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**Energy Efficiency, Green Buildings and Sustainable Construction:
Emerging Litigation Trends for Design Professionals**

I. Impact of Energy Efficiency and Green Building Driven Codes on Building Design

California Code Compliance Challenge

Green building influence: Codes requiring high-performance building exterior walls and roofs are a by-product of the green building movement. Energy efficiency codes have evolved to require tighter wall assemblies utilizing continuous components to reduce the movement of air, moisture, and temperature differentials.

Future code direction toward zero-net-energy: On May 9, 2018 [The California Energy Commission] approved a measure to require solar panels on most new homes after 2020. This future building code version is intended to reduce energy consumption. Zero Net Energy means the building's performance produces as much energy as it consumes. The state's Building Standards Commission must still approve to adopt the requirement into a future code edition. While net-zero remains an admirable goal, getting there is not yet cost-effective, according to some state officials. An established voluntary program by the International Living Future Institute, well known for its Living Building Challenge, offers a Zero-Energy Building certification program.

Industry involvement: Architects look to energy code consultants, building envelope consultants, product reps, and design-assist collaboration from contractors for building enclosure guidance. Quality control measures are more and more common either as a choice in one's individual practice, or as dictated by building codes in some jurisdictions, or as an owner driven requirement including: Construction document design peer review. Use of Third-party on-site observation, verification, certification, and building commissioning. Quality control is intended to mitigate problems. However, inconvenient findings at inconvenient sequences are sometimes ignored.

Roof attic design complexity: Driven by energy efficiency mechanical ventilation requires, roof attic spaces used for air handling units and or associated duct work require increased insulation values and extended insulation placement and integrity. New regulations are to the point where it perceived by some experts that the real purpose of the code restriction is to encourage designing air handlers elsewhere than in the attic.

Exterior wall design complexity: The requirement for continuous exterior insulation and air barriers has had an impact on the design and construction industry. Architects and contractors faced with the task of gathering and understanding related building science concepts and faced with new product choices that lack of appropriate in-use durations for validation, find themselves treading new territory.

Green Building Industry Practices

Green building product trends: During the last 10 years, energy efficiency driven code requirements have created a market for high-performance insulated building envelope products and design innovation. Some of these products and design systems lacked in-use compatibility, reliability, or durability data. Others had no known ASTM standard for testing or adaptability.

Design assist exploration for large complex projects: Contractors are at the forefront of new code-driven developments impacting building envelope systems. Contractors have hands-on experience with applying and assembling the complexity. They need to be vigilant about training, field-testing, and representing new manufactured products. As building complexity and design innovation expands, the contractors are invited more and more to collaborate early in the design process.

Insurance and Legal Trends

Coverage, Product liability, Contracts, and more recently design assist liability continue to evolve. Architects are pushing for the team contractors to share liability by insisting on Professional Liability Added Coverage for the Contractors.

The creation of the insurance wrap policy allowed condominium developers to retain their subcontractors who were otherwise unable to obtain insurance coverage. Unfortunately, when construction related claims against the developer arose, Developers found themselves unable to point to their subs for settlement coverage. Those outside the wrap (i.e. architects and engineers) became a much greater target for contributing insurance money toward settlement.

Case Study: Beacon Residential Community Association v Skidmore, Owings and Merrill, LLP (2014) 59 Cal.4th 568, 327 P.3d 850. Building users have always been part of the equation with LEED. Now they are part of the architect's duty of care because of this recent court. This 595-unit residential litigation case started with a window glazing solar heat gain allegation claiming uninhabitable dwellings. After court appeals and a change in focus, the court ruled that the architect's duty of care expanded beyond the traditional contractual relationship with the owner (developer) to the future homeowners.

II. Managing the Risk of Energy Efficiency Design, Green Building Goals, and Construction Expectations

Understanding Stakeholders' Expectations

Understanding stakeholders' expectations is prudent in managing risks. Having a clearly defined description of green building and energy efficiency goals as it pertains specifically to the project is advisable.

The building owner generally focuses on issues such as: Cost. Branding. Market value. Investment value. Performance. Durability. Zero-Net-Energy Achievement. Cost and Knowledge

of Maintaining and Operating a Complex Green Building. The building users care about: Comfort. Health. Employee Productivity.

The Design team, Legal team, and Insurance team. The principles and roles of these stakeholder groups with respect to green building design and construction can be summarized as follows:

- The Design and building team (U.S. Green Building Council three principles): People (Occupancy health), Planet (Environmental responsibility), Profit (Productivity. Value. Marketability. Utility efficiency. Maintenance and operation.)
- The Legal team. Members of this panel compiled three principles: Protection, Prudence, and Protocol. Protection through contracts, insurance, liens, internal policies and procedures. Prudence in using careful good judgment that allows someone to avoid risks. Protocol in the system of rules that explain the correct conduct and procedures to be followed in formal situations.
- The Insurance industry's green principles as a variation of the U.S. Green Building Council's version: People (Reasonable workmanship), Product (Appropriate building materials), Performance (Intended building function and usefulness in whole or in part).

Architects Duty of Care

Sustainable design knowledge: Today, green building fundamentals are a general part of an architect's awareness in practice especially in jurisdictions that adopt green building codes. However, Zero-Net-Energy design practices involve concepts and strategies that go beyond standard energy codes. These tend to take a specialty level of awareness and stakeholder collaboration for large complex projects.

