



Project Summary

Organization

Precision Contracting Services Inc.

- Specialist in fiber optic communications infrastructure and low-voltage applications
- Designs, installs, and maintains wide area networks and metropolitan area networks
- Includes support for intelligent transportation systems

Solution: Communications

Location: Florida, USA

Project Objectives

- Ensure an integrated, intelligent, and efficient approach to network management
- Improve communication between network engineers and project managers
- Deliver projects more cost-effectively

Products Used

Bentley® Fiber, Bentley Geo Web Publisher® for Communications, Bentley® Inside Plant, Bentley Map®, MicroStation®

Fast Facts

- PCS uses Bentley's communications products as the core of a software solution that develops 3D digital models of network infrastructure
- Projects using these products are 25 percent more cost-effective
- PCS has grown its contracting business quickly by using Bentley's communications products

ROI

- PCS clients have seen an average 25 percent reduction in rework
- Lower design and build production costs has increased return on investment for PCS clients by 25 percent

Precision Contracting Services Deploys Bentley's Communications Products

Innovative Network Design and Management Solution Increases Return on Investment for PCS Customers by More Than 25%

Keeping Communications Networks Operational and Current

Precision Contracting Services (PCS), a specialist in fiber optic communications infrastructure and low-voltage applications, designs, installs, and maintains wide area networks and metropolitan area networks, including support for intelligent transportation systems. A major challenge facing PCS's clients is the need for accurate, real-time information about their communication networks, in an industry where asset management standards have been typically low, and infrastructure data is often poorly organized and obsolete. To remedy this, PCS developed the FiberTrak™ software system based on Bentley's communication products. FiberTrak enables network managers to quickly and easily access critical information related to their fiber optic network infrastructure. PCS estimates that FiberTrak has lowered the cost of work for its customers by at least 25 percent.

Fast, reliable and comprehensive communications networks are vital to almost every aspect of safety and convenience in modern life, from Internet access, security systems, power supply management, traffic management and weather forecasts, to emergency response. As the world has become more dependent on digital data, the ability to identify potential failure points has become increasingly important. The geospatial information system (GIS technology) from Bentley Systems applied to communications networks is playing a crucial role in the operations and maintenance of such networks.

A Dynamic and Cohesive Database

Network engineers need knowledge about connectivity, passive infrastructure location, active component configuration, and correlative powering considerations. They also need real-time access information as they perform a range of administrative and physical maintenance tasks, while locating and preserving assets. PCS developed FiberTrak to enable users to access critical infrastructure information through the Internet, using real-world engineering maps with a level of detail that includes splicing diagrams, device specifications, and bandwidth allocations. Network managers use FiberTrak to locate and verify existing infrastructure and report changes using redlines. The system's secure servers store the

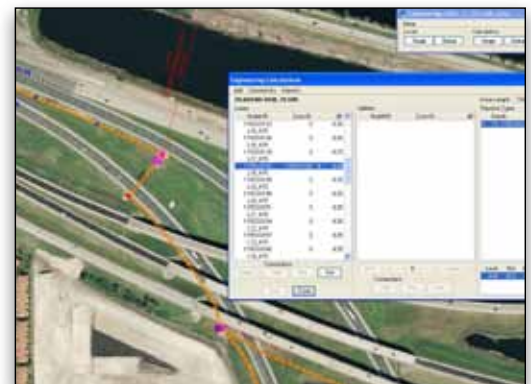
intelligent network information and manage access by authorized personnel.

By combining disparate pieces of a network into a single database, FiberTrak provides accurate and minutely detailed information that is easy to access, understand, and utilize. FiberTrak provides an asset management documentation dataset that facilitates operations and maintenance activities, supports detailed inventory management, enables the configuration of devices, and delivers powerful reporting.

Intelligent Network Model – A Fusion of CAD and GIS Technology

The core of FiberTrak comprises a range of Bentley's communications products including MicroStation, Bentley Fiber, and Bentley Inside Plant. Working alongside other products and interface processes that PCS has developed, these products enable FiberTrak to establish a GIS/CAD asset data model. Bentley Geo Web Publisher for Communications enables remote access to this intelligent network model.

