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AVANTI

News+Views

AvantiGrout stops leaks. Permanently.

Spotlight on ... Harold Kosova

Harold Kosova began his career in the sewer inspection and rehabilitation industry in 1960 when he was hired by Carylon Corporation to develop their first inspection camera.

Harold revolutionized the industry by designing and building the first mobile TV inspection studio, which led to the development of various types of sewer rehabilitation. Within three years, sewer inspection by closed-circuit television became the new industry standard.
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Publisher's Notes

By F. David Magill, Jr., P.E., CEO, Avanti International

In this issue of News+Views, we're spotlighting our good friend Harold Kosova. Harold has been instrumental in the design and development of closed-circuit television equipment and pioneered the use of chemical grout for sewer rehabilitation. Over the past 45 years, he has truly helped to revolutionize the industry.

As we move into summer, the coastal areas of our nation are concerned about the hurricane season and where the next "big one" will strike. Other parts of the country are concerned about storms in general. All storms that bring significant rainfall will impact not only sewer infrastructures, but also dams and underground structures. Areas to be addressed will be soil stabilization, sewer rehabilitation, and waste containment. One proven method of dealing with these storm issues is the use of chemical grout. Our staff can help you choose the best product for the job and the best application methods.

If you have comments, a story idea, or would like to relate something of interest, please contact Joe Janney at (281) 486-5600 or (800) 877-2570, or via email at jjanney@avantigrout.com. • •

Rembco Undertakes New Project for Hazardous Waste Containment at ORNL

"Locking hazardous waste materials in place is almost always safer and more cost effective than removing them for treatment, and there typically is no ongoing maintenance expense." -Clay Griffin, President of Rembco Geotechnical Contractors, Inc. of Knoxville, Tennessee.

Collar pipe installation at ORNL trench.

After several months of preparation, Rembco Geotechnical Contractors, Inc. is starting field operations at Tennessee's Oak Ridge National Laboratory (ORNL) to contain radioactive materials by grouting them in place.

Rembco led a similar effort in the summer of 1996, in which portions of four shallow unlined disposal trenches were permeated with cement-based
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OverViews ...

Rembco Undertakes New Project

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grouts, microfine cement-based grouts, and acrylamide grouts. Permeation grouting was identified as the preferred method of containment based on the fact that it would eliminate excavation and ongoing operating and maintenance costs after completion.

Acrylamide grout was chosen because there is a long history of test work at ORNL which shows that, of the available materials, acrylamide is the only material with a history of standing up under nuclear bombardment on a time frame which relates to the required half life degradation of the contaminating materials.

After the completion of the project, monitoring at adjacent locations reflected an immediate drop in the quantity of released contaminates. Additionally, hydrologic monitoring has been established to determine the long term effects.

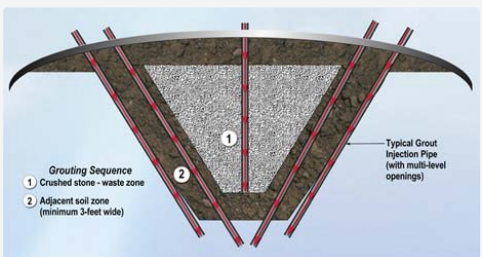
The current scope of work includes insitu-grouting of two trenches and seven wells, all of which were constructed or installed in the 1960s. The longest of the trenches, Trench 5, is approximately 300 feet long, 10 feet wide at the ground surface, and 4 feet wide at the bottom of the trench. This trench was 15 feet deep and was layered with 1.5" to 2" diameter of crushed stone to a depth of approximately 10 feet.

An aerial view of Trench 5

Polyethylene sheeting was placed over the top of the crushed stone and the trench was backfilled with soil. The water table was determined to be about 25 feet below the bottom of the trench. Approximately 9.5 million gallons of contaminated liquid waste was then pumped into the trench, and in 1970 it was paved with asphalt.

The sleeve pipe driver is a 42-foot mast with a hydraulic hammer.

The average seepage rate for this trench was approximately 4,300 gallons per day when the trench was full, and while no leaks were noted during operation, contaminated vegetation has been detected down slope of the trench. The theory was that the liquid would slowly permeate the soil and leave the contaminated particles behind in the crushed stone. However, fractures developed in the soil structure allowing the contamination to gradually seep out of the trench contaminating the surrounding soil.



Cross-section of grout treatment zones

The approach to the new project will be similar to the approach used in 1996. Collar pipes are 5.5" O.D. and are installed through the gravel and asphalt cap a couple of feet into the soil. The sleeve pipes are 20 to 30 feet long and driven in one piece. These pipes have rubber sleeves covering holes drilled every 2 feet down the pipe. The sleeves function as valves, letting grout out but not letting contaminated groundwater in. A double packer is positioned over an individual sleeve port and the grout is injected (cement grout in the gravel trench, acrylamide in the surrounding soils). Collar pipes are installed in augured holes and grouted in place. The sleeve pipe is driven inside the collar so any grout or contaminated material that comes up will be contained.

The Rembco team is now working on the Construction Verification Activity (CVA), a small test area next to Trench 7. A model section of a trench was built and it will be injected using the same equipment and procedures developed for the actual trenches. It will be cored, excavated, and tested for hydraulic conductivity to validate the methods before work begins on the contaminated areas.

According to Clay Griffin, the test section should be complete in a couple of weeks. The actual work will involve grouting in approximately 700 sleeve pipes, with 6 to 10 ports each. It is expected that approximately 120,000 gallons of cementitious grout will be injected into the gravel-filled trenches, and 36,000 gallons of acrylamide injected into the surrounding soils. The project is expected to have a duration of about 4 months after completion of the test section.

Rembco has developed a state-of-the-art data acquisition system which will monitor and record the grouting parameters in up to 8 simultaneous injection locations. Flow and pressure sensors on each grout line are polled every 3 seconds. The data is displayed graphically for the grout manifold operator, transmitted wirelessly to the grout engineer, and recorded on both internal and removable memory. The system also provides operator "prompts" for precise control of the grouting process, includes removable memory, and offers unprecedented capacity for instantaneous and post analyses.

For additional information on this project or other similar projects, contact Clay Griffin, President of Rembco Geotechnical Contractors, Inc., at (865) 671-2925, or visit the Rembco website at www.rembco.com. • •