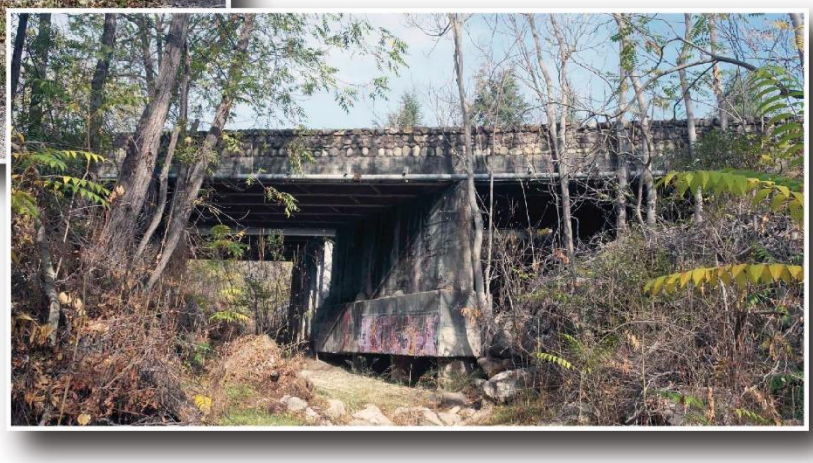
The
Alamo Pintado Creek Bridge
Los Olivos, California
Built in 1912



This booklet was prepared as part of an agreement between the California Department of Transportation (Caltrans) and the California State Historic Preservation Officer (SHPO), as a component of the mitigation for the project to remove the Alamo Pintado Creek Pedestrian Bridge in Santa Barbra County, California. The bridge is scheduled to be removed in early 2023.

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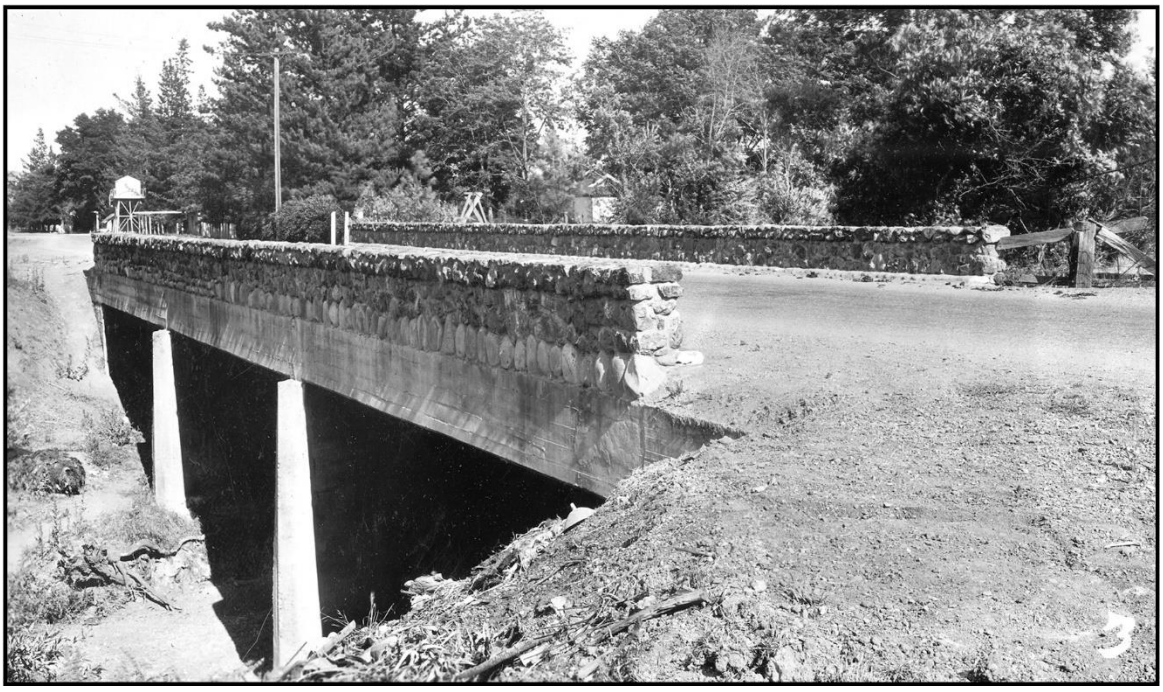
The land on which Los Olivos, California now sits is part of the traditional territory of the Chumash people. The Chumash are descendants of people removed from their land and subjugated by five missions during Spanish colonization from Malibu to Morro Bay and inland to Bakersfield.



