

PRIMARY RECORD

Primary # _____
 HRI # _____
 Trinomial _____
 NRHP Status Code: 3S
 Other Listings _____
 Review Code _____ Reviewer _____ Date _____

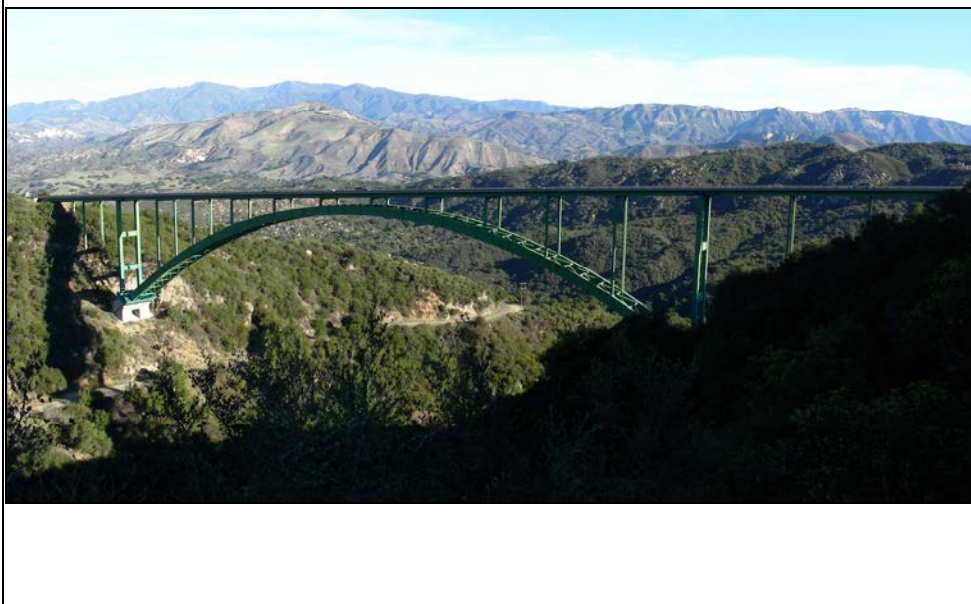
*Resource Name or #: Cold Spring Canyon Bridge Caltrans Map Reference No.: _____
 P1. Other Identifier: Bridge 51 0037
 *P2. Location: *a. County Santa Barbara County County/Route/Postmile: SB 154 PM 22.95/23.19
 b. Address State Route 154, PM 22.95/23.19
 City _____ Zip _____
 *c. UTM: USGS Quad: San Marcos Pass Quadrangle, 1995 d. UTM: _____
 *e. Other Locational Data (APN #) 13.5 miles northwest of the City of Santa Barbara
 *P3a. Description: (Briefly describe resource below)

The Cold Spring Canyon Bridge (51 0037) is a deck style steel arch bridge, completed in 1963 and opened to traffic in 1964. It is located on SR154 at post miles (PM) 22.95/23.19, approximately 13.5 miles northwest of the City of Santa Barbara, just northwest of the San Marcos Pass. As shown in **Photograph 1**, the structure has nine spans including one arch span and eight steel girder approach spans. The bridge is 1,218 feet long, with the arch mainspan of 700 feet. It rises over 400 feet above the canyon floor. The deck is supported by slender steel column bents and two 134-foot-tall towers. The arch supports steel girder sub-spans on steel column bents. The towers have four-foot squared legs connected by three cross struts. The column bents have two-foot squared box legs that are hinged at the top and bottom to allow for relative movement of the deck during temperature changes and unsymmetrical loading. The tallest of these slender columns is 93 feet tall. The steel plates that form the towers, columns, floor beams, girders and arches are welded steel.

The foundations are reinforced concrete with one abutment on steel pilings. The arch and main towers are supported with pinned steel castings that rest on reinforced concrete skewbacks. The reinforced concrete composite slab deck, shown in **Photograph 2**, is seven feet deep supporting a 28-foot-wide roadway between curbs. (See Continuation Sheet.)

*P3b. Resource Attributes: HP11 Bridge
 *P4. Resources Present: Building Structure Object Site District
 Elements of District Other

P5a. Photograph or Drawing (Photograph required for buildings, structures, and objects.)



P5b. Description of Photo: Camera facing northeast, 2/14/07
 *P6. Date Constructed/Age: 1963, Caltrans records
 Historic Prehistoric Both
 *P7. Owner and Address: Caltrans District 5
50 Higuera Street
San Luis Obispo, CA 93401
 *P8. Recorded by: Christopher McMorris
JRP Historical Consulting, LLC
1490 Drew Avenue, Suite 110
Davis, CA 95618
 *P9. Date Recorded: 2/14/07
 *P10. Type of Survey: Intensive
 Reconnaissance Other
 Describe: _____

*P11. Report Citation: JRP Historical Consulting, LLC, "Historical Resources Evaluation Report, Cold Spring Canyon Bridge (51 0037) Pedestrian Barrier Project, State Route 154, Santa Barbara County, California," 2007.

*Attachments: NONE Map Sheet Continuation Sheet Building, Structure and Object Record
 Linear Resource Record Archaeological Record District Record Milling Station Record Rock Art Record
 Artifact Record Photograph Record Other (List): _____

See [Office of Historic Preservation Recording Historical Resources](#) for instructions.

Map Reference No.: _____

*Resource Identifier:	<u>Cold Spring Canyon Bridge</u>	*NRHP Status Code:	<u>3S</u>
B1. Historic Name:	<u>Cold Spring Canyon Bridge</u>		
B2. Common Name:	<u>Cold Spring Canyon Bridge</u> <u>or Cold Spring Canyon Arch</u>	County/Route/Postmile:	<u>SB 154 22.95/23.19</u>
B3. Original Use:	<u>Bridge</u>	B4. Present Use:	<u>Bridge</u>
*B5. Architectural Style:	<u>Modern</u>		
*B6. Construction History:	<u>Construction began in May 1962 and was completed in December 1963. Bridge opened to traffic in February 1964. Repairs were made to the bridge in 1990, 1995, and 2000. Seismic retrofit was conducted in 1997-1998. Additional concrete barrier at south abutment was added in 2006.</u>		
*B7. Moved?	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> Unknown	Date:	Original Location:
*B8. Related Features (describe below): <u>None</u>			

B9a. Architect: <u>Division of Highways Bridge Department</u>	B9b. Builder: <u>American Bridge Division of US Steel</u>
*B10. Significance: Theme: <u>Bridge Engineering</u>	Area: <u>Santa Barbara County and California</u>
Period of Significance: <u>1962-1964</u>	Property Type: <u>Bridge</u>
Applicable Criteria: <u>NRHP C,G / CRHR 3</u>	

The Cold Spring Canyon Bridge (51 0037) appears to meet the criteria for listing in the National Register of Historic Places (NRHP). The structure is significant at the state level under NRHP Criterion C, and it has exceptional importance that meets the standards of Criteria Consideration G for properties that have achieved significance within the past fifty years. Its period of significance is 1962-1964 when the structure was built, completed, and opened to traffic. In addition to its historical significance, the Cold Spring Canyon Bridge retains historic integrity to convey its significance. The bridge also has been evaluated in accordance with Section 15064.5(a)(2)-(3) of the California Environmental Quality Act (CEQA) Guidelines, using the criteria outlined in Section 5024.1 of the California Public Resources Code, and it appears to meet the significance criteria as outlined in those guidelines. (See Continuation Sheet.)

B11. Additional Resource Attributes: _____

B12. References:

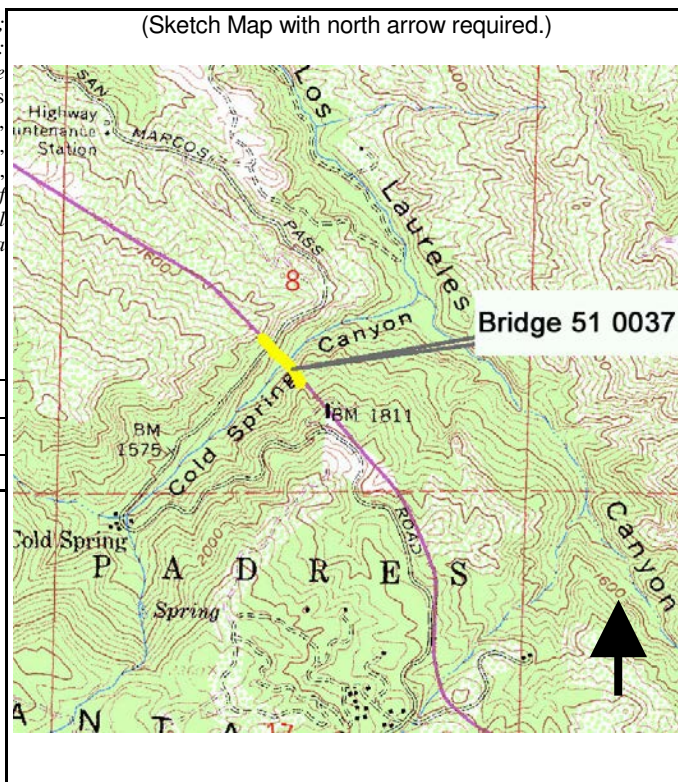
California Highways and Public Works; California Historical Society Quarterly; Caltrans District 5 records; Civil Engineering; Condit, Carl W. American Building: Materials and Techniques from the Beginning of the Colonial Settlements to the Present. 2d ed. Chicago: University of Chicago Press, 1982; Division of Highways Bridge Department. As-built plans, Cold Spring Canyon Bridge, 1963; Jahlstrom, I.O. "Report of Completion for the Construction of Cold Spring Canyon Bridge, County of Santa Barbara, Contract No. 63-14V13C2, Road V-SB-80-B;" June 17, 1964; Journal of the Construction Division, Proceedings of the American Society of Civil Engineers; Los Angeles Times; Merritt, Frederick S. Structural Steel Designers' Handbook. New York: McGraw-Hill Book Company, 1972; Santa Barbara News-Press. Plus oral interviews. Also see footnotes of B10.

B13. Remarks:

B14. Evaluator: Christopher McMorris

Date of Evaluation: April 2007

(This space reserved for official comments.)



CONTINUATION SHEETSee [Office of Historic Preservation Recording Historical Resources](#) for instructions. Continuation Update**Caltrans Map Reference No.:** _____**Resource Identifier:** Cold Spring Canyon Bridge**County/Route/Postmile:** SB / 154 / 22.96***P3a. Description:** (Continued)

The bridge is 34 feet wide from railing to railing. Sections of the roadway's embankment at the bridge ends were constructed along with the bridge structure. The railings on the bridge are a Division of Highways standard type of their period, called type II barrier railings. Each railing is 3 feet, 7 inches tall and has three-foot-wide barrier curbs in front of them.¹

The bridge's arch was formed using 1,440 tons of steel plate formed into curved box-shaped arch rib sections, each nine feet deep and three feet wide. It is a two-hinged arch. All shop splices for the steel members were welded and high-strength bolts were used for field connections of members. As shown in **Photograph 3**, steel truss K-bracing connects the two arch ribs, which are 26 feet apart. The steel pedestals were welded to the ribs to form the column bases. The arch ribs were connected to the deck by cables located near the crown of the arch, as shown in **Photograph 4**. The columns were designed to stand without bracing and fabricated full length without field splices, which enhanced their slender qualities.²

***B10. Significance:** (Continued)**HISTORIC CONTEXT**

The Cold Spring Canyon Bridge (51 0037) was an integral part of a California Division of Highways project to upgrade, relocate, and realign a seven mile segment of SR154 in the early 1960s. The bridge was designed in 1961. Its construction began in May 1962 and was completed in December 1963. The bridge opened to traffic in February 1964. The Division of Highways Bridge Engineering Department in Sacramento designed the bridge, and the American Bridge Division of United States Steel built the structure. It is the largest steel arch bridge in California, and it was one of the first major arch structures in the United States comprised of all-welded steel components.

