

GENERATIONS ON STEVENS PASS

# OF MOUNTAINS AND MEN

BY ROBERT W. SCOTT/PHOTOS BY ROBERT W. SCOTT AND MARTIN BURWASH

*"Most men who have really lived have had in some share, their great adventure, this railway is mine" – James J. Hill*

In the midst of a heavy snow flurry in the small town of Skykomish, Wash., Michael Pierce looked back over his 43-year career on the railroad. "In conditions like this you get a true respect for the old heads," he said, describing the original route over the mountain pass. "Not me, brother!" he says. "In the early days these guys were out there keeping the line open in what they called rain and snow gear, which usually meant nothing more than a No. 10 snow shovel, working to move a 30-foot snow slide by hand."

Mike is a third-generation railroader,

following in the footsteps of his father and grandfather, who first hired out on the Great Northern in 1910. Mike retired in 2005 after serving 43 years on the GN, Burlington Northern, and, lastly, BNSF Railway.

After four decades in the Cascades, Mike has seen many changes but says a few principles remain the same. "In mountain railroading the grade and curves dictate everything," Mike says. "You have to have so much power to move so much tonnage. Come winter-time, everything becomes that much more important to pay attention to."

Although the years have changed, as have the colors and railroad ownership, the challenge still remains — man and

machine versus the weather and the mountains. It's something that has played out for the past 125 years in the Pacific Northwest.

Railroads built west from the upper Midwest with the goal of reaching the tidewaters of Puget Sound and the open Pacific Ocean. By reaching this fertile region, the railroads would be able to haul east the products of the Northwest including the endless stands of timber, fruits and vegetables, and products of the sea. The bonus to railroads was the ability to backhaul Midwest and eastern products to the burgeoning west coast territories including the latest in machinery, technology, and endless bushels of wheat.

The warming sun isn't doing much to bring the mercury above 20 degrees on a cold January 14, 2011, morning as an eastbound BNSF Z-SSEHC (South Seattle-Chicago) winds along the old Great Northern mainline following the Wenatchee River and amid the orchards just below Monitor, Wash. ROBERT W. SCOTT



**ABOVE:** Fireman Ted Cleveland, engineer Andy Strom, and conductor Al Holovels made up the crew of the last electric operating between Skykomish and Wenatchee on July 31, 1956. **COURTESY SKYKOMISH HISTORICAL SOCIETY**  
**RIGHT:** A 1980s Burlington Northern vehicle train is in the teeth of the eastbound 2.2 percent climb up the west slope. Near the old town site of Alpine it crosses one of a series of major trestles tucked away in the rugged back country.  
**BELOW RIGHT:** Years after the Burlington Northern merger, Rocky the Mountain Goat still stands proud on the flank of a chip car. As an interesting side note, the once often-seen signature of "Ralph Mackey Quacky" actually belongs to a man who is now an engineer on the Montana Rail Link. **MARTIN BURWASH PHOTOS**



Pushing west from the Great Plains of the upper Midwest, the railroads encountered the Rocky Mountains. Homestake, Marias, Pipestone — the names of mountain passes evoke visions of treacherous snow-covered gaps in the rocks and the human struggle to pass west. After cresting the Rockies, the struggling journey was not over — there were more mountains to cross, with a range called the Bitterroots, and the last obstacle — the Cascades.

### History

Stevens Pass is the former Great Northern mainline crossing of the mountains between Wenatchee, Wash., and Everett, Wash., as part of its northern transcontinental route from St. Paul, Minn., to Seattle, Wash. The terrain of the North Cascades is rugged and unforgiving — in the 150 miles south from the Canadian border, there are 288 mountain peaks towering between 7,000 and 9,000 feet. Upon locating Lake Wenatchee, chief engineer John F. Stevens discovered a creek that headed west into the high country. His assistant C.F.B. Haskell followed Nason Creek to its headwaters and on September 15, 1890, discovered the low pass that Stevens predicted would be there. On a wooden sign he carved "Stevens Pass" and placed it on a tree to mark the location.

