

FiberSystems

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Case History

*FRP Composite Pipe relieves an
"Explosive" Situation for Water
Pollution Control Facility*

10-6-2011

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FRP Composite Burial Pipe solves catastrophic failures of stainless steel and then PVC piping systems.

Product: Filament Wound FRP Composite Epoxy Vinylester Heavy Duty Pipe, Fittings and Flanges.

Customer: Municipal Water Pollution Control Facility.

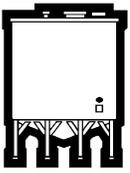
Application: Buried Hot Air Piping with minimal protective cover and heavy truck crossings.

Background: The municipality recently replaced stainless steel hot air piping that corroded from the outside due to aggressive soil chemistry. This pipe was dug up by the general contractor and replaced with PVC pipe. Unfortunately, the plastic pipe could not handle the combined stresses of heat, pressure and burial conditions and literally exploded heaving large amounts of soil into the air. The FiberSystems engineering team was consulted to review all parameters and come up with a recommended solution.



Methods and Materials of Construction: Several parameters had to be considered while designing this severe duty piping system. The minimal ground cover necessitated the application of a dual angle wind pattern for increased resistance to heavy truck crossings. The municipality provided us an initial purchase order to conduct a full engineering study of potential pipe stresses and support locations. Our in-house professional engineer utilized Algor Pipe Pak to confirm suitability of the FiberSystems FRP Composite Pipe for this application. The loading analysis detailed the appropriate location of thrust blocks for the buried pipe system.

The Challenges: The customer had to install the all new FRP composite pipe system in only one day to keep the process functioning. The hot air from 75 Hp blowers had demonstrated that PVC was not up to the challenge. Using our 40' winder and in house spooling capability we made life much easier for the installing contractor. All that was needed at the site was some field trim and installation of mechanical couplings to join the few pipe joints in the system design.



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Customer Benefits: The FiberSystems team addressed all the challenges presented by this application to resolve a major problem for the municipality. These included:

- a) Superior pipe design resistant to soil corrosion and heavy burial loadings
- b) The right pipe for the temperature and pressure
- c) Expert pipe design analysis utilizing our in house P.E. services
- d) Design of very long pipe runs (> 40 feet) to speed installation at the site
- e) Isometric spool design with full approval drawings for sign off



- f) Close coordination with the customer through out manufacturing to insure a timely delivery and same day installation by the piping contractor
- g) Submittal of general instructions for proper installation of FRP Composite burial pipe prior to shipment for customer review

The result was an on time delivery at the job site at 7 a.m. using a crane friendly flatbed truck. The FiberSystems isometric pipe spools were quickly laid in place and the process was up and running by 1:30 p.m. **the same day.**

The customer's worry about more pipe line explosions has now ended.