The following overview provides a historic context for the route over San Marcos Pass, on which Cold Spring Canyon Bridge is located, as well as context for the bridge's design and construction. Included in this overview is information on the bridge's design that contributes to its engineering and aesthetic qualities, including a discussion regarding welding technology and the architectural character of the structure.

San Marcos Pass Road and the Development of State Route 154

The Cold Spring Canyon Bridge is located on SR154 (San Marcos Pass Road) approximately 13.5 miles northwest of the City of Santa Barbara in the Santa Ynez Mountains and is situated just northwest of San Marcos Pass. The Santa Ynez Mountains are a coastal range that separates the northern part of Santa Barbara County from its coastline, which generally runs east-west from the Ventura County line to the area west of Lompoc before turning north. Historically, travelers traversed the mountains at one of several passes, including (from east to west) San Marcos Pass, Refugio Pass, and Gaviota Pass, the latter two of which are located 15 to 20 miles west of San Marcos Pass. SR154 ascends from US101 in Santa Barbara and proceeds in a northwesterly direction into the Santa Ynez Valley, passing Lake Cachuma, and through the communities of Santa Ynez and Los Olivos before intersecting again with US101 approximately six miles north of Buellton and Solvang. After leaving the suburban area north of US101 in Santa Barbara, one ascends into the Los Padres National Forest. On the way up from Santa Barbara to San Marcos Pass, the highway is intersected and flanked by several smaller roads, some of which were bypassed when the contemporary roadway was constructed. One sizeable intersection about halfway from US101 northwest to San Marcos Pass and the Cold Spring Canyon Bridge is with Old San Marcos Pass Road and Painted Cave Road. Several miles later one crests San Marcos Pass and begins to descend into the Santa Ynez Valley as the highway takes vehicles over the Cold Spring Canyon on the bridge that is the subject of this report.

¹ Jahlstrom, "Report of Completion for the construction of Cold Spring Canyon Bridge, County of Santa Barbara," June 17, 1964; *California Highways and Public Works*, September-October 1963, 15-17.

² *California Highways and Public Works*, September-October 1963, 15-17.

CONTINUATION SHEET

See [Office of Historic Preservation Recording Historical Resources](#) for instructions. x Continuation Update

Caltrans Map Reference No.: _____

Resource Identifier: Cold Spring Canyon Bridge

County/Route/Postmile: SB 154 22.95/23.19

The Native American Chumash are the first known people to traverse what are now the Santa Ynez Mountains through San Marcos Pass. The earliest historical records of San Marcos Pass date to the early nineteenth century, documenting the route that connected the Santa Barbara Mission with its farm on the San Marcos Rancho, which was established in 1804. The pass is noted as the location where, during the United States war with Mexico, John C. Fremont and his troops passed over the coastal mountains in 1846 on their way from Monterey to Los Angeles to meet up with forces on their way north from San Diego under the command of Commodore Robert F. Stockton. The legend is that Fremont chose the route through San Marcos Pass following a warning not to use the more traveled Gaviota Pass because of a possible ambush there by Mexican armed forces. Although much has been written about this event, there does not appear to be any specific evidence that such an attack was imminent.³

The San Marcos Pass was used infrequently during the early period following California statehood in 1850, but by the late 1860s demand grew for improved roadways between Santa Barbara and areas to the north. In response, the Santa Barbara and Santa Ynez Turnpike Road Company incorporated in 1868 with Llewellyn Bixby as one of its directors. Bixby and Thomas Flint operated a stagecoach company that was contracted to carry mail. The turnpike road company built the road over San Marcos Pass, completing the roadway around 1870.⁴ Among the noted stops on the stagecoach route was Patrick Kinevan's house, which was situated near the pass, and the Cold Spring Tavern, which is extant upstream from the Cold Spring Canyon Bridge. This tavern began operating in the 1890s. The turnpike operated as the stagecoach route. The county acquired the road in 1898 and the stage line operated until 1901 when the Southern Pacific Railroad completed its line from San Francisco to Los Angeles, connecting San Luis Obispo to Santa Barbara via rail. The stagecoach era ended because stagecoaches could not compete with the comfort and speed of the railroad.⁵

Although the railroad provided passenger and freight service from Santa Barbara to towns to the north, there was growing demand in the early twentieth century for improved roads. Santa Barbara County began improving the highway over San Marcos Pass in the 1900s-1910s, building a bridge on this route at the Santa Ynez River in 1912 for example. In addition to the demand for a better motor vehicle road from Santa Barbara into the Santa Ynez Valley, communities grew along San Marcos Pass Road, including the residential development that accompanied the San Marcos Trout Club in the mid-1920s and Painted Cave Village, which began in 1930. As vehicle traffic increased along the San Marcos Pass Road and speeds increased with improved automobiles and trucks, this twisting, narrow, and largely unimproved road became very dangerous.⁶

The California Division of Highways added San Marcos Pass Road to the state highway system in 1931 and it became State Route (also referred to as Legislative Route) 80. Locally, the road was signed as Highway 150. The Division of Highways upgraded and realigned portions of the roadway in 1935 and 1936 from Santa Barbara up to Painted Cave Road and in the vicinity of Los Olivos in the Santa Ynez Valley. As shown in the map below, the state moved the road's intersection with the coast highway from Goleta closer to Santa Barbara. This project included construction of a new 24 foot wide asphalt surfaced highway, drainage features, and some small bridges. This new highway included excavated cuts through and along hillsides that created a roadway that was less steep and winding than its nineteenth century predecessor. The route westward from Painted Cave Road through San Marcos Pass

³ Erwin G. Gudde, *California Place Names: The Origins and Etymology of Current Geographical Names*, (Berkeley: University of California Press, 1949) 309; and *California Inventory of Historic Resources*, 185. The story of Fremont proceeding through the San Marcos Pass is recounted in "How San Marcos Pass Saved California to U.S.," *California Highways and Public Works*, August 1936, 6-8 and 30-32 and "Fremont and the San Marcos Pass," *California Highways and Public Works*, September 1950, 42-44. The early history of San Marcos Pass is also presented in Caltrans, Historic Resource Evaluation Report San Marcos Pass Road, January 1993. This HRER includes references to Maynard Geiger, "Some Observations on Santa Barbara County's Early Roads," *Noticias*, 10:2 (Spring 1964); John C. Fremont, "California Battalion Trip from Monterey to Los Angeles," excerpt from *Memoirs of My Life* (1887); and Walker A. Tompkins, "The Foxen-Fremont Fable," *Noticias*, 26:1 (Spring 1980).

⁴ Newton H. Chittenden, *Health Seekers', Tourists' and Sportsmen's Guide, Health and Pleasure Resorts, Pacific Coast*, (San Francisco: C.A. Mubdock & Co. Printers, 1884) 80.

⁵ Caltrans, HRER San Marcos Pass Road (1993). The HRER references to the early history of the roadway include: Walker Tompkins, *Stagecoach Days in Santa Barbara County* (Santa Barbara: McNally & Loftin West, 1982) and Stella H. Rouse, "San Marcos Pass History," *Noticias*, 26:2 (Summer 1980).

⁶ "Way It Was," *Santa Barbara News-Press*, February 5, 1989; Walker A. Tompkins, *San Marcos Pass*, Neighborhood Series, No., 11, Santa Barbara Board of Realtors, 1980, np; and Caltrans, HRER San Marcos Pass Road. The early road over San Marcos Pass began in Goleta. This road was alternatively called San Marcos Road.

CONTINUATION SHEET

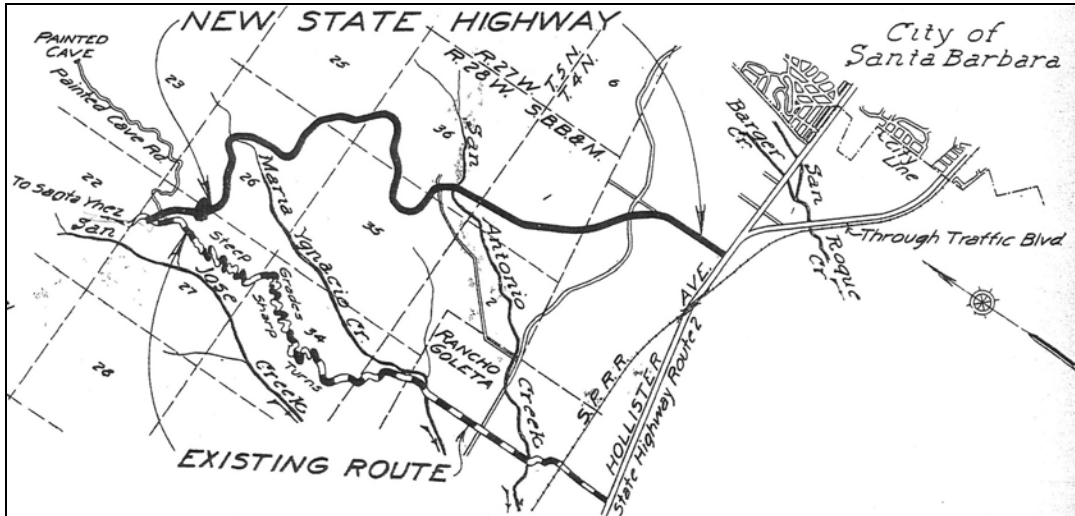
See [Office of Historic Preservation Recording Historical Resources](#) for instructions. Continuation Update

Caltrans Map Reference No.: _____

Resource Identifier: Cold Spring Canyon Bridge

County/Route/Postmile: SB 154 22.95/23.19

and down through Cold Spring Canyon to the Santa Ynez Valley floor, however, remained largely unchanged from the county highway the state had acquired.⁷



[California Highways and Public Works, February 1935, 4. Route 2 is US101. San Marcos Pass and Cold Spring Canyon are located northwest of the end of the new highway illustrated.]

As traffic along San Marcos Pass Road grew steadily during the mid-twentieth century, the inadequacy of the route for auto travel became more pronounced. Vehicles traveled this inland route between Santa Barbara and north county communities such as Lompoc and Solvang as well as to Vandenberg Air Base, which became the West Coast’s missile center in 1956.⁸ Traffic grew as the county’s population grew in the 1950s. Population growth occurred in the north county area around Vandenberg, which had a growing demand for workers, and along the coast around the new University of California Santa Barbara campus near Goleta.⁹ Residential development along San Marcos Pass Road further increased during this period, as demand grew for hillside houses with ocean views.¹⁰ The roadway also provided access to the recreational area at Lake Cachuma, which the United States Bureau of Reclamation (USBR) built in the late 1940s and early 1950s as a water storage and flood control project. The USBR built the dam forming Lake Cachuma in 1953 (later renamed Bradbury Dam).¹¹ In response, county infrastructure and roadways needed to be improved to handle growing demands.

The Division of Highways upgraded, realigned, and straightened San Marcos Pass Road in three phases, finally renumbering the roadway as SR154 in 1963. The first phase occurred in 1951 when the Division of Highways built a new alignment to replace the old road that was to be inundated by the new Lake Cachuma. The second phase occurred in 1956 when the Division of Highways

⁷ H.L. Cooper, “Building a Highway Over Santa Ynez Range Via Historic San Marcos Pass,” *California Highways and Public Works*, February 1935, 4-5 and 15; L.E. McGougal, “Highway Completed Through Historic San Marcos Pass on New Alignment,” *California Highway and Public Works*, January 1936, 4-5 and 16.

