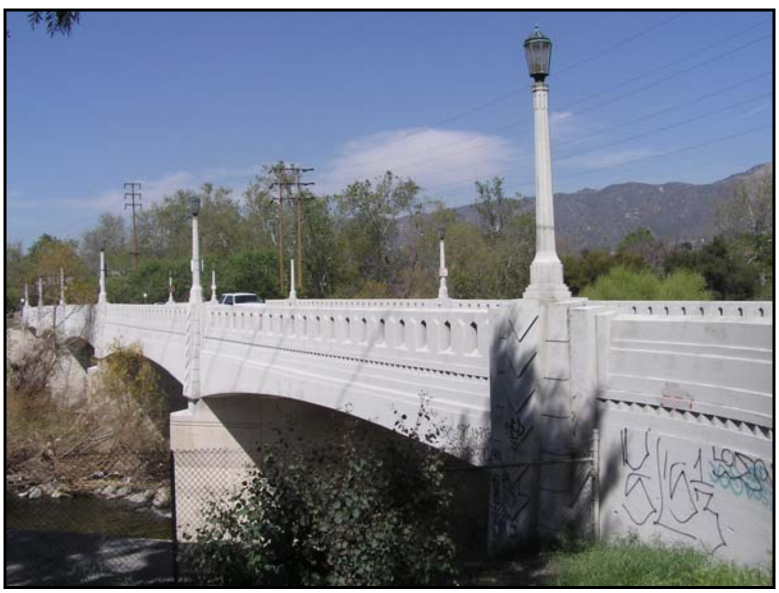
Caltrans Statewide Historic Bridge Inventory Update
Survey and Evaluation of Common Bridge Types



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Cover photos

Top: Bridge 53-0397Y, Gaffey Street overcrossing at Highway 101, Los Angeles

Bottom: Bridge 53C1298, Riverside Drive over Los Angeles River, Los Angeles

Summary of Findings

As part of Caltrans' Statewide Historic Bridge Inventory Update, this report evaluates 20 bridges for their eligibility for listing on the National Register of Historic Places. In addition, these bridges were 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.

A statewide bridge survey was carried out by Caltrans in the 1980s, which included bridges that were more than fifty years old at that time. The current update evaluates bridges constructed prior to 1960. Earlier portions of the Bridge Inventory Update evaluated masonry and concrete arches, metal, timber, and concrete trusses, suspension bridges, and concrete box-girder bridges. The present report evaluates the more common bridge types, including steel beam, concrete beam, concrete slab, and timber stringer bridges, as well as culverts.

There are more than 7,300 bridges in California that were built before 1960 and are examples of these common types. The 20 bridges evaluated in this report include the potentially significant bridges from this population which have not previously been determined eligible for National Register listing, as well as bridges which require some clarification of their National Register status. These 20 bridges include 13 concrete T-beams or girders (five of which utilize prestressed concrete), four steel girders (one of which is a bascule span), two concrete slabs, and one masonry-faced, steel culvert. Based on the evaluations in this report, the ten bridges listed below are eligible for inclusion on the National Register of Historic Places, and are considered historical resources for the purpose of compliance with CEQA:

02-0011	State Route 263 over the Shasta River, Siskiyou County Concrete T-beam, built in 1928
02-0015	State Route 263 over the Klamath River, Siskiyou County Concrete T-beam, built in 1931
34C0024	Third Street over Islais Creek, San Francisco Steel girder bascule bridge, built in 1949
34C0063	Lincoln Way over Sunset Blvd., San Francisco Concrete T-beam, built in 1931
42C0071	Weber Avenue over Belmont Avenue, Fresno Prestressed concrete beam, built in 1953

53-0397Y Gaffey Street Overcrossing, Los Angeles
Concrete T-beam, built in 1935

53C1298 Riverside Drive over the Los Angeles River, Los Angeles
Concrete T-beam, built in 1938

53C1380 West Blvd. over Venice Blvd., Los Angeles
Concrete slab, built in 1933

54-0411 State Route 38 over Grout Creek, San Bernardino County
Masonry faced, steel culvert, built in 1938

55-0003 State Route 1 over Aliso Creek, Orange County
Concrete T-beam, built in 1926

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1. Project Description and Scope of Survey

In 1986-88, Caltrans carried out a statewide survey of historic bridges and identified bridges that meet the criteria for listing on the National Register of Historic Places. Because of the fifty-year threshold for National Register listing, the original survey evaluated only those bridges that were constructed in 1936 or earlier. Caltrans is now updating that survey, including the evaluation of roadway bridges constructed prior to 1960. This update includes bridges on or over state highways as well as bridges owned by local governments. The 1960 cut-off date was chosen so that bridges will not need to be evaluated on a project-by-project basis for several years after the completion of the survey.

