

# We Stopped a River with Chemical Grout!

Comments by Zoud Danko, Chief Engineer, ABM Engineering Services for Voit Properties, Los Angeles, CA

## THE PROBLEM:

“When they designed our 300,000 square-foot office building, the engineers knew it would be built over an underground river. After all, the river has been there for at least 20,000 years, but they thought the flow would stop in the dry season.

During the construction of the five-story underground parking garage, the contractors had to keep pumps running continuously. They pumped over a million gallons of water a day from the excavation.

The builders took the standard procedures to prevent leaks. They installed Bentonite panels over the exterior, and they applied some tar-based products, but almost immediately after the building was completed, it started leaking. Over the next few years, many attempts were made to stop the leaks, but the problem got worse. Places where water had seeped through cold joints eroded into half-inch holes where water jetted a foot from the wall. Finally, the building owners gave up trying to stop the leaks and channeled the water to sump pumps on the lowest level. At least from there the water could be pumped into the storm drain. Once, when the pumps failed at night, the water was four feet deep before it was discovered the next morning.

When I was hired two years ago, you could hear water running as soon as you stepped off the elevator on any floor of the garage. Some people said they actually liked the waterfalls because it reminded them of Hawaii.



“We were pumping 300 gpm, but we couldn’t keep up with the leak.”

## THE SOLUTION:

I had experience with leaks in another nearby building, so I knew about chemical grout. My first step was to contact John Goss, a contractor Voit had used previously and who had extensive experience with chemical grout. John knew exactly what I wanted.

During 1996, our first budget year, we concentrated only on the worst leaks: where water was squirting out of the walls. We had immediate results. Within a minute of injecting the Avanti AV-202, the jets of water would slow and then stop.

By the end of the “wet” season, most of the “gushers” had been sealed, but I found one near a corner of the lowest parking level. When one of the workmen tapped the spot with a hammer, a four-inch diameter hole blew through the wall and water poured in with almost the same force as a fire hydrant.

Soon, all of our sump pumps were working, but they couldn’t keep up with the incoming flow. Six men tried to press a sheet of plywood over the hole to slow the flow, but they couldn’t hold back the jet of water. Finally, someone thought of using a pickup truck to press the plywood against the hole. That slowed the flow until the Avanti grout could be injected through the wall to permanently stop the flow.

Now, all five levels of the garage are completely dry. Engineers had estimated it would cost over a million dollars to stop our leaks, but chemical grout stopped them for less than one-fourth that amount. ”

## Chemical Grout Protects All Kinds of Concrete Structures



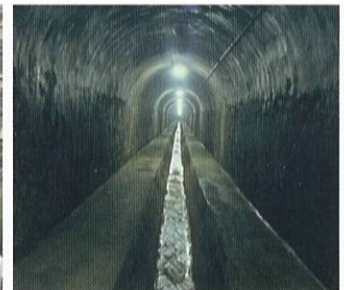
Dams



Subways



Treatment Plants



Tunnels