⁸ “Cold Spring Canyon Arch,” *California Highways and Public Works*, September-October 1963, 15.

⁹ Development of UC Santa Barbara and Vandenberg Air Force Base was covered well in the local press, as is evident in Dewey Scharman, editor, *Headlines: A History of Santa Barbara from Pages of Its News Paper, 1855-1982*, (Santa Barbara: NewsPress Publishing Co, 1982).

¹⁰ J.M. Sturgeon, “San Marcos Pass, Modern Highway Built Through Historic Area,” *California Highway and Public Works*, May-June 1964, 13-14.

¹¹ A.M. Nash, “Report from District V,” *California Highways and Public Works*, September-October 1958, 17; Ed Ainsworth, “High Bridge Aids Growth of City,” *Los Angeles Times*, June 25, 1963, A2; California Department of Water Resources, Division of Flood Management, California Dams Database, Bradbury Dam, available online at: http://cdec.water.ca.gov/cgi-progs/damMeta?dam_id=160 (accessed January 2007); and E.J.L. Peterson, “Story of San Marcos Pass Told in State Highway Journal,” *Santa Barbara News-Press*, September 1, 1955, B-2.

CONTINUATION SHEET

See [Office of Historic Preservation Recording Historical Resources](#) for instructions. Continuation Update

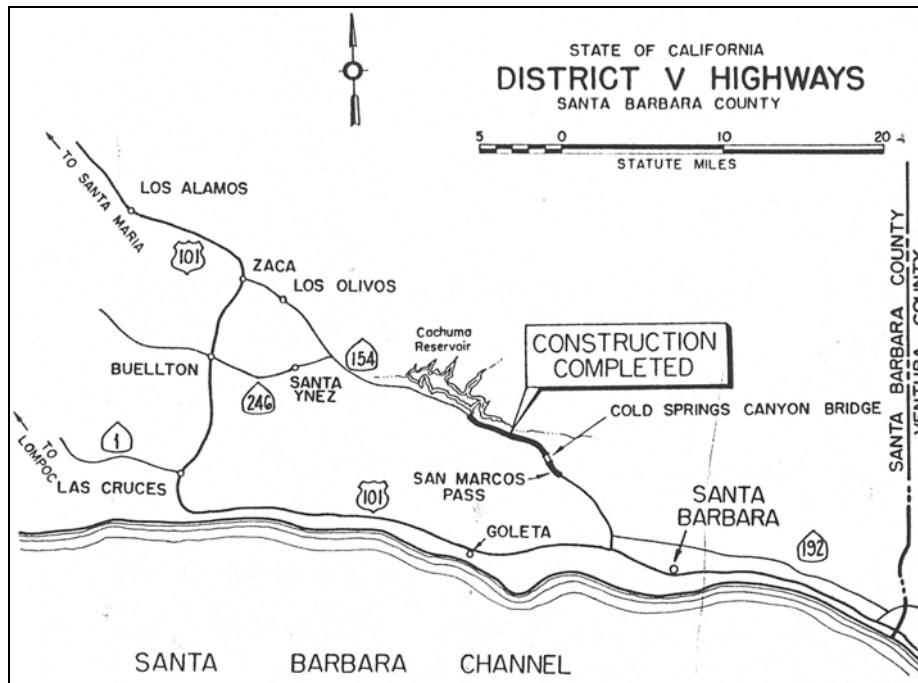
Caltrans Map Reference No.: _____

Resource Identifier: Cold Spring Canyon Bridge

County/Route/Postmile: SB 154 22.95/23.19

upgraded the portion of roadway between Painted Cave Road and San Marcos Pass. The latter portion was a 1.9 mile stretch of new highway that abandoned portions of the old San Marcos Pass Road and created a new straighter roadway.¹²

By the end of the 1950s, the seven mile stretch of the old highway winding down from the crest of San Marco Pass to the Santa Ynez Valley floor, that included the area around Cold Spring Canyon, needed to be upgraded. This stretch included many sharp curves, some with radii of less than 200 feet. The Division of Highways sought to reduce the number of curves and steep grades on the highway, concluding that the new alignment should be built uphill from the old route. The highway designers decided, however, that an alignment through Cold Spring Canyon following the old route could not sufficiently eliminate the sharp curve near the Cold Spring Tavern. Thus a bridge to span Cold Spring Canyon was necessary. The Division of Highways built the Cold Spring segment of highway, which became SR154 and is shown in the map below, between June 1962 and February 1964.¹³ Realignment of San Marcos Pass Road near Cold Spring passed through both public and private land, including land owned by Emmet J. Kinevan, son of Patrick Kinevan who had operated the stagecoach stop near San Marcos Pass decades before.¹⁴



[California Highways and Public Works, May-June 1964, 12.]

Construction of this seven-mile segment of SR154 completed the Division of Highways' more than decade long upgrade to the highway, enhancing safety and speed of travel on this inland route to and from the City of Santa Barbara and communities in northern Santa Barbara County. The series of projects on SR154 from 1951 through 1964 coincided with similar developments on other state highways across Santa Barbara County, and were part of long-planned upgrades of former county highways. Projects to widen and improve older roadways and highways to modern standards included: segments of US101 in Santa Barbara and from Goleta to Santa Maria, SR1 and SR246 through and near Lompoc; and SR166 east of Santa Maria to New Cuyama. The highway improvement project on SR154 did, however, leave remnants of the old route in place, portions of which are extant and still in use

¹² California Highway and Public Works, May-June 1964, 13; Caltrans District 5 records, "From Painted Cave Road to San Marcos Pass, EA 55-5VC18-F, Final Report, June 25, 1956."

¹³ California Highway and Public Works, May-June 1964, 14-15.

¹⁴ Kinevan's property is noted on the as-built plans for the Cold Spring Canyon Bridge. Emmet Kinevan is listed as son of Patrick Kinevan in the 1900 US Census. United States Census Bureau, *Twelfth Census of the United States, 1900*. 1900 Population Schedule, Township 3, Santa Barbara, California.

CONTINUATION SHEET

See [Office of Historic Preservation Recording Historical Resources](#) for instructions. x Continuation Update

Caltrans Map Reference No.: _____

Resource Identifier: Cold Spring Canyon Bridge

County/Route/Postmile: SB 154 22.95/23.19

(04 0137) and for a steel girder overpass structure design in the “Steel Highway Bridge Design Competition,” sponsored by the American Bridge Division of US Steel in 1959. He was recognized for his work on the Cold Spring Canyon Bridge and for several more bridges in the 1960s and early 1970s. Shulman remained with the Bridge Department until 1975, except for a few years when he worked for Aerojet Corporation in Rancho Cordova, near Sacramento, in the early 1960s after he had finished most of the design for the Cold Spring Canyon Bridge. He went to the State Architect’s office structural safety section in 1975, where he engineered mostly hospitals and schools. He eventually became principal structural engineer of that office and retired from the state in 1992.²¹

Raymond L. Whitaker also joined the Division of Highways Bridge Department in 1951, following completion of his engineering degree from the University of Nevada, Reno. He worked in bridge construction supervision for a few years and then moved to the bridge design office in Sacramento. One of the best known bridges he helped design, prior to working on the Cold Spring Canyon Bridge, was the Vincent Thomas Bridge, which was also completed in 1963. He was one of the principal designers of the suspension system of that structure. In 1964, Whitaker moved to the California Department of Water Resources (DWR) where he headed up that department’s bridge office. At DWR, he oversaw completion of the design computations and construction of the Bidwell Bar suspension bridge (12 0188, carrying SR162 over the Middle Fork of the Feather River), which was completed in 1965. During this period he also consulted on the SPINK Corporation’s design of the pedestrian suspension bridge at California State University Sacramento, known as the Guy A. West Bridge, which was completed in 1967. Whitaker became acquainted with a vice president of US Steel during the design of the Cold Spring Canyon Bridge who encouraged him several years later to investigate a position with Wilbur Smith Associates in South Carolina. Whitaker followed this advice and took a position with Wilbur Smith Associates in 1966, where he spent the rest of his career, eventually becoming chief structural engineer in the firm’s home office in Columbia, South Carolina.²²

George A. Hood, Jr., joined the Division of Highways Bridge Department in 1948 after a short stint with the Bureau of Reclamation in Denver. He joined the department’s design division in 1953 and was promoted from bridge designer to section supervisor prior to his work on Cold Spring Canyon Bridge. Among his designs, prior to the Cold Spring Canyon Bridge, were two all-welded steel structures at Lake Berryessa on Knoxville-Berryessa Road. These bridges are the Pope Creek Bridge (21C0013) and the Putah Creek Bridge (21C0014) which were constructed in 1957. The latter of the two was widened in 1958. Hood retired from the Bridge Department in 1984.²³

The Division of Highways district highways design division laid out the new route for SR154 and selected the site for the bridge department. Several factors went into the choice of the steel arch design for Cold Spring Canyon including consideration of construction costs, maintenance demands and costs, span layout, and designated design loads. Shulman maintains that the magnitude of the site, including its picturesque location, demanded a structure to complement the setting. From an engineering perspective, steel arches were, and still are, a suitable and economical choice in steep canyons, such as the Cold Spring Canyon. There was also limited access to the lower canyon area for machinery and equipment, which made it all the more apparent that a long span structure was required. In addition, the Los Padres National Forest area around the bridge was susceptible to fire, so little to no timber falsework could be located in the canyon during construction. Such falsework would have been required for a reinforced concrete structure, for example.²⁴ Reinforced concrete and prestressed concrete designs were also not seriously considered because such structures would have been much heavier than the steel arch, and the allowable bearing pressure for the foundations would not have supported such structures.

²¹ *California Highways and Public Works*, November-December 1959, 45; *California Highways and Public Works*, September-October 1964, 59; and Shulman, oral interview, March 19, 2007. Mr. Shulman’s name is mis-spelled as “Schulman” in various articles and documents.

²² Whitaker, oral interview, March 12, 2007; and “The (Green) and Golden Gate,” *Sacramento State Bulletin*, October 17, 2005, available online at: <http://www.csus.edu/bulletin/bulletin101705/bulletin101705bridge.htm> (accessed March 2007).

²³ George A. Hood, Jr., oral interview with Christopher McMorris, JRP, March 28, 2007.

²⁴ Marvin Allen Shulman, “California Scenic Bridge Features 700 Ft. Welded Steel Arch,” *Modern Welded Structures*, Vol. II, (Cleveland, OH: James F. Lincoln Arc Welding Foundation, 1965), A-16; Shulman, oral interview, March 19, 2007; and Hood, oral interview, March 28, 2007. George Hood reiterated the restrictions for building falsework in the canyon because of fire hazards in a National Forest.

