



Project Overview

EMERGENCY REPAIR OF LARGE-DIAMETER FIBERGLASS SEWER PIPE

Name: DC Water Sewer Pipe
Type: Fiberglass Sewer Pipe
Location: 2600-2720 South Capitol St SE, Washington, DC
Completed: March 2012

PROBLEM

A 20-ft long section of a 96-inch diameter fiberglass pipeline was damaged during the initial installation. The damage was primarily on the interior surface of the pipe and exposed many of the glass fibers within the pipe. The owner was concerned about the remaining service life of the damaged pipe and required the pipe manufacturer to remedy the problem.

SOLUTION

The pipe manufacturer selected QuakeWrap, Inc. for a turnkey Design-Build retrofit solution. Due to concern in proper bond strength between the FRP and the pipe, pull-off tests were conducted in advance using QuakeBond™ 220UR (Underwater Resin) as shown on the right; all samples failed at 750 psi or higher with no bond failure of the epoxy.

QuakeWrap® TB20C Biaxial Carbon Fabric saturated with QuakeBond™ 333SR that cures in water was used. A total length of 22 feet was repaired, allowing for a 1-ft extension into adjacent pipes. The 36-ft long X 4-ft wide bands of carbon fabric were applied in the hoop direction; this allowed for a double layer of fabric on the lower half of the pipe (below the spring line).

The repair of the pipe was completed ahead of schedule in 2 days.



Technical Highlights

- 96-inch fiberglass pipe was damaged & required emergency repair
- A dam was constructed and sewer was bypassed to a parallel pipe
- Off-site tests proved excellent bond between FRP and fiberglass pipe
- QuakeWrap® Biaxial carbon Fabric and QuakeBond™ saturating resin and tack coat that cure under water were used to allow fast repair and immediate return to service
- QuakeWrap provided turnkey design, materials and installation
- Project was completed ahead of schedule
- Finished pipe is shown in the lower right photo



Credits

Design Engineers: QuakeWrap, Inc., Tucson, AZ
FRP Installer: FRP Construction, Tucson AZ
Owner: District of Columbia Water & Sewer Authority
Pipe Manufacturer: Flowtite, U.S. Composite Pipe South, LLC



“The FRP Retrofit Experts”