



Project Overview

FRP REPAIR OF BEAMS IN PARKING STRUCTURE

Name: Martini Park Parking Garage
Type: Parking Structure
Location: Scottsdale, AZ
Completed: August 2008

PROBLEM

A new parking structure was built in Scottsdale, Arizona. 17 prestressed double T beams were designed to span over the width of 60 ft. Before the construction of the building the original design loads changed. In the retail section on top of the parking structures a stage was planned to be built. The new loads exceeded the design loads for the DT beams, which had been originally design without those loads.

The owners had two options: a) to discard the constructed double tees and build new ones or b) install the beams and immediately strengthen them before they are put in service. They chose the latter.



SOLUTION

17 DT beams, i.e. 34 stems needed additional strengthening. QuakeWrap® FRP Strengthening System was selected. One 2 ft wide layer of unidirectional QuakeWrap® carbon FRP was applied as a flexural reinforcement. As shear reinforcement the same material was applied in the perpendicular direction. The two feet wide strips were spaced 4 ft on center. The beams could be accessed with scaffolding, no scissors lift or man lift was needed. The 34 stems were wrapped by a crew of 5 workers in 11 days.



Technical Highlights

- 64,000 Sq. Ft. Parking Garage
- Section of 9,000 square feet needed strengthening
- 34 stems in 17 double tee beams were strengthened with unidirectional carbon FRP fabric.

Credits

General Contractor: Whiting Turner General Contracting
Structural Engineers: QuakeWrap, Inc.
Repair Subcontractor: FRP Construction, LLC



“The FRP Retrofit Experts”