NPS Form 10-900
(Rev. 10-90)

OMB No. 1024-0018

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United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES
REGISTRATION FORM

1. Name of Property

Historic name: **MOUNTAIN QUARRIES BRIDGE**

Other names/site number: **MOUNTAIN QUARRY CEMENT BRIDGE, , PACIFIC PORTLAND CEMENT COMPANY RAILROAD BRIDGE, AMERICAN RIVER QUARRY BRIDGE, AUBURN CONCRETE ARCH BRIDGE, NO HANDS BRIDGE**

2. Location

Street & number: **North Fork of the American River** not for publication ___
City or town: **Auburn** vicinity **X**
State: **California** code **CA** county **Placer** code **061**
Zip code: **95603** **El Dorado** code **017**

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act of 1986, as amended, I hereby certify that this X nomination ____ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property X meets ____ does not meet the National Register Criteria. I recommend that this property be considered significant ___ nationally X statewide ___ locally. (___ See continuation sheet for additional comments.)

11-18-03

Signature of certifying official Date

Bureau of Reclamation

State or Federal agency and bureau

In my opinion, the property ✓ meets ____ does not meet the National Register criteria. (___ See continuation sheet for additional comments.)

Stephen D. Nickerson DSHPO 1-3-03

Signature of commenting or other official Date

State or Federal agency and bureau

4. National Park Service Certification

I, hereby certify that this property is:

✓ entered in the National Register _____ _____
___ See continuation sheet.
____ determined eligible for the _____ _____
National Register
___ See continuation sheet.
____ determined not eligible for the _____ _____
National Register
____ removed from the National Register _____ _____

____ other (explain): _____

_____ 2/11/04 _____
Signature of Keeper Date of Action

5. Classification

Ownership of Property (Check as many boxes as apply)
___ private
___ public-local
___ public-State
X public-Federal U.S. Bureau of Reclamation

Category of Property (Check only one box)
___ building(s)
___ district
___ site
X structure
___ object

Number of Resources within Property

Contributing	Noncontributing	
_____	_____	buildings
_____	_____	sites
1	_____	structures
_____	_____	objects
_____	_____	Total

Number of contributing resources previously listed in the National Register 0

Name of related multiple property listing (Enter "N/A" if property is not part of a multiple property listing.) **Not Applicable**

6. Function or Use

Historic Functions (Enter categories from instructions)

Cat: **Transportation Rail-related** Sub:

Current Functions (Enter categories from instructions)

Cat: **Transportation** Sub:

7. Description

Architectural Classification (Enter categories from instructions)

Other - Concrete Arch Bridge

Materials (Enter categories from instructions)

Foundation	**Reinforced Concrete**
Roof	**Not Applicable**
Walls	**Reinforced Concrete**
Other	**Piers - Reinforced Concrete**

Narrative Description (Describe the historic and current condition of the property on one or more continuation sheets.)

X See continuation sheet

8. Statement of Significance

Applicable National Register Criteria (Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing)

____ A	Property is associated with events that have made a significant contribution to the broad patterns of our history.
____ B	Property is associated with the lives of persons significant in our past.
X C	Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.

____ D Property has yielded, or is likely to yield information important in prehistory or history.

Criteria Considerations (Mark "X" in all the boxes that apply.)

____ A owned by a religious institution or used for religious purposes.
____ B removed from its original location.
____ C a birthplace or a grave.
____ D a cemetery.
____ E a reconstructed building, object,or structure.
____ F a commemorative property.
____ G less than 50 years of age or achieved significance within the past 50 years.

Areas of Significance (Enter categories from instructions)

Engineering

Period of Significance

1912

Significant Dates

1912

Significant Person (Complete if Criterion B is marked above)

Not Applicable

Cultural Affiliation

Not Applicable

Architect/Builder

Mr. John B. Leonard, of the firm Leonard & Day, Engineer
Duncanson-Harrelson Company, Building Contractors
J.B. Harrington, Chief Construction Engineer

Narrative Statement of Significance (Explain the significance of the property on one or more continuation sheets.)

X See continuation sheet

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9. Major Bibliographical References

(Cite the books, articles, and other sources used in preparing this form on one or more continuation sheets.)

X See continuation sheet

Previous documentation on file (NPS)
___ preliminary determination of individual listing (36 CFR 67) has been requested.
___ previously listed in the National Register
___ previously determined eligible by the National Register
___ designated a National Historic Landmark
___ recorded by Historic American Buildings Survey # _____
___ recorded by Historic American Engineering Record # _____

Primary Location of Additional Data

___ State Historic Preservation Office
___ Other State agency
___ Federal agency
___ Local government
___ University
___ Other

Name of repository: _____

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10. Geographical Data

Acreage of Property: Less than one acre

UTM References (Place additional UTM references on a continuation sheet)

Northing	Easting
4308704N	10 669905E

Latitude	Longitude
38-54-45.700000	121-05-29.700000

X See continuation sheet

Verbal Boundary Description (Describe the boundaries of the property on a continuation sheet.)

Boundary Justification (Explain why the boundaries were selected on a continuation sheet.)

