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# WATER & WASTEWATER APPLICATIONS

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COMPOSITE &  
COATING REPAIR  
SHOWCASE

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COMPOSITE PIPE REPAIR

# RAW SEWAGE INTAKE PIPING



## COMPOSITES FOR COMPLEX GEOMETRIES

Frequent pinhole leaks at a wastewater treatment plant in Brooklyn, NY posed a major challenge. The pipes either needed to be replaced, which would require a full plant shutdown, or a long-term repair needed to be installed. The pipes ranged from 30-60" in diameter and included

complex geometries, such as pipe supports, dresser couplings, and flanged joints. Composites were ideal because they could be molded to the correct shape. The client repaired the leaks with high-strength carbon fiber composite.

CF-500 BD, FRP 200, FRP 110 Tack

COMPOSITE PIPE REPAIR

# FIRE MAIN PIPING SYSTEM



## REPAIR FOR PIPE SEGMENT CAST INTO CONCRETE

Internal and external corrosion at a flanged connection caused a leak in a fire main piping system and threatened the structural integrity of the connection. Replacement of the pipe was difficult, as the pipe segment was cast into the concrete wall. A composite carbon

fiber wrap was installed, completely encapsulating the flanged connection, to provide a long-term solution. The carbon fiber composite prevented future leaks, stopped external corrosion, and structurally reinforced the corroded flanges.

CF-500 BD, FRP 200 Saturant, HP 300 Epoxy

COMPOSITE PIPE REPAIR

# SEVERELY DEGRADED LARGE DIAMETER PIPELINE

CF-500 BD, FRP 200, HP-300 Epoxy



## LONG-LASTING, EFFECTIVE REPAIR

The severely degraded pipeline was repaired with a composite repair system capable of withstanding 3 times the operating pressure and preventing leaks even with continued internal corrosion. The long-lasting repair has a maintenance-free, 50-year life expectancy.



## 03

# Multi-Phased Approach to Comprehensive Composite Repair

A large diameter pipe at a pumping station with severe internal corrosion and a very complicated geometry needed to be repaired with the assets were online. After lightly sandblasting the pipeline to avoid further damage, extensive degradation and severe pitting were revealed.

The application company first applied an anti-corrosive coating for steel structures. Then, a synthetic metal compound for rebuilding damaged steel was applied over a dresser coupling void. Two layers of Advanced FRP System's carbon fiber composite repair were wrapped over the entire pipe surface, including the support structures. The finished repair was then coated with an epoxy top coat.



STRUCTURAL COATINGS

# WASTEWATER CONCRETE HOLDING TANKS



## SEVERE DEGRADATION SEAMLESSLY REPAIRED

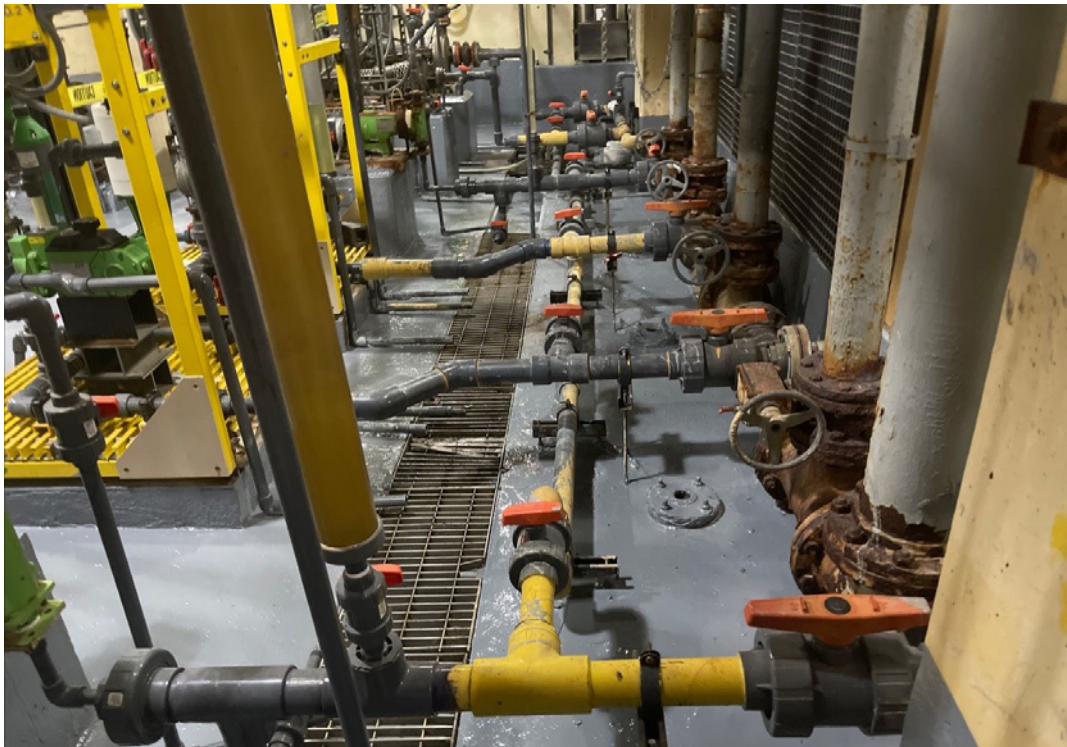
A wastewater treatment plant had two concrete holding tanks for raw sewage. The tanks were experiencing severe degradation of the concrete above the vapor zone, most likely due to high levels of hydrogen sulfide gas. The tanks were drained, and over 3 inches of concrete was missing. The concrete was rebuilt

