



Coast Mail

News from the San Luis Obispo
Railroad Museum

Issue Number 60 – Summer 2017 San Luis Obispo, California www.slormm.com

The Museum is open every Saturday from 10 am to 4 pm. It opens other times for groups by arrangement. Contact media@slormm.com.

New Exhibits

Museum volunteers have been hard at work on new exhibits. One features the connection of San Luis Obispo to the national rail system via Cuesta Grade in 1894 and the Gaviota Coast in 1901 (right). It includes a breather tube used in the Cuesta Grade tunnels. The other exhibit shows the development and evolution of the Santa Maria Valley Railroad (below). It includes an interactive panel and video program featuring aspects of the SMVRR.



Photos, except Stenner Trestle, by G. Matteson



Upcoming Events

On **July 1** at 1:00 pm Arroyo Grande author Jim Gregory will talk about some desperados, vigilantes, and bootleggers who added to San Luis Obispo County's real excitement [*Coast Mail* Spring 2017].

And on **July 7** from 6 to 9 pm the Museum will be part of the city's Art After Dark event, with displays of work by local painters, photographers, and possibly other media. If you have something to share, contact Saphya (saphya@me.com).



Restoration Progress

Members Brad LaRose, Dan Manion, and Bob Wilson have used lots of rust solvent and muscle power to remove deteriorated wood blocks bolted to the ends of our former Southern Pacific tank car (right). New blocks are drying in preparation for cutting to fit. Howard Amborn (in the window), John Marchetti, and Dave Rohr (hiding inside) have been working on our 90-year-old Pullman (below right). Metal window sash can't just be picked up at the hardware store. Our 1200-series Pacific Coast Railway boxcar has a new roof much closer to the original (below). A second roof layer is planned.



Wine-rail excursions on **August 4** and **October 6** leave the S.L.O. Amtrak station at 3:35 p.m., ride the Coast Starlight over and past Stenner Creek trestle (above) to Paso Robles, visit a winery, and return to S.L.O. in the evening. Contact media@slormm.com for details.



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Don't have Internet access? Don't miss out. See if a relative or friend can help. Also, nearly all public libraries have access, and staff who can help you get started.

**Our Mission:
Preserving California's Central
Coast Railroad History**

The San Luis Obispo Railroad Museum is a non-profit educational institution. Founded to preserve and present California Central Coast railroad history by collecting, restoring, displaying, and operating relevant railroad artifacts, photographs, models, and documents, its goal is to facilitate a better understanding of railroads' impact on our area's social, cultural, and economic history.

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Contact

Telephone (message) 805 548-1894
 e-mail: info@slorrm.com
 Website: www.slorrm.com
 Mail: 1940 Santa Barbara Avenue
 San Luis Obispo, CA 93401

DOCUMENTS AVAILABLE

Any member may access or receive a copy of the Museum's *By-laws*, *Collections Policy*, or *Strategic Plan* by going to the website noted above or by sending a #10, self-addressed, stamped envelope to the address above.

Correction

The article "Too Many Railroads" in the Spring 2017 *Coast Mail*, by including a "Cotton Belt" logo, implied that the Interstate Commerce Commission's 1929 study supported the Southern Pacific absorbing the St. Louis Southwestern (SSW). SSW was not on the ICC list of potential SP acquisitions, though SP did get a controlling interest in 1932 and merged the line in 1992. The ICC thought the SSW should go to the Illinois Central.

Become a member

Membership provides opportunities for anyone interested in today's railroads, railroad history, train travel, or model railroading to learn and experience more, and to share with others.

Individual members pay \$36 per year, a family \$60, and a sustaining member \$100. Junior memberships (ages 12-18) for the model railroaders are available (see Model Railroad Superintendent for details).

Application forms can be downloaded from the Museum's website and mailed with payment, or you can join online by clicking Membership and using PayPal. (Mailing and web addresses are listed at left.)

Membership benefits include free admission to the Museum and access to Members Only features of the website, including full current issues of *Coast Mail*.

Renew your membership

The Museum exists thanks to continued member support. All annual memberships expire **December 31**. If you have not already renewed, please provide your payment and any changes to your contact information. You can renew online through the Museum's website (via Paypal) or checks may be mailed to the Museum. If renewing online you can provide updated contact information by phone message or email (contact listed at left). The Museum never shares your contact information.

Our newest Board member

Norma Dengler was elected to the Board May 9. A Morro Bay resident who enjoys train travel, and a regular docent on *La Cuesta*, Norma worked in countywide planning, including transportation issues.

TIMETABLE

These are the scheduled meetings of the Museum Board of Directors, held on the second Tuesday of each month at 6:00 p.m., at 1940 Santa Barbara Avenue, San Luis Obispo:

- June 13 - Public presentation meeting (the Museum library & archives)
- July 11 - Board action meeting
- August 8 - Board action meeting

For dates, times, and locations of committee meetings, contact the Museum by email (info@slorrm.com) or phone message (805 548-1894).



Photo by Gary See

How did you get interested in trains?

Saphya Lotery

As a member of the Museum's Events Committee, Saphya has been a great help promoting Museum activities and conducting the Boy Scout merit badge program. She also works with Operation Lifesaver, the effort funded by most U.S. railroads to educate the public on safety at grade crossings and along tracks. Saphya previously volunteered with a railroad museum in Nevada.

