

Society for Industrial Archeology

2019 Fall Tour

Reno, Nevada

September 19-22



Guidebook



**SOCIETY FOR
INDUSTRIAL
ARCHEOLOGY**

SIA – 2019 Fall Tour – Reno, Nevada

SCHEDULE AT A GLANCE

Thursday, September 19

Optional Tour – Verdi to Donner Pass (8:30 AM – 3:00 PM)

- Verdi Hydroelectric Plant
- West Verdi Concrete Arch Bridge
- Donner State Park Visitor Center
- Donner Pass Sites (China Wall, Snow Sheds, Summit Bridge)
- Central Pacific Railroad Tunnel No. 6

Optional Tours on your own

- National Automobile Museum
- W.M. Keck Museum

Opening Reception at Whitney Peak Hotel (6 PM to 8 PM)

Friday, September 20

Tour A (8:30 AM – 5:00 PM)

- Ormat Geothermal Power Plant
- Galena Creek Bridge
- Nevada State Railroad Museum
- American AVK (Hydrants and Valves)
- Bently Heritage Distillery

Tour B (8:30 AM – 5:00 PM)

- Lahontan Dam & Powerhouse
- Wadsworth Truss Bridge
- Tesla Gigafactory
- Kimmie Candy
- Havelock Wool

Friday Evening - Dinner on your own

Saturday, September 21

The Comstock (8:00 AM – 5:00 PM)

- Geiger Grade Road
- Virginia City Welcome Center
- Comstock History Center
- Chollar Mine Tour
- Lunch at Fourth Ward School
- Rock Point Mill site - Dayton
- Donovan Mill – Silver City
- Yellow Jacket Mine shaft - Gold Hill

Evening banquet at the Depot Craft Brewery and Distillery (6 PM to 9 PM)

Sunday, September 22

Optional Tour (9:00 AM – 3:00 PM)

- V&T Railway steam train ride from Carson City to Virginia City

Acknowledgements

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Truckee-Carson Irrigation District

Truckee Meadows Water Authority

COVER IMAGE

*Con. Virginia Pan Mill Battery and Hoisting Works, 1876,
Carleton E. Watkins photographer, The Online Archive of California.*

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SCHEDULE AT A GLANCE

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INTRODUCTION

THE COMSTOCK LODGE. In 1849, placer gold was discovered in a stream flowing into the Carson River near the present town of Dayton, Nevada, in what was then Utah Territory. By 1853, there were about two hundred prospectors in the area. In 1856-7 brothers Hosea and Ethan Allen Grosh discovered several veins of a “black rock” which they determined to be silver. They estimated it to be worth \$3,500 per ton. However, before they could file the claim, tragedy would strike both brothers. Hosea ran a pick through his foot, which became infected; he died in September 1857. Allen got caught in a snowstorm while traveling to California in November 1857. He suffered from severe exposure and died on December 19, 1857. In the Spring of 1858, Henry Comstock, who had befriended the Grosh brothers, learned of Allen’s death. He took possession of their cabin, and went in search of their claim. Neither one of the Grosh brothers ever realized a dime from their valuable discovery. Mt. Grosh near Virginia City is named in their honor.



View of Virginia City, circa 1866 (L&H)

In January 1859, a group of four miners led by Virginia native James “Old Virginny” Finney discovered the Gold Hill outcropping. Virginia City would later be named after him. In June 1859, Peter O’Riley and Patrick McLaughlin discovered a new vein near the head of Six-Mile Canyon, but when the loud-mouth trickster Comstock learned of the find, he told the men they were working on land he had already claimed. With his partner Emanuel Penrod, Comstock made a deal with O’Riley and McLaughlin to share the claim.

In their search of gold, the early prospectors kept finding a “blue mud” which they simply tossed aside. In other places, an unknown “black rock” was found which the miners also ignored. Then, in late June 1859, a sample of the black rock was assayed in Grass Valley, California, and found to be worth \$3,876

per ton: three-quarters silver, and one-quarter gold. On July 1, 1859, the first account of this discovery was published in a California newspaper, and soon, the “Rush to Washoe” was on. Henry Comstock soon sold his claims, and left the area broke in 1862. He went to Oregon, and later Montana, where, on September 27, 1870, he shot himself. Though Comstock died poor and unhappy, the rich lode that he had an early part of was named for him.

The Comstock Lode made the reputation of Nevada as the “Silver State.” Its record output of \$700,000,000 has never been eclipsed. Today, the area of Virginia City, Gold Hill and Silver City is simply known as “the Comstock.” The growth of the Comstock led to the rapid development of new mining technologies and other support industries in the region, including railroads, timber, charcoal, ice, hydropower and the U. S. Mint in Carson City.



RENO began at the site of a toll bridge constructed in 1859 by Charles Fuller across the Truckee River at the northern end a large valley known as Truckee Meadows. In 1861, Fuller sold his bridge and adjacent hotel to Myron Lake. The area became known as Lake’s Crossing. In 1868 when the Central Pacific Railroad arrived, Lake sold the railroad a large plot of land for a townsite that was officially established on May 13, 1868. The new town was named after General Jesse Reno, who died in battle during the Civil War. In the years that followed, Reno became an important agricultural and transportation hub for people and goods, to and from the Comstock.



Reno Train Station, 1905 (UP)



Virginia Street Bridge (1877-1905) and the Lake House Hotel. (WNHPC)

In 1877, a new tied-arch iron bridge was built to replace the 1867 wooden Howe truss bridge. The iron bridge would stand until 1905, when the city relocated it to Rock Street and built a concrete double arch bridge that would stand until 2016, when it was replaced by the current Virginia Street Bridge.

The **VIRGINIA & TRUCKEE RAILROAD (V&T)** reached Reno in August 1872, providing a vital link between the Comstock mines and the outside world via the Central Pacific Railroad (CPRR). The V&T roundhouse and engine house in Reno were located near the current site of Greater Nevada Field. The region boomed with the discovery of the Big Bonanza in 1873, and the V&T enjoyed stunning success and prosperity. At its peak, the railroad worked two dozen locomotives and scheduled as many as forty trains a day on a single track. The last run of the V&T was on May 31, 1950 between Reno and Carson City.



V&T RR Bridge over Truckee River, Reno, 1880. The timber Howe truss was replaced in 1896. (WNHPC)



V&T RR Engine House & Turntable, Reno, 1947 (WNHPC)

The Southern Pacific Railroad (which had acquired the CPRR in 1885) built a new station in downtown Reno in 1926, which is still in use as an Amtrak Station. The station was enlarged as part of the 2007 ReTRAC grade separation project.

In 1886, Nevada State University was relocated to Reno from Elko. Its first building, Morrill Hall, was constructed on a bluff overlooking the Truckee Meadows, north of the center of town. The Mackay School of Mines was built in 1908, a gift from John Mackay, who had made a fortune on the Comstock. Today, the building houses the **W. M. Keck Earth Science & Mineral Engineering Museum**. The museum houses an outstanding collection of minerals, ores, fossil specimens, and photographs, in addition to mining-related relics. There is a special emphasis on early Nevada mining history with samples from notable mineral districts such as the Comstock Lode, Tonopah, and Goldfield. The University of Nevada – Reno (UNR) currently has more than 21,000 students.

The Reno divorce industry began in 1906, when Laura Corey, the wife of William Corey, president of U.S. Steel, travelled to Reno to obtain a divorce from her philandering husband. The event was scandalous and widely publicized. The waiting period for a Nevada divorce was a generous six months. In 1927, during a period of competition among several states for the migratory divorce trade, the Nevada legislature shortened the residency period to three months. This act boosted the industry and divorce-seekers flocked to Reno. In 1931, Nevada was beginning to feel the effects of the Great Depression, and seeing an economic opportunity, the Nevada legislature revised its divorce law once again. This time, it shortened the residency requirement to six weeks, thereby opening the divorce floodgates. During the ten years between 1929 and 1939, more than 30,000 divorces were granted at the Washoe County Courthouse, and Reno was known as the divorce capital of the world.

Gambling was legalized in Nevada in 1931. Reno remained the economic, political, and population center of Nevada until Las Vegas assumed the role in the 1960s. Despite this shift, Reno continued to

grow with a more diverse economy that included manufacturing, warehousing, and tourism. A casino-building boom occurred in Reno during the 1970s. However, with the rise of Native American gaming in California, and increased competition from Las Vegas, the number of casinos in Reno has decreased since the 1990s. Some of the downtown properties have been converted to residences. In recent years, the region has seen a large influx of new arrivals, primarily from northern California.

The **4TH STREET CORRIDOR**, which parallels the railroad, developed as Reno's primary industrial and commercial area, with numerous hotels, flour mills, warehouses, a gas works, a brick works, ice plants, lumber yards, metal shops, breweries, meat packers, and later, various automotive-related businesses such as gas stations, repair shops, and motels.



Flanigan Warehouse, 1910 (RH)

FLANIGAN WAREHOUSE was completed in 1902, primarily to store wool and other goods for Patrick L. Flanigan's sheep and cattle business, but its massive size enabled it to be used simultaneously for wholesale trade, distribution, and general storage. Wool and livestock from Flanigan's ranches were shipped on the narrow gauge Nevada-California-Oregon Railroad line directly to platforms located on the east side of the building. Sacks of wool were elevated to the second story via a two-ton freight elevator, then dropped down through the floor for sale and transport. Together with his business partners, Flanigan also opened the Nevada Meat Company on the lot directly to the east, creating an extensive complex comprising holding pens, a slaughter house, and cold storage. After years of financial struggles, Flanigan faced foreclosure in 1914 and died in 1920. The warehouse continued to be used for storage, and eventually as a building and painting supply store through most of the 20th century. In 1998, Ed Scalzo purchased the building at 701 E. 4th Street and moved his furniture business, Forever Yours Fine Furniture, there.

RENO BREWING COMPANY opened on East 4th Street in 1903. The new company joined a number of existing breweries in Reno including the Buffalo Brewing Company, Riter's Elite Steam Beer, and the Wieland Brewing Company. With the repeal of Prohibition in 1933, demand for the company's beer soared, and in 1940, the company constructed a new bottling plant next door. A 380-ft well provided the water used in production. The brewery operated until 1957. The main plant was demolished in 1959; the bottling plant still remains, but is currently vacant.



Reno Brewing Company, 1940 (RH)

The closing banquet will be at the **DEPOT CRAFT BREWERY DISTILLERY**, located in a beautifully-renovated three-story brick building constructed in 1910 to serve as the headquarters for the **Nevada-California-Oregon Railway**. Originating in Reno, the NCO served many locales along the 238-mile stretch to Lakeview, Oregon. Unlike many of Nevada's railroad systems, the NCO catered primarily to ranchers and farmers with almost all of the cargo consisting of livestock, wool, hay, and grain. Designed by prominent Nevada architect Frederic DeLongchamps the same year that he designed the Washoe County Court House, the two-story brick depot reflects the eclecticism that early 20th-century architects often employed. Its style combines Italianate bracketed cornices, Mission-style facade elements, Roman arches, and red Spanish roof tiles. The ground floor featured a main waiting room and separate women's waiting room, with general railroad offices located on the second floor.

By 1917, the company was forced to sell sixty-four miles of the main line and all of its Nevada holdings to the Western Pacific Railroad, and moved its headquarters to Alturas, California. The Western Pacific converted the tracks to standard gauge, using the building as a passenger and freight depot until 1937, and as general offices for the company and a variety of other local businesses for the next twenty years. In 1958, the building was sold to Thelma and Pete Barengo, who operated it for decades as the general headquarters for the Sierra Wine & Liquor Company, the distribution company the family had founded locally in 1934. The Barengos also constructed a 15,000-square foot concrete warehouse next

door, employing a pneumatic tube system to send orders directly from the office to the warehouse's stock room. Listed in the National Register of Historic Places in 1979, the depot sat vacant for a decade after the Barengos' departure. It gained new ownership in 2013, underwent an extensive renovation, and reopened on New Year's Eve, 2014 as the Depot Craft Brewery Distillery.



1911 postcard of the NCO Depot, Reno (RH)

NCO LOCOMOTIVE MACHINE SHOP is located across the tracks from the Depot. It was built in 1889 as the repair shop for the narrow gauge Nevada-California-Oregon Railway. The single-story building was planned in sections, with the eastern wall constructed of wood to provide for easy expansion as needed. A turntable located just north of the shops allowed crews to rotate railroad cars and engines to enter the building for maintenance and repairs, while four skylights in the gable roof provided natural light. Tracks ran from the turntable just a few yards eastward to the company's wooden roundhouse.

