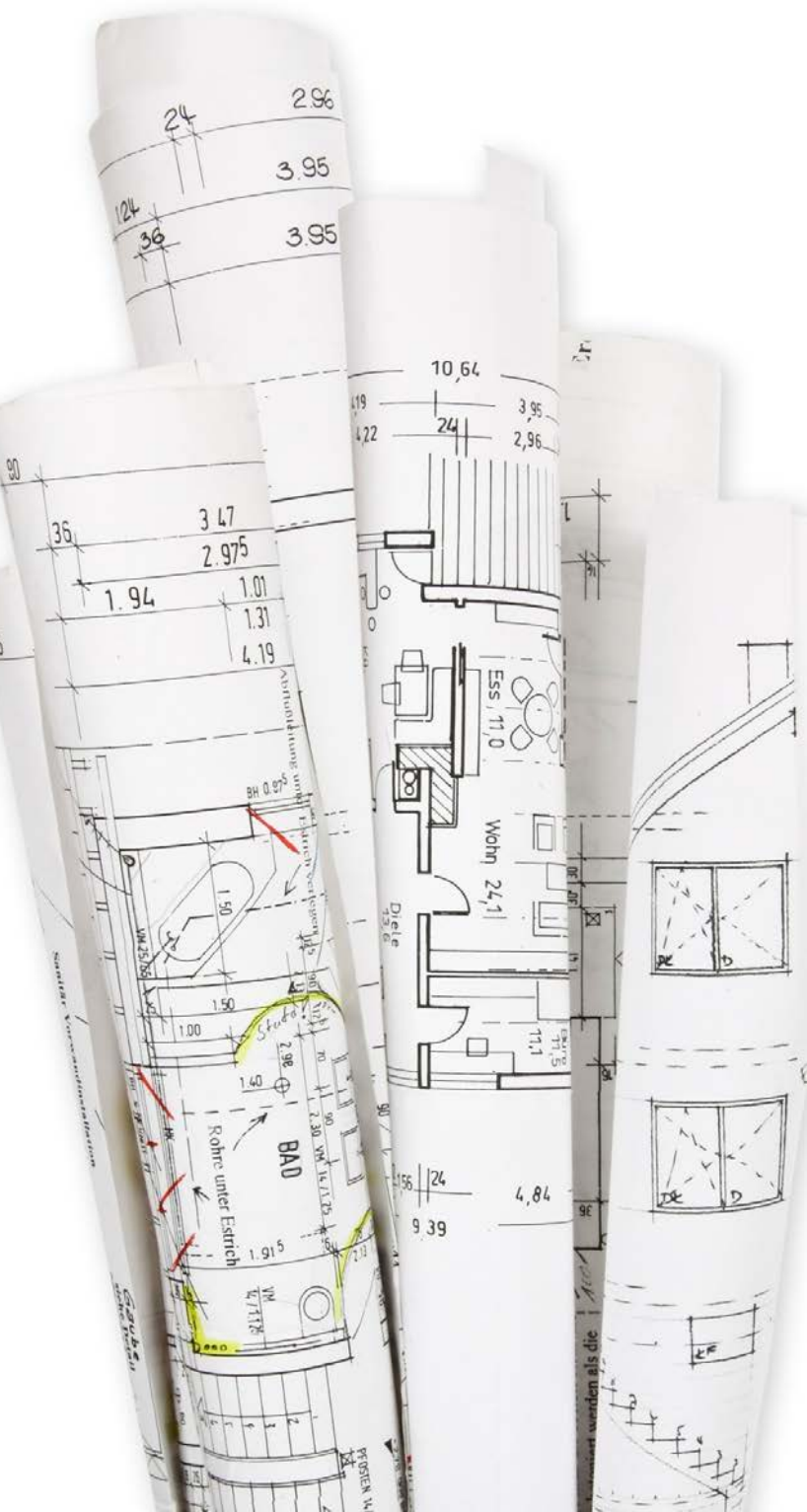


BUILDING BLOCKS

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BUILDING COMMISSIONING, SMART BUILDINGS & GREEN DESIGN

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Building commissioning, a professional service for larger new or renovation projects, assists building owners in determining if their mechanical systems are operating as intended and in conformance with mandated requirements. Abbreviated as Cx, a building's system design, installation, tests, operation and maintenance must be properly appraised. A well balanced system can help maximize energy efficiencies, and at the same time provide a healthier indoor environment (especially in a pandemic).

