AFL CASE STUDY

OHIO DEPARTMENT OF TRANSPORTATION

CHALLENGE

Install a high-capacity fiber optic cabling system to support highway sensor data collection requirements for Ohio DOT's Smart Mobility Corridor, a 35-mile stretch along U.S. Route 33 connecting Dublin and East Liberty, Ohio.

SOLUTION

Utilized AFL's LM-Series, high-density 432-fiber OSP MicroCore® fiber optic cable that was air-jetted into Dura-Line's FuturePath, 7-way 22/16 OSP Bundled MicroDuct.

RESULTS

Direct buried MicroDuct along the roadside and the AFL OSP MicroCore cable installed in one of the seven MicroDucts within the pathway.

Micro-technology backbone cabling approach required significantly less time compared to traditional HDPE duct and pulled-cable practices.

Spare MicroDucts within the pathway allow for future network upgrades of up to six additional AFL 432-fiber OSP MicroCore cables (totaling 3,024 fibers) using low-cost cable-jetting technology.

CHALLENGE

Ohio is the world leader in developing smart mobility technology. The Ohio Department of Transportation (ODOT) required a fully redundant high-speed communications network to allow the state to partner with automotive research centers and local governments in the region to create a place to safely test innovative technologies. By installing a "Smart Mobility Corridor," they would have a 35-mile fiber network that links the Honda/OSU Transportation Research Center (TRC) in East Liberty, Ohio, and the Ohio Super Computer Center through Dublin. This "Corridor" required a high-capacity fiber optic network which will connect researchers with data from sensors located along the roadway and will provide more frequent and accurate reports on traffic, weather conditions and improvements in incident management.

SOLUTION

For the project, AFL and Dura-Line partnered to provide a solution that offered significant savings on installation labor costs and time to install. AFL provided 35 miles of its high-density 432-fiber OSP MicroCore GR-20 compliant loose tube fiber optic cable. This 432-fiber loose tube cable, with a diameter of 12.6 mm, is the smallest, most robust product of its kind in the market. The 432-fiber cable is part of AFL's LM-Series OSP MicroCore® fiber optic cable product line designed for outside plant installation in MicroDuct conduit systems. The unique, high-fiber-density concept of AFL's LM-Series offers a cable construction that safely accommodates from 12 up to 432 fibers and can be jetted into MicroDucts with inside diameters ranging from 10 mm to 16 mm, making it ideal for the Dura-Line FuturePath MicroDuct.

Dura-Line's FuturePath 7-way conduit consists of seven small ducts, each with an interior diameter of 16 mm, that are bundled together with one overall sheath. The 7-way MicroDuct can support more than 3,000 fibers in total, which allows for expansion to meet the demand of data acquisition now and in the future. The FuturePath 7-way was installed by a combination of pathway burying methods including over 102,000-ft using a standard vibratory plow machine.

The jetted fiber optic cable system works by feeding the LM-Series 432-fiber cable into a pneumatically-driven jetting unit that is connected to a duct with a one-way air valve. While the jetting unit continually pushes the fiber optic cable into the duct, high-pressure air from a compressor is introduced into the pathway through the one-way air valve which propels the cable through thousands of feet of buried MicroDuct. The air-jetting

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COMPONENTS USED FOR SMART MOBILITY CORRIDOR:

AFL
- LM-Series 432-fiber OSP MicroCore® fiber optic cable

Dura-Line
- FuturePath® MicroDuct, 7-way

installation process offers significant costs-savings compared to traditional methods of pulling the cable. Additionally, long distance installation distances from a single point are possible due to the combined properties of the high air-drag OSP MicroCore outer sheath and the ultra-low-friction between the cable jacket and the silicone lining of the MicroDuct.

RESULTS

The installation contractor for ODOT installed over 35 miles of AFL's LM-Series 432-fiber OSP MicroCore cable in one MicroDuct within Dura-Line's FuturePath 7-way MicroDuct in two short months. The remaining six open pathways within the MicroDuct allow for future developments along the same 35-mile route. Additionally, this solution allows ODOT and other highway research organizations to add new technology or expand and upgrade the existing network quickly and easily without impacting operations. The AFL and Dura-Line micro-technology cabling infrastructure provides ODOT with an easily upgraded optical platform to support their Smart Mobility Corridor project current data acquisition needs and be readily upgrade as the sensing and monitoring demand grows.

For now, the "Smart Mobility Corridor" provides the technology for ODOT to run and maintain a Smart Lane to deal with traffic and communicate with the public on the road. Looking toward the future of highway transportation technology, ODOT considers this project as the first step to eventually implementing driverless trucks as a means of a transportation solution across the state.

ABOUT AFL

Founded in 1984, AFL is an international manufacturer providing end-to-end solutions to the energy, service provider, enterprise and industrial markets as well as several emerging markets. The company's products are in use in over 130 countries and include fiber optic cable and hardware, transmission and substation accessories, outside plant equipment, connectivity, test and inspection equipment, fusion splicers and training. AFL also offers a wide variety of services supporting data center, enterprise, wireless and outside plant applications. For more information, visit www.AFLglobal.com.

ABOUT DURA-LINE

Dura-Line is a leading international manufacturer of communication and energy infrastructure products and systems including conduit and accessories designed to provide protection and fast, safe installation of communication networks. Dura-Line is headquartered in Knoxville, TN. For more information, visit www.duraline.com.