

GREY AREAS FOR GREEN CONSTRUCTION

Green certainly is in: 75% of CEOs would build green facilities despite the credit crisis, according to a recent Turner Construction study. The same study reports that 83% of surveyed executives would seek LEED certification if constructing a green building in the next three years.

According to the **U.S. Green Building Council (USGBC)**, as of March 2009, there were 2,384 LEED Certified projects, up from 404 LEED Certified projects in 2005. Further, there are now 18,468 LEED Registered projects located across all 50 states and 91 countries. Finally, USGBC membership quadrupled between 2000 and 2009 and now comprises 18,805 member organizations.

Green construction can save money and help save the environment. What's not to like? For risk managers and property risk control professionals, there are actually several areas of concern, starting with property insurability issues and the potential for green buildings' approaches to increase fire hazards.

GREEN SAVES THE GREEN

The idea of environmentally friendly construction is clearly gaining momentum. Executives in the Turner Survey see great potential for cost savings:

- 84% said green buildings have lower energy consumption costs
- 68% said green buildings have lower operating costs
- 59% said total green building costs are less than traditional building costs over a 10-year period

Construction is a complex undertaking, however, and often new technologies bring unintended consequences. Below we examine the potential impact of the rapidly expanding green building movement on Property insurance and loss prevention, looking at potential synergies and possible conflicts. But first we look the question of whether green construction requires special insurance.



Green construction: the design or use of products, materials, machinery, equipment, systems or methods in the repair, replacement or reconstruction of property necessary to achieve certification by an individual or organization recognized by the Leadership in Energy and Environmental Design (LEED®) or the Green Building Initiative Green Globes®.

GREEN INSURABILITY

Does green construction require green insurance in the form of special policies or wordings? Sometimes. If a green building is insured on a Property insurance policy form containing a replacement cost valuation clause, the policy will, in the event of insured physical loss or damage, restore the building to what it was – if it was green before, it will be

Green construction can save money and help save the environment, [but] construction is a complex undertaking . . . and often new technologies bring unintended consequences [and] for risk managers and property risk control professionals, there are actually several areas of concern.

green again. There should be no manuscripting required, but insureds should make sure their statement of values accurately reflects the exposure.

Special clauses are required, however, if the property insured is not green but will be upgraded to green following an insured loss. To be upgraded to green, a building must be repaired with green building components and energy efficient designs installed with green construction methods. When the repairs are completed, the building will need to be certified by a recognized green authority. Green materials, construction methods and certifications cost more than simple replacement – hence the need for special language.

Green Property insurance enhancements, available from many carriers, should, at a minimum, include:

1. Reasonable and necessary costs of green building materials and energy-efficient designs
2. The costs of engineering and design services to design, manage and oversee the reconstruction of insured damaged property so it will qualify for green certification
3. The costs of testing and documentation services required as a part of the green certification process
4. The cost of repairing or replacing HVAC systems in order to achieve green air quality standards
5. Any additional costs incurred in the demolition of buildings or structures and in the removal and disposal of debris as required to achieve green certification
6. Any additional costs to install a green-certified vegetative roofing system
7. If a policy insures against time element losses: extension of the period of recovery to allow the steps necessary to qualify for green certification

Carriers can be expected to increase premium charges for green coverages and to impose special limits, sublimits and time limits.

According to underwriters offering green enhancements, uptake has been slow. But they expect uptake to accelerate as green building accelerates. As always, the nuances of green construction should be discussed with your insurance adviser. Your Property insurance broker and risk control consultant can guide you toward proper building design and coverage.

GREEN BUILDING DESIGN VERSUS PROPERTY RISK CONTROL

Green building philosophy focuses on performance sustainability with reduced environmental impact and operating costs. The six green building principles are:

1. Sustainable site (selection and planning)
2. Water efficiency (management)

3. Energy and atmosphere
4. Material (use) and resources
5. Indoor environmental quality
6. Building system design and innovation

Property risk control focuses on three primary goals related to clients' business interests:

1. Preservation of capital investment and market share through mitigation of anticipated operational risks/exposures
2. Operational performance longevity through encouragement of robust maintenance programs
3. Promotion of mitigation techniques for natural or man-made catastrophic exposures

POTENTIAL SYNERGIES AND CONFLICTS

SITE SELECTION CONSEQUENCES

Green site selection usually supports traditional property risk control by providing a seat at the table for a risk control advocate during the actual design process. The design and construction phases are the most cost-efficient and convenient times for designing and installing physical property risk protection systems.

Green site selection principles support the traditional property risk control concept of hazard evaluation during the due diligence process. Traditional property risk control focuses on the evaluation of earthquake, flood, hail, snow, wind and other natural catastrophe exposures during site selection or actual construction.

Focus on storm water management and heat island reduction in green site selection promotes the use of vegetated roofing systems. These roofing systems may not be suitable for certain operations. Here, green design can be in conflict with property risk control.

