

Green Buildings and Risk

Tim Corbett

There is obviously a movement and increased interest in green building design and construction. However, along with that movement comes increased risk and liability for design professionals. Green building design takes the approach to incorporate building design concepts, innovative products and material and construction methods that are energy efficient as well as addressing the health and well-being of the buildings occupants. To assist in managing the risk, in-depth documented discussions at the beginning of the project regarding the expectations by the owner are critical. In addition, discussing actual costs that will be incurred, the benefits that can be *potentially* obtained as well as the risks inherent in using new or untested products and technologies will lessen the design professional's exposure to potential litigation.

Design Expertise for Green Buildings

Design professionals, based on their knowledge and expertise, are in a unique situation to take a leading role in the green movement. However, recent surveys of design professionals indicate that most architects, engineers, and contractors have limited training, experience, or technical understanding in green building methodologies to properly design and oversee the construction process of green buildings. Design firms may run into trouble by underestimating the costs and expertise needed for green projects. *Business as usual* is not the direction to take when it comes to green projects.

The following are key challenges and questions need addressing before jumping in.

- How are the goals and project expectations defined, decisions made, and documented?
- Are client expectations consistent with the A/E's qualifications and capabilities?
- What is the experience of the Design Team, Contractor and Client on green projects?
- Who is responsible for identifying and the investigation of new products and systems? In addition, to what degree?
- What are the expectations of the end-users of the project?
- How is the Owner/Operator going to be trained on the operations and maintenance of the systems?

Building Commissioning Agent

Building commissioning (Cx) was developed from the selection, testing, adjusting, and balancing of the buildings mechanical systems. Cx is a relatively new service in the construction industry and an added expense the owner on green buildings projects may not be aware of, or be willing to pay for. During the design phase; the commissioning agent's primary duty is to clearly understand and to document the requirements and expectations of the system. This includes documenting design intent, reviewing design plans and construction documents and developing a commissioning plan. During the construction phase; the commissioning agent ensures that commissioning equipment is installed per the design documents. The acceptance phase includes verifying that building components and controls are operating as designed and meeting with the Owner's requirements and expectations. The quality of construction work is crucial when dealing with a sophisticated green building design. To avoid the potential problem of a good design being installation with poor construction means and methods, building commissioning can act as a quality assurance component to ensure the building meets the design criteria. Cx can be particularly important if the design professional has limited experience with green building projects.

Design and Construction Costs

Green building design and construction is often promoted as a cost saving feature for the *life cycle* of the building structure and the owner's original investment will be paid back within a period of time. The message must be clear that cost savings are related to the *life cycle* and savings may be minimal in the near future compared to the increased capital related to green building design and construction. Marketing material for green buildings at times indicate a big cost savings in energy and resource usage that may lead owners to believe that the savings will be significant and easily realized in the near future. Depending on who has performed the market studies, initial capital outlay for design and construction over a typical project may range from 1% to 20%. Percentages vary greatly based on the project type, size, level of certification, etc. The higher the certification level, types of products and systems, services provided, independent analysis, etc., the higher the cost. The costs are even higher when inexperienced design professionals and contractors are employed in the green building process.

New Materials and Technologies

Green buildings incorporate the use of new and innovative construction technologies and materials. Every new material or application of materials should be tested to determine the capabilities for the intended use. Surveys have indicated that minimal analysis and testing are incorporated, and the first projects to use the products are the beta tests. The owner and design professional should evaluate new materials, technologies, checking other projects where the product has been used, and comparing it to the performance of similar products. Identifying the depth and length of analysis of new products and material is also a key component for the design professional. Hiring independent testing laboratories is also a consideration, however, that comes at an additional cost to the project. Design professionals should not accept a new product based only upon the manufacturer product data sheets and sales literature. The design professional should inform the owner of the potential risks in specifying new materials and technologies. Discussions and the decisions made concerning the project should of course be carefully documented.

Contract Provisions

A good contract is the best line of defense when it comes to mitigating your risk. The contract is an excellent method for defining your scope of services; what will be provided, when, and what will not. Contracts are also an excellent method for qualifying clients and managing and establishing expectations. Contracts should address the following:

1. New and innovative products and technology may be used; they may lack proven history of successful application. Owner understands and agrees that project objectives may not be realized.
2. Ordinary skill and care will be used to achieve project objectives; however there is no warranty or guarantee the project will achieve LEED certification.
3. Verify the level of investigation and analysis that will be performed for new material and technologies, with no expressed or implied warranty or guarantees of results.
4. Client agrees to measure the potential risks related to incorporating the innovation product and/or systems and accepts the risks.
5. Limit your exposure to consequential damages by including appropriate language in your contract.



GUEST ESSAYS

Conclusion

The movement and interest in green building design will obviously continue. Design professionals are uniquely qualified to assist in that effort and take a leading role. However, getting involved in green design should not be taken lightly and associated risk need to be evaluated. There is a great deal of subjectivity in green projects. Caution is needed regarding client selection, managing expectations, products and technology, project team capabilities and contract language. These are critical elements that need to be addressed for a successful green project.

Tim Corbett is the founder and President of SmartRisk, a Pasadena based consultancy providing risk management solutions to Design Professionals. Tim has been a speaker at regional and national forums and has been published on the topics including Greener Buildings and Engineering, Inc. For more information on this or other topics, Tim can be reached at; tel. 626-665-8150, email: tcorbett@smartrisk.biz or visit SmartRisk website at www.smartrisk.biz.

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