The boundary encompasses the entire historic resource, including the main arch spans and approaches

11. Form Prepared By

Name/title **Hal V. Hall, a United States Private Citizen and Member of the following:**

Organizations **Placer County Historical Museum Foundation**
Placer County Historical Society
Western States Run Foundation
Western States Trail Foundation

Date **July 1, 2002**

Street & number **385 Robie Drive** telephone **530.885.1165**

City or town **Auburn** state **California** zip code **95603**

Additional Documentation

Submit the following items with the completed form:

Continuation Sheets

Maps

A USGS map (7.5 or 15 minute series) indicating the property's location.
A sketch map for historic districts and properties having large acreage or numerous resources.

Photographs

Representative black and white photographs of the property both current and from the past.

Additional items (Check with the SHPO or FPO for any additional items)

Property Owner

(Complete this item at the request of the SHPO or FPO.)

Name _____

Street & number_____ telephone_____

City or town_____ state_____ zip code _____

Description

Summary: The Mountain Quarries Bridge is located approximately a mile east of the City of Auburn across the American River, just downstream from the confluence of its north and middle forks, and immediately downstream from the State Route Highway 49 crossing. Although massive, the arch bridge is plain in appearance yet possesses a gracefulness that is in perfect harmony with its rugged surroundings.

The Mountain Quarries Bridge is shown on the Auburn Quadrangle Sheet of the Unites States Geological Survey and is located in northwest corner of Section I2, Township 12 North, Range 8 East, MDB&M.

Historic Account and Description of the Bridge: In 1910 the newly formed Mountain Quarries Company of San Francisco, a subsidiary of Pacific Portland Cement Company, contracted the Duncanson-Harrelson Company to construct a railroad bridge to cross the American River just below the confluence of the North Fork and the Middle Fork, near their limestone quarry. The bridge was a single-track structure used for a standard gauge rail, 482 feet from abutment to abutment. The Placer County approach is 72 feet in length, while the El Dorado County approach is 100 feet long, making the overall length of the structure about 650 feet. The bridge is 15 feet wide and 70 feet high with three 140-foot solid barrel skewed arch spans. At the time of its construction in 1911 the span bore the distinction of being the longest span concrete arch railroad bridge owned by a private concern. The heavy Mallet compound engine used by the company along with the weight being carried behind it required the bridge to be carefully designed. It continued to serve as a railroad bridge until about 1940 after which it was used as an equestrian crossing.

300 men at a cost of $300,000 completed the bridge in two years.

Details of Design: The arch rings of reinforced concrete with a crown thickness of 3 feet, 3 inches have solid spandrel walls also of reinforced concrete retaining the earth fill and ballast. The rough and precipitous nature of the banks of the river necessitated locating both approaches on 16-degree curves and placing the piers and abutments at a skew of 45-degress with the centerline of the bridge. The traffic over the bridge was exceedingly heavy from which many trainloads of quarried limestone were taken out daily.

The decorative detailing is limited to minor incised panel work at the arches and piers and a concrete cap wall. Modern handrails are 2-inch metal pipe approximately 3 feet high on either topside along the entire length of the bridge. The design details of the bridge include the following:

- Arch Rings - The arches, with a span of 140 feet and a rise of 24 feet have a crown thickness of 3 feet, 3 inches and a vertical thickness of 10 feet at the springing line. The main reinforcement consists of 1 ¼ inch square bars 30 feet long spaced 6 inches on center extending well into the abutments and piers.

- Abutments - The abutments with footings 20 feet by 29 feet 8 inches and 3 feet thick are of plain concrete except for a few bars in the bottom edges of footing course to reinforce the 2 feet projections beyond the abutment proper at sides and back. The footings are founded on solid rock and the bottoms

are perpendicular to slope of the intrados at the springing. The back of the abutment has a much flatter slope than the back of the arch ring at the intersection of the two.

- Piers - The piers on a 45-degree skew with the centerline of the arches are of solid plain concrete, resting on bedrock a few feet below the streambed. The width at right angles to the axis of pier is 10 feet 11 ½ inches under the coping that projects 1 foot 3 inches. The bottom width is 15 feet 6 inches due to the constant batter of the faces, while the length of piers at bottom is 49 feet 6 inches. A skewed cutwater extending up to the coping is placed at each end of the pier. The coping is 2 feet thick with a 6-inch bevel to the edge at the top. The total height of piers to springing line is 40 feet.

- Spandrels - The spandrel walls have a top width of 1 foot under the coping 21 inches deep, which projects 6 inches. The face of walls are vertical while the backs have a constant batter such that they are 1 feet thick at the top and 3 feet at the deepest part 10 feet above the springing line. The coping is reinforced with four 1-inch horizontal bars; two near the top and two near bottom. At the junction of the spandrel with the back of the arch ring is placed a 1 1.2 inch triangular coursing groove to emphasize the arch ring and hide the construction joint.

  Over piers and abutments the spandrel was is made 1 foot thicker for a length of 13 feet at the face to form a projecting pilaster with an inset panel. The back of this portion slopes the same as the rest of the spandrel wall. These walls are 21 feet high over the haunch backing of the arches. The spandrel walls are entirely separated from these pilasters by vertical expansion joints, the pilasters projecting over the ends of spandrels to hide the joint. The spandrels are 3 feet 11 inches high at the crown of the arches while the spandrel fill is 3 feet 8 inches deep at this point. Three 3-inch drain holes are at each side of the piers and over abutments to drain the fill.

