MEANY SKI LODGE

The Mainstreeter

Volume 17 No. 2 Spring 1998

The Northern Pacific Railway Historical Association

The Stampede Pass Switchbacks • Stampede Switchback Tour

MEANY SKI LODGE

Walt,

Thought you would enjoy this - Please pass on to Meany when through!

I have a copy to use in hiking the trails.

Jack

Jack

p.s. see map on back cover!

map

The Mainstreeter

SPRING 1998

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FREQUENCY OF PUBLICATION

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CONTRIBUTIONS & SUBMISSIONS

The *Mainstreeter* seeks articles, photographs, plans, data, maps and other material about the Northern Pacific Railway and its many predecessor and associated railroads and companies. No payment is made. Submit articles and other materials for consideration to the chairman of the Editorial Board.

NOTE TO MODELERS

Unless otherwise marked, the plans and drawings published in the *Mainstreeter* are sized for graphic presentation only and do not represent any particular scale. Even where specific scales are indicated, modelers should always verify dimensions, because photo reproduction and other processes involved in printing may result in slight changes in illustration sizes.

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THE NORTHERN PACIFIC RAILWAY HISTORICAL ASSOCIATION

The NPRHA is an independent, nonprofit educational organization formed in 1981 to collect, preserve, and disseminate information about the Northern Pacific Railway and its associated lines. Individuals sharing an interest in the Northern Pacific Railway – whether as railfans, veterans, modelers, collectors or historians – are invited to join the NPRHA. Regular association dues are $20 per year, NP veteran's dues are $15, and $35 makes you a sustaining member. Canadian members dues are $25 US. Members living outside North America pay the sustaining rate. All membership classes run from October to September of each year and entitle you to receive a calendar and the four *Mainstreeter* issues of the subscription year regardless of when you join in a calendar year. Both non-U.S. and sustaining members receive their *Mainstreeter* and calendar by first class mail and have the added satisfaction of knowing that a little extra has been done to help the NPRHA preserve the NP story.

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Cover Photo Captions and Credits

***FRONT COVER** – Decapod Engine 501 making its way up the Stampede Pass switchback line, east of Switch No.2 in 1887. Watercolor by Jack Christensen, 1998.*

***INSIDE FRONT COVER** – Engineer Hank Gupton snags the flimsies from the top hoop at Auburn depot on a sunny May day in 1968. Second trick operator Climer watches from the platform. Gupton has already slowed No. 26 to about 25 mph as he prepares to lead the North Coast Limited to its first transcontinental stop at East Auburn. Photo by Gary Emmons.*

***INSIDE BACK COVER** – An elevation map of the switchback line over Stampede Pass, as it appeared in Northern Pacific valuation books. Redrawn by Dennis Aust.*

***BACK COVER** – A map of the Stampede Pass switchback line superimposed on a current U.S. Forest Service map. Map work by James. C. Mattson.*

From the President

by Jim Hill

Surprise!

We have Jack Christensen and Gary Tarbox to thank for this month's cover, our first issue with color.

Although I haven't seen it yet as I write this, I know it's coming and am very excited to get my copy. We expect to be able to have more color in the future as occasions warrant. For me this is like icing on a cake that was already my favorite. When my *Mainstreeter* comes in the mail, nothing else happens that evening until I've finished going through it completely. Craig Reese and our editors and authors – and artist – have been doing an outstanding job to bring you the best publication possible. We hope you enjoy it as much as I do. But still again there is always room for your contribution, and we continue to be short of material, especially with a focus toward modeling and things that can be modeled. We are going to unchain Clint Crow and in the very near future he will edit an issue with a definite modeler's perspective. You should all be familiar with Clint's excellent C.C. Crow line of HO structure kits, and knowing the quality of his work, this forthcoming issue is surely one to anticipate.

We know that there needs to be many different kinds of features in the Mainstreeter each month. Since everything we do is an all-volunteer effort, we can't meet your expectations for balanced coverage unless you contribute the material that allows us to have that balance. So modelers, I challenge you! There is tons of material out there that is still completely obscure because no one has yet researched it and submitted the results for publication. There are engines, cars, equipment and structures begging to be publicized. You can do it. Start now. Don't keep us waiting any longer.

Tacoma on my Mind

If you haven't already made plans to be in Tacoma for our convention this July, you'd better get on it! Warren Broderick and the convention committee have been working long and hard to make Tacoma our best convention ever, and that is a tall order. I'm very excited about Tacoma and urge you not to miss it. To whet your appetite, you'll find enclosed with this issue the notice for this year's mail-in raffle. Bill McKown and W&R Enterprises have provided 10 (count 'em, 10) superb W&R Enterprises HO scale brass tank car models, the four-dome versions, so there will be several chances to win. Thanks again to W&R Enterprises for this generous contribution in support of one of our major annual fund-raising projects. Good luck to you – maybe we can both win one.

Update and Appreciation

The process of transferring Warren McGee's photograph collection to the Montana State Historical Society archives is nearly complete, with NPRHA providing $15,000 in support thanks to your contributions to this project. Going forward, I thank all of you who have contributed the time, effort and resources to keep NPRHA on track and running smoothly. It is your dedication that has made this the great organization that it is. Thank You! For those of you who have just joined us, welcome! We look forward to having you participate in all aspects of NPRHA activities. This is your organization, and your efforts make it the best there is. See you in Tacoma!

– Jim Hill, Feb. 26, 1998

The Northern Pacific on the Internet

Three NPRHA members have created web pages about the NP, covering history, modeling, rosters, and more. You can see these pages at the following URLs:

www.cs.utk.edu/~davison/ghrr.html (Mike Davison)
pw2.netcom.com/~whstlpnk/index.html (John Phillips)
www.armadillo.com/monad/ (David Zuhn)

In addition, a weekly e-mail newsletter about the NP and present operations on NP lines is available. The *Tell Tale* has more than 200 subscribers and features historical notes from NPRHA members and NP fans. To learn more about the newsletter see pw2.netcom.com/~whstlpnk/telltale.html or send an e-mail to <whstlpnk@ix.netcom.com>.

Tell Tale Helper Section ads are located at:
http://pw2.netcom.com/~whstlpnk/wantads.html

The Museum of the Rockies in Bozeman, Montana, has a site devoted to the Ron Nixon photo collection located at:
http://www.montana.edu/wwwmor/nixon.html

Jim Fredrickson collection

A photograph taken from the summit looking west in 1887 with the switchback main line on the left, the runaround track in the middle and the passing track on the right. Notice Lizard lake (Summit Lake) on the left and the location of the stub track shown on page 20 of Charles Wood's book, "Northern Pacific, Main Street of the Northwest."

The Stampede Pass Switchbacks

by Allan Schneider

Introduction

I became interested in the Stampede Pass switchback line a number of years ago when my wife and I were picking berries in the pass. I was walking up the north side of the pass from the Forest Service road next to the lake at the summit. The lake has been referred to as Summit Lake and Stampede Lake on some of the old maps and pictures. The U.S. Forest Service now identifies the lake as Lizard Lake. After a short walk up the slope, I found some ties along an old roadbed. I followed the roadbed to the east to the Forest Service road. I retraced my steps to the west and found that the roadbed stopped at the edge of a gully. I went down into the gully looking for the evidence of a trestle and found nothing.

To satisfy my curiosity, I began collecting information on the Stampede Pass switchback line. I wrote the Minnesota, Montana and Washington Historical Societies. The Minnesota Historical Society sent me several packages of information that contained two different survey maps. This information indicates that I may have found the summit siding. The Montana Historical Society sent a number of photocopies of photographs of the switchback line. The Washington Historical Society did not have any information.

I have used a number of sources to write this article, including company records, books and the railroad press of that day. I found conflicting information. Some sources might give one date or statistic while another gives another date or statistic for the same event. For example, there are disagreements on length of trestles, number of trestles, degrees of curvature, percent of grade, and so on.

The Northern Pacific held a charter to construct a line across the Cascade Range to Tacoma. However, the railroad made its first through-connection to the Pacific coast in 1883 by joining the Oregon Railway & Navigation Co.'s line at Wallula, 214 miles east of Portland. When the OR&N was leased to the Oregon Short Line, a subsidiary of the Union Pacific, the NP board of directors committed to building a line across the Cascades to Puget Sound *(1)*. This line was referred to as the Cascade Branch.

Pasco was selected as the starting point

of the Cascade Branch. The Cascade line was surveyed in 1881 with construction starting in 1883. By January 1885, three surveys had been completed over Stampede Pass, each requiring a tunnel. The selected route required a 9,850-foot tunnel. Because of financial problems, progress on the branch was slow until the beginning of 1886 when the decision was made to proceed with the project as fast as possible.

On Jan. 29, 1886, a contract was awarded to Nelson Bennett, with a bid of $837,250, for the construction of the tunnel through Stampede Pass *(2)*. The tunnel was to be 9,850 feet long and competed in 28 months. The construction on the tunnel was started on Feb. 13, 1986 *(3)*. On June 1, 1886, contracts were awarded to complete the road from each end of the division to the approaches to the tunnel. When the June 1 contract was awarded, the Cascade Branch line was completed 125 miles west of Pasco to the area of Ellensburg and 50 miles east of Tacoma to the area of Humphrey *(4)*.

In 1885, the Engineering Department decided that it would be too long a wait for the completion of the Stampede Tunnel before opening the main line to the coast. During the period, the OR&N developed an unfriendly attitude toward the NP and was requesting a higher portion of the through-rates than the NP wanted to pay. This resulted in the NP board of directors deciding on April 16, 1886, to build a temporary switchback line through Stampede Pass before the tunnel was completed. Another factor in the board's decision was the revenue that could be received from hauling construction supplies and normal freight *(5)*. The revenue would also help pay for the construction of the tunnel and main line. The temporary switchback line was to serve as the main line until completion of the tunnel.

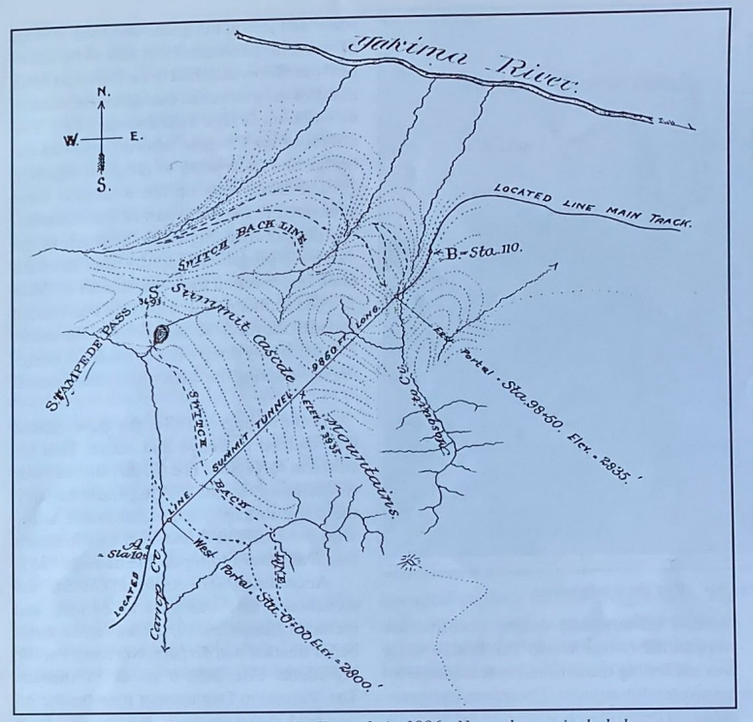
Design of the Switchback Line

Preliminary surveys were made to determine if it were practical to build a switchback line through Stampede Pass with a reasonable grade to allow trains to ascend and descend. The trains would have to be switched backward and forward over heavy grades, sharp curves and through a series of switchbacks. The line had to overcome an elevation of about 850 feet, above the tunnel, over rugged and heavily timbered terrain. One of the first surveys considered a 4 percent grade while another considered a grade of about 6 percent. The steeper grade was less costly to build because it shortened the length of the line and reduced the cost of construction. The steeper grade, however, would increase the expense of operating the line. The cost-benefit analysis favored a steeper line with about a 6 percent grade. Therefore, the decision was made to build the tunnel and the switchback line simultaneously *(6)*.

