

HDPE Pipe Used for Waste Water, Force Main and Water Transmission and Collection Lines

Northern Michigan

Problem

A project to re-build a wastewater treatment plant is ongoing in Northern Michigan. This plant is replacing old piping that leaked, which forced a shut down. The new collection lines and force mains will transfer an average of 150,000 gallons/day of leachate. Due to high PH factors and precipitation build-up, the plant design had to include a pipe system capable of withstanding a corrosive environment, to prevent any future leaks. The new pipe system collection lines and leachate collection lines also required tight and unique dimensions to fit within the design of the plant. The piping material chosen for the lines had to withstand the high PH factor, pressure and impact, and be corrosion resistant. In addition, the project had a short timeline to completion for the plant to go online.

Solution

The plant owner hired contractor Matt's Underground, LLC to fabricate, install and redesign the water treatment and leachate collection lines. Matt's Underground, LLC specializes in: commercial, industrial, municipal and environmental excavation; utility construction; HDPE fusion and assembly fabrication; process piping; road boring; concrete construction; and site restoration.



A view of some of the intricate piping systems installed by Matt's Underground.



The original design for the plant was PVC. However, when the pipe lines were "pigged" or cleaned by shooting a missile-type cleaning mechanism through the liner, the PVC shattered. Therefore, the contractor worked with pipe supplier ISCO Industries and the customer to specify a different piping material to complete the project. High-density polyethylene (HDPE) pipe was chosen as the new material for the piping system. HDPE pipe is corrosion, pressure and impact resistant. In addition HDPE pipe is ideal for trenchless installation and is more cost-effective than line-cleaning PVC. HDPE is stronger and can handle impact better. Plus, when fused, HDPE pipe has a leak-free joint.

Matt's Underground worked with ISCO Industries' representatives, Brad Gray and Carter Krus, to obtain all the necessary materials for the project. ISCO Industries supplied tens of thousands of feet of HDPE pipe (ranging from four- to eight-inch pipe), valves, fittings, McElroy



Some more of the unique interior HDPE assemblies put together by Matt's Underground.

fusion machines (#2, #14, #28, #412 and #618) and accessories. ISCO ensured that all materials arrived in a timely fashion in order for the project to run on schedule.

Installation

During the installation, the buildings for the plant were built in conjunction with the infrastructure. As stated earlier, the plant had a short deadline to begin operating, so Matt's Underground had a very tight time frame to complete the pipe portion of the project. All the materials had specific delivery times to ensure the contractor's crew stayed on task.

During the piping system installation, ISCO Industries provided technical assistance and kept the contractor's fusion machine fleet up and running to avoid any downtime. ISCO has multiple McElroy Master Mechanics available to service and repair rental equipment.

"ISCO played a huge part in helping us meet our deadlines and in keeping this project moving," said Matt Bennett, owner of Matt's Underground. "We have been on site for three years and will be here for many years to come. ISCO's Brad and Carter understand how things work here and that helps us out a ton. Brad and Carter were always very prompt with availability and delivery possibilities. We made them jump through a lot of hoops but things always worked out."

The outdoor portion of the plant's piping system design included standard force mains, water lines, etc. Matt's Underground, LLC installed most of the force main and collection pipes using horizontal directional drilling (HDD), a trenchless method. They used an open cut method for a lot of the yard piping.

The piping inside the plant was unique. The

contractor worked quickly to install the piping inside the plant, while construction of other parts of the plant took place. The contractor fabricated unique HDPE assemblies for the piping system. Many of the valve assemblies, combined with pig launching equipment, were designed by the contractor, saving the customer nearly \$30,000 per week. Many of these assemblies were completed quickly in only a day or two. This helped them stay on schedule. The crew worked 100-weeks in the last three months before the deadline in order to complete the project. All of the Matt's Underground crew members are McElroy fusion certified.

In addition, the chemicals in the water going through the treatment plant are so corrosive that every tank, or anything that comes in contact with the water, was lined with sheet HDPE.

Conclusion

Due to the contractor's design and installation, all the lines were serviced and pigged in-house, saving on costs for the plant owners. ISCO supplied all HDPE pipe and associated materials on time and provided technical and service assistance as needed, allowing the contractor to complete the piping project in the allocated short time frame, meeting the deadline.

"We have had a few other suppliers come up here and check out our site and try to get a few orders from us. I always tell them that we have been working with ISCO and they know how things work around here. Nothing is planned and things happen extremely quickly. We don't have time for someone else to figure out how to service us," added Bennett. "We have developed a great relationship with Brad and Carter and that has led to us working on many other projects together around the country. Brad makes it up here at least once a month to make sure everything is on site and going as planned. We talk on the phone just about every day but it is nice to see a supplier on site and involved like ISCO has been. ISCO has played a very important role on this project and we have all been impressed with their service."

