

Thinking Inside the “Box”

Lanzo Lining Services Completes Massive Non-Circular CIPP

Not all CIPP rehabilitation jobs are created equally. Some jobs have minor annoyances and others, like the Joe Campau B 10 Outfall installation that rehabilitated 3,600 lf of a rectangular box culvert in Detroit, push the boundaries of realistic possibilities.

Merely one installation out of 10 in the City's DWS - 849 contract, the Joe Campau B 10 Outfall installation began just before the end of November 2005 and completed just in time for Detroit to host Super Bowl XL, which was played Feb. 6, 2006.

Comprising approximately \$5 million out of the contract's proposed \$17 million price tag, Lanzo Lining Services, which has an office in Roseville, Mich., won the bid knowing full well of the challenges that come along with lining a non-circular



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pipe. The Lanzo crews put an emphasis on pre-inversion pipe preparation, the management of the influent lines and the bypassing of existing flows.

A seemingly infinite list of equipment was used, including a battery of diaphragm pumps, vacuum equipment, resin/catalyst storage, hydraulic and pneumatic tools and

power capabilities.

“A project such as this requires redundancy at every level; you end up sort of throwing the kitchen sink at it,” says Fred Tingberg Jr., vice president of sales and marketing at Lanzo Lining Services. “When you go to non-circular geometry, you have structural issues to account for stress and pressures within the pipe.”

Yet, the complications did not end with the pipe's shape and size, there were 100 year-old cast-iron gates in the pipe that were removed and refurbished, and crews were subject to sub-freezing temperatures during the around-the-clock shifts for four weeks. Although fresh shifts came on twice daily, sleep deprivation and fatigue ran rampant through the jobsite, which stretched between Jefferson Avenue and the Detroit River.

The extreme cold also compro-



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mised the CIPP rehabilitation process. With temperatures dipping to 8 F, several key employees were on call 24 hours a day to handle the resin temperature, viscosity and pump efficiency complications that cropped up incessantly. Before the pipes could be cured, the pipe's haunches were grouted to support the ovalized liner during installation.

"With a round CIPP, you want to have contact with as much of the surrounding pipe as possible," Tingberg says. "While the CIPP might already have contact with 70 to 80 percent of each pipe wall, the grout is used to fill in the gaps to make it structurally sound."

Once the pipe could support the liner, the Lanzo crews performed an over the hole wet out in frigid tem-

peratures. The over the hole inversion technique is used when the tube and resin weigh too much to factory-impregnate and haul to the site. Instead, a makeshift plant is assembled literally over the staging pit, or hole, explains Tingberg.

To make matters even more difficult, the Composites One CCP resins needed to be furnished as close to 50 F as possible, which was not an easy task when outside temperatures were near zero. To remedy the situation, the Applied Felts tube was kept warm by using a sequence of heated tarp enclosures to increase the temperature up for suitable curing. The Lanzo crews allowed a week for each of the three barrels that covered 1,200-ft sections. Approximately 1 million lbs of resin were used in the

rehabilitation, making this the largest non-circular pipe rehabilitation Lanzo has ever completed and possibly the largest anyone has ever completed, according to Tingberg.

"It's quite a feat to perform inversions of this length, size and thickness," Tingberg says. "The sheer committed cost of materials makes these jobs zero tolerance with respect to failure to meet expectations."

While the battle of the Joe Campau installation is over for Tingberg and Lanzo Lining Services, the war of the DWS - 849 contract is far from over. Rehabilitation work for the contract will continue throughout the year.

Jason Morgan is an assistant editor of *Trenchless Technology*.

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