The building underwent multiple reconfigurations over the next few decades, with a temporary wooden addition on the east side providing space for painting and woodworking. After the wooden car shop was removed and a new eight-stall brick roundhouse was constructed adjacent to the original locomotive house, the building was used exclusively as a machine shop. The decline of the NCO prompted the sale of its Reno holdings, including the roundhouse, the machine shop, and the depot, to the Western Pacific Railroad in 1917. Since the narrow gauge facilities were incompatible with the new owner's standard gauge equipment, the company leased the old locomotive house and machine shop to various businesses. These included the Crane Company of Nevada, a branch of the large plumbing supply firm headquartered in Chicago, which operated its business out of the structure from 1921 until 1963. A small brick addition was constructed in the 1940s. The Western Pacific sold the old locomotive house and machine shop in 1957 to the Yancy Company of Reno, and the building has changed hands several times since then. It is now home to the recently-opened Black Rabbit Mead Company.



NCO Locomotive Machine Shop, Reno (RH)

LINCOLN HIGHWAY. Locals rejoiced in September 1913 when organizers of the new cross-country highway named for Abraham Lincoln announced their chosen route would pass through Reno, using the 4th Street corridor. In 1914 contractor A.F. Neidt constructed a concrete bridge on the highway route near Verdi with carved concrete side rails spelling out the words “Lincoln” and “Highway.” The bridge railings can be viewed today in a truck parking area near Mogul, along eastbound I-80.



The 1914 Lincoln Highway bridge rails. Now located in an I-80 rest area near Mogul. (MB)

The area experienced its first major surge of traffic along the highway in 1915, as hundreds of motor tourists passed through on their way to attend the Panama Pacific Exhibition in San Francisco. Within a few years, it was designated part of a second cross-country highway, the Victory Highway, organized in 1921 to memorialize veterans of World War I.

Local business leaders decided to capitalize on national enthusiasm for the completion of the Lincoln and Victory Highways by staging the Transcontinental Highways Exposition on the grounds of the new Idlewild Park in west Reno. Held in the summer of 1927, the event constructed scores of temporary structures throughout the park, attracted countless tourists from across the country, and left a lasting imprint on Reno with the park's Mission Revival-style California Building, and the first Reno Arch on Virginia Street. "The Biggest Little City in the World" slogan was later added to the arch after a contest was held. The arch was replaced in 1963 and again in 1987.



The second Reno Arch, built 1964. The Silver Dollar Club was located on the site of the Whitney Peak Hotel. (MRCP)

In 2018, the Regional Transportation Commission (RTC) of Washoe County completed a \$58 million upgrade of the 4th Street Corridor within Reno, and the Prater Way portion within the city of Sparks. The project features the RTC RAPID Lincoln Line with all-electric buses and eight bus stops with a variety of historic images of the corridor on large glass panels.

SPARKS, like Reno, was established as a railroad town, when in 1904, the Southern Pacific Railroad moved its shops from Wadsworth due to a realignment of its tracks. The railroad constructed a huge forty-stall roundhouse, a large brick maintenance shop and other support facilities. Houses in Wadsworth were dismantled and placed on flat cars for transport to the new town. Initially, the town was variously called East Reno, Glendale, and Harriman. It was eventually named 'Sparks' in honor of then Nevada Governor John Sparks.



SPRR Shops and Roundhouse, 1957. The PFE plant is at the upper left. (KB)

A large addition to the maintenance shop was built in 1944. However, with the advent of diesel locomotives, the last steam locomotives left Sparks in July 1956. The roundhouse was razed in 1959, but the maintenance shops still exist, and are occupied by various businesses. The adjacent Sparks Yard is now part of the Union Pacific (UPRR) system.

Over the years, a large industrial area developed in Sparks between the railroad and the river. Businesses included the Pacific Fruit Express (PFE) ice and refrigeration plant, located directly south of the tracks from the roundhouse. PFE was a joint venture between the UPRR and SPRR. The plant was completed in 1921 with a capacity of 190 tons of ice per day. Long platforms were built to efficiently load large blocks of ice onto the company's distinctive yellow rail cars. However, by 1958, the PFE cars had been converted to mechanized refrigeration, the Sparks icehouse was closed, and the icing platforms were dismantled. The building later became the home to Bill Harrah's antique automobile collection, a portion of which in 1989 became the **National Automobile Museum** collection in Reno.

The **Sparks Heritage Museum** contains a collection of the city's railroad and general history, along with several pieces of railroad equipment, including SPRR #8 oil-burning engine originally owned by the NCO, and shown in previous section.

The area remains an active industrial area with numerous trucking facilities, manufacturing establishments, petroleum distribution, and other related businesses. Like Reno, the city of Sparks has also experienced tremendous growth in recent years.

THURSDAY OPTIONAL TOUR - VERDI TO DONNER PASS

The Truckee River flows 110 miles from Lake Tahoe north to Pyramid Lake. Major tributaries include Donner Creek, Prosser Creek, and the Little Truckee River. Much of the river's drop occurs in the twenty-two mile stretch between the junction with the Little Truckee River at Boca, California, through the Truckee River Canyon to the Washoe Power Plant near Mogul. Water from the river is also an important source for irrigation and domestic purposes. The battle over precious water from the Truckee River was the basis for one of the longest-running lawsuits in U.S. history, finally settled in 2016 with the Truckee River Operating Agreement.

Hennes Pass Road was a major emigrant trail from the Truckee Meadows to the California gold fields. In the 1850s, it was improved and became a toll road. In 1860, Felix O'Neil built a bridge over the Truckee River, which became known as the Crystal Peak Toll Bridge. This bridge was destroyed in a flood in 1908. The current 150-ft single-span Parker truss, known as the Bridge Street Bridge, was built in 1928 and rehabilitated in 1987.



Bridge Street Bridge, Verdi (MB)

After the discovery of the Comstock Lode in 1859, the Hennes Pass Road served as the primary supply road for the mines to and from California, until the completion of the Central Pacific Railroad in 1869. The Hennes Pass Road was included in the Lincoln Highway, the first transcontinental highway system in the nation. It continued to carry automobile traffic between Truckee and Verdi until the completion of the Victory Highway through the Truckee River Canyon in 1925.

The town of Crystal Peak, California was located just over the state line and was founded by the Crystal Peak Company on the north side of the Truckee River in 1864. Several saw mills were built, along with a brewery, several shops, and four hotels. By 1967, the population swelled to over 1,500 with the influx of nearly 1,000 Chinese immigrants building the CPRR. However, the town soon

withered and disappeared after the railroad decided to bypass the town and establish a new depot on the south side of the river at Verdi.

VERDI LUMBER COMPANY. The development of the Comstock and other related enterprises in the region created a huge demand for timber. Square-set timber bracing used in the mines required large quantities of lumber, along with fuel for locomotives, stationary steam engines, and building construction. Much of this lumber came from the slopes of the nearby Sierra Nevada and the Lake Tahoe Basin. Great fortunes were made by men such as Walter Hobart, Sam Marlette, Duane Bliss, and others, including Oliver Lonkey, a French-Canadian logger who set out for California 1856.



Verdi Lumber Company Band Saw Mill, 1901 (VHPS)

Lonkey later established his own sawmill in Grass Valley, California. In 1864, he relocated to Franktown in Washoe Valley, Nevada, to take advantage of the booming Comstock lumber trade. There he constructed an extensive system of V-flumes to transport logs from the surrounding hills to his mill. In 1873, Lonkey moved to Virginia City and operated a lumberyard there for nine years. In 1882, he moved to Verdi and assumed operation of the Verdi Planing Mill and Box Factory. This mill featured a 90-horsepower steam engine, one of the largest in the area at that time.

In 1888, Lonkey established the Verdi Mill Company. He also established the Verdi Lumber Company in 1900, acquiring the vast holdings of the Truckee Lumber Company in nearby Dog Valley. He constructed a logging railroad that eventually included over thirty-two miles of track, with numerous switchbacks, a loop, and several timber trestles. Initially, two Mogul-type locomotives were purchased from the V&T but they couldn't handle the steep grades of the road

and were soon replaced with several geared Shay engines built in Lima, Ohio. A new band saw mill was completed in 1901. After Lonkey died in 1905, the company continued to operate until the early 1920s. However by that time the forests around Dog Valley and Sardine Valley had been thoroughly denuded. In 1926, a fire destroyed the main mill. The company ceased operations in 1927. In 1939, the company's timber lands became part of the Toiyabe National Forest. Crystal Peak Park is now located on a portion of the Verdi Lumber Company property along the Truckee River.



1907 truss and 1915 girder SPRR bridges crossing the Truckee River at Fleish (MB)

RAILROAD BRIDGES. Several historic steel railroad bridges cross the Truckee River between Boca and Verdi. In 1907, three truss bridges were built by the American Bridge Company at Iceland, Fleish, and East Verdi. Parallel steel girder spans were added to each location in 1915 as part of the track doubling project between Truckee and Reno. Originally built for the Southern Pacific Railroad, these bridges are still in use by Union Pacific and Amtrak.

WEST VERDI CONCRETE ARCH BRIDGE is one of two similar highway bridges (along with the East Verdi Bridge) built in 1938 by Isbell Construction Company of Reno to carry the Lincoln Highway (later U.S. 40) across the Truckee River. These bridges were documented by HAER in 1989 prior to their reconstruction.

HYDROPOWER PLANTS. By the late 1800s, Virginia City mines were so deep they required constant pumping to remove groundwater. Steam-driven, Cornish pumps had been effective for a while, but the expense of coal and a drop in the value of silver forced mine owners to seek a cheaper power alternative. Between 1899 and 1911, four hydroelectric power plants were built by the Truckee River General Electric Company along the Truckee River to serve Virginia City and other nearby communities. The company also acquired and improved the Lake Tahoe Dam at Tahoe City, California.



West Verdi Arch Bridge (MB)

FARAD POWER PLANT, built in 1899, is located on the west side of the river seventeen miles below Truckee. It was the first and uppermost hydroelectric plant on the river, and the only one to be built on the California side of the border. The Farad plant originally included a rock-filled crib diversion dam and a 9,300-ft long elevated wooden box flume. Two 6-ft diameter wooden penstocks dropped into the power house containing two horizontal McCormick turbines connected to two Westinghouse generators.

For many years, Farad and the three other plants were owned by the Sierra Pacific Power Company. These plants were later acquired by the Truckee Meadows Water Authority (TMWA, AKA “tum-wah”). However, Farad has not operated since 1997 floods destroyed its concrete dam. The Tahoe-Pyramid bike trail now passes through the abandoned Farad site, and portions of the deteriorating elevated wooden box flume are still visible from I-80.

FLEISH POWER PLANT was built in 1905 just west of Verdi near the California border. Fleish was named for the Fleishacker brothers who financed the Truckee River General Electric Company. The plant is fed by an 11,000-ft long combination surface canal, elevated wooden box flume, and tunnels. The powerhouse contains a single 3,000-HP Victor spiral flume turbine and a Westinghouse generator. This plant is rated at 2.5 megawatts. The elevated box flumes, penstock, wooden overflow, and tailraces have recently been rebuilt by the TMWA.

VERDI POWER PLANT was built in 1911 just north of the town of Verdi. It is served by a two-mile long surface canal from a diversion dam located about a mile below Fleish. The surface canal was originally connected to a 9-ft diameter surface wooden stave pipe and steel penstock that fed the plant. These were later replaced with a buried steel pipe. The concrete powerhouse contains a single horizontal Allis-Chalmers Francis turbine rated at 3,200 horsepower connected to a General Electric generator. This plant is now owned and operated by TMWA and is rated at 2.3 megawatts.



Farad intake building and wooden penstocks (MB)

WASHOE POWER PLANT built in 1904 is the lowest of the four plants on the river. This plant is fed from a diversion dam located north of Boomtown Casino. A combination of elevated wooden flumes and surface canals feed the plant, which is located near Mogul. The powerhouse contains two New American horizontal turbines built by the Dayton Globe Iron Works in Ohio, and two Stanley generators built in Pittsfield, Mass. The plant site contains an adjacent transformer house which is also connected to the Farad and Fleish plants. This plant is currently rated at 1.9 megawatts. It is now owned and operated by TMWA.



Washoe Powerhouse, built 1904 (MB)

FLORISTON, CALIFORNIA is located in the canyon approximately two miles above Farad. Floriston was a company town built by the Floriston Pulp and Paper Company in 1899 to house employees of their paper mill. The company was established by the Fleishacker brothers for whom the nearby power plant is named. The paper mill was said to be the second largest in the nation, with 500 employees. The town also included a fifty-two room hotel. The paper company operated its own flumes, an aerial tramway in Coldstream Valley, and its own railroad up Alder Creek and into Euer Valley in the late 1920s. After years of litigation due to the pollution that the company dumped into the river, the paper mill closed in 1930 and was dismantled. Floriston remained vacant until 1947 when San Francisco lawyer Preston Wright bought the town and created the Floriston Property Owners Association. Many of the original company houses remain.



Floriston Pulp and Paper Mill (CHSPC)

ICELAND, CALIFORNIA was located just upstream of Floriston at a railroad crossing over the river. Several ice companies once operated here including the Mountain Ice Company, the People's Ice Company, the Union Ice Company, and the Floriston Ice Company.

