



Grout Workshop: Stop Water Infiltration Now, Not Later

by Traci Read Senior Editor

Most sewer infiltration enters structurally sound sewer systems through joints, manholes, service connections and the first few feet of the service lateral. Infiltration occurs when defects in below-grade structures like sanitary sewer lines, manholes, pump stations, catch basins or storm drains allow ground water to enter the system. This infiltration adds to treatment costs and increases the risk of sanitary sewer overflows (SSOs). A proven and economical way to permanently stop these leaks is with chemical grout.

Chemical grouting is a joint sealing and stabilization process used to stop ground water flow through soils surrounding structurally sound sewer pipes or structures such as manholes, lateral cut outs and the exposed annulus flow area between the liner and host pipe. The grouting process involves the injection of low-viscosity grout (the same as water) into the structure or soil. The grout saturates the soil, displacing the water between the soil grains and then gels to form a gel/matrix. This gelling locks up the soil grains thereby stabilizing the soil and prevents water flowing through the soil into sewer cracks and thus into the sewer structure, effectively stopping infiltration.

To teach the basics of grouting, a group of suppliers hosted a half-day workshop for city of Houston personnel and local engineers at the Avanti International offices in Webster, TX (near Houston), on April 27. Avanti (chemical grout supplier), Aries Industries (television and grouting equipment supplier), Logiball (joint and lateral test and seal packers) and the University of Houston's Center for Innovative Grouting Materials (CIGMAT) sponsored the workshop.

The workshop builds on the popular Grout Boot Camps that are scheduled twice a year in different locations. To date, eight camps have been conducted with more coming in 2011 – one on the East Coast

and a new one planned for the West Coast. Representatives from these three firms staff more intensive three-day training schools.

Each of these grouting suppliers are members of the Infiltration Control Grouting Association (ICGA), a division of NASSCO (National Association of Sewer Service Companies).

Program coverage

"Grouting is being done, but not always correctly," says Daniel Magill, president of Avanti. "The purpose of this workshop is to give personnel the basic knowledge of how to effectively maximize their use of grouting."

To get the workshop rolling, attendees were asked, "Would you like to spend \$3,000 now to save \$200,000 later?" They would learn that grout – used for more than 50 years as an effective method for eliminating ground water infiltration into sanitary sewer systems – is less expensive and less disruptive than other rehab methods.

Industry experts Magill and Dick Schantz, P.E., Aries Industries product manager, gave presentations on six areas:

- Understanding sewer system chemical sealing programs and specification information;
- Why chemical grouts are economical and effective at stopping groundwater infiltration;
- How chemical grouts permanently stop groundwater infiltration into existing sewer systems;
- How chemical sealing stops groundwater infiltration at service lateral cutouts in lined sewers;
- Why sewer joint testing and chemical sealing should be a scheduled sewer maintenance; and
- Municipal case studies of successful grouting programs.

Dr. C. Vipulanandan, Ph.D., P.E. and director of CIGMAT, provided an over-

view of grouts being studied and tested at the University of Houston's Department of Civil and Environmental Engineering. "Testing and field results by CIGMAT have validated the applicability of grouts to eliminate infiltration into our cities' sewer systems," says Vipulanandan.

Live demo

Using an Aries' TV/grout inspection truck and camera plus a Logiball packer, a simulation of the grouting process was conducted by Schantz.

Grouting a sewer line's joints involves a particular process, Schantz pointed out. A crew uses a CCTV camera that enables a trained technician inside the truck to view pipes a thousand feet in any direction from a manhole. Where joints need grouting, a technician pulls a packer that is connected by an air hose to a compressor on the truck through a sewer line. The packer has four lines – two for acrylamide chemicals and one for air testing.

"If the joint fails the air test, then it will be sealed," adds Schantz. "The technician inflates the packer and pumps the two acrylamide chemicals through it. The two chemicals combine, travel through the crack or joint, and permeate the soil outside the pipe where it cures to an impermeable solid in a controllable time-period, stopping infiltration. Then the joint is air-tested again to confirm that the joint has been sealed."

FOR MORE INFORMATION:

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