The identified rail route would take the railroad from the Columbia River

at Wenatchee up the Wenatchee River to Chiwaukum, where it crossed a low pass in the hills, before picking up Nason Creek, which it would follow all the way to the summit at Stevens Pass. On the west side, the route followed the Tye River down to Skykomish, then following the Skykomish River to Monroe before following the wide valley across to Everett.

From the beginning, Stevens declared that a summit tunnel would eventually be needed. While the tunnel was being planned, work commenced to open the line over the pass with a series of switchbacks. The initial route was slated not to exceed 2.2 percent except for the temporary switchbacks needed to cross the pass.

Construction on the temporary line quickly progressed and was completed in 1893. A total 12 miles of rail, including eight switchbacks, were required to cross the Pass with grades at 4 percent and curves in excess of 12 degrees. Steam engine technology limited the small GN Moguls to two or three cars at a time over the switchbacks, and it took nearly two hours to traverse in good weather, which for most of the year was a rarity. It was not unheard of for the summit of Stevens Pass to receive more than 100 feet of snow annually. The winter of 1897-98 saw a total of 140 feet of snow falling on the summit.

As operations commenced on the temporary line, planning was in place for



a summit tunnel. It was determined that the tunnel would be about 2.5 miles long and would require construction through solid granite. The tunnel was surveyed by Stevens himself, with construction beginning in 1897. Breakthrough between both faces of construction was in September 1900, with operations beginning through the 2.63-mile tunnel that December.

Though the new tunnel reduced the summit elevation, the eastbound 1.7 percent grade and resulting low speeds caused dangerous conditions for train crews and passengers. Following incidents in 1903 and 1906, in 1907 GN had made the decision to solve the tunnel safety issue and electrify the line through the tunnel.



**LEFT:** Nothing is more spectacular than the Stevens Pass snow dozer making a "speed run" flinging snow in both directions from tracks. These unique snow-fighting machines are often confused with Jordan spreaders.  
**BELOW LEFT:** From the old Great Northern right-of-way along the flanks of Windy Mountain an eastbound Burlington Northern freight has the look of an N-scale model. The train is about to enter the eight-mile tunnel and this vantage point gives a clear view of how much elevation was eliminated by the new alignment. **MARTIN BURWASH PHOTOS**



### Electrification and the Battle Against the Snow

By July 1909, a three-phase 6,600-volt, 25Hz a.c. system was installed through the tunnel between Wellington and Cascade Tunnel Station. The GN purchased four General Electric boxcab units for operation in the tunnel.

In the early days of operation, the units performed admirably, as long as the train weight did not exceed 1,600 tons. Below that tonnage, the 375 r.p.m. motors in the boxcabs allowed a continuous speed of 15 m.p.h. Trains arriving at Wellington or Cascade Tunnel Station had the road steam locomotives remain on the train with the electrics coupling onto the head end for the trip through the tunnel. On westbound trains, the boxcabs were able to assist in keeping downhill speed in check by the use of regenerative braking.

Although operations through the tunnel were made easier with electric operations, conditions outside the tunnel continued to be unpredictable. Sudden storms off the Pacific could dump snow

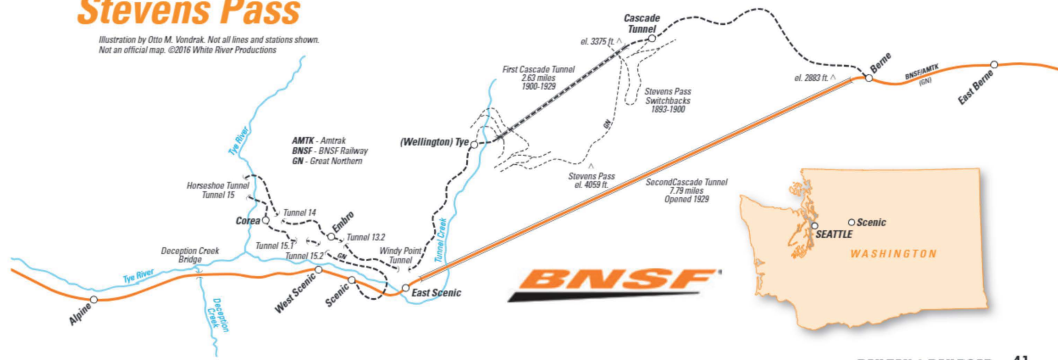
at a rate of a foot an hour. The alignment of the rail route on the west side of the Pass was especially prone to dangerous conditions. From the west portal station of Wellington, the tracks hug the south face of Windy Mountain above the Tye River. The route crossed several snow and slide chutes. At the point where the tracks wrap around Windy Point it would take another several miles, including extensive bridgework and a horseshoe tunnel, to reach Scenic 800 feet below. During a particularly heavy snowfall in February 1907, there were up to 25 snow slides per mile along the route. During winter operations, multiple rotary snowplows were used almost continually to keep the line clear for passage.