BOCA, CALIFORNIA was established as a construction camp for the CPRR in 1868, and was located at the top of the canyon where the Little Truckee River joins with the Truckee River. Within a few years, the growing town had added a sawmill, a telegraph office, a shingle house, a schoolhouse, a hotel, and a general store. In 1876, the Boca Brewery was completed. As many as 300 workers were employed in Boca's various industries. There were six large icehouses in Boca, each capable of storing thousands of tons of ice, which were cut from the millpond, floated two hundred yards down a canal, and skidded on a tramway to where they were packed in sawdust and stored year-round.

By 1872, Boca was shipping more ice, wood, and shingles to points east and west than any other point between San Francisco and Omaha. At its peak, the brewery produced 30,000 barrels of beer

each year. The brewery was located across the river from the mill and ice plant where Interstate 80 now crosses over the site. Boca Beer was sold worldwide and gained fame due to brewing with natural spring water and ice. It became a popular drink at the 1883 World's Fair in Paris, France. In January 1893, the Boca Brewery burned to the ground. It was not rebuilt.

The last ice harvest in Boca took place in the mid 1920s when Union Ice Company constructed its refrigeration plant on west 4th Street in Reno, which is now the Crystal Ice Company. In 1904, a fire destroyed the hotel. What was left of the town was demolished when Boca Dam was built in 1939. Part of the dam construction was completed by a CCC camp located at Boca. Several foundations are all that remain, along with the nearby Hirschdale Road Bridge.

TRUCKEE, CALIFORNIA. The CPRR selected the site of Colburn's Station for its new depot in 1867. The town soon became an important stop for trains heading over Donner Pass. During the late 19th century, eighteen or more sawmills were operating in the Truckee area, along with a chair factory, a furniture factory, shingle mills, and charcoal and brick kilns. Mill sites were oriented primarily along main streams, such as Trout and Alder creeks. Elle Ellen established himself in Truckee in 1868 as one of the leading mill operators during this time. Cordwood formed a principal aspect of the 19th century lumber business. After the boards were cut from the logs, the leftover pine and fir scrap was salvaged for cordwood, much of which was used as fuel for steam locomotives. Cordwood cutting was principally done by Chinese workers. Truckee is now a popular all-season tourist town, and is a major gateway to Lake Tahoe and numerous ski areas with more than 200 inches of snow each winter.



Downtown Truckee in winter, circa 1937 (OM)

CHARCOAL PRODUCTION also functioned as an important adjunct to the lumber industry in the Truckee area. The charcoal was primarily used for smelting ores from the mines in Nevada and Utah, where trees were less plentiful. Charcoal production fluctuated widely throughout the 1870s and early 1880s, as it was tied into the ups and downs of the mining industry. Charcoal was largely

the product of Chinese colliers. The most common technology for making charcoal in the Truckee Basin was in rudimentary surface earthen kilns rather than brick kilns. A 100-cord earthen kiln might take from three weeks to a month to burn. Nearly 250 earthen charcoal kilns and three brick charcoal kilns have been inventoried near Truckee, along with a large number of associated Chinese work camps.

DONNER LAKE STATE PARK is located near the outlet of Donner Lake. It contains the Pioneer Monument which commemorates the ill-fated 1846-7 journey of the Donner Party, who were trapped at a nearby campsite by the brutal Sierra winter snows. They were rescued in February 1847, almost four months after they became stranded. Only forty-eight of the original eighty-seven member party survived. The monument was dedicated in 1918. The nearby visitors center, opened in 2015, features artifacts and stories of the Emigrant Experience, the Land of the Washoe, Chinese construction of the railroad, and early motoring adventures over Donner Pass.

DONNER SUMMIT BRIDGE. Established in 1913, the Lincoln Highway was strung together from many sections of road across the country from New York to San Francisco. The section through Donner Pass was unpaved and steep, with grades up to eighteen percent. In 1923, the state of California began construction of a new and improved highway. Harlan D. Miller of Oakland designed a unique sloped, curved, open-spandrel concrete arch spanning across a rocky chasm just below the summit. It was completed in 1926. The graceful arch spans 117 feet and the overall length is 241 feet. The Lincoln Highway route was converted to U.S. Highway 40 in 1928.



Donner Summit Bridge, built 1926 (MN)

Much of the original Lincoln Highway was taken by the new highway, but in a few places there were changes as improvements were made. The paved U.S. Highway 40 served as the major east-west

route across the Sierra Nevada until Interstate 80 was built in 1960. After years of constant use, the bridge was in a state of disrepair. It was set for demolition until community members rallied and saved the bridge with a grant from the state. Restoration was completed in 1996.



Chinese tunnel worker, circa 1867 (AAH)

DONNER PASS RAILROAD TUNNELS. The first transcontinental railroad, completed in 1869, went through Donner Pass. It required fifteen tunnels cut through solid granite to get across the Sierra Nevada. The longest and most difficult to build was Tunnel 6, which crosses through the crest. The 1,659-ft long tunnel is 16-feet wide and 19-feet high. Nothing like it had ever been attempted anywhere. It took two years to build. Chinese workers used black powder and later nitroglycerine to blast the rock from four directions utilizing a central shaft cut from the summit.

Meanwhile, forty miles of track, engines and train cars were hauled over the pass on wagons to continue the building into Nevada. Time and the race with the Union Pacific could not be lost. Chinese workers battled extremes in temperature, blizzards, avalanches, accidents, and disease to build the railroad. Remains of Chinese camps survive in many places. Another notable feature is the nearby China Wall, located just east of the summit. Rock excavated from Tunnel 6 filled in the ravine and was faced with perfectly fitted granite, laid without mortar.

The Southern Pacific Railroad (SPRR) assumed control of the CPRR in 1885. With increased traffic, the SPRR added a second track to many parts of the line from 1909 and 1915, including the section between Truckee and Reno. In 1925, the SPRR built a new, two-mile long tunnel ½-mile south of the original summit tunnel, at a much lower elevation. Known as Tunnel 41, it eliminated a number of curves and provided a second track through the pass. The SPRR also introduced cab-forward locomotives so that crews could better cope with the smoke and fumes through the longer tunnels. In 1940, Mt. Judah, a 8,245-ft peak directly south of Donner Pass was named for Theodore Judah, who had surveyed the original route of the CPRR. Judah died in 1863, several years before its completion. The original Tunnel 6 remained in use until 1994.



East portal and snowshed of Tunnel 41 through Mt. Judah (HAER)



SPRR #4157 Cab-forward locomotive at Truckee, 1937 (FCS)

SNOWSHEDS. Snowstorms in the Sierra are typically measured in feet, not inches. In January 1870, just a few months after the Golden Spike ceremony, an avalanche covered and tore away a large section of track near Donner Pass. After that winter, the CPRR constructed forty miles of snowsheds through the mountains. They used 65-million board feet of lumber and 900 tons of bolts and spikes.

However, the wooden structures were terrible fire hazards. The railroad soon employed fire train crews, track walkers, fire lookouts, carpenters and snow shovelers to protect and maintain the snowsheds and to keep the trains moving. To prevent fires from spreading, spaces were needed in the long line of snowsheds and so telescoping sheds were built. In summer, one section of shed was rolled into another, leaving a firebreak.

Railroad shops, buildings, turntables, local businesses, worker houses, and even the school and hotel on Donner Summit were connected by snowsheds. During the winter some people would never see the light of day. In the 20th century, the wooden snowsheds were replaced with concrete structures, which still remain.



Snowshed reconstruction, 1920s (NS)

FRIDAY TOUR A

ORMAT STEAMBOAT GEOTHERMAL PLANT is located in the Steamboat Hills just south of Reno in Washoe County, Nevada. It consists of the six geothermal power plants with a combined generating capacity of 73 MW. The electricity generated by the complex is sold to NV Energy under separate long-term power purchase agreements. Nevada is currently the second-leading state in total installed geothermal capacity, after California.

GALENA CREEK BRIDGE was completed in August 2012, as part of a \$450 million, 8.5-mile I-580 freeway extension between Reno and Carson City. It is the longest cathedral arch bridge in the world, according to NDOT. Unlike a typical concrete arch bridge, the deck of a cathedral arch is supported only at the crown, with no intermediate spandrel columns. During construction, a temporary 400-ft long tunnel was built over the creek bed and a temporary 523,000 cubic-yard embankment was built to minimize the amount of falsework required. The twin span Galena Creek Bridge has a total length of 1,725 feet, a main span of 689 feet, and is 295 feet high.



Galena Creek Bridge under construction (ADKO)

WASHOE VALLEY is located between Reno and Carson City. In 1861, the Ophir Mining Company erected a 72-stamp mill for the reduction of ore from the Ophir Mine in Virginia City. The Ophir Mill was built on Washoe Lake's west shore and was reached by an elevated causeway built across what was then Washoe Marsh. The Ophir Mill ceased to operate in 1866. Its stone ruins are visible from I-580 northbound. Nearby in 1863, the Washoe Reduction Works were erected at Franktown Creek by Captain J.H. Dall. It burned in 1866 and was rebuilt, only to burn again in 1871.

Lumber from the mountains around Lake Tahoe was shipped across Washoe Valley and up to Virginia City. Washoe Valley supply towns such as Washoe City, Ophir and Lakeview grew in response to the nearby mining activity.

MARLETTE WATER SYSTEM was built in 1873 by the Virginia City and Gold Hill Water Company to provide a dependable water source for the Comstock area. It was designed by German-born engineer Hermann Schussler, who had previously surveyed the alignment of the Sutro Tunnel between Virginia City and Dayton. Schussler's design overcame challenging topography to convey water without pumping from the snowy Carson Range east of Lake Tahoe down through Washoe Valley and up to Virginia City. Water was initially supplied from Hobart Creek Reservoir and conveyed to the Lakeview tanks by a covered wooden box flume. In 1877, storage capacity was greatly increased with the completion of the 4,000-ft long Incline Tunnel, through which water from Marlette Lake, on the west side of the divide was conveyed to the Lakeview tanks by the Marlette and East Slope wooden box flumes.



A portion of the Marlette Water Siphon above Washoe Lake (WC)

The system's most unique feature is a seven-mile long inverted siphon, located between the Lakeview tanks and the Five Mile Reservoir, west of Virginia City. The siphon drops more than 1,900 feet in elevation from the tanks to Lakeview Saddle, where water pressures exceed 700 psi (typical water systems operate at less than 100 psi). The discharge of the siphon is located 1,600 feet above the saddle, east of Duck Hills. From there, an aqueduct flows by gravity to Five Mile Reservoir and eventually to Virginia City. The Marlette siphon had the largest drop of in the world at the time of its completion, more than double the previous record.

Completed in 1873, the first pipeline consisted of 11-inch riveted steel pipe fabricated at the Risdon Iron and Locomotive Works in San Francisco. The first water arrived in Virginia City on August 1, 1873. The project also included the construction of a residence for watermaster John B. Overton, known as Lakeview House. A second pipeline was added in 1875, and a third built in 1887. Water

was also diverted to Carson City at the Lakeview tanks. A pump station was added to convey water from Marlette Lake over the eastern ridge to Hobart Reservoir after the Incline Tunnel collapsed in 1957. The system is currently owned and operated by the State of Nevada to provide raw water to Virginia City, Gold Hill, Silver City and Carson City. The system was designated a Civil Engineering Landmark by the American Society of Civil Engineers in 1975, and listed on the National Register of Historic Places in 1992. While various improvements have been made over the years, the system continues to function much as it has for well over a century.

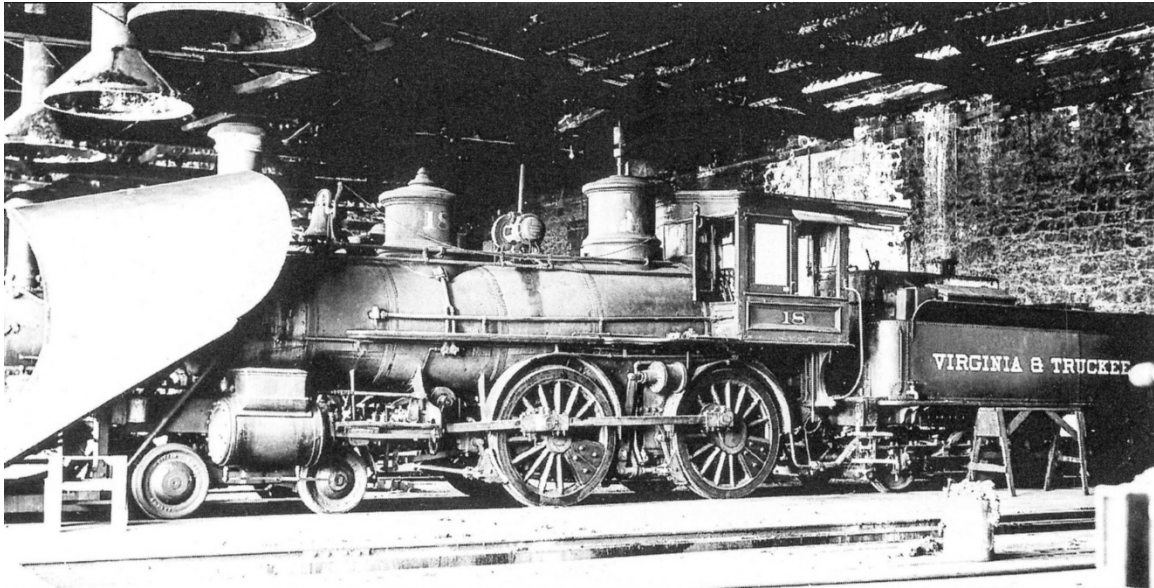
CARSON CITY is located about thirty miles south of Reno in Eagle Valley. It began in 1851 as a trading post. In 1858, Abraham Curry arrived and surveyed a townsite. Carson City became the capital of the newly-formed Nevada Territory in 1861, as well as the seat of Ormsby County. Just three years later on October 31, 1864, Nevada became the 36th state. Carson City soon became an important staging center for goods going to-and-from the Comstock, as well as timber from the Lake Tahoe basin. The state capitol building, designed by Joseph Gosling was completed in 1871. A Federal Building was completed in 1890. However, by 1930, with the decline in mining and railroad activity, the city's population declined to just 1,800, making it one of the smallest state capital cities in the nation at the time. Ormsby County was consolidated into Carson City in 1969. Today, an active industrial area is located in the northeast part of the city, near the airport.