Minnesota Historical Society collection

An 1887 photograph taken on the west side looking up the hillside at Bridges Nos. 25 and 28 and the cribbing between Bridges Nos. 21 and 22. The track in the foreground is the temporary main line.

In the spring of 1886, W.H. Kennedy ran a preliminary line survey for the switchback line that started about three-quarters of a mile from the west portal of the tunnel where it connected with the main line. In this line survey, the switchback line crossed over the west entrance of the tunnel twice before going though Stampede Pass *(7)*. The first switchback was a short distance and due north from the point where the switchback line left the main line. The second switchback was to the southeast from the tunnel mouth at a higher elevation. The line then went north toward the lake at the summit. After crossing the summit, the line continued for a distance before going through a horseshoe curve to the upper switchback on the east side. The line then ran through two more switchbacks north of Martin before rejoining the main line east of the tunnel portal.



Sketch of switchback line made by W.H. Kennedy in 1886. No scale was included.

J.Q. Barlow revised Kennedy's survey*(8)*. Barlow's original survey had one switchback on the east side and two on the west side. However, he added another switchback at the east side near the east portal of the tunnel to avoid having the switchback on the east side at the tunnel mouth where it would act as a wye and force every train to pass over it. To achieve the necessary distance without increasing the number of switches, it was necessary in several cases to create a figure-S line. Distance was also created by following a ravine up toward its head, then almost completely circling back and crossing the same ravine on a trestle. The inside back cover shows the switchback elevations as they appeared in the valuation books *(9)*. The length and height of the bridges are also indicated. The back cover map shows the switchback line superimposed over a current Forest Service map.

The east end of the switchback route left the main line on the sharp curve at the mouth of Mosquito Creek gulch heading west across the creek on a high trestle. It ran almost immediately onto the tail track of the first switchback. The line then headed in the opposite direction, climbing out of the gulch northwestward up the mountainside. The line continued to climb steeply and crossed three deep ravines to the second switchback about a mile away. The line reversed itself again heading southeastward for about half a mile through a full horseshoe curve. The summit was reached as the line climbed north and west for nearly a mile *(10)*.

On the west side the switchback line descended in more or less of a straight line for more than a mile to the southwest. The line then entered a loop consisting of two consecutive 15 degree horseshoe curves. Emerging from the lower end of the loop, the line proceeded westerly for nearly a mile to the second switchback on the west side. The tail track of this switchback terminated in a high dead-end fill. Doubling back eastward toward the tunnel mouth, the line dropped down to the first switchback on the west side and reversed again. The line then descended westward to the main line about three-quarters of a mile beyond the west tunnel portal *(11)*.

There were seven switches on the switchback line, including the ones connecting it to the main line and the one at the summit. This allowed the railroad to always deliver trains in the direction that they were received at the beginning of the grade.

Construction of the Switchback Line

The contract for the switchback line was awarded on June 1, 1886, to Hale Smith Burns and Co. *(12)* J.Q. Barlow of the NP

F. Jay Haynes photograph, Montana Historical Society collection

Looking up the hill on the west side with Bridges Nos. 22 and 24 with Switch No. 4 to the left of the photograph. Bridge No. 29 is in the foreground.

Gary G. Widle collection

Bridge No. 26 rises from Switch No. 5 with Bridge No. 19 in the background.

took charge of the construction of the entire switchback project and held this responsibility until the line was turned over to the NP Operations Department *(13)*. Work did not begin until June 14 because deep snow prevented the locating party from moving out. The engineers and contractor simultaneously began establishing camps and moving in their equipment in preparation for construction activities. The location of the line was made by a single party, directed by Barlow. The construction of the switchback line was begun on the east side of the mountain in August 1886 with clearing and grading work. The line location and construction began at the same time. All line location work was completed by July 12 *(14)*.

There was a long delay in reaching the switchback line because severe weather prevented completing the main line on time. Track from the east reached the switchback line on March 10, 1886, permitting supplies to reach the construction site. When winter began, the grading was almost completed. Bridging was behind schedule because of the limited supply of timber suitable for bridging in the area and the difficulty of hauling timber by wagon up the steep slopes of the mountain. Most of the timber was brought in on rail cars and the bridges were built from the end of the track. The severe weather encountered during construction stopped the bridge work. The bridge work was exceeding the original cost estimate by a considerable amount. Therefore, bids were obtained from other contractors to finish the work. After Nov. 12, the work was done under a contract with N.L. Blagen *(15)*.

Most of the grading and track laying was done during the winter of 1886-87 with the effort of hundreds of Chinese laborers shoveling snow off the raw grade. Fifteen feet of snow and ice on the grade and over 40 feet of snow in the summit cut had to be shoveled out. Snow also had to be shoveled from many of the gulches to enable the carpenters to work on bridge foundations *(16)*. The efforts of the Chinese laborers allowed the bridge and track work to progress rapidly.

The trestle pits on the west side were excavated in the early part of the construction period. Bridging on the west side of the mountain progressed rapidly after the west main line reached the switchbacks on May 12. The timber on the west side was hauled ahead of the track-laying crews on the snow. Extraordinary progress was made on bridging considering the difficulties encountered *(17)*.

In the spring of 1887, the thaw caused the roadbed to heave and settle. This resulted in soft spots. The fill dirt slid and was washed away by the melting snow, causing the track to sag, buckle and heave along with the roadbed. Most of the switchback line was rebuilt to repair the damage *(18)*.

According to *The Railroad Gazette*, the switchback line was 7.04 miles long and included 32 trestles *(19)*. However, the number of trestles is in dispute. Northern Pacific Presidents File 2481-9 states 31 trestles. The Valuation Department map on the inside back cover shows 30 trestles. We have found a more detailed diagram which reveals a short shallow bridge 100 feet to the west of Bridge No. 6 and, several hundred feet west of Bridge 11, one bridge that was apparently abandoned and filled right after construction.

Table 1. Grade Details

Feet per Mile	Miles	Grade (%)	Percent of Line
90 to 100	0.035	1.7 to 1.9	0.5
240 to 250	1.415	4.5 to 4.7	20.1
250 to 360	1.390	4.7 to 4.9	19.7
260 to 270	0.490	4.9 to 5.1	7.0
270 to 280	2.108	5.1 to 5.3	31.0
280 to 290	0.120	5.3 to 5.5	1.7
295.68	1.180	5.6	16.8
Level	0.230	0.0	3.3
Total	7.04		100

Source: Columns one and two are from *The Railroad Gazette*, Dec. 23, 1887. Columns three and four are by the author.

The elevation of the west end of the switchback line when it left the main line was 2,731 feet. The grade on the west side was 947 feet in 3.8 miles or 249.2 feet per mile with a maximum grade of 5.2 percent and a curvature of 4.06 percent. The highest point reached on the switchback line was 3,678 feet at the summit of Stampede Pass. Five hundred feet of level grade was laid across the summit. Part of this section was used to feather the east and west grades together and the other part as a level place for trains to stand. A summit spur 1,300 feet long at level grade was made along the side of the ridge for switching and setting out cars. On the east side of the pass the line descends to the level of 2,877 feet where it rejoins the main line. The total rise on the east side is 801 feet in 3.24 miles with a maximum grade of 5.6 percent or 295.68 feet per mile and a curvature of 4.95 percent *(20)*. Table 1 gives the details of the grades. Table 2 give the details of the curve in feet and total curvature. The grades of the stems at the switches were 3 percent *(21)*.

Table 2. Curve Details

Curves	Total Feet	Total Curvature
6°	617.7	37° 04’
7°	234.6	16° 25’
8° and 8° 30’	2,102.0	175° 12’
10°	3,818.9	381° 53’
12°	4,465.9	535° 44’
14°	5,326.7	745° 44’
15°	2,883.3	447° 30’
Tangent	17,609.9	……..
Grand Total	37,159.0	2,339° 32’

Source: *The Railroad Gazette*, Dec. 23, 1887.

Each of the switchbacks had a spur 575 feet beyond the switch forming the connection. The spur could hold two Decapod engines and seven passenger coaches or two Decapod engines and 14 freight cars. The spurs were located on an ascending grade of 2.5 percent and joined to the descending and ascending grades with vertical curves *(22)*. The ends of the spurs were butted against a heavy excavation to take the place of bunting posts. This design of the switchbacks checked the speed of a descending train and

F. Jay Haynes photograph, Jim Fredrickson collection

The summit looking east in 1890 during the dismantling of the snowsheds. The switchback main line is on the right and the passing track on the left.

F. Jay Haynes photograph, Jim Fredrickson collection

Looking east up the tail track of Switch No. 5 with Bridge No. 19 visible up the hill.

gave a train ascending the mountain a better start. When the train was descending the mountain, the lighter grade of the spur enabled the crew to better control the starting of the train.

The total curvature was to the right, 1,185 degrees and 57 minutes, and, to the left, 1,153 degrees and 35 minutes. The total curvature for three single curves was 246 degrees and 40 minutes, 213 degrees and 35 minutes, and 198 degrees and 50 minutes *(23)*.

There were 32 trestles totaling 7,525 feet. The longest trestle was 560 feet. The next four longest trestles were between 420 and 480 feet. There were seven trestles over 40 feet high with the highest being 125 feet and the next three tallest at 75, 80 and 90 feet respectively. There were 15 snowsheds, totaling 3,364 feet. Telephone stations were established at each switchback and at the summit *(24)*.

On March 30, 1887, a small locomotive, after pushing one car up the east side of the switchback line for about a mile, lost control and began to run away downhill. When the brakes proved to be inadequate, the crew jumped. The locomotive's estimated speed was 100 mph. The locomotive came upon three carpenters working on a curved trestle. It killed one man outright and cut off the legs of the second man. The third man survived by throwing himself flat on the timbers as the train took off into the air passing over him. The train fell 100 feet into the canyon below and was smashed to pieces on the rocks *(25)*.

F. Jay Haynes photograph, Jim Fredrickson collection

This photograph was taken from the tail track of Switch No. 5 looking up at Bridges Nos. 17 and 20 on the west side.

