

Coal Combustion Product Type

Fly Ash

Project Name

Perot Museum of Nature and Science

Project Location

Dallas, Texas

Project Participants

Holcim US, Morphosis Architects, GFF Architects, Datum Engineers, John A. Martin Associates, Inc., Buro Happold, Balfour Beatty Construction, Lattimore Materials Corporation

Project Completion Date

December 2012

Project Summary

The Perot Museum of Nature and Science is a 180,000-square-foot facility designed by Pritzker Prize-winning architect Thom Mayne, located in Victory Park northwest of downtown Dallas. Clad in precast concrete panels, the 14-story cubic structure houses 11 permanent exhibit halls and 6 learning labs in which the public is invited to “ponder the vast mysteries of science.”

Project Description

Early in the design process, the architect focused on the concept of the building as an exhibit in and of itself. For the museum’s exterior, that resulted in specifying the use of precast concrete panels designed to evoke a sedimentary geological formation. Exposed concrete is likewise featured in the interior for flooring and walls.

Concrete was chosen as the primary building material also for its sustainability. Mixes with 50 percent fly ash replacement for portland cement were used in the building’s piers, columns, and slabs expressly for the purpose of attaining Leadership in Energy and Environmental Design (LEED) certification. Lower-volume fly ash concrete was specified in the exterior cladding.



The 30,000 square feet of concrete flooring in the museum’s exhibit space is among the museum’s primary aesthetic features. Continuing with the theme of incorporating nature in the building design, the architect specifically sought to expose the aggregate within the concrete. Owing to the concrete’s high fly ash content—which made the flooring particularly hard and durable—exposing the aggregate within required extensive milling, diamond grinding, and polishing. The end result, however, has been lauded as both an aesthetic and functional triumph.

Beyond its LEED value as a recycled, low-carbon material, the museum’s high-volume fly ash concrete has earned recognition for the other sustainable attributes it brings to the building’s design, including:

- Durability
- Resistance to fire, flooding, and other natural disasters
- Heat-island mitigation
- Use of locally sourced materials
- Thermal/energy performance
- Noise resistance
- Avoidance of sealants and coatings that can contain volatile organic compounds.

Upon its opening, the museum held the distinction of being one of only five buildings to have received four Green Globes for sustainability practices and was the only Green Globe-certified museum.

Photo: Perot Museum of Nature and Science