



Project Overview

FRP RETROFIT OF SHEAR WALLS IN HIGH RISE BUILDING

Name: McKinley Tower
Type: Office Building
Location: Anchorage, Alaska
Completed: September 2005

PROBLEM

The McKinley Tower (formerly the MacKay Building) survived the 1964 Good Friday Earthquake, but suffered significant damage. With a magnitude of 9.2, that earthquake is the strongest measured in North America to date.

Lack of reinforcing steel had resulted in significant damage to beams, walls and coupling beams. Previous seismic retrofit projects were abandoned due to high costs. As a consequence, the building remained vacant for some 20 years.



SOLUTION


QuakeWrap® FRP Retrofit System was selected since it provided a cost effective seismic retrofit alternative. QuakeWrap® composite carbon and glass fabrics were used to strengthen existing shear walls, eliminating the need to building new shear which produced significant cost savings.

In addition to the shear walls, seismic retrofit was provided also to coupling beams and all the columns. The FRP retrofit did not increase the building mass, which allowed the seismic demands on the building to remain practically constant and generated significant savings in foundation retrofit.

Also, gravity load retrofit was provided to the roof slab to increase its loading capacity to allow for the installation of heavy equipment.



Technical Highlights

- 14-story high-rise damaged by 9.2 magnitude earthquake in 1964
- High repair cost kept building vacant for 2 decades.
- 120 columns wrapped and 400 beams and walls retrofitted
- 55,000 ft² of carbon and glass FRP used
- QuakeWrap's work featured on 



Credits

Structural engineer: Schneider & Associates, Anchorage, AK
General contractor: The Unit Company, Anchorage, AK

This project received the 2006 Award of Excellence from the International Concrete Repair Institute (ICRI).

“The FRP Retrofit Experts”