



Rush Production of Unique "Solution" Keeps Los Alamos Lab in Business

Product: FRP composite filament wound armored and protected schedule 80 black carbon **steel** pipe in 40 foot lengths.

Customer: Los Alamos National Labs in Los Alamos, New Mexico.

Application: "Slip" lining of failed existing 6" diameter buried steam condensate return pipe line.

Background: Existing steam pipe was buried under one of the Lab's main buildings. When the condensate pipe suddenly failed from long term external corrosion attack, the mission of the lab was critically impacted.

It was determined that cutting the concrete floors of this building, to dig up and replace this steam condensate line, was not practical. Thus, the decision was made to reline the existing 6" steel pipe line by digging "pits" at strategic locations, and to "push" into place a 4" diameter heavy schedule 80 steel pipe.

It was also determined that the soil around this pipe was highly corrosive. Thus, the Labs wanted a strong, yet corrosion resistant replacement piping system to reline the failed steel pipe.

Method and Materials of Construction: To provide both maximum strength and external pipe corrosion resistance, Industrial Fiberglass proposed that we factory FRP composite armor, by filament winding, the outside of 4" diameter schedule 80 seamless black steel pipe. This would be done using a proprietary premium grade high-impact, high-temperature epoxy resin.

The FRP armoring laminate was an extra heavy 100 mils. The filament wound external FRP composite armoring was held back 4" on each end, to allow for field welding of the steel pipe. We furnished special epoxy field overlay weld kits for completing the armoring protection - after the field steel pipe welded joints were made.



The Challenges: To minimize field labor, and to speed up installation, the customer wanted us to furnish the 4" diameter pipe in 40 foot lengths. As with most FRP pipe manufacturers, our filament winding machines were constructed to wind 20 or 30 foot lengths for the 4" pipe sizes. To meet the customer's needs we were able to modify our winding equipment and procedures to provide the requested filament wound armored 40 foot lengths.

Because of the critical mission of the Labs, they elected to have us produce and ship this FRP composite armored steel pipe on a super rush basis - under our Emergency Service Production (ESP) program. We located and had the extra long 40 foot lengths of steel pipe shipped to us overnight. We worked the weekend to FRP composite armor the steel pipe.

Using one of our own covered trailers, leaving on Sunday evening, our drivers drove straight through to New Mexico - to complete the ESP commitment.

Customer Benefits: Through ingenuity and the creative combining of the strength of steel pipe, with the toughness and corrosion resistance of high temperature FRP composites - we were able to provide a solution for the customer that minimized repair costs and disruption of the Lab's mission. Our ESP program, production flexibility, and the ability to make shipment using our own trucking equipment, provided the Los Alamos Labs a "right now" solution.

Opportunities for Your Customers: Which one of your customers or clients could benefit from Industrial Fiberglass' unique ability to provide creative corrosion resistant equipment - from concept to finished solution - using ingenuity, superior resin technology, tooling, flexible fabrication technology, and ESP commitment?