



Market Application Focus

Buildings

Concrete Repair & Protection

Corrosion & Strengthening

Project: Miami Beach City Hall
Owner: City of Miami Beach
Engineer: BEA International
Contractor: National Concrete Preservation
Year: 2008

The Problem



The 80 year old Miami Beach City Hall Building stands out as a strong architectural landmark and a classic example of the diverse history of Miami Beach. The old City Hall Building is one of the largest and youngest listings on the National Register of Historic Places. The structure, displaying a Mediterranean Revival style, was designed by Martin Luther Hampton and erected in 1927. The building is composed of a central nine - story tower standing 125 feet and 3 inches tall with two two-story wings. The Miami Beach police 911 communication equipment office at one time was located on the 9th floor of the building. After approximately half a century of serving the community, the old City Hall building started to show signs of aging. Structural cracks that started to appear in the exterior of the building. Water intrusion through the exterior façade and windows was slowly deteriorating the structural integrity of the historic building. In 1996, there was a fire on the roof of the South Wing. During the restoration of the fire damage, the first piece of the decorative cornice began to fall.

The Sika Solution

A total of 36,300 sq.ft of surface area was replaced with the fiber reinforced stucco. Columns on each floor of the building were found in an extremely deteriorated state. There was spalled concrete with damaged steel in these members. Concrete was chipped using chipping hammer to get to sound concrete. Sikacrete 211, a pre-bagged concrete, was used to restore these existing columns.

These columns were strengthened with carbon fiber reinforced fabric using SikaWrap 230 C. Columns were strengthened to allow installation of the new window system in the building. Once exposed, the Structural steel I-Beams were found in a precarious condition. Armatec 110 was applied to the steel beams for corrosion prevention and



Case Study





encased in concrete. The reinforced concrete beam located on the 1st and the 2nd floor was corroding and spalling. These beams were repaired by form and pour and form and pump methods. A total of 1052 cubic feet of concrete, including Sikacrete 211 and cast in place concrete, was used to restore the beams. A total of 1000 linear feet of cornices were recreated and installed to maintain the original architectural look of the building façade. Lack of cover on the rebar, aided by the waterborne chlorides had resulted in active corrosion on the concrete joist and the underside of the concrete slab. Once

the surface was adequately prepared, SikaTop 123 and Sika MonoTop 615, specialty repair materials with low permeability were used to repair these conditions. The wooden windows were replaced with aluminum windows without scarifying the original design and size of these openings.

Sika Products Used

Sika Armatec® 110 EpoCem® - a 3-component, solvent-free, moisture-tolerant, epoxy-modified, cementitious product specifically formulated as a bonding agent and an anti-corrosion coating.

Sikacrete® 211 is a 1-component, portland-cement concrete containing factory blended coarse aggregate.

Mono Top 615 is a 1-component, polymer-modified, silica fume enhanced, cementitious, non-sag mortar. It is a multi-purpose mortar which can be applied by trowel or low pressure wet spray process.

Sikadur® Anchor Fix 4 is a 2-component, solvent-free, moisture-tolerant, high-modulus, high-strength, structural epoxy. When mixed it gives a smooth, non-abrasive, paste adhesive. It conforms to the current ASTM C-881 and AASHTO M-235 specifications.

SikaWrap® 230C is a unidirectional carbon fiber fabric. Material is field laminated using Sikadur 300, Sikadur Hex 300/306 or Sikadur 330 epoxy to form a carbon fiber reinforced polymer (CFRP) used to strengthen structural elements.

SikaQuick® 1000 is a 1-component, rapid hardening, early strength gaining, cementitious, patching material for concrete.



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