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MUNICIPALITY APPLICATIONS

COMPOSITE PIPE
REPAIR & STRUCTURAL
REINFORCEMENT SHOWCASE



COMPOSITE PIPE REPAIR

WASTEWATER DRAFT TUBES CARBON FIBER REINFORCEMENT



6-LAYER COMPOSITE WRAP EXTENDS SERVICE LIFE BY SEVERAL YEARS

Significant wear was identified in four of the draft tubes at a wastewater treatment facility. The abrasion was due to internal wear from an agitator in liquid with entrained solids, and the wear bands were roughly two feet long. The facility was looking for a repair that would last several years and be installed on the external surface of the draft tubes.

Advanced FRP's solution first provided a ceramic reinforced epoxy putty to protect against wear. The tubes were then wrapped with 6 layers of high-strength carbon fiber, transitioning at least 18 inches onto sound steel on either side of the wear zone. The finished repair will last several years until a new process is put into place.

CF-500 BD - Ceramic Repair Putty HT - FRP 211 HT - HP-300 Epoxy

COMPOSITE PIPE REPAIR

SPIGOT JOINTS AND ELBOW REPAIR



4-LAYER, HIGH-STRENGTH COMPOSITE REPAIR

Inspectors at a water and wastewater facility found corrosion at the spigot joints and elbows of two pipes in a circulating water line. The provided solution started by first blasting the steel surface and then applying a hold

coat. Putty was then used to smooth the surface, transition the joints, and to fill in the pits. A composite system was then applied to complete the pipe reinforcement using a galvanic barrier and 4 layers of carbon fiber.

FRP Repair Putty - FRP 120 HT Adhesive - Sat 210 HT
- GF-300 BD - CF-500 BD

COMPOSITE PIPE REPAIR

TWO-PART WATER TREATMENT PLANT REPAIR

FRP Repair Putty - GF 300 BD - CF 500 BD - Sat
210 HT - HP 300 Epoxy - FRP 120 HT Adhesive



Carbon Fiber Repairs Leak in Mechanical Pipe

PART ONE: LONG-TERM LEAK REPAIR

Employees at a water treatment plant found that a Y-shaped pipe with a mechanical clamp would drip leak when in full service. One requirement of the repair was that the clamp could not be removed for long periods of time.

The applicators began by grit blasting the pipe before applying an adhesive and putty. The pipe was then wrapped in a 6-layer carbon fiber system and reinforced with an epoxy topcoat.

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Composite Reinforcement of Pencil-Sized Leak in Pipe

PART TWO: THROUGH-WALL DEFECT REPAIR

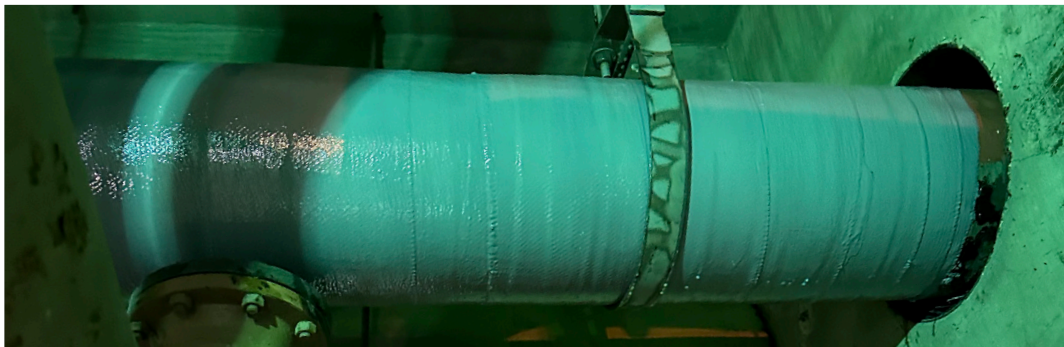
The water treatment plant operator also required a repair for a pipe going into a concrete floor with a hole in the side that was approximately the size of a pencil.

The solution required that the applicators first sand blast the pipe before applying an adhesive and putty. A t-miter was then prepared via grinding, and the pipe was wrapped with 6 layers of carbon fiber using a skirt system comprised of small, 12" pieces. The repair area was then covered with an epoxy topcoat.



COMPOSITE PIPE REPAIR

THROUGH-WALL LEAK IN RAINWATER TRANSPORT PIPE



CARBON FIBER REINFORCEMENT OF EXTREME WATER LEAK

A pipe that transported rainwater in the basement of a water treatment plant had a hole going through the side. An employee at the plant stated that when it rained, “it was like a waterfall was coming down in the basement.” The hole was

repaired by first grit blasting the pipe and then applying adhesive and putty. 6 layers of carbon fiber were then wrapped before a topcoat was applied. Six months later, the employee stated that they remain very pleased with the work.

