



## Enhanced 'Call Before You Dig' System in Place

UP's innovative "Call Before You Dig" (CBUD) system was overhauled and relaunched March 5.

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

"It was time for our old process to be replaced," said Craig Johnston, director-fiber optic & asset utilization. "We believe the new software will continue the synergies that Union Pacific and its customers have fostered from the inception of our program."

The former system, while still effective, had become slow and cumbersome to use. Starting last spring, the SAFT group collaborated with the PS Technology (a Union Pacific subsidiary) development team to design and implement an updated, more efficient system. Through PS Technology's experience in developing innovative software, the new CBUD system is designed to readily adapt to today's progressive technology and to add new features to better manage the assets along the railroad corridor.

"Using the latest technologies, the new system provides Union Pacific an effective platform from which the SAFT group can continue to grow their business," said PS Technology Senior Manager Dan Markel.

By further leveraging advances in Geographic Information Technology and database



### *Rule 44.5 states:*

"At least 48 hours before performing work requiring excavation or construction along the railroad's right-of-way, telephone Union Pacific's "Call Before You Dig" hotline (1-800-336-9193) 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."

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# Towers Keep the Railroad Rolling

As fiber optic cable technology now flashes packets of data critical to railroad operations at light-speed alongside the rail, a bridge is sometimes required to link that information to a widely scattered system of radios and computers needed to keep the railroad operating effectively.

UP's wireless infrastructure, such as towers and other IT Telecommunication facilities, create the bridge for much of that data.

The railroad controls and operates more than 1,500 towers ranging from 40 feet in height to 500 feet. Towers carry the communications backbone from mountaintop to mountaintop for distances exceeding 50 miles using microwave technology in areas where fiber cable is not present.

Often the microwave system is used to disseminate communications from fiber to ground-based radios and signal systems to support railroad operations.

In mountainous areas, UP technicians

must use snow cat machines to reach these towers in winter. Special training and certification is required for snow cat operations which must carry emergency survival kits with rations and shelter.

One tower near Steamboat Springs, Colorado, is built as a succession of three buildings, each with an entrance. The depth of snow determines the entrance to be used.

UP tower crews build and maintain telecommunications structures across the system.

Some towers are available for third-party collocation activities as determined by Associate Systems Engineer Mike Wallman and Senior Project Engineer Tom McGovern.

Towers are also marketed for other third-party use through SBA Communications Corporation (SBA), who markets, manages and constructs towers for non-railroad use on Union Pacific with the railroad's



*Tower in Buckhorn Mountain High Park, Fort Collins, Colo.*

core operations. In addition to this collaborative effort to market wireless facilities, thorough assessment and environmental studies are completed prior to any tower development or construction. As an example, towers exceeding certain heights, or near an airport or helipad, could require aircraft warning lighting as well.

## Evolution of Fiber Optic Engineering Group

Fiber optic cable systems began to be installed on UP's right of way in 1985 along the Dallas Subdivision between Fort Worth and Dallas.

Telecommunication "start-up" companies collaborated with UP to install fiber optic along the railroad.

At the time, all commercial telecommunications plans were reviewed and processed by UP's Engineering Department for approval. The actual construction oversight was relegated to regional Engineering inspectors – fiber optic, which eventually evolved to the regional construction coordinators known today.

The original Engineering inspectors coordinated with local managers—track maintenance to ensure fiber optic cables were installed as approved and did not interfere with maintenance and safe operations of rail, ties, ballast rock and other railroad facilities. This coordination continues today with any new and existing fiber optic construction activity along the right of way.

Fiber Optic activities also require coordination with Operations personnel to provide flaggers, ensuring that track is cleared for approaching trains. Flaggers are key to safe operations and have been instrumental during telecommunication boom activities to

protect employees and equipment.

In Omaha, Engineering was responsible for plan design approval and coordination with the railroad's capital improvement plans. Several members of the Engineering Department determined how to design and construct the fiber along railroad rights of way without interfering with railroad operations.