CONTINUATION SHEET

See [Office of Historic Preservation Recording Historical Resources](#) for instructions. Continuation Update

Caltrans Map Reference No.: _____

Resource Identifier: Cold Spring Canyon Bridge

County/Route/Postmile: SB 154 22.95/23.19

With input from Hood and others, Shulman concluded that a steel arch was the most suitable and economically feasible structure for this site. Its selection, Shulman recalls, was “a natural for the site.”²⁵ Shulman coordinated with the Bridge Department architects on the layout and design of the Cold Spring Canyon Bridge, taking advice on ways to enhance the aesthetic qualities of the bridge. In particular, Shulman received input from the architects regarding the appearance and spacing of the columns and other visual components, including the exclusion of cross bracing in the towers. He worked with Bridge Department cost estimators to evaluate construction costs, including calculating estimated quantities of materials based on preliminary layout designs and estimates for the cost of materials and labor, including provisions to account for the bridge’s location / setting and the quantity of work expected. The Cold Spring Canyon Bridge was also among the first structures for which the Bridge Department (and Shulman) used computers to provide data on the complicated computations required for the structural design.²⁶

The emphasis of the design was on the arch structure and the stability of the structure to withstand the loads to be placed on it from traffic and possible seismic events, for example. In addition to the forces carried to the ground by the arch itself, the design of the structure’s deck acted as a horizontal stiffening element. This, in turn, permitted the supporting columns and towers to be slender. In contrast to the intricate calculations and design necessary for the arch, towers, columns and deck structure, the railings used on the bridge were a standard type. No particular requirements were considered for their selection, besides those of the basic highway bridge engineering and safety that were inherent in the standard type design. The Bridge Department did not consider a specially designed railing for this structure, although the decision to use the type that is on the bridge may have been seen to provide for improved views from the bridge.²⁷

After Shulman’s (temporary) departure from the department, Whitaker took over the project to complete the design. Whitaker changed little of the design and only had to complete computations of some design elements to improve the performance of the bridge under various types of loading. This included altering the design of the K-shaped cross bracing between the arch ribs from one to two sets of cross bracing, along with adding the cable system at the apex of the arch.²⁸

As construction was coming to a completion, Whitaker assessed the structure’s aesthetic qualities, describing the “two gracefully curved box-shaped arch rib sections” of the bridge and listing the structure’s important qualities to include its all-welded sections, “unusual arch proportions,” picturesque setting, and “generally pleasing appearance” as contributing to its being a “notable addition to the California highway scene.”²⁹ At the time of the bridge’s construction, views of the canyon from the bridge and surrounding countryside were considered to be among the most beautiful and impressive in California and considered an asset to the structure’s design.³⁰

The bridge’s design included all-welded components for the arches, girders, columns, towers, and floorbeam system. It was calculated as having saved at least \$400,000 in comparison to other bridge designs and provided several other advantages in addition to cost savings. The use of all-welded components helped create a more functional design, quicker and easier shop fabrication, faster field erection of the structure, less dead load (weight of the bridge structure itself) resulting in smaller foundations, less expected maintenance, and a longer life expectancy for the structure. The all-welded design also was an important component of the aesthetic

²⁵ Shulman, oral interview, March 19, 2007.

²⁶ Whitaker, oral interview, March 12, 2007; Shulman, oral interview, March 19, 2007. The Division of Highways’ set standards for bridge type selection from the early 1960s is described in: Division of Highways Bridge Department, Manual of Bridge Design Practice, State of California: Highway Transportation Agency, Department of Public Works, 2nd edition, 1963, 1-3 to 1-21. The Division of Highways head Bridge Engineer for Planning, Arthur Elliot, also mentioned the use of computers in this project in a paper delivered to the Western Association of State Highway Officials (WASHO) conference in 1961, “Bridge Building in an Electronic Age.” (available at the Caltrans Transportation Library, Sacramento). Elliot also described the general process for bridge design during this period in “California’s Way to Aesthetic Bridges,” *Esthetics in Concrete Bridge Design*, (Detroit: American Concrete Institute, 1990), 119-131.

²⁷ Whitaker, oral interview, March 12, 2007; Shulman, oral interview, March 19, 2007; F. H. Yoshino and R.L. Whitaker, *California Highways and Public Works*, September-October 1963, 15 and 20.

²⁸ Whitaker, oral interview, March 12, 2007; Shulman, oral interview, March 19, 2007.

²⁹ *California Highways and Public Works*, September-October 1963, 15 and 20.

³⁰ *California Highways and Public Works*, September-October 1963, 15.

CONTINUATION SHEET

See [Office of Historic Preservation Recording Historical Resources](#) for instructions. Continuation Update

Caltrans Map Reference No.: _____

Resource Identifier: Cold Spring Canyon Bridge

County/Route/Postmile: SB 154 22.95/23.19

design, contributing to the trim, smooth, uncluttered appearance of the bridge.³¹ Shulman used welded components, for example, because he did not want the complicated appearance that would have resulted with lattice-formed columns or diagonal bracing between the columns. The “open and clean” appearance of the bridge is formed by the slender individual components in the arch ribs, towers, and columns, all of which were more slender than they otherwise would have been if rivets and bolts had been necessary.³²

Construction of the Cold Spring Canyon Bridge

The American Bridge Division of US Steel was the prime contractor for the erection of the Cold Spring Canyon Bridge, and Division of Highways engineer Fred Yoshino served as the project’s resident engineer, with four assistant resident engineers. The Massman Construction Company of Kansas City, Missouri, was the contractor for construction of the approach fills, substructure excavation, concrete, and the concrete deck construction. Massman hired Coxco, Inc., for construction of the roadway embankment. The structural steel for the bridge was manufactured by Consolidated Western Division of US Steel in Los Angeles and by the American Bridge Division of US Steel in Gary, Indiana. The design and construction of the bridge cost over \$2 million.³³

The American Bridge Company was originally founded in 1870 in Chicago, Illinois, and operated as an independent company in the Midwest. In the late 1890s independent bridge companies began consolidating, and in 1900 twenty-eight of the largest steel fabricators and constructors consolidated into the American Bridge Company, taking the name of one of the contributing companies. The following year American Bridge Company became a subsidiary of United States Steel Corporation, the corporation formed by J.P. Morgan that virtually controlled the United States steel industry. American Bridge Company became the American Bridge Division of US Steel and remained a subsidiary of the US Steel Corporation until 1987 and is now privately owned. Because of its financial backing, immediately after consolidation in 1900 the new company commanded a great percentage of steel bridge building projects across the country and won major contracts throughout the world, using the projects to further develop the use of steel in bridge construction. American Bridge built many bridges in California, including several of the most well known steel structures in the state, such as the I Street Bridge in Sacramento (22C0153) built in 1911, both the original 1927 Carquinez Strait Crossing (23 0015L) (now being dismantled) and the second Carquinez Strait bridge (23 0015R) built in 1958, the cantilever 1941 Pit River Bridge and Overhead (06 0021) on I-5 at Lake Shasta, and the Schuyler Heim Lift Bridge at the Port of Los Angeles (53 2618) built in 1946. American Bridge continued to build and repair bridges in California throughout the twentieth century, including the seismic retrofit of the Cold Spring Canyon Bridge in 1996-1997, discussed below.

The eighteen month construction of the Cold Spring Canyon Bridge between May 1962 and December 1963 occurred in four phases: substructure; erection of the steel structure and deck on the approach spans; erection of the steel arch span; and deck construction over the arch. The diagram below illustrates the erection method to construct this bridge. The contractors were limited in their use of heavy equipment for excavation and construction of the bridge substructure because of the difficult locations of the footings. The contractors used a giant slingshot comprised of elastic rubber bands to fling the first line across the canyon in order to pull the initial chains across the divide.³⁴ As shown in **Photograph 5**, American Bridge used a “stiff leg” derrick to erect the steel on the approach spans, and they used railroad rails mounted on top of the approach span girders to move a traveler for construction of subsequent bents and span girders. The bridge builders then used a highline approach on the arch portion of the structure, which included construction of two 117-foot-tall temporary towers placed on top of the girders flanking where the arch span would be built. This was followed by the use of a cantilever method of support to build the arch ribs outward from either end towards the middle. The

³¹ Shulman, “California Scenic Bridge Features 700 Ft. Welded Steel Arch,” *Modern Welded Structures*, A-16; Shulman, oral interview, March 19, 2007; Whitaker, oral interview, March 12, 2007; “Giant Slingshot Used to Help Build San Marcos Pass Bridge,” *Los Angeles Times*, April 10, 1972, D1.

³² Whitaker, oral interview, March 12, 2007; Shulman, oral interview, March 19, 2007.

³³ Jahlstrom, “Report of Completion for the Construction of Cold Spring Canyon Bridge” June 17, 1964; “Long Steel Arch Bridge to be Completed Soon,” *Los Angeles Times*, November 28, 1963, 16; “Cold Spring Canyon Bridge Not Open Yet,” *Los Angeles Times*, February 2, 1964, F2; *California Highways and Public Works*, September-October 1964, 59. Fred Yoshino died in Sacramento in 2002. Ancestry.com, *Social Security Death Index* (Provo, UT: The Generations Network, Inc., 2006). Shulman and Hood also stated that they believed Yoshino had died.

³⁴ *California Highways and Public Works*, September-October 1963, 18.

CONTINUATION SHEET

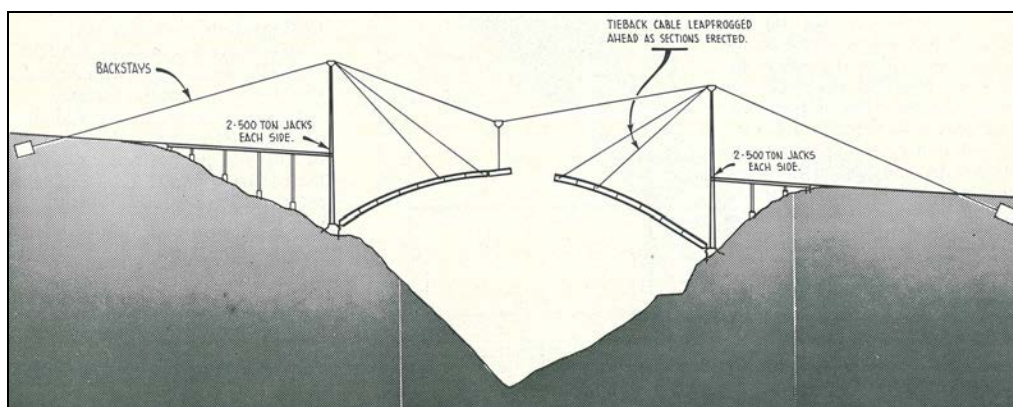
See [Office of Historic Preservation Recording Historical Resources](#) for instructions. x Continuation Update

Caltrans Map Reference No.: _____

Resource Identifier: Cold Spring Canyon Bridge

County/Route/Postmile: SB 154 22.95/23.19

towers were tied back to anchor blocks buried in the approach fill to take the cantilever loads. American Bridge lifted the arch span sections into place by crane from trucks situated on the road below the new bridge. Work occurred on both sides of the canyon so that the loads on the arches and tiebacks were balanced. **Photograph 6** shows the arch after it was completed in July 1963, three months behind schedule. This delay was because some of the arch ribs fabricated in Gary, Indiana, were flawed and required corrective work. Work was slower on this bridge than on conventional bridges because various operations could not be done concurrently, but rather had to follow a specific sequence. No portion of the concrete deck could be built, for example, until all steel for the arch span was in place, and painting of the steel had to wait until the concrete pours and curing on the deck stopped dripping water. The challenging location and design of the structure, as well as concerns to follow adequate safety procedures, prevented the contractor from speeding up the progress of construction.³⁵ **Photograph 7** is an aerial view taken near the end of the construction period and shows the route of the old highway in the foreground.



