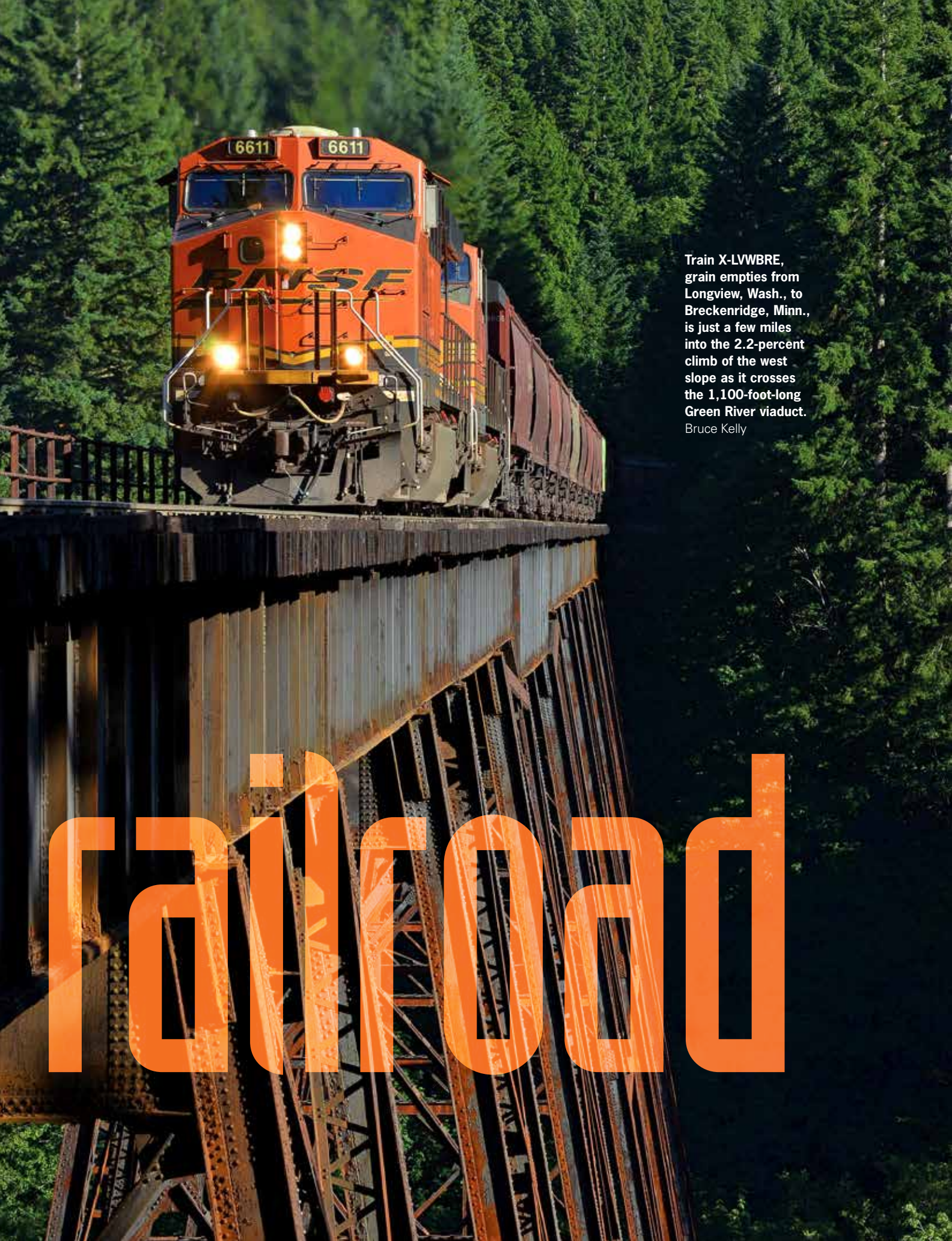
H-EVEPAS, an Everett-to-Pasco manifest, crosses the Green River viaduct east of Lester with a three-model ES44C4, ES44DC, and Dash 9-44CW mix of GEs and a deadheading Savage SW1200 switcher bound for a new assignment in the Midwest. Sean Kelly