For the purpose of the Statewide Historic Bridge Inventory Update, the population of pre-1960 bridges was divided by bridge type, with separate evaluation reports for the various types. Five reports have previously been completed, covering the following types of bridges:

- Masonry arches
- Metal trusses
- Timber and concrete trusses, and suspension bridges
- Concrete box girders
- Concrete arches

This sixth evaluation report covers the more common bridge types, of which few examples meet the National Register Criteria. The common bridge types in California include steel beams, concrete girders and T-beams, concrete slabs, culverts, and timber stringers. These types account for more than 80% of the pre-1960 roadway bridges in California, totaling more than 7,300 bridges.

2. Research and Field Methods, and Evaluations

An initial screening of the more than 7,300 common-type bridges was undertaken to identify those examples which appear to have some potential for National Register eligibility. Resources used in the screening included as-built plans for both original construction and subsequent alterations, bridge inspection reports, historic maps, current and historic photographs, and other materials available at Caltrans Headquarters in Sacramento. The screening identified bridges that might meet National Register Criterion C for their age, size, technical innovations or aesthetic distinction, as well as bridges that might meet National Register Criterion A for their association with significant events in local or statewide history.

The screening identified only a small number of bridges that were considered to be potentially significant, while the great majority of these bridges were clearly ineligible for National Register listing. Most of the significant pre-1936 examples were identified in the original bridge survey, and only a few bridges from the 1936-1959 period were found to be potentially significant. In screening the concrete slab bridges, for example, a substantial majority were found to be small, rural creek crossings with no engineering or aesthetic distinction and no potential for eligibility under Criterion A. In addition, the post-World War II period includes many hundreds of freeway bridges of standard design, which do not meet any of the National Register criteria.

The approximately 60 bridges identified in the screening as having some potential significance were then surveyed in the field. Following the field survey, many of these bridges were found to lack integrity or to not possess sufficient engineering, aesthetic, or historical significance to meet any of the National Register criteria. For example, several of the longest steel beam spans from the 1950s were considered to be potentially significant after the initial screening. However, after field survey and comparative analysis of these bridges, it was clear that the only bridge in this group that might meet Criterion C was Bridge 04-0076 in Humboldt County, with its record-breaking span of 275 feet. The remaining bridges were not formally evaluated, and are considered ineligible for National Register listing, along with the thousands of bridges that were not identified as potentially significant in the initial screening. As a result, from the initial group of approximately 60 bridges that were field surveyed, only 20 are formally evaluated in this report.

Caltrans maintains an inventory of bridges and their National Register status, giving each bridge a status code of 1 through 5: Category 1 bridges are listed on the National Register; Category 2 bridges are eligible for listing; Category 3 bridges may be eligible for listing; Category 4 bridges are unevaluated; and Category 5 bridges are ineligible. Most of the common-type bridges that are not evaluated in this report will be given a Category 5 status. However, some bridges that are not individually significant are components of larger properties that may be eligible for National Register listing but have not yet been evaluated. These bridges, numbering more than 500 bridges of common type, will be given a Category 4 status in the current Bridge Inventory Update. Included in this group are approximately 200 railroad bridges over roadways, nearly 200 bridges over canals, more than 100 bridges on potential historic roads, a small number of pipe and conveyor overcrossings that are associated with industrial facilities, and a few bridges associated with buildings or other structures such as dams. Most canal bridges in California were built well after the canals that they cross, and are evaluated as individual properties in the Bridge Inventory Update. The only canal bridges proposed for Category 4 designation are those which were constructed as an integral part of significant facilities such as the Central Valley Project canals. Most of the bridges on potential historic roads are part of old Route 66 from Barstow to the Arizona border, although a few others are on State Route 2 (the Angeles Crest Highway) in Los Angeles County and State Route 74 in Riverside County.

In addition to being identified as potentially significant in the initial screening, some of the bridges evaluated in this report were included for other reasons:

- Four (02-0011, 02-0015, 33-0132Y, and 44-0041) are bridges which are currently listed as category 3 (may be eligible). One of the objectives of the Bridge Inventory Update is to change each of the category 3 bridges to either category 2 (eligible) or category 5 (ineligible).
- Three bridges (24C0006, 24C0364L, and 46C0046) are currently listed as category 2, but do not appear to be individually significant or contributors to larger historic properties. They are included in this report to clarify their National Register status.
- Two bridges were evaluated and found eligible by historian Jim Fisher, formerly of Caltrans, but the evaluations were never sent to the State Historic Preservation Officer (SHPO) for concurrence.

