



The story of America's transcontinental railroad is legend. In 1853, Congress authorized surveys of potential routes for the "Pacific Railroad," which were completed in 1855 and identified a Northern Pacific, a Central Pacific, and two Southern Pacific routes. The 1862 Pacific Railway Act chose the Central Pacific route due to gold in northern California, silver in northern Nevada, and the absence of Southern Congressmen -- due to the Civil War -- to advocate for a Southern Pacific route, which would have been a much easier build. The Act specified two railroad charters: the Union Pacific Railroad would build railroad and telegraph lines west from the eastern shores of the Missouri River at Council Bluffs, Iowa, and would meet the Central Pacific Railroad and telegraph line built eastward from the navigable waters of the Sacramento River in California. On January 8, 1863, grading for the CP commenced at "K" Street at the waterfront of the Sacramento River and the first rails were laid later that year. The CP crossing of the Sierra Nevada required 15 tunnels, the most difficult being the summit tunnel at Donner Pass and other engineering feats. The first train passed through the Donner Pass summit tunnel on June 18, 1868, and on May 10, 1869, the CP met the UP at Promontory Summit, Utah, henceforth binding the nation.

By far the biggest challenge for the CP was the crossing of the Sierra Nevada and the Pacific Crest via a summit tunnel at Donner Pass. The glaciated, pristine granite at the pass formed a solid wall that had to be penetrated with hand tools, animal power, and explosives. Adding to the challenge, heavy snows slowed and stopped winter work during the winters of 1865-66 and 1866-67. During the latter winter, to keep things moving while slowly carving a railroad grade through the mountains, Charles Crocker (the CP's overall construction manager and one of the "Big Four" owners of the CP) directed the tremendous undertaking of hauling and sledging three locomotives, forty cars, and material for 40 miles of track over 28 miles of mountain trails over Donner Pass and down into the Truckee River canyon, where light snow made grading and track work possible. The CP followed the Truckee River eastward from Truckee and the first locomotive from Truckee crossed the California-Nevada state line in December 1867 as work on Donner Pass continued. The first train passed through the 1,659-foot Donner Pass summit tunnel on June 18, 1868, and the following day the road was opened to Reno, Nevada, a town-site staked out by the CP. From Reno, the CP had relatively clear sailing as it wound its way around the normal-fault mountain ranges and across the flat alluvial valleys of northern Nevada and northwest Utah to meet the UP less than year later.

The SP double tracked the route over Donner Pass in 1925 by building a longer (10,322 feet), lower, single-track tunnel located 3,100 feet south of the original tunnel. The original summit route remained in use as one of the two tracks, and the track alignments diverged at Norden (this location), 1.3 miles (as the crow flies) west of the pass. The 1925 alignment cut a lower grade to the lower summit tunnel and rejoined the original route 2.2 miles (as the crow flies) east of the pass at a location called Eder. Both tunnels remained in use until 1993, when the Southern Pacific Railroad (CP successor) abandoned the 6.7 miles of the original route over the summit, including the original CP tunnel. Since 1993, the route over Donner Pass -- from the west entrance of the 1925 tunnel to a point 2 miles east of the east entrance -- is single track, causing a bottleneck in UP (SP successor) traffic today.

We'll explore Donner Pass from west to east, starting with this westward view of the CP (later SP and now UP) at Norden, California, where the 1925 re-alignment to the then-new, longer, lower-elevation summit tunnel diverges from the original route over the pass. This is the east end of the Norden snowshed "complex" and the tracks diverge under the shed. The Norden snowshed was completely rebuilt in 1925. The west end of the 1,000-foot-long shed has a simple entrance with two tracks entering, the same two tracks seen here at the east end, which has three generations of snowshed entrances. The abandoned shed at the far right is on the original CP alignment, the abandoned center entrance (with the red door) is the 1925 second track to the lower summit tunnel, and the active shed on the left was built later to accommodate two tracks on the 1925 alignment to the lower tunnel (I could not find a date for this third entrance).



Eastward view out of the active shed entrance.





Westward view of the active shed entrance. The concrete wall on the right is the original (1925) south wall of the shed and the wall was removed to the left, where pillars replaced the wall when the wall was opened up to add the third (active entrance). The 1925 second track alignment is on the other side of the pillars and the original (1867) CP alignment is in the dark distance.



Westward view of the west shed entrance showing the inner workings of the Norden snowshed complex. There are four tracks here, from right to left: the original CP (1869) alignment; the 1925 second track alignment, which was re-aligned and once continued to the left side of the west entrance; and the two active tracks with concrete ties and fresh ballast.