with Advanced FRP System's EM-110, a high-compressive strength epoxy mortar. The concrete was then coated with SL-310, a high-build epoxy coating system. The SL-310 was spray applied at up to 250 mils thick in a single coat to provide a seamless finish, even when rough aggregate was exposed.

SL-310, EM-110

SECONDARY CONTAINMENT

# BLEACH CONTAINMENT AREA FOR WASTEWATER PLANT



## LONG TERM SOLUTION FOR AGGRESSIVE CHEMICALS

A bleach containment area of a wastewater treatment plant required a repair due to degradation of the concrete. A new coating system was needed that could withstand exposure to frequent spills of concentrated sodium hypochlorite (bleach). HP 400 Novo was

applied in two easy-to-install coats via roller to provide long-term protection and excellent chemical resistance. The 100% solids, solvent-free coating cured at any thickness, ensuring consistent quality throughout the repair.

FRP 200 Sealer - HP 400 Novo

SECONDARY CONTAINMENT

# UNDERGROUND PUMPING VAULT

GF-300 BD - FRP Repair Putty - HP-300 Elastomer



## SOLVING INTERNAL CORROSION AND IDENTIFIED THROUGH-WALL FAILURES

During an inspection, a water treatment plant found groundwater was leaking into the chamber of one of its underground pumping vaults. The damage was primarily attributed to internal corrosion of the steel on the floor and lower sections of the wall, with multiple through-wall failures identified. A solution had to be installed that would prevent groundwater infiltration, reinforce the corroded floor-to-wall joint, and resist periodic immersion in water with a high salinity. The solution also needed to be installed without grit blasting the repair area, as the sensitive pumping equipment could not be removed or safely protected.







## 06

# COATING REPAIRS ENGINEERED FOR SUCCESS

To prepare the repair area, the failed existing coating was removed via Bristle Blasting, and a surface-tolerant epoxy primer was installed to maximize adhesion to the exposed steel. Pitting and holes were filled in with a high-build epoxy putty then reinforced with two layers of a high-strength woven fiberglass mat. An elastomeric epoxy was then applied to minimize any stress from thermal cycling and provide maximum impact and abuse resistance to the cured system.

### STEPS

1. The steel was Bristle Blasted then primed with FRP 201 Sealer.
2. FRP Repair Putty was used to fill in existing pitting and provide coves in the corners.
3. Fiberglass was saturated with FRP 200 Saturating resin and installed around the circumference of the vault to reinforce the floor-to-wall joint.
4. Two layers of HP-300 Elastomer were applied via roller at 15 – 20 mils per coat.

The final system provided an immersion-grade, reinforced epoxy that tied into the existing internal coating to prevent future corrosion from the inside of the vault.

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