The bridges evaluated in this report (except for the two bridges evaluated by Jim Fisher) were surveyed in the field between April 2003 and July 2004. In addition, Caltrans records such as inspection reports and as-built drawings were collected for each bridge, as well as relevant articles from publications such as *California Highways and Public Works* and *Civil Engineering*. Additional sources on local history were consulted as indicated on the DPR-523 forms for the individual bridges (see Appendices I and II). Ten of the 20 bridges were determined to be eligible for National Register listing.

3. Public Participation

In April of 2003, Caltrans sent letters to the county planning departments of each county in California, nine cities, and 58 historical societies and preservation groups, informing them of the Statewide Bridge Inventory Update and inviting their comments. Letters were sent to the following organizations in the cities and counties that have bridges which are included in this report, in addition to the county planning departments.

- City of Fresno, Housing and Neighborhood Review
- City of Los Angeles, Cultural Heritage Commission
- City of Oakland, Community and Economic Development Agency
- City of Sacramento, Planning Division
- City of San Francisco, Landmarks Preservation Advisory Board
- Heritage Orange County
- Fresno City and County Historical Society
- Los Angeles Conservancy
- Monterey County Historical Society
- Sacramento County Historical Society
- San Francisco Architectural Heritage
- San Luis Obispo County Historical Museum
- Siskiyou County Museum
- Solano County Historical Society
- Tulare County Historical Society

The only response received was from the Sonoma County Permit and Resource Management Department, which requested copies of the evaluations for all Sonoma County bridges.

In addition, architectural historian Don Napoli of Sacramento requested to review and comment on the draft reports for the Statewide Historic Bridge Inventory Update. A draft copy of this report was sent to Mr. Napoli on November 22, 2004. No response was received as of December 20, 2004.

4. Overview of the Bridge Types Surveyed

4.1. Steel beams and girders

There are more than 1,500 steel beam or girder bridges in California that were built prior to 1960. However, steel bridges have never been the predominant type in the state. Steel girder bridges make up less than 10% of the extant roadway bridges erected in California prior to 1930, and account for only about 20% of the bridges constructed in each decade from the 1930s through the 1950s.

Currently, five of the state's steel girder bridges are listed on the National Register: two as components of the San Francisco – Oakland Bay Bridge, two as components of the I Street Bridge in Sacramento, and one that is within the Presidio of San Francisco. (The two I Street approach structures are identified as non-contributors to the listed bridge.) Nine other steel girder bridges have been determined eligible for National Register listing: three as contributors to the Arroyo Seco Parkway, two as contributors to the Feather River Highway, and four that were found to be individually significant. Three of the four individually significant bridges were determined eligible in the original statewide bridge survey of the 1980s, while the fourth (Bridge 39-0044) was re-evaluated and determined eligible in 2001. No listed or eligible steel girder bridges have been demolished since the original statewide bridge survey.

The four individually eligible steel girder bridges are:

- Smith Point Road over the South Fork of the Eel River in Humboldt County (04C0239, built in 1934). This bridge was the second continuous steel girder bridge in the state, and was constructed on a horizontal curve. (A continuous structure is one in which the steel girders are continuous over the supporting piers, rather than separate, simple spans between piers.) This bridge also received an honorable mention in the American Institute of Steel Construction's competition for the most beautiful steel bridge built in 1934.
- The Bradley Overhead on State Route 140 in Merced (39-0044, built in 1931). This was the first steel bridge in California to be constructed entirely with welded connections rather than rivets or bolts.
- Interstate 110 over the Los Angeles River in Los Angeles (53-0042R, built in 1936). This bridge is a key link in the city's freeway network, and its 200-foot main span was the longest steel girder span in the nation at the time of its construction.
- Sunset Blvd. over Silver Lake Blvd. in Los Angeles (53C0136, built in 1934). This bridge is significant for its architectural embellishment, including decorative metal railings and pedestrian walkways with brick-faced arches.

There are more than one hundred steel girder bridges in California for which the construction date is unknown, and some of these may date to the nineteenth century. However, there is only one bridge of this type known to have been built before 1900, a railroad bridge over Palm Avenue in Hercules, Contra Costa County (28-0037Y), which was constructed in 1899. In addition, there are more than thirty steel girder bridges which date to the first decade of the twentieth century. None of the steel girder bridges in California are significant for their early construction date, since this was a well-established technology by 1899, and the first bridge of this type in California is undoubtedly no longer extant.

