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Precast concrete: A key component for a wider range of applications in sustainable construction

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There's little doubt that "green" building is here to stay. In 2008, the use of building practices that are mindful of the environment will continue to gain momentum.

Architects, builders and developers have long recognized that precast concrete has distinct advantages. But as the issue of sustainability becomes a higher priority, the building industry has taken note of precast concrete's wider-ranging and longer-lasting benefits.

Sustainability

Sustainability can be defined as the condition in which the needs of today are adequately met without jeopardizing the needs of tomorrow. Considerations of sustainability have become an integral part of all development in the U.S.

The challenge for the construction industry has been to find a method or material that combines the adequate stewardship of resources with an economic incentive to builders and owners.

The environmental impact of precast

There are several key reasons why the use of precast concrete to achieve sustainability will continue to proliferate in 2008:

- * **Construction:** Precast concrete also offers a quieter, cleaner, shorter construction period. Erecting precast components results in less waste and debris on a jobsite than other commonly used building systems. In addition, fewer trucks are required to deliver large precast components and the building process is faster, which can result in energy savings.
- * **LEED support:** Incorporating precast concrete into a building's design can contribute to as many as 23 of the 26 points required for LEED certification. Precast concrete has the potential to help earn points in a range of categories: reducing the "heat island effect," maximizing energy efficiency, management of construction waste, use of regional materials, and more.
- * **Energy efficiency:** Precast concrete contributes to a building's thermal mass, which improves a building's energy efficiency. In fact, thermal mass in exterior walls can reduce a building's peak energy load, which leads to lower utility bills. In addition, some owners find that, by selecting precast concrete, they can opt for smaller, less-expensive HVAC systems.
- * **Durability:** Precast concrete panels offer exceptional long-term durability, which reduces long-term maintenance costs and extend the life-cycle of a building. Precast offers resistance to damage from fires, insects, wind and floods. In addition, a building owner can completely refurbish the interior of a precast concrete structure while leaving the shell intact, which provides a level of flexibility.
- * **Indoor air quality:** When volatile organic compounds (VOCs) off-gas from any source - furniture, carpet or some building materials, for example - they can reduce a building's indoor air quality and adversely affect the health of occupants. Precast concrete contains low to negligible amounts of

VOCs, thereby contributing to a healthier indoor environment.

* Manufacturing: Precast concrete producers have developed an environmentally friendly production process. For example, the solid waste from manufacturing precast is only about 2.5% of the mass concrete used in production. However, producers capture and recycle 95% of that solid waste, resulting in actual waste of about one-tenth of one percent.

An ongoing trend

As we move further into the 21st century, and as the building industry gives more careful and meaningful consideration to the needs of the future, there's little doubt that we will continue to see precast concrete specified for widening range of applications.

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