- Approaches - The approaches at either end consist of heavy reinforced concrete slabs carried on longitudinal walls also of reinforced concrete that follow very closely the curve of the track at the approaches in order to keep the span of slab to a minimum. The fill over these slabs is the same as at the crown of the arches and the spandrel walls are also the same.

  The approach at the quarry end of the bridge on the El Dorado County side is considerably longer than the one at the Auburn end. At points where breaks occur in the alignment of the longitudinal walls, cross-walls 1 foot thick, extend from one side to the other. This necessitates two inner cross-walls in each approach not counting the cross retaining walls over abutments. These latter walls are 2 feet thick and reinforced.

  The longitudinal bearing walls of varying height are 2 feet thick with a 3-foot footing course 1 foot 6 inches deep. Eighteen inch 45 –degree fillets are placed at connection of sidewalls with deck slabs.

  The deck slabs with an average span of 12 feet are 3 feet thick and reinforced. Where the slope becomes so steep that one sidewall can be omitted and also at ends where slab intersects the ground

line, the slabs are rested directly on the solid rock. The nature of the slopes makes a short retaining wall necessary at each end of the bridge, on opposite sides. These walls have a copinng the same as spandrel walls, a vertical face. The tops of all approach slabs are inclined 2 inches toward the longer longitudinal wall to provide for drainage.

Recent Chronicled Accounts: There is something to be said about the stability of the Bridge. Modern bridge builders have constructed no less than three highway bridges upstream from the bridge, and each time torrential floods have ripped the modern bridges out while the Mountain Quarries Bridge remains unscathed by the ravages of the elements. In 1965 the California State Highway Department used the bridge as a detour while a new bridge was being built to replace one washed out in the great flood on the American River in 1964.

In 1975, portion of the old rail route including the span of the Bridge was designated as the Western States Pioneer Express Recreation Trail for equestrian and hiking purposes (see Recreation Section below).

After a few earlier studies in 1969 and 1992 including one in late 1995, the Bureau of Reclamation deemed the Bridge a concern over the its stability should another major flood event occur. However, after careful consideration by the Bureau of Reclamation the U.S. Congress appropriated sufficient amount of money to stabilize and repair the pier foundation that had considerable erosion after 90 years of torrid currents and river floods. The questionable foundation of the left pier underwent repairs in 1998 without any effect to the historical quality or character of the Bridge.

In September 1990, the U.S. Department of the Interior, Bureau of Land Management, issued the American River National Recreation Area Feasibility Study. The Bridge was determined to be a historic site that is nationally significant in the Outstanding Feature section of the study.

In February 1993, the Bureau of Reclamation issued a final report of the American River Water Resources Investigation Technical Team's Inventory and Recommendations for Wild and Scenic Eligibility and Preliminary Classification. This reported included the Bridge as having Outstanding Remarkable Values (ORV) under the cultural section. Prior to this report, in September 1992, the Bridge was a part of a cultural resource survey and based on the various reports and guidelines for ORV's the Bridge met the indicators for ORV designation under the Twentieth Century Era category.

The historical significance of bridge is documented and currently listed on the register of the American Society of Civil Engineers' Historic Civil Engineering Landmarks of Sacramento and Northeastern California. The bridge is also identified in the following records:

- Historic Resources Inventory, Placer County Department of Museums, Auburn, California, June 1992.
- Historic American Engineering Record (Inventory cards), Heritage Conservation and Recreation Services, Library of Congress.

Surrounding Features: The following sections provide further descriptions of the area surrounding the Bridge including the river canyon, area characteristics, landforms, minerals, climate, air quality, vegetation, timber, noise, recreation, cultural features/archaeological and historic sites, bridges, scenic quality, transportation, and landownership and uses.

- River Canyon - The North and Middle Forks of the American River Canyon ("river canyon") are representative of the drainage of the central and northwestern Sierra Nevada mountain range slope. It has a sharply incised, deep, nearly straight river canyon with a low stream gradient and a smooth, gentle regional slope on the ridgelines. The upper portions of the drainage have increased stream gradients and more irregular ridge topography. The rivers flow through long, narrow valleys, being confined by the steep canyon walls that extend some 1,200 to 2,500 feet above the river.

  The river canyon is generally accessible only by paved road and a network of riding and hiking trails. The only access to the bridge is the former railroad grade from either the side of the river canyon. There are two road crossings of the river within this area, State Route Highway 49 and another conventional vehicle bridge both upstream from the Mountain Quarries Bridge near the river's confluence.

- Area Characteristics - The canyon walls move in so that the river canyon becomes a mere hollow with the riverbed varying from 25 to 75 feet in width.

  Vegetation species and density change with almost each bend in the river, with mixtures from small stands of mixed conifer to extensive stands of hardwoods (oak, maple, and bay).

  The north-facing slopes are vegetated with mixed conifer and hardwoods while the south facing slopes support mixed hardwood and brush species.

- Landforms - The canyon lands of the North and Middle Fork of the American Rivers are the western part of the deep; middle reaches of the major Sierra Nevada streams that were formed during the period of erosion that followed the overlying of the range by deposits from volcanic material. This material included ash, andesite mud-flows and other rock flows. Slopes of this area steep, varying from 30 per cent to vertical. The stream gradients are generally low to moderate, and the character of the river canyon faces and slopes vary. In the steeper portions where the exposed rock faces are viewed from the river bottom, it gives an enclosed feeling; when viewed from the canyon rim, it provides a perception of great depth and height.