Virginia & Truckee Railroad Shops, Carson City, 1972 (HABS)

VIRGINIA & TRUCKEE RAILROAD SHOPS, CARSON CITY. In 1872, the V&T began construction of a large maintenance shop in Carson City. The site was in full operation by early 1874. The U-shaped building measured 322 feet by 180 feet, and included an eleven-bay engine house, a carpentry shop, foundry, machine shop, blacksmith shop and pattern shop. The front façade of the shops featured eleven double wooden arch doors which opened to an array of tracks leading to a 54-ft turntable. Stone for the building was brought from the nearby state prison quarry. In addition to fabricating and maintaining railroad equipment, the V&T Shops produced a variety of items such as ore carts, mining equipment and flag poles.

With the decline of the V&T, the shops fell into disrepair even before the trains stopped running in 1950. The building was documented in 1972-73 by the Historic American Buildings Survey, and was demolished in 1991. The stone blocks were purchased and reused by a winery in California. A few pieces of the building are now at the Nevada State Railroad Museum. The distinctive wooden arch doors of the shops have been recreated in steel as a public art sculpture installation under the I-580 overpass of U.S. Highway 50 in Carson City, commemorating the V&T Railroad.



V&T #18 "Dayton" with snow plow inside the Carson City shops, unknown date (WNHPC)

UNITED STATES MINT. The Carson City Mint was established by Congress on March 3, 1863, to serve the coinage needs brought about by the Comstock Lode. Prior to the development of this facility, silver and gold ore mined in the Nevada territory was shipped to San Francisco for processing. However, the costs of shipping and the risk of theft necessitated a branch in the new territory.

The cornerstone for the new mint was laid on September 18, 1866, and the building was completed on December 13, 1869. Abraham Curry, known as "The Father of Carson City", was appointed by President Grant as its first superintendent. Curry also supervised the construction of the mint. The impressive sandstone structure of the Renaissance Revival style was designed by architect Alfred B. Mullett, the newly-appointed supervising architect for the United States Treasury Department. On February 11, 1870, Seated Liberty dollars with the "CC" mintmark rolled off the solitary coin press known as Press No. 1. During its operation, the Carson City Branch issued fifty-seven different types of gold coins and produced eight coin denominations, including dimes, twenty cent pieces, quarters, halves, trade dollars, Morgan dollars, five dollar gold pieces, ten dollar gold pieces, and twenty dollar gold pieces.

In 1873, the Carson City Mint experienced its most eventful year when changes were made to the nation's monetary system, resulting in different varieties of coins being produced. In 1876, more coins were struck than in any other year in the history of the mint, as a result of peak production on the Comstock. James Crawford served as superintendent of the Carson City Mint for ten years starting in 1874 until his death in 1885. The mint was shut down in 1885 for political reasons and

remained closed under a Democratic administration led by President Grover Cleveland from the middle of 1885 until the fall of 1889. In October 1889, coins once again began rolling off the mint's presses and continued to do so until the spring of 1893, at which time coinage operations ceased for good. The Carson City Mint's formal mint status was withdrawn in 1899 due to the drastic decline in mining on the Comstock. The facility continued to function as an assay office until it closed in 1933. It was sold to the State of Nevada in 1939 for \$10,000. Today, it functions as the Nevada State Museum, with a glass-enclosed elevator addition designed to resemble a headframe.



United States Mint, Carson City, circa 1879 (HABS)

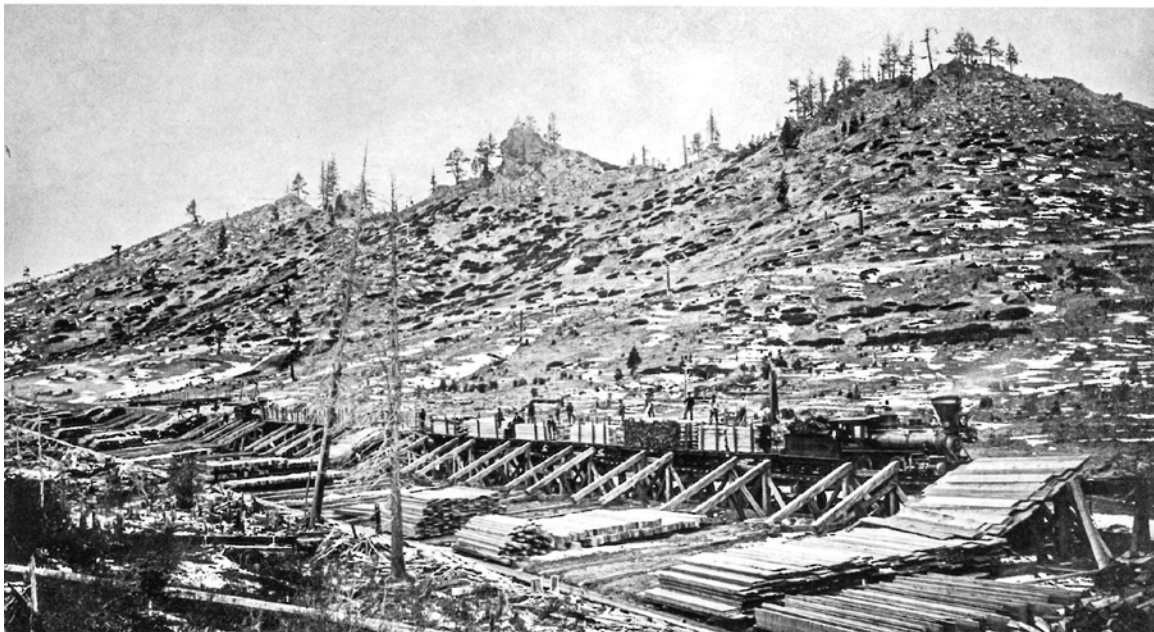
The **NEVADA STATE RAILROAD MUSEUM** was established in 1981 in Carson City, and is devoted to the history of Nevada's railroads. The bulk of the museum's collection of more than sixty locomotives and cars were once part of the V&T Railroad. In the 1970s, the State of Nevada purchased the pieces from Paramount Studios, which had acquired the rolling stock in 1937, when the V&T was experiencing financial difficulties. Paramount used them in numerous motion pictures and television programs. Inside the main museum building is the Inyo, an 1875 wood-burning Baldwin locomotive, as well as V&T Caboose No. 9, built in 1873, and the Dayton, built in 1873 at the Central Pacific Railroad yards in Sacramento.

The museum collection also includes V&T Coach No. 17, built by the Central Pacific in 1868, as well as the beautifully restored Virginia and Truckee Railway Motor Car 22, built in 1910 by the McKeen Motor Car Company of Omaha, Nebraska. The motorized rail car was used to save the cost of running a full steam train. It ran regular passenger service between Reno and Carson City until

1945 when it was sold and converted into a diner. It later served as an office for a plumbing company. It was donated to the museum in 1995 where it underwent an extensive restoration that was completed in 2010. It is one of only a few railroad vehicles that have been designated a National Historic Landmark.



Inside the McKeen Motor Car, Nevada State Railroad Museum, Carson City (MB)



Lumber train at Spooner Summit, 1877 (WNHPC)

CARSON & TAHOE LUMBER & FLUMING CO. Located between Carson City and Lake Tahoe, Spooner Summit was the point where lumber from the mills at Glenbrook were unloaded from rail

cars and loaded into a flume to be sent down to Carson City. This operation was owned by the Carson & Tahoe Lumber & Fluming Company, built by Duane L. Bliss in 1875.

CARSON VALLEY. Genoa, the oldest town in Nevada, was founded in 1861 by Mormon settlers. It is located at the western edge of the broad, flat Carson Valley at the foot of the mighty Carson Range. Gardnerville got its start in 1879, when Lawrence Gilman moved from Genoa and named the place for his friend, John Gardner. H.F. Dangberg, Jr. established Minden in 1905, named after his father's birthplace in Germany. The 1906 V&T extension of a rail line from Carson City was key to Dangberg's plans for the town's future. The railroad spurred the growth of Carson Valley into a hub of agriculture. Located in the heart of Douglas County, the Carson Valley has changed from a small farming community to one of the fastest-growing areas in the state. Bently Nevada, now owned by Baker Hughes, a General Electric company, employs 600 people at its plant in Minden. The company was established in 1961 by engineer Donald Bently to produce monitoring equipment for rotating industrial machinery. It is the largest employer in Douglas County. Since 2003, Starbucks Coffee has operated a huge roasting plant and distribution center that serves much of the west coast. Minden is also home to North Sails, manufacturing high-tech sails for racing yachts.

AMERICAN AVK is a leading U.S. manufacturer of gate valves, fire hydrants, and accessories for the water, wastewater, fire protection, and irrigation industries. AVK was one of the first valve manufacturers in the world to develop and design the Resilient Seated Gate Valve. American AVK was incorporated in 1985 to introduce AVK gate valves to North America. Since then, American AVK has continued to expand its production facilities, marketing activities and product range. AVK is now located in a state-of-the-art 180,000 square foot manufacturing facility in Minden, Nevada. The AVK Group today consists of over 70 companies worldwide.

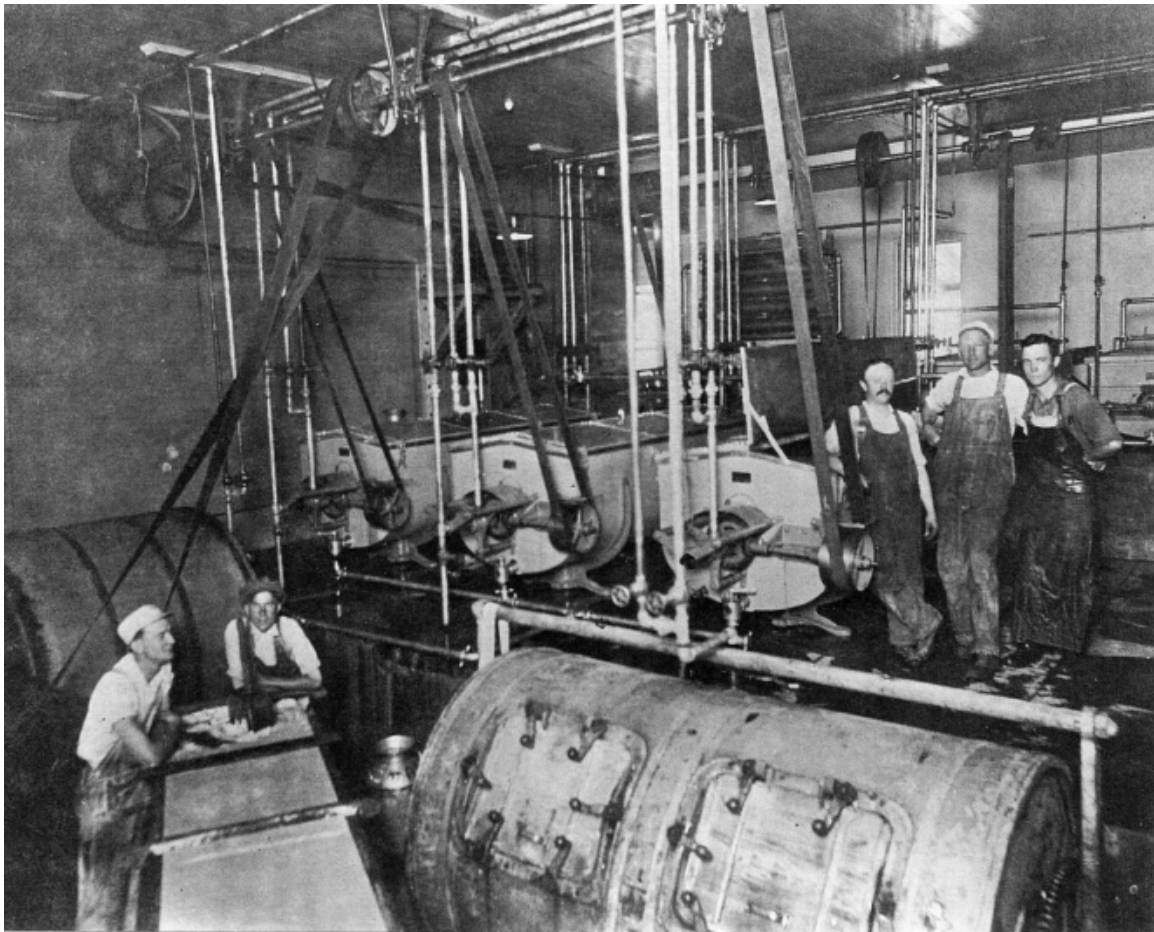


Bently Heritage Distillery, Minden (MB)

BENTLY HERITAGE DISTILLERY is a recently opened estate distillery, located in a restored complex of historic industrial buildings in Minden, in the heart of the Carson Valley. The main building, a 1906 flour mill, contains a tasting room and single-malt distillery, including two large copper pot-stills custom built in Scotland. The Minden Flour Milling Company was instrumental bringing the V&T Railroad to Minden, and helped spur the growth of electric power to the area. By the 1920s, the mill had become one of the largest in the state, processing 100 barrels of flour a day as well as chicken and cattle feed.

