

Resiliency—An Important Part of High Performance



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When people think of High Performance, the versatility, efficiency, and durability of the components come to mind. These relate to the construction and operations of a structure, which are critical aspects. But there is another key ingredient to a truly high-performance structure: Resiliency.

Creating a true high-performance structure challenges designers and contractors to integrate and optimize all relevant systems and materials to minimize costs, energy usage, and maintenance over the building's service life. A big part of this consists of designing projects to be resilient.

Resiliency goes beyond durability, which is essentially the building's ability to withstand the routine environmental conditions to which it is subjected.


Resiliency refers to the ability of a project to withstand less frequent extreme events such as hurricanes, tornados, earthquakes, explosions, and fires. These events can result in the complete destruction of a structure and devastate a community.

Resiliency also is a natural extension of sustainability, which is often defined as the ability to meet our needs and goals while not compromising or inhibiting future generations from doing the same. When we build resilient structures, we typically do not need to use more materials and energy to rebuild them again after an extreme event. Even more important, we save lives.

Precast concrete inherently provides a high level of resiliency, mostly due to its strength, mass, and durable nature. For example, most precast concrete has at least 5000 psi compressive strength, which can resist greater wind loads than common stick-built construction. Precast also uses welded and bolted connections, versus the nails, screws, and mortar used in more traditional methods.

Precast concrete can be further designed to resist the forces created by extreme events. Often this involves the special design of connections, so they transmit or absorb additional forces. It may also include sacrificial reinforcement, such as in precast hybrid moment frames.

Precast concrete is one of the most resilient building systems, providing protection for occupants and equipment. It also helps to maintain functionality of a structure after an extreme event. It serves as a great example of a high-performance material that integrates and optimizes many attributes into one system.

The articles in this issue focus on the inherent resiliency of precast concrete. They showcase projects from around the country that have used precast concrete systems to provide high-performance attributes to a range of building types. We hope this issue gives you ideas on how you can use precast concrete's resiliency to meet your own high-performance needs. Let's Discover High Performance Precast! 

ASCENT

On the cover: James F. Battin United States Courthouse in Billings, Mont.

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- **POSTMASTER:** Send address changes to *Ascent*, 200 W. Adams St., Suite 2100, Chicago, IL 60606. Periodical postage paid at Chicago, IL and additional mailing offices.

- *Ascent* (Vol. 23, No. 3, ISSN 10796983) is published quarterly by the Precast/Prestressed Concrete Institute, 200 W. Adams St., Suite 2100, Chicago, IL 60606.
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