



Project Overview

FRP STRENGTHENING OF PRESTRESSED CONCRETE BEAMS IN SCHOOL GYM

Name: Oran M. Roberts Elementary School
Type: School Building
Location: Dallas, Texas
Completed: June 2005

PROBLEM

A new air-handling unit was being placed on the roof of the school gymnasium, causing overstressing of the prestressed concrete double-tee beams.

Seven double-tee beams (17.5" high x 40-ft long) required flexural and shear strengthening to support the weight of the unit.



SOLUTION

QuakeWrap® FRP Strengthening System was selected given its quick application time with minimum disturbance to the gym activities. QuakeWrap® composite biaxial glass fabric was used on this project. This fabric allowed for both the flexural and shear strengthening of the prestressed beams in a single application. Applying an intumescent coating to the strengthened beams provided fire resistance.



Technical Highlights

- Gymnasium prestressed concrete beams in the roof could not support weight of new A/C unit.
- Flexural & shear stresses in beams were over the design limit
- Project required protection against fire damage
- Seven 40-ft long beams were retrofitted
- A single application solved both flexural and shear deficiencies
- Fire resistant coating was applied to the outer surface of strengthened beams.



Credits

Consultant: Carter & Burgess, Dallas, TX
Specialty Contractor: Mobile Enterprises Inc., Fort Worth, TX

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