

THE SL52.5 INCREASED TO 60-IN. O.D. IS BEING LOWERED INTO THE JACKING PIT TO LAUNCH ON THE THIRD DRIVE.

FEATURE STORY



GOING WITH THE FLOW: SLURRY MICROTUNNELING IN WISCONSIN

BY: LAURA ANDERSON

A seasoned pipe jacking contractor is back in the slurry microtunneling game, after a 10-year hiatus. Crew members, with direction from the equipment manufacturers' field technician, encountered three distinctive crossings on their inaugural project, providing a well-rounded experience for the newbie microtunneling operators.

The Northeast Interceptor – SEI to FEI Relief/Replacement project for the City of Madison and Monona in Dane County, Wis., is owned by the Madison Metropolitan Sewerage District. The project was designed by AECOM of Middleton, Wis. It involved the installation 6,162 lf of 48-to 60-in. ID new sanitary sewer lines. Merryman Excavation of Woodstock, Ill., was the general contractor. EJM Pipe Services of Lino Lakes, Minn., was contracted for all slurry microtunneling and trenchless pipe installations, including all of the shaft installations.

EJM installed 627 lf of 48-to 60-in. ID RCP in three drives with two MTBMs. The three microtunneling drives were staged incrementally over an eight-month time frame to align with the general contractor's progress. All crossings took place under multi-lane highways at nearly flat grades and in close proximity to a lake and multiple creeks. The 8-ft segment C-wall RCP pipe met tie-ins that were open-cut by the general contractor. Adapters connected the final microtunneled RCP segments to the open-cut HOBAS pipe to smooth the ID/OD size differential.

This project marked EJM's re-emergence into the microtunneling market after 10 years. EJM sought assistance from a factory-trained field technician to support its six crew members on operations. EJM used an Akkerman manufactured microtunneling system, comprised of an SL52.5 MTBM skinned to 60-in. OD and an SL74 MTBM

both with soft-ground cutter face configurations, control container, remote hydraulic power pack, MT960K jacking frame, MT460 jacking frame, bentonite pump, slurry pack and booster pumps. EJM's slurry separation plant was manufactured and furnished by Derrick Equipment Co.

Construction for the first crossing began in late February 2013. The first interceptor had to be completed before the seasonal thaw. This 205-lf pass, situated from north to south crossed under the eight-lane Beltline Highway. The geology in this region, 200 ft north of Upper Mud Lake, was wet sand. When the highway was constructed in the 1960s, sand from Mud Lake was used as fill material. The contractor used the SL74 MTBM to install 60-in. ID RCP for this drive. The 20x24-ft shaft was trenched in at 13-ft deep to achieve the 0.12 percent grade. The field technician and crew members closely

EJM PIPE SERVICES CREW USED AN AKKERMAN SL74 MTBM ON THE FIRST SLURRY MICROTUNNELING DRIVE ON THIS PROJECT AND WORKED TOWARDS COMPLETION ON THIS DRIVE BEFORE THE SEASONAL THAW.



assessed the MTBM's advancement from the control container monitors until it emerged on the south side of highway. Full construction for this pass took place from Feb. 25 through March 29, 2013, with microtunneling consuming about a week of that time.

The second crossing, 202 ft in length, ran under four-lane East Broadway, diagonally from east to west. The construction shafts were located by a diner, gas station, hospital and large home improvement store, with both pits edging the highway. The SL74 MTBM had to pass under a creek toward the end of the drive and shallowly emerge to meet the tie-in at a nearly flat grade. The 20x24-ft launch shaft was set at 16-ft deep. Approximately 32 ft into the drive, the crew encountered some hard ground that caused the rotational torque to intermittently rise then fall back into normal ranges. Following the installation

of several additional feet, they moved beyond the area to discover that they had mined through a region of densely set tree roots. Clean-out of the separation plant from the concentrated amounts of sands also contributed to delays and significantly reduced daily production rates. The last quarter of the bore under the creek was noted on the geological reports as a former dump site. Here the MTBM encountered some solid objects, creating the need for a few steering corrections. However, the MTBM emerged into the reception shaft on line and grade. Construction on this crossing took place from April 25 through May 23, 2013, with the pipe installation completed in six days with crews assuming 12-hour shifts.

Construction on the final 240-ft bore began in July 11 and microtunneling operations began on Aug. 20. The pits were located in

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THE SL52.5 INCREASED TO 60-IN. O.D. EMERGED AFTER CROSSING UNDER HIGHWAY AND EMERGING IN A SMALL STREAM.



a residential area and the drive had to advance from west to east, under Highway 51. The 12x20-ft jacking pit was constructed at 20-ft deep in late August, near the shoulder of Highway 51. The drive commenced in a small stream on the east side. Crew members oper-

ated an SL 52.5 MTBM increased to 60-in. OD to install the 48-in. ID C-wall RCP. The geology on this bore was similar to the other two drives with the exception of a small amount of clay fill. The MTBM emerged into the reception pit on Aug. 27.

Mark Montgomery, Vice President of Field Operations for EJM Pipe Services stated, "We could see that our operators gained confidence in their own abilities to carry out the work as the job progressed. The knowledge that our crew was able to take away from each drive is priceless. There are so many obstacles that can affect a drive's outcome in all soil conditions and our crew did exceptionally well to overcome them and finished strong."

EJM crews concurrently installed 616 lf of 48- to 60-in. ID RCP with an Akkerman TBM 480 and TBM 600 pipe jacking system on the Northeast Interceptor – SEI to FEI Relief/Replacement project. Upon completion of this project, the EJM crew was headed to begin a microtunnel drive in rock conditions in Kansas City, Mo.

Regarding the need to adapt to the ever-changing ground conditions and construction challenges, Montgomery said: "Sometimes you just have to go with the flow" – pun intended.

LAURA ANDERSON IS DIRECTOR OF MARKETING FOR EQUIPMENT MANUFACTURER AKKERMAN OF BROWNSDALE, MINN.

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