- Minerals - Metallic mineral resources of the river canyon consist mainly of gold, silver and chrome. Minor amounts of copper, lead and zinc occur in some gold-silver deposits. Most of the gold and silver lode deposits are quartz veins. Placer gold deposits occur in late Tertiary, Pleistocene and Recent gravels.

- Climate - The river canyon have a Mediterranean-type climate marked by warm, dry summers; colder, wet winters; with a fairly large range in daily and seasonal temperatures. Weather varies considerably by elevation and season.

- Air - Air quality within the river canyon is good-to-excellent although there are times when pollutants drift in from the Sacramento valley with the prevailing westerly and southwesterly winds. These winds are also a major influence, which minimize drift of emissions from I-80 to the north into the river canyon.

  The diurnal windflow pattern typical of mountainous regions in which winds flow up drainages during the daylight hours and down in the night-time hours along with prevailing winds being parallel to the drainage helps to "flush" out the river canyon.

- Vegetation - The flora in the two canyons is diverse, interesting and to some extent complex. Geologic variability and climate have combined forces to make the river canyon an interesting mosaic of plant communities.

  The river canyon are considered to be well covered with vegetative types that normally occur in the range of thermic and mesic soil temperature classes and that can also be correlated with aspect and soil types. There are considerable areas of rock and rock outcrops on which little to no vegetation grows. These areas are more extensive on the north canyon walls except where rock slopes and cliffs are predominate on both the north and south sides of the canyon.

  The conifers consist of: digger pine, Douglas fir, incense cedar, jeffery pine, ponderosa pine, sugar pine, California nutmeg, red and white fir. Hardwood species include alder, willow, aspen, big leaf maple, interior and canyon live oak, black oak, California Bay and associated shrubs. Meadows are not common to the river canyon area.

  Except for mining, past uses and activities in and along the river have been minimal and have not contributed in any noticeable alteration of the vegetation. Mining may have had some impact in very small local areas; however, this activity took place 40 to 100 years ago and what impact it had on the vegetative composition is not apparent to the average river canyon user at this time.

  Poison oak is common to the river canyon area at this elevation.

  There are no known findings of threatened or endangered plant species within the river canyon. However, this does not mean that there are none, since the river canyon is within the range of several species on the list.

- Timber - Very little or no timber harvesting has occurred within the immediate river canyon. Most of the timber that has been removed has been along the upper edges of the canyon.

The steep canyon slopes, inaccessibility, small volumes and scattered timber have all been important reasons for the lack of timber harvest activities within the river canyon in the past. The federal lands within the river canyon continue to be managed for values other than their timber resource.

With the timber in the river canyon not being a part of a standard timber management component and not expected to be included as such in the future, the average annual potential yield from the federal lands in the area is insignificant.

- Noise - Noise associated with man's activities is limited within the river canyon. It is mainly associated mostly with automobiles and motorcycles, and, to a lessor extent, suction dredges.

- Recreation - The mountains, forests, rivers, streams and lakes of the Sierra Nevada provide a wide choice of recreational opportunities in northeastern California that contribute substantially to the economy of the area.

  Lake Tahoe, Granite Chief Wilderness, North Fork American Wild and Scenic River, Auburn and Folsom State Parks, and the Middle Fork Feather Wild and Scenic River, are recreation attractions of national significance that exist within a 100 mile vicinity of the Mountain Quarries Bridge.

  There are no developed recreation sites at the Mountain Quarries Bridge site.

  A portion of the railroad grade including the span of the Bridge received National Recreational Trail status by the Secretary of the Interior in 1975, pursuant to the National Trails Systems Act. Approximately 50% of the former rail route is utilized as a riding and hiking trail known as the Western States Pioneer Express Recreation Trail (Western States Trail). The trail extends from Beals Point near Folsom, California, to the Tahoe National Forest near Foresthill, California. The United States Forest Service plans include designating the Western States Trail as a National Recreational Trail to Squaw Valley. It is possible that the remaining portions of the rail route could become functional and expanded for the aforementioned forms of recreation. The designation has provided trailhead type facilities in the area as well as improved trail access and maintenance. In addition, this portion of trail is part of the proposed American Discovery Trail.

  The Rails-to-Trails Conservancy, an organization that promotes the conversion of abandoned rail corridors to trails in the United States, added the railroad grade including the bridge span to their popular directory of existing rail-trails, American's Rail-Trails in 1992.

  All recreation use in the area is in a dispersed form. This use is in close proximately of the bridge is mostly dependent upon the existing trail access into the river canyon.

The limited access restricts the types of use, as well as the levels of use in the river canyon near the Bridge.

Although the area has never been sampled for recreation use, the following is a general estimate of existing activities within the river canyon:

- Fishing
- Recreational Mining
- Motorcycle Use
- Hiking, running and backpacking
- Hunting
- Horseback Riding
- Overnight Camping
- Swimming
- Rafting and kayaking
- Viewing Scenery
- Nature Study
- Enjoying Unusual Environment
- General Knowledge and Understanding

Use is generally found only along the corridor on each side of the river canyon and mostly in the bottom of the canyon and along the Western States Trail and other network of trails leading into and out of the canyon.