Next door, a second distillery has been constructed behind the 1916 brick façade of the Minden Butter Manufacturing Company, to produce the company's other spirits (vodka, gin and eventually bourbon). This building also contains a bottling facility. The creamery was once the largest in Nevada, shipping on an international scale. It was organized to market Carson Valley produce, particularly butter, under the Windmill brand.

Across the street is the historic Minden Wool Warehouse building, owned by the Bently family, but not part of the distillery. As an "estate distillery", the company grows almost every ingredient at the nearby Bently Ranch, where the malthouse and climate-controlled barrel storage warehouses are located.



Minden Butter Company, 1920s (WNHPC)

FRIDAY TOUR B

LAHONTAN DAM & POWERHOUSE is located west of Fallon in Churchill County. The dam was constructed in 1915 as part of the Newlands Project, begun in 1903 as the first large-scale project of the Bureau of Reclamation. Water from the Truckee River is diverted at Derby Dam, west of Fernley and conveyed by a ditch about 32 miles to the Carson River at Lahontan Dam. The project included an extensive network of irrigation ditches and drains, and led to the transformation of thousands of acres of barren desert to productive agricultural land in the broad, flat Lahontan Valley. The Lahontan Dam was the largest earth-fill dam in the United States when it was completed. It features two curved, stepped concrete spillways that converge on a circular pool 220-feet in diameter. The 4.0 MW powerhouse, completed in 1911 is still in operation.



Derby Dam dedication ceremony, 1905 (UNR)

TESLA GIGAFACTORY is a joint venture between Tesla Motors and Panasonic to manufacture lithium-ion batteries for Tesla vehicles, home, and business applications. Since initial production began in early 2016, the massive facility has become the centerpiece of the Tahoe-Reno Industrial Center (TRIC), located in Storey County. As of mid-2018 the plant employed about 3,000 people. With easy highway and rail access, and a development-friendly zoning process, TRIC has become home to an ever-growing list of companies such as Walmart, PetSmart, James Hardie, Apple, Switch, Tire Rack and others. In 2017, a new 18-mile extension of USA Parkway was completed to provide direct access to the center from Highway 50.

WADSWORTH SPRR BRIDGE was built in 1907 by the American Bridge Company for the Westwood Branch of the Southern Pacific Railroad. The 212-ft span across the Truckee River was later used by the Fernley and Lassen Railroad until 1955. The line was officially abandoned in 1978. The bridge is still open to pedestrians. This camelback Parker truss bridge is similar to several other truss bridges over the Truckee River still in use by Union Pacific and Amtrak trains in the Reno area, many of which are visible from I-80. Wadsworth is located on the Pyramid Lake Piute Tribe Reservation.

KIMMIE CANDY was established in 2000 by Joe Dutra in Sacramento. In 2003, the company won the prestigious “Product of the Year” award for its “ChocoRocks” at the annual Candy Grammys held in Long Beach, California. With the goal of creating more American jobs, in 2005 Dutra relocated the previously-offshore Korean manufacturing operation to a state-of-the art facility in Reno. Since then, the company has experienced international expansion with not only coast-to-coast sales in the United States but also in Canada, Mexico, the Philippines, South America, and the Middle East. Today, Kimmie Candy proudly states, “Made in America” on every package. Since opening the Reno factory in 2007, the company has grown from 7 to over 30 employees. The company currently makes about 4.2 million pounds of candy per year.

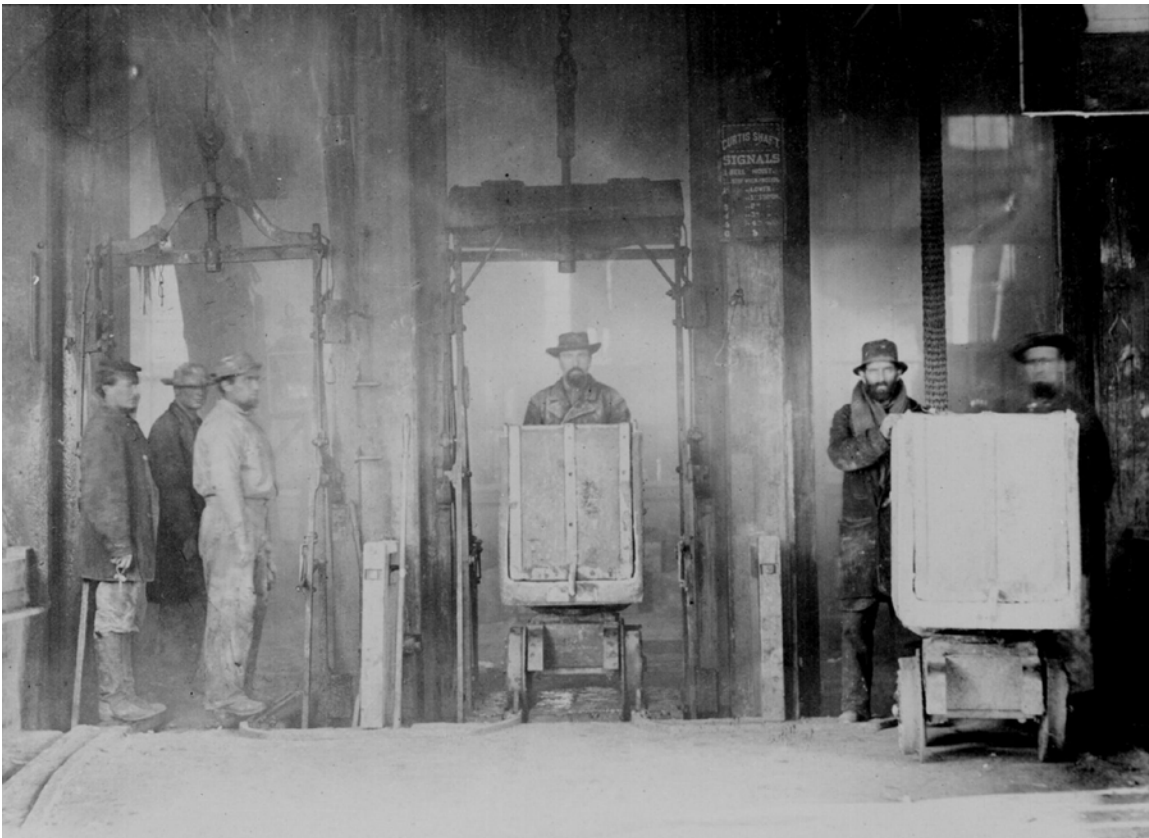


Kimmie Candy (KC)

HAVELOCK WOOL manufactures high-performance loose-fill and batt insulation at their Reno facility using natural New Zealand wool as a non-toxic alternative to traditional building materials. Unlike other types of insulation, no dust is created with wool insulation, it's allergen-free and no protective gear is required when installing it. Havelock's process utilizes an array of repurposed vintage wool-processing machinery.

SATURDAY TOUR – THE COMSTOCK

VIRGINIA CITY is located on the eastern slope of Mount Davidson, high above the surrounding desert. It is a most improbable location for a townsite, had it not been for the discovery of a rich vein of silver ore in June 1859. Soon after, word spread in California and elsewhere, and the “Rush to Washoe” was on. By the end of 1860, the population of the Comstock had swelled from a small mining camp to a bustling community of more than 3,000. Over the next two decades, wealth attracted people from around the world. Miners came from Cornwall, Ireland, Germany and other places. Perhaps the most successful of this group was Irish immigrant John W. Mackay, who arrived in late 1859 via the California goldfields and worked his way up from humble miner to the one of the richest men in the country, earning the moniker “the Bonanza King.” George Hearst, father of William Randolph Hearst, also arrived in 1859 and purchased an interest in the Ophir Mine, establishing the basis for the family’s fortunes. In late 1862, Samuel L. Clemens arrived in Virginia City. After a brief stint in the mines, he became a reporter for the *Territorial Enterprise*, where he established the pen name Mark Twain.

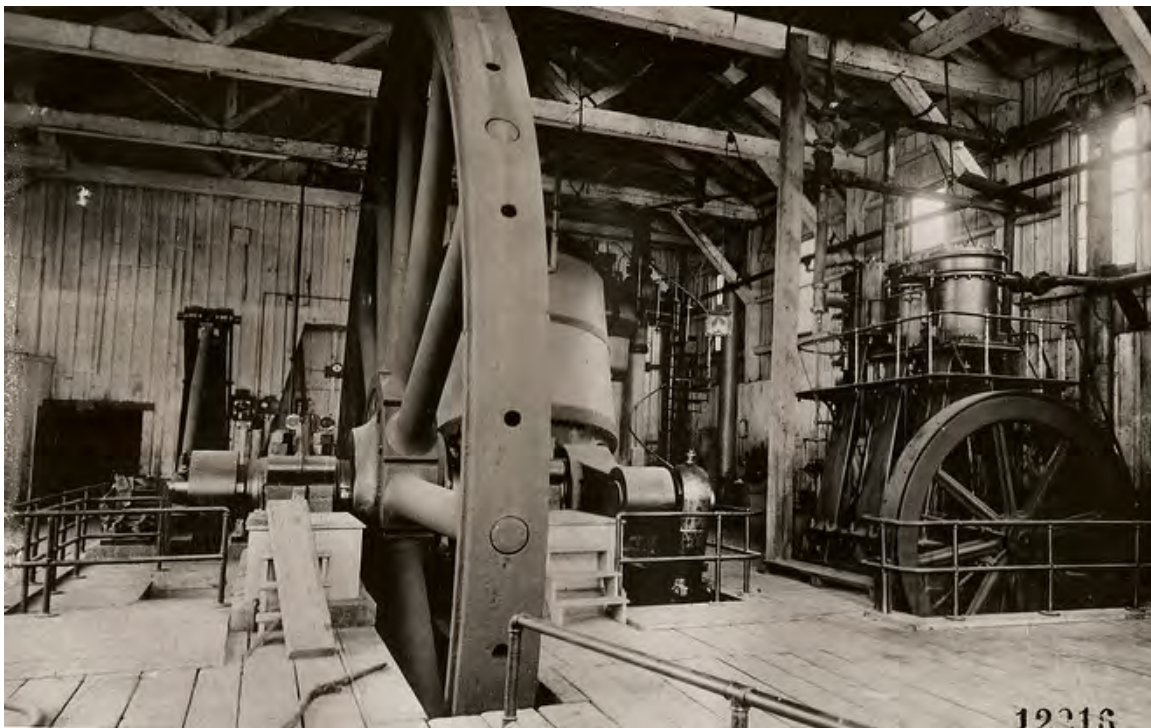


Cars coming out of the shaft, Virginia City, circa 1867 (TOS)

The development of the Comstock mines led to a variety of technological improvements. At first, the ore was extracted through surface diggings, but these were quickly exhausted, forcing the miners to tunnel underground. The rock, however, was so fractured, that the tunnels were often subject to deadly cave-ins. A solution to this problem was developed in 1860 by Philip Deidesheimer, who developed a system of square set timber frames that enabled underground mining to safely expand

throughout the Comstock. As the mines got deeper, the inflow of water also became a major issue. Plunger pumps run by small steam engines were used between 1861 and 1874. In the early 1870s, steam-powered Cornish beam engines were introduced. The last of these was installed at the Union Mine in 1879. It had a 40-ft diameter, 110-ton flywheel which operated a 48-ft pumping beam connected to a 16-inch square pumping rod, 2500-ft long constructed from sections of Oregon pine connected with iron plates. The pump featured a 64-inch initial cylinder and a 100-inch expansion cylinder powered by a direct-action type compound condensing engine.