Table 3. Cost Summary for the Switchback Line

Item	Unit Cost	Total Cost
Clearing heavy timber – 94.54 Acres	$100.00	$ 9,454.00
251 stations grubbing	10.00	2,510.00
68,181 cubic yards excavated solid rock	1.00	68,181.00
15,558 cubic yards excavated loose rock	0.45	7,001.10
47,683 cubic yards excavated cement grave	0.45	21,457.35
37,142 cubic yards excavated earth	0.27	10,028.34
103 trees cut down and removed	4.00	412.00
1,548 cubic yards extra haul	0.01	15.48
225 cubic yards slope wall	4.00	900.00
36 cubic yards riprap in place	0.90	32.40
3,100.902 FBM timber sawed, hewed, etc.	20.00	62,018.04
237,802 FBM plank in structure	19.00	4,518.24
8,117 linear feet of culverts	17.00	1,379.89
161,835 linear feet of crib work logs in place	0.17	27,511.95
17,604 cross ties	0.24	4,224.96
8 miles of track – laying main	275.00	2,238.91
7 miles track – laying surfacing	175.00	1,311.87
10,337 cubic yards of ballast	0.45	4,651.65
Extra work per force account		76,849.98
Grand Total		$304,697.16

Source: Northern Pacific Railway Co., Valuation Department Report, June 30, 1887; p. 121.

The last spike on the switchback line was driven on June 1,1887, at precisely 6:02 p.m. by Assistant General Manager J.M. Buckley at the summit of the pass *(26)*. The switchback line was connected to the main line on June 2, 1887. The switchback line was completed 11 months and 18 days after the engineers began work. The line was opened for traffic on June 2 and operated by the construction forces until July 3 when the line was turned over to the Operating Department *(27)*. Through passenger service began on the same day.

After the decision to construct the switchbacks, two heavy Decapod locomotives were ordered from Baldwin Locomotive Works. They are discussed in detail in a later section. However, these locomotives caused problems that resulted in modifications to the line before operations began.

The driving wheelbase of the Decapods was 17 feet. It was thought that the blind drivers would get full traction on 15-degree curves. In operation, it was discovered that the increased gauge for curvature caused the blind drivers not to bear fully on the rails. Where the track was faulty or the drivers slipped, the rail was crowded over and the drivers derailed. This problem was solved by laying a third and fourth rail *(28)*. This was done first on all curves of 14 and 15 degrees and then extended to all curves of 10 degrees or more to prevent accidents. Third and fourth rails were laid on 4,791 feet of the sharpest curves to carry the tread of the driving wheels of the Decapods and heavy Consolidation engines.

When the track was first laid, 7.5-pound rail braces were used, two at each joint and one at the halves and quarters of each rail. However, this precaution was not sufficient to keep the track from spreading. Therefore, bridle braces were used on all curves *(29)*. The brace was designed and constructed for easy installation. Two were used on each joint and one on the halves and quarters as needed. They were made in lengths to fit the gauge of the track at the point where they were used. This solved the problem of spreading track.

During the winter months heavy snow up to 10 feet deep would cover the line. In July 1887, contracts were let to Hugh Glen & Co. and Hoffman & Bates for the construction of snowsheds on the main and switchback lines *(30)*. Fifteen snowsheds totaling 3,362 lineal feet were built in all through cuts and in places where the line was close to steep hillsides on the switchback line. Because of the weight of the snow, the

F. Jay Haynes photograph, Jim Fredrickson collection

Bridge No. 19 is in the foreground with Bridge No. 17 in the background.

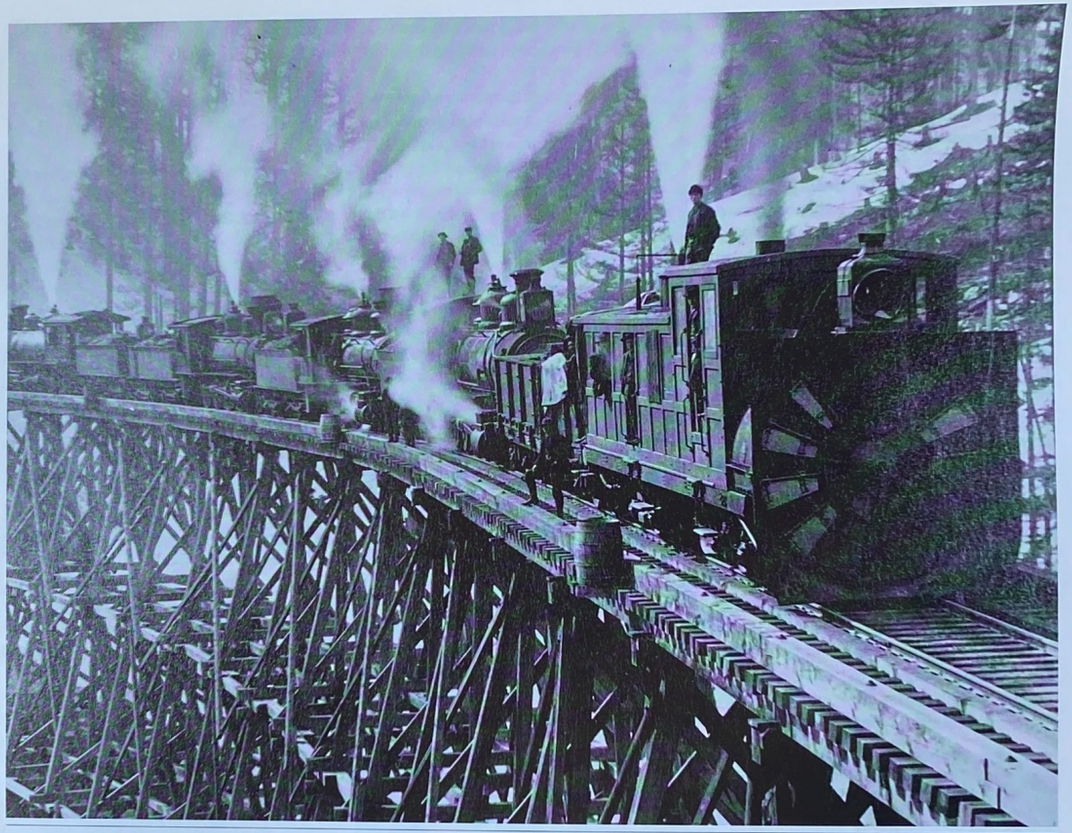
snowsheds were built with 10- by 12-inch posts and 10- by 16-inch caps spanning the track. The bents were 4 feet apart and covered with 4-inch planks. The wood used to build the snowsheds was the best quality of red fir because of its strength *(31)*.

Before the snowsheds could be finished, the government accused the Northern Pacific of cutting excessive timber. A Seattle court decision on Nov. 12, 1887, allowed the Northern Pacific to cut timber adjacent to the Cascade Branch for building snowsheds and lining tunnels on those sections of the line not already accepted by the government. Construction on the snowsheds was delayed until late August to early October 1887. The snowsheds on the switchback line were near completion by the end of October *(32)*.

The estimated cost of the switchback line was $225,000 *(33)*. However, the building of the switchback line was done at considerable cost. Every method possible was used to lower the cost without sacrificing the solidity and strength of the roadbed. Local timber was used when possible to lower the cost of building the trestles, and trestles were used to avoid costly fills. The line was located to avoid solid rock cuttings where possible. Log cribs filled with earth and loose rock were used instead of retaining walls. This reduced the amount of materials moved to make the roadbed. Table 3 shows the type of work and associated costs involved in building the switchback line. According to Louis Renz the total cost of the switchback line was $350,000 *(34)*. The difference between the total in Table 3 and Renz was in the additional track bracing, extra rails on sharp curves and the building of the snowsheds.

Yakima Valley Museum collection

This photograph was taken from Bridge No. 2 and is looking east from Switch No. 1. Bridge No. 1 is on the right and Bridge No. 3 is on the left as the switchback line starts upgrade on the east side of Stampede Pass.



Yakima Valley Museum collection

The snowplows on the east end of Bridge No. 1.

Operations

The Stampede switchback line was one of the most difficult lines to operate in the world because of its steep grades and sharp curves. It was surpassed only by the 6.8-mile Iron Mountain Branch of the Denver and Rio Grande, from Hecla to Calumnet, which had an 8 percent maximum grade and 25 degrees maximum curvature. Stampede had a maximum grade of 5.6 percent and curvature of 15 degrees *(35)*. The switchback line was operated for about a year and a half. All trains were restricted to 10 mph on the switchback line. The movement of traffic over the mountain was accomplished in remarkably quick time with no accident of any kind to man or machinery, except one slight accident on switch No. 2, on the east end, when one of the engineers was slightly bruised in the snowshed covering the tail end of the switchback at that point *(27)*.

Two Decapod engines and about six Consolidation engines were required to operate the switchback line. At that time, tonnage was not used by trainmen to assign the number of locomotives to a train. The size of a train was based on the number of cars to be moved regardless of the total tonnage of the train. Cars had much less capacity than present equipment and locomotives were scarcely large enough to take the place of a later steam switch engine. Hand brakes, air brakes, and link and pin couplings were used during this period.

All trains between Easton and Weston were under the control of the switchback trainmaster. Weston was at the base of the grade just out of Lester. It was bypassed when the main line was relocated in 1913. Only one train was allowed on a side of the mountain at a time. This allowed two trains, one going east and one going west, to be on the mountain at a time with a meet occurring at the summit. Train movements were controlled over the mountain by telephone. The conductor of each train left a clearance ticket with each switch tender as he passed the switch. When the train passed the switch,

the switch tender telephoned the trainmaster's office to report the clearance of the passed train. If the train stopped or had trouble, the switch tender reported the situation promptly to the trainmaster's office. The switch tender also determined the assistance required and reported this information to the trainmaster's office *(37)*.

Before traveling the switchback line, engineers ensured that all brake equipment was in first-class order, a full supply of freely flowing sand in the dome, and a full maximum pressure of 140 pounds maintained in the boiler. Automatic air was used on ascending and straight air when descending. Before starting over the mountain, trainmen thoroughly examined and tested each brake to determine if all were in perfect order and the dogs could hold firm. Defective equipment was reported to the car foreman for correction. If equipment on the locomotive or cars was defective, no attempt was made to cross the mountain until they were put in perfect order. Trainmen were not to depend upon the air brakes. However, they were prepared to use the hand brakes in all cases of air brake failure. All train crew members, including the conductor, took positions at brakes while on the switchback line and were prepared to act at a moment's notice. If it became necessary to stop on the grade, the wheels of each car were securely blocked in addition to setting brakes *(38)*.

The crew required to operate a train over the switchback line consisted of a conductor and one brakeman for every two cars. Additional brakemen were added to the regular crew of the conductor and two brakemen at either end of the switchback line. A switch tender was on duty at each switch. He was responsible for closing switches for approaching trains when they signaled. The engineer on an ascending train gave two long blasts on the whistle to close a switch. Three long blasts on the whistle were given by a descending train to close the switch *(39)*.

All trains stopped at the summit for a short period to charge the automatic brakes, sound the wheels, and examine and test the brakes. The summit siding was also used as a meeting point when freight traffic was heavy. When the siding was being used, the track was cleared and blocking done by telephone. The scheduled time for passing over the switchback line was one hour and 15 minutes.

According to the Jan. 13, 1888, *Railroad Gazette,* the switchback line had no accidents for the first six months of operation *(40)*. However, there were several breakdowns including breaking axles, blowing out of cylinder heads, and other unidentified incidents that caused the release of air. In each case, the trains were promptly stopped by hand without accident or damage.