Activities vary depending upon accessibility to the river canyon. Use in the rugged forges is limited to gorge scramblers and a few hardy fishermen who enjoy this unique environment. In portions of the river canyon with gentler terrain and better trail access, a wider variety of uses are found.

The Bridge is also a portion of the historic, Tevis Cup Western States 100 Mile One Day Ride and the Western States 100-Mile Endurance Run, held annually from Squaw Valley, to Auburn, California.

It is recognized that many factors could affect recreational use in the future; a continuing drought or increasing fuel shortages would undoubtedly tend to decrease future use. On the other hand, increases in the local population, improved access, additional trails or increased publicity may increase the use in the area.

- Cultural Features/Archaeological and Historic Sites - According to ethnographic accounts, the southern Maidu inhabited the American River area. Before the Europeans arrived, there were several thousand southern Maidu occupying the grasslands and foothills of this region. Like other foothill Sierra groups, they migrated on a seasonal basis from west to east. In the spring and continuing through the summer,

they would move up into higher elevations, where they built temporary encampments. During this time, they gathered a variety of seasonal plants, fished, and hunted game that was not available to them at lower elevations (Sanborn 1974).

The geographic distribution and frequency of sites shows a pattern of limited or temporary settlement of the river canyon. This pattern coincides with other accounts that indicate that the peoples of the western Sierra foothills migrated to the higher elevations during the summer months and occupied the ridges instead of the canyon.

During the heyday of the Gold Rush era, there were several thousand people living in the river canyon. Evidence of this activity is found in the remnants of old flume benches and ditches that carried the water from tributary streams. In places where the rivers may have been diverted for this purpose, the heavy spring runoff and floods have obliterated most, if not all, of the evidence.

The historic sites near the Mountain Quarries Bridge are related in some way to the various periods of gold mining in the respective river canyons. Evidence of past mining operations may consisted of stamp mills, compressors, adits and related items used by miners in that era. All of this equipment was brought down into the canyon in pieces by animal (mule, oxen or by horseback) or skidded and then assembled.

The following gold rush sites along the American River are located within a few miles of the Mountain Quarries Bridge:

- Louisiana Bar
- New York Bar
- Murderer's Bar
- Mammoth Bar
- Junction Bar
- Tamaroo Bar

The archeological site of Hawyer's Cave was located at the former quarry site near New York Bar.

- Bridges - There are two conventional automobile bridges over the North Fork of the American River that is up stream from the Mountain Quarries Bridge. Neither the location nor the scale of these other bridges detracts from the setting of the Mountain Quarries Bridge. The proximately of these conventional bridges to Highway 49 merely facilitates public access to and appreciation of Mountain Quarries Bridge. These bridges do not fall within the period of significance and are not in keeping with the character of the Mountain Quarries Bridge.

- Scenic Quality - The area surrounding the Mountain Quarries Bridge comprises some of the most spectacular and distinctive gorges and canyon lands found within the middle Sierra Nevada Region. The high scenic quality of the river canyon is derived from an unusual diversity of landforms, rock formations, vegetative patterns and water characteristics. The arrangement of natural features within the river canyon creates a variety of unusual landscape settings.

  The canyon bottom, moderately narrow and mildly curving, permits open views of the large-scale, steep canyon walls composed of olive green patches of brush and oak interspersed with gray rock outcrops. Major lateral canyons and ridge lines form dramatic diagonal lines that descend to the canyon bottom and create additional visual interest and a primary focus of attention.

  The river canyon is nearly linear in configuration, with the viewer observing broad-scale open vistas of the river and canyon walls that show broad, uniform slopes. Vegetation patterns show a degree of landscape variety that is common to much of the Sierra Nevada region. The river canyon bottom offers considerable variation in width, shoreline and water flow characteristics.

  Evidences of man's past activities are generally not apparent to viewers from the river. Except for the Bridge in the river canyon and occasional glimpses of the old trails that parallel the river or canyon wall virtually all of the structures, and some of the mining machinery and other past disturbances have been grown over and/or screened by dense vegetation.

  The scenic value of the river canyon near the Mountain Quarries Bridge can be realized by considering the variety of vegetation; the numerous, deep, blue-green pools separated by the rapids and riffles of white water; the gorges and bluffs; and, the occasional view of the higher mountains in the background. These all combine to create the unique scenery along the Bridge.

- Transportation - Although transportation to the river canyon near the Mountain Quarries Bridge is gained by way of State Route Highway 49, the terrain has been the major deterrent in limiting access within the rest of the river canyon to the Bridge.

- Landownership and Uses - The Mountain Quarries Bridge is in federal ownership (100%). Specifically, the United States Bureau of Reclamation is the federal owner and the California Department of Parks and Recreation now manages land for recreational purposes as part of the Auburn State Recreation Area.

  There are no electric, gas or oil lines within or along Mountain Quarries Bridge area; however, there is a SBC Pacific Telesis telephone line buried in the earth-filled portion of the bridge. The line is not visible and has no effect to the historical quality or character of the Bridge.

Statement of Significance

Summary: Based on the information obtained from various archival sources, and after assessing the historical significance of the various railroad bridges in reference to the National Register of Historic Places eligibility criteria, the Mountain Quarries Bridge meets the eligibility criteria by virtue of the high degree of integrity of location setting, workmanship, materials, feeling and association. The Bridge exemplifies these characteristics.