Prior to the construction of Bridge 53-0042R in 1936, the maximum span lengths for steel girder bridges in California increased gradually to 120 feet, and none of the pre-1936 examples are significant for their long spans. Bridge 53-0042R, with its main span of 200 feet, was a significant increase over the previous record of 120 feet. Among the state's extant pre-1960 steel girder bridges, the 200-foot span has been matched once (by Bridge 04-0037, built in 1957) and exceeded once (by Bridge 04-0076, built in 1958). Bridge 04-0076, which is evaluated in this report, has a record-setting span of 275 feet. No other pre-1960 steel girder bridges were considered to be potentially significant for their long spans or other engineering qualities.

Four steel girder bridges are evaluated in this report:

- 04-0076 Hwy. 101 over South Fork, Eel River, Humboldt Co., 1958
- 24C0006 Jibboom Street Overhead, Sacramento, 1937
- 24C0364L I Street Viaduct, Sacramento, 1937
- 34C0024 Third Street over Islais Creek, San Francisco, 1949

The two Sacramento bridges are approaches to the I Street Bridge, constructed in 1911, which is listed on the National Register. These approach ramps are part of the listed property, but are described in the nomination as non-contributing components of the historic bridge. Since these two bridges have turned fifty years old since the National Register nomination of 1981, they are evaluated in this report to confirm their status as non-contributors. The other two bridges have not previously been evaluated. This report concludes that of these bridges, only Bridge 34C0024 in San Francisco is eligible for National Register listing. It is one of only three steel girder bascule bridges in California that were built before 1960, and is significant for its Art Moderne styling.

4.2. Concrete

Reinforced concrete was first used for bridge construction in California in 1888, with the construction of the Lake Alvord Bridge in San Francisco's Golden Gate Park. Designed by the engineer Ernest Ransome, this arch bridge was the first reinforced concrete bridge in the United States [Mikesell, 1990: 72]. Prior to 1910, almost all of the concrete bridges constructed in California were arches.

By the second decade of the twentieth century, reinforced concrete had become the preferred material for new bridge construction in California, owing in part to the lack of steel production on the West Coast and the cost of transporting steel from Eastern states or from foreign countries. At the same time, the proportion of concrete arch bridges began a dramatic decline from about 1910, while slab and T-beam bridges became more popular. With the introduction of the concrete box-girder bridge in the mid-1930s, the proportion of T-beam bridges also began to decline, while the box-girder became the most common type for new bridges. Concrete slab structures have continued to make up about one-quarter of all new concrete bridges in the state, as this is the preferred type for relatively short spans and where a shallow depth of structure is desired.

Concrete bridges account for more than two-thirds of all extant California bridges constructed prior to 1960, and more than 90% of the bridges constructed from 1960 to the present. Although these percentages may be influenced by a greater survival rate for concrete bridges compared to those constructed of other materials, it is clear that bridge construction in California has been dominated by concrete for nearly 100 years.

4.2.1. Concrete Girders and T-beams

There are more than 2,000 concrete girder and T-beam bridges in California that were constructed prior to 1960. Only concrete slab bridges are more common among the state's pre-1960 bridges. The earliest confirmed date for such a bridge is 1909, and there are fewer than 20 extant examples constructed before 1914. The type quickly became popular around 1915, however, and accounts for more than 40% of all extant bridges in California dating from 1915 through the 1920s. This proportion declined to about 20-25% of the bridges dating to the 1930s and 1940s, and less than 20% of those built in the 1950s.

All but a few of the concrete T-beam bridges constructed prior to the 1930s had spans of less than 60 feet. A notable exception was the Dillon Road Bridge over Salt River in Humboldt County. Built in 1919 and replaced in 1994, it had two spans of 142 feet each. In the 1930s, several T-beam bridges were constructed with spans of 60 to 100 feet, and several more with spans exceeding 100 feet were built in the 1940s. However, only a small number of concrete T-beam and girder bridges with spans of 120 feet or more were ever built in California, as other bridge types proved to be more economical for long spans. The longest concrete T-beam span in the state is Bridge 53C0045, built in Los Angeles in 1942. This bridge, a combination T-beam and box-girder structure with a main span of 202 feet, was recently evaluated by a consultant for the City of Los Angeles, and found eligible for National Register listing. No other bridges of this type were identified in the initial screening as potentially significant for their long spans.

11 concrete girder and T-beam bridges are currently listed on the National Register, ten as contributors to larger properties. Six are within the Presidio of San Francisco National Historic Landmark, three are components of the San Francisco – Oakland Bay Bridge, and one is within the Forts Baker, Barry, and Chronkite Historic District in Marin County. The other bridge is the First Street Bridge over the Napa River in Napa, built in 1914.