For operating safety, locomotives were not permitted to take any more cars down the hill than they hauled up. If the engine failed, the brakes would have to hold the weight of the locomotive and the train. The more cars on the train the more difficult it was to stop and hold the train. A Decapod could handle two 12-wheel sleepers, three eight-wheel coaches or five loaded freight cars. Two Decapods could handle five 12-wheel sleepers, seven eight-wheel coaches or 10 loaded freight cars. Two Consolidations could haul three eight-wheel coaches and two baggage cars. One Decapod and one Consolidation could haul seven loaded freight cars. Two Consolidations could haul six loaded freight cars, while one Consolidation could haul half that number *(41)*.

Most trains were operated with an engine on the front and on the back of the train to hold the train if it broke in two and the brakes failed. The railroad found that more cars could be hauled over the line with a locomotive on each end of the train than with two locomotives coupled together be-

Decapod (2-10-0) No. 500, typical of the type used on the switchback line.

Jim Fredrickson collection

F. Jay Haynes photograph, Montana Historical Society collection

Looking west from Switch No. 5 with Bridge No. 26 on the right and Bridge No. 27 on the left.

cause the power was nearer the load or resistance.

When a train was handled by one locomotive, the locomotive was kept on the downgrade end of train when ascending and descending. This was accomplished by placing the cars in front of the locomotive at the foot of the grade and pushing them up to the tail of the first switch. The locomotive would then back down to clear the reverse track, the switch tender would throw the switch for the reverse track and let the cars run up the track a sufficient distance to clear the locomotive. The locomotive was then placed in the rear of the cars and pushed them to the next switch. This method was followed until the train reached the base of the grade on the other side of the mountain *(42)*.

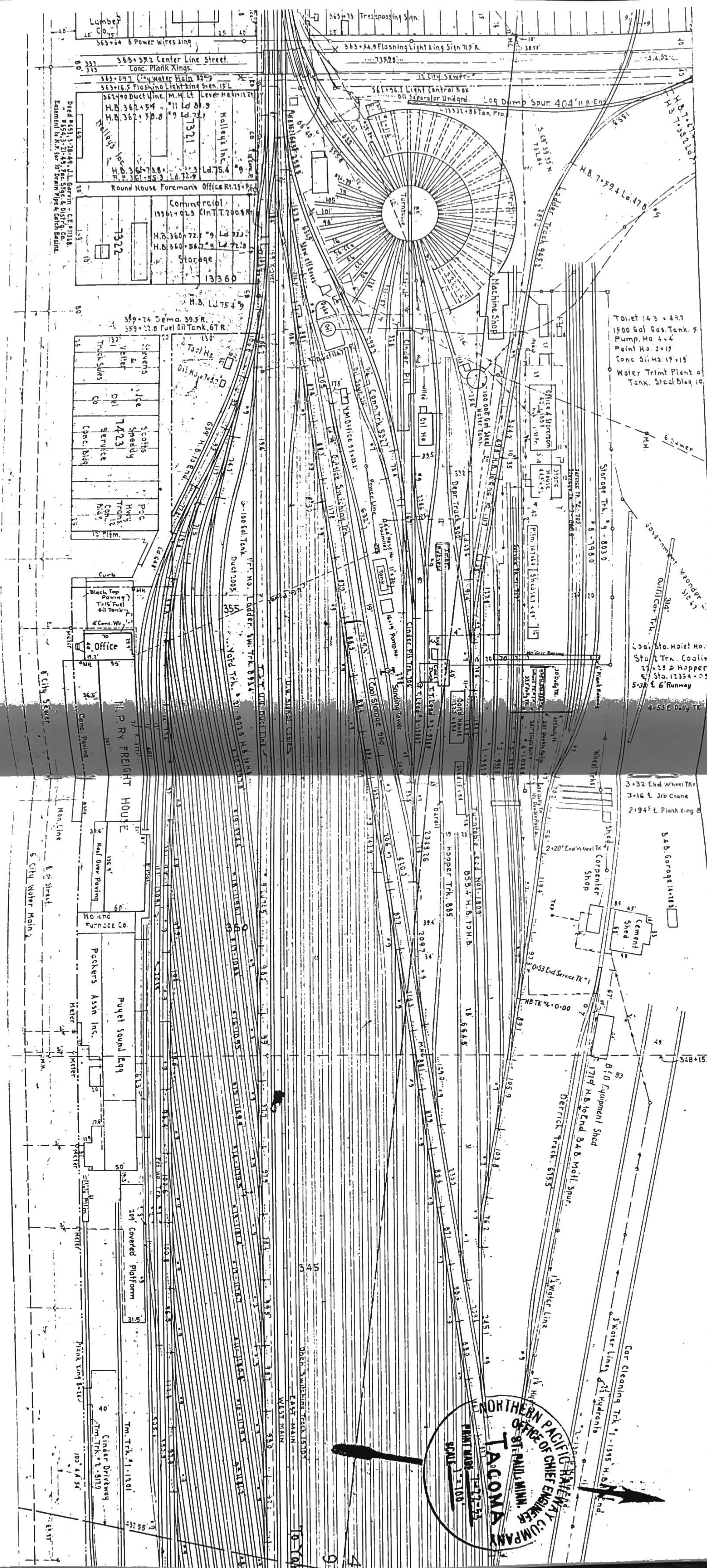
Ordinary snowplows could not be used on the switchback line because the snow was too heavy to push and the steepness of the grade prevented the plows from reaching a speed required to throw the snow clear of the track. Two rotary steam snow shovels were ordered from Cooke Locomotive Works for snow removal *(43)*. On Jan. 2, 1888, the two Leslie steam rotary snow shovels, propelled by four locomotives between them, went to work on the switchback line. They could clear the whole line in one day, thus eliminating manual snow clearing. After the arrival of the new rotary steam snow shovels, snowsheds were built only in avalanche areas. However, the rotary steam snow shovels did not solve the problems of hoarfrost and ice that reduced adhesion to levels where trains could no longer safely operate. On Jan. 19, 1888, a Decapod lost control and slid downgrade like a great toboggan only to derail at the end of a switchback *(44)*.

In September 1887 a reporter gave the following description of riding over the switchback line: "...coming east at Weston the engines changed from regular American Standards to eight wheel driver 'Hogs' and then to the first switchback where Decapods start their assist. The noise as the train goes back and forth up to the top and down on the switchback is terrific as is the scenery. It takes an hour of great excitement and I recommend taking the trip before snowsheds cover the route and scenery is not available" *(45)*.

A similar reporter's description appeared in the Aug. 27, 1887, *Walla Walla Union*. In this account, the road locomotive was replaced with a Consolidation (Hog) at the base of the grade. The Consolidation moved the train to the junction of the main line and the switchback line, where a Decapod was coupled to the train for the run over the switchback line. When the train reached the main line, the Decapod was uncoupled and the Consolidation then pulled the train to the base of the grade, where it was replaced with a road locomotive *(48)*.

Gary G. Wilde collection

This photograph shows the steam plant used during the construction of Stampede Tunnel in the background and Switch No. 1 with Bridges Nos. 1 and 3 leading to it.


Lumber Co.
Trespassing Sign
Power Wires Xing
Flashing Light Xing Sign
Center Line Street
Conc. Plank Xings.
City Water Main
Light Control Box
Oil Separator Undgrd.
Log Dump Spur 404'
Round House Foreman's Office
Commercial
Storage
Turntable
Ladder Track
Machine Shop
Tool Ho.
Oil Ho.
Cinder Pit
Sand House
Office & Storeroom
Store House
Storage Trk.
Toilet
Pump Ho.
Paint Ho.
Conc. Oil Ho.
Water Trtmt Plant
Coal Sta. Hoist Ho.
Office
N. P. Ry. FREIGHT HOUSE
Conc. Paving
City Sewer
City Water Main
Holland Furnace Co.
Packers Assn Inc.
Puget Sound Egg
Roof Over Paving
Covered Platform
Cinder Driveway
Ladder
Yard Trk.
Coal Storage
Sanding Tower
Hopper Trk.
Turntable Lead
Carpenter Shop
Cement Shed
B&B Garage
B&B Equipment Shed
Derrick Track
Water Line
Car Cleaning Trk.
Hydrants
East Main
West Main
NORTHERN PACIFIC RAILWAY COMPANY
OFFICE OF CHIEF ENGINEER
ST. PAUL, MINN.
TACOMA

Jim Fredrickson collection

This photograph was taken from Bridge No. 1. It shows Martin with the steam plant in the center and Bridge No. 2 on the right. Note the narrow-gauge track leading from the tunnel. This track was used to move supplies to the tunnel and trailing from to tunnel during construction.

The *Union* article further stated, "The 'Decapod' and 'Hog' puff and snort in concert, and send great masses of black smoke from the stacks, the numerous wheels turn, the fronts of the cars rise like a ship mounting a wave. Passengers ... marvel at the steepness of the road, or shudder at the depths of the canyon below, or point out the gleaming tracks in the valley ... the mountains reverberate the hoarse whistles of the engines...." According to the article, the brakemen inspected the cars after the train stopped at each switchback. The train was carefully inspected and the air and hand brakes tested before the train descended the grade on the other side of the summit *(47)*.

I did not find any information on the total number of passenger and freight cars hauled over the switchback line. However, the Feb. 8, 1888, issue of *The Railroad Gazette* stated, "during September of 1887, nearly 1,900 cars were transported over the line and in fact hauled every car presented to it" *(48)*.

Decapod Engines

Decapod locomotives have 10 coupled drivers and a two-wheel lead truck. The two Class M NP Decapod engines were numbered 501 and 502. They were the largest in the United States at that time with a total weight of 148,000 pounds. They were built by the Baldwin Locomotive Works and designed for curves of 330 feet radius. The design placed as much weight as possible on the drivers, about 133,000 pounds. The first, fourth and fifth drivers had flanges, while the second and third drivers had none. To reduce friction on curves, the rear drivers had additional play. The first and fourth divers had 3/4 of an inch play and the fifth had 1-inch play. The rigid wheelbase was between the centers of the first and fourth drivers, or 12 feet, 8 inches. This was less than either a Consolidation or Mogul locomotive. The total wheelbase of the NP Decapods was 24 feet, 4 inches *(49)*.

The Decapods had 22- by 26-inch cylinders and 45-inch diameter drivers. The estimated tractive effort of the Decapod was 34,800 pounds on level track. The weight in working order of the locomotive and tender was about 228,000 pounds *(50)*.

When the Decapods arrived, they had only one sandbox designed for use when the engine was moving forward. Because the engines operated half the time in reverse a second sand box was added with pipes leading to the rear of the rear drivers *(51)*.

The engines were provided with the standard automatic air brakes with hose couplings arranged to connect with the train from either end of the engine. The engines also had steam driver brakes and the latest improved water brake. The water brake was used when descending the grade because it did not cause any wear on the brake shoes. Air brakes were used on the train itself at the same time and usually set at 10 pounds of pressure. In case of emergencies, the steam driver brakes and, at times, the reverse lever were used.

The Railroad Gazette was generally complimentary about the performance of the Decapods *(52)*. It stated that a Decapod could go anywhere an eight-wheeled engine went, on either bad track or curves. The April 16, 1888, issue of *The Railroad Gazette* stated that the Decapod locomotives "have been a surprise to the Mechanical Department of the road, owing to the unexpected ease with which they pass around the sharpest of curves." However, Robert Frey's thesis states the Decapod "was perhaps the biggest failure on the railroad." The performance of the locomotives was so poor that the railroad decided never to purchase another unit of this type *(53)*.

