



Project Overview

CARBON FRP REPAIR OF UTILITY PULL BOXES

Name: Tucson Electric Power Pull Box
Type: Utility Pull Box
Location: Tucson, Arizona
Completed: May 2007

PROBLEM

Tucson Electric Power Company (TEP) had several underground pull boxes that exhibited severe corrosion problems in the top slab (ceiling). The degree of concrete and steel reinforcement deterioration compromised the structural integrity of the box and the value of the power cables servicing important industrial facilities in the area.

A maintenance free and long term corrosion repair solution that could be quickly implemented with minimum power downtime was highly desirable.



SOLUTION

QuakeWrap[®] FRP Repair System was selected to provide the desired solution. After concrete repair work was completed, a layer of QuakeWrap[®] FRP biaxial carbon fabric was installed. The biaxial FRP fabric provided an air tight membrane to prevent future corrosion and at the same time reestablished the structural strength of the ceiling and side walls that were reduced due to deteriorated steel reinforcement.



Technical Highlights

- Several underground power utility pull boxes exhibited severe corrosion problems.
- Deteriorated condition of top slab compromised the structural integrity of the pull box, along with the power cables.
- QuakeWrap[®] carbon fabric was used to repair the corrosion problem and reestablish the structural strength of top slab.
- Each pull box was repaired by a three-man crew within a day

Credits

Engineering & Materials: QuakeWrap, Inc., Tucson, AZ
Contractor: QuakeWrap, Inc., Tucson, AZ



“The FRP Retrofit Experts”

Follow Up

In February 2012, a team consisting of TEP and QuakeWrap Engineers inspected several of these pull boxes to access their condition. All FRP installations looked in excellent shape. Due to the humid environment in these buried structures, there was some mildew built up on the surface of the FRP. However, no structural degradation of the FRP was observed **after 5 years in service**.



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