



ACAA

# Beneficial Use Case Study

## J. Craig Venter Institute

### Coal Combustion Product Type

Fly Ash

### Project Location

La Jolla, California

### Project Participants

J. Craig Venter Institute, ZGF Architects LLP, McCarthy Building Companies, KPFF Consulting Engineers, Jacobs Consultancy

### Project Completion Date

2013

### Project Summary

The J. Craig Venter Institute (JCVI) is a three-story, 45,000-square-foot laboratory facility located on a 1.75-acre coastal site within the University of California, San Diego campus. It incorporates one building consisting of a single-story, 12,605-square-foot laboratory wing; a three-story, 28,600-square-foot office wing; a 3560-square-foot loading dock area; and a partially below-grade parking garage. The laboratory and office wings sit atop the roof/podium deck of the parking garage. Designed by the Los Angeles office of ZGF Architects, the building features unusual geometry with varying angles, together with full-height shear walls and architecturally exposed concrete.

### Project Description

From the outset, JCVI—a biological laboratory engaged in genomic research—was designed to be environmentally friendly, from its materials selection to its achievement of net-zero-energy status, the first biological laboratory in the world to do so.

The exposed architectural concrete on the building's exterior was essential to the desired look, yet posed one of the greatest structural challenges for the building team. Architectural as-cast concrete is one of the most demanding concrete finishes, but



SOURCE: McCarthy Building Companies



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adding 30% fly ash to meet LEED Platinum standards gave the process an additional challenge. During initial testing, the fly ash composition produced a marbling effect, making it challenging to create the intended aesthetic quality of the exposed concrete walls.

To ensure the desired aesthetics of the architectural concrete, McCarthy performed all of the concrete work, drawing on the expertise of the same concrete specialists who developed a pioneering concrete mix and installation procedure for the nearby Salk Institute East Building. Similar to the Salk Institute project, the concrete craftsmen created several generations of mock-ups to refine the mix design and fine-tune the finishing and forming techniques to produce the concrete's smooth and flawless finish.

McCarthy ultimately performed all the concrete work, including the concrete walls, columns, footings, slab on grade, slabs on metal deck, and podium deck. Use of 30% fly ash in the architecturally exposed concrete walls, columns, footings, slabs, and podium deck contributed to the LEED credits in the category of recycled content—and its eventual certification at the Platinum level.