

# Railroading ABO PASS

A BNSF freight heading into Deadman's Curve on Abo Pass

Originally published in El Defensor Chieftain newspaper, Saturday, December 3, 2011.

Copyright: © 2011 by Paul Harden. Article may be cited with proper credit to author. Article is not to be reproduced in whole or placed on the internet without author's permission.

By Paul Harden  
(na5n@zianet.com)  
For El Defensor Chieftain

During the 1970s, railroads across the country declared bankruptcy and ceased to exist. This left the public perception that the days of railroads were doomed -- and for many years, they were.

Several dominant railroads emerged. Today, the top two are Union Pacific and the Burlington Northern and Santa Fe (BNSF Railway Company) -- both of which are deeply rooted in New Mexico. Last year, more freight was moved by rail than any other time in history, and Amtrak saw its highest ever passenger counts. Quietly, the UP and BNSF have been rebuilding, at great cost, to become among the most profitable industries in the country.

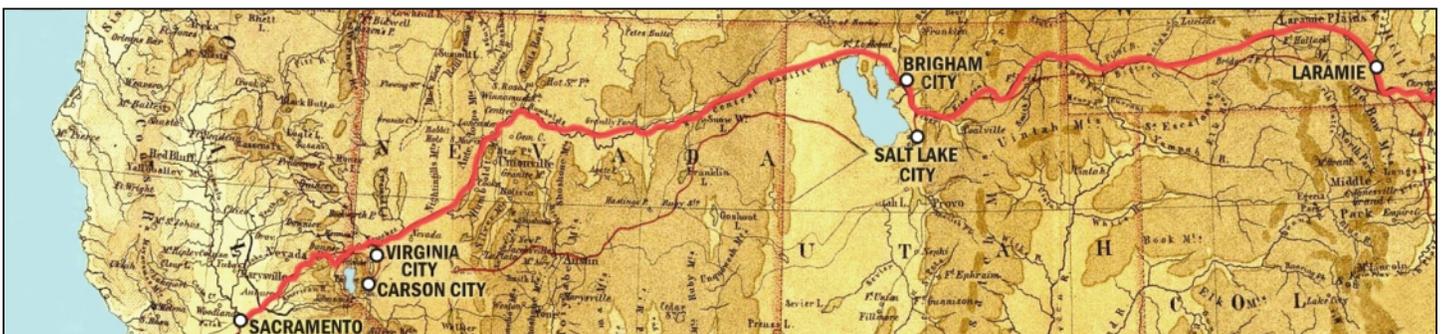
The ATSF was the railroad that changed New Mexico and Socorro County. Today, that proud history continues under the BNSF name. And nowhere is the line more important than on a corner of Socorro County called Abo Pass.

## EARLY RAILROADING

By the 1860s, thousands of miles of railroad track stretched from Boston to New Orleans. About two-thirds of the railroads were in the northern states, and about one-third in the South. There were no railroads in the West. During the Civil War, much of the railroad traffic was converted to supporting the war effort. Railroads proved to be valuable assets in transporting troops and supplies -- and as military targets.

The need was seen for a transcontinental railroad stretching from the Atlantic to the Pacific Coasts. Thousands of emigrants traveled annually over the Mormon and Oregon-California trails -- a journey that took from early spring to the onset of winter to make the trip. Supply wagons to New Mexico, over the Santa Fe Trail or El Camino Real, also spent months on the trail. A transcontinental railroad would shorten this journey to days.

In spite of the expense of the Civil War, Congress authorized the construction of the first transcontinental railroad in 1862. Union Pacific Railroad laid 1,067 miles of track from Council Bluff, Iowa, through Cheyenne, Wyo., and into Utah. On the Pacific side, the Central Pacific Railroad laid 690 miles of track from Sacramento, Calif., over the Sierra Nevada mountains, to Utah.



An 1871 modified map shows the transcontinental railroad route from Laramie, Wyo. to Sacramento, Calif.

The two railroads met at Promontory Summit, Utah Territory, on May 10, 1869, ending six years of grueling work. It was considered an engineering marvel for the time.

The transcontinental railroad was highly successful and profitable for the railroads. One could travel from Chicago to Sacramento in eight days for \$64. Still, for New Mexicans, the closest rail stop was Cheyenne. There were no other railroads in the West.

