



## **Cast Stone/Architectural Precast Information Related to LEED / Sustainable Design:**

“Depending on which bubble you live in, it may seem that the momentum of green design is unstoppable. While it is true that a lot has been achieved in the recent past, there is still a vast community that either is unaware of sustainable design as a concept, indifferent to its cause, or unconvinced of its advantages. To convince owners, builders, and designers (or other stakeholders) about the benefits of sustainable design, one must first understand that each group has a different opinion about the relevant selling points.

To an owner, the bottom line may be financial. To an architect it might be environmental and to the engineer it might be performance. There are many reasons to build green and, as advocates for sustainable design, architects should be equipped to provide a suitable argument relevant to the particular audience.”

*Source – ARCH News (monthly newsletter of East Bay Chapter- AIA)*

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### **“The Surprisingly Green Building Material**

Concrete is as old as the Romans, but it’s also a key solution to modern concerns about energy efficiency, protecting the environment, and using our resources wisely.

You know that concrete offers exceptional stability, durability, and design flexibility. But you may not be aware of the environmental advantages it offers throughout its manufacture and use. And because old concrete can be reused, the energy savings accrue indefinitely.

In fact, concrete is one of the most environmentally friendly construction products currently available.

### **Natural and recycled materials**

Some building materials rely on scarce or non-renewable resources. In contrast, concrete is made from three abundant ingredients:

- Water
- Aggregate (stone, sand, and gravel)
- Portland cement (a fine gray [or white] powder, plentiful in nature)

A growing list of recycled materials can complement these basic ingredients. Aggregate may contain safe industrial by-products, such as steelmaking’s slag. Portland cement can be supplemented by materials such as fly ash, a discard of coal-burning power plants. Even cement’s manufacturing process used recycled materials. Each year, a single

cement kiln can safely burn one million old tires, conserving fossil fuels and reducing landfills.

### **Stronger, Lasts Longer**

Since concrete is strong and adaptable, and resists fire, water, and weather, it has a longer service life than other construction materials. Concrete's durability reduces maintenance and reconstruction, conserving resources. And at the end of its service life, crushed concrete can be reused as aggregate for new concrete.

### **Year-round Energy Efficiency**

The thermal mass of concrete buildings saves energy year-round by reducing temperature swings. A concrete building will require cooling mainly during off-peak times, when power is produced more efficiently. The same building will also cost less to heat than a comparable structure made of different materials.

These benefits last as long as the building itself – which in the case of concrete structures is a very long time.”

*Source- Environmental Council of Concrete Organizations*

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Cement production accounts for 0.33% of the world's energy consumption. This is lower than for both wood production (0.50%) and steel production (1.80%).

The cement industry has reduced carbon dioxide emissions and energy usage by over 33% since 1975 and is continually striving to make further reductions.

*Source – Department of energy*

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### **Key Points Regarding the Use of Cast Stone/Precast Concrete in Sustainable Design (with related applicable LEED Category: Materials & Resources credit ):**

- 1) Concrete's durability helps it maintain its appearance, so the building shell can remain in place longer. Precast concrete panels can be reused if a building's use changes or for renovation. (1.1 and 1.2)
- 2) Forms and moulds used in casting are reusable so no subsequent disposal is required. (2.1 and 2.2)
- 3) Design minimizes construction waste since it provides literally no on-site waste. (2.1 and 2.2)
- 4) Products often contain manufacturing by-products such as fly ash, silica fume and blast furnace slag that otherwise find their way to a landfill. (4.1)
- 5) Reinforcing steel used is produced from post-consumer recycled material. (4.2)
- 6) Concrete raw materials are generally shipped from sources within close proximity of the manufacturing facility. (5.1 and 5.2)

*American Artstone staff can assist project team by providing product related LEED data and documentation as required for certification application.*