According to Frey, the locomotives derailed frequently on the poor track of the switchback line. They spent a lot of time in the shop because of broken frames. The 10-driver wheelbase was too long for practical counterbalancing because of the 45-inch driving wheels. The counterbalancing problem made the locomotives hard on the rails and caused broken frames, broken main and side rods and loose driving tires. The crews considered them dangerous. The shop force considered the locomotives too complex and did not or could not keep them repaired *(54)*.

After the switchback line was abandoned, the locomotives were used as helpers between Spokane and Cheney. They were modernized to improve their performance and renumbered 1 and 2. They ended their careers as switchers. By the late 1920s, Decapods were used less frequently. No. 1 was dismantled by 1930 and, in October 1933, No. 2 was taken off the roster. No. 2 was not dismantled at the time, but there is no record of its demise *(55)*.

The unsatisfactory performance of the Decapod locomotives caused the Mechanical Department not to recommend another purchase of a 10-driver locomotive. Even the introduction of bigger, high-performance 2-10-2 and 2-10-4 locomotives during the 1930s did not convince the NP of the value of a 10-driver locomotive *(56)*.

Jim Fredrickson collection

Near Switch No. 4 looking east at Bridge No. 22 on the left and Bridge No. 24 on the right.

Conclusion

As a whole, the switchback line was a success considering the heavy grades and curvature and the power available. The line accomplished everything that its builders expected. Because of its novelty and the beauty of the scenery, it was a great attraction to tourists *(57)*. The employees seemed to be pleased with their work. On the whole, they were fascinated about working and riding over this piece of track *(58)*. After the completion of Stampede Tunnel, the switchback line was used for a few tourist trains and then abandoned.

Acknowledgments

I would like to thank James Dick of St. Paul for all of his help gathering most of the information used in the article. Without his help, I could not have written it. I thank Brad Sawyer for his information. The Minnesota and Montana Historical Societies provided information and pictures. I also thank Gary Tarbox and Phil Beach for their encouragement in writing the article. ◕

Warren Wing collection

Summit of the switchback line in the spring of 1887 after the runaround track was removed. The work train was apparently being used to house section crews that kept the line open during the winter.

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8. Northern Pacific President's File SF 2481-8.
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38. *Railroad Gazette,* 17.
39. *Railroad Gazette,* 17.
40. *Railroad Gazette* (January 13, 1888): 18.
41. *Railroad Gazette,* 18.
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46. Lewty, 54.
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50. Robert L. Frey, "*A Technological History of the Locomotives of the Northern Pacific Railway Company*" (Ph.D. diss. University of Minnesota, 1970), 91.
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53. Frey, 91.
54. Frey, 92.
55. Frey, 95.
56. Frey, 95.
57. *Railroad Gazette* (February 8, 1888): 69.
58. Northern Pacific President's File SF 2481-9.

F. Jay Haynes photograph, Minnesota Historical Society collection

Looking west at Lizard Lake (Summit Lake) and the switchback line as it crosses Bridge No. 13.

Yakima Valley Museum collection

New rotary snowplows pose on the Mosquito Creek Bridge (No. 1) just after they were purchased and sent to Stampede Pass.

Stampede Switchback Tour

by Gary Tarbox

[*Editor's Note: The photo references in the text are to photos located in Allan Schneider's article in this issue of the* ***Mainstreeter***]

For years, a number of Northern Pacific fans in the Seattle area have been intrigued with the switchbacks built over the summit of Stampede Pass during the 1886-88 construction of the tunnel. Many people attempted to locate the right-of-way but had very little information on the actual route used and soon lost the trail. Folklore had it that the main U.S. Forest Service road over the summit of the pass (FR54) was built on top of the switchback route, thereby eliminating any traces. Some of us were introduced to a small portion of the right-of-way when Jim Fredrickson led a tour of Martin and Stampede during the Tacoma NPRHA convention in 1986. During that tour, Jim led us down the switchback grade to Martin and showed us how the original ties had rotted away, leaving only mossy ripples in the roadbed.

Several NPRHA members searched for a map of the route and found at least three purported maps. The first map (Fig 1) found turned out to be the routing proposed in 1884 by W. H. Kennedy. This routing was composed of four switchbacks on the east side and two on the west side. That map was modified and laid over a Forest Service map for publication in a mid-1980s article in

Doug Oldenberg Photo, 8-23-97

The Stampede switchback expedition crew stops for lunch near Lizard Lake. They are (from left to right): Chris Stubblefield, Doug Oldenburg, Jim Mattson, Rodger Campbell, Gary Tarbox, Jack Christensen, John Phillips III, Jim Fredrickson, and Drew Robinson.

Model Railroader magazine. However, when people tried to actually follow these maps, the reported route quickly proved to be wrong.

Allan Schneider kept the subject alive and Jim Dick of St. Paul, found a map of the actual route in a private collection in that city. This map was much simpler than the other two as it had two switchbacks on each side of the summit with a passing track at the top. In an effort to understand the terrain, 12 NP fans went to the pass on Aug. 23, 1997, to check this third map's accuracy. Another underlying objective of the expedition was to figure out where the switchback photos with sparse captions were taken. Allan and I thought it was essential to identify the bridge locations to understand how trains were operated over the switchbacks. The third map proved to be very accurate and was instrumental in our locating the right-of-way at both ends of all the bridges. More importantly, we discovered that very little of the right-of-way is covered by the road and that most of it can be found with some brush crashing.

Jim Mattson, retired Burlington Northern conductor, was an active participant in this exploration. When he returned home, he superimposed the third map on the current Forest Service map using the tunnel portals as locator points. Jim's map is reproduced on the back cover of this issue and also shows the switchback route in relation to the area roads. Thus, you, too, can find and follow the switchbacks from Martin to Old Stampede if you don't mind making your way through various levels of vegetation and hillside angles. In the subsequent paragraphs, I describe the tour some of the original group took and include a few tips on making the trek.

Gary Muehlius Photo, 9-7-97

Two timbers from Bridge No. 6 are still visible where they fell during the last century.

A couple words of caution: some of the terrain is very rugged and should be attempted only if you are accompanied by a friend of equal strength and dexterity, in case of trouble. For the most part, you can stay on U.S. Forest Service land during the tour and not trespass on railroad property. I will refer to the creeks on the east side by the names used in 1887 with the names given them by the Forest Service at a later date in parentheses. You will note that the current Mosquito Creek was called Summit Creek, the current Stampede Creek was called Mosquito Creek and the current North Fork of Stampede Creek was called Mule Creek.

Starting at I-90

You start the tour on the east side of Stampede Pass by leaving Interstate 90 at the Crystal Springs-Stampede Pass exit (No. 62) and heading west on FR54. Stay to the right at the first intersection and follow the road up the hill after having traveled southeast for about a mile. Referring now to the topographical map on the back cover, you will go through the first hairpin curve back north and then head west. As the road climbs upgrade, it starts into the creek bottom that was once spanned by Bridge No. 4. From there the road turns north and passes over Mule Creek (North Fork of Stampede Creek) culvert.

Before you cross over Mule Creek, you should turn left onto the unimproved forest road and follow it a few hundred feet up the hill. At that point, you will see the switchback right-of-way cross the road and diverge downgrade on the left. Stop and park here. You should walk down the switchback grade to Switch No. 1 on the hillside across from Martin. As you follow the grade you will notice that it has been used by heavy machinery at various times, making it a bit lumpy. However, you can see that the grade averages out to the original 5.6 percent grade in the places where there has been no slippage down the hill.

Before you can see Martin across Mosquito (Stampede) Creek gulch, the trail leaves the right of way and veers to the right into a small creek bottom that was spanned by Bridge No. 3 and formed the north leg of Switch No. 1. The southern leg of this switch was the Mosquito Creek trestle, Bridge No. 1, which was photographed from a number of angles. It linked the main line to the switchback route at a point just east of Martin and crossed over the current main line a number of feet above the current track level. The tail track of Switch No. 1 extended to within a few feet of the new concrete snowshed of Tunnel 3, the Stampede Tunnel. Because much of this tail track grade was reinforced with log cribbing, it has slumped down hill in many places.

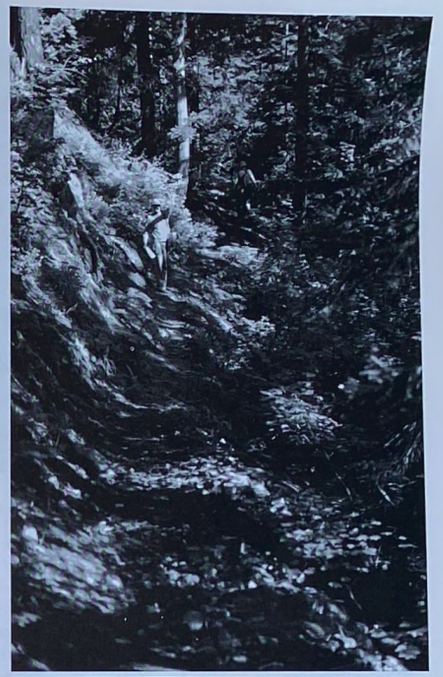
Gary Muehlius Photo, 9-7-97

A view of the Switchback grade leading upgrade from Switch No. 1.

Heading West

Going back to where you left your car and walking across the Forest Service road, you will see the first good example of what the undisturbed roadbed looks like after over 110 years. Notice the moss-covered ridges where the original ties have rotted away and that the right-of-way is bracketed by a shallow cut. This piece of the grade extends for about 100 feet before it disappears into the canyon of Mule Creek, formerly spanned by Bridge No. 4. To find the other end of Bridge No. 4, keep in mind that the original survey crew stood where you are and swung a transit line around at a 5.6 percent incline until it hit the opposite hill and that most of the bridges on the switchbacks were curved.

When you have located the likely point of the other side of Mule Creek, you can start some serious brush crashing. You will likely not want to go down the cliff at the end of the right-of-way, but will want to walk back and down the road to the creek bottom, then go up the other side of the canyon to find Bridge No. 4's northern bridgehead. The right-of-way is much higher up the hill than you will likely think and is covered with thick brush for the first 500 feet. When you emerge from the brush, you will be on a rocky hillside overlooking the Yakima River Valley many hundreds of feet below you to the east. This is one of the most spectacular views on the switchbacks.



Gary Muehlius Photo, 9-7-97

Looking east down the tail track of Switch No. 1.

As you proceed up the grade and start into some evergreen trees, you come to the point where FR54 cuts across the right-of-way. Bridge No. 5 started in the middle of the road and extended 440 feet to the west. The opposite bridgehead is easily located by heading to the left through the trees then curving back to the right. Bridge No. 6 is notable since most of its timbers still lay where they collapsed and are quite visible in the understory. Most of the other bridges seem to have been either dismantled for the timber or were consumed in subsequent fires. Proceeding beyond Bridge No. 6, you encounter heavy brush that can be penetrated, but slows your movement. This area contains the short and shallow Bridge No. 6A. After locating the short Bridge No. 7, you begin to see glimpses of Switch No. 2's southern leg coming down the hillside through the brush as you rise to the same level at the switch. The tail track of Switch No. 2 extended 570 feet to the west, but has been partially blocked by slides over the

Chris Stubblefield Photo, 8-23-97

Jack Christensen and Jim Mattson walk across the power line clearing between Bridge Nos. 15 and 16 and are framed by a shallow cut of the Switchback line.

years. This is where the Haynes photo was taken that shows the two grades diverging from Switch No. 2.