By the 1870s, two railroad companies were formed to build railroads in the West, including New Mexico. They were the Denver and Rio Grande, and the Atchison, Topeka & Santa Fe Railway.

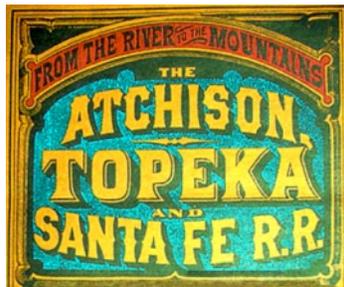
### **AT&SF RAILWAY**

The Atchison, Topeka & Santa Fe Railway, often just called the Santa Fe, started in Council Bluffs, Iowa, in 1873. Their goal was to build a transcontinental railroad from Chicago to Guaymas, Mexico.

While the first transcontinental railroad terminated in Sacramento, the winter snows in the Sierra Nevada mountains often halted train traffic for days until the tracks were cleared -- at least until the next snow storm. The winter-free port city of Guaymas, and access to the shipping trade from the Orient, would give the Santa Fe railroad a distinctive advantage over the Union Pacific transcontinental line.

By 1876, the Santa Fe line reached La Junta, Colo., meaning "junction" in Spanish. Here, the line split, one branch going to Pueblo and Denver, and the other to Trinidad, Colo.

From Trinidad, the plan was to cross Raton Pass, enter New Mexico, and on to Santa Fe, the namesake of their railroad.



Central Pacific Railroad

An early photo showing the attempts to keep the rail line open over Donner Pass during the winter months. Heavy snows often halted the train for days.

### **RAILROADS AND GUNSLINGERS**

The D&RG and ATSF railroads were not exactly friendly competitors. The fierce competition between the two railroad giants led to a series of armed conflicts from 1877 until 1880. These conflicts are often called the Railroad Wars. And, it all began at Raton Pass and the fight for New Mexico.

Raton Pass is the most direct land route through the Sangre de Cristo mountains, located on the Colorado-New Mexico border. It is the gateway to New Mexico. Both D&RG and ATSF were building their line to be the first to service New Mexico. Both railroads arrived at Trinidad for the push to Raton Pass at the same time.

Reportedly, the Santa Fe Railroad tapped in on the D&RG telegraph lines and learned that they planned to begin construction over the pass the following morning. To establish claim to the pass, the Santa Fe roused workers out of their beds around midnight and ushered them to the summit. Under the dim light of hand-held lanterns, they began construction of the railroad bed at the top of the pass. They could thus claim they were the first to build on the pass.

Over the following weeks, each railroad did what they could to interfere with the other. This

included cutting telegraph lines, halting supply wagons at gunpoint, mysterious derailments, and countless barroom fights to incapacitate workers.

To end the impasse, the Santa Fe railroad hired local gunslingers to escort and guard their workers and flow of supply wagons through Raton Pass. The D&RG did the same. Apparently, ATSF out-gunned their competitors as D&RG eventually abandoned their quest for the pass.

D&RG shifted their focus on Colorado. They decided serving the wealthy mining towns would be far more lucrative than fighting the ATSF for New Mexico. They immediately began building a narrow gauge line from Pueblo to the mining towns of Cañon City, Salida, and on to Leadville. However, it wasn't long before the ATSF had the same idea and the two railroads were at it again in the mountains of Colorado.

From Cañon City to Salida and Leadville, the natural railroad route followed the Arkansas River through the Royal Gorge. It was here the two railroads clashed for rights through the deep canyon. Again, the Santa Fe railroad hired some big guns to protect their interests and slow the advance of their competitor. The D&RG responded by hiring even bigger guns, such as famous gunslingers Bat Masterson, Doc Holliday and dozens more.

Finally, after several years of sabotage, armed conflicts, and the occasional killing, the federal government stepped in for a legal resolution. The conflict shifted from the gunslingers to the attorneys. An out-of-court settlement gave the Royal Gorge and southern Colorado to the D&RG, and Raton Pass and New Mexico to the ATSF. The railroad wars came to an end. Bat Masterson and



D&RGW Photo

**The D&RG Railway got the rights to the Royal Gorge and Colorado; ATSF was allowed to service New Mexico..**

his gunslingers were sent home. New Mexico would finally get a railroad.