Building commissioning occurs during integration meetings during the late design and early construction phases, and perhaps again after the work has been completed, and addresses design, building operations, maintenance, general administration and asset management. Design professionals involved in this service offer unique opportunities to timely identify and resolve mechanical engineering problems that otherwise result in building owner's dissatisfaction and claims.

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To understand the building owner's system performance objectives and goals the building commissioning professional must have proper training. This includes comprehension of documentation procedures and decision making courses of action when altering a system in place. Maintaining building performance data can be used to evaluate options during the life of the building in facility management.

Originally, Cx was developed to address HVAC and electrical systems. However, it has expanded to address systems such life safety and smart buildings (including building envelop management, solar energy systems, etc.).



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A smart building is any structure that uses automated processes to automatically control the buildings operations including heating, ventilation, air conditioning, lighting, security and other systems. A smart building uses sensors, actuators and microchips, in order to collect data and manage it according to a business' functions and services. This infrastructure helps owners and facility managers improve asset reliability and performance, which reduces energy use, optimizes how space is used and minimizes the environmental impact of buildings. ... They are living organisms connected to a network with intelligent and adaptable software. *RCRWireless News, What is a smart building and how can it benefit you?*

A building owner engages a building commissioning professional, known as a commissioning agent (CxA). A CxA is not to be confused with a building inspector, who creates a report of existing conditions. The National Conference on Building Commissioning rather considers this professional service a "verification" of the design and construction of the building system, and is not included in the usual scope of service on an architect or engineer. And, this professional service is relatively new, and has mostly evolved from mechanical engineering, and green architecture and engineering design.

Green design is an approach to building that minimizes the harmful effects of construction projects on human health and the environment. The "green" architect or designer attempts to safeguard air, water, and earth by choosing eco-friendly building materials and construction practices. ... green building design challenges designers to go beyond the codes to improve overall building performance and minimizes life-cycle environmental impact and cost. While most green buildings do not have all of the following features, green architecture and design may include:

- Ventilation systems designed for efficient heating and cooling
- Energy-efficient lighting and appliances (e.g., ENERGY STAR® products)
- Water-saving plumbing fixtures
- Landscaping with native vegetation and planned to maximize passive solar energy
- Minimal harm to the natural habitat
- Alternative renewable energy power sources such as solar power or wind power
- Non-synthetic, non-toxic materials used inside and out
- Locally-obtained woods and stone, eliminating long-haul transportation
- Responsibly-harvested woods
- Adaptive reuse of older buildings
- Use of recycled architectural salvage
- Efficient use of space
- Optimal location on the land, maximizing sunlight, winds, and natural sheltering
- Rainwater harvesting and greywater reuse

IN CONCLUSION

The confluence of building commission, smart buildings and green design is the future of the design and construction industry. The *US Department of Energy, Quadrennial Technology Review, "An Assessment of Energy Technologies & Research Opportunities,"* states that:

Building efficiency must be considered as improving the performance of a complex system designed to provide occupants with a comfortable, safe, and attractive living and work environment. This requires superior architecture and engineering designs, quality construction practices, and intelligent operation of the structures. Increasingly, operations will include integration with sophisticated electric utility grids.



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Perhaps one of the most critical element of this confluence is with a building's envelope (walls and roof). A little known fact is architect Frank Gehry's design of the Los Angeles Walt Disney Concert Hall's "exuberant curves and shimmering stainless steel ... have awed architectural aficionados. But the very features that make the \$274 million building sparkle have been blasting some condominiums across the street with a near-blinding glare." *Whose Bright Idea Was This? By Jia-Rui Chong, Los Angeles Times, 2/21/2004.* That is why designers must take into account not only the building itself, but the environment surrounding it.

About the Author

Eric O. Pempus, FAIA, Esq., NCARB has been a risk manager for more than 15 years with experience in architecture, law and professional liability insurance, and a unique and well-rounded background in the construction industry. He has 25 years of experience in the practice of architecture, and as an adjunct professor teaching professional practice courses at the undergraduate and graduate levels for the last 34 years. As a Fellow of the American Institute of Architects and Chair/Hearing Officer of the AIA National Ethics Council, he has demonstrated his impact on architectural profession. He has presented numerous loss prevention and continuing educational programs to design professionals and architectural students in various venues across the United States and Canada.

The above comments are based upon DesignPro Insurance Group's experience with Risk Management Loss Prevention activities, and should not be construed to represent a determination of legal issues, but are offered for general guidance with respect to your own risk management and loss prevention. The above comments do not replace your need for you to rely on your counsel for advice and a legal review, since every project and circumstance differs from every other set of facts.

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