GF-300 BD - CF-500 BD - FRP Repair Putty
- FRP 120 HT Adhesive - FRP 210 HT Sat - HP-300 Epoxy

SPECIALTY REPAIR

CONCRETE BEAM REINFORCEMENT



BEAM REPAIR AT FEDERAL COURTHOUSE BUILDING

Two concrete beams adjacent to a cooling tower on the federal courthouse building in Houston were cracked and badly degraded from water and wind. A structural engineer determined the correct thickness of carbon fiber to provide the required strength to

withstand the bending movement of the beam. A seven-layer system using a unidirectional carbon fiber composite was applied to the bottom face of the beam. This was then followed by two layers of bi-directional fabric applied in bands around the beam.

CF-600 UD - CF-500 BD - FRP 200 Saturant

SPECIALTY REPAIR

SEVERE CORROSION ON LEVELING TROUGHS

FRP Repair Putty - GF 300 BD - CF 500 BD - Sat
210 HT - FRP 120 HT Adhesive



COMPLETE RESTORATION ACHIEVED

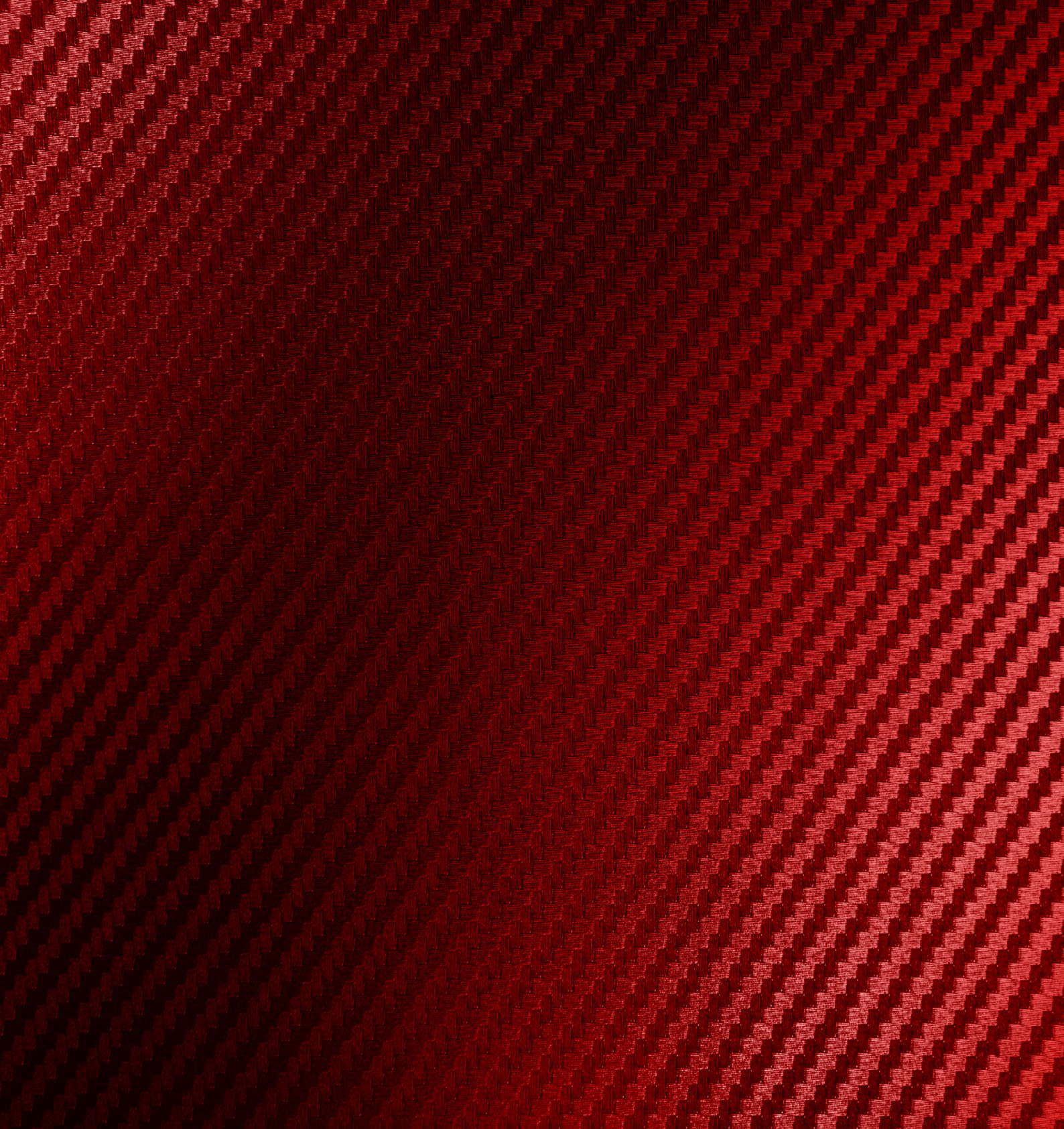
The troughs were wrapped in a 4-layer carbon fiber system on the inside and outside. A corrosive resistant topcoat was then applied to the repair area.

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Carbon Fiber Reinforcement Halts Water Level Issues

Inspectors at a water treatment plant found that six leveling troughs had severe corrosion that was causing water level issues. The solution required that the troughs first be completely drained before they were power-washed and sand blasted.





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