Reversing your direction and continuing up the grade from Switch No. 2, you encounter more brush, which eventually gives way to boulders and rock fill pushed over the hillside during the construction of road FR54. This fill appears to be stable, but a great deal of caution needs to be exercised. Also, the area around Bridge No. 8 appears to have been consumed by the road construction. Very little of the right-of-way can be seen from the road unless you know what you are looking for. On the south side of the road where the grade comes out of the woods, a trace of a shelf can be seen cut into the rock starting about 8 feet above the road. When you scramble up the rock face by holding onto the local vegetation, you will find the characteristic mossy tie marks in the roadbed and a medium level of brush. As you proceed up the relentless 5.6 percent grade, you will notice a number of small cuts, fills and drainage ditches until you come to the bridgehead of Bridge No. 9, which is elevated about 8 feet above the surrounding terrain. As you continue through the brush in the same direction, you come upon a moderately used forest road built in the creek bottom, spanned by Bridge No. 9. This road consumed the southern bridgehead and left a steep cut through sandy soil, which has been undercut enough to make it difficult to climb.

Once up on the plateau, you will be under the power lines and in an area of intense brush that is extremely hard to traverse. The power company has been over this with heavy equipment and has destroyed much of the characteristic right-of-way signs, but the cuts through the area are still visible along this straight piece of grade. On the other side of the power line clearing, the switchback grade and another branch of the forest road merge as the right-of-way starts into the first horseshoe loop. This merging continues to curve for about 90 degrees until the road makes a sharp turn to the left. At this point the right-of-way stops at the approach of Bridge No. 10, which crossed a small tributary of Mule Creek. The ground under this bridge is a bit swampy but is passable. The other end of Bridge No. 10 is about 6 feet above the surrounding terrain and continues on a circular fill another 90 degrees around the loop to the head of Bridge No. 11. This bridge also spanned part of Mule Creek and is a continuing segment of the loop. The northern head of Bridge No. 11 is about 10 feet above the surrounding terrain and was located in a sizable stand of trees last summer. However, logging crews were cutting in the area and had felled one fir, roughly 24 inches in diameter, that had been growing in the middle of the right-of-way. By counting the rings of the stump, the tree was found to be over 80 years old.

A few hundred feet north of Bridge No. 11, you enter the power line right-of-way and the switchback grade turns into a logging road, which cuts through the trees as it curves to the west. In this area was a bridge that was apparently abandoned and filled shortly after construction. In the summer of 1997, this area was also being logged, but the switchback right-of-way was being maintained as the main access road to the operation. Bridge No. 12 was built to span a slight dip in the terrain that had been filled by logging slash for burning. Farther west, the right-of-way begins to cut into the rock hillside on its way to the summit of the pass. This cut can be easily seen to the south of FR54 as a shelf about 15 feet above the road a couple hundred yards east of the summit.

Gary Muehlius Photo, 9-7-97

The open grade on the hillside north of Bridge No 4 as it curves to the left to meet Forest Road 54.

The Summit

Just west of the remains of the rock cut, the road is built on the switchback right-of-way and continues until you are about 100 feet beyond the summit of the pass, where Switch No. 3 and the start of the passing spur were located. The bottom photo on Page 9, looks east in 1890 and shows crews disassembling the snowshed in the cut at the summit and Switch No. 3 with the spur on the left and the mainline on the right. Today, the east end of the spur is quite visible from the road and the mainline can easily be found on foot, just to the south of the spur, although less easy to see from the road. The spur track has a 2.5 percent inclining grade as it proceeds west, while the main line begins a steady 5.2 percent grade down the west side of the summit as is shown in the photo on Page 5. This picture was taken in 1887 when the line was in service and had a locomotive runaround track. By 1890, the bottom photo on Page 19 shows that the runaround track had been removed, even though the switchbacks were put back in service for a few weeks in June 1889 while crews lined a particularly difficult part of the Stampede Tunnel.

One of the great myths is that this portion of the switchbacks had been covered by the road. The right-of-way actually separates rather quickly from the road and ends up some distance up the hill. You will see that the road falls away from the switchback line at a grade as high as 10 percent in places. From its location higher up the hillside, the switchback right-of-way crosses Bridge No. 13, which was one of the highest on the line at over 200 feet. It must have been spectacular as it was cradled between the two rock faces of the canyon containing Sunday Creek, which flows across the mouth of Tunnel 3 at the west portal. The bottom photo on Page 20 shows this curved span of Sunday Creek and the way the construction crews cut the local timber to aid the effort. The west end of this curved bridge is only about 25 feet above the road when it joins the right-of-way on a shelf cut into the hillside. The right-of-way continues its 5.2 percent descent from Bridge No. 13 while the road rises out of the creek bottom and they meet a few hundred feet from the west end of the bridge.

For the next quarter mile, the road is built on the right-of-way and follows it down to just beyond Bridge No. 14, where it diverges from the road to the right and re-enters the power line clear-cut. The switchback right-of-way cuts across the power line route partially on Bridge No. 15 and immediately dives into a shallow cut that leads into the first loop of the double horseshoe curve used to slow the descent of the steep hillside. About halfway through the first loop, the route crosses Bridge No. 16, a 530-foot curved structure that spans the valley used by the descending road. The bridge terminated at a steep mound visible to the south of the road near the trees. The fill immediately gives way to a shallow cut for a few hundred feet and terminates at the west end of Bridge No. 17, which curves back under the power line right-of-way.

Gary Muehlius Photo, 9-7-97

The remains of Bridge No. 6 can be seen rotting into the understory on the hillside approaching Switch No. 7.

The switchback grade then goes into the lower horseshoe curve, which continues down to Bridge No. 18 spanning Sunday Creek and on to a few hundred feet of cut on the opposite side of the valley. This short section of right-of-way is hard to reach due to the terrain, dense brush and double crossing of the creek. From this short cut, the grade goes onto Bridge No. 19, which was a massive structure, the longest of the switchback route, measuring over 150 feet high in places. Bridge No. 19 completes the curve of the lower horseshoe. It is the bridge often seen above the west portal of Stampede Tunnel in photos after the turn of the century and up to the 1920s.

Over the Cliff

Because of Bridge No. 19's size and curvature, it is easy to lose your orientation when trying to find its west end. The slope of the land and brush density on the hillside are not as severe to the east, but as you move west, the hillside becomes much steeper. A four-man exploration crew on Aug. 23 reached the grade at the west end of No. 19 by going back to the cut between bridges 16 and 17 and rappelling down the steep hillside to the lower right-of-way between Bridges 19 and 20. Each person used tree limbs, roots or anything else to belay their descent. From the lower grade, we were able to easily walk between the tall broadleaf trees to the east till we found the bridgehead of No. 19. It is suggested that future parties bring a couple hundred feet of rope to allow everyone to lower themselves down with less trauma.

Bridge No. 20 is a very short span and easily bypassed on an animal trail as you walk west. However, Bridge No. 21 takes a bit more rock-climbing effort to skirt the 360-foot chasm. At this point the right-of-way turns south onto a high shelf blasted out of the rock cliff. The view to the west and south is unobstructed. However, you need

Gary Tarbox Photo, 8-23-97

A view of the two rights-of-way merging at Switch No. 4. Chris Stubblefield is standing on the upper track and Drew Robinson and Jack Christensen on the lower track.

to watch your step here as the shelf is almost full of rock chips that have fallen off the hillside over the last 110 years. As you come downgrade toward Switch No. 4, you must climb around the steep gulch spanned by Bridge No. 22 and immediately see the lower right-of-way rising toward the switch until you reach its location. To the west of Switch No. 4, the first 290 feet of the 575-foot tail track was built out onto Bridge No. 23, which spans a ravine that is over 125 feet deep.

The Home Stretch

From Switch No. 4, the grade descends at the steady 5.2 percent grade past Bridge No. 24 as the slope of the hillside begins to flatten out a bit. Bridge No. 25 spans the same cut as No. 21, but at a lower elevation with less slope to the hillside. Much of the right-of-way beyond this point has been disturbed by heavy machinery used around the settlement of Old Stampede. Under the steep hillside on the west end of this level of the track, a 10- to 15-foot shelf has been bulldozed to stop boulders from crashing down on the main line and buildings.

As you continue east on this level you cross over the partially filled-in 90-foot Bridge No. 26 just before reaching Switch No. 5 and its tail track, which runs up-grade at 2.5 percent. This tail track extends beyond the end of the new concrete snowshed at the west portal of Tunnel 3, but is located a couple hundred feet above the tunnel mouth. The bottom photo on Page 10 was taken from this tail track looking up the hillside at Bridges 20 and 17, while the top photo shows Switch No. 5 and its tail track with Bridge No. 19 rising in the distance. Switch No. 5 ranks with Switch No. 1 at Martin for ease of access as you can get to it from the road to Old Stampede. This road crosses the switchback right-of-way as it heads west toward Switch No. 6.

From Switch No. 5 the right-of-way continues down grade to the west. It crosses over four more bridges (Nos. 27 to 30), which get progressively longer from 90 to 192 feet, although none of them are higher than 50 feet. The switchback line then rejoins the main line from the Stampede Tunnel at Switch No. 6 located nearly three-quarters of a mile to the west of the portal. The photo on Page 6 was taken below the main line looking up the dry creek bed spanned by Bridges Nos. 28, 25 and 22. Similarly, bottom photo, Page 7, was taken from the main line looking up the hillside at Bridge No. 29 in the foreground with No. 24 and 22 above.

Helper Section

Allan Manson is looking for photos (pre-1970), drawings, etc. of the following: Lester station, engine facility, hotel and surrounding community, New Stampede station, Steilacoom station, ferry dock and surrounding community. Interior photos would be very helpful. Information on Lester and Stampede is for the model railroad under construction at the Washington State History Museum in Tacoma. 3301 46th Court S.E., Olympia, WA 98501, (360) 491-6692.

Dave Cramer seeks condensed profiles, track charts, engineering and signaling plans, station maps, blueprints, technical information, time tables, tourist books and miscellaneous paper. 2114 Sheridan Drive, Madison WI 53704, e-mail <Trainsite@aol.com>.

Ken Johnsen needs color slides of Northern Pacific wooden cabooses to aid in restoration of No. 1324 and to use in a slide show about the restoration. He would like to either buy the slides outright or borrow them to make duplicates in his own photo lab. P.O. Box 161, Renton, WA 98057.

John Polunc would like to buy a near-mint Northern Pacific Monad sign. The sign was hung either on the depot or on diesel engines. It measured about 2 feet in diameter. Send photo, will return. 5900 27th Ave. S., Minneapolis, MN 55417.

Roger Seward is looking for a marked key to fit NP small heart-shaped U.S. mail car brass lock, and other keys. 264 Third Ave. S.E., Beach, ND 58621, (701) 872-4248 evenings.