Saphya knows about today's railroad operations because she recently worked as an Amtrak conductor. And so far she's the only person to have had a baby shower at the Museum, which her daughter has visited several times since. We hope that as she learns to walk and talk we'll be able to start recruiting her to be a docent.

In the next Coast Mail

- Not a baseball bat
- Rail yard in downtown Los Osos
- The Beet Belt Route
- Following orders
- Many non-railroads with tracks

Museum Store

To raise funds, the Museum offers several items for sale. T-shirts, baseball caps, belt buckles, mugs, enameled pins, embroidered patches, engineer hats, and videos are available through the Museum website www.slorrm.com. Click on **Company Store**.

Focus on Artifacts



Why a fan?

This is the indicator for a Pacific Coast Railway track switch, also known as a turnout, from about 1900 in the San Luis Obispo area. Donation and display were noted in the Spring 2015 *Coast Mail*.



An indicator is attached to the switch mechanism either mechanically or electrically. It shows which way a switch is aligned, for the through route or the diverging route (typically called “normal” and “reverse” respectively). Many types of indicators have been used over the years by different railroads: always lighted; lighted only at night, not lighted; round panel, square or rectangular panel; rectangle with semicircular ends; square panel turned 45 degrees so it looks like a diamond; arrows. Most panels are painted red or yellow, depending on the relationship of one switch to neighboring switches. SP used red on a “derail,” a device that causes the wheels of a (hopefully) slowly moving locomotive or car to shift off the rails of a siding or spur track so it won’t unintentionally run through a switch between it and a main track. Some indicators are close to the ground; some, like this one, are over six feet tall.

But various sources on railway engineering practice shed no light on why this particular combination of shapes and colors was used. Two possibilities:

It’s for a stub switch. In stub switches, both blunt-end rails move to line up with both rails of the through or diverging route. Narrow-gauge lines often used stub switches because they needed fewer specially made parts and less exacting geometry. In conventional moving-point switches, rails shaped to a tapered end move to rest against the inside of one rail of the through route or the opposite rail of the diverging route.

It’s for a three-way switch. A stub switch is the only practical way to have a through route, a right-hand diverging route, and a left-hand diverging route start from the same spot, a consideration where space is limited. This PCRY indicator displays not by rotating to show a panel’s face or an edge but by being positioned vertically or angled left or right – a clear sign to show the position of a three-way switch. The fan shape implies this range of motion; use of red and white helps visibility in all light conditions. However there is one photo of such a stand, probably near Higuera Street, that is clearly a moving-point, two-way switch. Maybe the stand was re-used from another location? Note the dark lower frame: one can see why this is called a “harp style” switch stand.

A Gallery of Indicators



These five images are roughly in scale with each other but appear smaller than the one at left.

Left to right above: the UP hand-throw to the S.L.O. team track; an SP spring switch indicator; SP spring switch indicator panel that’s perpendicular to the one labeled “S S,” with rounded side corners for safety.



A spring switch allows slow movement by a “trailing” path that otherwise would require moving the rails by hand. There used to be one where “East S. L. O.” double track ended.

Above right: the UP derail hand-throw at the team track – yes, it’s purple. (“Derail” is explained in the text at left.)

Above left: A square indicator that’s seen better days, on an old type stand, probably not on the SP (stock photo).

Below: The current signals at the north end of the S.L.O. yard. These Centralized Traffic Control signals respond to track occupancy and hazards ahead, including a misaligned switch. They are always lit and their default aspect is red for STOP. The dispatcher in Omaha can set them to green to authorize train movements, but cannot override indications that are triggered by local conditions such as occupied track or a misaligned switch. Some other signals illuminate only when a train approaches.

Photos by Glen Matteson except as noted



New Mystery Photo

These rails (at right) haven't had steel wheels contact them for many years, but they've had railcars pass over them recently. Can you solve this riddle and identify where they are? See the next *Coast Mail* for answers.



