

FIRST IN THE WORLD

A unique approach to lateral grouting keeps homeowners contented with the public works department in a southeastern Wisconsin village

By **Scottie Dayton**

Whenever the Village of Brown Deer, Wis., experienced a heavy snow melt or down-pour, sewers backed up into homes.

The neighborhoods, built in the 1950s and '60s, have 8-inch vitrified clay mainlines and 6-inch clay laterals. Great Lakes TV Seal Inc. (GLTV) in Green Bay, Wis., has spent many years grouting the village's mainlines and began repairing the laterals in 2005.

Larry Nietzel, public works director for the village, knew which areas had sewer problems. To locate the trouble spots, his men injected green-dyed water into the ground where the laterals left the houses and at the ditch line. The village targeted 60 of the worst offenders for rehabilitation from the sewer to the homeowner's property line, a distance of 30 to 35 feet.

"Larry wanted us to do all the work without entering the homes, but packing that far into the laterals from the mainline was unheard of," says Jeff Healy, who operates GLTV. He explained the conditions to Marc Ancil, president of Logiball Inc. in Jackman, Maine, and

Ancil's company designed and custom-built the necessary equipment. The rehabilitation project was successfully completed on time and on budget.

Preparation

Working from the mainline, six GLTV employees in two teams inspected and cleaned the laterals. Using a Lateral Evaluation Television System (LETS) from Aries Industries of Waukesha, Wis., they televised the pipes and found mineral deposits, grease and extensive root intrusion. All the inflow and infiltration came from bad joints, as many as 14 per pipe.

The biggest cleaning obstacle was finding a way to get the 1/2-inch hose from a Vactor 2115 Jet Rodder to the lateral. Logiball adapted one of its lateral launchers to clean 40 feet up the pipe. "Basically, a DC motor rotates an elbow

holding a piece of hose and the 25-degree back-jet end nozzle," says Ancil. A winch upstream pulled the launch sled and hose. The TV camera showed how much to rotate the nozzle to align it with the lateral. Once turned on, the jetter propelled itself up the pipe.

The crew cleaned for five days using 35 gpm at 2,000 psi. The Jet Rodder carries a 15-cubic-yard stainless steel debris tank, 1,500-gallon water tank, water system delivering 80 gpm at 2,500 psi, and vacuum blower delivering 3,600 cfm at 28 inches Hg. "Cleaning the laterals made the grouting process much smoother," says Healy.

Straight out of the box

Logiball manufactured a 45-foot-long rubber lateral grouting plug (or bladder) and adapted it to the company's lateral packer, then made sure that it worked

"We used a winch on the back of the TV/Grout truck to position the nose in the manhole, then pulled the packer down by hand a little at a time. It was a tight fit."

Jeff Healy

TOUGH JOB

PROJECT:

Grout 30 to 35 feet of 6-inch clay laterals from the sewer main to the property line without using the cleanout access

CONTRACTOR:

**Great Lakes TV Seal Inc.,
Green Bay, Wis.**

CUSTOMER:

Village of Brown Deer, Wis.

EQUIPMENT:

Custom-built launching device and packer from Logiball Inc.; AV-100 grout from Avanti International; Vactor 2115 Jet Rodder from Vactor Manufacturing, Lateral Evaluation Television System (LETS) from Aries Industries

with everything in the truck. According to Ancil, the hardest part was making sure the bladder inverted properly with air pressure and retracted into the mainline assembly with vacuum. "That's the part that had never been done in the world before," he says.

To reduce the friction rubber on rubber creates, two or three men restrained and lubricated the fully inflated bladder every time the packer went down a manhole. "Each inch had to be covered," says Ancil. "Anyone driving past saw an erect, 45-foot, yellow anaconda with three guys slathering white grease on it."

Ancil accompanied the packer to the jobsite where it was tested. Although the packer was flexible, lowering it into the sewer was a challenge. "We used a winch on the back of the TV/Grout truck to position the nose in the manhole, then pulled the packer down by hand a little



Workers prepare the bladder that will travel 30 feet into the lateral to seal the pipe connection and joints from the sewer main to the property line. From left, Jesus Varela of Great Lakes, Dana Faulkner of the Village of Brown Deer, and Greg Healy of Great Lakes. Inset photo: The packer is deflated and pulled back from the lateral after sealing is complete.

at a time. It was a tight fit," says Healy.

The packer with pan-and-tilt camera was winched through the mainline, then rotated to align the launching tube and grouting plug with the lateral. Air pressure (about 40 psi) sealed the ends of the packer against the sewer walls, expanded the tube to create a mixing chamber for the grout and catalyst, and inverted the plug into the lateral.

Adjusting gel time

"We were standing 60-feet away at the manhole, but we could still hear the bladder moving up the laterals and the pop it made when fully inflated," says Ancil. Although the forward end of the bladder sealed against the wall of the lateral, its expansion was restricted, and that left an annular space.

Grout flowed through this passage, out the bad joints, and gelled with the surrounding soil. Technicians determined on the job how fast to pump the grout and its gel time. "The normal

gel time is 30 to 35 seconds for a 3- to 5-foot-long repair," says Ancil. Healy first set the time for three minutes, then reduced it to two minutes by adjusting the pumping rate.

The annular space held 11 gallons of AV-100 grout from Avanti International of Webster, Texas. Some laterals took 35 gallons to seal, six took 75 gallons, and others took 22 gallons. The crew determined when the lateral was sealed by monitoring the pressure. After the grout cured, the crew retracted the deflated plug by vacuum, and the assembly was pulled to the next connection.

Two employees averaged five lateral repairs per day. Nietzel will evaluate the repairs by monitoring flow rates during snow melt and spring rains. The Village of Brown Deer budgets annually for rehabilitation, and Great Lakes TV Seal will return this year to grout 60 to 80 more troublesome laterals. ■

Jesus Varela of Great Lakes sets up the 45-foot-long lateral packer.



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