

Record-breaking composite CIPP made with Vipel[®]

Market Segment:	Sewer Rehabilitation
Composite Application:	CIPP
Host:	Concrete sewer pipe
Resin:	Vipel [®] 102NA
Manufacturing Process:	Cured-in-place pipe
Length:	1,700 feet (518 meters)
Diameters:	96 inches (2,438 millimeters)
Installed:	2011
Location:	San Diego, California, USA

A record-breaking application of higher strength iPlus[®] Composite cured-in-place pipe (CIPP) technology significantly reduced the time and cost of expanding San Diego International Airport. Insituform Technologies[®], Inc., completed the work using Vipel[®] resin from AOC.

Expansion plans by the San Diego Airport Authority put a new terminal over a 96-inch (2,438-millimeter) diameter concrete sewer pipeline. The pipe was 25 feet (7.6 meters) underground and not designed for the structural loads the new project would add. Because pipe excavation and replacement would have created headaches for taxpayers and air travelers alike, engineers explored trenchless technologies.

Keeping the wall thickness of the new liner under 1.26 inches (32 millimeters) became a critical design factor



Vipel[®] technology was used for a custom composite liner.



CIPP eliminated the need for pipe excavation and replacement.

for ensuring that the upgraded pipe's flow rate could handle current and projected volumes. To make the liner strong enough, slip-lining would have added approximately 12 inches (305 millimeters) of wall thickness; and conventional CIPP would have added 2.07 inches (51 millimeters).

For a solution, general contractor Charles King Co. brought in Insituform Technologies® to install a custom, 1,700-foot (518-meter) long fiber-reinforced iPlus® Composite liner. Carbon fibers in the iPlus Composite for the airport project resulted in a pipe strong enough to withstand the new structural loads at a wall thickness that is 40 percent less than conventional CIPP.

The Vipel 102NA resin is specially designed to efficiently wet out the reinforced liner," said Bill Moore, AOC Product Leader for CIPP. "The resin technology optimizes the performance and superior mechanical properties of the carbon fiber-reinforced composite structure."

With no appropriate manhole available for the installation, site workers created a single access point for two inversions in opposite directions.

The job established a new benchmark for iPlus® Composite technology, which to date had not been used for a water inversion greater than 200 feet nor in a host pipe larger than 60 inches in diameter.

"The resin technology optimizes the performance and superior mechanical properties of the carbon fiber-reinforced composite structure."

Bill Moore, AOC Product Leader for CIPP Resins

About Insituform®

Insituform Technologies® Inc. is a leading worldwide provider of proprietary technologies and services for rehabilitating sewer, water and other underground piping systems without digging and disruption. To learn more, visit www.insituform.com.

About AOC®

AOC is a leading global supplier of resins, gelcoats, colorants, additives and synergistic systems for composites and cast polymers. AOC knows technology, lives quality and delivers service better than any other supplier.

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