



Miami's Freedom Tower Shines Again

A beloved architectural landmark and enduring symbol of resilience gets a last chance at rebirth—in this case, the third time's the charm

BY RANDY POWERS

From the time the Freedom Tower was constructed, it has stood as a striking symbol of Miami's growing importance as an urban center. James Cox, a former Ohio governor and owner of the *Miami News & Metropolis*, the city's first daily newspaper, commissioned the erection of the 16-story stucco office tower in 1925 (Fig. 1). A prime example of Spanish Renaissance revival style, which was in vogue in South Florida at the time, its tower was said to be modeled after the Giralda Tower in Seville, Spain.

The building's lower floors created a large footprint (approximately 15,000 ft² [1400 m²] per floor). These floors featured a magnificent Mediterranean revival lower lobby and mezzanine area, and impressive murals depicting the development of the printing press and the journalism profession.

The *Miami News* inhabited the building for 30 years (Fig. 2). In 1962, after the tower had been vacant for several years, the U.S. General Services Administration took over the structure. The Freedom Tower began its second life as a service center for the hundreds of thousands of refugees pouring into South Florida from Cuba in the wake of the Castro regime, the Bay of Pigs initiative, and other international political developments (Fig. 3).

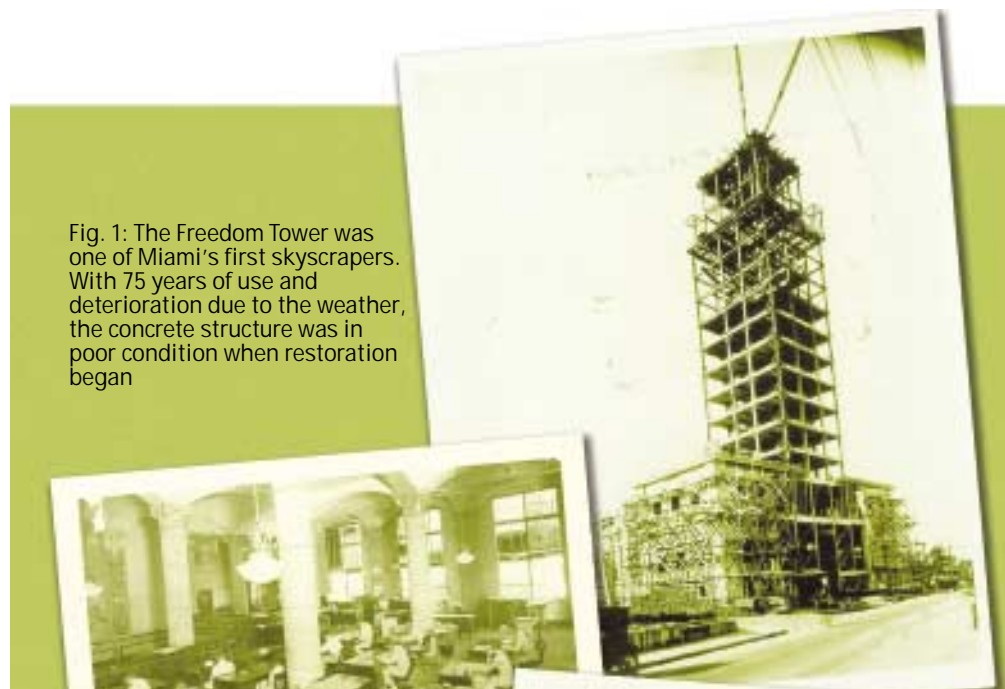


Fig. 1: The Freedom Tower was one of Miami's first skyscrapers. With 75 years of use and deterioration due to the weather, the concrete structure was in poor condition when restoration began



Fig. 2: For the first 30 years of its existence, the Freedom Tower was home to the *Miami News*, the city's first daily newspaper



Fig. 3: Between 1962 and 1974, close to 400,000 refugees fleeing Cuba were processed at the structure that came to be known as the Freedom Tower, a name that endures today