Westward view of the west shed entrance, the light at the end of the tunnel in this view. The original (1867) CP alignment, which is the northernmost of the three eastern entrances, is in the foreground.





Westward view of the original CP alignment, a few step east of previous photo.



Eastward view of the original (1867) CP alignment, same location as previous photo. The track begins a curve to the left to climb to the original (1868) summit tunnel.



Westward view of the original (1925) east entrances for the Norden snowshed complex. The original CP alignment is on the right and still has tracks; this is the line to the original/higher summit tunnel. The shed entrance on the left (with the red door) is the 1925 second track to the lower summit tunnel. Both entrances had to have been built in 1925 to accommodate the two tracks, but it is unclear why their construction is so different.





Westward view of the east entrances for the Norden snowshed complex. The original CP alignment in the foreground and still has tracks. The active track is barely visible to the left of the red door. There is a lot of snow for late May.





Eastward view of the original CP alignment, as it begins its climb to the upper tunnel and cuts a steeper grade than the active tracks (visible in the center distance) to the lower tunnel. The old track ends at a pile of dirt on the left.





Closer eastward view of the end-of-track of the original CP alignment, which was abandoned in 1993. Somewhere in this view there was once a turntable to turn helper engines; the turntable was built in 1924 as part of the SP's double tracking project.





Eastward view of the active UP tracks on the 1925 alignment to the lower tunnel. The snow on the left slope accentuates the abandoned grade of the CP (1869) over Donner Pass via the original, higher-elevation tunnel.





Eastward view of the west entrance of the SP's 1925 summit tunnel under Donner Pass, 1.1 miles east of Norden (previous location). The west entrance of the 2-mile-long tunnel has a 700-foot snow shed that covers a switch that brings the double track down to one track before entering actual tunnel. On-line discussions indicate this is a bottleneck on the UP's primary transcontinental route and diverts traffic to the UP's Western Pacific (1909) Feather River Route.



Westward view of the west entrance of the SP's 1925 tunnel/snowshed.





Eastward view of the trackage within the snowshed at the west entrance of the SP's 1925 summit tunnel. The switch that brings the double track down to one track is marked by converging track and the bright orange chevron on the switch. The light at the end of the tunnel is 2 miles away and is in the Great Basin.



Westward view of the 1925 re-alignment from the top of the snowshed at the west entrance of the 1925 tunnel.



Another westward view of the west entrance snowshed.





Westward view of the snowshed at the west entrance of the 1925 tunnel, which is under the snow in the foreground.



Now we have moved higher and 3,100 feet north to the west entrance of the original CP tunnel. The flat area was the site of Summit, where CP then SP top-of-grade operations were conducted until 1925, when those facilities were moved down to Norden. The viewer is standing on Sugar Bowl Road looking westward. The red gate in the foreground is on the CP (1869) alignment and the retaining wall in the lower left is for an overpass to carry Sugar Bowl Road over the tracks. The west entrance of the original summit tunnel is located just behind the viewer.





Eastward view of the west entrance of the original CP summit tunnel, built by thousands of Chinese craftsmen and laborers during 1867 and 1868. The graffiti covered retaining walls support Sugar Bowl Road. Note that the 1,659-foot tunnel has no concrete work, which was not needed because the glaciated granite is so hard.



Eastward view of the west entrance of the original CP tunnel from Sugar Bowl Road.





Whereas the western approach to Donner Pass follows the South Yuba River, which provided only moderate construction challenges, the east entrances of the two summit tunnels daylight on a steep mountain slope. The snowshed in this southward view is the east entrance to the original CP tunnel. Note the bare, glaciated granite and the steep slope to the left (east) at the western boundary of the Great Basin.



Southeastward view near the same location as previous. The snowshed on the right is the same one as in the previous photo, i.e. the east entrance of the original CP tunnel. Going left (east) from that shed is an open cut grade, then a shed built into a cut grade through a granite hump, then an open ledge grade with retaining walls – the “China Wall.”