Cold Spring Canyon Bridge Erection Method Diagram³⁶

Steel Arches and Welding Technology

The Cold Spring Canyon Bridge is one of the few steel arch bridges on California roadways. It is the longest of its type in the state with its 700 foot long main span, which, at the time it was built, was twice as long as the state’s previously longest steel arch bridge.³⁷ It is also one of only two steel arch bridges on California roadways built with all-welded steel components. Generally, steel arches are more difficult and expensive to fabricate and erect than other types of bridges, such as the concrete box girder and prestressed concrete which were innovations developed in the mid-twentieth century. Some steel arches, however, were built as the most economical and effective design, particularly where construction of reinforced concrete was not economically feasible. In some circumstances, the arch form was chosen for aesthetic reasons. Although steel arch bridges built during the early to mid-twentieth century generally followed the forms developed for this bridge type in the nineteenth century, refinements to their designs and simplifications of their forms resulted from the application of increased scientific testing and mathematical rigor as well as improved quality of steel and steel construction methods. Some of the best-known twentieth century steel arches in the country are massive

³⁵ Division of Highways Bridge Department, As-built plans, Cold Spring Canyon Bridge, 1963; Jahlstrom, “Report of Completion for the Construction of Cold Spring Canyon Bridge, June 17, 1964. The roadway’s new number is also provided in this report as V-SB-154. Also see, *California Highways and Public Works*, September-October 1963, 19; “Amended Plan on San Marcos Highway Okd,” *Los Angeles Times*, January 8, 1962, A14; “Long Steel Arch Bridge to be Completed Soon,” *Los Angeles Times*, November 28, 1963, 16; “Cold Spring Canyon Bridge Not Open Yet,” *Los Angeles Times*, February 2, 1964, F2; “Bridge to Open at Cold Springs,” *Los Angeles Times*, February 7, 1964, A2; *California Highways and Public Works*, September-October 1964, 59. Construction of the Cold Spring Canyon Bridge was covered by major newspapers. See, for example, “Bridge at Halfway Point,” *New York Times*, March 26, 1963. The *Santa Barbara News Press* covered the bridge’s construction at various points, but did not publish articles about the bridge when it was completed or when it opened. The newspaper also described the design and construction of Cold Spring Canyon Bridge in: Bill Griggs, “Dream Design Bridges Reality at Cold Spring,” *Santa Barbara News-Press*, May 10, 1987, B-1 to B-2.

³⁶ Published in *California Highways and Public Works*, September-October 1963.

³⁷ The Pulga Bridge (12 0038), carrying SR70 over the Feather River in Butte County, was built in 1932 with a 350 foot main span and was the longest steel arch bridge in California when it was built.

CONTINUATION SHEET

See [Office of Historic Preservation Recording Historical Resources](#) for instructions. x Continuation Update

Caltrans Map Reference No.: _____

Resource Identifier: Cold Spring Canyon Bridge

County/Route/Postmile: SB 154 22.95/23.19

on the Ohio Turnpike, built in 1955, and the South Street Bridge over I-84 in Middlebury, Connecticut, built in 1964.⁴² The New River Gorge Bridge in West Virginia, a deck style solid-ribbed arch with a truss-formed arch, was the longest steel arch bridge in the world from when it was constructed in 1975 until the steel arch Lupu Bridge was completed in 2002 in Shanghai, China.⁴³

The use of all-welded components in the Cold Spring Canyon Bridge illustrates a maturation of welding technology and its acceptance and use in major structures. Its implementation here was not innovative, but rather evolutionary in demonstrating confidence and proficiency in the application of this technology to achieve a structurally feasible, economically sensible, and aesthetically pleasing design. The established use of welding for major buildings and important bridges can be seen in other buildings and structures across the county contemporary with the Cold Spring Canyon Bridge. Among them, for example, are the Chicago Civic Center built in 1963-1965 and the Ash Street / Pillsbury Road Bridge on I-93 in New Hampshire. The Chicago Civic Center's bold design is apparent in the dimensions of spans (both in width and height) and the creation of a portal framing system that forms a rigid frame evenly dividing the tensile and compressive stresses among connected members.⁴⁴ New Hampshire Department of Transportation's engineer Robert Prowse designed the all-welded steel rigid frame Ash Street / Pillsbury Road Bridge as a conceptual bridge competition design, and the state of New Hampshire built the structure in 1964. It is composed of "five frames or bents designed to function as a series of parallel two-hinged rigid frames." Its design permitted the welded forms to take on sculptural qualities that reflected its internal stresses and to unite the overall structure.⁴⁵

Welding developed in the early twentieth century and was one of the most important innovations in steel bridge construction that emerged in the 1930s. Welding, or electric arc-welding, was originally invented in the 1880s by French inventor Auguste de Meritens, but was not used in building construction until the early twentieth century. Welding was used for sporadic purposes and in some building projects in the United States during the 1920s and was first used on California bridges during the 1930s. By the end of that decade, state engineers in California were studying and experimenting with welding to improve techniques and applications. Welded bridges promised to be lighter and easier to construct than riveted structures because they did not require rivets, tie plates, and lacing bars, and they could be constructed on the ground and moved into place. Welded bridges also promised to provide cost savings by decreasing the volume of metal necessary. Implementing the use of welding in bridge construction, however, required investment in welding equipment plus skilled designers and welders. Proponents not only considered welding economically viable, but they also claimed there would be aesthetic advantages to constructing such bridges. Welding was not used widely at first because engineers tended to design with known and proved methods which welding had yet to become. Furthermore, there were difficulties in inspecting it externally for defects, and early welding techniques were, at times, structurally weak.⁴⁶

In the 1950s, welded bridges became more common in California as construction practices were improved and engineers recognized the safety of welded structures. Welding was boosted into a more prominent role in bridge construction during the early 1950s when the federal government limited the use of rolled steel in bridges during war restrictions for the Korean conflict. With fewer large

⁴² Frederick S. Merritt, *Structural Steel Designers' Handbook*, (New York: McGraw-Hill Book Company, 1972) 13-12, 13-22, and 13-40; The New York State Historic Preservation Officer determined the Lewiston-Queenston Bridge eligible for listing in the NRHP in 2001 under Criterion C and Criteria Consideration G. Claire Ross, NY SHPO National Register and Survey Unit Coordinator for Niagara County, personal communications with Christopher McMorris, JRP, March 9, 2007.

⁴³ National Park Service, "New River Gorge Bridge," informational pamphlet, New River Gorge National River, November 1998; "Superstar opens super bridge," *China Daily*, online at: http://www.chinadaily.com.cn/en/doc/2003-06/30/content_241993.htm. The West Virginia State Historic Preservation Officer considers the New River Gorge Bridge eligible for listing in the NRHP, although no evaluation has been completed on the structure. Ginger Williford, Structural Historian, West Virginia, State Historic Preservation Office, personal communications with Christopher McMorris, JRP, March 8, 2007.

⁴⁴ Condit, *American Building*, 193-195.

⁴⁵ Ken Story, Preservation Company, and James L. Garvin, New Hampshire Division of Historical Resources, "Ash Street Bridge (Robert J. Prowse Memorial Bridge) Bridge No. 140/120," New Hampshire Division of Historical Resources, Individual Inventory Form, NHDHR Inventory #LON0116, September 2001 and December 2002, available at the State of New Hampshire, Department of Transportation, Bureau of Environment; and Federal Highway Administration, "Final List of Nationally and Exceptionally Significant Features of the Federal Interstate Highway System" November 1, 2006, online at: http://www.environment.fhwa.dot.gov/histpres/highways_list.asp (accessed March 2007).

⁴⁶ Condit, *American Building*, 192-193; and "Three State Engineers Win Awards in Welding Design Competition," *California Highways and Public Works*, November 1938, 16, 17, and 28; P. Van Rensselaer and F. Sax, ASCE, "Why Not More Welded Structures?" *Civil Engineering*, August 1960, 53; Omer W. Blodgett, *Design of Welded Structures*, (Cleveland, OH: James F. Lincoln Welding Foundation, 1966), 1.1-1 to 1.1-3.

CONTINUATION SHEET

See [Office of Historic Preservation Recording Historical Resources](#) for instructions. Continuation Update

Caltrans Map Reference No.: _____

Resource Identifier: Cold Spring Canyon Bridge

County/Route/Postmile: SB 154 22.95/23.19

rolled steel members available, the Division of Highways developed welding practices to build up structural elements of large bridge projects. The Bridge Department became instrumental in promoting the use of all-welded girders, largely for their potential economic benefit, as well as for the use of composite girders where bolts were welded to the top flange to improve the integration of the girder with concrete decks. The advantages of welding – including time savings in construction, reduced materials, improved durability of steel components, and aesthetic enhancements – became more readily apparent, and welded structures were increasingly considered for bridge designs. By the mid-1950s and early 1960s, the Division of Highways regularly constructed all-welded structures, such as the viaduct for the elevated Bayshore Freeway in San Francisco, built in 1954 (34 0077) and the George C. Cole Memorial Bridge carrying US101 over the South Fork of the Eel River at Myers Flat (04 0123), built in 1962, both of which won awards from the American Institute of Steel Construction.⁴⁷

Dissemination of information regarding welding and promotion of its use was, in large part, the result of publications from and competitions sponsored by the James F. Lincoln Arc Welding Foundation. Established in 1936 to promote the art and science of arc welding, the foundation was a spin off of the Lincoln Electric Company in Cleveland, Ohio, which pursued this technology when it was relatively new, shifting its emphasis to manufacturing welding equipment. The company saw the need to encourage greater practical experience if the technology was to reach its potential. This led to the formation of the non-profit foundation which disseminated information and stimulated research by sponsoring awards programs for innovative uses and designs for welded structures. The first awards contest was held in 1938 with subsequent awards presented in 1943 and afterward. The foundation began publishing its own texts in 1954. The foundation later awarded Marvin Shulman and the Division of Highways Bridge Department an award for the Cold Spring Canyon Bridge.⁴⁸ In addition to providing engineers technical data to satisfy potential structural situations, the James F. Lincoln Foundation also promoted welding by illustrating its economic benefits and its applications in contemporary design. In 1966, a Lincoln Foundation publication explained that welding provided designers the freedom “to employ the most elementary or most daring concepts of form, proportion, and balance to satisfy the need for greater aesthetic value.” It went on to describe contemporary buildings with exposed steel framing used as part of the “artistic scheme” that illustrated the “unencumbered simplicity of form essential to the modern look in architecture.”⁴⁹

It was in this environment, although not overtly recognized as such, that the Division of Highways Bridge Department engineers considered welding and its aesthetic benefits for creating a pleasing structure, such as occurred with the Cold Spring Canyon Bridge. Shulman, Whitaker, and Hood did not identify that they were working in a “Modernist” aesthetic, but their efforts to design an open, uncluttered, graceful steel arch design that took advantage of welding’s various benefits are indicative of the era in which the Cold Spring Canyon Bridge was designed and built – a period when building and structural designers sought to achieve economy, efficiency, and functional and material honesty, along with appropriate structural balance.

The Cold Spring Canyon Bridge also illustrates an engineering design that can be understood from a historical perspective because, in part, few arch bridges were built subsequent to this structure. There are likely several reasons for this. There may have been few situations on California roadways that called for the use of a steel arch, as was needed for Cold Spring Canyon. The Cold Spring Canyon Bridge was also designed and built prior to other innovations and structural testing that are now prevalent in bridge construction. These include innovations in steel manufacturing that have allowed other structural types to be used for long spans, including “weathering steel” developed in the mid-1960s and “high-performance steel,” which was developed in the early 1990s. The latter type has greater strength, is lighter in weight, and has greater atmospheric resistance than conventional steel.⁵⁰ In addition,

⁴⁷ H.D. Stover to F.W. Panhorst, letter regarding welding processes reports and list of welded bridges in California, November 2, 1944, Structures Maintenance Historical Collection, General Information File, California Department of Transportation Library, Sacramento; Division of Highways, *Sixth Annual Report*, 1953, 157; Arthur L. Elliot, “California Captures Four AISC Steel Bridge Awards,” presentation ca. 1961, available in “aesthetics” file at the Caltrans Transportation Library Sacramento; and Shulman, oral interview, March 19, 2007. The award winning section of the Bayshore Freeway was at the 9th and 10th Street Viaducts, now considered part of the Central Viaduct in San Francisco.