ONE-WAY » mountain

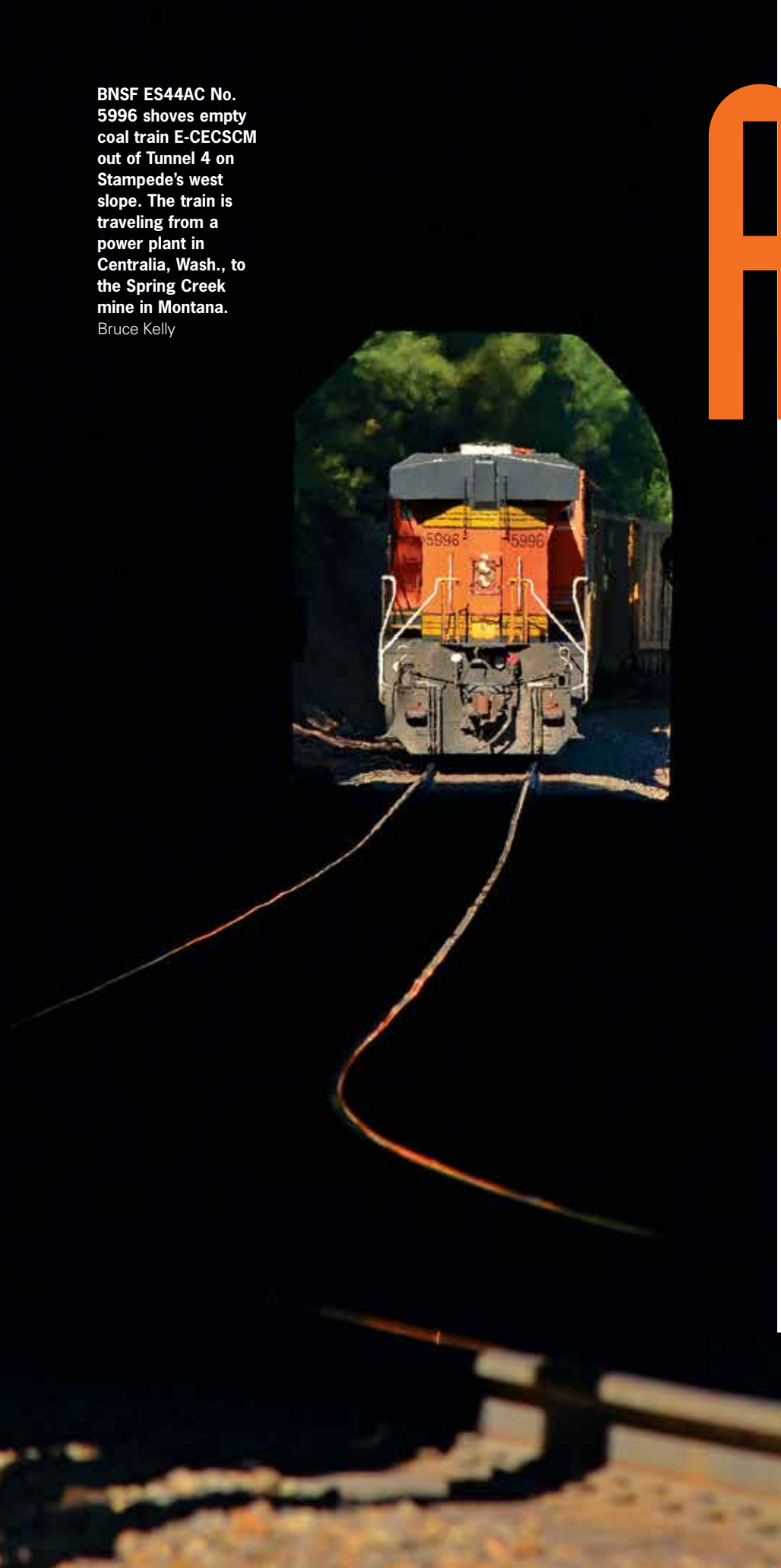
How BNSF got the bang for its buck on Stampede Pass

by Bruce Kelly



Train X-LVWBRE, grain empties from Longview, Wash., to Breckenridge, Minn., is just a few miles into the 2.2-percent climb of the west slope as it crosses the 1,100-foot-long Green River viaduct. Bruce Kelly

railroad



BNSF ES44AC No. 5996 shoves empty coal train E-CECSCM out of Tunnel 4 on Stampede's west slope. The train is traveling from a power plant in Centralia, Wash., to the Spring Creek mine in Montana. Bruce Kelly

