



# Boring Las Vegas

## Team Fishel Installs 12,000 feet Of Fiber In Harsh Rock Conditions Under Vegas Streets

**D**oing any kind of road work in downtown Las Vegas is going to take some planning, but installing 4,500 feet of fiber-optic cable in the middle of the city is going to require weeks of painstaking coordination. This was the case for Brian Dunlevy and his crew at Team Fishel in Las Vegas.

The company was hired by AT&T to reinforce an existing fiber line, which will upgrade to a new long-haul fiber communications line and make a dark fiber integration between AT&T and Level 3 Communications, which operates one of the largest communications and Internet backbones in the world. Dark fibers are lines that have yet to be used within cables that have been laid and are not yet connected to any device.

Team Fishel, based in Columbus, OH, is a family-owned utility construction and network installation contractor with 23 offices in 11 states. The company was founded by Ken Fishel in 1936 and moved into the Las Vegas market in 2006 after purchasing Kacel Communication, a longtime underground contractor in the area.

Before starting on the downtown project, Team Fishel completed a 7,500 foot installation in Warm Springs, NV, just west of Interstate 15. The 4,500 feet in downtown Las Vegas continued the project and was just north of the Strip running along Las Vegas Boulevard to Charleston Street.

"The planning was pretty substantial on this project," says Dunlevy, area manager

for the Las Vegas Division of Team Fishel. "We had to coordinate with the city and county, as well as the Nevada Department of Transportation."

In addition to the fiber line upgrade, a 7,000-foot road improvement project was taking place at the same time. Team Fishel had to work with other contractors to coordinate schedules. The entire permit process took about three and a half weeks.

### Work begins

The project began in September 2007 and required 12,000 feet of drilling for the installation of 70,000 feet of cable, as well as cable marker posts and five manholes.

"It was a substantial project from that perspective," Dunlevy says.

It wasn't just the pre-planning that took time. Onsite preparation was also tedious. Team Fishel researched each drill shot, exposing the existing facility as they were marked to determine the depth and distance on the running line. Information about existing facilities was entered into the Vermeer Atlas Bore Planner software, which provides a graphic visualization of the job.

Using the data that is entered, Atlas Bore Planner provides a path to follow or tells the operator what to move to make the bore work. The bore path is provided in two formats; one screen displays a top and side view, the other shows a report that lists the

depth and pitch of each drill stem.

"Southwest Gas required a 24-inch separation from any transmission line and 12 inches from all distribution lines," Dunlevy says. "We could plug in all the existing facility information and let the software program plan all the depth and distance from the existing lines."

Once the planning was completed, Team Fishel started work with a Vermeer D36x50 Series II Navigator HDD rig to install three 1.5-inch HDPE conduit lines to hold the new fiber-optic cable for AT&T.

Often a problem in the Vegas area is caliche soil – a calcium carbonate that was formed when water running through the valley built up layered deposits and sealed itself off so that water could no longer run through. It's incredibly hard to drill through, and operators prefer to avoid this type of ground conditions.

"The drill head we used gave us the capability to drill through hard soil and cut and carve the caliche," Dunlevy says. "That way we could make our steering corrections. We had to get 22 feet deep to get under a transmission line and provide proper clearance."

At one point the crew got into an underground wash area, where they switched to a standard 5-inch duckbill to complete a couple of shots in soft, sandy gravel. This drill head gave Team Fishel the flexibility to make the steering corrections required in the soft soils.

### Caliche blues

Caliche in the Vegas area can range from 6,000 to 12,000 psi and can force crews to change plans midstream.

"The caliche prevented us from getting down to grade," Dunlevy says. "With the

angle of inflection required to be successful, we had to maintain a defined pitch and depth, and the caliche wouldn't allow us to drill through it. So we excavated about a 10-foot long area approximately 18 inches wide and busted out the caliche with a hoe ram."

Dunlevy adds this excavation was the launch pit that allowed the Team to get below an 18-inch thick layer of caliche about 24 inches below the surface.

Dunlevy needed a 5.5-inch tunnel for the conduit. Once the pilot bore was completed they used a 6-inch fluted rock reamer to build the tunnel and pull back the three 1.5-inch HDPE conduits. Once that was accomplished, they made their tie-in at each bore location. Standard EZ-Mud Bentonite mixtures were used for the job, except when they hit the wash area and needed to insert some additives to maintain the bore tunnel. The length of the shots on this job averaged about 450 feet, Dunlevy says, with some as long as 550 feet and others as short as 250 feet.

"We were one of the first companies to really endorse the whole mini-directional drill program in the mid 1980s," he says, adding that the directional drilling market in Las Vegas "is trailing" in comparison to other parts of the country.

"We need to make sure everyone understands the cost savings to the customer and the convenience to the traveling public," Dunlevy says.

This project was the first of a three-phase project for AT&T, coming in at \$570,000 for Team Fishel's work. Dunlevy estimated the project would take about 20 days of boring, and it took 19 days with up to 18 teammates on the job at one point.

"There's more work coming to extend this line," Dunlevy says, "but that's still in the future." AT&T is a long-time customer for Team Fishel, who also does work for Verizon Business, Nevada Power, Level 3, Cox Communications and Time-Warner Telecom.

### Advice

Dunlevy has advice for those working in an area where caliche might be found.

"Just avoid it if possible!" he says, with a laugh. "Most of the caliche layers are just that – in layers. Knowing where the layers are is going to determine your success. Once you get into them, maintaining proper grade and pitch is probably not an option. You usually have to excavate to get under the layer and to get back out."

He adds that caliche is very abrasive with cemented gravels, feldspar and quartz in it, which makes it very different from the soils and grounds conditions usually found in some areas.

"The drill operator will know when he hits it immediately," Dunlevy says. "You

can't carve, you can't push – being able to carve through caliche just isn't feasible or time-effective."

The biggest challenges Team Fishel faced on this job was coordination with the various city, county and state entities.

"Safety is always a huge concern, and we needed to make sure we had a strong safety plan in place for our teammates, customers and the public," Dunlevy says. "In addition, we needed to accommodate traffic and pe-

destrians." By working nights, traffic was accommodated and pedestrians minimally inconvenienced.

### FOR MORE INFORMATION:

**Contractor:** Team Fishel, (800) 347-4351, [teamfishel.com](http://teamfishel.com)

**HDD equipment:** Vermeer Manufacturing, (888) 837-6337, [vermeer.com](http://vermeer.com)

**Drilling fluids:** Baroid Industrial Drilling Products, (877) 379-7412, [baroiddp.com](http://baroiddp.com)