Soon others joined the Engineering ranks as the customer demand increased and additional fiber construction began. More and more people took field trips and hy-railed to evaluate territories for fiber optic placement. UP continues to rely on this Engineering function and has added participation and functional responsibilities by other integral components of its SAFT group.

The Fiber Optic's Engineering team strives to perform work associated with fiber safely, correctly and without undue interference to railroad operations, facilities and property. These Engineering processes, including installation, operation and maintenance of these fiber systems in accordance with the principles compatible with the continuing growth, change and operational flexibility, are necessary to secure our rail transportation business opportunities now and in the future.

*UP employees can access Fiber Optic Focus on the employee homepage under "News and info/Your Local News." Bill Wright, editor BJWRIGHT@UP.COM*





Remote territory presents challenge for fiber installation. Fifty miles will be constructed along the Caliente Subdivision in Nevada and Utah.

# Fiber Optic Construction Underway

UP has plans to construct another segment of fiber optic cable along one of its western corridors.

In addition to the Provo Subdivision project currently underway, the development of approximately 50 miles of new fiber optic construction along the Caliente Subdivision between Caliente, Nevada, and Modena, Utah, also is planned.

This area is very isolated with the rail corridor routed through rocky canyons alongside waterways snaking through the high desert terrain.

A number of tunnels and bridges support rail operations between curves and hilltops, making the use of microwave through the canyon-like route very difficult. Projects such as this, improve

communications systems that formerly utilized pole lines to support radio and signal systems.

Commercial power is not available for a portion of the project, so in addition to the fiber cable, the railroad plans to install additional duct so power can be removed from poles for the duration of the work.

Paul Pino, the SAFT project engineer, is developing the project design for the Telecom Department, which plans to begin construction early this summer.

UP Construction Coordinator team members are expected to provide contractor coordination and inspection support for the project.

## Call Before You Dig System in Place

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storage, UP created a robust system for tracking and protecting longitudinally installed systems. In addition to the fiber optic systems already being protected, the new and improved CBUD system is tracking vital Union Pacific longitudinal facilities, such as key signal, electrical and telecommunication systems.

When work is to be done anywhere on the railroad, a Call Before You Dig ticket is communicated to Response Management Communications Center (RMCC) for

coordination to our customer's protection centers so that appropriate personnel can be dispatched to the field, when needed, to locate and protect facilities.

"The new CBUD system has greatly improved and expedited the user experience," said RMCC Senior Manager Damien Thompson. "It's easier to navigate, the location data is real-time and it makes creating multiple tickets and ticket extensions as simple as one or two mouse clicks."

*"We believe the new software will continue the synergies that Union Pacific and its customers have fostered from the inception of our program."*

*-Craig Johnston, director-fiber optic & asset utilization*

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# Courage to Care

Eamus Domum Incolumes. The Latin motto meaning “Go Home Safely” is the foundation of UP’s safety principle known as “Courage to Care.”

“Courage to Care” is an entirely voluntary process.

Those who decide to accept the principle wear the black and silver badge with two lions sitting back to back. The lions represent the commitment of those who wear it, saying:

“I have the courage to care. Worn with a lion’s pride, it means those I work with will have my back, and I will have theirs. I pledge to shield myself and my team from harm.

I will take action to keep them safe,  
by fixing an unsafe situation,  
addressing an unsafe

behavior or stopping the line. In turn, I will have the courage to accept the same actions from my co-workers, who care enough to correct my path. We wear this badge out of respect for each other and those who have gone before us. On my watch, we will all go home safe to our families every day.”

Between the lions is a silver rail spike engraved with the words “Eamus Domum Incolumes.” We in the Safety, Asset Utilization and Fiber Optic Technology Group (SAFT, pronounced “Safety”) have accepted this principle and will do our best to see that in performing our work and interacting with our customers along Union Pacific rights of way that we all “Go Home Safe.”

