. *M.A. Mortenson Co., Inc. v. Timberline Software Corp.*, 140 Wn.2d 568, 998 P.2d 305 (2000).
[17] *Builders say BIM can be competitive tool during recession.* Daily Journal of Commerce, January 26, 2009, citing in part to a McGraw Hill Construction report.
[18] AIA B101 2007, Articles 4.1.6 and 4.3.1.5.
[19] "BIM! You've Been Sued!", STRUCTURE, February 2009.
[20] J. Kent Holland, Publisher, *Construction Risk.com Report*, Vo. 9, No. 8, December 2007.
[21] Nat'l. Inst. Of Building Sciences.
[22] *BIM May Reduce Design Exposures but May Create Technology Risks*, Victor O. Schinnerer & Company's Risk Management Guideline No. 2 for 2008.
[23] The AGC Consensus Document 301 is the competing document from the Association of General Contractors, but it lacks the specificity of the E202 and is really just an agreement to agree. Accordingly, it serves best as a checklist rather than an actual agreement as to definitions and procedures.
[24] AIA E202 (2008), Section 1.2.1.
[25] AIA E202 (2008) Article 3.
[26] AIA E202 (2008) Section 1.2.3.
[27] AIA E202 (2008) Sections 1.2.4 and 2.2.
[28] AIA E202 (2008) Articles 2 and 4.
[29] Integrated Project Delivery: A Guide (2007) AIA National/AIA California Council.
[30] Integrated Project Delivery: A Guide (2007) AIA National/AIA California Council, pages 5-6.
[31] "Insurers Worry About Green-Building Risks", *Engineering News Record*, July 9, 2009.
[32] AIA B101 2007, Article 3.2.3
[33] National Society of Professional Engineers *Code of Ethics for Engineers*, Section III, Subsection 2d.
[34] National Society of Professional Engineers *Code of Ethics for Engineers*, Section III, Footnote 1.
[35] See "green" based design claims summary by Frank D. Musica of Victor O. Schinnerer & Co., Inc., delivered to the 2007 National AIA Meeting in San Antonio, Texas under the title, "Don't Let Green Design Cause Red Ink."

[36] Id.
[37] Many of these educational points are drawn from the Musica presentation referenced above as well as from cases in the author's own experience.