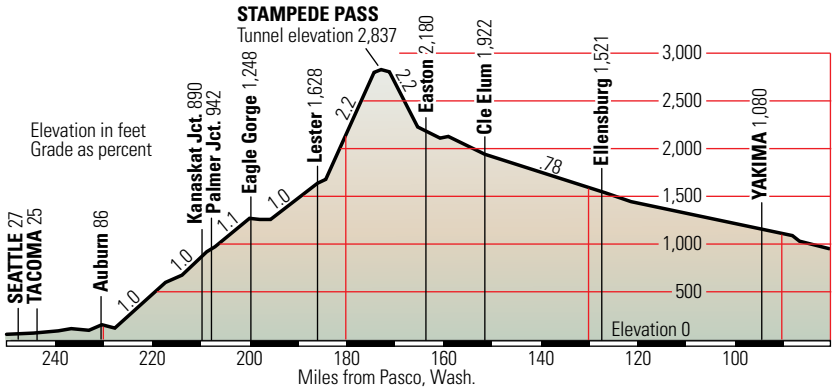
Ask certain officials at BNSF Railway what their company's biggest accomplishments have been over the past 20-plus years and one answer always seems to make the list: Rebuilding capacity that was discarded decades ago by predecessor Burlington Northern. After BN merged with Frisco in 1980, hundreds of miles of seemingly redundant main lines were either handed off to regional and shortline railroads or abandoned altogether. But when BN merged with Santa Fe in the mid-1990s, revenue ton-miles were increasing year after year, giving a new generation of railway executives ample incentive to grow the business, rather than dismantle it.

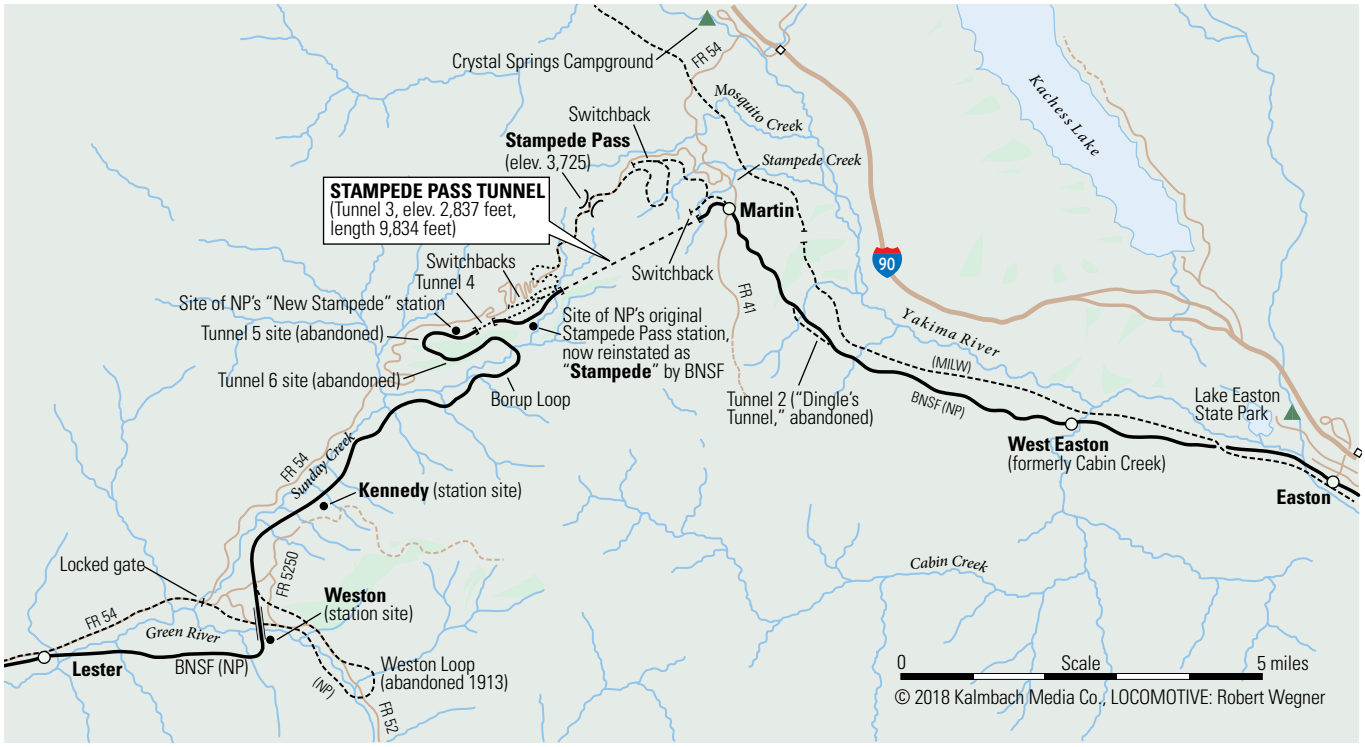
Among the earliest and boldest investments that BNSF made was the reopening of the former Northern Pacific main line over Stampede Pass in the Cascade Range of western Washington. BN closed Stampede to through traffic in 1983 and sold the eastern half of the route (Cle Elum to Kennewick, Wash.) to shortline Washington Central in 1986. The following year, BN removed track from the dormant Milwaukee Road main line over nearby Snoqualmie Pass, which BN acquired but never developed after the Milwaukee's 1980 demise.

