



Illinois, UP Collaborate to Accomplish Project



The Safety, Asset Utilization and Fiber Optic Technology and Telecom departments are collaborating to analyze, protect and install fiber optic cable along UP's right of way from Chicago to St. Louis for the High Speed Rail project.

The project will provide a high-speed rail alternative to highway and air travel between the cities. Scheduled for completion by the end of 2016, enhancements have been made to bridges, culverts, drainage areas, signals and wayside equipment. New sidings and a second track were laid in some locations. To better manage the project, it was separated into tiers to maximize progress.

Both departments are preparing to modify or replace approximately 250 miles of fiber optic cable along the right of way, which would primarily transport data to control and monitor signals at grade crossings — an important feature for trains running at 110 mph.

Paul Pino, SAFT project engineer, created design plans for where new fiber would be installed to understand the costs involved to modify the existing fiber or install new fiber. He took Precision Measurement Vehicle data and created a computerized design, taking into consideration future projects.

"I took the railroad project plan, including new track plans, and referenced them into my files and tried to make the best determination to avoid those impacts," he said. "Then we won't have to relocate the fiber later and can potentially avoid additional costs."

UP acquired the 30-year-old, 24-count fiber cable from one of its fiber optic customers. This is one of several fiber optic systems along this route.

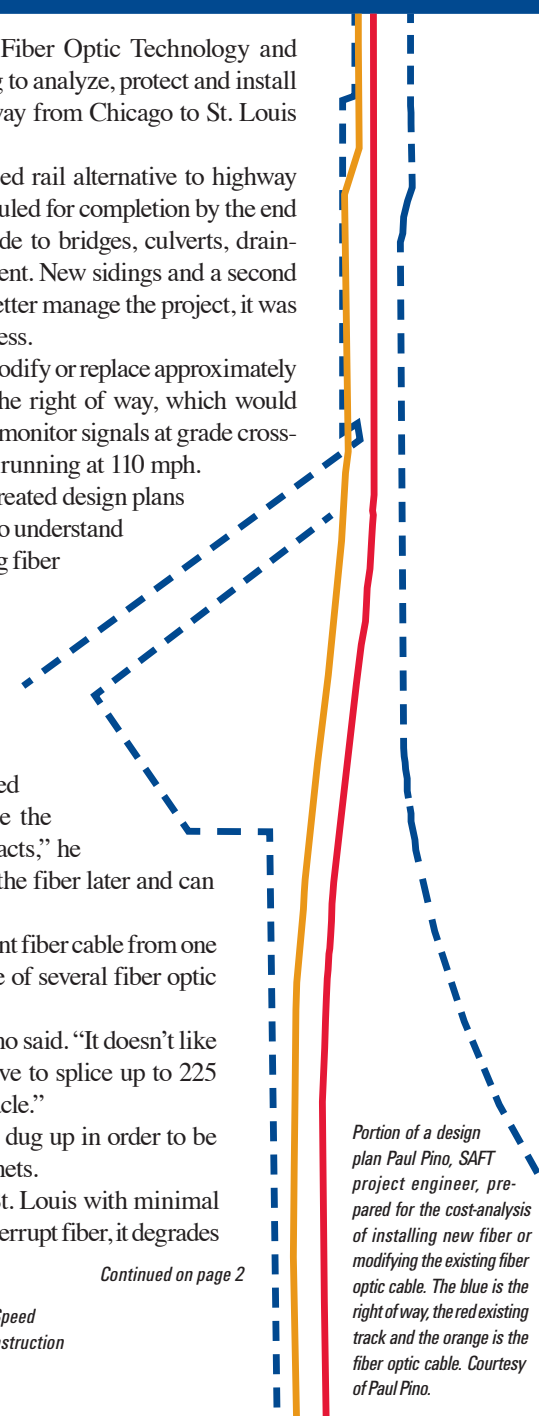
"The old fiber is old technology," Pino said. "It doesn't like to be spliced or fused, and we will have to splice up to 225 different crossings. That's a huge obstacle."

The existing fiber would need to be dug up in order to be tied into and extended into signal cabinets.

"The old system ran from Joliet to St. Louis with minimal break-offs," Pino said. "Anytime you interrupt fiber, it degrades

Continued on page 2

Fiber optic cable is relocated in Normal, Ill., for the High Speed Rail Project. Photos courtesy of Toby Tobias, regional construction coordinator.



Portion of a design plan Paul Pino, SAFT project engineer, prepared for the cost-analysis of installing new fiber or modifying the existing fiber optic cable. The blue is the right of way, the reexisting track and the orange is the fiber optic cable. Courtesy of Paul Pino.

Illinois, UP Collaborate to Accomplish Project

Continued from page 1

the system by lessening the light.”

Toby Tobias, regional construction coordinator, oversees fiber replacement in certain locations and track work to keep our existing customers’ fiber systems protected.

“The main challenge is the aggressive timeline, but it needs to be done,” said Scott Haines, manager Telecom operations. “It also affects our contractors’ ability to get the correct fiber for the amount needed to put this in and installed in the time frame we are allotting them.”