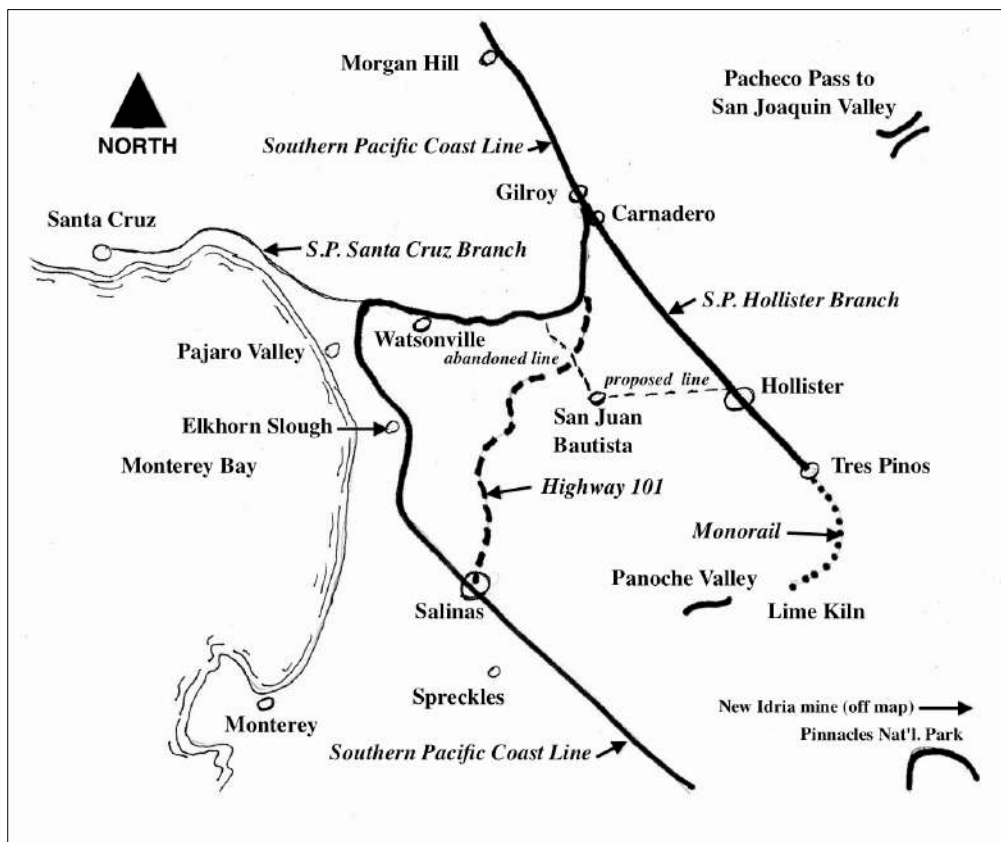
A sweet deal: The Museum is raising funds to bring an offered beet gondola from the San Francisco Bay area.

Photo by Glen Matteson

Previous Mystery Photo Answer

The Spring 2017 *Coast Mail* mystery photo shows Southern Pacific sugar-beet gondolas in the S.L.O. yard in 1990. SP hauled solid trains of beets to big refineries at Spreckles near Salinas and at Betteravia near Santa Maria. The beets came mostly from the Salinas Valley and Imperial County. West Coast beet sugar competed with "pure cane sugar from Hawai'i," as the C&H jingle said. Shippers favored the old wood-sided cars for beets coming through the desert via Beaumont Pass. Processing the beets involved cooking, but it wasn't good if they arrived partly pre-cooked by contact with steel car sides. Before about 1960, beets from Los Osos Valley were loaded at a spur near California Boulevard in S.L.O. (image above left, north is to right). By the 1990s, competition from artificial sweeteners, beets grown outside California, and high-fructose corn syrup ended Central Coast beet trains, once a major traffic source.

The 1955 aerial view shows rows of palms, Hathway Ave. crossing the tracks, the spur serving Union Sugar Company on one side and American Beet Sugar Company on the other, and the spur to Standard Oil Company (upper left corner). *Image from City of S.L.O. Engineering Div. Collection*



Steinbeck Country

Salinas, like San Luis Obispo, might have been bypassed entirely by the Southern Pacific. The line through Hollister was originally intended to be the Coast Route. Or railroads other than, or in addition to, the Southern Pacific might have built into the area.

See "From the Archives" on the next page for more on this area, in particular the Hollister Branch. What, a monorail?! And look, below Salinas there's Spreckles (Mystery Photo article above).

If you're reading a paper copy, become a Museum member and go online to see following pages, and all of each *Coast Mail* as they're published.

(Not all historically proposed or existing railroads, and not all highways, are shown on this map).

Map by Glen Matteson

From the Archives

Report and illustrations by Glen Matteson

Northern Limits

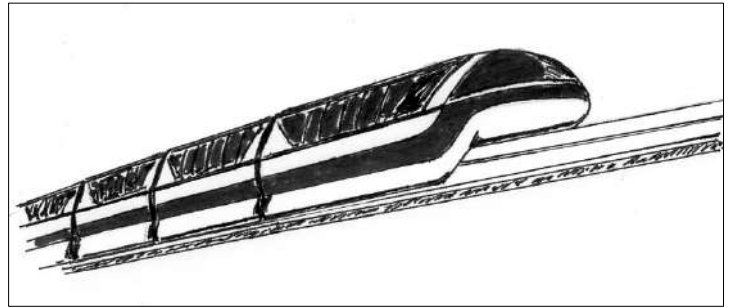
This story involves a monorail, so conjure up a vision of a sleek, futuristic urban transportation mode... and prepare to be surprised.

Regular readers of “From the Archives” may recall the account of Myron Angel’s Prospectus for a railroad from Port San Luis to the San Joaquin Valley that was never built, in which the railroad then under construction south from San Jose was referred to dismissively as the “Southern Pacific branch railroad” (*Coast Mail* #55, Spring 2016). It turns out that both Branch and Railroad should have been capitalized, because they were part of the name of the corporate entity that was constructing what would become Southern Pacific’s Coast Line. It was common during the 1800s for railroads to build extensions of themselves under different company names, probably to assure that if the extension turned out to be not such a good idea after all, the financial results would not drag down the whole business. Using different names also sometimes shielded their maneuverings from competing railroads.