STRUGGLING TO FIND ITS NICHE

In the 1970s, the federal government closed down activities at the Freedom Tower. The building, like others in the area, faced a period of hardship, during which time the tower changed hands twice. In 1987, an overseas investment group purchased the building, and poured approximately \$14 million into renovating the lower floors. Working from original drawings and early photos, this restoration added back many of the elaborate architectural details removed over the years. Becky Matkov of Dade Heritage Trust, a local preservationist organization, recalls the excitement surrounding the renovation: “It was to die for. We had a grand-opening gala in the beautiful downstairs ballroom. Then in 1992, the National Trust for Historic Preservation held its national conference at the tower.” Within 6 months, however, the foreign owners filed for bankruptcy, the mortgagors foreclosed, and the Freedom Tower went into its final—and this time nearly fatal—slide.

Far more was plaguing the Freedom Tower than mere aesthetics—the structure was crumbling from the inside out. From the moment of its birth, early, primitive concrete construction methods had sowed the seeds of destruction within the building’s own columns, beams, and soffits. An improper mixture of ingredients in the structural concrete had resulted in a high amount of cast-in chlorides, exacerbated by the prevailing saltwater air. The resulting delaminations, cracks, and spalled concrete created an environment that exposed the reinforcement to the elements, and corrosion began. The building was, in fact, well on its way to collapse.

A MISSION OF RESCUE

Late 1997 was marked by an act of mercy, embellished by a touch of irony, as members of the very community who first benefited from the Freedom Tower’s benevolence stepped in to save the building. Prominent Cuban-American businessman Jorge Mas Canosa and his family paid \$4.1 million to purchase the Freedom Tower. Mas Canosa announced, “This building, which long served as a beacon of hope, will be assured its rightful place for posterity as a monument to the legacy of Cuban Americans, for whom these halls became the way to freedom. It is a landmark that belongs to all the people of South Florida ...”

Shortly thereafter, detailed plans were unveiled to turn the Freedom Tower into a living monument to the Cuban struggle for freedom. The lower floors were

now to house a museum and a research library full of historical documents and memorabilia, plus meeting and assembly spaces. The museum would be patterned after the “living history” model, including the development of exhibits featuring computer-aided effects to realistically portray the terrifying experience of pursuing freedom on boats or rafts. The bas relief murals and other accoutrements from the days of the *Miami News* would be preserved or returned to the building.

The library level would also feature an outdoor roof-terrace space, overlooking the downtown Miami skyline and Miami Bay, for receptions honoring international political and business dignitaries. Upper floors of the tower would become office space for the Cuban American National Foundation.

The architectural firm of Rodriguez & Quiroga (Coral Gables, FL) was retained to draw up detailed plans for renovation and restoration. The engineering firm of Donnell Duquesne & Albaisa (DD&A) was selected to deal with the many structural challenges faced by the building. In turn, DD&A contacted Structural Preservation Systems, Inc., a national contractor specializing in structural concrete repair and strengthening, to carry out the challenging structural repairs required in all sections of the building, at an estimated cost of \$2 million.

REBUILDING, STEP BY STEP

According to Rob Sommer, Structural Preservation Systems’ Project Manager on the Freedom Tower, work started on the ground floor—in particular, the small (100 x 50 ft [30 x 15 m]) parking garage area at the rear of the building. “We found extensive deterioration all throughout this relatively small area,” Sommer says. “Our testing revealed that the original concrete mixture was substandard. Compressive strength testing revealed less than 3000 psi, which is about half of what structural concrete’s compressive strength should be.” It turned out that practically every beam and column in the garage area, as well as the entire soffit, needed to be replaced.

