

Bridging the digital divide

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Most people in the United States don't think twice about having access to high-speed Internet service at home. It's now as basic as air conditioning.

But just as some homes don't have central air, broadband Internet is not yet universal. This digital divide is particularly acute between rural and urban areas. According to the federal government, Americans living in urban areas are three times more likely to have access to next-generation broadband than those in rural areas – and approximately 15 million mostly rural people lack access to entry-level broadband in their homes.

The call for change is coming from the highest level of the U.S. government.

"Today, high-speed broadband is not a luxury, it's a necessity," President Barack Obama said in a speech in Iowa in 2015 as he promoted expanding access to broadband communications.

In that same state, utility contractor Quality Communications LLC has been doing its part to address the digital divide by installing fiber lines in rural areas for several communications companies. One of those was a project this past fall installing 80 miles (128.7 km) of fiber to improve phone and Internet service, including streaming video, in western Iowa.

There's an extra sense of satisfaction on jobs like that, says John Krajicek, who is co-owner with his brother Mike of Quality Communications.

"This job brings services to rural customers that they normally cannot receive," he says.

The project also was an example that working in rural areas is not always as easy as it may seem. Utility locates, traffic control, changing soil conditions and rolling terrain all were part of the jobsite conditions.

"The old saying of every day is a new day – it can be that way in the directional boring world," says Rich Krajicek, another brother and one of the crew leaders for Quality Communications.

FROM ONE PLOW TO SEVERAL DRILLS

This experienced utility installation company has come a long way from its beginnings.

John and Mike Krajicek founded Quality Communications in 1999 in their hometown of Denison, Iowa, with no previous experience in the industry. They ran a semitrailer and automobile repair, tire and welding business.

One night, a friend who worked for a telephone company asked if they'd be interested in installing phone drops, which are the lines that run between a main line and a building, such as a home or business.

They bought a yard plow, a new pickup truck and built their own trailer — and the business was off and running.

After a couple of years, the telephone company they worked with was bought out, and the new owner said if Quality Communications wanted to keep the work, they'd have to install the main cable too. That's how Quality Communications got into horizontal directional drilling (HDD).

"We had a few bent rods, and we planted a drill bit that hasn't grown into a tree yet," Rich Krajicek says of his first time operating a drill.

Quality Communications now has 15 full-time employees making up four crews. Each crew has a horizontal directional drill and a ride-on tractor with a vibratory plow attachment. The company does electrical, water, sewer, geothermal installations and other jobs, but most of their work is telecom fiber installations.

FIBER JOB

This includes the fiber job in western Iowa last fall for Farmers Mutual Telephone Co. out of Harlan, Iowa. The phone company wanted an upgrade because its existing copper cable wasn't able to provide rural communities with the service expected these days. Quality Communications was contracted to install 80 miles (128.7 km) of fiberoptic cable, with the underground line protected by SDR 13.5 conduit varying in size from 1 inch to 4 inches (2.5 cm to 10.2 cm).

About two-thirds of the project was completed with a Vermeer RTX1250 ride-on tractor with a vibratory plow attachment to direct-bury the line along the road.

The remaining work was installed by using horizontal directional drilling, especially under culverts and waterways. They used a Vermeer D20x22 Series II Navigator® horizontal directional drill for most of the culvert shots and the smaller creeks. For bigger creeks and harder soils, they turned to a Vermeer D24x40 Navigator® horizontal directional drill.

They also tested the new Vermeer D23x30 S3 Navigator® horizontal directional drill, which John Krajicek calls an impressive machine.

"We feel that Vermeer drills are the most economical on the market for our industry," he says. "The support and service has been great."

The company had one or two crews working on the project, depending on the weather.

CHALLENGING CONDITIONS

The shots ranged from 100 to 300 feet (30.5 to 91.4 m). Required cover was 5 feet (1.5 m) for culverts and 8 feet (2.4 m) for waterways.

Culverts and creeks are common in agricultural areas and are a reminder that rural settings can be challenging for underground construction crews even though urban jobsites tend to be more often associated with above- and below-ground obstacles.

Rolling hills and wet weather added a degree of difficulty to properly position the drills. The same was true for traffic. Rural areas may not have the same traffic volume as a city, but large trucks and farm equipment like tractors are common.

"We take great pride in operating in a safe manner and making sure that people traveling down the roads stay safe," John Krajicek says.

Also like in a city, the underground infrastructure in rural areas is getting more and more crowded. That makes locating existing lines an important part of the job.

"People think 'rural,' but there's still buried electric," John Krajicek says. "There was the old copper system under the ground on this job. There's a ton of rural water lines. We constantly deal with other utilities."

CHANGING SOIL CONDITIONS

Ground conditions also can present a challenge. On this job, the Quality Communications crew encountered clay, sand and cobblestone during different bores.

"It gets pretty challenging when you get in the cobble and the clay and the sand," John Krajicek says. "It makes it difficult to steer. It's important to have a good operator on the drill who takes his time."

For the pilot bores, the crew used between a 4-inch (10.2 cm) and 5-inch (12.7 cm) Gladiator™ Club bit by Vermeer. That's their go-to style for most bores except those with hard rock or river crossings, when they'll use a bit designed for rock. John Krajicek says they've found that the Gladiator Club bit wears well.

When they had to backream, they used a flute-style reamer. Again, it's something they've had good luck with, and they like the way it mixes the drilling fluid and maintains the flow out of the hole.

FLEET MANAGEMENT

For Quality Communications, fleet management is another facet of every project they work on. The four crews typically operate at the same time across multiple jobsites. Management needs to ensure each project has the appropriate labor and equipment. Communication is key to ensure things go well from a logistical standpoint. John Krajicek says he talks with crew leaders daily about their projects, equipment and customers.

He also says it's important not to shortchange yourself on equipment.

"I've always been a big believer in having enough equipment to do the job, so when you show up to a jobsite you're capable of doing everything you need to do," he says.

RECEIVING THANKS

The job for Farmers Mutual Telephone Co. was completed in four months without any major issues. That doesn't mean it wasn't remarkable. The people who live and work along the new 80-mile (128.7 km) fiber line now have much better Internet service than they did before.

On jobs like this one, Quality Communications will sometimes hear words of appreciation from customers.

"They'll come out and say, 'You guys did a great job. Boy, we've been waiting for this for years,'" says Rich Krajicek. "It is rewarding when homeowners, business people and farmers say that."

Source: Vermeer Corporation