This settlement, and other agreements between the railroads, is why ATSF – now the BNSF – has served New Mexico since the 1880s, and the D&RG served southern Colorado and northern New Mexico.

### **BUILDING RATON PASS**

ATSF pushed ahead to conquer Raton Pass, even before the agreement with the D&RG. A series of switchbacks was built to access the summit. The first train crossed the pass and pulled into Willow Springs, soon to be renamed Raton, on Feb. 1, 1879. Track crews wasted no time extending the line to the south. On July 4th, the first passenger train pulled into Las Vegas, N.M. A few months later, construction began over Glorietta Pass and the push into Santa Fe.

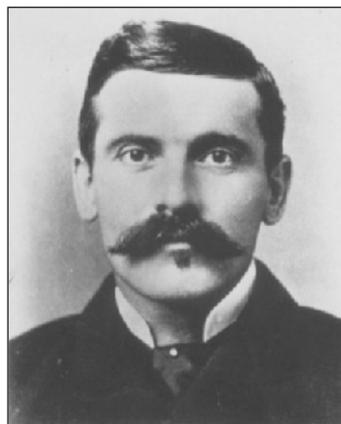
Raton was the company's first experience driving rail over a mountain. It didn't take long for ATSF to realize maintaining a railroad over a mountain pass was an expensive operational headache.

Elevation of the rails rose from 5,971 feet at Trinidad to 7,622 feet at the mountain summit, and back down to about 6,000 feet at Raton, all inside of 23 miles. This yielded an astounding 3.5 percent grade, an average climb of about 150 feet per mile and, at places, 180 feet per mile. This was a grueling grade by any railroad standard.

Passenger and freight trains could not climb the grade by themselves. A second "helper" engine had to be added, called a "double header" in



**Bat Masterson**



**"Doc" Holiday**

railroad terms, to push the trains to the summit and on to Raton. Averaging about 10 miles per hour, it took nearly two hours to cross the pass.

Moving trains over Raton Pass -- with the expense of operating extra engines, the coal and water consumed, and the extensive train crews -- became a huge expense for the Santa Fe railroad.

After a year of use, ATSF decided to bore a tunnel through the summit to help reduce the grade. The tunnel was 2,037 feet long (about one-half mile), 19 feet high, 14 feet wide, and reduced the grade to about 3 percent. The first train rumbled through the tunnel on Sept. 1, 1879.

When the ATSF completed its line to California, in 1881, hundreds of railroad men were employed at Raton and Trinidad, all working feverishly to keep the increased freight traffic moving over Raton Pass. In spite of this force, the gateway to New Mexico had become a bottleneck to the transcontinental line by the 1900s with no solution in sight.



Courtesy AT&SF Railfans

**The Raton Tunnels, on the New Mexico-Colorado state line, after the second tunnel was bored in 1909. The left-hand tunnel was sealed in 1949 and no longer in use.**

## **DOWN THE RIO GRANDE**

The ATSF tracks over Glorietta Pass were completed by February 1880. Building the railroad over Raton and Glorietta passes was far more time consuming and expensive than planned. So expensive, the railroad wanted no more mountain construction and decided against building their mainline through Santa Fe, in spite

of the railroad being named after the capitol city. Instead, they drove their rails to Lamy, 18 miles south of Santa Fe.

From Lamy, the track was laid to the Santo Domingo Pueblo, where the ATSF line finally joined the Rio Grande. From there, construction along the river was fairly swift, arriving in Albuquerque in April 1880. The first trains rolled into Socorro in July, and then into San Marcial by October.

San Marcial was a landmark for the ATSF railroad. It marked 1,000 miles of track since their start in Atchison, Kans. ATSF milepost 1000 is located near Tiffany, with San Marcial at milepost 1005.

From San Marcial, the railroad continued south to El Paso, Texas. At Rincon, a branch struck off to Deming -- another landmark. It was here that the ATSF tracks joined with the tracks to California built by the Southern Pacific. With the joining of these two railroads, on March 18, 1881, America had its second transcontinental railroad. The ATSF was suddenly elevated to one of the country's major railroads.