Readers may also remember the article on “Speculation” in *Coast Mail* #59, Spring 2017, covering rumors of the Santa Fe Railway possibly being the first to reach the Central Coast. Other articles, involving the Pacific Coast Railway, noted possible coast-interior connections along what is now Highway 166. In an interesting symmetry, similar speculations, and even more branch-line building, occurred near the lower end of the Salinas Valley at what might be considered the northern limit of this Museum’s area of focus.

Prepare for some confusion. What became the Southern Pacific initially built south from San Francisco to Gilroy as the San Francisco and San Jose Railroad and the Santa Clara and Pajaro Valley Railroad. The California Southern was incorporated by the SP to build from Gilroy to Salinas. (“California Southern Railroad” was also the name of an Atchison Topeka & Santa Fe Railway company formed to sneak a line from Barstow to San Diego via San Bernardino, Temecula, and Oceanside, breaking rival SP’s monopoly in Southern California.) Gilroy, Garlic Capital of the World, should also be famous for having been reached by some aspect of the Southern Pacific in March 1869, two months before the Central Pacific and the Union Pacific drove a golden spike at Promontory, Utah.

But alas, Gilroy was not to be a railroad junction. That honor went to Carnadero (a somewhat improvised Spanish word meaning “butchering place”) a few miles farther south, where the “Hollister and Tres Pinos Line” continued southeast into one of our state’s more obscure counties, San Benito (at the time part of Monterey County). This line has the distinction of being the first track built by the railroad named Southern Pacific, as opposed to the several other business names used by those controlling the Southern Pacific to construct lines.



Seattle, Las Vegas, and the various Disney theme parks use straddle-beam monorails, with rubber tires bearing on the top and sides of a steel-reinforced concrete beam.

Like the early Southern Pacific in the San Luis Obispo area, the Hollister line mainly carried agricultural items and people. In season, 20 to 30 carloads a day of hay were shipped. (The town of Hollister is named for a member of the family whose name also was applied to the peak northwest of San Luis Obispo, and the avenue in, and the ranch near, Goleta.) Hay warehouses at Hollister and Tres Pinos were reportedly the largest in the world at the time, each 100 feet wide and 242 feet long.

But the Hollister line was seen not just as an agricultural branch. Depending on who was surveying, or speculating, it could have been part of a connection eastward into the San Joaquin Valley (via the SP’s Coalinga branch), or it could have become the through Coast Line; it offered a more direct route than the one eventually used via Watsonville and the problematic Elkhorn Slough. That other route was completed to Soledad the same day the Hollister line reached its terminus at Tres Pinos. Soledad became the end of the Coast Line for 13 years, longer than Santa Margarita was the railhead between 1889 and 1894.

Ready for more confusion? As was often the case, once the euphoria of having *a* railroad wore off, residents of the area felt a transportation monopoly was not in their best interests. So they chartered the San Benito Railroad in 1875, a proposed narrow-gauge line extending 33 miles to Monterey Bay. It would connect with the narrow-gauge Monterey and Salinas Valley Railroad and the Santa Cruz Railroad. But by the time construction could be started, the Southern Pacific checkmated the locals by acquiring both the coastal companies, at what must have been fire-sale prices when they had financial difficulties.

Another proposed rail competitor was the Watsonville Transportation Company. It got as far as obtaining some right-of-way, but it also ended up in SP ownership. Not to be deterred, in 1908 the San Juan Southern (sounds like it belongs in Colorado or New Mexico) was formed to connect Hollister with two other now obscure lines, the San Juan Pacific and the Ocean Shore Railroad. And an outlet to the coast would not be enough: the proposed San Joaquin Western was to reach Fresno. Like San Luis Obispo County’s “Railroad That Never Was” none of these connections came to be.

Article continues on page 6.

Northern Limits (continued)

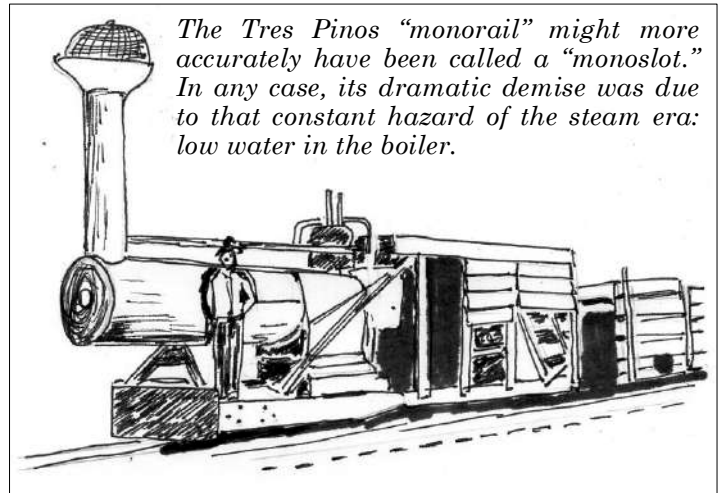
The Western Pacific Railroad is famous as the last to be built as part of a transcontinental system, and in partnership with the Burlington Route and the Denver & Rio Grande Western, hosted the iconic *California Zephyr* starting in 1949. It crossed the Sierras via the Feather River Canyon miles north and thousands of feet lower than SP's Donner Pass, reaching a terminus at Oakland. But in the early 1900s there were rumors that the WP would hook from San Jose through Hollister and into the San Joaquin Valley far south of its Niles Canyon – Sacramento route. This dream was reinforced when a coal deposit was discovered northwest of Hollister. Even the Santa Fe was rumored to desire a route through Hollister to Monterey.

