Resilient Design – An Overview

Berkley Design Professional
a Berkley Company
Better By Design®

Hurricanes, floods, tornadoes, wildfires—natural disasters impacting the world's natural and built environment with devastating effect are occurring more frequently and with greater impact. Climate change is a reality whether one believes these are caused by man-made actions or cyclical. These occurrences cause significant damage to building envelope and structures, roads, bridges, harbors, power and communication systems, and other critical elements of the built environment. Extensive economic loss and disruption of essential services and basic living conditions follow.

What are the duties of engineers, architects, environmental consultants, and other design professionals in their roles as protectors of the health, safety, and welfare of the general public? Resilient design is one way to minimize the damage these events cause and aid in subsequent recovery. Berkley DP believes it is important for design professionals to be familiar with the principles and strategies of resiliency in design.

What are the duties of design professionals in their roles as protectors of the health, safety, and welfare of the general public?

Resilience is defined as "the capacity to adapt to changing conditions and to maintain or regain functionality and vitality in the face of stress or disturbance" (Resilient Design Institute).

Consideration of climate change and the higher likelihood of extreme environmental events are factors in the evolution and expansion of the standard of care. Current codes and regulations are slow to catch up to the "new normal." Design professionals, particularly engineers and environmental scientists, should address resiliency factors in their projects based on expectations for their scientific knowledge. This perception creates potential liability concerns with which design professionals must contend. Here are several recommendations for risk management considerations of resilient design:

1. Anticipate code and practice standards updates and upgrades due to climate change.
    - If the current code basis for storm water management is to design to for a 100-year flood, promote design for a 500-year flood. Milestone floods are happening more often, In fact, Hurricane Harvey's flooding effect in Houston was the city's third "500-year" flood in the three years. Since you are recommending design beyond code minimums, balance the level of enhanced design with the function and exposure of the project. For example, an office building may not need to be as vigorously resilient as a hospital, water treatment plant, or other critical care facility or infrastructure. A major highway along a coastal waterway will likely have more stringent criteria than an inland arterial road. Consideration of applicable climatology models, reports, and robust studies demonstrates a recognition of the importance of enhanced information to guide project criteria in site design.

- Design structure, enclosure, energy services, and storm water management components with additional safety factors not yet memorialized in building codes that address the likelihood of increasing wind and rain due to more intense storms. These components may include sea walls, retaining walls, bridge and power line supports and abutments, building foundations and structure, envelope and enclosure (roofing and roof structures, walls, and windows), flood plain areas, retention and detention ponds, spillways, and piping.
- Discuss with your client why you recommend these increased factors of safety for resilient design. If they direct otherwise, such as to design only to minimum (current) code requirements, document such owner directives in letter form to them and store this correspondence in your project files. This issue will be of greater concern when working with private developers who may not have a long term view of the project lifespan. For example, a developer planning out a residential subdivision design may not want to pay for enhanced storm water retention. Compare their motivation to governmental agencies, such as the Army Corps of Engineers, which designs and constructs coastal protection systems with enhanced standards to address increasing impacts of climate change. We expect that more local and state agencies will adopt a similar perspective of the value of additional investment in resiliency—some already have (e.g., Florida after Hurricane Andrew in 1992).

2. **Become familiar with climate change factors and design implications.**

- Be transparent in communicating these factors and diligently pursue client consent to design to an enhanced level.
- You can provide informed advice to your clients, but put the responsibility on them to obtain the additional studies that may be required and to make the ultimate decision based on the options considered.

3. **With regard to clauses in the professional services agreements, we recommend the following:**

- Disclaim third-party reliance. This will mitigate your risk to some degree, based on decisions reached and directives given by your clients to design to code minimum rather than to the enhanced levels as recommended above. The effectiveness of this disclaimer may be limited in consideration of the case law in the project's jurisdiction and general responsibility of the licensed design professional to protect the health, safety and welfare of the general public.
- Disclaim warranties and guarantees, and establish a normal professional standard of care.
- Include a force majeure clause in your contract to mitigate risk of catastrophic events.

What performance standard will you, the design professional be held to? At what point will an enhanced Standard of Care be triggered? This is still a gray area due to insufficient case law common to emerging risk management issues. But one thing is clear: awareness of environmental factors impacting design and communication of the risks and benefits of resilient design factors with the owner are key. Design professionals that provide their clients clear, transparent and knowledgeable advice will assist owners in making informed and proper decisions.

Updated December 5, 2018

About Berkley Design Professional

Berkley Design Professional was started in 2013 by a team of people with deep roots in underwriting, loss prevention and claims handling for the Design Professional community. The genesis of Berkley DP was the combination of our team's passion for bringing fresh ideas to the products and services Design Professionals need together with W. R. Berkley Corporation's desire to commit its superior financial strength and A+ rated paper to this industry segment. Berkley DP's motto is: "Better by Design." By this we mean that our policyholders are better businesses because we've designed comprehensive coverage and current risk management solutions that make their practice less susceptible to loss.

For more information, contact:

Andrew D. Mendelson, FAIA
Senior Vice President,
Chief Risk Management Officer
amendelson@berkleydp.com

Diane P. Mika
Vice President,
Director of Risk Management Education
dmika@berkleydp.com

Berkley Design Professional
a Berkley Company
Better By Design®

berkleydp.com | 855.534.7285