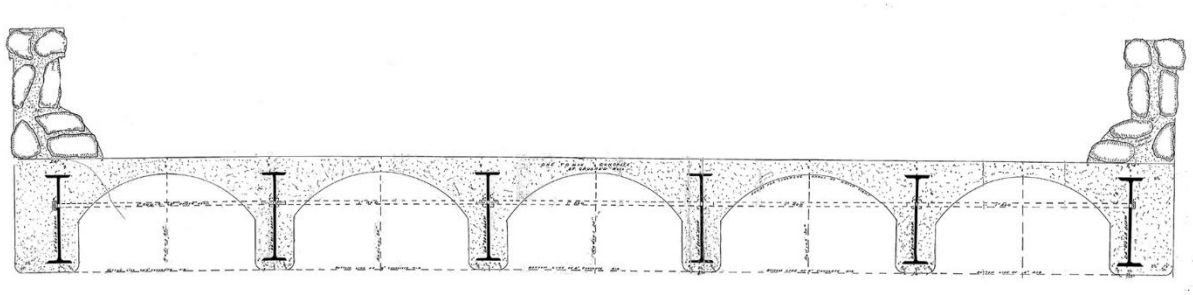
Photograph of the Alamo Pintado Creek Bridge, 1932. The bridge is a concrete-encased "jack arch" steel-stringer bridge with rustic stone masonry rails.
Courtesy of the California State Archives.

The Alamo Pintado Creek Bridge has been in place for nearly 110 years on a bypassed segment of Highway 154 in Los Olivos, California. Santa Barbara County Surveyor Frank F. Flournoy and Civil Engineer Owen H. O'Neill designed the bridge. Deacon & Hale, a private construction company, built the bridge under contract to the County in 1912-1913 on what was then a county road.

The bridge measures 92 feet long by 24 feet wide. It consists of three 30-foot spans joined end-to-end west-to-east. Abutment wingwalls support each end of the span and two concrete piers support the center of the bridge.

Six 24-inch eighty-pound steel stringers encased in concrete support the road deck. Low rails of multi-colored stone-rubble masonry and curbs of river cobbles flank the road surface. The underside of the bridge deck has the distinctive rectangular coffers created by the jack arches and made of formed concrete. Semicircular board-formed concrete lateral cross-bracing, integrated with jack arches, are at regular intervals along the length of the vaulting to support the deck and provide bracing for the arches.

Underside of the bridge showing the jack arch construction.



Cross-section drawing of bridge from the original plans.
Note stone-inlaid rails and jack arch design.

Santa Barbara County was the original owner of the bridge, which was used for horse-drawn and motorized vehicle traffic along San Marcos Pass Road crossing Alamo Pintado Creek.

The State of California Division of Highways (the precursor to Caltrans) acquired the bridge in 1931. At that time, the bridge carried State Route 80 (formerly San Marcos Pass Road) over the creek. In 1971, Caltrans rerouted the highway (by this time designated State Route 154) and built a new automobile bridge approximately 40 feet upstream (north) from the original bridge. The old Alamo Pintado Creek Bridge was closed to auto traffic and has since been used as a pedestrian and equestrian bridge.

A Transportation Timeline

For thousands of years, the Chumash traveled the California coast and to the Channel Islands by boat. Countless footpaths connected villages, important resources, and ceremonial sites.

1769 - The Camino Real mission trail began with the establishment of Mission San Diego de Alcalá. El Camino Real (the Kings Road) was actually a collection of rugged dirt footpaths that grew into cart and wagon roads connecting California's 21 Franciscan missions, pueblos (towns), and presidios (forts) with its northern end at Mission San Francisco de Asis. The exact routes changed frequently over time.

1786 – Mission Santa Barbara was established and used a route through San Marcos Pass to its farm in the Santa Ynez Valley.

1850 – California became the 31st State in the Union. Transportation was by foot, horse, railroad, and boat. Dirt roads became muddy and often impassable in winter. Few people traveled through rugged San Marcos Pass.

1865 – Demand grew for improved roadways.