The Bridge embodies the distinctive characteristics of a type, period, and method of design/construction and represents the work of a master, a noted engineer and designer, John B. Leonard. Mr. Leonard was a pioneering proponent of the use of reinforced concrete in California and the Mountain Quarries Bridge is an excellent example of heavy concrete design characterized by a grace and lightness of feeling that belies the nature of its construction material. Mr. Leonard also designed other reinforced concrete bridges throughout California and Nevada along with a score of concrete buildings.

Historic Context: In the early 1900's the Pacific Portland Cement Company built a special railroad line that connected their limestone quarry operation known as Mountain Quarry in El Dorado County four miles east of Auburn, California, along the Middle and North Forks of the American River, near Junction Bar, with the west bound Southern Pacific main line at Auburn, in Placer County. The high grade of limestone was quarried and transported by rail for use in the manufacturing of cement and the refining of sugar.

The Mountain Quarry Cement Bridge or Mountain Quarries Bridge, sometimes referred to as "No Hands Bridge", was completed on March 23rd, 1912. At the time of its construction the bridge was the longest concrete skew arch railroad bridge in the world. The building of the bridge was also to determine if concrete was practical in building long bridges. Although a couple of construction faults plagued the building of the Bridge it was considered a great piece of railroad bridge engineering. The bridge stands today as a proud monument to early day engineering and to the men who worked with somewhat primitive tools to create it.

The Mountain Quarries Bridge has withstood the tugging of the American River currents for over 90 years and stayed on its footings when the Hell Hole Dam broke in December of 1964 and took out two modern bridges upstream. The Bridge also withstood the so-called "Valentine Day Flood of 1986" which caused the destruction of a 200-foot earth-filled coffer dam a few miles further down river. These and other occurrences attest to the achievement of John Leonard's use of reinforced concrete.

This structure is currently listed in the Historic Civil Engineering Landmarks of Sacramento and Northeastern California because it represents an early, rare, and unique example of reinforced concrete in a railroad bridge.

The Bridge has served merely as a landmark since the railroad went out of service in 1939. It did, however, serve a purpose shortly after the Hell Hole Dam flood during months after December 1964. The dam located some 40 miles upstream brought tons of thundering water and debris down the Middle Fork. The force of the winter rain was enough to tear out the newer concrete bridge to Georgetown, but the cement railroad bridge survived and proved of suitable temporary service as it routed vehicle traffic to and from Placer and El Dorado County while repair work progressed on the modern structure.

The rail route's 17 trestles and line of tracks were removed in the 1940's during the war.

Statement of Significance and Eligibility: The Mountain Quarries Bridge meets the National Register test of eligibility under ***Criterion C*** for distinctive engineering characteristics. The bridge contains features of engineering skills, as is demonstrated by the type of reinforced concrete employed at the turn of the twentieth century. The structure also meets test of eligibility of transportation as it was designed to carry the largest locomotives of the day as well as cars laden with limestone. The distinctive engineering represents the work of a master, Mr. John B. Leonard.

The assessment of the bridge's engineering and transportation is referenced to the following definitions: period of significance, integrity, location, design, materials, workmanship, feeling, association, and uniqueness.

Period of Significance: The Bridge served as an important railroad connection between 1912 to the 1940's for the hauling of limestone approximately 7 miles from the Cool Quarry to the Southern Pacific rail line in Auburn, California.

Integrity: The overall historical and natural integrity of the Bridge is very high.

The integrity of the Bridge remains in its original state; however, in 1999 one of the piers in the Bridge was stabilized and repaired. Despite the repair, the Bridge retains its original visual qualities since much of the stabilization and repair occurred below the water level. This rehabilitation work used concrete materials much like what was used during the period of construction of the Bridge.

The Bridge's integrity of design is only slightly impaired by the modified railing installed by the Bureau of Reclamation as a safety precaution in September 1984.

Today, the bridge can be found much the same as it was over 90 years ago. While it has not been used in the traditional transportation means as a railroad since the 1940's, pedestrians and equestrians use it. The bridge retains its historic character

and has not been affected by modern development. The recent repairs made to the bridge has not diminished its integrity nor affected its historic and engineering value.

Location: The Mountain Quarries Bridge is located in a rugged river canyon corridor on the county border of Placer and El Dorado Counties, in the western foothills of the Sierra Nevada Mountains. Since its construction in 1912, the bridge has undergone no changes to its original design, and today clearly retains its locational association with early bridge engineering and design.

Design: The bridge demonstrates and shows evidence of a quality of engineering design that is representative of 20th century railroad bridge construction. For example, the live load used in the design and analysis of stresses in the arch had to support heavy Mallet locomotives being used to haul rock from the quarry to Auburn.

Due to the engineering difficulties inherent in the restricted canyon site, the Bridge had to be skewed rather than crossing the stream at the preferred right angle. Mr. Leonard met the requirement with a bridge that proved to be twenty percent cheaper than a steel structure designed for the same site. The bridge was designed for permanence. With the completion of the Mountain Quarries Bridge furthered Leonard's experimentation in reinforced concrete bridge design continued into the next decade.

With its tracks removed during World War II, the bridge has stood unmaintained in quiet abandonment. Yet, in the 1950's and 1960's, was twice pressed into emergency service as a vehicular bridge when floods washed out highway bridges a few hundred yards upstream.

