



*Top: Cutting through unpredictable rock formations in Idaho made this project especially challenging.
Bottom: The cab of Trenching Services' new T1155 which includes an enhanced operator program called Tec Plus.*

Basalt/Lava Rock Trenching Requires Patience, Experience

Idaho Falls, located in the southeast portion of Idaho, is situated along the famed Snake River. Its skyline features the Teton Mountain Range and Yellowstone National Park. It's sometimes hard to remember that this picturesque region features some of the hardest rock formations in the United States.

The area is known for its basalt/lava formations. These dense areas range anywhere from 12,000 to 25,000 psi in compressive strength. But it's not the pressure that is the significant factor. This type of rock is very resilient and requires a significant amount of energy to break. The small holes in the rock actually act as shock absorbers and keep the rock from fracturing along a straight line. But use too much energy, and you can create an even bigger problem.

"I've seen contractors try to blast this type of rock and ruin an entire area because they used too much energy," says Bob Webb, president of Trenching Services based in Sparks, NV.

This is where Trenching Services comes in. The company was formed in 2004 by Webb and his business partner Dave Taylor. They specialize in hard rock trenching

and site preparation, using a Vermeer Terain Leveler Surface Excavation unit. Most of their work centers on cutting trenches for the installation of underground utilities, but they also have worked on numerous cross-country pipeline projects as well.

"We've figured out how to effectively trench in basalt/lava rock," says Webb. "This stuff is very difficult to cut and does not lend itself to high production trenching. Experience counts and we have a daily diet of it."

Trenching Services was recently hired to cut more than 25,000 feet of trenches for a new development near Idaho Falls. The 900-acre development is a residential planned community that will include multi- and single-family homes, schools, golf course, walking paths and minor retail. The trenches will house the development's



water, sanitary and storm sewer, gas and electrical lines.

Project specifics

The first phase of the project required Trenching Services to cut 12,000 feet of sanitary and 2,500 feet of storm sewer trenches. PVC lines ranging from 18 to 24 inches in diameter were placed in a 36-inch-wide trench that measured 12-feet

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deep. The sewer trenches were cut on grade using a laser control system. More than 9,000 feet of eight-, 10- and 12-inch PVC water lines were installed in a separate 36-inch-wide trench cut to a depth of seven feet. The majority of the trenches contained a single pipe; however, some were classified as joint utility and will contain power, gas, fiber and communications lines.

"Ninety percent of the trenches contained rock," says Webb. "In some cases, the rock is at the bottom of the trench and others contain solid or monolithic rock for the full depth."

Developers in this area have not seen a lot of trenching. Historically, they've blasted at these types of sites. Blasting has the potential to leave large boulders the size of a small car on the site or create larger-than-necessary holes, which are not aesthetically pleasing to potential home builders and buyers. Also, blasting does not create a uniform trench sidewall or bottom. In most cases, large amounts of fill gravel must be used to create a level trench bottom. Trenching produces a square sidewall and trench bottom, as well as a usable backfill fill product, saving time and making the site more aesthetically pleasing.

Trenching Services mobilized three of their Vermeer track trenchers – a T1255, T1055 and the new T1155 which includes Tec Plus for user-friendly operation – for this project. Due to the unique rock formations in this region, Trenching Services has taken the time to design their own tooth formation, which Vermeer manufactures for them.

"We design our own pattern because this rock is so hard and different from what you will find in other parts of the country," says Webb. "We gather a lot of data from each site and continuously enhance our design to ensure we are getting maximum productivity."

Production rates

Before Trenching Services arrives on a jobsite, they have already analyzed the rock and adjusted the tooth pattern based on their past experience. This effort paid off as each trencher averaged about 200 feet per day in these brutal rock formations. Daily production ranged from 50 to 400 feet per machine, depending on the rock conditions.

"The numbers may not seem like a lot, but in these conditions, 200 feet per unit per day is substantial," says Webb. "We were able to attain higher production rates in areas where rock was only present in the bottom of the trench, but move 50 feet and you may hit top to bottom rock. That tends to slow down production."

According to Webb, managing tooth life is an everyday job. Crews have had to change out the tooth style and pattern daily, and sometimes hourly, depending on the rock conditions. Their operators are experienced and smart about what to use in certain conditions.

"Despite the hardness of the rock, this was an everyday job for Trenching Services.

"It's a fairly typical job for us," says Webb. "This rock has been much harder than the average, in the upper end of the spectrum, but the developers appreciate not seeing those large piles of boulders on the site when they are trying to build and sell homes. Trenching is a new concept for developers in the region and we are leading the way to educate them on how trenching can benefit their business and time lines."

FOR MORE INFORMATION:

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