But wait, there's more! Additional railroads proposed for the area were: the San Francisco and Los Angeles Shortline Railroad ("shortline" presumably meaning direct) and, perhaps inspired by the L.A.-area Pacific Electric, to be electrified and run at 75 mph; the Monterey and Fresno; the Fresno, Coalinga, and Tidewater (your archivist's favorite name among the never-built simply because it sounds so improbable); the modestly if rather generically named Intercounties Railway; the much less modest San Francisco and Colorado River Railway; and the geographically limited Panoche Valley Railroad.

As with the hills around San Luis Obispo, Arroyo Grande, and Nacimiento, the New Idria mines near Hollister produced mercury ores. The Hollister line never reached that far, but it did bring mining equipment within 60 miles, with wagons hauling it the rest of the way.

Lime was a more convenient item, roasted from stone quarried at Thompson Canyon 12 miles beyond Tres Pinos. This traffic looked profitable enough for the Southern Pacific to offer the mining company rails and other materials if the company would grade the line and install the track. Instead, the owner, Mr. Burt, decided to build his own system of conveyance: what has universally been referred to as a "monorail" of parallel 4-by-12 timbers with a gap between (maybe more accurately called a "monoslot"). A steam locomotive and two cars, moving on rollers instead of wheels, were built. The locomotive was cobbled together using a flatcar and steam tractor parts, the whole contraption being narrow and quite wobbly. The rollers had a single central flange that rode in the slot, and which tended to chew away at the guiding wood beams. Previously, wagons and teams of horses had hauled the lime from the kilns to SP's Tres Pinos railhead; they were kept on standby duty due to frequent problems with the other system. The "monoslot" lasted about a year.

On the final trip, September 5, 1892, engineer Bill Maynard saw that the boiler water was dangerously low, stopped on the bridge over Pescadero Creek, dropped a suction hose, and pumped away. The cold water hitting the overheated firebox caused an explosion that "scattered pieces of the equipment over adjacent scenery." Most of the guideway lumber was salvaged and after milling was used in several structures in the vicinity.



The Tres Pinos "monorail" might more accurately have been called a "monoslot." In any case, its dramatic demise was due to that constant hazard of the steam era: low water in the boiler.

In 2013 there were reports that what remained of the Hollister branch, from Gilroy to Hollister, had been sold by Union Pacific Railroad to Palo Alto-based San Benito Railroad LLC. *Commercial Executive Magazine* reported "The track had been considered a linchpin in a plan to develop thousands of homes northwest of Hollister. That's because the line could provide passenger rail service from a proposed community there to Gilroy..." where riders could board the Caltrain service, an incarnation and extension of Southern Pacific's former "commute" service between San Francisco and San Jose. The last activity on the branch reported among the online railfan community was a U.P.R.R. work train offloading welded rail in October 2014.

The information for this piece came mainly from H. W. Fabing's article "Southern Pacific Hollister Branch" in The Western Railroader magazine of June 1973. A few details, including the monorail engine boiler explosion quote, are from an article by J. E. Leavett of the Hollister Free Press in the March 1958 issue of that magazine. Various descriptions of the "monorail" guideway do not agree, possibly due to different designs having been tried at different times or on different sections. The one above is taken from the earlier article, with sources closer in time to the operation. Some of the confusion may be due to a "prismoidal" railway of similar vintage proposed north of the San Francisco Bay Area, which would have used planks in an inverted "V" position.

* * *

And speaking of the Salinas area, here's something that wouldn't happen today:

"On August 27 [1959] a steam boiler explosion at the Raiter Canning Company in Salinas during the peak of the tomato canning season resulted in the movement of Southern Pacific steam engines 2582 and 2836, both consolidations [2-8-0 wheel arrangement], out of storage for steam service at the canning company from six to eight weeks." – From an unsigned article in the *Western Railroader* magazine of October 1959.

However, there have been cases, in the upper Midwest and in Canada, where diesel-electric locomotives have temporarily provided power to small towns or groups of buildings that lost utility power due to storms.