⁴⁸ J.F. Lincoln Foundation, “About Us, History & Profile,” J.F. Lincoln Foundation website, online at: <http://www.jflf.org/about/history.asp> (accessed January 2007); “Award Winning Bridges,” *California Highways and Public Works*, January-February 1965, 40.

⁴⁹ Blodgett, *Design of Welded Structures*, 1.1-1 to 1.1-7.

⁵⁰ Shulman, oral interview, March 19, 2007; Whitaker, oral interview, March 12, 2007; Hood, oral interview March 28, 2007; Whitaker, oral interview, March 12, 2007; Robert A.P. Sweeney, Chairman of the Committee on Steel Bridges, “Steel Bridges,” Transportation for a New Millennium. Available from the Transportation Research Board, “Millennium Papers” <http://www.trb.org/TRB/publications/MillenniumPapers.asp> (accessed January 2007).

CONTINUATION SHEET

See [Office of Historic Preservation Recording Historical Resources](#) for instructions. Continuation Update

Caltrans Map Reference No.: _____

Resource Identifier: Cold Spring Canyon Bridge

County/Route/Postmile: SB 154 22.95/23.19

bridge design innovations such as large segmental prestressed concrete structures and cable-stay suspension structures were also likely responsible, in part, for few steel arches of similar size and scale as the Cold Spring Canyon Bridge being built subsequent to this bridge's construction. The structure's value as illustrating a design aesthetic that can be viewed with a historical perspective is discussed below.

None of the key engineers on the Cold Spring Canyon Bridge project, Shulman, Whitaker, and Hood, ever worked on another major steel arch bridge. Their work on the Cold Spring Canyon Bridge, however, provided insight and confidence in using all-welded designs in subsequent projects. Whitaker later used welded components for several major projects on the East Coast, including curved steel girder bridges built in Knoxville for the World's Fair in the early 1980s, a bridge widening over the Ashley River in Charleston, South Carolina, and in the William-Brice football stadium of the University of South Carolina in Columbia, South Carolina.⁵¹ Shulman's later designs included many all-welded girder bridges. Among the most prominent of his later designs were the Elkhorn bridges on I-80 over the Sacramento River, built in 1969 (22 0025L and 22 0025R).⁵²

Bridge Aesthetics and Modern-era Design

The Cold Spring Canyon Bridge illustrates the maturation of bridge design that encompasses an aesthetic influenced by the Modern-era design of the post World War II period. It also demonstrates a collaborative effort in the Bridge Department that encompasses the engineering and architectural values of its period. The simple geometry, graceful lines, slender components, and open uncluttered appearance are indicative, as noted above, of the era in which the bridge was designed and built – a period that can now be viewed with sufficient historical perspective.

Bridge design in California generally corresponded with architectural trends of the twentieth century. By the mid-1930s, the architectural and design aesthetic for prominent new buildings and structures in California had started to shift away from the Beaux Arts and City Beautiful Neoclassicism of the early part of the century towards the aesthetic of the Moderne or International Modern styles that were more abstract, stripped-down, and unadorned. These styles were promoted as symbols of twentieth century technological progress and were a reaction to the perceived excesses of ornament adopted during the late nineteenth and early twentieth centuries.⁵³ While many bridges across the state continued to be constructed using utilitarian designs, the Division of Highways Bridge Department emerged during this period as a national leader in the design of not only boldly engineered bridges, but also of structures with aesthetic appeal that responded to the changing visual sensibilities of professionals and the public at the time. Such spectacular aesthetic examples of this shift in taste from the 1930s include the San Francisco-Oakland Bay Bridge, the Bixby Creek Arch (44 0019), and the Tower Bridge in Sacramento (22 0021).

As in many design fields during the mid-twentieth century, bridge engineers of the period sought to design structures that would not only be functional and efficient but also represent the essence of their material, eschewing concealment and extraneous decoration for simplicity and clean, graceful lines. These efforts were inherent in their work, and while engineers may have not overtly recognized their work as such, these values expressed many of the tenets of Modern-era design. This was expressed by the Bridge Department starting in the mid-1930s as a desire to design bridges without "archaic bric-a-brac" adornment, aiming instead for bridges whose components were "pleasingly proportioned and harmoniously arranged."⁵⁴ Early on, the Bridge Department appears to have been influenced by the designs and concepts of Alfred Eichler, who worked for the Division of Architecture in the Department of Public Works from the 1920s to the 1960s. It was Eichler who pointed out that, not only did applied architectural elements such as moldings, cornices, brackets, and pilasters add cost to bridge design, it was difficult to properly apply those classical forms in bridge design, resulting in typically unsuccessful compositions. The trend, thus, was away from using historical precedents in hopes that the new structures would transcend the shifts of taste from one generation to another. Later, Bridge Department chief of bridge planning

⁵¹ Whitaker, oral interview, March 12, 2007.

⁵² Shulman, oral interview, March 19, 2007.

⁵³ Arthur L. Elliot, "Fifty Years of Freeway Structures," 1988, Bridges file, California Department of Transportation Library, Sacramento, 3-5 [Edited version of essay printed in *Going Places*, July-August 1989, 12-17], 2; Wilbur J. Watson, "Architectural Principles of Bridge Design," *Civil Engineering*, March 1938, 181 and 184; and Aymar Embury II, "Esthetic Design of Steel Structures," *Civil Engineering*, April 1938, 262.

⁵⁴ *Civil Engineering*, March 1938, 183; and Division of Highways, *Eleventh Biennial Report*, 1938, 54.

CONTINUATION SHEET

See [Office of Historic Preservation Recording Historical Resources](#) for instructions. Continuation Update

Caltrans Map Reference No.:

Resource Identifier: Cold Spring Canyon Bridge

County/Route/Postmile: SB 154 22.95/23.19

Arthur Elliot promoted serious consideration of aesthetics in bridge design that likely spread throughout the culture of the department.⁵⁵

Although one can see a shift in aesthetics and taste in mid-twentieth century bridge design, many bridges constructed during this period, particularly after World War II, were designed for the greatest economy with less emphasis on the aesthetics of siting, formal expression, viewer and driver experience, or their place as civic monuments. Some of the innovations, and the economies achieved through their application, led to increased standardization of bridge design across the state and thus, in the eyes of critics, greater visual monotony. The result was a dual effect. Bridge standardization coincided with post-World War II aesthetic values that sought form to follow function, yet Modern design qualities were co-opted for mass production of bridges in the postwar period. The Division of Highways was aware that some of its designs had aesthetic shortcomings and began to use their architects more frequently in the 1950s to work on enhancing the visual effects of bridges. This led to increased aesthetic review of new bridges at the Bridge Department in the 1960s.

The Bridge Department's efforts in the 1960s to improve the aesthetics of bridge design were centered around the concept of structures' compatibility with their surroundings. Bridge Department chief of bridge planning Arthur Elliot promoted aesthetics in bridge design and freeway development. Elliot emphasized that aesthetics was not about concealing structures or adding unnecessary architectural treatment. He stressed the need for engineers to go beyond the basic computations to find the intuitive proportions of structures. He sought to not increase the cost of structures for the purposes of aesthetics, but rather to find forms and modest architectural treatment that would provide a more pleasing structure. District engineers in particular were sensitive to the issue of designing structures that would meet with approval from local governments and citizenry. Coordination between engineers and the staff architects in the Bridge Department became standard practice that was enhanced by the architects typically understanding the principals of bridge engineering. While structures like the Cold Spring Canyon Bridge were the result of this interaction, other results were more modest and largely go unnoticed now, such as textured concrete walls and tapered concrete columns for freeway overpasses.⁵⁶

It was in this environment that the Division of Highways Bridge Department engineers designed the Cold Spring Canyon Bridge. While the engineers did not recognize this atmosphere as working in the "Modernist" aesthetic, their efforts to design an open, uncluttered, graceful steel arch design corresponded to the tenets of mid-twentieth century Modernism that sought economy and efficiency of form, functional and material honesty, and structural balance that was harmonious with its setting. Procedures initiated at this time for reviewing bridge design aesthetics have continued, and some aspects of the trends that emerged in the mid-twentieth century have continued. Caltrans continues to assess the aesthetic compatibility of structures and continues to strive for structures that are economical and structurally reliable.⁵⁷ The Cold Spring Canyon Bridge illustrates the maturation of the Bridge Department's designs meeting many of the Modern aesthetic goals and is an excellent representation of the Division of Highways' response in the late 1950s and early 1960s to produce pleasing structures that are designed with meticulous application of established engineering forms and fabrication methods.

Awards for the Cold Spring Canyon Bridge and Bridge Department Recognition

The Cold Spring Canyon Bridge has been widely recognized for its structural design and aesthetics. The bridge was noted as a "spectacular engineering feat" and as an "engineering marvel" in the popular press when it was originally constructed and for years

⁵⁵ Leonard C. Hollister, "The Modern Highway Bridge, as Expressed by Recent Designs of the California Division of Highways," *Roads and Streets*, October 1937, 45-50; Arthur L. Elliot, "Aesthetics of Highway Bridges," *Civil Engineering*, June 1968, 64-69. See "aesthetics" file at the Caltrans Transportation Library in Sacramento for Arthur Elliot's presentations and documents pertaining to bridge aesthetics from the 1960s and 1970s.

⁵⁶ *Civil Engineering*, June 1968, 64-69; Shulman, oral interview, March 19, 2007; Hood, oral interview, March 28, 2007. See "aesthetics" file at the Caltrans Transportation Library in Sacramento for Arthur Elliot's presentations and documents pertaining to bridge aesthetics from the 1960s and 1970s, such as "What Does Aesthetics Mean in the Division of Highways, Phase I, Aesthetics Program?" January 25, 1966.

⁵⁷ A.L. Elliot, "California's Way to Aesthetic Bridges," *Esthetics in Concrete Bridge Design*, (Detroit: American Concrete Institute, 1990), 119-131; and James E. Roberts, "Caltrans Considers Aesthetics Important," *Roads & Bridges*, November 1988, 73.