Telecom technicians will later install equipment including data switches in cabinets for signal transport.



The project is separated into tiers to maximize progress and needs.

Shallow says goodbye

Time flew by for Mike Shallow, senior manager Fiber Optics and Asset Utilization. After 41 years of railroad experience, he retires March 31.

Originally from Wisconsin, he started with Soo Line Railroad in June 1974 on a rail gang. In May 1975, he began working for Chicago & North Western Railroad (C&NW) in Wisconsin as a section gang member and continued to work seasonally to fund his education. He joined C&NW full-time in March 1978 and switched from section gang to the Bridge & Building Department.

When C&NW and Union Pacific merged in 1995, Shallow advanced to the Fiber Optics Group, which is now Safety, Asset Utilization and Fiber Optic Technology (SAFT). He worked as a construction coordinator before transferring to Omaha to join the management team.

In his current role, he manages UP’s Call Before You Dig program and regional construction coordinators, ensuring they have the proper resources to do their jobs.

“From my perspective, the construc-

tion coordinators are the true heart and soul of the SAFT group,” Shallow said. “They’re the ones who are hands-on in the field with customers. They make our program and everything we do the success that it is.”

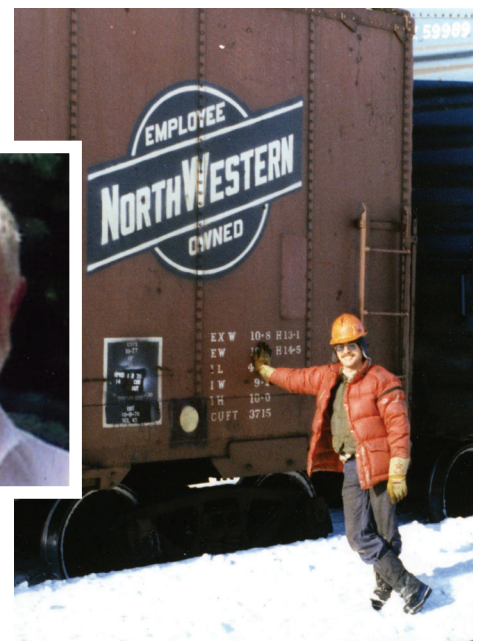
During his years with SAFT, he has been involved with organizations such as Common Ground Alliance (CGA) and North American Telecommunication Damage Prevention Council (NTDPC). As an original member and first co-chair of the CGA Data Reporting & Evaluation Committee, he participated in the original development of the Damage Information Reporting Tool (DIRT) and its continued evolution.

Shallow enjoyed working with customers and co-workers, and wonders where the time went.

“I hope I get the chance to interact



Mike Shallow, senior manager Fiber Optics and Asset Utilization



Mike Shallow began his railroad career joining Chicago & North Western Railroad in 1975.

with all the friends I’ve made during my 41-year career,” he said.

Shallow and his wife of nearly 30 years, Vicky, are developing their Wisconsin ranch. He looks forward to the completion of his shed where he will continue his woodworking hobby. Because he traveled nationwide for work, he currently does not have plans to travel during retirement.

How Much Fiber Does SAFT Manage?

The SAFT team manages about 34,000 route miles of customer fiber optic systems installed along Union Pacific rights of way. That is:

Six round-trips from New York City to Los Angeles



14 Tour de France races

When working near the right of way, it's important to call before you dig 48 hours in advance so utilities can be marked.

Call Before You Dig Hotline Success

Union Pacific's Call Before You Dig (CBYD) System 2.0 has been in use for one year. More than 19,000 tickets were created during 2014, compared to about 18,200 during 2013.

CBUD is primarily the Safety, Asset Utilization and Fiber Optic Technology (SAFT) group's internal system for protecting about 34,000 route miles of customer fiber optic systems installed along Union Pacific rights of way.

Rule 44.5 states: "At least 48 hours before performing work requiring excavation or construction along the railroad's right of way, call Union Pacific's Call Before You Dig hotline, 800-336-9193, to determine whether fiber optic cables are present in the proposed work area. When calling the hotline, provide the following information about the work area:

- Service unit, subdivision and milepost limits.
- Description of work to be performed.
- Date excavation will begin.
- Name, title and telephone number of a contact person associated with the work.

If fiber optic cables are present, do not begin work before the cables have been located and protected by the fiber optic communications company."

The hotline is answered 24/7 to accommodate emergency requests, and 7 a.m. to 4 p.m. Central Time for other requests. Calls are routed to the Response Management Communications Center, which disseminates information to Union Pacific's customer protection centers so appropriate personnel can be dispatched to the field, when needed, to locate and protect facilities.

A recent addition to CBUD is the notification of local telecom managers of tickets to protect underground telecom assets.

"These assets are fiber or other cables that are important to internal railroad operations," said Tom McGovern, SAFT project engineer. "These managers get copies of the tickets pertaining to work happening in their territories and respond as needed."