More From the Archives by Glen Matteson

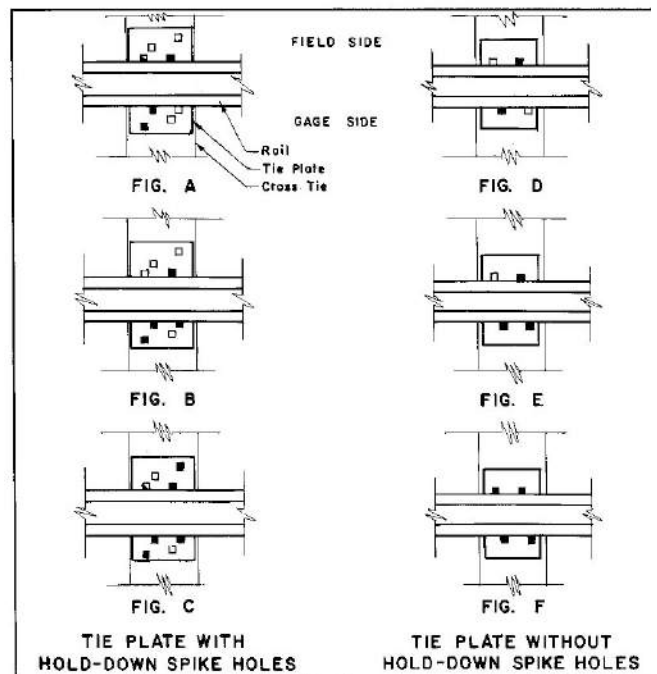
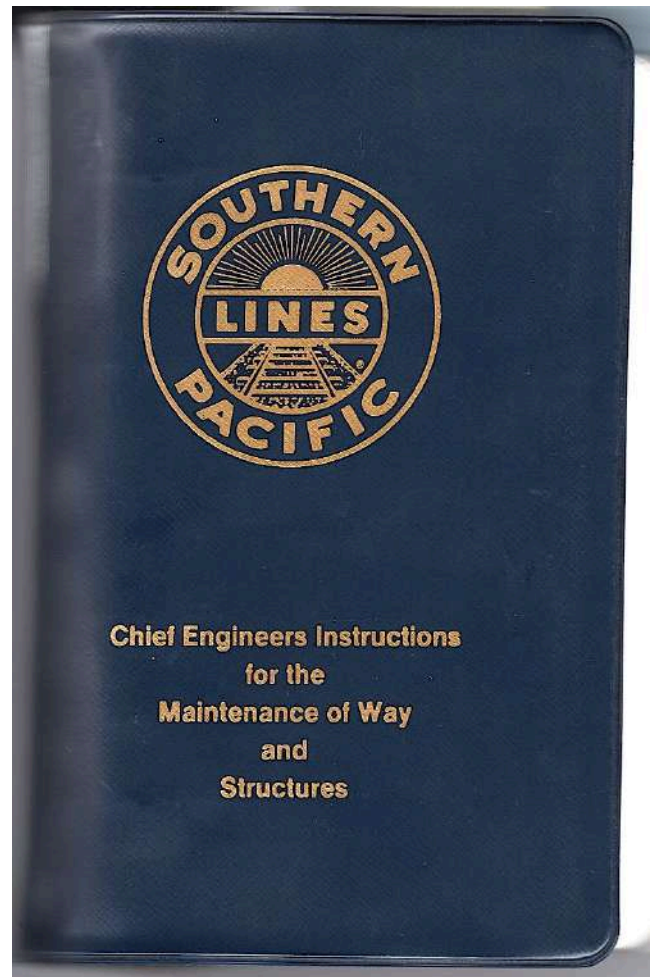
More Details

Museum visitors looking at the display track or, more particularly, the adjacent Union Pacific main tracks, often comment on the tie plates having four holes but only two spikes. They are genuinely vexed, and also sometimes concerned about spikes that have pulled up. Tie plates are the steel slabs that rest on top of the wooden crossties and below the rails. They help keep the rails in alignment and spread the weight of the rails over a larger area of wood, reducing wear that inevitably comes from the impacts of train traffic and shifts due to temperature changes. The simple answer is that it's not necessary to have four spikes in all situations, but it is more economical and convenient to have a standard four-hole tie plate and to also use them in situations where two, three, or four spikes are called for.

The upper right image is the cover of Southern Pacific *Transportation Company's Chief Engineers Instructions for the Maintenance of Way and Structures*, revised through November 1, 1988, a mint-condition item in the Museum's archives. It's 5 x 7-1/2 inches, six-ring, loose-leaf bound, with dark blue vinyl cover and imitation gold lettering. And yes, there is no possessive apostrophe in the title. Railfans and archivists notice that sort of thing. (The Cotton Belt *Route* and Rio Grande *Action Road* logos appear on the spine along with the Southern Pacific *Lines* logo.) With the possible exception of those who quote baseball statistics, railfans have a reputation for being the most detail-oriented (to say it politely) people one is likely to meet. And the most detail-oriented among the railfan community—especially modelers—are referred to as “rivet counters,” in a friendly way of course. This edition we're giving equal time to civil engineers, the kind referred to in that document's title, not the kind who operate locomotives (*Coast Mail* #57, Fall 2016). It's only fair. Locomotive engineers get all the waves, and when did you last hear “Oh look, doesn't that civil engineer look dashing with his slide rule and pocket protector?”

The document has about 255 pages, of which 35 extend out as larger-format drawings reduced from the SP *Common Standard Plans* book. The lower right image shows part of one such page, with the two types of tie plates in use. The notes keyed to the figures are not shown because to be legible the image would require a half page of this newsletter. It's sufficient to observe that there are four-hole and eight-hole tie plates, which are to have two, three, four, five, or six spikes per plate, depending primarily on track curvature and allowed train speed. The plates with holes away from the base of rail are said to have “hold-down” spike holes; spikes at the base of rail are called “line spikes,” while those away from the base of rail are called “hold-down spikes.” Holes are arranged to avoid having multiple, close spikes in line with the wood grain, which could lead to splitting. It may not be clear from the image, but unspiked holes are represented by open squares, spiked holes by solid black squares, and optional spikes with a square half-filled on the diagonal. Most contemporary tie plates have little “shoulders” to fit each side of the rail base, and a very small angle in cross-section so the rails will be tipped very slightly inward (to resist “rolling over,” which is more likely than tipping inward under wheel loads).

