



# Project Overview

## FRP STRENGTHENING OF DT BEAMS IN PARKING GARAGE

**Name:** Parking Garage in Scottsdale  
**Type:** Parking Garage  
**Location:** Scottsdale, Arizona

### 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. Consequently the beams needed additional strengthening both in bending and shear.

### 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 bending reinforcement. As shear reinforcement the same material was applied in the perpendicular direction. The two feet wide strips were spaced 4 ft c.o.c.

The beams could be accessed with scaffolding, no scissiors lift or man lift was needed.

The 34 stems were wrapped by a crew of 5 workers in 11 days.



## Technical Highlights

- 64,000 square feet parking garage
- Section of 9,000 square feet needed strengthening
- 32 stems were strengthened with unidirectional FRP carbon fabric.

## Credits

General Contractor: Whiting Turner, Inc., Scottsdale, AZ

