

California Academy of Sciences

San Francisco, California, U.S.A.

Located in San Francisco's Golden Gate Park, the California Academy of Sciences is touted as the "world's greenest museum" for its ambitious sustainable design. Completed in 2008, the academy's 400,000-square foot LEED-platinum green building replaces an outdated, earth-quake damaged complex of buildings that served as the academy's home since 1916. The design of the new building seeks to reinforce the Academy's goals to "explore, explain and protect the natural world." Landscape architecture played a crucial role in realizing the design team's concept of "lifting up a piece of the park and putting a building under it." The bold new building includes a 2.5-acre living roof, which spans the museum's three main wings – the Steinhart Aquarium, the Morrison Planetarium, and the Kimball Natural History Museum.

By combining the academy's different functions under one roof, the new building reduces the facility's physical footprint by approximately 1.5 acres. A smaller footprint means fewer materials were needed to complete construction and less energy is needed to heat and cool the building. In addition, the reclaimed real estate is used for new gardens that accommodate gatherings, receptions, and outdoor dining.

The green roof has proven to be a highlight attraction that introduces visitors to a living experiment in native plant restoration within a major city. More than 1.7-million native California plants, including 25 species, blanket the academy. All plants were selected for their adaptation to the local climate and ability to attract local butterflies, birds, and insects, some of which are endangered. Visitors are encouraged to explore the roof from the 3,500-square foot observation deck, which offers interpretive signage and panoramic views of scenic Golden Gate Park, making it one of the museum's most popular exhibits.

In addition to teaching visitors about local plants and wildlife, the exhibit highlights the numerous environmental and economic benefits of the green roof. The plants and soil composition absorb and filter rain water, helping to reduce runoff by more than 90 percent. Less runoff means smaller storm drains can be installed, saving the project cost and materials.

Visitors can learn about how the green roof makes the building more energy efficient. A six-inch layer of soil and plants insulates the building interior, lowering interior temperatures by an average of 10 degrees during the summer. Skylights add to the building's energy efficiency, allowing natural light to filter to rooms below. Visitors can also see how the roof produces its own solar energy with thousands of photovoltaic cells mounted around the perimeter of the roof. The cells supply the building with 5 percent of its energy, thereby preventing the release of more than 450,000 pounds of greenhouse gas emissions per year.

DESIGNING OUR FUTURE: SUSTAINABLE LANDSCAPES

California Academy of Sciences

Project Resources

DESIGN TEAM

SWA Group

John Loomis, *Lead Designer*; Lawrence Reed;
Zachary Davis; Michael Odum; Rick Story

CLIENT'S PROJECT MANAGER

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DESIGN ARCHITECT

Renzo Piano Building Workshop, Genoa, Italy

IRRIGATION CONSULTANT

Marty Dickson

ARCHITECT OF RECORD

Stantec Architecture, San Francisco, CA
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CONSULTING ENGINEERS

ARUP

CIVIL ENGINEER

Rutherford and Chekene

HORTICULTURE CONSULTANT

Rana Creek Living Architecture