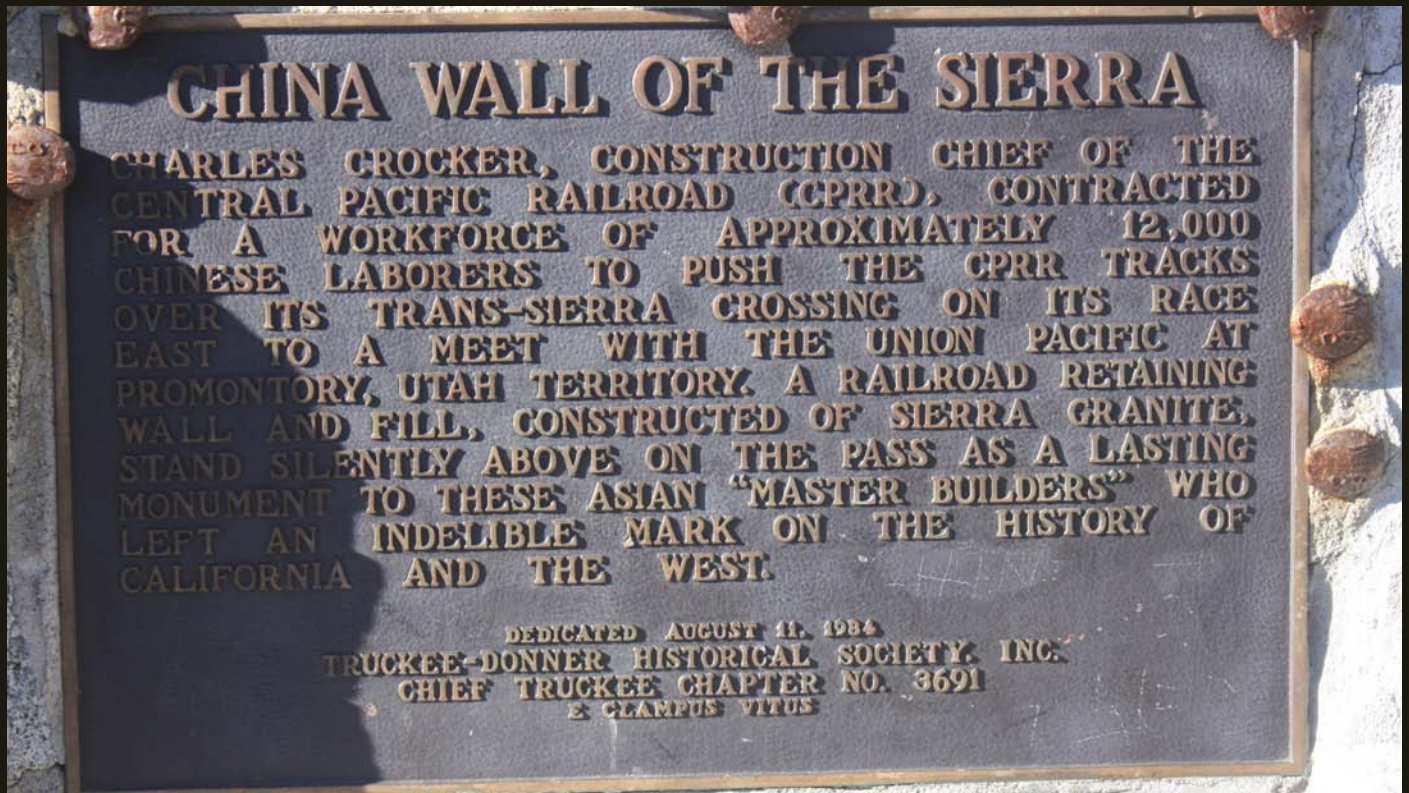


Southward view of the China Wall. Rock excavated from the summit tunnel was used to fill in the ravine and was faced with perfectly fitted quarried granite; there is no mortar in the cracks. The upper wall protects the track from avalanches and slides. The walls are in perfect condition, looking good for 150 years old and more than a century of heavy rail traffic.





Southeastward view of the China Wall. To the left of the wall is a tunnel through a granite ledge, which emerges on the other side into a partially buried snowshed.







Closer view of the snowshed on the east side of the tunnel east of the China Wall.



Southwestward view of the snowshed east of the China Wall. This shed continues 1.4 rail miles down the slope, interrupted only by four short tunnels. A lot of snow for late May.