In 1864, Andrew S. Hallidie of San Francisco devised a high-strength flat woven-wire rope that quickly replaced hemp rope. Root blowers were introduced in 1865 to improve ventilation within the mines. The use of dynamite replaced black powder after 1868. Large quantities of ice were also required to keep miners cool as temperatures got hotter the deeper the mines were dug.



Cornish pump room at Union Mine, Virginia City (NHS)

In 1864, the Bank of California was established in San Francisco by a group led by William C. Ralston and Darius Ogden Mills. They sent William Sharon to manage the Virginia City Branch. Over the next several years, the bank acquired more than a dozen mines through foreclosure, and established the Union Mill and Mining Company. They also built the V&T Railroad, the Carson & Tahoe Lumber & Fluming Company, and the Virginia & Gold Hill Water Company, creating a virtual monopoly in the area. The Bank Crowd, and particularly Sharon, were despised for their ruthless tactics. The Belcher Mine was the group's most profitable mine, earning more than \$15 million over its lifetime. However, the overextended Bank of California closed on August 26, 1875. The next day Ralston was found floating in San Francisco Bay, of an apparent suicide (or a stroke, according to some sources). Sharon and Mills reopened the bank just two months later, which is now the Union Bank of California.

The Bank Crowd, however, was unable to buy out Mackay, who formed a partnership with fellow Irishmen James G. Fair, James C. Flood, and William S. O'Brien. In 1873, they discovered the richest ore body in the Comstock Lode, known as the "Big Bonanza" of the Consolidated Virginia and California Mine. Between 1873 and 1882, the Comstock Lode and its "Big Bonanza" yielded more than \$105,000,000.

In 1887, an interesting waterpower system was introduced by John B. Overton at the C&C Shaft. Water from the expanded Virginia & Gold Hill Water Company system was directed from an 80,000-gallon tank through an iron pipe to an 11-ft Pelton Wheel located at the Consolidated Virginia Shaft. The same water was then directed to the C&C Shaft, where it passed vertically down through three other Pelton Wheels at 500-ft vertical intervals, after which it was discharged through the Sutro tunnel. The wheels were connected to a complex system of wire ropes and pulleys strung between poles, over a 1,000-ft distance, providing mechanical power to run 80 stamps and 12 grinding pans.

Also in 1887, the first use of electric power on the Comstock was introduced at the Nevada Mill, using a similar Pelton Wheel system consisting of an 11-ft wheel at the surface and six 40-inch wheels located in the Chollar shaft, 1,630-ft below the surface. Each wheel was connected to a dynamo that powered 60 stamps, 30 amalgamating pans, 15 settling pans and 10 agitators. This system also provided a limited amount of electricity for lighting throughout the city.

With the completion of the Farad hydro plant in 1899, Reidler electric pumps were introduced on the Comstock as the mines got deeper and the flow of hot water became extreme.



Sierra Nevada Hoisting Works, 1878. Note the huge piles of lumber and people for scale. (CW)

Bullion production rose from less than \$8 million in 1869 to over \$36 million in 1877 when the Big Bonanza was at its peak. It then fell rapidly to about \$1 million in 1881, when it had become exhausted. By 1899, production from low-grade ores declined to less than \$200,000. Additionally, in 1882, an immense flow of hot water was encountered below Gold Hill, flooding the mines to the level of the Sutro Tunnel. However, the Comstock continued to produce ore until the 1940s.

Virginia City suffered five widespread fires, the worst of which was the “Great Fire of 1875,” which burned nearly 75 percent of the town, and caused about \$12 million in damages. The town was rebuilt in about eighteen months. The later “third line” mines, such as the Combination, Ward and East Yellow Jacket, were excavated to as much as 3,200 feet with almost nothing in return. By 1920, there were just a few small operations in business and by 1930, less than 600 people lived in the community. Since the mid-20th century, a thriving tourism industry has existed. In 1961, the Virginia City National Historic Landmark District was established. Covering more than 14,000 acres, it is one of the largest in the nation.

MINERAL PROCESSING. The *Patio Process* was the earliest method of ore extraction used on the Comstock. This process was developed at Pachuca, Mexico in 1557. It was introduced at the Mexican Mine in 1859. The ore was ground in 12-ft diameter circular “patios” or arrastras. Water, mercury, salt, roasted copper and iron sulfides were added. This method to extract the silver was slow and inefficient. In addition, the climate of Virginia City caused problems with freezing.



Interior of the Brunswick Mill, Carson River, 1872 (CW)

In 1860, Almarin B. Paul built the 24-stamp Pioneer Mill near Devils' Gate, which incorporated an early version of the Washoe Pan Process, which was improved upon by others in the years that followed. The process utilized shallow circular iron tanks or "pans" with mechanical agitators. Each pan typically held 1,200 to 1,500 pounds of ore that had been crushed in a stamp mill. Water was added to make a pulp, along with a mixture of mercury, salt and copper sulfate. A circular iron plate called a muller was mounted on a vertical shaft and lowered into the pan, and was rotated to provide both agitation and additional grinding. Heat was delivered to the pans by steam pipes. The ore would then dissolve in the mercury, which would be evaporated and recondensed in a retort for reuse, leaving the valuable metals. The use of mercury was hazardous to workers and the environment, particularly along Gold Canyon, Six Mile Canyon, and the Carson River (now a Superfund site), where most of the pan mills were located. The inefficient pan process also allowed some of the gold and silver to escape. In the 1890s, the cyanide process was developed and proved to be more efficient, particularly with low-grade ores. It is still the most common method used for recovering gold and silver throughout the world.



Freight wagons climbing the Old Geiger Grade Road (MHF)

GEIGER GRADE ROAD. Access to the Comstock was initially over an early wagon road from Dayton through Gold Canyon. After 1859, another road descended east from Virginia City along Six Mile Canyon to the Carson Valley. Because teamsters used it to haul ore to the Carson River for processing, the road was named Mill Street. To the west, Jumbo Grade and Ophir Grade gave access to mills along the shore of Washoe Lake. In November 1861, the territorial legislature granted a franchise to D. M. Geiger and J. H. Tilton to develop a northern route from Virginia City to the Truckee Meadows. The road opened in 1863 with several toll stations. Its sharp descent, including hairpin turns and steep slopes, made it impractical for heavy loads, but it was a popular route for stagecoaches. In 1936, the New Deal Works Progress Administration improved Geiger Grade. The project bypassed the steepest grades, widened the road, and made it more functional for automobiles. This road remains in service today and is the most direct route between Reno and Virginia City.

The **CHOLLAR MINE** was established in 1859 by a group of prospectors headed up by Billy Chollar. Within a few years the claim was sold to the Bank of California who had the wherewithal to launch a large underground operation. The Chollar Mine eventually produced \$17,000,000 in both silver and gold. The mine is now open for tours, featuring a 400-ft level walk through an old mine tunnel. The tunnel gets a bit tight in places before entering an underground room called a stope. The famous sticky, blue-gray mud that clung to miners' picks and shovels is still around. The Chollar Mine tour also features a small museum with various mining artifacts that include large format maps of the various mining claims and shafts that existed on the Comstock.



1877 view of the Chollar Mine ore-loading facility and the newly-completed Fourth Ward School on the hill above (CW)

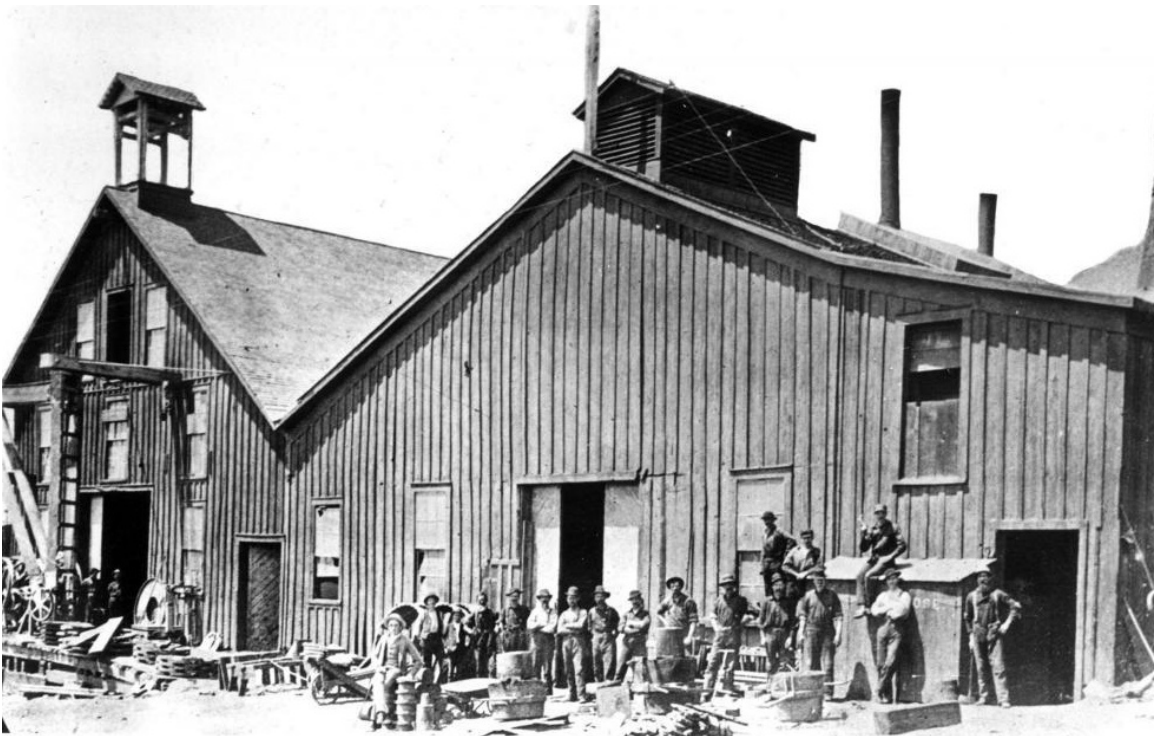
The **COMSTOCK HISTORY CENTER** was constructed in 2005, on the site of the V&T Northern Passenger Depot. The building houses a small museum space for rotating exhibits, V&T Engine 27, the Comstock Historic District Commission, the Comstock Cemetery Foundation, and has storage space for historic artifact collections. The building was designed by John Copoulo to emulate details from both the Passenger Depot that occupied this lot and the car shed that once stood between here and the Freight Depot to the north. Engine 27 hauled the final run of the V&T in 1938. It replaced the Dayton (Engine 18), which was on display here for many years and now resides at the Nevada State Railroad Museum in Carson City.

V&T FREIGHT DEPOT. After many years of negotiation, Storey County has finalized plans to purchase the depot from its private owners. It is hoped that the track can be extended to this building. There were several sidings in this area and additional spurs extended to mines throughout Virginia City.



Former V&T Passenger Depot & Car Shed (MHF)

FULTON FOUNDRY was located on the divide between Virginia City and Gold Hill. It was established in 1863 by Thomas R. Jones. The first pumping engine made in Nevada was constructed by the Fulton Foundry in 1864 for the Bullion Mine. It cast a 22-ton flywheel for the Yellow Jacket Mine in 1880, said to be the largest casting ever made in the west at that time. Some of the cast iron storefronts in Virginia City were also made by the Fulton Foundry.



Fulton Foundry, Virginia City (WNHPC)

GOLD HILL is located just one mile south of Virginia City at the south end of the Comstock Lode, below a steep switchback known as Greiner's Bend. Gold Hill gained the nickname "Slippery Gulch" for its often muddy, precipitous main street. At its peak, Gold Hill was home to more than 8,000 residents. An important stop on the V&T Railroad, the town boasted numerous businesses, churches, schools, foundries and firefighting companies. Mines included the Gold Hill, Yellow Jacket, Kentuck, Crown Point, and Belcher.

The 85-ft high, 500-ft long Crown Point Trestle was built in 1869 by the V&T across the Crown Point Ravine. It was rebuilt in 1875 and loomed above Gold Hill until 1936, when it was removed after the last trains ran between Virginia City and Carson City. The ravine was later filled in as part of an unsuccessful open-pit mining effort by the Sutro Tunnel Coalition.



View of Gold Hill and the Crown Point Trestle (WNHPC)

YELLOW JACKET MINE was one of the more successful mines on the Lode. The claim was located on May 1, 1859, shortly after the discovery was made at Gold Hill. Construction of the shaft began in 1864. The Yellow Jacket recovered about \$13 million in ore by 1876. The shaft went down 1,100 feet vertical, then another 1,840 feet on a 45-degree angle. The "New" East Yellow Jacket shaft was added in an attempt to chase the sloping ore body. However, millions of dollars were spent with little return until it shut down in March 1882 at the 3,000-ft level.