We could go on about tie plates and spikes and spiking...



Article continues next page.

More Details (continued)

But we won't, because to do so would only conform to the stereotype of having few friends outside the fan base, and fewer still of the female persuasion. (Some of us learned that it's best to reveal our railroad enthusiasm only when a relationship is well along, or better yet, late in life.) So we turn to ties. They are to be nine inches wide, seven inches thick, and nine feet long. On main tracks they are to be spaced at 19½ inches, measured from their centers. They are to be installed with the heart side down. No, this does not refer to unrequited love. The heart of the tree is the core, and putting down the side of the tie that came from closest to the tree's core makes the annual tree rings on the upper surface more likely to shed water. Until reading that part your archivist had assumed heart-side-down was to avoid having a convex upper surface (due to differential shrinkage with drying) on which ties plates would tend to rock and not bear efficiently. Take that, Mr. Know-it-all.

Rails, as almost everyone knows, are to have 4 feet 8½ inches between the inner surfaces of their heads. But did you know that distance is to be measured 5/8 inch down from the rail head's top surface? And the measuring tool is to be non-conductive, so it won't set the trackside signals to red. The minimum acceptable gauge is 4 feet 8 inches, the maximum 4 feet 9½ inches. The gauge of sharply curved track is to be 1/8 to 1/4 inch wider than standard, depending on the sharpness of the curve. When installing rail, gauge is to be checked and set every third tie.

At this point it should not surprise readers to learn that the Museum's archivist, curator, and previous newsletter editor once had a profound three-way discussion on the spelling of "gauge." Civil, structural, and mechanical engineers prefer "gage" (no "u") as does the document presented here, except once when "gauge" was used, probably by some troublemaker. The ultimate arbiter, the American Railway Engineering Association, uses "gage," except at least once in the association's massive standards book where someone slipped in "gauge." Your editor has decided to use "gauge" because that looks right to most readers.

You can help build a bridge to the future.

California Polytechnic State University, San Luis Obispo, usually called simply Cal Poly, is highly regarded for its practical programs in architecture and engineering, with an emphasis on "learning by doing."

Sometimes experience is a cruel teacher. This is the Union Pacific (formerly Southern Pacific) bridge over Highland Drive, a principal campus access route. Every few years, a vehicle too tall to make it under the bridge suffers some damage. Each time, while the bridge fares much better than the vehicle, a qualified railroad worker must inspect it. Your support for the Museum helps us collaborate with Cal Poly in preparing those who design, build, maintain, and inspect railroad infrastructure.



A double-decker city bus was no match for the bridge. A semitrailer hauling mattresses also suffered from a height problem, despite warning signs.

Images provided by KSBY-TV

We can't neglect ballast, the bed of small rocks that keep the ties, and therefore the rails, in proper alignment and well drained. The ballast rocks should be crushed from much bigger rocks, and must fit through a two-inch sieve, with no dimension greater than 2½ inches, and with negligible amounts smaller than two inches. They must be hard and angular on all surfaces. If slag is used, it must be air-cooled slag, not water-cooled. (Reader help needed: Is that to avoid bubbles that would lead to breakage, fine particles, and settling or fouling?) Ballast is to be thoroughly tamped within 13 inches on each side of both rails, but never the midpoint between the rails.* The only exception is switches, where the whole area must be tamped.

Trackside signals indicate the presence of trains ahead, as well as broken rails. Certain signals, "protective" ones, also go red when special devices along the track detect fire or high water at bridges, landslide, or rock-fall, or with an earthquake. (There are several in the San Luis Obispo area.) This little blue book specifies how often each type of detector is to be inspected and tested: high-water detectors, once per week in the rainy season, once a month in the dry season; all other types, every two weeks.

For those who collect details, here is item 2.4.6: "Upon receipt of new No. 1 [switch] rods, it is necessary that the holes be inspected to insure that they have been chamfered [openings given a bevel]. Correct chamfer is 1/16" minimum – 1/8" maximum at 45 degrees."

That last may prompt a smile. Those silly engineers, concerned about the edges of hole openings. But the goal of every engineering standard is safe functioning with reasonable economy. Our lives literally depend on the development and implementation of those standards, across a wide range of fields. The next time you see an engineer, wave.

* The first draft of this article asked readers to help answer "Why not tamp the middle?" A later book donation (*Roadway and Track* by W. F. Rench, © 1923) gave the answer: "Center-bound" track gives a rough ride because the ties tend to see-saw on the high point of the subgrade, which in section is slightly rounded for drainage, where the layer of ballast is thinner. If deep enough, even tamped ballast has some resiliency. The goal is to have even "springiness" throughout.



You can go this way, or you can go that way, or you can...