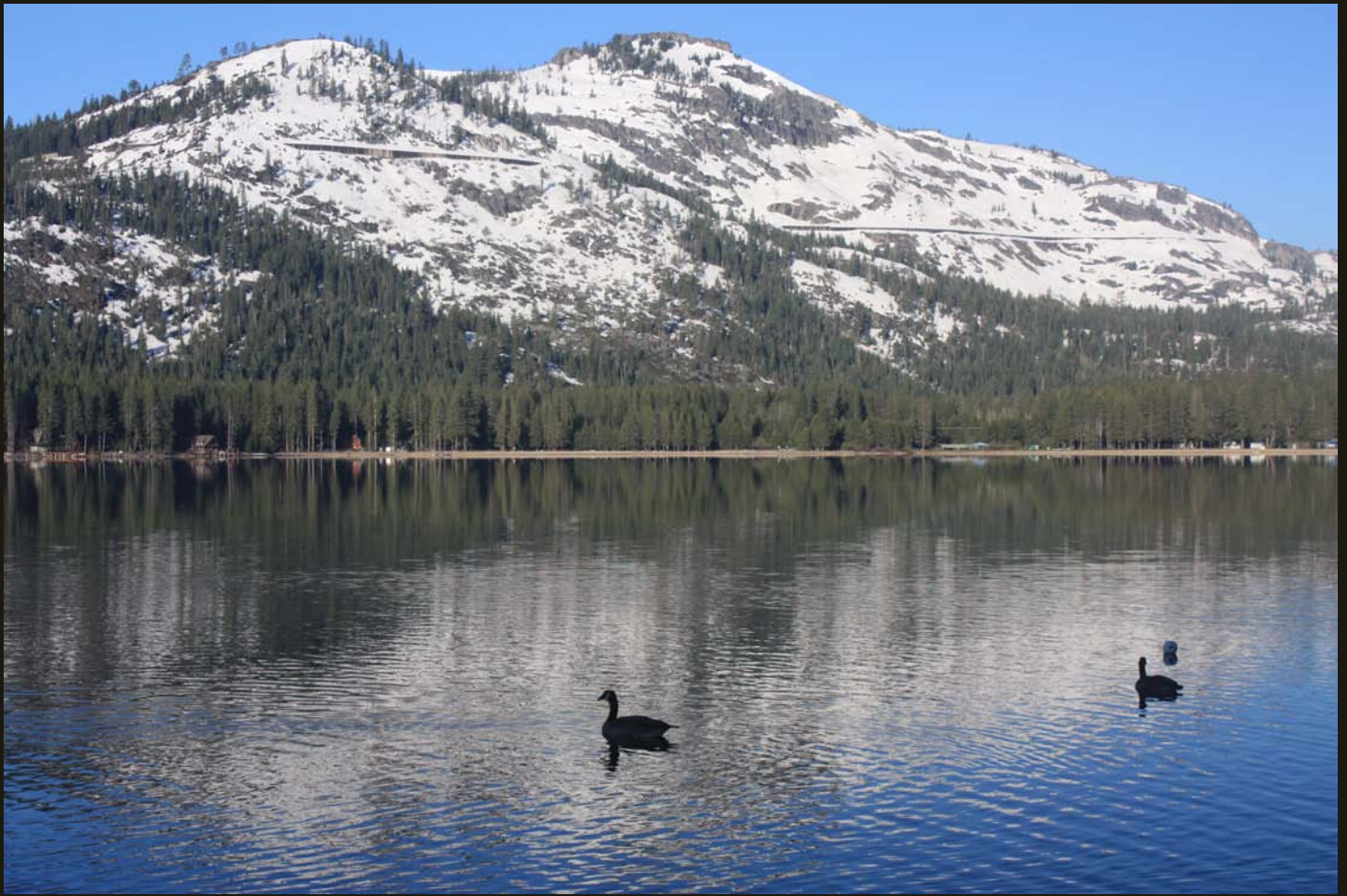


Southwestward view of the 1.4 mile snowshed east of the China Wall, just east of the previous location. It was down this slope that, during the winter of 1866-67, the CP hauled three locomotives, forty cars, and material for 40 miles of track over Donner Pass and down into the Truckee River canyon. Transcontinental trains plied this route from 1868, when the tunnel was completed, until the SP abandoned the original tunnel route in 1993. From 1925 until its 1993 abandonment, this line was the second track of a double-track crossing of the summit, the other track being the lower-elevation 1925 tunnel, which is under the mountain a half mile behind and below the snowshed in this view.



Southward view of the 1.4 mile snowshed east of the China Wall, just east of the previous location, where an avalanche has breached the shed.





Southwestward view of Donner Lake and almost the entire 1.4 miles of abandoned snowsheds. Eder, which is just east of the east entrance of the 1925 tunnel and is where the 1925 alignment diverges from the original CP alignment, is on the hillside just off the photo to the left.



Southeastward view of Donner Lake, which empties into the Truckee River (left of photo) and the CP grade on the slope behind the lake. Eder, where the 1925 alignment diverges from the original CP alignment, is on the hillside just about at the right edge of the photo. Therefore, the grade in this view is the active track on the original CP (1869) alignment. Just to the right of center there is a snowshed, the only one on the active track east of Donner Pass; this shed covers the switch between single track to the right (east) of the shed and double track to the left.