Tragedy struck on the early morning hours of March 1, 1910, at Wellington on the west end of the Cascade Tunnel. A large avalanche struck two snowbound trains that had been stranded on the mountain for nine days. The avalanche took both trains and their passengers 150 feet down into the Tye River valley. The total death toll is still in debate, with the number being between 96 and 101; the disaster still stands as the deadliest avalanche in U.S. history. It was because of this that the railroad began to look at options to build a longer tunnel that would avoid future snow dangers.

Discussions of a new tunnel on the pass took place as early as 1916, but

## Stevens Pass

Illustration by Otto M. Vendrak. Not all lines and stations shown. Not an official map. ©2016 White River Productions



World War I placed them on hold. Plans again were put forth in 1921 as the cost of maintaining so many snowsheds continued to mount. Approval for the new tunnel project came in 1925. Once again John F. Stevens was summoned to lead the effort to survey the new tunnel and the new approach grades.

The new tunnel was to be constructed with an elevation drop of 634 feet in 7.79 miles, resulting in a grade of 1.66 percent. The work on the tunnel was completed in just over three years, and the alignment was so accurate that when both drilling sides met they were off by only nine inches horizontally and three inches vertically over the 7.79 miles. When it opened on January 12, 1929, it was the longest railway tunnel in the western hemisphere.

Part of the tunnel project also

Other than the daily Amtrak *Empire Builder* the only passenger traffic is the seasonal *Leavenworth Snow Train* that brings visitors from Seattle to attend the annual winter festivities and tree lighting in the Bavarian-themed town of Leavenworth. Engineer Denin Levine is in charge of the eastbound run on December 19, 2015, kicking up snow speeding out of Merritt, Wash. **BELOW:** A westbound Z-CHCSSE (Chicago-South Seattle) eases out of the Foss River Canyon just after an icy morning sunrise on December 19, 2015. The train is still on the 2.2 percent downgrade but will soon reach the 1 percent at Skykomish where it will again pick up the pace to South Seattle. **ROBERT W. SCOTT PHOTOS**



included the total electrification of the 71 route miles between Skykomish and Wenatchee. The new electrical system was upgraded to an 11,000-volt overhead catenary system. Thirteen new electric locomotives were purchased in 1927 from General Electric (Y Class) and Baldwin-Westinghouse (Z Class). The route from Skykomish to Wellington was electrified in 1927 while the tunnel was under construction.

The new Cascade Tunnel eliminated

the maintenance on 40,000 feet of snow sheds and 21 miles of railroad. Trains were now able to operate the entire route under better protection of winter hazards with safe electric power. On either side of the electrification, steam was still the rule with some of the GN's finest and largest steam locomotives providing lead duty on trains. The steam engines were traded out for electrics at Skykomish, where a steam engine facility was located. On the east end,



**ABOVE:** Crossing downgrade over the Gaynor Trestle, an empty crude oil train is returning to the Bakken region of North Dakota from a refinery near Anacortes, Wash. Gaynor is the site of a 1949 line relocation that eliminated a 10-degree curve on the 2.2 percent grade that was blasted out of a solid rock face. **LEFT:** The afternoon winter sun is about to dip below the Cascade Mountains on December 19, 2015, as an eastbound S-SEACHC-1-18A (Seattle-Chicago) blasts through Winton, Wash. The small community hosted a Longview Fibre sawmill that remained a customer until its closure in 2006. **ROBERT W. SCOTT PHOTOS**

east portal. A ventilation system is in place on the east end of the tunnel with fans powered by two 800-h.p. electric motors.