In addition to these listed bridges, 39 bridges of this type have previously been determined eligible for National Register listing. 17 of these are contributors to historic roads, such as the Arroyo Seco Parkway, the Cabrillo Freeway, and the Feather River Highway. Four others are contributors to historic districts or significant canals, and the remaining 18 bridges are individually eligible. Of the individually eligible bridges, 11 are significant as early examples, dating from 1909 to 1917, and exhibit the variety of designs employed during the developmental period for this bridge type. The other seven eligible bridges were constructed from 1927 to 1941, and represent the technically and aesthetically significant examples from this period.

Three concrete girder bridges that were determined eligible in the original statewide bridge survey have been removed since that time. Bridge 01C0015, built in Del Norte County in 1913, was replaced in 1989. It was the only bridge of this type designed by the important bridge engineers Thomas and Post. As noted above, Bridge 04C0012, built in Humboldt County in 1919, was replaced in 1994. Bridge 33C0006, built in Alameda County in 1922, carried Altamont Pass Road over a railroad. The bridge was removed and replaced with earth fill after the removal of the railroad tracks.

The initial screening of concrete girder and T-beam bridges, undertaken to identify potentially significant examples, did not identify any of the earliest bridges of this type, or any technically innovative examples, other than those previously determined eligible for National Register listing. The significant early examples had already been identified and evaluated in the original statewide bridge survey of the 1980s, and the only significant later innovation was the introduction of prestressed concrete, which is discussed below in Section 4.3.3.

Eight concrete T-beam bridges, all built between 1926 and 1938, were identified as potentially significant and are evaluated in this report, in addition to the prestressed concrete bridges discussed below. Four of these eight bridges currently have a Category 3 status (may be eligible) in Caltrans' database, while the other four are Category 5 (ineligible) bridges. However, one of the ineligible bridges was evaluated by Jim Fisher (then of Caltrans) in 1994 and found to be eligible, although the evaluation was never forwarded to the SHPO for concurrence. This report concludes that of these eight bridges, six are eligible for National Register listing:

- 02-0011 Rte. 263 over the Shasta River, Siskiyou County, 1929
- 02-0015 Rte. 263 over the Klamath River, Siskiyou County, 1931
- 34C0063 Lincoln Way over Sunset Blvd., San Francisco, 1931
- 53-0397Y Gaffey Street Bridge, Los Angeles, 1935
- 53C1298 Riverside Drive over L.A. River, Los Angeles, 1938
- 55-0003 Rte. 1 over Aliso Creek, Laguna Beach, Orange Co., 1926

The two remaining T-beam bridges (33-0132Y and 44-0041) are not eligible for National Register listing.

4.2.2. Concrete Slabs

There are approximately 2,200 concrete slab roadway bridges in California that were constructed prior to 1960. Of these, one is listed on the National Register (as a contributor to the Presidio of San Francisco) and 16 others were previously determined eligible for National Register listing. Of these 16 bridges, 11 are part of the Arroyo Seco Parkway and three others are contributors to larger properties, while only two are individually eligible. The two individually eligible concrete slab bridges are:

- South Sutter Road over Mormon Channel in Stockton (29C0232). Built in 1915, this bridge is one of only two remaining examples in the state of the "mushroom" system developed by the engineer C.A. Turner in 1910. (The other Turner "mushroom" bridge is a concrete arch.)
- County Road 118 over Cameron Creek (46C0410). Also built in 1915, this bridge was an experimental design that uses steel trusses encased in concrete, forming the bridge railings, to support the concrete slab roadway.

Two concrete slab bridges that were determined eligible in the original statewide bridge survey have been removed since that time: 06C0293 and 06C0294. Both bridges were built in Shasta County in 1924, and were the state's only examples of concrete slab structures having arched concrete railings that provide support for the slab span.

The oldest known date of construction for a concrete slab bridge in California is 1900. There are only seven examples built before 1914, but the type becomes more common after that date, with 58 slab bridges built from 1914 to 1919, more than 200 in the 1920s, and increasing to almost 1,000 in the 1950s. All of the seven earliest examples are small bridges that lack engineering or aesthetic significance, and four of these also lack integrity due to later alterations.

Most of the concrete slab bridges have relatively short spans, with few examples having spans over 50 feet prior to the 1930s. Although slab spans approaching 90 feet were built prior to 1960, spans of this length or greater were easily achieved using other structure types. With the exception of the two bridges previously found individually eligible for National Register listing, no concrete slab bridges were found to have potential significance for their long spans or other engineering qualities.