1868 – Chinese laborers working for the Santa Barbara and Santa Ynez Turnpike Road Company completed construction of San Marcos Pass Road. It operated as a toll road.

1887 – The Pacific Coast Railway (based in San Luis Obispo) extended its line to the newly-created townsite of Los Olivos. The community of Los Olivos grew quickly.

1895 – The first automobiles came to California. Roads were graded dirt, occasionally oiled or graveled.

1898 – Santa Barbara County acquired San Marcos Pass Road.

1906 – More than 6,500 automobiles were registered in the state.

1913 – Alamo Pintado Creek Bridge was completed and used by horse-drawn wagons, horses and riders, pedestrians, and automobiles.

1918 – More than 360,000 automobiles were registered in California.

1929 – More than 1.9 million automobiles were registered in the state.

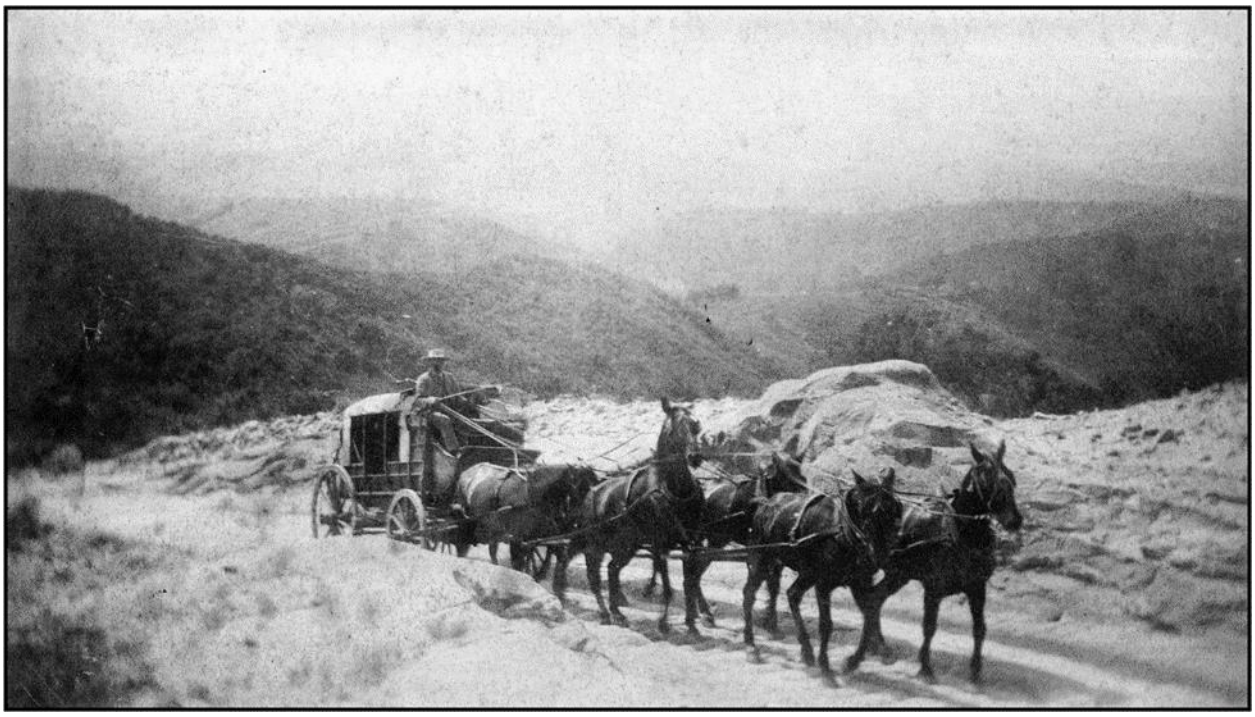
1931 – Alamo Pintado Bridge and the county road became part of the State highway system.

1971 – The California Department of Transportation (Caltrans), in partnership with the County, built a new highway bridge over Alamo Pintado Creek, but it had no sidewalks, so the original bridge, located immediately to the south, continued to be used as a pedestrian and equestrian bridge.

2021 – More than 14 million automobiles were registered in California and over one million of those were electric vehicles. Ongoing erosion in Alamo Pintado Creek throughout the decades eroded the soil under and around the bridge's supports making it unstable.