California has been gradually re-establishing a public transportation system that reached its peak extent between about 1910 and 1950. Shown below are examples of the origin-destination and routing choices (and costs) available in June 1949. They're from Southern Pacific Company's "Interdivision and Joint Passenger Tariff" books Z-No. 11 and AG-No. 8.

Parts of pages have been excerpted to show some familiar places. Gonzales is a small town in the Salinas Valley; Goldtree was a siding north of Stenner Creek trestle (and not much more); and Gilroy is now a burgeoning suburb of Silicon Valley.

These cornucopias of detail were donated in 2016 by Ed Von Nordeck, who was hired by SP in 1952 in Los Angeles, initially to deal with ticketing on such trains as the *Daylight* and the *Lark*.

Headline Number ^{ESP}		13		14		15		16		17		18	
FROM ^{ESP}		Lathrop, Cal.		Modesto, Cal.		Merced, Cal.		Fresno, Cal.		Tulare, Cal.		Bakersfield, Cal.	
TO		First Class	Coach Class	First Class	Coach Class	First Class	Coach Class	First Class	Coach Class	First Class	Coach Class	First Class	Coach Class
		\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
Gila, Ariz.													
Via Mojave and Yuma.....		26.90	19.23	26.20	18.73	24.85	17.76	22.93	16.39	21.35	15.26	19.13	13.69
" San Francisco, Los Angeles and Yuma.....		29.70	21.23										
Gilroy, Cal.													
Via San Francisco.....		4.73	3.39	5.37	3.85	6.65	4.76	8.58	6.14	10.15	7.26	12.37	8.85
" Livermore and San Jose.....		4.73	3.39	4.32	3.10	5.60	4.01	7.53	5.39	9.10	6.51	11.32	8.10
Glendale (Tropico), Cal.													
Via Mojave.....		13.53	9.67	12.83	9.17	11.50	8.22	*9.57	*6.84	*8.00	*5.72	*5.78	*4.12
" Los Banos and Mojave.....		13.88	9.92										
" San Francisco.....		16.33	11.67										
Goldtree, Cal.													
Via San Francisco and Salinas.....		10.56	7.52	11.20	7.99	12.48	8.90	14.41	10.27	15.98	11.40	18.20	12.99
" Livermore and Salinas.....		9.45	6.74	10.15	7.24	11.43	8.15	13.36	9.52	14.93	10.65	17.15	12.24
" Mojave and Saugus or Burbank.....				20.37	13.60	13.60	9.73	15.75	11.26	14.18	10.14	11.96	8.54
" Mojave and Los Angeles.....												12.78	9.15
Goleta, Cal.													
Via San Francisco and Salinas.....		14.58	10.44	15.23	10.90	16.51	11.82	18.43	13.19	20.01	14.32	22.23	15.90
" Livermore and Salinas.....		13.48	9.65	14.18	10.15	15.46	11.07	17.38	12.44	18.96	13.57	21.18	15.15
" Mojave and Saugus or Burbank.....				14.93	10.69	13.60	9.73	11.67	8.35	10.10	7.23	7.88	5.64
" Mojave and Los Angeles.....												8.70	6.24
Gonzales, Cal.													
Via San Francisco and Salinas.....		6.60	4.72	7.23	5.17	8.52	6.09	10.45	7.47	12.02	8.59	14.23	10.17
" Livermore, San Jose and Salinas.....		5.48	4.17	6.18	4.42	7.47	5.34	9.40	6.72	10.97	7.84	13.18	9.42

Headline Number ^{ESP}		1		2		3		4		5		6	
FROM ^{ESP}		Los Angeles, Cal.		Long Beach, San Pedro, Redondo Beach, Santa Monica, Cal.		Glendale (Tropico), Cal.		San Fernando, Cal.		Saugus, Cal.		Lancaster, Cal.	
TO		First Class	Coach Class	First Class	Coach Class	First Class	Coach Class	First Class	Coach Class	First Class	Coach Class	First Class	Coach Class
		\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
San Ardo, Cal.													
Via Oxnard or Saugus and Santa Barbara.....		10.27	7.34	10.27	7.34	10.03	7.17						
" Santa Paula and Santa Barbara.....								9.75	6.97	9.33	6.67	10.96	7.83
" Glendale, Oxnard and Santa Barbara.....								10.61	7.59	10.96	7.84	12.60	8.01
San Luis Obispo, Cal.													
Via Oxnard or Saugus and Santa Barbara.....		*7.88	*5.62	7.88	5.62	*7.65	*5.47						
" Santa Paula and Santa Barbara.....								*7.35	*5.25	*6.95	*4.97	8.58	6.14
" Glendale, Oxnard and Santa Barbara.....								8.23	5.89	8.58	6.14	10.22	7.31
" Los Angeles and Oxnard.....								8.70	6.21	9.05	6.46	10.68	7.62
San Mateo, Cal.													
Via Salinas and Gilroy or Santa Cruz.....		15.93	11.39	15.93	11.39	15.70	11.23	15.42	11.03	15.00	10.73	16.63	11.89
" Fresno and San Francisco.....		17.21	12.29	17.21	12.29	16.98	12.14	16.52	11.81	16.10	11.51	14.47	10.34