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Soltau in the USA

by Lynne Riding

Texas continues to be the hot spot for microtunneling in the United States. Projects are currently underway in Dallas and Houston. An Austin microtunneling contract was recently completed.

Soltau Microtunneling was an active participant when Houston opened up to new trenchless excavation methods. Today Soltau machines are active on at least three projects in Texas cities.

In January this year Oscar Renda Contracting, Inc., Roanoke, TX began work on two contracts in Dallas. The West Bank Interceptor A & B projects, totalling over 11,000 feet, will replace an existing 48-in. sewer built in 1953 which has collapsed. The contract calls for microtunneling 8600 feet of the 48-inch line and 700 feet of a 30-inch line for a total project value of \$6.5 million.

Oscar Renda is using its Soltau RVS 400A slurry microtunneling system for the West Bank projects. Drive lengths of up to 1100 feet are planned, using 20-ft lengths of Hobas FRP throughout. The first drive of 725 feet without interjack equipment has been success-

fully completed—a record for Soltau equipment in the USA. It started out in Eagleford shale which makes up the majority of the project. On this first drive after 350 feet, the ground became a heavy clay and then unstable sandy clay. A production of 40 to 60 ft. per shift was reached on the first drive.

Elsewhere in Dallas, Southland Construction, Inc. of Burleson, TX is carrying out over 4500 feet of microtunneling with a Soltau RVS 250A auger machine. The project marks the first use in the Dallas area of clay pipe supplied by Mission Clay Products.

Southland Construction is also microtunneling in Houston on the Bell St. project. The company is installing 5000 feet of 36-inch Hobas pipe, utilizing a Soltau RVS 400A slurry machine.

Meanwhile, BRH-Garver is using a new Soltau 48-inch slurry microtunneling system on the Woodway Contracts A and B. The area is next to Tanglewood where President Bush is having his new home built. Garver is using a new 48-inch head along with

existing Soltau equipment modified for a slurry system.

The Woodway project consists of about 5000 feet of 48-inch line using 10-foot Hobas pipe joints. A second phase includes 1600 feet of 18 inch. with 8-ft. clay pipes, which Garver is installing with an RVS 250A auger microtunneling system. Most of the 18-inch sewer is completed and the initial drives on the 48-inch line have been successfully installed. A third phase includes 1400 feet of 36-inch sewer to be laid in open cut. The total contract value is \$4 million.

Soltau has been involved with microtunneling from the very beginning. In Europe in 1984, Dr. Gerd Soltau supplied his first microtunneling system for use in Berlin. Even at this early stage it had an active steering system based on a laser. The market developed initially in Berlin with owners there specifying microtunneling as a method of construction in preference to open cut. By 1986 Soltau had supplied 15 machines to Berlin, with others supplied to other parts of Germany.

In late 1986 Cliff Tubbs, vice president of BRH-Garver, Inc., Houston, TX visited Germany to look at the Soltau auger microtunneling systems. This visit resulted in Soltau supplying BRH-Garver with one machine, an RVS 100A, which was followed by a second, an RVS 250A. These were both of the auger type. Although river and highway crossings had been completed in the mid 80's with microtunneling equipment, the first complete sewer installation carried out in the USA was the River Oaks relief sewer project carried out by Garver in Houston.

Eight thousand feet of 10- and 21-inch concrete pipe was installed by Soltau equipment. Garver completed the construction successfully and adapted the technique to American construction methods. The main problems encountered in this first contract included the quality and tolerances of the concrete pipes; the experience level required by operators; and the suitability of the equipment for the Houston clay. All



Soltau RVS 100AS microtunneling jacking 12-in. clay pipe.

these problems were overcome and BRH-Garver was awarded further contracts in Houston.

Houston has become the "Berlin" of the USA. An important factor in the growth of microtunneling was the introduction of a pipe more suitable for the equipment than the available concrete pipe. Hobas USA introduced their fiberglass reinforced pipe which was ideal for microtunneling installation. This was an important catalyst in the success of microtunneling both in Houston and other areas of the USA.

BRH-Garver today has carried out 12 projects utilizing Soltau RVS equipment, installing over 40,000 feet of pipe. Garver has used the microtunneling method more than any other contractor in the USA, and is able to offer a wide choice of microtunneling equipment, in various sizes with both the auger and slurry type.

Soltau's microtunneling success in Houston was based on the RVS 100A and 250A. These machines were well



Oscar Renda Contracting's RVS 400A slurry microtunneling machine running on the West Bank Interceptor project, Dallas.

suitable to the clay found in the area. With the RVS system there is less equipment to set up and production rates in cohesive soil are generally higher. This means the non-productive time is kept to a minimum. In the USA, where there has been more space available, the microtunneling operations

have been carried out from temporary, rectangular jacking shafts (18 feet by 10 feet), using 10-ft. long pipes. This gives greater production and lower cost but does not minimize surface disruption which is one of the primary aims of the method. As more work is specified for busy urban environments and where protection from the elements is an advantage, the fully containerized RVS system has many advantages and may be used more frequently.

In 1989 Soltau introduced its first slurry microtunneling system. The same surface control units and power packs and in some cases the jacking unit may be used for either system, allowing contractors with Soltau auger equipment to also have a slurry system at a lower cost than purchasing a complete new system. Soltau now supplies equal numbers of the original auger system and slurry systems.

Soltau provides as standard equipment a complete steering package which is fully interactive with an electronic target, including fully

Continued on p. 67

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microtunneling requires a different approach to the way a design engineer perceives a project. The issue of soil load, bedding, and trench width have been replaced with the questions of jacking force and pit size.