Tom Hoff seeks in HO: Overland DM&IR SD-9 phase IV, No. 153-174, Cat. No. 5187; D&RGW Krause-Maffei hydraulics, Cat. No. 1909; NP G.E. U25-C, Cat. No. 6265, or U28-C, Cat. No. 6269; ACF Centerflow three-bay, five-hatch 3560 cu.ft., u/p; PFM NP A-3 4-8-4; W&R NP A-3 4-8-4; NP RPO-baggage, early 1400 series with blanked center door. 2003 Hunter Glade Lane, Arlington, TX 76012, (817) 860-1262, <tchoff@flashnet>.

Helper Section ads are free to NPRHA members. Send yours to: ***Craig Reese****, 16148 S.E. Fifth St., Bellevue, WA 98008, or e-mail to <creese2@earthlink.net>.*

Tracking the NP

by Mike Lustig

NP Equipment Sightings

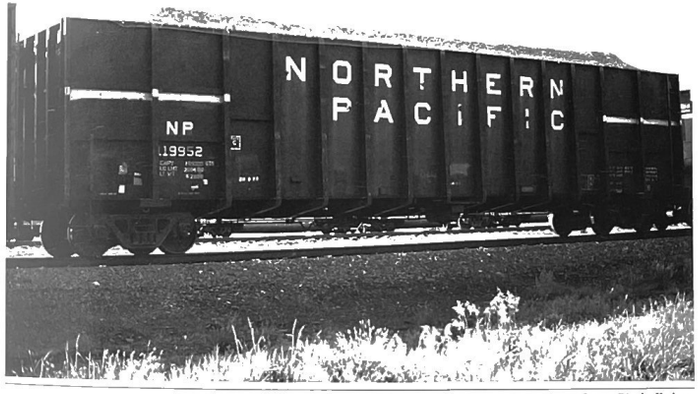
Larry Bischoff sent in a couple of pictures of former Northern Pacific equipment he took last summer on his way to the NPRHA Convention in Bismarck, North Dakota. One is of woodchip car 119952 taken at Forsyth, Montana. Larry also took a picture of a former Northern Pacific caboose on display at a private residence at Silver Star, Montana (south of Whitehall on State Highway 41). This particular caboose was painted Great Northern however. Meanwhile a sister to this caboose (No. 1030) (painted Northern Pacific) is on display at a park next to the Dinosaur Museum in Dickinson, North Dakota. The caboose is displayed with the South Heart, North Dakota, depot that is being restored.

Former *North Coast Limited* diner 459 (Budd built in 1957), which is now BNSF diner *Lake Superior*, has been repainted silver with stainless steel fluting below the windows. It looks like a Burlington car now.

Maurice Luke photo

Former NP heavyweight diner, a little worse for wear, at Glendive, Montana.

Speaking of former NP diners, NPRHA member Maurice Luke sent pictures of a heavyweight diner at Glendive, Montana, sitting on concrete. We're not sure when the car was build but the owner says the roof is in good shape, although it would need a lot of work to restore it. Along with the diner is an old "cook car" and two sleepers that were used by track gangs.



Larry Bischoff photo

NP woodchip car No. 119952 at Forsyth, Montana, July, 1997.

Depot Doings

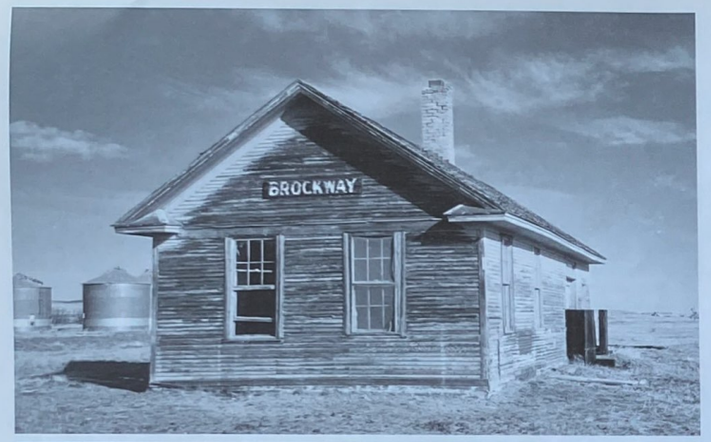
NPRHA member Mark Meyer sent pictures of former Northern Pacific depots at Circle, Brockway, and Bozeman, Montana. The Circle depot is on display in a park in Circle along with a BN caboose. It received a coat of whitewash recently and it is hoped that the depot will be restored by next summer with train order board and all. The Brockway depot is looking a bit worse for wear and the Bozeman depot, although

Larry Bischoff photo

Under that GN paint is an NP caboose (series 1000-1049), located at a private residence in Silver Star, Montana.

Mike Lustig photo

NP caboose No. 1030, at Dickinson, North Dakota.



Mark Meyer photo

Northern Pacific depot at Brockway, Montana.

boarded up, looks like it's in good shape.

In 1997, I had a chance to view some former Northern Pacific depots and get pictures. The Dilworth, Minnesota, depot is in a park in Dilworth on display with a Class L-9 0-6-0 steam engine. Fargo's Northern Pacific depot is now a senior citizen center and has offices on the second floor. It still sports a Monad. The New Salem, North Dakota, depot, which the city painted dark red, is in a park. That was the color of Northern Pacific depots prior to 1948 when the sand and brown base was adopted as colors for Northern Pacific depots. The depot at Almont, North Dakota, that was moved to North Almont as part of the New Salem Line change in 1947, is back in Almont, on display, as reported in the **Mainstreeter** a couple of years ago. It has been restored very nicely and features the train bulletin board showing Trains 25 and 26, no stop, 3 and 4, discontinued, and the times erased for Trains 1 and 2. ◕

Thanks to Mark Meyer, Larry Bischoff and Maurice Luke for contributing to this column.

If anyone has anything Northern Pacific that they would like to share with our readers, please write me, ***Mike Lustig,*** *at P.O.Box 141. Whitefish, MT 59937. (406) 862-3406 or e-mail me at mlustig@digisys.net.*

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Modeling News

by Jeff Nichols

New Items: N Scale

DeLuxe Innovations, P.O. Box 4213, Burbank, CA 91503. Gunderson high-brakewheel wood chip car should be available at this time and I still don't have any road numbers yet. The prototype numbers should be in the NP series 119700-119849.

GHQ, 28100 Woodside Rd., Shorewood, MN 55331. The NP W-3 and Z-8 should still be out this fall.

Life-Like Products, Inc., 1600 Union Ave., Baltimore, MD 21211. SW-9/SW-1200 switcher. At this time they have yet to announce one painted in NP but in HO they have them painted with two different numbers. Hopefully, in the not so distant future, we will see NP models but until then you can buy them undecorated. The SW-1200 numbers in NP were second Nos. 119-131, Nos. 132-149 and second Nos. 150-177.

Micro-Trains Line, 351 Rogue River Parkway, P.O. Box 1200, Talent, OR 97540-1200. 40-foot plug/slider box car with staggered NP on the left side of the car and the big NPR herald on the right. This car is a reprint of an earlier car but this one has brown trucks instead of black. If you are lucky enough to see one you had better pick it up as they are getting harder to find.

Mark Meyer photo

Northern Pacific depot at Circle, Montana.

Mark Meyer photo

Northern Pacific depot at Bozeman, Montana.

Mike Lustig photo

Restored Northern Pacific depot at Dilworth, Minnesota, 1997.

Shoreham Shops Limited, P.O. Box 22011, Eagan, MN 55122. Hopefully, by now, you have in your possession a 1959 Budd-built NP Slumbercoach. I believe that they are modeled after NP series 325-328.

New Items: HO Scale

Accurail, P.O. Box 1202, Elburn, IL 60119. At this time, we should have another 50-foot boxcar available. I haven't seen this car yet but I think it will be close to the NP series 1100-1289. None have been announced in NP colors. Also the NP wood reefers (No. 4909) will be released as a 3-pack and each car will have a different number.

Atlas Model Railroad Co., 378 Florence Ave., Hillside, NJ 07205. Pro-Line Train Set. I'm not one for recommending people to go out and buy train sets but Atlas released a PS-2 painted in NP, and guess what? The only way you can get it is to buy a set (item No. 1010 or No. 1011). I don't know if this car will ever be released on its own or in a three-pack.

Branchline Trains, 333 Park Ave., East Hartford, CT 06108. By the time you read this there should be a 50-foot AAR boxcar in NP colors. The car will have Youngstown doors, 4-3-1 improved early dreadnought ends, straight side sills, and add-on ladders and grab-irons. From what I understand, there will be three cars released with three different numbers in the "Savings Bonds" paint scheme. They are willing to do all of the paint schemes the boxcars were painted in.

Challenger Imports Ltd., P.O. Box 93244, Capital Square Station, Des Moines, IA 50393. Arriving in spring of 1998. The 1955 **North Coast Limited** built by Samhongsa. You will be able to buy a 10-car set (No. 2256.1s) or a three-pack set (No. 2257.1s). The cars will be painted, full window treatments and decor and basic interior partitions. I can't wait to see this train set! Also, to accompany this train set, will be released an F3A/F3B plus a later version F3A (F5A). The F-units will be painted in the Raymond Loewy paint scheme.

E&C Shops, P.O. Box 567, Roseburg, OR 97470. GP-9 Phase 2 and Phase 3 diesel locomotives. None are announced painted for NP at this time but, as always, you can have them painted yourself.

Funaro & Camerlengo, R.D. 3, Box 2800, Honesdale, PA 18431, is offering a cast polycarbonate resin kit for an NP 36-foot double-sheathed boxcar with a radial roof (kit No. 1006). The kit also includes decals.

Intermountain Railway, P.O. Box 839, 30 E. 9th Ave., Longmont, CO 80502-0839. Cat. No. 40733. A 1937 AAR 40-foot boxcar in 12 numbers for $13.95 per kit.

International Hobby Corp., 413 E. Allegheny Ave., Philadelphia, PA 19134, has introduced their 2-6-0 loco in NP (part No. M552). I haven't seen this engine, but I'm sure that you will need to add detail parts to it.

Key Imports, P.O. Box 1848, Rogue River, OR 97537. Coming soon, W-3 and W-5 Mikados. The engines will come detailed and factory painted and lettered for NP.

Mantua, P.O. Box 10, 412 Grandview Ave., Woodbury Heights, NJ 08097-0010. 41-foot steel reefer painted in NP dark green with orange horizontal stripe. This car has an accurate paint scheme but the car, itself, is not an NP prototype.

Rick Schonfelder, 5 Allinga Place, Donvale, Victoria, Australia 3111. Rick wrote to me and said that he has been wanting to obtain some of the Overland Big Pig Palace cars and finally did but, unfortunately, there were no decals available for this car. So, he requested OMI to rerun the decals for his cars. Due to the special minimum run of 20 sets, he now has 17 available for sale! Please send a money order in U.S. currency or U.S. cash is acceptable, at the sender's risk. A money order is preferable. By the way, Rick wants to know if any one out there wants to sell their BPP cars to him?

Stewart Hobbies, Inc., P.O. Box 341, Chalfont, PA 18914-0341, is scheduled to release a Baldwin VO-1000 switcher some time this year, bit I don't know if there will be any painted in NP.

Walthers, 5601 W. Florist Ave., Milwaukee, WI 53218, now has available ore cars in a four-pack (No. 932-4405) and a 12-pack (No. 932-4455), which means that there will be 16 different numbers to choose from! The cars look very good from what I have seen.