## **EARLY 1900s**

In the 1890s, the Atlantic and Pacific Railroad began to build a line from near Isleta Pueblo to California. The rails stopped at the Colorado River when the A&P ran out of investor money. ATSF purchased the bankrupt company and finished the line into Los Angeles. This is the mainline track to Grants, Gallup, Flagstaff, Ariz., and on to Los Angeles, and the line used by today's Amtrak and BNSF. With the acquisition of the old A&P line, ATSF was now the operator of two transcontinental lines.

By the 1900s, ATSF was enjoying the profits from its transcontinental, or TransCon, services. However, there was still one section in the Los Angeles-Chicago corridor that posed a major operational bottleneck: Raton Pass -- the gateway used by both transcontinental routes. The steep grades limited the size of trains, required costly helper engine operations, and the single track

through the pass was slow and limited the amount of daily traffic. Conditions over Glorietta Pass weren't much better.

To help alleviate the congestion, a second track was built from Trinidad to Raton in 1902. However, the single track through the Raton tunnel still caused delays.

### **THE BELEN CUTOFF**

ATSF President Edward Ripley became determined to build a new east-west line that would bypass Raton and Glorietta altogether. No matter where they looked, they still had a 1,700-foot climb to escape the Rio Grande valley.

Then, surveyors and engineers discovered the small town of Belen and Abo Pass. From Belen to the top of the pass was a 1,700-foot climb, about the same as Raton, but a gentle climb most of the way. The only steep portion would be the 5 miles through Abo Canyon, where the grade rose about 65 feet per mile, or about a third of that at Raton Pass.

After careful surveying and consideration, Ripley decided this would be the new route of his transcontinental railroad to bypass Raton Pass. He called it the "Belen Cutoff" -



**Edward P. Ripley  
President, AT&SF**

- the name still used today. Construction of the new mainline track began in 1906. The roadbed was built largely by hand through the canyon. Seven bridges were built where the track zigzagged across the arroyo, which the railroad called the Abo River.

Belen quickly grew from a small village to a major railroad town during the construction phase. Another town would be needed at the east end of the pass for housing construction crews and providing water for the thirsty steam locomotives coming out of the canyon. This town was named Mountainair.

In between, small towns were built with sidings for controlling traffic through the canyon and water stops. These were at Sais, Scholle and Abo - which are mostly ghost towns today.



Photo by Paul Harden

**Mountainair, founded in 1906, was one of many towns built by the AT&SF railroad in New Mexico.**

Another railroad terminal would be needed near the New Mexico-Texas line. Texico and Portales were considered. However, land prices hit the stratosphere once they heard the railroad was coming. Instead, ATSF purchased a large parcel of land in the middle of nowhere east of Texico. Quickly, a town was built with homes for the train crews, stores, railroad offices and shops, and, of course, the railroad yards.

It was decided to call the new town Riley Switch. An application for a post office was submitted, and rejected. The Post Office cited a town named Riley already existed -- 30 miles north of Magdalena! In 1908, the city council renamed the railroad town to Clovis.



Photo by Paul Harden

**The town of Abo was a water stop on the east side of the pass. It was discontinued when AT&SF converted from steam to diesel locomotives. Today, it is a virtual ghost town and a lonely signal on the Belen Cutoff.**



Photo courtesy Robert Eveleth  
**Engine 5027 departing Belen in 1956 for an eastbound run up Abo Pass. Belen remains one of the major yards on the BNSF transcontinental railroad today.**



Photo courtesy Robert Eveleth  
**Engine 5027 begins the eastbound climb up Abo Pass in this 1956 photo, helping four diesel locomotives. Abo Pass was the last use of steam power on the ATSF.**

When the Belen Cutoff was completed, the line stretched from Kansas to Amarillo, Texas, then Clovis to the Belen yards. From Belen, tracks were realigned to join the mainline to Grants, Gallup, and on to Los Angeles. Officially, the Belen Cutoff is 1,351 miles long, stretching between Florence, Kans., and the Rio Puerco east of Laguna Pueblo.

### **ABO PASS**

The first transcontinental freights passed through Abo Canyon and arrived in Belen on July 1, 1908. Almost immediately, the Belen Cutoff became one of the busiest TransCon routes in the country -- a distinction it holds to this day under the BNSF name.

Cross-country passenger trains, such as the Southwest Chief, continued to use the picturesque Raton Pass. A second tunnel was built in 1909 to speed up freight traffic over Raton Pass. However, the bulk of the cross-country freight traffic that passes through New Mexico has used the Belen Cutoff and Abo Pass since 1908.