CONTINUATION SHEET

See [Office of Historic Preservation Recording Historical Resources](#) for instructions. x Continuation Update

Caltrans Map Reference No.: _____

Resource Identifier: Cold Spring Canyon Bridge

County/Route/Postmile: SB 154 22.95/23.19

afterward.⁵⁸ Engineers also referred to the structure as a “classically beautiful bridge,” and the bridge was discussed along with other major steel arches nation-wide in engineering journals and manuals during the 1960s and 1970s.⁵⁹ Shulman recalled that one of the judges that awarded the bridge recognition remarked about the bridge’s aesthetic quality by stating that “by its simplicity, it has beauty.” This recognition came at a time when California was among the leading states receiving awards for their bridges from organizations like the AISC, James F. Lincoln Foundation, Portland Cement Association, Prestressed Concrete Institute, American Iron and Steel Institute, US Steel Company, and the Federal Department of Transportation.⁶⁰

Marvin Shulman was honored with a national welding award from the James L. Lincoln Foundation for the Cold Spring Canyon Bridge, soon after completion of construction. AISC honored the bridge in 1963-1964 as the Most Beautiful Steel Bridge (Long Span); the plaque for this designation is on the west end of the bridge and is shown in **Photograph 8**.⁶¹

The Cold Spring Canyon Bridge was also one of 77 awardees of Governor Edmund (Pat) Brown’s Governor’s Design Awards in 1966. Division of Highways’ bridge designers Marvin A. Shulman and George A. Hood, Jr., were honored for the structure. The jury included prominent designers of the period including Nathaniel Owings, of Skidmore, Owings, and Merrill, as well as T.Y. Lin, UC Berkeley civil engineering professor and prominent bridge designer.⁶²

Furthermore, SR154 itself was recognized. The State of California designated SR154 from Santa Barbara into the Santa Ynez Valley as a Scenic Highway in 1968. In addition, the non-profit organization Scenic America rated a 32-mile section on SR154 from Santa Barbara through the Santa Ynez Valley as one of the top ten most scenic highways in the United States.⁶³

The American Society of Civil Engineers (ASCE), Santa Barbara-Ventura Section, designated the structure as Historic Civil Engineering Landmark #44 in October 1976. ASCE emphasized this recognition in 2004 by mounting a plaque on a monument located on Old San Marcos Pass Road, northeast of the bridge, as shown in **Photograph 9**.⁶⁴ In addition, Buckland & Taylor, Ltd., was given two awards in 1999 for its work on the seismic retrofit of the bridge. The two awards were the CELSOC Engineering Excellence Award of Merit and the ACEC Engineering Excellence Honor Award.⁶⁵

Some bridges designed by the Division of Highways Bridge Department have been recognized as the “work of a master” under NRHP criteria. This recognition has been for the Bridge Department as a collective group, rather than for individual engineers in the department. Both the state-wide historic bridge inventory completed in the mid-1980s and the recent historic bridge inventory update (2002-2006) identified bridges that were significant, at least in part, because they were important works of the Bridge Department. Examples of steel bridges include bridges on SR70 in Feather River Canyon, built in 1932-1936; San Francisco-Oakland Bay Bridge,

⁵⁸ Ed Ainsworth, “High Bridge Aids Growth of City,” *Los Angeles Times*, June 25, 1963, A2; “Long-span bridge an impressive gateway to valley,” *Los Angeles Times*, April 28, 1979, K5. Also see an appreciation of the bridge in: Joan Bolton, “Five Million Pounds of Steel,” *Santa Barbara Magazine*, January-February 1989, 14-20.

⁵⁹ Cinco Linears, Vol. 2, No. 2, February 1, 1977; Leo J. Ritter, Jr. and Radnor J. Paquette, *Highway Engineering*, (New York: Ronald Press Company, 1967) 203-204; Merritt, *Structural Steel Designers’ Handbook*, 13-22 and 13-23; William F. Hollingsworth, “Fifty-Year Development: Construction of Steel Arch Bridges,” *Journal of the Construction Division, Proceedings of the American Society of Civil Engineers*, Golden Jubilee Issue, No. 1, March 1975, 85-103.

⁶⁰ List of awards for California Bridges, as of June 1973 (available in the “Aesthetics” folder at the Caltrans Transportation Library in Sacramento). This list was likely compiled by Arthur Elliot, former head of Bridge Engineering Planning at the Division of Highways.

⁶¹ “Long Steel Arch Bridge to be Completed Soon,” *Los Angeles Times*, November 28, 1963, 16; “Long-span bridge an impressive gateway to valley,” *Los Angeles Times*, April 28, 1979, K5; *California Highways and Public Works*, September-October 1964, 59.

⁶² “Governor Presents 15 Design Awards,” *Los Angeles Times*, January 1, 1967, H2. These so-called annual awards appear to have only been given out once at the end of the Brown administration. Neither the Reagan administration nor any other subsequent administration appears to have pursued recognition of engineering structures in this manner.

⁶³ *Santa Barbara News-Press*, January 3, 1995, 35A; Division of Highways, *Scenic Highway Corridor Survey*, 1968; and Santa Barbara Route 154 file at Caltrans Transportation Library. The scenic route designation signing occurred November 22, 1968.

⁶⁴ Russ Pyros, Chairperson, History and Heritage Committee, ASCE, letter to E.F. “Frank” Gregory, District Director of Transportation, Caltrans, December 21, 1976 on file at Caltrans District Five and Caltrans Transportation Library.

⁶⁵ Buckland & Taylor, Ltd. Bridge Engineering, “Cold Spring Canyon Bridge,” webpage: <http://www.b-t.com/projects.cldsprg.htm> (accessed November 2005).

CONTINUATION SHEET

See [Office of Historic Preservation Recording Historical Resources](#) for instructions. x Continuation Update

Caltrans Map Reference No.: _____

Resource Identifier: Cold Spring Canyon Bridge

County/Route/Postmile: SB 154 22.95/23.19

1936; Albion River Bridge on SR1 in Mendocino County, 1944; and Schuyler Heim Bridge in Los Angeles, 1946. There are others built in concrete that have been similarly recognized. As discussed in Section 5, the Cold Spring Canyon Bridge appears to be similarly significant as an important structure designed by the Division of Highways Bridge Department.

Repairs and Alterations to the Cold Spring Canyon Bridge

The Cold Spring Canyon Bridge has been repaired over the years, and was seismically retrofitted in 1997-1998. In the early 1990s, bridge investigations revealed that the reinforced concrete skewbacks, at the base of the two towers at either end of the arch, had deteriorated with wide cracks visible in the concrete. Caltrans repaired the skewbacks by sealing the cracks in 1990 and 1995. The department also reduced the vegetation adjacent to the bridge, as a fire safety precaution, and sealed the bridge deck at that time. Caltrans laid new asphalt concrete on SR154 between PM 21 and 23.2, including over the Cold Spring Canyon Bridge, in 2000, and built an additional concrete K-rail along the roadway over the southwest abutment in 2006.⁶⁶

Buckland & Taylor, Ltd., Bridge Engineering designed and the American Bridge Company built the seismic retrofit of the structure under contract with Caltrans in 1997-1998, several elements of which are shown in **Photograph 10**.

Bridge investigations had indicated that the bridge's arch ribs and main towers could be overstressed in a seismic event and that the arches might not resist an uplifting force at the connection with the footing. The investigation also recommended stronger lateral cables between the deck and arch. This project included the installation of steel reinforcing plates constructed up from the arch ends on the top and bottom chords. The project also included installation of new bolts, bolsters flanking the abutment seats, and anchors placed diagonally along the tangent of the arch and below the anchor bent. The arch ribs and main towers were strengthened along with new concrete encased around the skewbacks and modifications to tie-downs for the arches.⁶⁷

EVALUATION

The Cold Spring Canyon Bridge (51 0037), built in 1962-1963, appears to meet the criteria for listing in the NRHP because: a) it is significant, at the state level, under Criterion C; b) it has exceptional importance that meets the standards under Criteria Consideration G for properties that have achieved significance within the past fifty years; and c) it retains historic integrity to convey its significance. Its period of significance is 1962 to 1964, when it was constructed, completed, and opened to traffic. The structure is significant for its type, period, and method of construction as an important example of bridge design and engineering that demonstrates a maturation of steel arch bridge design and welded steel technology in California, and it represents a high aesthetic quality of contemporary design from its period. It is also an important work of the Division of Highways Bridge Department which is considered a "master" engineer of the period, and it is an important work of the American Bridge Division of US Steel which is considered a "master" builder of the period.

The Cold Spring Canyon Bridge does not appear to be significant under Criterion A. This structure is associated with development of San Marcos Pass Road and SR154 when it was upgraded and realigned in the 1950s and early 1960s and was specifically part of a project constructed between 1962 and 1964. The route that became SR154 was a well-established inland route between the City of Santa Barbara and north Santa Barbara County communities. The Division of Highways' improvements on SR154 during this period were among many similar projects throughout Santa Barbara County during the mid-twentieth century where old routes were upgraded and realigned for improved contemporary use. While the Cold Spring Canyon Bridge contributed to the improved safety, ease of travel, and decreased travel times on SR154, it did not fundamentally change the existing transportation corridor or itself specifically lead to additional growth or development of areas near San Marcos Pass, in Santa Barbara, or in the Santa Ynez Valley. Demand for and the effects of its construction, therefore, were similar to those of many other bridges built throughout the county and state during the 1950s and 1960s. Thus, the structure is not important for its association with significant historic events and/or trends related to its construction or use.

⁶⁶ Caltrans District 5 records.

⁶⁷ American Bridge, "Cold Spring Canyon Bridge – Seismic Retrofit," online summary available at <http://www.americanbridge.net> (accessed January 2007); Buckland & Taylor Ltd., Bridge Engineering, "Cold Spring Canyon Bridge," online summary available at <http://www.b-t.com/projects/cldsprg.htm>. (Accessed October 2006).

CONTINUATION SHEET

See [Office of Historic Preservation Recording Historical Resources](#) for instructions. Continuation Update

Caltrans Map Reference No.: _____

Resource Identifier: Cold Spring Canyon Bridge

County/Route/Postmile: SB 154 22.95/23.19

The Cold Spring Canyon Bridge also does not appear to be significant under Criterion B or Criterion D. Bridges are infrequently, if ever, evaluated as significant under these two criteria. Important historic persons associated with bridges are usually involved with their design, making them significant under Criterion C, rather than Criterion B. Historic buildings and structures can occasionally be recognized for the important information they yield, or might yield, regarding historic construction materials or technologies, thus making them significant under Criterion D. Bridges in California, however, particularly those built in the mid-twentieth century, can be studied through various written sources and documented construction types, so the structures themselves do not appear to be principal sources of important information in this regard.

The Cold Spring Canyon Bridge is significant under Criterion C for its engineering and architectural design and as an important work of the Division of Highways Bridge Department and the American Bridge Division of US Steel. The structure's significance lies in both its engineering value related to its structural type and design and importance as an aesthetic achievement. It is significant at the state-wide level, in part, because it is the largest steel arch in California and it was one of the first in the country to be built entirely of all-welded steel components. The Bridge Department devised an interesting and well-received design for the Cold Spring Canyon Bridge within the economic and physical confines of the project. It is an important example of its type and method of construction for its period because it exhibits a maturation of steel arch bridge design and welded steel technology employed on bridges in California, and it represents a high aesthetic quality that illustrates contemporary Modern-era architectural principles that extolled the virtues of unadorned and efficient designs along with material and functional honesty. The Bridge Department used well-established structural components – including steel arch, welded steel components, and reinforced concrete deck – but executed the overall design in a manner that captures aspects of the highest quality of work in bridge engineering in California at that time. The assemblage of its arch design, its all-weld components, and its clean, open, uncluttered appearance provides a structural continuity with all of its elements acting together in a singular form that creates a beautiful bridge that transcends its practical utilitarian function.

Both the Division of Highways Bridge Department and the American Bridge Steel Division of US Steel have been identified as masters, as defined under Criterion C. The Bridge Department is noted for its exceptional long-term bridge design program that resulted in highly functional and architecturally significant bridges throughout the state and that promoted innovative and architecturally significant structures starting in the 1930s, such as the bridges on SR70 in Feather River Canyon, 1932-1936, and the San Francisco-Oakland Bay Bridge, 1936. The department's high quality work in designing the state's major structures continued at least into the 1970s. American Bridge has a long history of building major bridges in California, including structures built prior to the construction of the Cold Spring Canyon Bridge, such as the Schuyler Heim Lift Bridge at the Port of Los Angeles (53 2618), built in 1946, and others that were also Bridge Department designs. Their work on the Cold Spring Canyon Bridge structure illustrates their experienced and precise construction methods and procedures that only a handful of companies possessed at the time. The Cold Spring Canyon Bridge exemplifies the same monumental characteristics of other major bridges designed by the Division of Highways Bridge Department, but in an architectural expression that reflects its period of design and construction in the early 1960s, as well as those constructed in California by the American Bridge Division of US Steel. The Cold Spring Canyon Bridge is thus an important work of the Bridge Department and of American Bridge, which, as discussed in the historic overview, are considered "master" engineers and bridge builders of this period.