Early Road and Bridge Construction in Santa Barbara County

Footpaths and horse trails were already well established before California became a state. In 1854, the Santa Barbara County Board of Supervisors created three county road districts and began assessing road taxes. Wagon roads into the Santa Ynez Valley included a branch road from El Camino Real running through Gaviota Pass and a route through Refugio Canyon. Overland mail service between San Francisco and Los Angeles had been established in 1861, but roads through both San Luis Obispo and Santa Barbara counties were notoriously bad. By 1866 the Gaviota route had been improved, but the San Marcos Pass Road remained difficult to travel. In response, a small group of local investors organized a syndicate to construct a toll road over the Santa Ynez Mountains via San Marcos Pass. Construction was accomplished by Chinese laborers, and the toll road was completed in 1868. Most long-distance stage and wagon traffic between Santa Barbara and the north took advantage of this new cutoff instead of El Camino Real.



Stagecoach pulled by a team of six mules and horses on San Marcos Pass Road in the 1880s.
Courtesy of the Santa Barbara Public Library, public domain.

In 1887, the Pacific Coast Railway (based in San Luis Obispo) extended its line southeastward from its former terminus at Los Alamos to the newly-created townsite of Los Olivos at the northern end of the Santa Ynez Valley. The Los Olivos depot was located just east of Alamo Pintado Creek and near the site of the future Alamo Pintado Creek

Bridge. County roads, including the San Marcos Pass Road, converged at this important transportation hub. The new community of Los Olivos grew quickly.

The Central Hotel, later known as the Los Olivos Hotel and Mattei's Tavern, circa 1888.
The site of the 1912 Alamo Pintado Creek Bridge is to the right (west).
Photo courtesy the Santa Barbara Independent, public domain.

Santa Barbara County adopted the San Marcos Pass toll road into its road system in 1898. Although the highway has been realigned and improved since then, the modern road still follows the same general route of the 1898 road. Stagecoach lines continued to operate on the San Marcos Pass Road through the remainder of the nineteenth century, effectively ending in 1901 with the completion of the Southern Pacific Railroad coast route between Santa Barbara and points north.

Santa Barbara's rural county roads (like rural roads throughout the United States) did not receive any major improvement until the early twentieth century. Local roads remained the responsibility of the counties. The ever-increasing popularity of the automobile placed even more emphasis on the need for road improvements in Santa Barbara County.

In 1907, the California legislature passed the Road District Improvement Act, which addressed the need for building and improving the main public highways in the state, and also provided a means to secure better secondary local roads in the unincorporated areas of the counties. The Road District Improvement Act authorized landowners in unincorporated areas to organize and form 'permanent road districts,' whose purpose it was to lay out, construct, and improve principal county roads. These districts were established by county ordinance and held authority to issue bonds for road improvements within their boundaries.

In 1908, the Santa Barbara County Board of Supervisors appointed three road commissioners and hired a professional engineer, D. H. Dickinson, to take charge of all of the county's engineering work slated to be conducted under the Road District Improvement Act. In 1909 Santa Barbara County established its first permanent road districts. These road districts proved to be easier to organize in the more populous unincorporated areas of the county—particularly if on or near the alignment of the Coast Road (former El Camino Real and predecessor of U.S. Highway 101). In less populous areas, where it was harder to garner support for a permanent road district, funding for local road projects was provided directly from the county. The Santa Ynez Valley (including Los Olivos) did not organize its own permanent road district until 1923. Construction and maintenance costs for the Alamo Pintado Creek Bridge had to be paid for out of the County General Road Funds.

Throughout the 1910s and 1920s, San Marcos Pass Road remained a low-traffic, county-owned facility that primarily served the local rural population. The unimproved nature of the rural roads in the Santa Ynez Valley was challenging for automobiles.

Construction of early twentieth-century Santa Barbara County bridges mirror the transition occurring nationwide from timber, iron, and masonry bridges to steel and reinforced concrete bridges. The California-published trade journal *Architect and Engineer* featured a regular column (1905 to 1912) titled "Reinforced Concrete," edited by engineer and bridge designer John B. Leonard. Leonard promoted the use of reinforced concrete for county bridges, stressing that despite their initial higher construction costs, reinforced concrete bridges required less maintenance and had longer useful lives.