Like Raton Pass, helper engines were used to push the eastbound freights from the Sais siding (near the junction of N.M. 47 and U.S. 60) to Mountainair, and up the grade through the canyon. After World War II, ATSF converted to diesel locomotives for their TransCon service. Still, steam locomotives were used as helper engines on Abo Pass until 1957. Today, it is not unusual to see three or four engines pulling freight cars up Abo Pass.

### **BNSF**

In 1996, the Atchison, Topeka and Santa Fe Railway merged with the Burlington Northern Railroad, and changed their name to Burlington Northern and Santa Fe, or BNSF. Today, BNSF operates over 24,000 miles of track in 27 states.

The merger nearly doubled the amount of freight traffic along the northern mainline, from Chicago to Seattle, and over the Belen Cutoff. BNSF picked up where ATSF left off: double tracking the mainline from Chicago to Los Angeles to accommodate an increase in freight trains. BNSF spent millions of dollars double tracking their TransCon tracks.



Robert Eveleth provided this rare photo of Santa Fe steam locomotive No. 5027 helping three diesel engines and freight up Abo Pass. The photo was taken on May 26, 1956. Steam engines were used as helpers on Abo Pass until 1957.



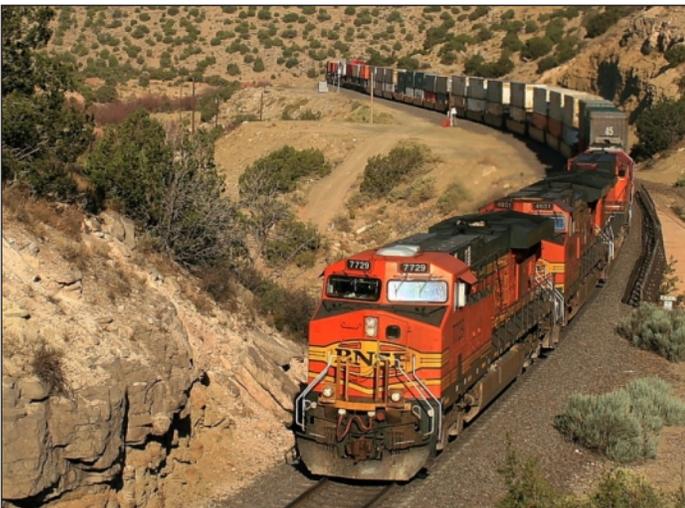
An AT&SF engine, with the old “Santa Fe” paint scheme, in Abo Pass. Today, trains bear the BNSF markings, though an occasional Santa Fe engine can still be seen.

By 2006, the BNSF Annual Report stated that all but 51 miles of the 2,200 miles of high-volume mainline route was now double tracked, allowing up to 100 trains a day on the mainline through New Mexico. The report added that work had begun to add “a second main track through Abo Canyon (East of Belen, New Mexico) – the largest bottleneck on the TransCon.”

Officially called the “Abo Pass Expansion Project,” it has been years in the making and became a major engineering feat.

### **BOTTLENECK IN ABO PASS**

In recent years, the demand on the BNSF TransCon has risen dramatically. In 2000, BNSF estimated 60 trains a day over the Belen Cutoff, or a train about every 25 minutes. With double track



Courtesy of Caroline J. Ostendorf  
A mile-long train crawls up the original single track grade through Abo Canyon with the help of three BNSF engines.

now in place along the majority of the line, that number has risen to 80–100 trains a day. That's a 100-car train through Abo Pass about every 15 minutes – equivalent to about 35 million semi-truck loads of merchandise and equipment per year. Tons of merchandise arriving from China and other overseas manufacturing centers has added to this increase in freight traffic.