To help the RMCC efficiently take calls and find locations, work continues to create a more robust system of maps and visual aids.

According to the Common Ground Alliance, an organization dedicated to protecting underground utility lines and safety of people who dig near them, there are more than 100 billion feet of underground utilities from various industries in the United States.



Similar to Union Pacific's Call Before You Dig hotline, 811 provides a public, local one-call notification center that takes the caller's information and communicates it to local utility companies to identify the approximate location of underground facilities. According to the CGA, 51 percent of American homeowners who planned to dig for projects — including landscaping, installing a fence, mailbox or deck in 2014 put themselves and communities at risk by not calling 811.

Digging without knowing the approximate location of underground utilities increases the likelihood of unintentional damage, which can cause serious injury, service disruptions and repair costs.

Chalk One Up for Redundancy, Communication

Communication led to a swift recovery effort Jan. 26. While working in a fiber hut near Denver Intermodal Yard, a technician inadvertently cut a fiber optic cable. He immediately contacted Brandon Jager, regional project supervisor-Telecom, triggering a calling chain to SAFT group's Clarence Styvar, regional construction coordinator, and Ron Sanderson, Sprint technician.

Within a few hours, Sanderson arrived on-site and created a temporary solution. He returned the next day to permanently splice the cable, which requires precision to fuse each fiber together as data is transmitted by light and needs a clear path.

Data transmission was uninterrupted throughout the repair process thanks to UP's network redundancy.

"Most fiber systems have redundancy, so if something happens, it automatically switches to another route," Styvar said. "This location happened to have a microwave site. When the fiber was cut, it just switched on. It worked like it was supposed to."

Thanks to interdepartmental communication between Union Pacific's SAFT and Telecom departments and Sprint, along with UP's redundant network, service to Denver-area customers was not interrupted, keeping Sprint customers' business and personal communications fluid.

This newsletter appears under direction of the IT Department. For news coverage, contact the newsletter office by phone at 402-475-6397, fax 402-475-6398, mail information to 2201 Winthrop Rd, Lincoln, NE 68502-4158, or email newslink@newslink.com. This material is intended to be an overview of the news of the department. If there are any discrepancies between this newsletter and any collective bargaining process, insurance contracts or other official documents, those documents will govern. UP continues to maintain and reserves the right, at any time, to alter, suspend, discontinue or terminate all plans and programs described in this newsletter. This newsletter is not an employment contract or any type of employment guarantee. Any photo submitted may be used. Anyone who submits a photo retains all rights to the image. However, by submission you give the newsletter permission to use your photo(s) in all related media. Thanks to everyone who contributed to this newsletter, including, but not limited to, Tom McGovern, Paul Pino, Toby Tobias and Mike Wallman.



BUILDING AMERICASM

*UNION PACIFIC RAILROAD
1400 DOUGLAS STREET
OMAHA, NE 68179*

PRSR STD
U.S. POSTAGE
PAID
MAIL U.S.A.



Colocation of Equipment Benefits UP, Customers

In 2014, Telecom Construction crews completed the replacement of seven towers along rights of way to make way for colocation of railroad and other equipment.

Towers were replaced in Alta Vista, Kansas; Chico, California; Harper, Wyoming; Jonesboro, Arkansas; Nebraska City, Nebraska; Shreveport, Louisiana; and Topeka, Kansas.

Companies contacted the Safety, Asset Utilization and Fiber Optic Technology group inquiring to colocate or add additional equipment to the tower. After determining whether the tower can hold the weight of additional equipment, Union Pacific looks at the return on investment of replacing the tower.

“These were old and aging towers that Union Pacific would look to replace in the near future, but with the possibility of revenue and service enhancement, UP elected to replace them

sooner,” said Mike Wallman, SAFT systems engineer. “This allows Union Pacific to get a return on their investment while replacing an aging asset.”

One of the new towers replaced for a customer has produced additional customer inquiring to lease space.

“The benefit for our customers is that they don’t have to maintain the tower structure,” Wallman said. “It also benefits UP because of improved coverage by the cell carriers who wish to colocate, and UP has many cellular devices in the field. These colocation initiatives provide for better cellular and data coverage for our employees.”

UP plans to replace additional towers in 2015. The work will benefit UP and customers served, providing a new updated structure for the railroad’s internal operating use and deliver reliable services for customers.

How Lightweight Is Fiber Optical Cabling?

Thinner and more lightweight than traditional copper wire, NASA uses fiber optic cabling in space shuttles. Companies that build airplanes use it to keep overall weight down and increase payload capacity.

Per 1,000 feet, fiber optic wire weighs about 9 pounds, while 1,000 feet of copper wire weighs about 80 pounds.

Fiber optic cable is more reliable than copper and has a longer life span. Optical fiber also can carry thousands of times more information than copper wire. A 24-strand fiber optic cable operating at 140 Mbps carries the same number of voice channels as a 7.5-centimeter, 900-pair copper cable.