WATER EFFICIENCY CONSIDERATIONS

The green water efficiency principle may conflict with the traditional property risk control concept of water-based fire protection. Using recycled or grey water supplies for traditional fire sprinkler systems presents exposure to supply vacuums, sediment accumulation and microbiologically influenced corrosion (MIC) of sprinkler piping.

Perhaps most importantly, the focus on water preservation challenges the required water flow testing of fire protection system components, such as sprinkler systems and fire pumps. Since the systems are

normally in constant operation, water flow efficiency testing is the only mechanism for verifying the systems will work during potentially catastrophic events.

The drive for water efficiency may spur the growth of fire protection technology that features low water emission, such as water mist systems and waterless approaches, such as clean agent systems. Today, these systems are used for unique hazards or environments. They are not always as effective as traditional water-based sprinkler protection. Perhaps the green building movement will provide the impetus for new technology that is both effective and water efficient.

ENERGY REDUCTION AND ATMOSPHERE IMPACT

Green principles focused on the reduction of energy consumption and atmospheric pollution can impact traditional property risk control in a variety of ways. Energy management systems in efficient buildings can create low temperature environments where fire sprinkler systems can actually freeze. The use of thermal barriers or other components designed to restrain environmental temperature should have fire resistance ratings that conform to building code requirements. NFPA and FM Global recommend a 40 degree (F) environmental temperature to avoid freezing in fire sprinkler systems.

Building envelope integrity is crucial to reduced energy consumption and withstanding wind-related or extreme temperature events. Building insulation materials can add to thermal efficiency but can also create fire hazards. However, the green focus on frequent commissioning promotes robust maintenance and improvement programs. These programs can vastly improve the performance of aging buildings during natural catastrophes.

RECYCLED MATERIAL RAMIFICATIONS

The green principle of recycling and reusing material can create storage burdens too great for existing fire sprinkler protection systems. Special storage areas should be contemplated during the design process to ensure the design of fire sprinkler protection is adequate to meet insurability requirements.

The green focus on using reconstituted products may inherently reduce fire resistance of structural components. Locally recycled products are often produced in small quantities with inconsistent material properties – attributes that can create havoc for the assessment of fire resistance.

COST OF BETTER INDOOR AIR

Green indoor environment quality principles support property risk control concepts related to human element management programs. Alignment occurs in smoking policies (including enforcement standards) in all occupancies and dust mitigation in manufacturing or research occupancies.

This green principle does conflict with the property risk control concept of fire containment and extinguishment via sprinklers in the following two ways:

1. Increased exhaust/ventilation air flow can delay sprinkler response or cause sprinklers to activate sporadically during fires. Sprinklers are designed to contain or extinguish fires by activating in successive rings as the fire expands. Sporadic sprinkler activation can quickly overload the available water supply due to water pressure and volume design requirements.
2. Large open spaces such as atriums, often a feature of green design, pose a challenge to fire protection via sprinklers. Sprinklers struggle to contain or extinguish fires more than 45 feet below the sprinkler level. A water droplet simply cannot penetrate a fire and heat plume or vane from this distance.

Green design promotes the use of under-floor and ceiling air distribution systems for cooling effects. Current property risk control concepts focus on early detection of incipient stage fires within cable clusters above or below occupied environments, posing a potential conflict.

BUILDING CONSTRUCTION AND DESIGN INNOVATION PROMOTION

The green principle of building innovation through integrated design teams and operations supports traditional property risk control concepts. In theory, integrated design teams will address potential hazards with mitigation techniques suggested by property risk control advocates. This would save the owner the costs of retrofit construction and can reduce the cost of risk transfer options, e.g., insurance.

SUMMARY

Green construction and property conservation, as well as highly protected risk (HPR) insurance underwriting, share core philosophies, but risk professionals should be aware of potential property risk exposure created from evolving green construction trends. The nuances we address are just examples. Green design results in complex situations, which will vary with every building and every green upgrade. Please consult your local property risk control advocates for project-specific concerns.



Other Willis publications on related green topics include:

Willis North America Real Estate and Hospitality *Views*, May 2008

Willis North America Construction Practice *I-Beam*, October 2008

CONTACTS

If you would like additional information on this or other risk control topics, contact your local or regional Willis Property Risk Control Consultant or

Mark Mirek, PE

SC/SE Regional Manager, Property Risk Control

Willis Strategic Outcomes Practice

214 458 2517

mark.mirek@willis.com

Joe Stavish, PE

National Technical Director, Property Risk Control

Willis Strategic Outcomes Practice

973 829 2955

joe.stavish@willis.com

The objective of our publication is to provide a general overview and discussion of issues relevant to insurability and loss control. The comments and suggestions presented should not be taken as a substitute for advice about any specific situation.