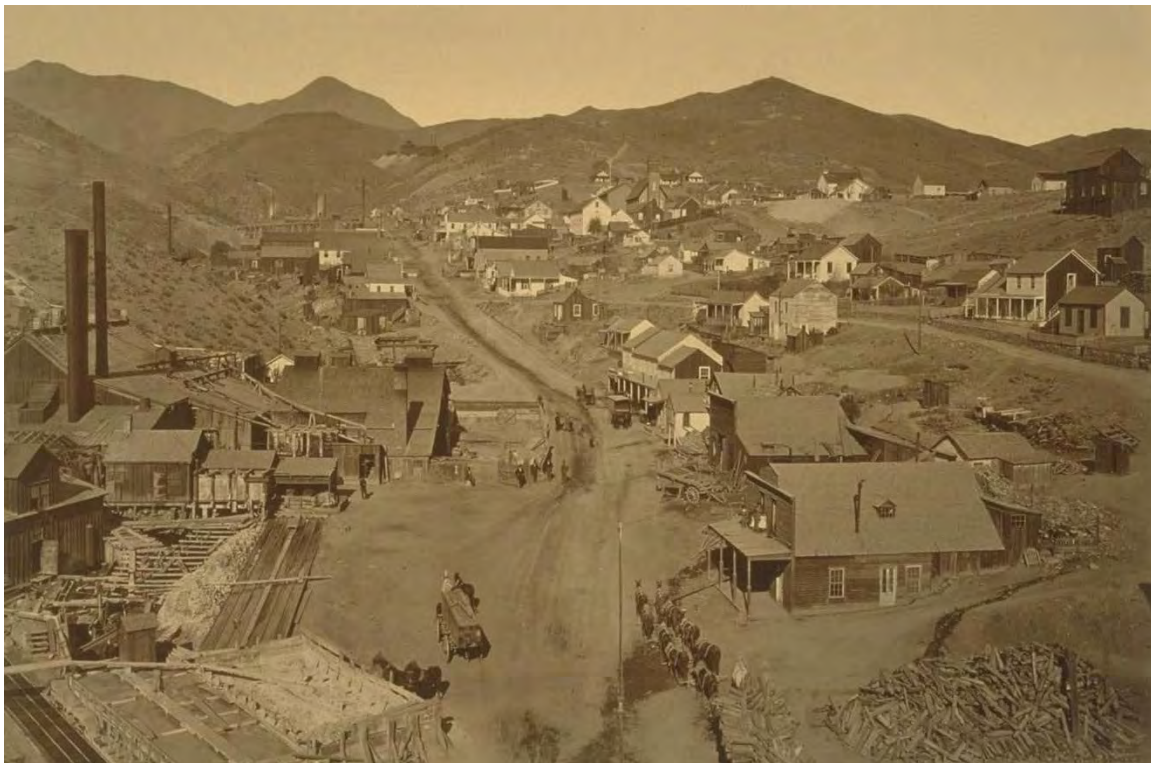
On the morning of April 7, 1869, a methane fire broke out in the Yellow Jacket Mine at the 800-foot level. It is the worst mining disaster in Nevada history. Friends and families of miners stood and

watched as the mine burned knowing they couldn't do anything about it and they were never going to see anyone come out of the mine shaft alive. Suddenly, smoldering timbers collapsed and the fire spread to the neighboring Kentuck and Crown Point Mines. The fire was so intense that it burned for several days, hindering rescue attempts. More than 35 miners lost their lives that day. Fortunately, shifts were changing at the time of the fire, likely reducing the number of deaths.

Today, all that's left of the Yellow Jacket Mine is the incline chute and head frame. The Upper Yellow Jacket mineshaft dates from the late 1930s. It was restored in 2013-14 by the Comstock Foundation. The Miner's Cabin is located at the bottom of the hill. This cabin once served as a break shack for miners between shifts. It is now part of the Gold Hill Hotel and is rented out to guests. The massive foundation remains of the East Yellow Jacket shaft can be seen from the V&T tracks between Gold Hill and Virginia City.

By 1861, **SILVER CITY**, located in Lyon County, boasted several boarding houses, a number of saloons, four hotels and a population of about 1,200 people. As Virginia City boomed, Silver City became an important freighting center with extensive stables and corrals to serve the many people traveling between the Comstock Lode mines of Virginia City and the processing mills located near Dayton and along the Carson River.

Despite its name, the mines along the Silver City fault tended to be more gold-rich, compared to the main lode in Virginia City and Gold Hill. Devil's Gate, just north of Silver City, consists of two large natural rock walls on either side of the road to Virginia City. Formed from lava rock, the rock was blasted and widened for a toll road.



Silver City, circa 1876. The Trench Mill is on the left. (CW)

EARLY 20TH CENTURY COMSTOCK MILLS. By 1900, the bonanza years of the 1860s and 1870s on the Comstock were long gone. The population of Virginia City had shrunk to less than 3,000. However, during the period from 1900 to 1920, several small mines and mills in the area steadily produced on a reduced scale. Using updated technologies, many of these mills were able to extract gold and silver from the piles of low-grade tailings that had been discarded during the boom years.

About a dozen small mills were able to keep going through the Great Depression. By 1935, as a result of New Deal-era government policies, the price of gold increased to \$35 an ounce. Thirteen small mills were in operation on the Comstock, with a total capacity of about 1,200 tons per day. These Depression-era mills included the Arizona Comstock, Sierra Nevada, and Bradley in Virginia City, the Con Chollar, Sutro-Coalition, and the Overland in Gold Hill. Mills in Silver City included the Donovan, Trimble, Recovery, Clack, Esher, Hartford, and the Dayton Consolidated.

However, in 1942 the Federal Government issued War Production Limitation Order L-208, which forced the closure of mines across the country, as it considered the production of gold and silver to be non-essential to the war effort, unlike copper and zinc. Only a few would reopen after the war.



View of the Butters Plant with the wooden flume from the Kinkead Mill (ALB)

BUTTERS PLANT. In 1902, Charles Butters built a massive cyanide plant on a hillside in Six Mile Canyon near the base of Sugarloaf Mountain to process low-grade tailings that had been discarded during the boom years. Butters had succeeded with the cyanide process in South Africa and brought his experience to the West. The 20-stamp mill employed about sixty, and was the largest cyanide mill in the United States when it opened. Ore was delivered from Chollar mine dump by two-mile long aerial tramway, and also from the Kinkead Mill via a wooden flume. The mill also had its own dynamo room to produce its own power using a flume from the public water system. The mill closed in 1927, and the mill ruins are still visible from State Route 70.

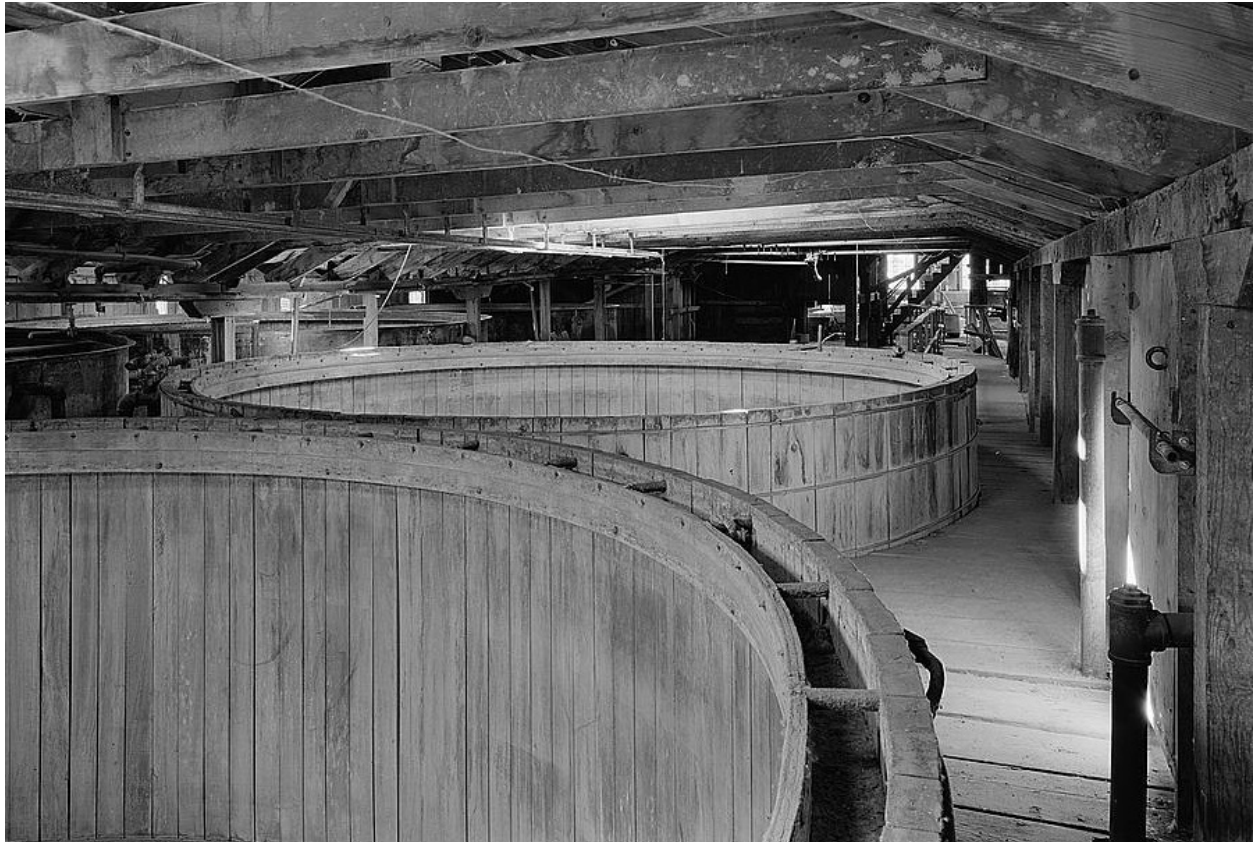
CROWN POINT MILL was built in 1935 and sits just downhill from the Gold Hill Hotel. It operated for just seven years, processing 300,000 tons of ore until it was forced to shut down by the Federal Government. In the 1980s, an effort was made to make the mill operational again. Over 8,700 man-hours and \$700,000 went into the restoration.



Inside the Crown Point Mill (JB)

DONOVAN MILL, located in Silver City, is a significant landmark of Comstock history. In 1896, Professor Robert Jackson from the University of Nevada School of Mines perfected the cyanide/zinc process here. He conducted tests on Comstock mill tailings, and then set up a formal operation at the Dazet Mill. The use of cyanide and zinc for the retrieval of precious metals was conceived in Scotland in 1887. Limited testing in New Zealand and elsewhere proved the value of the process. The success of Jackson's experiment opened the door for the industry to cease using mercury for processing gold and silver ore. The new process was more efficient and arguably better for the environment.

Felix Lacrouts had built the Dazet Mill in 1890 funded by Virginia City liquor dealer Jean Dazet, with ten stamps crafted and refurbished at the V&T Foundry in Carson City. The site was previously occupied by the steam-powered, 20-stamp Kelsey Mill built in 1861. The Kelsey Mill changed hands four times before it was dismantled in 1878. When Jackson and his partner Dr. J. Warne Phillips outfitted the mill for cyanide processing, they added tanks and rooms to the south. Phillips eventually bought out Jackson and then sold the mill complex to William Donovan, Sr. in 1912. In 1920, his son William Donovan, Jr. purchased twenty stamps from the Rock Point Mill in Dayton. He added these four 5-stamp batteries on the Donovan family's third expansion of the mill. The Donovan Mill processed ore until 1959, recovering a total of about \$1.2 million in gold and silver.



Redwood tanks inside the Donovan Mill, Silver City (HAER)

In 1980, the Donovan Mill was documented by HAER. The Comstock Foundation for History and Culture purchased the complex for \$195,000 in 2014. The Comstock Foundation received a \$1,500 Industrial Heritage Preservation Grant from the SIA in 2017 to assist with a condition assessment report for the mill. In the past several years, a committed group of volunteers has donated thousands of hours to assist in the restoration process, including significant structural stabilization of the roof and the Dazet Mill ore bins, which were in danger of collapsing. Once completed, it will house the Donovan Mill Museum and Visitor Center, as well as a functioning stamp mill, machine shop, and more.

THE CLACK MILL is a small mill built by George S. Clack near Silver City, just up the hill from the Donovan Mill. The five-level Clack Mill was built on a hillside and featured a Chilean roller mill to crush the ore, instead of the usual stamp mill process. The machinery was belt driven by an electric motor. The process began at the upper (first) level where ore was fed through the primary crusher. Then, an automatic feeder evenly placed the crushed ore onto the bed of the roller mill containing six vertical cast iron rollers weighted down by a large ballast bin, filled with crushed rock. The finely crushed ore then passed over a sluice table before entering the Muller grinder concentrator (similar to a Washoe pan) located on the fourth level. Three Wilfey tables are located at the fifth and lowest level of the mill, and contain a series of longitudinal ridges to separate out the heavier gold and silver particles. The Clack Mill had a capacity of 35 tons per day. Much of the original equipment remains, although the structure is severely dilapidated. It is visible from SR 341.



