



## PROJECT PROFILE

# Reach Resort

Structural Assessment and Repair Design | Key West, FL



### CLIENT

LXR Luxury Resorts and Hotels

### BACKGROUND

The Reach Resort is in the heart of Old Town in Key West, Florida. The resort includes a five-story, 150-room beachfront hotel constructed in 1985.

The post-tensioned concrete parking garage for a hotel in Key West, Florida, was experiencing significant concrete deterioration and corrosion of the embedded post-tensioned tendons in the floor slabs. The owners needed an assessment of conditions in the garage and in the hotel building, which was similarly constructed, along with recommendations for necessary repairs. Repairs would have to be implemented while the hotel remained in operation. Additionally, the repairs would have to be coordinated with a complete interior renovation of the property.



### SOLUTION

WJE engineers determined that chloride contamination of the concrete, coupled with environmental exposure conditions, resulted in the observed deterioration. The engineers performed a structural analysis of the affected floor slabs and developed appropriate concrete and post-tensioning repairs and a concrete protection system for review by the owners. WJE was subsequently directed to prepare construction documents outlining the necessary repairs. The repair design accounted for coordination with facility operations and other interior renovation work. During the repairs, WJE provided construction administration services, including full-time construction observation as requested by the owners. Specific repairs included the following:

- Removal and replacement of deteriorated concrete, including slab edges, shear walls, girders, and slab soffits
- Splicing and/or replacement of existing post-tensioned tendons, including installation of new corrosion protection systems
- Application of a urethane membrane to the top surfaces of concrete balcony and walkway slabs
- Application of an acrylic architectural coating to all concrete repair areas, excluding the top surface of the balcony slabs
- Replacement of existing handrails with a new aluminum handrail system