Only two concrete slab bridges are evaluated in this report:

- Bridge 46C0046, Main St. over Porter Slough, Porterville, Tulare Co. (1939)
- Bridge 53C1380, West Blvd. over Venice Blvd., Los Angeles (1933)

Bridge 46C0046 is currently listed as Category 2 (eligible) in Caltrans' database, although this appears to be a data entry error, as there is no record of any prior evaluation of this bridge. Bridge 53C1380 is currently a Category 5 (ineligible) bridge. This report concludes that Bridge 46C0046 is not eligible for National Register listing, while Bridge 53C1380 is eligible under Criterion C, for its Art Deco design and ornamental embellishment.

4.2.3. Prestressed Concrete

A notable subset of concrete T-beam and slab bridges are those constructed of prestressed concrete. No prestressed concrete bridges were included in the original statewide historic bridge survey, since the first roadway bridge in California to use this technique was constructed in 1953. This report evaluates five of the earliest examples, all built from 1953 to 1955.

Prestressing is a method of increasing the strength of concrete, allowing for the use of less material and a shallower structure depth for beams and girders compared to typical reinforced concrete construction. It is therefore often used where the necessary vertical clearance requires a structure of minimal depth. The most common method of prestressing is to hold the reinforcing steel (rebar) in tension while the concrete is poured around it. When the concrete has set, the tension in the rebar is released, causing the rebar to contract and induce a compression force in the concrete that surrounds and is bonded to it. This internal compression significantly increases the strength of the concrete member.

Prestressing originated in Europe, with the French engineer Eugene Freyssinet playing a pioneering role in the first decades of the twentieth century. The method was used extensively in the reconstruction efforts following World War II, as it reduced the amount of steel required compared to regular concrete construction. In the United States, prestressing was first used for circular forms, such as pipes and tanks, and was not used for bridge construction until 1951. In that year, two roadway bridges of prestressed concrete were completed in the Eastern part of the country: The Walnut Lane Bridge in Philadelphia, and a bridge in Madison County, Tennessee [Dallaire: 118; Holley: 25].

The first bridge in California to use prestressed concrete was a pedestrian bridge over the Arroyo Seco Channel in Los Angeles, completed in the fall of 1951. It was reportedly the first bridge of this type not only in California, but also in the Western United States [Barton: 1]. The bridge's 110-foot span is carried by a pair of concrete girders, which were prestressed using groups of wires rather than reinforcing bars. Two years later, the first vehicle bridge of prestressed concrete was completed in Fresno (Bridge 42C0071, which is evaluated in this report).

In addition to the Fresno bridge of 1953, seven other extant prestressed concrete bridges date to 1954, and five date to 1955. The type quickly became a common part of the bridge designers' repertoire after this date, with 21 examples from 1956, 28 from 1957, and more than 70 each year in 1958 and 1959. The number of prestressed concrete bridges continued to increase from 1960 on, to a high of approximately 300 examples built in 1970. There are currently more than 5,000 prestressed concrete roadway bridges in California.

Most of the pre-1960 bridges of this type in California are small bridges, including many canal crossings. It appears that prestressing was used primarily where a minimal structure depth was desired, to reduce the amount of grading needed for approaches. There are no pre-1960 examples of prestressed concrete bridges with span lengths exceeding what was routinely accomplished with regular concrete construction. The only potentially significant bridges using prestressed concrete in the pre-1960 survey population are the earliest examples, from the developmental period for this technique in California, 1953 to 1955.

Of the 13 extant prestressed concrete bridges from 1953 to 1955, seven are small, insignificant examples. This group includes both T-beam and slab structures. One bridge from 1954, the John Street Overcrossing in Monterey County (Bridge 44-0121) was determined eligible for National Register listing in 2003, as the first application of this technique in a concrete box-girder bridge. The remaining five bridges are evaluated in this report, which concludes that one, the Weber Avenue Overcrossing in Fresno (Bridge 42C0071), is eligible for National Register listing under Criterion C.

4.3. Culverts

Culverts are typically concrete boxes, concrete pipes, or corrugated metal pipes. A single culvert may have only one box or pipe, or several placed side by side. Culverts with a total length (along the roadway alignment) of less than 20 feet are not considered bridges, do not have bridge numbers, and were not included in either the original bridge survey of 1986-88 or the present update. However, culverts with a total length of 20 feet or greater are considered bridges and have been assigned bridge numbers. These were included in the present Bridge Inventory Update.

There are approximately 1,100 culverts in California (hereafter referring only to those with bridge numbers) that were constructed prior to 1960. The oldest confirmed date of construction is 1911, although there may be earlier examples among those for which the construction date is unknown. However, fewer than 10% of the culverts were constructed before 1930, and more than 500 date only to the 1950s. 70 of the culverts are steel pipes, while all of the rest are of concrete.