The Cold Spring Canyon Bridge also possesses exceptional importance that meets the standards of Criteria Consideration G, for properties that have achieved significance within the past fifty years.⁶⁸ The structure's significance can be viewed with historical perspective because the structure illustrates a defined period of bridge engineering and architecture in California that, while influential to subsequent bridge engineering and design, reflects the refined development of steel arch bridge technology and the aesthetic of the post-World War II Modern era. The Cold Spring Canyon Bridge possesses enduring value as an engineering accomplishment and one that both design professionals and the public continue to appreciate for its engineering and aesthetic qualities. As discussed in the historic overview, the bridge has been recognized with many awards and citations, most notably by organizations in the engineering profession such as AISC and the James F. Lincoln Arc Welding Foundation, and there is a body of

⁶⁸ Guidelines for applying the standards of exceptional importance under Criteria Consideration G are in: National Park Service, "Guidelines for Evaluating and Nominating Properties That Have Achieved Significance within the Past Fifty Years," National Register Bulletin 22 (Washington DC: US Department of the Interior) 1979, revised through 1998.

CONTINUATION SHEET

See [Office of Historic Preservation Recording Historical Resources](#) for instructions. Continuation Update

Caltrans Map Reference No.: _____

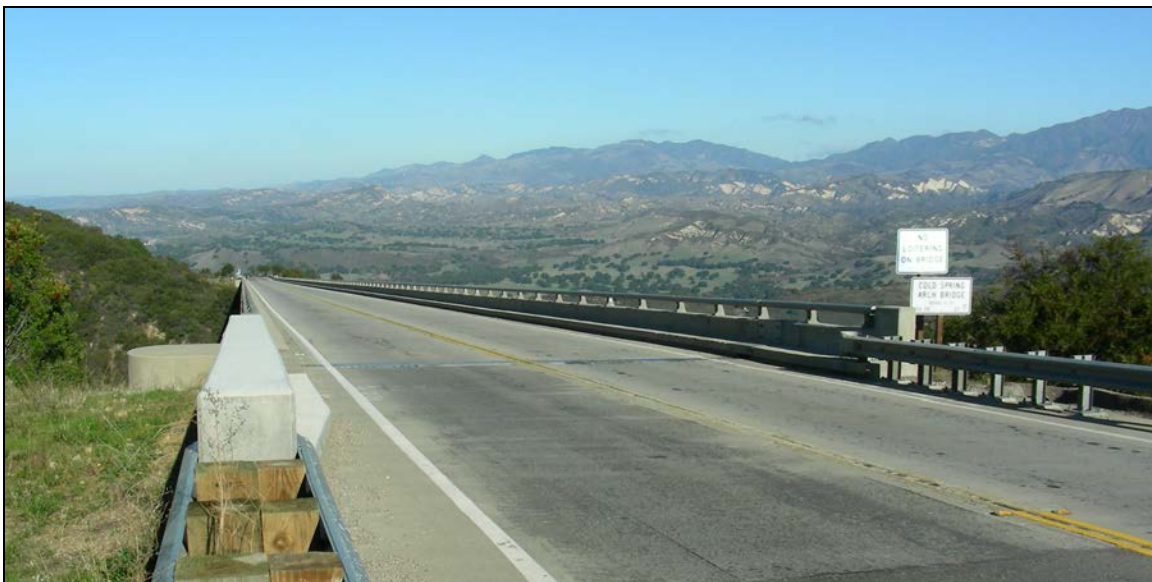
Resource Identifier: Cold Spring Canyon Bridge

County/Route/Postmile: SB 154 22.95/23.19

scholarly comparative analysis demonstrating the bridge's relative importance for its engineering design and aesthetic achievement. The bridge is also an ASCE designated Historic Civil Engineering Landmark.

In addition to its significance under Criterion C and its exceptional importance under Criteria Consideration G, the Cold Spring Canyon Bridge (51 0037) also retains historic integrity that conveys its engineering significance. The Division of Highways has maintained the structure and has not made any major changes or repairs, except for the seismic retrofit which did not diminish the historic integrity of the bridge. The structure is in its original location with its original design, materials, and workmanship intact, which provides one with a clear sense of its integrity of feeling and association.

The character-defining features of the Cold Spring Canyon Bridge are its components that are part of its original design, including the arch ribs with their cross bracing, the columns and towers, floorbeam girders, abutments, and railings. The design of the reinforced concrete skewbacks is also included in the structure's character-defining features, even though the skewbacks have been encased with new materials. Some of these original design features play a more significant role in conveying the bridge's significance. These would include the arch ribs, columns, towers, and road deck girders. Of lesser importance are the standard type railings and concrete road deck. The elements of the bridge at the roadway are included in the bridge's character-defining features because they are part of its original design and overall design effect. The features of the bridge that were added during the seismic retrofit of the structure in the 1990s do not contribute to the structure's significance and are not part of the bridge's character-defining features. These include the concrete bolsters flanking the abutments and steel clips on the roadway girders at the top of the towers. Along with the metal guardrails flanking the bridge approaches, the concrete extension of the south side railing on the east end of the bridge also appears to have been added and would not be considered to be a character-defining feature.



Photograph 2: Cold Spring Canyon Bridge deck, camera facing north, 2/14/07

CONTINUATION SHEET

See [Office of Historic Preservation Recording Historical Resources](#) for instructions. Continuation Update

Caltrans Map Reference No.: _____

Resource Identifier: Cold Spring Canyon Bridge

County/Route/Postmile: SB 154 22.95/23.19



Photograph 3: Cold Spring Canyon Bridge substructure, camera facing southeast, 2/14/07.



Photograph 4: Cold Spring Canyon Bridge arch apex, camera facing northeast, 2/14/07.

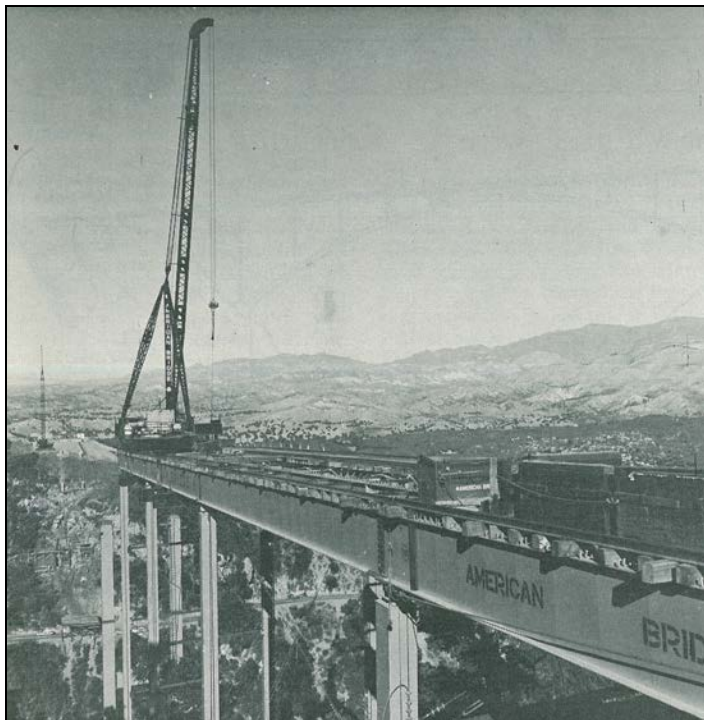
CONTINUATION SHEET

See [Office of Historic Preservation Recording Historical Resources](#) for instructions. Continuation Update

Caltrans Map Reference No.: _____

Resource Identifier: Cold Spring Canyon Bridge

County/Route/Postmile: SB 154 22.95/23.19



Photograph 5: Cold Spring Canyon Bridge approaches under construction. Caltrans Negative # 9386-1.⁶⁹



Photograph 6: Cold Spring Canyon Bridge under construction, completion of arch. Caltrans Negative # 10182-4.⁷⁰

⁶⁹ Published in *California Highways and Public Works*, September-October 1963.

⁷⁰ Caltrans DPR 523B (11/94)

*Required Information

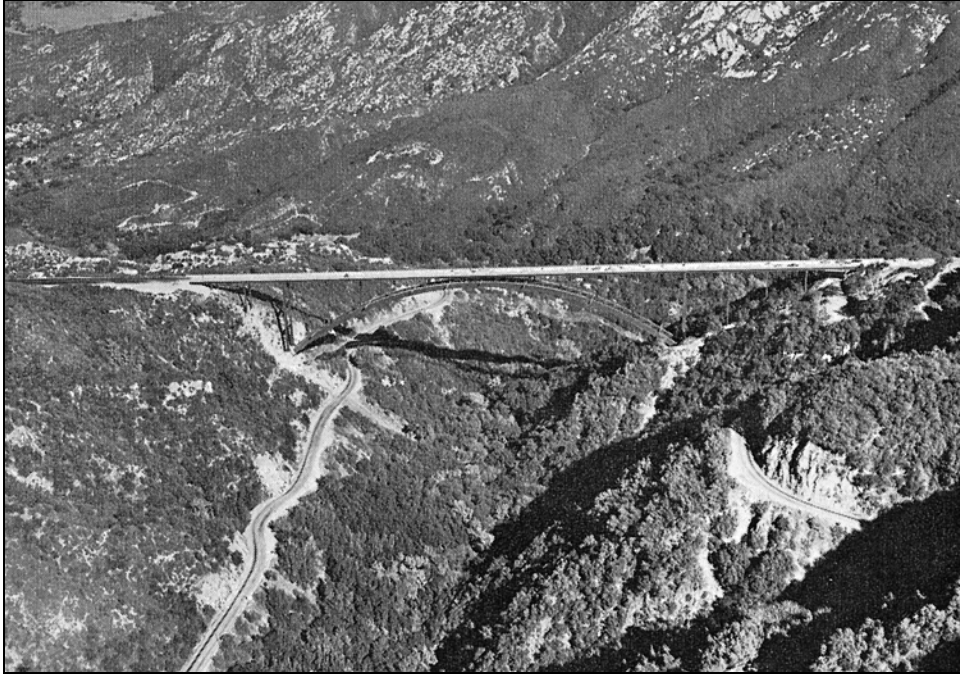
CONTINUATION SHEET

See [Office of Historic Preservation Recording Historical Resources](#) for instructions. Continuation Update

Caltrans Map Reference No.: _____

Resource Identifier: Cold Spring Canyon Bridge

County/Route/Postmile: SB 154 22.95/23.19



Photograph 7: Cold Spring Canyon Bridge, aerial view facing northeast, 1963.
[*California Highways and Public Works*, May-June 1964, page 14].



Photograph 8: Cold Spring Canyon Bridge AISC Award, 2/14/07.

⁷⁰ Published in *California Highways and Public Works*, September-October 1963.

CONTINUATION SHEET

See [Office of Historic Preservation Recording Historical Resources](#) for instructions. Continuation Update

Caltrans Map Reference No.: _____

Resource Identifier: Cold Spring Canyon Bridge

County/Route/Postmile: SB 154 22.95/23.19



Photograph 9: ASCE plaque at Cold Spring Canyon Bridge on Old San Marcos Pass Road, 2/14/07.



Photograph 10: Cold Spring Canyon Bridge west end, camera facing north, 2/14/07.