



Project Overview

FRP RETROFIT OF HISTORIC BUILDING

Name: Fox Historic Theatre
Type: Historic Building
Location: Tucson, Arizona
Completed: April 2005

PROBLEM

Built in 1929, the theatre was closed for 30+ years until a recent \$12 million renovation. Many unreinforced masonry (URM) walls and parapets, concrete beams, and the lobby floor required strengthening and waterproofing.

URM walls had little shear capacity, basement reinforced concrete beams and the lobby floor slab were weak. The lobby slab also required waterproofing. The retrofit could not disturb the historic nature of the building.

SOLUTION

QuakeWrap® FRP Retrofit System was selected to strengthen the targeted structural elements. QuakeWrap® composite glass fabrics were used to increase the shear capacity of URM walls and flexural capacity of parapets. The basement beams supporting the lobby floor were strengthened using the same fabric.

The lobby floor was strengthened and waterproofed from the top with glass fabric. Typically, FRP flexural strengthening of slabs is done on the bottom face; however, in order to use the waterproofing benefits of the FRP system, the slab was redesigned as a cantilever.



Technical Highlights

- Over 7,000 ft² of URM wall were converted to shear walls.
- The lobby floor was strengthened and waterproofed in a single operation.
- Over 8,500 ft² of QuakeWrap® glass fabric used
- QuakeWrap® resulted in significant time saving
- Project featured in "Back to the Blueprint" on the History Channel.



Credits

Consultant: Grenier Structural Engineering, Tucson, AZ
General Contractor: Concord General Contracting, Tucson, AZ



This project received the **2006 Award for Excellence in Structural Engineering (Retrofit)** by the Structural Engineers Association of Arizona and the **2007 Award of Merit** from the **International Concrete Repair Institute (ICRI)**.



"The FRP Retrofit Experts"