There is only one culvert that has previously been determined eligible for National Register listing. This is bridge 53-0988T in Los Angeles, a pedestrian undercrossing which is a contributor to the Arroyo Seco Parkway. Three additional culverts are potential contributors to the pending National Register nomination of the Arroyo Seco Parkway, the boundaries of which have been expanded beyond those of the original eligibility determination.

In general, culverts were treated as categorically ineligible for National Register listing in the present Bridge Inventory Update. They are utilitarian structures that do not possess significance under any of the National Register Criteria. In the initial screening of common bridge types, only one culvert was identified that appeared to warrant individual evaluation: Bridge 54-0411, which carries Route 38 over Grout Creek in San Bernardino County. This 1938 structure is a steel pipe culvert with stone masonry facing. It was evaluated by Jim Fisher (then of Caltrans) in 1993 and found eligible for National Register listing, but the evaluation was never sent to the SHPO for concurrence. The evaluation included in this report is based on Mr. Fisher's evaluation of 1993. One other masonry-faced culvert was identified in the initial screening, but its size and setting are such that it does not appear to have any potential for significance under the National Register criteria.

4.4. Timber stringers

There are 530 timber stringer bridges in California that were built before 1960. Only ten of these are on state highways, with the remainder on local roads. None of these 530 bridges have been listed or determined eligible for listing on the National Register.

Timber stringer bridges consist of a series of closely spaced stringers, typically spanning between timber bents with multiple columns. The roadway is usually timber decking with an asphalt overlay, although some timber stringer bridges have concrete decks. Because of the lower strength of wood compared to concrete or steel, timber stringer bridges generally have spans of less than thirty feet. The largest of these bridges (57C0430, Hollister Street over the Tijuana River in San Diego) has 43 spans and is 800 feet in length, although most are one to four spans and are less than 100 feet long.

Only 16 extant timber stringer bridges in California are known to have been built before 1930, and only three before 1920. The oldest are two bridges constructed in 1910, although the date of construction is unknown for a large portion of the timber stringer bridges, and it is possible that one or more were constructed prior to 1910. However, the overwhelming majority of the extant pre-1960 examples were constructed in the 1930s through the 1950s, reflecting the fact that although this bridge type was historically quite common in California, they have been more susceptible to deterioration, and therefore replacement, than steel, stone, or concrete bridges.

Timber stringer bridges were generally used for small crossings where there were no significant site constraints or engineering difficulties. The type was often chosen because the materials are relatively inexpensive, and easy to transport and assemble. No timber stringer bridges are evaluated in this report. None of the 530 examples appeared to be potentially significant in the initial screening of common bridge types. As this was a well-established technology well before the earliest examples in California, none of the oldest bridges of this type are significant for their age. None of the pre-1960 timber stringer bridges exhibit technical innovations, ornamental embellishment, or any other characteristics that would make them significant under National Register Criterion C. In addition, none were found to have potential for individual significance under Criterion A.

5. Evaluations and Conclusions

The following 20 bridges are evaluated in this report, using Department of Parks and Recreation Inventory and Evaluation forms (DPR-523 forms).

	Bridge #	Name / Location	County	Date
1.	02-0011	SR 263 over Shasta River	Siskiyou	1928
2.	02-0015	SR 263 over Klamath River	Siskiyou	1931
3.	04-0076	U.S. 101 over South Fork, Eel River	Humboldt	1958
4.	20-0154L	U.S. 101 over Petaluma River	Sonoma	1955
5.	20-0154R	U.S. 101 over Petaluma River	Sonoma	1955
6.	23-0099	SR 128 over Putah Creek	Solano	1954
7.	24C0006	Jibboom Street Overhead	Sacramento	1937
8.	24C0364L	I Street Viaduct	Sacramento	1936
9.	33-0132Y	Golden Gate Avenue Undercrossing	Alameda	1934
10.	34C0024	Third Street over Islais Creek	San Francisco	1949
11.	34C0063	Lincoln Way over Sunset Blvd.	San Francisco	1931
12.	42C0071	Weber Avenue Overcrossing	Fresno	1953
13.	44-0041	Scenic Drive Overcrossing	Monterey	1930
14.	46C0046	Main Street over Porter Slough	Tulare	1939
15.	49-0042	SR 1 over Santa Maria River	San Luis Obispo	1955
16.	53-0397Y	Hwy. 110, Gaffey St. Overcrossing	Los Angeles	1935
17.	53C1298	Riverside Drive over L.A. River	Los Angeles	1938
18.	53C1380	West Blvd. Separator	Los Angeles	1933
19.	54-0411	SR 38 over Grout Creek	San Bernardino	1938
20.	55-0003	SR 1 over Aliso Creek	Orange	1926