FiberTrak gives teams the ability to customize deliverables including printed plan sets; Google Earth KMZ files; intelligent PDFs, DGN XFM and DGN files; custom Microsoft Access reports from Oracle; and Esri SHP files. The Bentley software-based model allows PCS's clients to monitor their infrastructure assets and to export native format data to other



Bentley's communications products generate automatic engineering calculations while designing.

"Bentley's communications products, with their powerful fusion of CAD and GIS capabilities, allow us to run our projects cost-effectively, which in turn has enabled us to grow our business quickly."

— Bruce Boyd, director, engineering and sales, PCS

Find out about Bentley at: www.bentley.com

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The screenshot shows the FiberTrak software interface. At the top, there is a network diagram with a fiber optic cable and a splice point labeled 'CCTV3017.6'. Below the diagram is a table with columns for 'Splice', 'Butter', 'Fiber', 'Splice', 'Butter', 'Fiber', and 'Notes'. The table contains multiple rows of data, including splice IDs, fiber counts, and notes.

Splice reports are generated quickly in Bentley Geo Web Publisher.

applications used for network administration, emergency maintenance, and the planning of modifications related to new construction.

This dynamic GIS/CAD data model allows all members of an operations and maintenance team to access information from a single source, with the knowledge that everyone is using the most current data. Different team members can update information about the network, while performing individual maintenance tasks.

Cost-Effectiveness and Collaboration

According to Bruce Boyd, director of engineering and sales, PCS first adopted Bentley's communications products because of their interoperability with other industry GIS formats and their impressive range of functionality, including the ability to store all information in Oracle Spatial, edit reference files from the current working file, apply coordinate systems to projects, and apply custom attributes to network features. In addition, Bentley's communications products provide dynamic views to create layouts, execute thematic mapping, and print organization – all time-saving features that reduce the likelihood of interpretation errors.

By using Bentley software as a base platform, FiberTrak has been able to provide a wide range of deliverable options. Turning a fiber optical network over to a client with a clearly defined outline for operations and maintenance provides efficiencies that save time and money. As was pointed out earlier, PCS estimates that it has lowered the cost of work for its customers by at least 25 percent. Typically a client that has implemented FiberTrak can find answers within minutes, instead of the hours it would take to look through plans and verify their accuracy.

Another major benefit for PCS's clients is cost-effective network administration delivered through tried and tested Bentley software features such as bills of material reporting, asset inventory, and engineering calculations, along with spatial location of network devices with detailed attributes.

For example, clients can easily query the intelligent network model to assess the cost associated with upgrades. This means they can make better-informed business decisions.

Through geo-referenced infrastructure data and full-scale geometric component documentation, engineers can easily manage circuit outage problems and maximize device uptime, raising the overall quality of service for systems relying on the network. In addition, engineers can support and evaluate proposals for network modification or expansion. Because collaboration across project teams is enhanced, issues are addressed and resolved more quickly.

Better Return on Investment for Customers

Bruce Boyd explains that the real value for clients lies in the fact that PCS is able to provide complete, fully functional documentation projects on time or ahead of schedule. For example, using FiberTrak, PCS completed a 120-mile project from start to finish in 18 months. In comparison, the documentation for another section of the Florida Department of Transportation network was still not finished after four years using a different software application.

With FiberTrak, not only can PCS easily document new networks, it can also catalog existing networks. It has now deployed FiberTrak on virtually all its projects or client network extension work orders since 2006, which represents over 200 projects and approximately 1,000 miles of network. In that time, PCS estimates that it has increased return on investment for its customers by over 25 percent by lowering its own production costs. This means that even with upfront costs, design and build delivers much better value than network leasing.

New Business Gains for PCS

Using Bentley software, PCS has also expanded its market reach. With the depth of information provided by Bentley Geo Web Publisher for Communications, PCS can compete more effectively with other web-based asset management applications. As a result, PCS saw a 66 percent increase in its quarterly hosted services business in 2010. In addition, PCS found that it was competitively positioned to take on supplementary construction activity and reciprocal engineering services.

As a result of productivity increases and rework reductions for its clients, PCS has increased the number of internal staff using Bentley software, and has also extended its use of Bentley LEARN training resources. In 2010, PCS expanded its technology partnership with Bentley by providing real-world data that can be used in PCS FiberTrak for modeling intelligent transportation systems networks using Bentley's communications products. This data will enable asset managers, maintenance engineers, and network designers and planners to be more accurate and efficient.