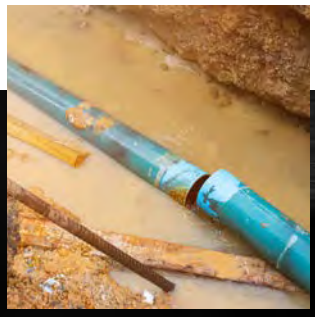
NUCA

Business Journal

Spring 2021



Pay Attention Now, or Pay Much More Later

Disadvantaged Business Enterprise (DBE) Fraud

The Secret To Holding Underperformers Accountable Is…

Member's Jobs: L.G. Roloff Construction Company

Published exclusively for NUCA members

L.G. ROLOFF CONSTRUCTION COMPANY

Elkhorn WWTF Decommissioning & Interceptor Sewer Extension

by Robert Baylor, NUCA Communications Director

Member's JOBS

This project won the NUCA 2020 Top Jobs category for Sanitary Sewer Collection & Storm Drains.

In 2018, the City of Omaha, Nebraska hired JEO Consulting Group, Inc., to develop a wastewater preliminary engineering report for the city's Elkhorn Wastewater Treatment Facility (WWTF). Much of the population growth of the city is projected to continue in the Elkhorn WWTF drainage basin, with the facility already operating at design capacity (1.0 million gallons/day) it would not be up to the task of supporting future municipal growth in the next 20-30 years.

After reviewing a variety of WWTF expansion and replacement alternatives, the city decided that the most cost-effective option was to decommission the Elkhorn WWTF and direct flows to the City of Omaha's interceptor sewer system.

This project was a small part of the City of Omaha's expansion of its wastewater facilities, projected to cost $220 million and take several decades to complete. Omaha has two major wastewater treatment plants that service 600,000 customers in the metropolitan area, one along the banks of the Missouri River and the other at Papillion Creek. Combined, the two plants treat an average of 110 million gallons of wastewater a day. Omaha has been planning for a $50 million investment to increase its solid waste capacity at the Papillion plant, to handle projected population growth in the city and nearby Douglas and Sarpy Counties.

NUCA member L.G. Roloff Construction Co. won the city's 2019 bid for this phase (OPW 52982) of the project. The new sewer main constructed was approximately 4,865 linear feet of 27-in./30-in. diameter vitrified clay pipe and was constructed on city-owned property, street Right-of-Way, permanent sanitary sewer easements, and temporary construction

easements. The interceptor sewer was sized for the expansion of the Elkhorn sewer shed and is projected to serve a future population of 28,000 people.

The pipe route crossed Omaha's 192nd Street, which had a very tight tolerance with a large diameter water main. The bore was extremely flat and because of its location in the middle of the job, if we did not hit our proposed grade it would jeopardize the entire project.

In addition to this street challenge, nearby Papillion Creek also dissected the project site. Two inverted siphon structures of depressed sewers, consisting of two 18-in. and one 16-in. diameter barrels carry wastewater under the channel. Because of creek setback requirements, these are two of the longest siphons in the entire City of Omaha system.

The project had a milestone date of June 19, 2020, which included completion of the sewer interceptor extension and siphons. On this date, the wastewater flow that would have gone to the Elkhorn WWTF would instead be conveyed to the Papillion Creek Wastewater Treatment Plant via the new interceptor extension constructed by Roloff.

To meet this milestone, the company had to overcome the challenge of constructing sewers in soft and wet alluvial soils during the harsh winters in Nebraska. Cold-weather concrete construction was also a factor on the four cast-in-place siphon structures. One of the siphon structures was about 24 feet deep and constructed under high-voltage power lines.

All the precast manholes and cast-in-place siphon structures had to be coated with Raven 405 Epoxy as well. To make sure we had a good bond between the coating system and the concrete substrate, the concrete had to cure out a minimum of 28 days. This proved to be an additional challenge since we had existing flow that needed to be transferred to the new interceptor sewer prior to reaching the treatment plant tie-in.

The pipe was shipped from Arizona and California to the Omaha project site, so Roloff had to coordinate with the manufacturer and other authorities to make sure the pipe arrived on-time and without damage.

Horizontal Boring and Tunneling Company of Exeter, Nebraska (also a NUCA member), was responsible for the directional drilling phases of both siphons and the 42-in. cased bore. Timing was crucial as Roloff needed the siphons constructed in order to begin concrete construction of the larger structures.

Construction of a new sewer was only part of the project. The existing Elkhorn WWTP was also to be decommissioned, except for several small operations that were to be continued in use. The plant was built in 1972 and expanded in 1996. Eriksen Construction Co. was the subcontractor responsible for this phase of the project.

The scope of work included demolishing most of the existing plant and removing the debris. The city was responsible for dewatering and disposing of as much digested sludge as possible. However, the contract called for the sludge and grit to be removed from the Elkhorn structures prior to demolition, with grit to be disposed of in a nearby state landfill. Wastewater could be sent through the new interceptor sewer.

Several items also were to be removed and salvaged, or reused elsewhere in the city's sewer system. One of these items was a Vessco belt filter press which was housed in a building that would remain on the treatment facility property.

Roloff and its subcontractors completed the project on schedule to the city's satisfaction. The fate of Elkhorn facility has not been finalized by the city, but several options are being considered. The long-term effects of this project will save both the city and community resources, as there will be far less maintenance on the interceptor sewer, and eliminated an unpleasant smell that could have slowed growth in the area.

Roloff Construction would like to thank the team members who made this project successful. Rocky Maas and Shon Wallis were Roloff's pipe and structure superintendents and Jesse Walz was the project manager. Jesse Ayala and Ethan Sundheim represented The City of Omaha who provided construction management and inspection services for the project. Zach Shultz with JEO Consulting Group Inc. designed the project and provided support to keep this fast-paced project moving.

In addition to those mentioned above, several NUCA members were critical subcontractors and suppliers on the project. Those companies included Horizontal Boring & Tunneling Company, Midlands Contracting Inc., Lincoln Winwater, and Logan Clay Products.

Lessons Learned

L.G. Roloff was able to perform the work within the proposed schedule. The lessons learned by the Roloff team were:

- Be a great teammate, be there for each other and be willing to step into another role or help another crew when that's what's required for success. Due to seasonal layoffs, we asked several key pipe crew personnel to form a second structure crew to keep the project on schedule.
- Taking the time to have a pre-installation meeting with our pipe supplier to review pipe handling & installation is always a great refresher that saves us time and money.
- When laying clay pipe (any pipe really) at minimum design slopes with unsuitable trench conditions it is imperative that you have a good quality and accurately calibrated pipe laser and level.
- The design called for 22-1/2 degree MJ bends to flatten out the siphon pipes prior to entering the siphon structures. All these fittings were ordered prior to completing the bores. Once we built the bores it was determined that different fittings would be required to make the connections. The right fittings were sourced and with no impact to the schedule.
- When working adjacent to a historic highway (Old Lincoln Highway) that has weight restrictions, you can guarantee construction traffic will end up on it. Additional traffic control was required to help preserve this piece of history. ■

Founded in 1975, Roloff Construction is an Omaha, Nebraska-based heavy/civil infrastructure construction firm that is a trusted partner for both public and private clients. The Roloff Construction team plans and executes projects according to its five core values: Safety, Dependability, Quality, Efficiency & Teamwork. The company takes great pride in its mission to better communities by building or repairing the clean water, storm water, sewer and road systems that are the underpinnings of public health, safety, and economic development. Their website is ***www.roloffinc.com.***