W&R, P.O. Box 3235, Alhambra, CA 91803. The NP Brill Gas Electrics will probably not be arriving until March because Samhongsa is so far behind schedule. There may be some overlap between the arrival of the Brills and the NP Mikados.

Publications

Classic Steam Era, by Lorenz P. Schrenk & Robert L. Frey.

CTC Board. Dec. 1997. Pages 21-29. Puget Sound & Pacific.

Railmodel Journal. Dec. 1997. Pages 8-13. BN & UP on the Canyon Creek Branch.

Mainline Modeler. Dec. 1997. Page 26. NP refrigerator car by Thornton Waite. Page 60. Montana Rail Link, by Doug Nuckles.

Hello! And what's happening in the world of NP model trains? A few *Mainstreeters* ago, I put out a notice for people to write in to me and tell me how they were able to come up with their best NP model paint colors or what you thought was a close NP color match in model paints. Well, so far, I guess nobody out there does any painting or it's a big secret because I have yet to see one letter. Now, I know that there are plenty of you who like to paint and paint well! The whole reason behind this idea was to put together a reference chart in one of the future *Mainstreeters* that could be utilized by all of us in the society. Rather than having a bunch of notes laying around your spray booth, or trying to remember what mixture of paints it took to achieve a certain color, you could refer to a paint chart. It would also help to keep some uniformity in all of our models and maybe the manufacturer's products.

Once again, if you have any comments or suggestions, please send them to: ***Jeff Nichols,*** *1516 22nd St. NE., Auburn, WA 98002.*

The NP welcomes you ...

Tacoma, a beautiful city, – a city of homes of taste and refinement – is a point from which one may radiate in many directions. The city itself is one of the most attractive to be found, and the wonder is that in such short time such a city has grown here.

Its natural and commanding advantages at the head of navigation on Commencement Bay of Admiralty Inlet – an arm of Puget Sound – have enabled it to solidly withstand the adverse effects of a period of commercial stagnation and inactivity. It has a fine harbor, is the headquarters of a large lumber trade, the point of trans-shipment for large amounts of coal up and down the coast, and of foreign cargoes of tea from China and Japan. Its ships ply to ports in all parts of the world. The Northern Pacific Railroad Company have a line of steamers running between Tacoma, and Yokohama and Hong Kong. Tacoma has several good hotels. Another, a very large and fine hotel, is now in process of erection.

As you stand upon the bluffs of Tacoma overlooking the bay, and, if the day be clear, look out across the intervening space, an ermined, majestic pile – that savors not of things of this earth – round whose godlike crest the clouds caressingly hover, looms up before you. It is Mount Tacoma.

"Clad in robes of virgin white," illimitable almost in its aspirations; climbing, it would seem, to the very battlements of heaven itself; almost holy in its majesty and solemnity, it stands – the monument of the centuries and the shrine of the people of Tacoma. Time has not dimmed its glories, age has not shorn it of its strength. To the mountaineer and Alpine climber it ever extends an invitation to grapple with its icy cliffs and glaciers in the attempt to stand upon its summit.

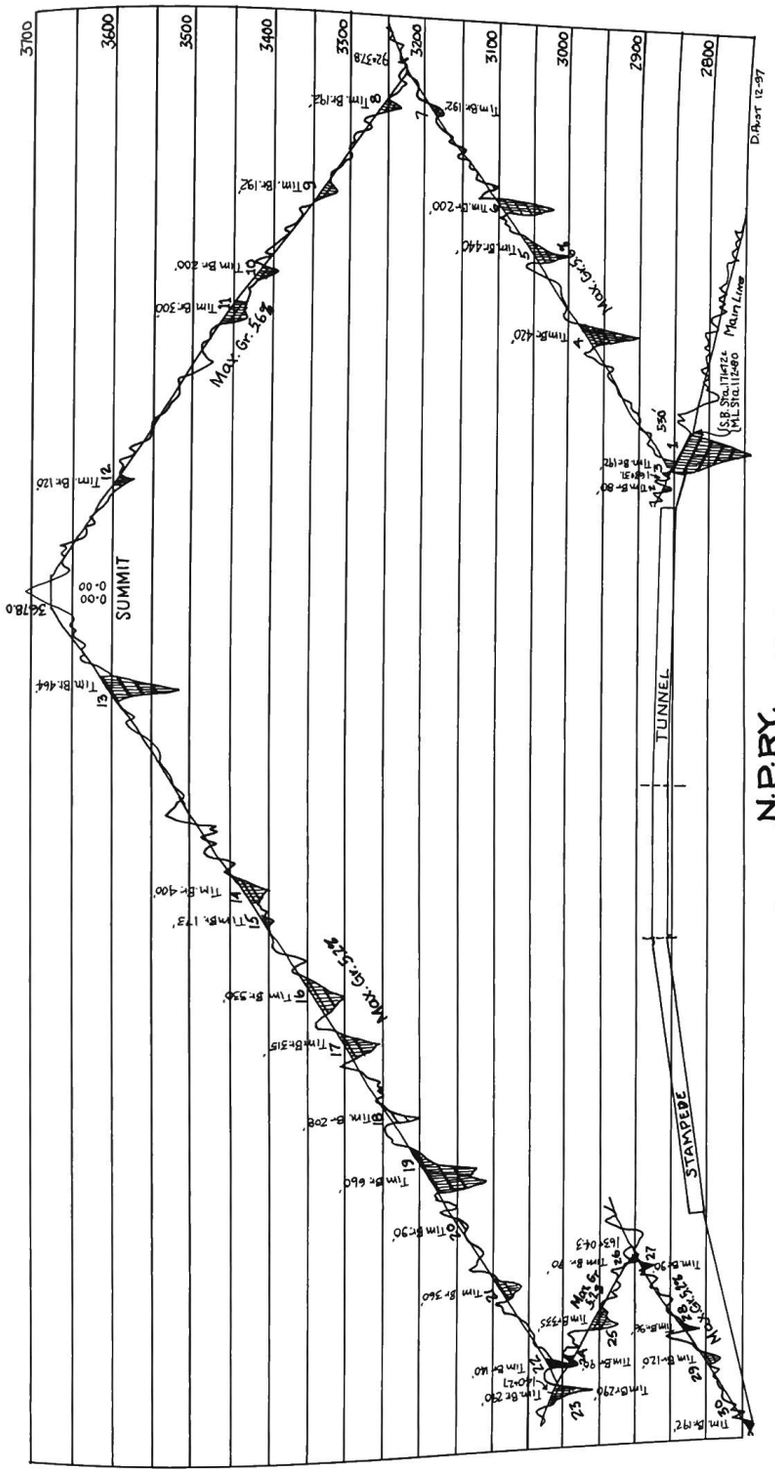
Of course the other large city of the sound, Seattle, must be visited. No one desires to go to the coast and not see all three of its, to a great extent, rival cities.

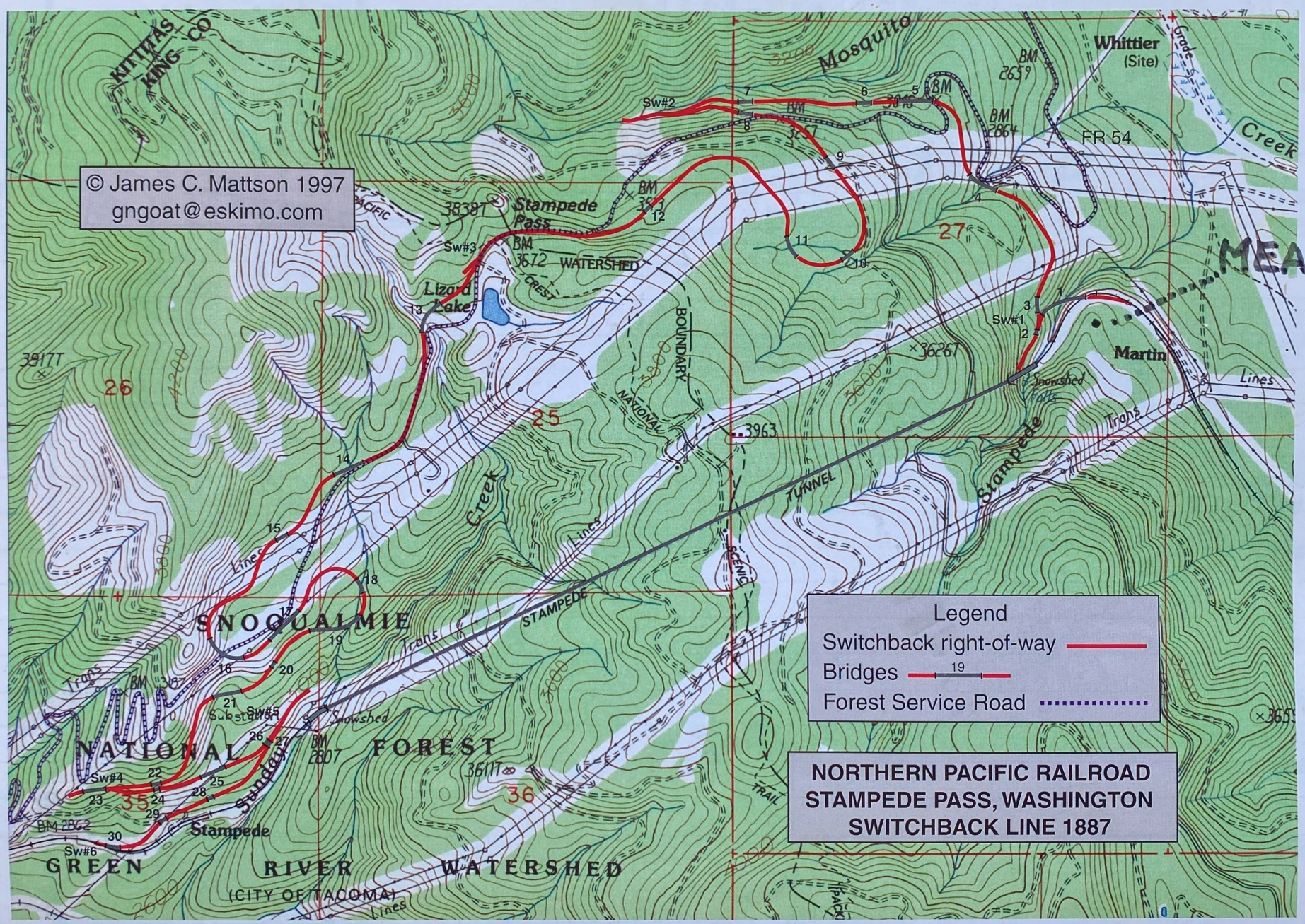
Seattle is evidently a business place of importance; that is evident upon a most cursory inspection. Its massive business blocks, built upon the ruins of its great fire, mean something, and no mistake.

From its large and fine harbor the city shows off wonderfully well, rising in well-defined terraces into large rounded hills. Intercommunication between the different portions of the widely extended city is obtained by both cable and electric cars, the former being used largely in ascending the hilly streets. The Rainier is a large hotel, placed in a commanding position near the summit of the hill.

In making the trip between the cities, the better way is to go by rail one way, thereby gaining a view of the hop fields between Puyallup and Seattle, and return via steamer. The railroad buns by and through many fields of hops, so that the traveler gets a very good idea of the manner in which this staple crop of the coast is grown.

– From "Six Thousand Miles Through Wonderland" by Olin D. Wheeler, published by the Northern Pacific Railroad in 1893





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