BNSF announced the revival of Stampede Pass in an April 26, 1996, press release, saying that it planned to spend "about $125 million between now and 1999" to restore the 77.9-mile route between Auburn, Wash., and Cle Elum. On the pass itself, rusted rails and rotted ties were replaced by new track, and the 1.8-mile summit tunnel saw its interior lining repaired and new precast concrete snow sheds installed at both portals. The first revenue trains in more than a decade brought Stampede back to life in December 1996, but there would still be many months of ongoing improvement to track and other infrastructure across the entire 230-mile route between Auburn and Kennewick. Buying back 150 miles of main line from Washington Central added some $40 million to the total cost of a project that seemed as daring in its day as the original construction was some 110 years earlier.

A proving ground for power

Engineer Jack Christensen had the honor of running BNSF's first through train over the reopened Stampede. His trio of General Electric Dash 9-44CWs were a far cry from the Baldwin 4-6-2 helper he





hand-fired during his first trip up Stampede in 1944. With 2.2-percent grades on both sides, Stampede Pass demanded increasingly bigger power from NP: Baldwin 2-6-6-2s and 2-8-8-2s, then Alco 4-6-6-4s. Crews faced unbearable heat and smoke in the confines of Stampede Tunnel. NP eventually installed a ventilation system, and even considered purchasing cab-forward steam locomotives, similar to what Southern Pacific adopted for Donner Pass.

While the Great Northern and Milwaukee Road electrified their Cascade passes to alleviate smoke-filled tunnels and improve train performance, NP went directly from steam to diesels, with General Motors' Electro-Motive Division FTs taking charge of freight runs over Stampede in the 1940s. In its final years before the BN merger, Stampede's tonnage was in the care of powerhouses like SD45s and U25Cs.

Demoted to secondary status following the BN merger, Stampede became home to some of the last sets of F units operating in mainline duty. BN ended through service over the route in 1983, but the pass provided the perfect place to test some locomotive innovations. A trio of B32-8 demonstrators performed on Stampede in July 1984, their combination of four axles, advanced wheel-slip control, and fuel-efficient 12-cylinder engine influencing BN's lease of 100 B39-8s from GE a few years later. In September 1984, BN SDP45 No. 6599 — its trailing truck replaced by an articulated, self-steering four-axled truck — worked the twisting 2.2 percent of Stampede in EMD's bid to sell higher adhesion with reduced flange wear. There were no immediate takers.

Resurrected too soon?

During the late 1990s, Stampede Pass averaged less than a half-dozen trains per day. BNSF said the reconstructed route was performing its intended goal of easing congestion on its Stevens Pass and Columbia River routes. But some pundits wondered whether BNSF spent too much money on

Empty grain train X-LVWTMP exits the concrete snow shed guarding the east portal of Stampede Tunnel at Martin. The grade will soon sharpen to 2.2 percent on the descent to Easton. Bruce Kelly

what amounted to a gold-plated railroad carrying little traffic.

Early intentions of moving Puget Sound intermodal via Stampede gained the support of government and port officials. But while the restoration work was under way, BNSF suspended its plan to increase tunnel clearances for double-stacked containers, in order to avoid pushing the reopening into the next year. That decision, combined with Stampede's 2.2-percent grades, meant that BNSF's new third route to the Northwest coast would only be of practical use to manifests and empty unit trains.

In mid-2002, with as few as four trains per day, rumors swirled that BNSF would close Stampede temporarily, but nothing came of it. In fact, over the next few years, the route underwent tie and rail renewal at various locations, most notably between Ellensburg and Kennewick.

