

Smart, Connected Roadways

The Pennsylvania Turnpike Commission deployed fiber optic communications to benefit motorists and add fiber for leasing.

Project Summary

Like many agencies, the Pennsylvania Turnpike Commission (PTC) wanted to innovate. But, their existing microwave network had limited capacity, and couldn't support the value-added safety and mobility applications that PTC required. PTC launched an advanced fiber optic network project to boost connectivity between their administrative buildings, as well as support All-Electronic Tolling (AET) and Intelligent Transportation Systems (ITS) for improved safety and mobility. With the bandwidth provided by the fiber optic network, PTC will be able to install automated tolling to support future autonomous vehicle traffic on the turnpike. The two-phase project includes:

- 220-mile fiber optic network
- Micro-trenching to overcome rocky terrain and minimize driver impact
- High-speed data and fiber optic networks along the turnpike
- Extra fiber for future revenue generation opportunities

Black & Veatch is conducting engineering, permitting, procurement and construction of PTC's fiber infrastructure. This includes design of the dark fiber, procurement of major materials, micro-trenching on the turnpike shoulder, placing vaults, laterals, attachments to bridges, inside plant work at demarcation sites, and fiber installation, splicing and testing. The entire project (mainline and laterals) are entirely contained within the PTC's Right of Way.

PTC Project Datapoints (Phases 1 and 2)

3 million

*linear feet of fiber
deployed*

184 miles

of micro-trenching

139

new bridge
attachments

24

interstate crossings



Amping up data capabilities on the PA Turnpike is necessary to prepare for AET and intelligent transportation and CAV systems. Fiber optic infrastructure is an essential element."

Neil Raup | Manager of Total Reconstruction Programs for the PA Turnpike

Parallel Benefits

PTC's high-capacity network includes extra fiber. PTC plans to lease the infrastructure to outside organizations, such as cellular network providers or other groups seeking high-speed broadband. Infrastructure leasing will deliver parallel benefits that reduce the impacts of PTC's initial infrastructure investment.

Future-Driven Technology

The project will provide high-speed data communications at the roadway to support the Open Road Tolling initiative (gantries above the roadway) and the ITS program, positioning PTC to meet its communication needs of the future. This project also supports future connected and automated vehicles (CAV) capabilities. With greater connectivity, PTC will be able to improve roadway safety through applications like smart signage and notifications, as well as improve mobility on the turnpike through technologies like traveler information systems and smart parking. With a state-of-the-art communications system as the foundation, PTC will be able to increase smart transportation functions over time.

