

Rescuing History

CURED-IN-PLACE LINING SYSTEM HELPS CONTRACTOR FIX LEAKING STORM DRAINS WHILE PRESERVING THE HISTORIC CHARACTER OF A SOUTH CAROLINA LANDMARK

BY SCOTTIE DAYTON

Leaks above the second-floor master bath and shower were ruining the ceiling and wall in the Wallace-McGee house in Columbia, S.C. The two-story steel-reinforced concrete structure was built in 1937 and is listed on the National Register of Historic Places and the state Historical Archives.

One plumber blamed the problem on the roof, so the owner had it replaced. The leak continued. Another plumber replaced and caulked the vent stacks without effect. For more than five years, the owner paid contractors for repairs that didn't work, while the concrete ceiling and exterior shower wall flaked and separated.

Finally, a plumber sawed a 4-inch-square hole in the wall above the shower stall to expose the west storm drain. Someone had wrapped metal plating around a hole in the 3-inch galvanized pipe and caulked it. The patch had failed.

Fearing that repairing the drain would involve ripping up the roof, tearing through 12-inch-thick concrete walls, and damaging the irreplaceable tiles and bathtub, the owner went online looking for alternatives. He found Drain Pro, a local trenchless sewer contractor.

"When we evaluated the situation, our main concern was how to preserve the home's historical character if we had to make access points," says company owner Chris Bergeron. "Our next concern was which tools would be the least intrusive, yet do the best job." Using a boiler descaler and cured-in-place flex liners from Perma-Liner Industries, his team successfully rehabilitated the west and east storm drains in two days.



FRENCH CONNECTION

Both storm drains ran through interior concrete walls. The west drain popped out for two feet in the concrete garage before exiting through the floor and into a 6-inch concrete French drain. The leaking east storm drain discharged to a separate French drain.

Chris Bergeron (left of Drain Pro) uses a 100-pound linoleum roller to impregnate the 2-mil-thick flex liner with a mixture of warm and hot epoxy resin, while Jeremy Bergeron checks the temperature of the resin.



Left to right: Jeremy Bergeron, part-time employee Victor Ponce, and Chris Bergeron monitor the inversion unit as it inverts 30 feet of 2-mil-thick flex liner into the west roof storm drain at 8 to 10 psi. (Photos courtesy of George Fulton Productions)

tough job

PROJECT: Rehabilitate roof drains at a historic home

CUSTOMER: Wallace-McGee house, Columbia, S.C.

CONTRACTOR: Drain Pro, Columbia, S.C.

EQUIPMENT: Lining system from Perma-Liner Industries
866/336-2568
www.perma-liner.com

RESULTS: Drains rehabilitated and historical character maintained



Leaks above the second-floor master bath and shower caused the concrete ceiling and exterior shower wall to flake and separate. A previous plumber sawed the 4-inch-square hole above the shower stall to expose the west storm drain.

To verify that stormwater was dispersing properly, Bergeron and his brother, Jeremy, inspected the backyard drainage system. The mini SeeSnake from RIDGID revealed root intrusion and sections of crushed pipe. They cleaned the line with an 8 gpm/4,000 psi trailer-mounted 300-gallon jetter from US Jetting, and a 1/4-inch Warthog nozzle from

StoneAge. The team then exposed the damaged lengths with a shovel and replaced them with 3-inch PVC pipe.

The home and attached garage had flat roofs. To reach them, Bergeron rented a ratchet lift and positioned it in the driveway. After hoisting the equipment onto the garage roof, they relocated the lift to the house roof and repeated the procedure.

"For somebody scared of heights, working two stories up was nerve racking," says Bergeron. "I tried to stay away from the edge, and when I had to be there, I tried not to look down."

Before televising the 30-foot-long drains, the brothers used a garden hose to pour water on the roof and watched where it ran. It went straight down the drains. The camera showed the pipes were threaded, heavily deteriorated, and 20 percent occluded with scale. For 20 feet, they also had a 1/2-inch-thick layer of tar from the installation of the new roof, and below that, a 90-degree vent pipe.

"For somebody scared of heights, working two stories up was nerve racking. I tried to stay away from the edge, and when I had to be there, I tried not to look down."

Chris Bergeron

"The bend changed our plans a little," says Bergeron. "Standard 3-mil liners won't navigate a right angle, so we ordered 2-mil-thick flex liners that would."

GAINING ACCESS

To prevent debris in the cleaning water from clogging the underground drains, the brothers sawed out the visible section of storm drain in the garage without damaging the walls. They then attached a temporary elbow and length of PVC pipe draining to a 20-gallon barrel.

Back on the roof, cleaning with the jetter went slowly. "The tar was hard, and if we became aggressive, we'd remove the whole pipe," says Bergeron. "Before long, the owner informed us that too much water was entering the master bath."

Bergeron had an electric Ream-A-Matic 4-60 rotary tube cleaner with a spin-grit brush from Goodway Technologies Corp. that he typically used to reinstate

laterals. The unit feeds water through the casing to the cleaning tool on the tip of an 862.5 rpm flexible shaft.

"I tried it as a descaler and it was much faster than the jetter," he says. "It also used a lot less water."

It took the team an hour to clean the pipe down to the vent. Because the cleaning tool wouldn't go around the 90-degree bend, they returned to the garage and cleaned up to it.

"We replaced the missing section of storm drain with PVC pipe attached to the ends with no-hub bands," says Bergeron. "After lining through it, we removed the bands and the pipe is now almost invisible against the white wall."

STELLAR PERFORMANCE

After hoisting the air compressor, inversion unit and other equipment onto the roof, the men unrolled sheets of plastic for wetting out the liners. "We used a 100-pound linoleum roller to impregnate the felt with a mixture of warm and hot epoxy resin that gave us 40 minutes working time," says Bergeron. "Then we rolled it up, loaded it into the gun, and inverted it at 8 to 10 psi."

When the liner reached the 90-degree bend, it hesitated. Bergeron dropped the pressure, rolled some liner back into the gun, increased the pressure to 10 to 15 psi, and released the liner. The momentum forced it easily around the bend. Inserting the calibration tube, inflated at 10 to 15 psi, required the same procedure. The liner ambient cured in four hours.

The next morning, the team used shovels to expose the east 6-inch concrete storm drain beside the home, then broke out a 2-foot section with a jackhammer and sledge hammers. To catch the cleaning debris, they inserted an elbow and short length of PVC pipe discharging to a plastic jug. Lining the second drain was identical to the first except for adding a cleanout. **C**



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