There were occasional detours of BNSF and even Union Pacific trains routed via Stampede due to track work or line closures elsewhere. But what really turned heads was the movement of loaded grain trains over Stampede during 2008 and 2009. These trips were mainly to test the potential for running high-tonnage traffic over the Cascade passes, but also to relieve pressure in the Columbia River Gorge. Manned helpers provided extra muscle for the climb from Easton to Stampede Tunnel and dynamic braking for the descent to Lester. BNSF found that the added expense in fuel and manpower, the diversion of locomotive resources, and the time spent adding and subtracting locomotives en route made the mountain way less efficient than the river way for hauling grain to Northwest ports.

Traffic over Stampede dwindled to as few as one or two trains per day in 2009. This time, rumors of a shutdown proved somewhat true. In September 2009, BNSF spokesman Gus Melonas said, "The Stampede Pass line remains active and is in service, however, due to economic conditions, activity has been scaled back." That activity amounted to locals only; through trains were rerouted to Stevens Pass and the Columbia Gorge.

Enter the Iron Triangle

By 2010, Stampede rebounded with upward of half a dozen trains per day. Aside from a couple of manifests running either direction, there were eastbound grain empties, plus occasional empty coal trains from either the Centralia, Wash., power plant or the Roberts Bank, B.C., export dock. The rise of crude by rail saw two to four oil trains per day coming to Northwest refineries and terminals, which produced an equal number of empty tank trains needing to get shuttled east, some via Stampede, others via Stevens or the Columbia Gorge.

All eyes were now on Stampede Pass. Several state-sponsored traffic studies recommended BNSF expand its use of Stampede in tandem with other routes; one study saying, "East-west capacity can be significantly increased by operating trains directionally on Stampede Pass (eastbound) and Stevens Pass (westbound). Single-direction traffic on each of the two routes has the effect of creating a double-track railroad."

In mid-2012, Stampede became a mostly eastbound railroad, but Stevens remained bidirectional. With the majority of the region's empty grain trains (and occasional empty coal or oil) running via Stampede, the Stevens Pass route would gain much-needed fluidity for its time-sensitive intermodals, and the longer but flatter route via the Columbia River Gorge would have less interference from empty unit trains traveling upstream against loaded grain, coal, oil, and merchandise trains moving west.

A new crew pool was established at Auburn with the intention of having personnel work in a three-trip cycle from there to Pasco, then west through the Columbia Gorge to Vancouver, then north to Auburn again. Someone called it the Iron Triangle, and the name stuck. Spokesman Melonas said, "The Triangle design could add additional traffic above current volumes that operate over Stampede." Activity on the eastbound-only Stampede has increased dramatically, from roughly eight trains per day in 2012 to as many as 18 trains per day during the 2017-18 autumn/winter rush.

A long way from 1887

Over the past year, most of Stampede's eastward parade has been empty unit trains, plus two or three daily manifests running from Everett or Tacoma to Pasco, as if to remind everyone what it's like to hoist revenue tonnage up and over the oldest mainline crossing of the Cascades. Most of the route from Auburn to Kennewick is dark (unsignaled) territory governed by track warrant, with dispatcher-controlled CTC signals and turnouts at key passing sidings. That's a notable change from the NP days of Automatic Block Signals, augmented by CTC over the pass itself.

BNSF had another $7.25 million in track upgrades set for 2018, with 9 miles of continuous welded rail replacing jointed rail between Toppenish and Yakima, and 4 miles of welded rail between Byron and Cle Elum. As for the possibility of enlarging tunnel clearances to allow stack trains over Stampede, BNSF will only say, "We add capacity as business conditions dictate."

A crew of only two taking 110 empty cars over the Cascades with just two locomotives on the head end and one operating unmanned on the rear would have been science fiction to the hundreds of men who laid track across Stampede's 3,700-foot summit during 1886-87 on a temporary course of hairpin loops, switchbacks, and timber trestles. In 1888, completion of the 1.8-mile Stampede Tunnel lowered the summit to 2,837 feet. Reawakening the pass from its BN-induced dormancy has seemed like a more prolonged process than its original construction, but the effort has paid off for BNSF. The squeal of flanges resisting the zigzag of the Borup Loops, the pulse of diesel exhausts against snow sheds and tunnel ceilings, and the thunder of slack running in for the descent of the Cascade east slope are the sounds of life restored in full measure to a mountain railroad that was once considered gone for good. 1

Rounding the upper Borup Loop, empty grain train X-LVWTNS is moments from plunging into Tunnel 4. High-tension lines in the foreground deliver electricity from upper Columbia River dams to the population centers of western Washington. Sean Kelly