This report concludes that ten of these 20 bridges meet one or more of the criteria for listing on the National Register of Historic Places. The DPR-523 forms for the ten eligible bridges are in Appendix I, while the forms for the ten ineligible bridges are in Appendix II. The ten eligible bridges are listed and briefly described below:

- Bridge 02-0011, a concrete T-beam structure, meets Criterion A as one of five significant bridges constructed in the late 1920s and early 1930s as components of an important transportation corridor, Highway 263 (originally Hwy. 99) through the Shasta River Canyon.

- Bridge 02-0015, a concrete T-beam structure, also meets Criterion A as one of five significant bridges constructed as components of the highway through the Shasta River Canyon. This bridge also meets Criterion C, as one of the state's most impressive examples of concrete T-beam bridge construction.
- Bridge 34C0024, a steel girder bascule bridge, meets Criterion C as a distinctive example of Art Moderne design applied to a bridge.
- Bridge 34C0063, a concrete T-beam structure, meets Criterion C for its distinctive design qualities, forming a monumental gateway to San Francisco's Golden Gate Park.
- Bridge 47C0071, a prestressed concrete girder bridge, meets Criterion C as the state's first use of prestressed concrete in a vehicle bridge.
- Bridge 53-0397Y, a concrete T-beam structure, meets Criterion C as a distinctive example of Art Deco design applied to a bridge.
- Bridge 53C1298, a concrete T-beam structure, also meets Criterion C as a distinctive example of Art Deco design applied to a bridge.
- Bridge 53C1380, a concrete slab structure, meets Criterion C for the artistic values embodied in its design and ornamental features.
- Bridge 54-0411, a stone-faced, steel culvert, meets Criterion C for the artistic values embodied in its distinctive stonework, constructed to enhance the scenic roadway of which it is a part.
- Bridge 55-0003, a concrete T-beam structure, meets Criterion A as a significant link in the development of the Pacific Coast Highway, and for its role in facilitating the development of adjacent seaside communities.

6. Preparer's Qualifications

This report was prepared by Andrew Hope, Associate Environmental Planner (Architectural History) at the California Department of Transportation in Sacramento. Mr. Hope has a B.S. in Architecture from the University of Michigan and a Master of Architecture degree from the University of Wisconsin at Milwaukee. Work experience includes 12 years with Caltrans doing historic property surveys and Section 106 compliance, and four years with the New York State Historic Preservation Office reviewing Section 106 compliance documents. Mr. Hope meets the Secretary of the Interior's Professional Qualifications

Standards for architectural history, and is qualified as a Principal Architectural Historian pursuant to the Programmatic Agreement among Caltrans, FHWA, the California SHPO, and the Advisory Council on Historic Preservation.

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Appendix I:

Inventory and Evaluation Forms (DPR-523 Forms) for bridges that are eligible for listing on the National Register of Historic Places.

02-0011	State Route 263 over the Shasta River, Siskiyou County
02-0015	State Route 263 over the Klamath River, Siskiyou County
34C0024	Third Street over Islais Creek, San Francisco
34C0063	Lincoln Way over Sunset Blvd., San Francisco
42C0071	Weber Avenue over Belmont Avenue, Fresno
53-0397Y	Gaffey Street Overcrossing at Interstate 110, Los Angeles
53C1298	Riverside Drive over the Los Angeles River, Los Angeles
53C1380	West Blvd. over Venice Blvd., Los Angeles
54-0411	State Route 38 over Grout Creek, San Bernardino County
55-0003	State Route 1 over Aliso Creek, Orange County

Appendix II:

Inventory and Evaluation Forms (DPR-523 Forms) for bridges that are ineligible for listing on the National Register of Historic Places.

04-0076	U.S. Hwy. 101 over the Eel River, Humboldt County
20-0154L, R	U.S. Hwy. 101 over the Petaluma River, Sonoma County
23-0099	State Route 128 over Putah Creek, Solano County
24C0006	Jibboom Street Overhead, Sacramento
24C0364L	I Street Viaduct, Sacramento
33-0132Y	Broadway over Golden Gate Avenue, Oakland
44-0041	Scenic Drive over State Route 68, Monterey County
46C0046	Main Street over Porter Slough, Porterville, Tulare County
49-0042	State Route 1 over the Santa Maria River, San Luis Obispo Co.