Overview of the Clack Mill near Silver City (CF)



View of the Chilean mill and ballast bin inside the Clack Mill (CF)

SUTRO TUNNEL. In 1865, German immigrant Adolph Sutro, who had established an ore mill in Dayton, incorporated the Sutro Tunnel Company with an ambitious plan to build a three-mile long tunnel from the Carson River Valley near Dayton to intersect the Virginia City mines at the 1,640-ft level. The tunnel would serve to drain and ventilate the mines, and also provide access from the mines to the mills along the Carson River. Sutro also envisioned a new town at the mouth of the tunnel that would rival Virginia City. By charging mines for drainage, milling, and transportation of miners and ore, Sutro would create a monopoly, shattering the Bank of California's control of the Comstock. However, William Sharon joined forces with his powerful allies to stop Sutro. Because of this opposition, work on the tunnel was delayed until October 1869; it took nine years to complete. The town of Sutro, at the tunnel mouth, became a bustling community of workers. The tunnel was wide enough for donkey-pulled carts to pass one another.



Sutro Tunnel site during a special visit organized by the Comstock Foundation in 2017 (MB)

On September 1, 1878, tunnel workers broke into the Savage Mine within eighteen inches of the planned target. The project cost about \$2 million dollars, and also included north and south laterals to connect the various shafts up and down the Lode. Sutro also built a mansion high on a hill above his planned town. Unfortunately, the Sutro Tunnel opened just as the Comstock mines declined. When the major companies ceased pumping in the 1880s, water flooded the lowest levels of the mines. The tunnel, however, provided a passive drain at the 1,640-foot level. However, soon after completion, Sutro realized his venture would not be profitable. He sold his interests and moved to San Francisco and made a fortune in real estate. In response to a resurgence of gold mining in the 1970s and '80s, miners began reworking the tunnel, but they only managed to repair about five hundred feet before the price of gold fell and the work ceased. Today the Sutro Tunnel and the adjacent town site remain as relicts of a great engineering feat. The tunnel continues to function as a drain, with water constantly flowing from its mouth, leaving the historic upper levels of the Comstock mines dry. Portions of the tunnel have since collapsed, making access impossible. The land near the tunnel portal is still privately owned. The owners have only allowed public access in recent years on a very limited basis.

ROCK POINT MILL site in Dayton contains ruins of the Nevada Mining Reduction & Power Company's 40-stamp mill, built in 1910 to process ore delivered by aerial tramway from the Haywood Mine near Silver City. The mill was built on the site of previous mills dating to 1861, when the Miners Foundry Company of San Francisco built a 42-stamp mill that utilized the Washoe Pan Process. This mill was powered by a 16-ft water wheel. This mill was sold to the Imperial Silver Mining Company in 1863 and expanded to 56 stamps, making it one of the largest Comstock mills at the time.

In 1869, the Union Mill & Mining Company acquired the mill and operated it as a "custom" mill. The plant was kept busy during the boom years of the 1870s. The mill was destroyed by fire in 1882.



Remnants of the Nevada Mining Reduction & Power Co. Concrete stamp battery foundations and cistern in the distance. MB)

In 1883, Charles Clark Stevenson leased the site and rebuilt the Rock Point Mill with improved machinery. A spur track from the Carson & Colorado Railroad was added in 1888. In 1898, mine operator Herman Davis and professor Jules E. Gignoux bought the mill and formed the Nevada Reduction Works Company to introduce the newly perfected cyanide process. In 1907, a dam break washed away \$80,000 worth of tailings. On May 2, 1909, the Rock Point Mill burned down. Davis rebuilt the mill using concrete and steel. It included forty stamps, and concentrators from the Risdon Iron Works in San Francisco. An aerial tramway was also built five miles to the company's Haywood mine at Silver City. Davis left the overextended company which went through bankruptcy in 1912. The machinery was sold off piecemeal over the next decade (including 20 stamps to the Donovan Mill) leaving the layers of evidence of the mill operations across the Rock Point Mill site landscape. In 1977, the state legislature established Dayton State Park at the mill site.

SUNDAY TOUR – V&T STEAM TRAIN – CARSON CITY TO VIRGINIA CITY

The Virginia & Truckee Railroad (V&T) incorporated on March 5, 1868 by the Bank Crowd to serve the mines of the Comstock. A railroad was deemed necessary because of the high cost of freighting goods by wagon into and out of Virginia City, and the need to carry ore to the mills along the Carson River. The Comstock region posed peculiar problems for railroad construction because of its difficult terrain. Isaac James was selected as its surveying and construction engineer. Construction of the V&T proved to be a remarkable achievement. James held the grade to a maximum of 2.2 percent as the railroad descended 1,600 feet in thirteen and a half miles from Virginia City to reach the mills along the Carson River. To achieve this, the track had to make the equivalent of seventeen complete circles. Most of the work was done by Chinese labor.



V&T Locomotive "Reno" at the Carson City Engine House, circa 1907 (WNHPC)

The initial twenty-one miles from Virginia City to Carson City were completed on November 29, 1869. The construction to a terminus at Reno, thirty-one additional miles, finally connected the Comstock to the transcontinental Central Pacific Railroad on August 24, 1872.

Virginia City boomed with the discovery of the Big Bonanza in 1873, and the V&T enjoyed stunning success and prosperity. At its height, the railroad worked twenty-four locomotives and scheduled as many as forty trains a day on a single track. Its refitting facilities were capable of repairing its own and other railway companies' equipment. The railroad transported valuable ore from the Comstock, and, in return, Virginia City and Gold Hill received timber to shore up mines and build homes. By 1878, the Big Bonanza had played out and mining production collapsed, although mining on the Comstock would continue on a relatively minor scale for over sixty years. The V&T kept operating on a much reduced scale. Hopeful of future bonanzas elsewhere, the Bank Crowd incorporated in 1880 and built the Carson and Colorado Railroad which connected with the V&T at

Mound House, and thrust southward into the desert for 293 miles to Keeler, California. Unfortunately, since its route went from nowhere to nowhere, it generated little traffic.

In 1900, the cash-strapped V&T sold the C&C to the Southern Pacific Railroad, just in time for its sold progeny to take advantage of the Tonopah and Goldfield mining booms. Whatever traffic was interchanged with the V&T at Mound House was stopped when the Southern Pacific built a more direct route, "The Hazen Cutoff," near Fernley to the central Nevada mining boomtowns. In 1906, the V&T constructed a fifteen-mile extension southward from Carson City to the newly created town of Minden, which transformed the railroad into primarily a carrier of agricultural products.

From 1869 to 1910, Henry Yerington served as Vice President and General Manager of the V&T. Darius Mills was president until his death in 1910, to be succeeded by his son Ogden Mills who died in 1929. He was followed by his son, Ogden Livingston Mills. In 1929, straight passenger service from Virginia City to Reno ended and the road paid its last dividend. Ogden Livingston Mills continued to pick up the bills for the declining railroad until his untimely death in 1937. His estate was not so accommodating. The road filed for bankruptcy in 1938 and service on the original line of track from Virginia City to Carson City ceased that same year. At first it looked as if operations might have to be shut down entirely, but an upswing in interest by rail fans—and the sale of equipment to Hollywood studios—kept the road going. However, competing automobile and truck traffic, the road's financial inability to invest in new equipment, and deferred maintenance spelled its doom. The last run on the V&T was on May 31, 1950 between Reno and Carson City.

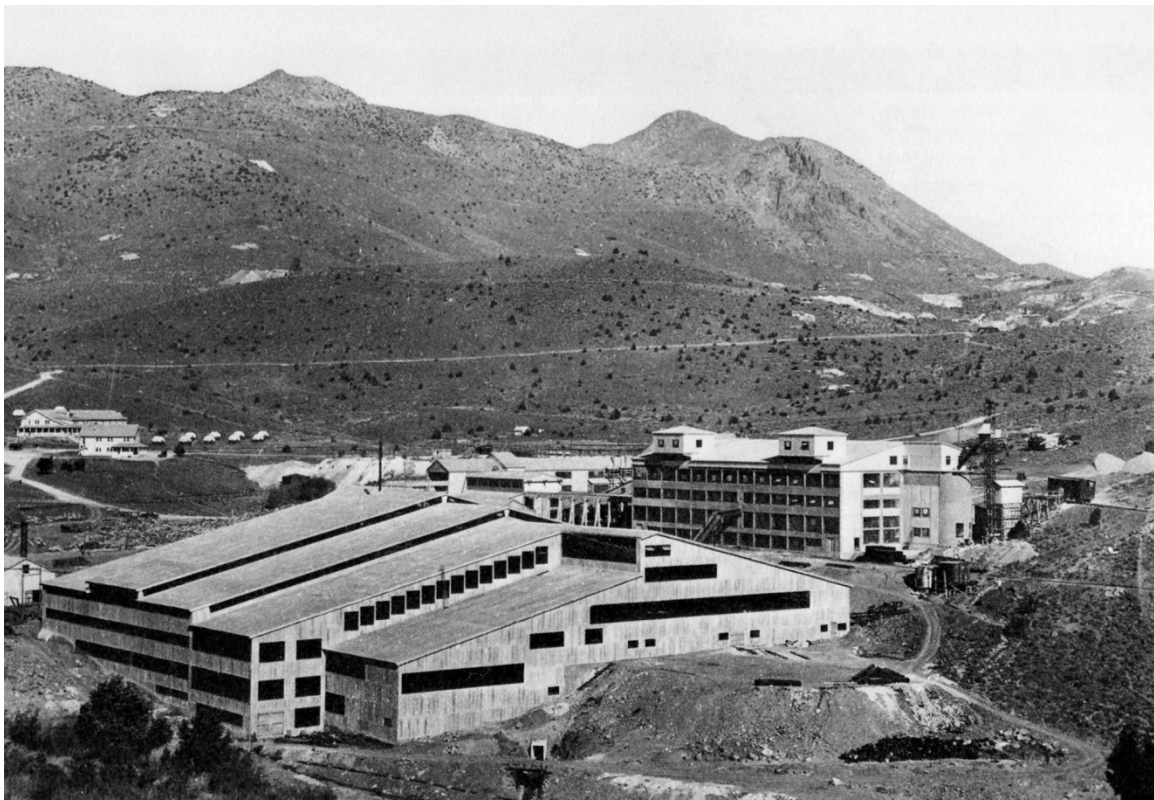
In the early 1990s, V&T Railway enthusiasts, along with Storey County, Carson City, and state officials, began studying the possibility of reconstructing the historic rail line between Virginia City and Carson City. A financial study was commissioned which indicated that the railroad was feasible, and the non-profit Nevada Commission for the Reconstruction of the V&T Railway was created to raise money for the project, estimated to cost \$25 million when completed. During the next decade, the railroad project made slow progress as the commission acquired right-of-way easements and financial commitments. In 2005, the Nevada DOT awarded a \$3.8 million contract to extend the railroad south from Gold Hill. The contract included filling in the huge Overman Pit which had blocked previous efforts to lengthen the railroad. Funding for this was provided by a 2% increase in room tax by the CCCVB. Additionally, the commission purchased a 1914 Baldwin steam locomotive from a defunct Northern California tourist railroad for \$420,000.

The Nevada Legislature provided \$500,000 in additional funds to help keep the project going while the Nevada DOT donated a railroad bridge formerly used near Las Vegas for a crossing over U.S. 50. The Legislature also granted Carson City permission to raise its sales tax by one-eighth of a cent to fund a big portion of the remaining expenses. The Carson City Convention & Visitor's Bureau has also pledged an additional \$100,000 annually for the next 20 years. The reconstructed railroad closely follows the original railroad right-of-way between Virginia City and Carson City.

In 2019, the V&T Railway celebrated its 150th Anniversary with a special ride featuring an onboard performance and re-enactment of 1800's banker and business man William T. Sharon, famous for his influence on the founding of the railroad in 1869.

AMERICAN FLAT, otherwise known as the United Comstock Cyanide Mill, was the largest cyanide mill in the world when it was completed in 1922. It was located northwest of Silver City. The massive plant was constructed almost entirely of reinforced concrete, with steel and wooden roofs and siding. The electrically powered plant was designed to handle 2,000 tons of ore per day (tpd) from its Consolidated Imperial Mine at Gold Hill. However, it typically only handled 1,200 tpd at its peak. The complex included a coarse crushing plant, fine grinding and concentration building, and the huge tank building, which covered about 2-1/4 acres, and contained 40 redwood tanks of varying sizes—the biggest being 60 feet in diameter. Smaller buildings on the site included a warehouse, refinery, and assay office. A small town was also constructed nearby.

Comstock Merger Mines, Inc. operated the facility from 1924 to 1926, without success. Soon after the mill's closure in 1926, all machinery, metal, and tanks were removed for salvage. The abandoned and deteriorating concrete ruins remained for another eight decades, becoming a favorite hangout for local teens, graffiti artists, photographers, and adventure seekers. Citing safety concerns, the Bureau of Land Management (BLM) demolished the entire complex in 2014. The site is visible from the V&T Railway.



United Comstock Cyanide Mill Complex at American Flat, 1920s (WNHPC)

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