



PROJECT PROFILE

Riverfront Boulevard Horseshoe Tunnel

Condition Assessment | Dallas, TX



CLIENT

Hayden Consultants, Inc.

BACKGROUND

The horseshoe-shaped tunnel below Riverfront Boulevard was built in the 1930s. The thirteen-foot-diameter cast-in-place concrete tunnel is approximately 3,700 lineal feet long and is 5 to 15 feet below grade. A timber foundation system supports a 1,250-foot-long segment of the tunnel. The tunnel floor is a reinforced concrete slab that is up to 3 feet thick at the edges. The tunnel's walls and ceilings are 15 inches thick with reinforcement located near the inside and outside faces.

As part of the Trinity River Corridor Project, the City of Dallas planned to reconstruct portions of Riverfront Boulevard (formerly Industrial Boulevard) located west of downtown Dallas. As a member of the design team, Hayden Consultants, Inc. requested that WJE assess the condition of the storm sewer tunnel below this street. Due to its age, length, and configuration, WJE was challenged with not only assessing the condition of an eighty-year-old concrete structure but with completing the assessment in a way that was safe for all team members.



SOLUTION

In order to initiate the assessment, WJE developed an appropriate confined space entry program to facilitate entry and work in the tunnel. This program was developed in accordance with the OSHA Confined Space Standard and included continuous air quality monitoring, security, and above-grade hazard monitoring during the fieldwork. The physical assessment services included detailed visual observations, nondestructive mechanical sounding, materials sampling with laboratory testing in WJE's Janney Technical Center, reinforcing steel location, and engineering analysis.

WJE concluded that the tunnel could be feasibly repaired and maintained and could remain in service. Repair recommendations were developed for circumferential crack and joint repair and sealing, isolated exposed reinforcing protection, concrete patching using high-quality repair mortar, and fire-damaged concrete repair using shotcrete placement methods. Further, WJE suggested the need for periodic reassessment, due to the age of the tunnel, to identify the need for further maintenance repair design and implementation.