Overhead soffit conditions showed delamination, plus cracked and spalled concrete. Structural Preservation Systems used hydrodemolition to remove the delaminated and spalled concrete (Fig. 4). Following this, detailed chipping of the concrete around the existing reinforcement steel created a minimum 3/4-in. (18 mm) clearance. This provided increased bonding capacity between the existing substrate and the new, added repair material. (It also allowed the repair material to consolidate around the bars.)

Special Products & Practice Spotlight

Next came cleaning and surface preparation, with sandblasting or abrasive blast cleaning to remove all rust and corrosion from the reinforcement steel. Because some of the corrosion was so extensive, work crews replaced 50% of the reinforcing bars, according to Sommer.

The repair process continued with construction of the formwork for the form-and-pump placement of new concrete. After formwork erection, the repair material was pumped into the forms. A compressive strength of 6000 psi (40 MPa) was achieved after a 28-day cure. According to Sommer, the soffit repair procedure included adding approximately 1 in. (25 mm) of extra structural concrete to the original construction. "We removed three inches, and put back four," he notes.

Because such a large area of overhead repairs was required (more than 6000 ft² [560 m²]), the work was conducted in a phased manner using a "checkerboard" pattern, so as not to compromise the structural integrity of the slab at any time during the repair procedure. Repairs were completed in each section before moving on. "It was much more time-consuming to complete the work this way," Sommer says, "but otherwise the structural integrity of the slab would have been jeopardized."

FORM-AND-PUMP REPAIR PROCEDURES

Structural inspection of the columns uncovered similar problems, requiring form-and-pump repair procedures that turned out to be anything but ordinary. The Freedom Tower job was challenging, requiring extensive shoring of the upper floors and pinning of the whole shoring assembly to the columns above (Fig. 5).

Because of their years of exposure to the elements—coupled with the loads they had carried over that time—many of the 24-in.-diameter (600 mm) columns in the ground floor garage area required full-depth repairs (Fig. 6). In addition to abrasive blast

cleaning to remove rust and corrosion from the reinforcement steel, hoop stirrups were added to provide additional reinforcement to the column members. A water-based curing compound was then applied, and the top 4 in. (100 mm) of each column dry-packed using a nonshrink grout.



Fig. 4: Removal of delaminated and spalled concrete by hydrodemolition



Fig. 5: Unique shoring design to transfer the load of the columns below

Special Products & Practice Spotlight

Beam repairs were required throughout the Freedom Tower structure, including concrete-encased I-beams on certain floors in the office tower portion. All delaminated and spalled concrete was removed from the beams. As with the columns, many beams required full-depth replacement. Beams supporting the library level were enlarged to withstand the additional load-bearing requirements via the use of a composite carbon fiber-reinforced plastic strengthening system.

The new museum level required the removal and reinstallation of the concrete floor. Because of the increased load-bearing requirements of the flooring on the 7000-ft² (650 m²) library level, Structural Preservation Systems completed an extensive full-slab replacement in portions of this space.

Plans called for many of the soffits, beams, and columns to remain exposed. For aesthetic purposes and in preparation for painting, finishers rubbed out any bugholes or other imperfections.



Fig. 6: Complete column demolition and shoring at the first floor

Miami's Freedom Tower restoration was completed in the fall of 2001 (Fig. 7). Its rebirth is a striking symbol not only for architectural preservationists, but also for the thousands of citizens who trace their first taste of freedom to its halls. Even the cupola, long abandoned and neglected, has been restored to its former appearance, with its beacon light once again keeping watch over Miami Bay.

Selected for reader interest by the editors.

—*Structural Preservation Systems, Inc.*

CIRCLE 58



Fig. 7: The Freedom Tower, Miami's 75-year-old architectural landmark, thought to be modeled after the Giralda Tower in Spain. In the 1960s and 1970s, it became the city's own "Ellis Island"



Randy Powers is Business Development Manager for Structural Preservation Systems, Inc., a Structural Group company headquartered in Baltimore, MD. He is based out of the Structural Preservation Systems office in Pompano Beach, FL.