As a westbound train approaches, the door opens and one fan operates as the train heads downgrade. Since there are less diesel gases in the tunnel with a downhill train, there can be a quicker flush with the fans. Train crews operating through the tunnel are trained to operate emergency breathing apparatus, which are carried onboard the engine in case of emergency. Bays are located inside the tunnel every 1,500-2,500 feet and have emergency communications and additional breathing systems available.

#### Five Decades on the Mountain

Local photographer, historian, and author Martin Burwash knows this

Wenatchee was the changeover location.

As train tonnage and frequency increased in 1947, GN purchased two new locomotives from General Electric. The 735,000-pound W-class electrics were designed with double-ended cabs and generated 5,000 h.p. from 12 axle-mounted traction motors.

GN continued to look at options for expanding the electrification, with some plans having it extend down into Everett and eventually into Seattle. As

diesels became to be more prevalent and powerful, it was decided to place a ventilation system on the tunnel and phase out the electric operations. On July 31, 1956, electric operations faded from the GN forever, handing future operations solely to diesels.

#### New Cascade Tunnel Challenges

Laid out on a straight line, the route through the tunnel is on a 1.56 percent eastbound grade with the crest at the



**ABOVE:** A contaminated soil “dirty dirt” unit train is in the siding at Scenic while westbound manifest M-SPOEVE (Spokane-Everett) rolls by on the main on a snowy January 16, 2012. **ROBERT W. SCOTT** **RIGHT:** This narrow gash in the mountains, where Nason Creek turns abruptly west, was once called “the Slot” by old Great Northern railroaders. John Frank Stevens made his way to this very spot in 1890 and surmised the headwaters of this creek must come from a low pass he had observed earlier that year while exploring the summit ridge of the Cascades. **MARTIN BURWASH**

mountain just as well as anyone else. He began to explore the pass with his father to capture the drama of mountain railroading in the fall of 1968. “The Old Man and I chose Stevens Pass because of its traffic and its access. During that time, the Milwaukee Road was sparsely operated — a lot at night and the access to the Northern Pacific on Stampede was tough due to the watershed restrictions,” Martin says.

Almost immediately, Martin became immersed into the rich history of the line. He was inspired by *Great Northern Lines West* by Charles R. Wood, and the route and its history struck a chord with him. “The other passes had history to them, but not one that was so in depth like the GN, and it was still something that you could still touch and feel,” Martin says.

It is also a very difficult line to access in places, something that poses a challenge to Martin. “Over the years I have probably walked most of the right-of-way from Skykomish to Merritt.” Getting good pictures on the west side of the mountain pass is a challenge due to access, shadows, clouds, rain, and tree tunnels. To him the west side of the pass is more fun to photograph. “During the winter snow there isn’t much of a finer location than above Deception Creek,



especially in a heavy snow with the train struggling on the 2.2 percent grade,” Martin says.

An outlet for telling the story of railroaders on the Pass is his novel *Vis Major*. Martin recreates the story of the Wellington disaster from the point of view of the railroaders.

#### The Modern-Day BNSF Scenic Sub

Starting on the west end at Everett, moving east the tracks cross the river bottoms along the Skykomish River

before the narrowing valley closes in near Monroe. East from Monroe, the small towns of Sultan, Startup and Gold Bar are in close succession. CTC-controlled sidings are in place at Monroe (11,988 feet long) and Gold Bar (10,224). Gold Bar was once a division point for the railroad with yard and engine facilities. A small yard still remains on the site, but is usually used to stage and store maintenance-of-way equipment. East of Gold Bar the grade increases to 1 percent as the tracks

follow the Skykomish River.