Design engineers face many difficult problems. Situations where limited amounts of easement or right of way exist, deep installations, high volume roadways, poor soils, obstacles, high ground water, dense utilities, or where closure of lanes or entire roadways would mean catastrophic results to businesses, municipalities and citizens have become common design dilemmas. A correctly specified microtunneling project represents one good solution.

**Water Pollution Control Federation Manual of Practice No. 9 (ASCE Manuals and Reports on Engineering Practice No. 37) Design and Construction of Sanitary and Storm Sewers, p. 201.*

Robert Lys, Jr., P.E. is director, technical services of NO-DIG, A Division of MCP Industries, Inc., Pittsburg, KS.

Soltau (Continued from page 49) automatic or manual steering control which is adjustable to different ground conditions. The system may also use an optional data logger which provides on-line information and a historical record which may be used to confirm the position of the pipes, jacking loads and steering values.

Soltau realized that as the U.S. market expanded, owners and contractors would require expert assistance and support to ensure the success of each microtunneling project. In 1992, Soltau decided to set up its own U.S. organization and incorporated in 1993 as Soltau Microtunneling. Its president is Paul Nicholas who has extensive knowledge of microtunneling equipment and its use. Soltau also has service and training personnel in the USA to provide the support that is so important for the success of microtunneling.

Soltau now is able to supply slurry or auger equipment on a rental or rental purchase basis to contractors interested in getting started in microtunneling. It also can supply highly experienced operator/trainer engineers. This allows rela-

tively small projects to be carried out in a contractor's own area to enable a better understanding of the system before committing the high level of investment required both in financial and organizational terms.

In 1992, the first Soltau slurry machine to be used in the USA was sold to Oscar Renda Contracting. It was used to install 54-in. i.d. Hobas pipe in Austin, TX, with the longest run of over 600 feet through Austin chalk. This machine included an integrated gripper and jacking module which improved production and reduced loads on the pipe. Now Oscar Renda is using a 48-in. slurry microtunneling machine through shale and clay on the West Bank Interceptor project in Dallas.

Soltau equipment now covers the size range from 4 to 90 in. diameter, either slurry or auger. It includes systems suitable for ground from unconsolidated sands and gravel through clays up to rock with a strength of up to 35,000 psi.

Soltau remains privately owned and a dedicated specialist supplier of microtunneling equipment and services.

The author is a free-lance writer from Charleston, SC.

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Madsen/Barr Installs U-Liner in Cayman Islands

by Allen Thomas

John Barr, partner with Madsen/Barr Corporation dresses for the job in the capital city of Georgetown, Grand Cayman wearing tan shorts and a short sleeved shirt. The sun shines daily in the Caribbean.

With the Eastern United States buried in snow from the blizzard of '93, Madsen/Barr crews have been setting records for the installation of U-Liner under the streets of the famous Seven Mile Beach. Tourists in bathing suits hardly notice the fleet of white trucks as they walk to the beach carrying diving masks and flippers.

Barr has been shuttling back and forth between his home base in Ft. Lauderdale and Georgetown since January 7 and he expects to complete the job the first week of April. When they are finished, they will have installed just under 12,000 feet of U-Liner, repaired over 150 manholes, and reconnected 13 lateral lines. The unusually small number of lateral connections has made the job go easier since the time consuming task of reinstating the laterals has been almost eliminated. In fact, since there are so few laterals to deal with, Barr has not even tried to open them with a remote operated cutter but has chosen to simply dig them up with a back hoe and reconnect the lines with standard

saddle clamps and couplings.

Barr said that the reason there weren't many laterals in the main lines was due to the "European" design of the gravity system. "We Americans can learn something from this design," Barr said. "They try to re-

duce the number of laterals being hooked into the main trunk lines and instead bring as many laterals as they can into the manholes. This makes it easier to maintain the system and helps the flow by reducing the taps along the main line." Laterals are run from the houses to a square maintenance box where several may come together and then they are combined into one lateral that runs to the manhole. These maintenance boxes allow for the laterals to be inspected and cleaned when necessary and reduce the taps into the main lines.

Another benefit of this design is that 6-in. pipe can be used for the mains instead of 8-in. All of the 12,000 feet of pipe that has been relined has

been 6-in. and the infiltration problem was primarily coming from these mains. Tom van Zanten, Project Manager for the Cayman Water Authority, said that the relining job has already been judged a success since the run time at the pump stations has been reduced by fifty percent and the level of the holding ponds has been lowered. The



A cruise ship creates a colorful backdrop for the Madsen/Barr equipment.

authority is planning to install a metering system that will more accurately measure the flows so they can make better plans for the future expansion of the collection system and the treatment plant.

Van Zanten said there were various reasons why the infiltration was so heavy in this section of the system. The relining solution was by far the best solution to the problem. Since the entire gravity collection system is only 46,000 feet in total, over 25 percent of it was relined. Any other process would have been prohibitive because of cost and disruption to the area.

The relining production rates have been very high, averaging over 250 feet a day. Don Robertson, Madsen/Barr foreman, has been in charge of the day-to-day installation and the crews have their procedures organized so that two sections are lined almost every working day. And on good days they will do three. A total of 119 sections averaging 100 feet each comprise the complete project, with one line of just under 300 feet being the longest and also the line with the most laterals to reconnect (5).

Madsen/Barr shipped all the equipment for the job from Ft. Lauderdale, including the U-Liner boiler truck, a CUES television and grouting step van, an Aquatech jet cleaner, a trailer to



(L-R) Madsen/Barr foreman Don Robertson, Cayman Water Authority engineer Tom van Zanten, and John Barr review production records of the U-Liner project.