Materials: The use of reinforced concrete in 1911 was still considered an experiment by some engineers because it was a relatively rare use of the material in railroading. Extant materials used were purely functional to attain the best means possible to secure the stability of the bridge for calculated load and possible erosion of its piers from the water current. Carefully arranged features demonstrate the engineering skills employed over 90 years ago. The uses of California products - cement, sand, gravel and reinforcing steel - negated the often-lengthy wait for eastern materials associated with steel bridges.

Workmanship: The bridge features, and the overall original design, evidence the workmanship that went into its construction. For example, all of the foundations were carried to bedrock and the walls were 18" thick with twisted iron rods. Workmanship included the construction of uniform construction joints between the rib and the

spandrel walls in order to prevent the usual ragged, unsightly line and the efflorescence seen on many bridges. All three arches are alike in design and construction. The integrity of the construction of the bridge provides a unique source of information on 20th century bridge design, engineering and construction.

Feeling: A grace and lightness of feeling that belies the nature of its construction material characterizes Mr. Leonard pioneering use of reinforced concrete in the bridge design. Aesthetically, the bridge offers conformity with its surrounding environment with a pleasing outline and appropriate use of ornament.

Association: The bridge represents an early era of bridge building with virtually no major alterations to the setting since its completion. The bridge also exhibits the determination and strength of character of the hundreds of bridge builders, to develop and maintain such a model transportation system link.

Uniqueness: The bridge is unique to this area despite other concrete reinforced bridges designed by Mr. Leonard in California and Nevada. The high degree of integrity, the early period of construction (1911 to 1912), the length of time that it had continuous use as a railroad bridge, and the roughness of the terrain indicates that this bridge is unique.

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United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

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GEOGRAPHIC DATA

Verbal Boundary Description:

The Mountain Quarries Bridge is approximately 482 feet in length (not including approaches), 15 feet wide and 70 feet high, consisting of three 140-foot solid barrel skew arch spans.

The approximate acreage of the bridge is less than one acre.

The Mountain Quarries Bridge is shown on the Auburn Quadrangle Sheet of the Unites States Geological Survey and is located in northwest corner of Section 12, Township 12 North, Range 8 East, MDB&M.

The approaches to the Mountain Quarries Bridge represent an integral component of the bridge structure. The approaches at either end are built with longitudinal walls carrying a heavy, reinforced concrete slab. The fill and ballast of the approaches rest directly on the slab. Owing to the steep hills on either side of the river, the line could not be properly projected without curves at either end of the bridge, although the angle of skew is 45-degrees with the direction of the flow of the river at the point crossed. Consequently, both approaches were laid out to permit a 16-degree curve in the line at each end. The curve at each end begins at a point directly over the abutment, permitting the line to parallel the river in side-hill cut. The natural topography necessitated the use, in some cases, of very high approach-walls. The latter were all founded on bedrock, and the horizontal slabs at the top were firmly anchored to the rock of the hillside.

From the attached USGS map Auburn Quadrangle the UTM References is:

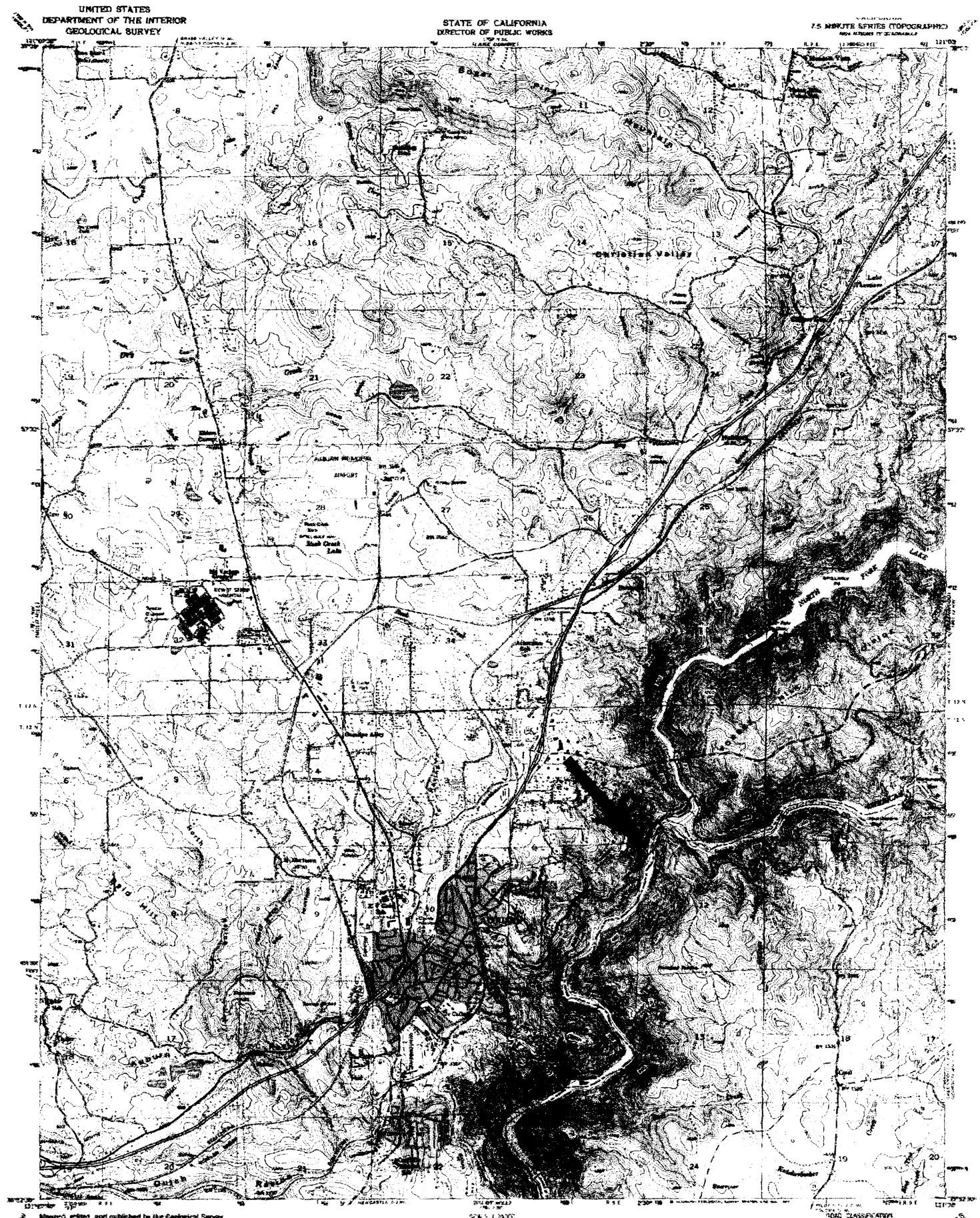
The coordinates are UTM Zone 10 and are based on the WGS-84 ellipsoid.