The Skykomish River is crossed four times in less than a dozen miles as the tracks start to climb into the mountain foothills. At Index the route is laid out on a sweeping horseshoe curve on a 1 percent grade through town and across the river. This is also another location that was upgraded in 1963, improving the line and reducing curves.

East of Index a bridge crosses the spectacular Sunset Falls before crossing the river again a mile later. Coming into the small town of Baring there is a

10,099-foot CTC siding. The old industry site of Grotto is passed just before reaching Skykomish.

Skykomish has been a railroad town from the day that GN built into it. At one point a large yard, engine facilities, roundhouse, and manpower forces were located here. Although it still has the heart of a railroad town, today it serves only as the staging location for a winter snowplow with a few maintenance tracks and an 8,949-foot CTC siding.

Beyond the east switch the grade stiffens to 2.2 percent as eastbounds

begin the hard climb into the high Cascades. The Foss River canyon is used to gain elevation, with the tracks crossing the river on a 10-degree curve to trade one mountain ridge for another. Continuing to climb, the route passes the old station sites of Tonga and Alpine. The terrain in this area is dense with evergreen trees and thick underbrush. Past Alpine, the right-of-way is chiseled out of the side of the mountain with slide fences protecting part of the line.

Several steep creeks are bridged on the climb, including the impressive Deception Creek Falls. At the west switch of Scenic the grade is still a stiff 2.2 percent, but lessens to 1.6 percent as it enters the 1929 new tunnel approach grade. Scenic is a 9,259-foot CTC siding. One can usually find a train waiting to meet a westbound or waiting its turn for the tunnel to clear out before continuing upgrade. Just past the east switch at Scenic is the west portal to the 7.79-mile-long tunnel that is under Stevens Pass.

The east portal of the tunnel comes out along Nason Creek and immediately begins the 2.2 percent downgrade following the creek. The CTC siding at Berne (12,323 feet) is located less than a mile east of the tunnel’s east portal. East of Berne is the Gaynor tunnel and trestle before the tracks end up at Merritt. From Merritt the grade lessens to 1 percent. Merritt is also a CTC siding



**LEFT:** Riding a westbound helper in October 1970, you lean out the cab window and look back on your train as it rumbles across the spectacular Foss River trestle. **MARTIN BURWASH** **BELOW:** An eastbound stock train with a rare EMD leader skirts along the Wenatchee River between Peshastin and Dryden on the east side of Stevens Pass on a sunny afternoon on January 4, 2014. **ROBERT W. SCOTT**





ABOVE: Bundled against the wind and cold, BNSF Conductor Derick Whitaker gives a roll-by to a westbound stack train at Scenic siding on a snowy late night on February 3, 2016. RIGHT: The town of Skykomish celebrates the heritage of the Great Northern Railway. ROBERT W. SCOTT PHOTOS

(6,729 feet) and has a wye that houses a small snow dozer regulator.

East of Merritt a small sag is located where a slight upgrade is encountered before reaching the CTC siding at Winton (10,978 feet). From Winton the alignment cuts over to the "Chumstick Cut-off" by tunneling through the Winton and Swede tunnels before crossing the Wenatchee River and through the Chumstick tunnel. The Chumstick Canyon is 1.6 percent downgrade through the wide canyon before reaching Leavenworth and the next siding (7,905 feet). East from there the tracks follow the Wenatchee River passing through Peshastin, Dryden, Cashmere (CTC siding of 8,049 feet), and Monitor before reaching Olds Junction and Wenatchee. The climate becomes drier and arid the further east you go, with the most noticeable difference being east of Leavenworth where pine trees lessen. The areas east of Leavenworth are also some of the most fertile for growing fruit anywhere in the country. The valleys are full of orchards providing world-famous Washington apples.