Use of Building Envelope Consultants for Complex Projects:

- Early involvement during design development phase is useful to mitigation the cost and out-of-sequence time to re-design. If early involvement is not anticipated during proposals with the building owner, consider contract provisions for out-of-sequence work.
- Exercise precautions when retaining separate building envelope consultants for above-grade design and below-grade design.
- Confirm any cross-over conflicts. Before retaining your consultant, confirm any cross-over conflicts between their responsibility for observing field tests under your agreement compared to whom the contractor plans to subcontract for conducting the field tests. Consider provisions and acknowledgement in the construction document project manual.

Use of Energy Consultants for Complex Projects:

- As energy codes get more and more strict energy consultants are being retained along with the architect for entitlement process services.
- In determining property potentials and seeking city council approvals for large projects, early involvement of energy modeling during schematics provides predictable and quantifiable data as guidance for maintaining the design development within the parameters of the approval requirements.

- For basic services, if early involvement is not anticipated during proposals with the building owner, consider contract provisions for out-of-sequence work.
- Confirm the appropriate credentials and certificates of the consulting firm. Realize they are not governed under a licensing board in their state and do not stamp their work product. They practice under a different professional business code than architects. Understand the terms, conditions, and caveats in their proposals and work product.
- A competent mechanical engineer realizes the benefit of involving an energy consultant for energy modeling studies during schematic mechanical designs. Even though your engineer is skilled at calculating the appropriate system, the energy consultant's models can offer quantifiable alternatives and comparisons for complex architectural designs and mechanical designs.

Awareness of Red-Flag Conditions Related to Energy Efficiency Design

Exterior wall system: Designing for continuous insulation, air barrier, water barrier, vapor barrier, rain-screens adds a whole new level of complexity.

- An increased amount of details is generally necessary to convey continuity of the assembly at the variety of transitions between planes and components.
- Variations in climate zones play a more critical role.
- Understanding the building science of air, vapor, and moisture movement through a wall.
- Solely relying on product manufacturer's published details is risky. Some published details are incorrect.
- The shift in focus to detailing continuous air barriers is changing the standard detailing of moisture barriers. The practice of having architectural plans peer reviewed by a third-party building envelope consultant or forensic consultant is prudent for architectural firms during this evolution of increased complexity. Potentially as knowledge and designed applications correlate with field success and confidence the need for a building envelope consultant may diminish.
- One scenario that has created confusion is the code-driven increased thickness of exterior foam insulation. Standard fasteners for cladding such as exterior plaster (stucco) are not sufficient in length to secure into the framing component. Awareness of maintaining thermal-bridging and sealed penetrations of the fasteners is critical in mitigating adverse temperature movement and water intrusion through the wall, especially for rain-screen design features. Rain-screens integrate an air space behind the building skin layer between the air/moisture barrier. This added space no longer allows for fasteners to simply cinch tight to a common moisture barrier sheet such a building paper and becomes a multiple source of air and water intrusion.

Mechanical system: For budgeting benefits and dynamic internal value engineering for large complex projects, avoid designing the preliminary mechanical system ahead of evaluating energy modeling scenarios. Energy consultants find it beneficial to the project team being engaged and running energy modeling scenarios during schematic design.

Pursuing Zero-Net-Energy: Part of the process in seeking Zero-Net-Energy certification for large complex projects, the building's energy use needs to be monitored, measured, and verified

during the first one or two years of operation. This brings potential liabilities and therefore brings opportunities to manage new risks:

- Achieving Zero-Net-Energy goes beyond current building codes. Therefore, designing for Zero-Net-Energy could carry an added risk to the professional for practicing at a higher standard of care.
- There may exist a potential disconnect in bridging the gap between construction achievement and Zero-Net-Energy achievement in terms of expectations, responsibilities, contract language, and insurance coverage.
- A contractor generally warrants his work for 12 months after certificate of occupancy. With Zero-Net-Energy monitoring activities there could be added scrutiny of the building's performance during this period.
- The architect's basic design services have been completed. Yet ongoing communication or involvement through additional services might be prudent to uphold their design intent.
- Contracts for energy consultants transition from an agreement with the design team to contracting directly with the owner. Insurance coverage issues would need attention. Responsibility for changes to the original construction would need to be addressed. In some respects, the energy consultant is now the quarterback for the design team. Their ethics and good judgment play an important role when it comes to discovering performance deficiencies.
- There are opportunities to manage the risk of construction defect claims through proactive involvement during Zero-Net-Energy certification phase.

Insurance and Legal Strategies

The use of project policies and OCIP/CCIP policies by design professions to limit potential exposure when designing more complex energy efficient buildings.

- Limiting exposure by describing project expectations in contract documents.
- The viability of limitation of liability clauses in energy efficient design projects.

Responding to three game-changing events: Insurance and legal teams have assisted developers and architects in reducing risks that were brought on by three west coast game-changing events; the creation of wrap policies, the crafted "Right to Repair" law, and the legal ruling in Beacon Residential Community Association v Skidmore, Owings and Merrill, LLP. Insurance and legal strategies that have been developed in response include:

- Developers have been able to transfer risk by working with insurance carriers to provide a separate wrap policy for their subcontractors.
- Architectural firms have added risk-mitigating language to their contracts especially on multi-family high-rise projects. For example, on high-rise apartment projects language is added to safeguard against a condominium conversion within the statute of limitations time frame of a claim. For condominium projects, language is crafted requiring the developer to provide a protected reserve fund for the duration of the statute of limitations to cover claims.