



PROJECT PROFILE

Queen Isabella Memorial Causeway

Condition and Remaining Service Life Assessment | South Padre Island, TX



CLIENT

Queen Isabella Memorial Causeway

BACKGROUND

The Queen Isabella Memorial Causeway located along State Highway 100, crosses Laguna Madre and the Gulf Intracoastal Waterway. Designed in 1971 and constructed in 1974, the causeway connects Port Isabel to South Padre Island. It has a total length of 2.4 miles, a width of sixty-eight feet, and a top-of-deck height of seventy-eight feet above mean high tide at the center of the main span.

The Texas Department of Transportation retained WJE to determine the causeway's existing general condition, to assess its remaining anticipated service life, and to develop potential remediation and maintenance strategies for extending its useable service life.



SOLUTION

WJE engineers performed condition assessments of the causeway included comprehensive evaluation of fifteen pier sections (deck through pile caps) representative of various span lengths, height, and structural element types. Field testing included visual and mechanical sounding surveys, copper-copper sulfate half cell surveys for identifying active corrosion, corrosion rate assessments, rebar cover surveys, and assessment of cathodic protection systems. In-house laboratory evaluation of concrete material included chloride content, petrography, carbonation, rapid chloride ion penetrability, and compressive strength. WJE engineers also performed service life modeling to assess as-constructed service life and to aid in evaluating potential remediation and maintenance efforts for optimizing remaining service life. Final recommendations were based on the best-value maintenance and rehabilitation strategies to maximize the causeway's service life.

