

## Precast Concrete and High Performance



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We didn't disappear before the new year began, as certain ancient civilizations predicted—at least not yet. But no one can deny that it's been a challenging and changing year. We have experienced some devastating disasters, weather patterns seem to be changing erratically, energy costs continue to increase, and our economy continues to hang on a "cliff" despite many efforts to alleviate that.

Many of these changes have prompted new approaches to how we design, construct, and operate buildings—some good, and some bad. On the good side, there is more focus on sustainable practices and materials as well as an emphasis on reducing energy consumption. This is a great start, but there is still more to do. Unfortunately, many are satisfied with a few positive attributes or a scorecard they can market, regardless of the building's actual long-term performance. Building codes and society have reduced efforts to the lowest common denominator. As a result, we have less durable construction and, in some cases, poor overall building performance.

The idea of high-performance buildings provides an overarching concept that includes sustainability, as well as many other important attributes. High-performance buildings are defined as buildings that integrate and optimize several high performance attributes on a life-cycle basis.

This is somewhat different from the way most of us typically think of high performance. Often, high performance is considered better than "standard." For example, high-performance concrete (HPC) would provide higher compressive strength, less permeability, etc. This part of the definition still applies to high performance buildings since, in most cases, these buildings exceed code requirements. However, the definition includes the ability to provide multiple benefits simultaneously, based on long-term performance. For example, a high performance building must be sustainable, energy efficient, and hurricane-resistant.

High-performance buildings are putting us back on track to build more versatile, efficient, resilient, and safe structures. To accomplish this, we will need to use high-performance materials and systems, such as precast concrete. That is the theme of this year's *Ascent* magazine. Each issue will address one of the broad groupings of high performance attributes, starting with versatility.

How is versatility a high-performance attribute? When discussing race cars, it may not be. But when optimizing systems and structures for the long-term, it's a critical issue.

Why use two separate systems or many different materials when one will do? Why not reduce total material usage, joints, detailing, professional liability, and coordination? Precast concrete provides incredible versatility in aesthetics, structural capacity, envelope design, and promotes deconstructability and adaptive reuse.

The articles in this issue focus on various aspects of precast concrete's versatility. When a material can reach from one end of the aesthetic spectrum to the other, serve as the envelope and structural system simultaneously, and truly optimize all of these benefits, that's versatility in a high-performance system. This issue, and the others this year, will help you *Discover High Performance Precast!*

### **ASCENT** On the cover: recast helps the Perot Museum in Dallas, Tex make an architectural statement. (see page 44)

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