



PROJECT PROFILE

Maravilla Condominiums

Fire Damage Investigation of Hollow Core Plank Deck | Galveston, TX



CLIENT

Shelmark Engineering

BACKGROUND

Maravilla Condominiums is a four-story residential complex constructed in 1986. The complex consists of three levels of residential space atop covered parking on the ground floor. The three residential floors were destroyed by the fire and removed by demolition. The remaining floor consists of a hollow core slab with a cast-in-place topping that rests upon structural steel girders supported by cast-in-place concrete columns.

On June 3, 2009, a building fire destroyed a significant portion of the complex above the hollow core slab. A CMU firewall separated and protected the remaining portion of the complex. WJE was retained to assess the potential fire damage to both the hollow core slab and the CMU firewall. WJE was also asked to evaluate potential corrosion deterioration of the hollow core slab and structural steel girders associated with exposure to a coastal marine environment and fire suppression efforts that incorporated chloride laden water.



SOLUTION

To fully assess the potential damage to the structure from both the fire and exposure to the corrosive environment, WJE performed an overall visual survey, a delamination survey of the cast-in-place topping and the hollow core soffit, rebound hammer testing of the firewall, a pachometer survey of the firewall to determine the as-built location of reinforcement, structural steel thickness measurements to determine section loss, and corrosion potential survey of the hollow core slab. WJE also performed laboratory testing on powder samples and petrographic analysis of cores. WJE was able to provide the client with detailed in-place conditions of selected structural elements, including the condition of the topping slab and extent of corrosion of structural steel girders.



The client considered replacing the precast hollow core slab and the cast-in-place topping slab; WJE was able to show that the hollow core slab did not sustain significant damage during the fire and that only localized repairs to the CMU firewall and the cast-in-place topping slab would be required. Because WJE performed the evaluation, the firm was retained to provide conceptual design documents for the repair and long-term corrosion protection system for the hollow core slab.