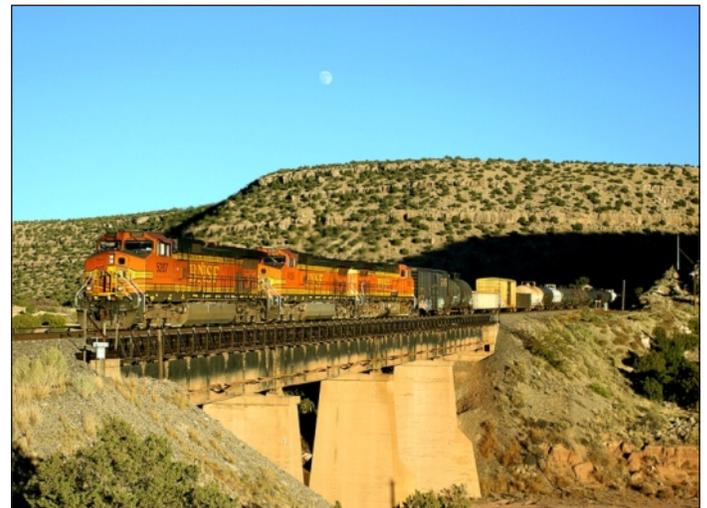
Abo Pass, in the northeast corner of Socorro County, is a critical part of the 2,200-mile long mainline track from Chicago to Los Angeles. Abo Pass became the largest bottleneck with only the single track through the pass. As a result, freight trains often had to wait for long periods of time at sidings while a train, traveling in the opposite direction, was in the pass.

By 1990, ATSF began plans to run double tracks through Abo Pass, which continued when the line became part of the BNSF Railroad. Recently completed, it was a 20 yearlong project.

### **EXPANDING ABO PASS**

One would think adding a double track over Abo Pass would be a simple matter of adding a second track next to the original. This could not be done. There was not enough room through the canyon to widen the railroad bed for two parallel tracks. The canyon is simply too narrow and the curves too sharp to add a second track. A solution was needed and it would be a major engineering feat.

Surveying began in the early 1990s to select the alternate route for the second track. A route south



Courtesy of Chris Palmieri  
A BNSF mixed freight crosses one of the seven bridges through Abo Pass. Access to the canyon for views like this are no longer permitted.



Photo by Paul Harden

**A westbound train waits at the Scholle siding while an eastbound train crawls through Abo Canyon. The single track through Abo Pass, allowing only one train at a time through the canyon, is what created the largest bottleneck on the BNSF mainline.**



Photo by Paul Harden

**In order to add a second track over Abo Pass, BNSF had to literally make their own canyon – a huge engineering achievement. This 2010 photo shows the new man-made canyon and roadbed on the left ready for laying the second track.**

of the existing canyon was chosen. Several years were spent filing for the construction permits and complying with a host of government regulations.

The new route was carefully surveyed to determine the impact on water flow, wildlife, and to the geology of the canyon. Working with the BLM and other agencies, this survey also identified more than 100 archaeological sites, some that were newly discovered. Old 1900 railroad camps, from when Abo Pass was first built, were also found and identified. Great care and expense went into protecting these historic sites, even adjusting the new route in places to avoid sensitive areas.

It wasn't until 2002 that these concerns were finalized and the engineering phase could begin. And, what an engineering project it would be. The only solution for adding a second track would be to build a new, man-made canyon to the south of the natural canyon. This would also require seven new bridges, flood control measures, and structures to prevent rock slides.

Fencing and animal paths were built to protect wildlife from getting caught in the man-made canyon while preserving their natural habitat.

Construction began in 2008, 15 years after BNSF first proposed the project. More than 200 people and 75 pieces of heavy construction equipment were used to build the canyon. Another 75 workers were used building the track and installing new signaling equipment.

More than 500 explosive blasts, and removing nearly 2 million tons of solid rock, were required to build the new canyon -- an unheralded feat. The blasts and rock removal were carefully controlled, not only to achieve the desired affects, but to protect the archaeological sites, prevent damage to the existing track, and minimize interruptions to auto traffic on U.S. 60.

With a freight train passing through the canyon every 15 minutes, one can imagine the effect if an accidental rock slide or misdirected blast closed the pass for several days. This would have been a devastating impact on the nation's rail traffic. Fortunately, careful planning and good engineering prevented such an incident.

The man-made canyon was completed and the new track laid by the end of 2010. The long-awaited double track through Abo Canyon opened for business in March 2011. BNSF describes building a man-made canyon as not only expensive, but "very, very expensive." The Abo Pass Expansion Project cost BNSF \$85 million. It was the most expensive double track expansion project in the railroad's history.

