

Hard Rock Hotel (Carbide and Carbon Building)

Facade Investigation, Restoration Design, and Construction Observation
Chicago, Illinois



CLIENT

Mark IV Realty

CHALLENGE

To facilitate the conversion of the iconic Carbide and Carbon Building into a 380-room Hard Rock Hotel, Mark IV Realty needed to evaluate the severely distressed terra cotta, brick, and window systems and develop methods to preserve and restore these key elements of this historic building.

STRUCTURE

The Carbide and Carbon Building is a thirty-eight-story steel-framed structure designed in the art deco style by architects Daniel and Hubert Burnham, sons of the great Chicago architect and urban planner Daniel Burnham. The building comprises a twenty-three-story base and a fifteen-story tower. It is clad with terra cotta and glazed brick materials that include classic art deco motifs. At 492 feet tall, the structure is one of Chicago's tallest terra cotta buildings.

SOLUTION

WJE quickly discovered that extensive cracking and displacement of terra cotta and brick had been caused by corrosion of embedded steel support elements and by the accumulation of compressive stresses due to the facade's inability to accommodate expansion of the clay-based cladding materials. Once the sources of distress were identified and conditions thoroughly documented, we developed restoration methods that enabled the preservation of more than 90 percent of the building's original terra cotta units. Other WJE restoration and preservation efforts included:

- Introduction of relief joints at every fourth floor to mitigate compressive stresses in the exterior masonry
- Restoration of windows where possible and specifications for appropriate replacements where deterioration was excessive
- Development of effective methods for cleaning the terra cotta
- Construction period services