In Santa Barbara County, the decade beginning in 1909 was an active period of bridge-building. As was typical in that era, county surveyors often designed bridges, combining the roles of surveyor and engineer. Once the design and specifications had been approved by the County Board of Supervisors, the bridge would be built by county crews or by contractors through a competitive bid process.

Jack Arch Bridges

The Alamo Pintado Creek Bridge is a jack arch type bridge. A jack arch bridge uses iron or steel girders encased in concrete for enhanced strength and weight-carrying capacity. This bridge type was readily adopted for use in railroad bridges and highway bridges as the nineteenth century drew to a close. The quote that follows is from *Historic Jack Arch Bridges of New Hampshire,* by the Historic Documentation Company, Inc.

> Although seldom discussed in the engineering literature, jack arch bridges were also built in increasing numbers during the early twentieth century.

They competed directly with short-span reinforced concrete bridges for many good reasons. The jack arch bridge did not require falsework placed at risk in the watercourse for its construction. Instead, the beams could be set in place across the abutments with a simple derrick and then used to support the concrete forms of wood or corrugated metal.

Jack arch bridges were less subject to defects in construction due to improper placement of the reinforcing bars or errors in the mixing and pouring of the concrete. They could be built with a knowledgeable supervisor and a small crew of unskilled laborers. The jack arch bridge offered a larger waterway opening than a concrete arch bridge and required less costly abutments. Used steel stringers could be acquired at a discount, whereas no such savings was possible for reinforcing bar. One or more of these factors might tip the scale in favor of a jack arch bridge as the logical and most economical choice over other bridge types.

Jack arch bridges continued to grow in popularity with state highway department engineers through the 1920s and 1930s. Although not "state-of-the-art" from an engineering standpoint, they were a cost-effective solution to the great need for short-span, high-capacity bridges…The fact that these bridges have proven capable of carrying much greater loads than intended in their design and have been in service for ninety years or longer is testimony to the utility of their design.

Alamo Pintado Creek Bridge

The Santa Barbara County Board of Supervisors first began discussing constructing the Alamo Pintado Creek Bridge in November 1910, when the Supervisors acknowledged an "urgent need" for such a structure and that a bridge should be built "at once." The matter appears to have been dropped, however, until October 2, 1911, when the Board directed County Surveyor Frank F. Flournoy to prepare plans and a cost estimate for the bridge. Flournoy presented the requested materials on July 2, 1912, and on August 5, 1912, the Board accepted the construction bid of Charles W. Deacon to build the bridge for $7,900.00.

Frank F. Flournoy, who served as county surveyor from 1895 until early 1915, was also expected to fill the role of the county's principal bridge designer of record for most of his tenure, despite the fact that he was not formally trained in bridge design or engineering. It seems, however, that the Alamo Pintado Creek Bridge was actually the result of a

collaboration between Flournoy and Owen H. O'Neill, a civil engineer who collaborated with him in the County Surveyor's Office from 1911 until 1915.

The builder of the Alamo Pintado Creek Bridge, Charles Wetmore "Deke" Deacon, worked on several bridge projects with his firm, Deacon & Hale, in 1909 and 1910 for both the City of San Luis Obispo and San Luis Obispo County. After building the Alamo Pintado Creek Bridge, Deacon worked as an engineer for the Pacific Gas & Electric Company, followed by several years working in the oil industry in Southern California and the countries of Saudi Arabia and Bahrain.

The State of California brought the San Marcos Pass Road including the Alamo Pintado Creek Bridge into the State highway system as State Route 80 on August 14, 1931. The Alamo Pintado Creek Bridge remained in service as the highway bridge until 1971, when a wider replacement structure was built on a new highway alignment just upstream (north of the original bridge). This new alignment, designated State Route 154, was the former right-of-way of the Pacific Coast Railway. When the new section of highway and replacement bridge were opened, the original Alamo Pintado Creek Bridge was closed to vehicular traffic and repurposed for pedestrian and equestrian use. An inspection report from 1971 noted that, "The structure remains in fair condition and should serve for many years under its new light loading conditions."

Due to creek channel degradation in the intervening forty-five years, the concrete bridge piles became heavily exposed, causing the 1912-1913 bridge to sink slowly at its supports, and the bridge was found unstable and subject to removal.

Aerial view facing south of a portion of the community of Los Olivos showing the Alamo Pintado Bridge along Highway 154.