For more than 100 years, westbound freight trains were often seen at the Scholle siding, while waiting for an eastbound train to clear the pass. This is no longer the case. For the first time, both eastbound and westbound freights can now pass through Abo Pass at the same time. The bottleneck is gone.

Some of the new man-made canyon can be seen from the U.S. 60 overpass near Scholle. This remains a favorite stop for rail fans photographing the BNSF freights as they emerge from the canyon.

Photography from the U.S. 60 overpass is permitted. However, access into the canyon is not. Trespassing laws are fully enforced. Besides, it is dangerous. When train meets man in the narrow canyon, the train wins.

The former ATSF, and today's BNSF, has long been a part of New Mexico's history – and economy. In New Mexico alone, BNSF employs nearly 1,200 people with an \$87 million payroll. More than 3 million box cars pass through Abo Pass and Belen each year -- some rumbling through Socorro. There are 896 miles of track in New Mexico on the BNSF lines with major rail yards at Albuquerque, Belen, Clovis and Gallup.

The Abo Pass Expansion Project was, indeed, an astounding engineering achievement. The double track through Abo Pass begins a new chapter in railroad history in New Mexico, and a new thrill to rail buffs.

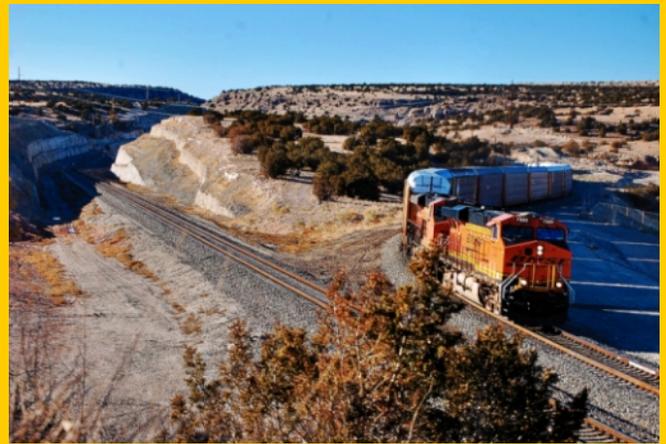


AT&SF telegrapher  
Roy Carrejo (SK) 1929-2011

This history article is dedicated to the memory of Roy Carrejo, the longtime station master and telegrapher at the Socorro ATSF depot, and a friend to many.

**Some of the references used in this article:**  
“Meade’s Manual,” by J.M. Meade, ATSF Chief Engineer, 1920; “Santa Fe Railroad,” by Steve Glischinski; “Double Tracking Through Abo Canyon,” by HDR Construction Co.; “BNSF Railway Magazine,” November/December 2008; communications with BNSF Railroad; and field work by the author. Thanks to Robert Eveleth, Chris Palmieri and Caroline J. Ostendorf for use of photos.

## The new double-track Abo Pass

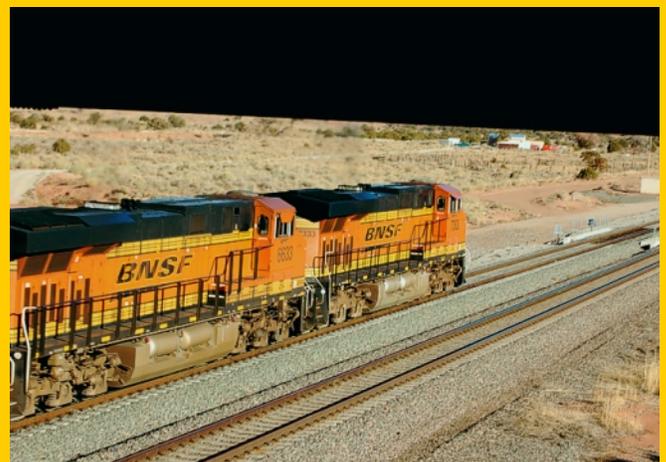


Photos by Paul Harden

An eastbound freight exits Abo Canyon on the original single lane track. The new 2nd track is on the left – now allowing 2-way traffic through the canyon.



A westbound train descends the newly built second track through the man-made canyon at Abo. There is a 1,700 foot change from the top of the pass to Belen, making for a steep grade.



A view of an eastbound train, showing the new double track, from underneath the US 60 overpass at Scholle. The double track is now nearly complete along the Chicago to Los Angeles BNSF mainline.