Northing	Easting
4308704N	10 669905E

Latitude	Longitude
38-54-45.700000	121-05-29.700000

The lands that the Mountain Quarries Bridge are held under public ownership by the United States Bureau of Reclamation, Department of the Interior. The administration of the lands and the bridge are the responsibilities of the California State Department of Parks and Recreation.

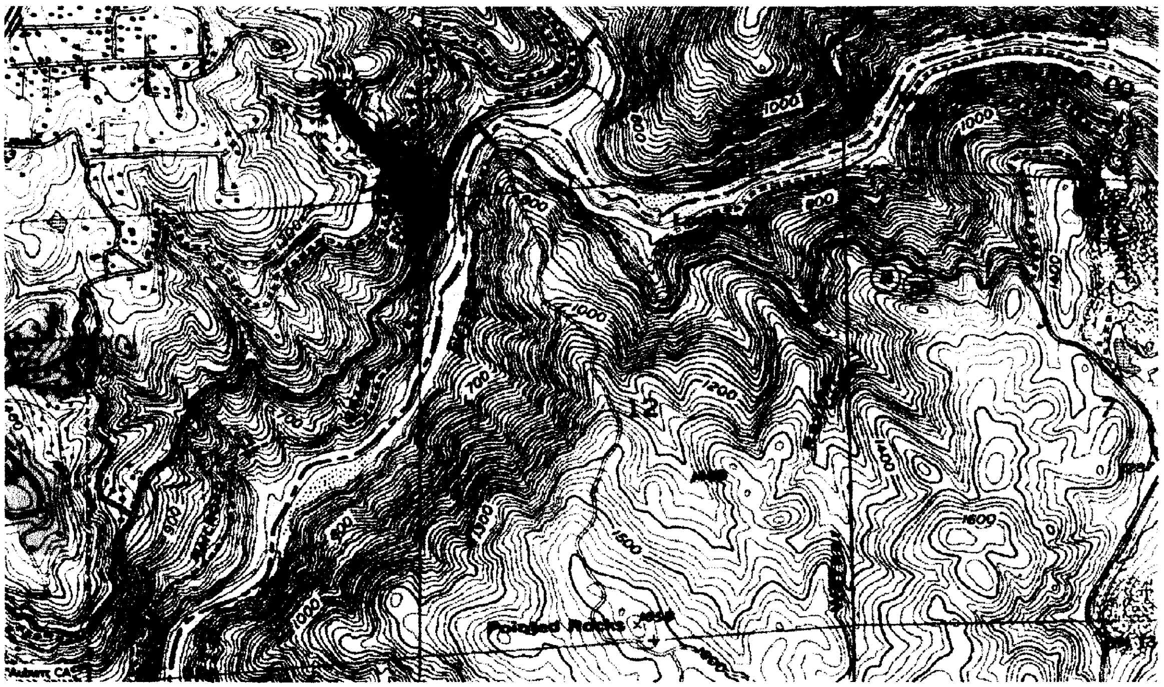
JUSTIFICATION: The boundaries encompass the entire historic resource, including the main arch spans and approaches.



'Auburn; CA'; Scale: 1" = 0.927Mi 1,492Mt 4,895Ft, 1 Mi = 1.079" , 1 cm = 587Mt

<u>Mountain Quarries Bridge</u>
Nomination to the National Register of Historic Places

Auburn, California Quadrangle
7.5-Minute Series (Topographic)
NE/4 Auburn 15' Quadrangle



Auburn, California: Scale 1" = 0.316 Mi 508Mt 1,667 Ft. 1 Mi = 3.168", 1 cm = 200 Mt