



Lift Station Rehabilitation with PREDL FRP Panel liner Bullhead, AZ

Introduction

In 2023, PREDL, a leading provider of advanced composite solutions, was approached to develop a rehabilitation solution for a lift station that suffered from severe corrosion throughout the structure. This corrosion posed a significant risk to the operation of the city's sewage system. The lift station is responsible for transferring wastewater from a low elevation point to a higher point for further treatment. Previous rehabilitation attempts had failed.

INSTALLATION

Before installing the PREDL FRP panels, the contractor removed all internal piping, pumps, accessories, drops, and ladder stakes in the lift station. Furthermore, the entire lift station was cleaned, and all remaining coating elements from the previous rehabilitation attempt were removed. Before starting the installation of the FRP panels, the water in the lift station had to be bypassed. A substructure for the panels was attached to the wall, at which point the single FRP panels, which were specially designed to fit through the entrance were attached. Stainless steel screws (Hilti) were used for fixing the elements to the existing structure. The joints were sealed with 3-layer Fiberglass sealing. The attached FRP panels were backfilled with PREDL FLEXLINER Grout, a special fiber-reinforced self-leveling mortar to ensure that there are no hollow points between the existing concrete wall and the FRP panels. Thus, a completely corrosion-protected pressurized waterproof and gas-tight system was created.

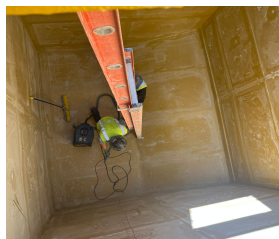
CHALLENGES

The lift station was heavily affected by corrosion, causing deterioration of the concrete structure. Previous rehabilitation attempts using coatings had failed. The coatings peeled off due to aggressive wastewater and gases, which further attacked and destroyed the underlying concrete layer. A system that was completely corrosion-resistant, water pressure tight, and gas-tight in the long term had to be used.



SOLUTIONS

The entire structure of the lift station was scanned using a 3D laser scanner and evaluated based on the scan data. After evaluating the current condition of the lift station, it was decided that it should be rehabilitated with fiber-reinforced polymer (FRP) panels. For the production of FRP panels a vinyl ester resin was selected for high performance requirements. The FRP panel liners, designed and produced by PREDL, are all deformation resistant. The entire lift station was rehabilitated with this system, from the bottom to the entrance. The rehabilitation with PREDL's FRP panel system offers a long-term solution for the protection against aggressive wastewater and gases.



BENEFITS OF FRP PANELS

The rehabilitation project was performed quickly and efficiently, as the 3D laser scan allowed for accurate preparation of the project. The use of the PREDL FRP panel rehabilitation process resulted in a long-term protected system that is resistant to aggressive wastewater and gases. A new rehabilitation will not be necessary in the future. A safe wastewater system protects people and the environment.