Currently, the Scenic Subdivision sees on average 15-18 trains per 24-hour period including Amtrak's Seattle section of the *Empire Builder*. This subdivision is the primary routing for intermodal and stack trains into and out of the Port of Seattle and South Seattle, and for some of the traffic into and out of Tacoma. This is also the primary empty bulk routing for the areas of Seattle to Vancouver, B.C. Empty bulk oil, grain,

and coal trains use this as a return route to the Midwest for loading. Although a staple in the early days, there is only one merchandise freight train per day each way on this line, a daily Spokane-to-Everett and Everett-to-Spokane train (M-EVESPO and M-SPOEVE). Many trains receive distributed power for the climb each way, with some westbounds picking up additional power at Wenatchee.

Occasionally drivers along U.S. Highway 2 may get a glance of Boeing 737 fuselages scooting along through the trees since BNSF uses this route to move the air frames to their assembly plant in Renton, Wash. This move can be part of a special "J" train or on the head end of a westbound stack or vehicle train.

#### Following Along

Catching trains on the Stevens Pass route can be a study in either success or frustration depending on the season and the time of day. It usually tends to be busy in the mornings and in the late afternoons with the busiest days being mid-week through Saturday. On some Sundays, you may just see a few trains out during the course of the day. Trains departing Seattle must contend with Amtrak and busy Sounder commuter train schedules so getting to Everett may be a challenge and take extra time.

U.S. 2 follows the route all the way from Everett to Wenatchee and provides easy access to most locations. The town of Skykomish is a place to check out the site of the old station and yard grounds.



The old depot has been moved to the south side of the tracks and is being restored as an interpretive center. The town also has acquired a retired GN SD9 that will be painted back into its original livery for display at the station grounds.

The Skykomish Historical Society is home to many artifacts of the line including items found at the Wellington slide location, and an extensive collection of other railroad items and documentation. A visit to the society is a must-do for a fan of the Pass or the GN. One of the group's prized possessions is the old station sign of "Tye," which is what Wellington was renamed after the avalanche disaster. There is also a signed document on display from John F. Stevens and James J. Hill. Skykomish has embraced its rail heritage with many of its businesses catering to rail enthusiasts. The Cascadia Inn is a favorite place for annual photography events with trackside-view rooms and has some of the finest homemade desserts around.

The original 1893 alignment over the pass is now a part of the Iron Goat interpretive trail and features easy access to most locations. The town of Skykomish is a place to check out the site of the old station and yard grounds from near the



ABOVE: A fresh two-foot snowfall created this winter scene as the westbound Z-CHCSSE (Chicago-South Seattle) crosses the Wenatchee River near Plain on December 19, 2015. On many winter days, one can escape the endless gray of western Washington by taking the trek over Stevens to shoot photos on the east slope. LEFT: While an eastbound waits in the siding, a BNSF track inspector sets on at Scenic to check the line between the west portal of the Cascade Tunnel and the west switch at Scenic on January 15, 2012. ROBERT W. SCOTT PHOTOS



top of Stevens Pass with the dirt road partly following some of the original switchback routes. The Iron Goat trail is barrier-free for about six miles on the mountain and goes through some of the surviving concrete snowsheds. The trail also accesses the west portal of the original Cascade Tunnel, but entry into the tunnel is not allowed due to recent structural collapses inside. This area is hallowed ground, as it is where the Wellington disaster occurred, and visitors must treat it as such; the removal of any artifact is strictly prohibited. Those not wishing to visit the site can see the location of remnants of the concrete walls and

sheds from U.S. 2 as you climb toward the Pass. Also readily visible are the scars on the mountain where snow still slides down into the canyon across the old right-of-way.

Winter can come early to the Cascades, with snow sometimes falling in late October and the season sometimes lasting into May. The area west of the Cascades is in an ever-present rain forest, thick with evergreen fir, cedar, and hemlock trees. Sunny and dry days are rare outside of summer into early fall. Over eight feet of rain falls on Skykomish annually. East of Stevens Pass there are far more sun-filled days year-round and snowfall remains on the

ground most of the winter in the higher elevations.

Driving through the Pass you expect to see the rugged scenery of the Cascades and can witness what is still happening a century and a half later — man and machine versus mountains and weather. Through all of the stories as told by Martin and Michael, the mountain is a true test of man, and will be for generations to come. ☐

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