

United States Department of the Interior  
National Park Service

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# National Register of Historic Places Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in National Register Bulletin, *How to Complete the National Register of Historic Places Registration Form*. If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions.



### 1. Name of Property

Historic name: Pilarcitos Creek Bridge

Other names/site number: Main Street Bridge; CA 0035C-25

Name of related multiple property listing:

Historic Highway Bridges of California MPD

(Enter "N/A" if property is not part of a multiple property listing)

### 2. Location

Street & number: Main Street, spanning Pilarcitos Creek

City or town: Half Moon Bay State: CA County: San Mateo

Not For Publication:  Vicinity:

### 3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, 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 at the following level(s) of significance:

national   statewide  x  local

Applicable National Register Criteria:

x  A  x  B  x  C   D

	Deputy State Historic Preservation Officer	2/18/14
<b>Signature of certifying official/Title:</b>		<b>Date</b>
<u>California Office of Historic Preservation</u>		
<b>State or Federal agency/bureau or Tribal Government</b>		

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In my opinion, the property \_\_\_ meets \_\_\_ does not meet the National Register criteria.

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**Signature of commenting official:** \_\_\_\_\_ **Date** \_\_\_\_\_

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**Title :** \_\_\_\_\_ **State or Federal agency/bureau or Tribal Government** \_\_\_\_\_

**4. National Park Service Certification**

I hereby certify that this property is:

- entered in the National Register
- determined eligible for the National Register
- determined not eligible for the National Register
- removed from the National Register
- other (explain:)

for Edison H. Beal  
Signature of the Keeper

4.7.14  
Date of Action

**5. Classification**

**Ownership of Property**

(Check as many boxes as apply.)

- Private:
- Public – Local
- Public – State
- Public – Federal

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**Category of Property**

(Check only **one** box.)

- Building(s)
- District
- Site
- Structure
- Object

**Number of Resources within Property**

(Do not include previously listed resources in the count)

Contributing	Noncontributing	
_____	_____	buildings
_____	_____	sites
<u>1</u>	<u>0</u>	structures
_____	_____	objects
<u>1</u>	<u>0</u>	Total

Number of contributing resources previously listed in the National Register 0

**6. Function or Use**

**Historic Functions**

(Enter categories from instructions.)

Transportation/Bridge

**Current Functions**

(Enter categories from instructions.)

Transportation/Bridge

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## 7. Description

### Architectural Classification

(Enter categories from instructions.)

other: Reinforced Concrete Arch Bridge

**Materials:** (enter categories from instructions.)

Principal exterior materials of the property:

foundation: Concrete

walls: Concrete

other, (Bridge Surface): Asphalt

other, (Pedestrian Walkways): Wood

### Narrative Description

(Describe the historic and current physical appearance and condition of the property. Describe contributing and noncontributing resources if applicable. Begin with a **summary paragraph** that briefly describes the general characteristics of the property, such as its location, type, style, method of construction, setting, size, and significant features. Indicate whether the property has historic integrity.)

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### Summary Paragraph

Half Moon Bay's Pilarcitos Creek Bridge, also known as the Main Street Bridge, was built in early 1900 across Pilarcitos Creek, adjacent to Zaballa House and SpanishTown. It was the first concrete bridge built in San Mateo County, and remains possibly the oldest prestressed concrete bridge in the world. It is also the second oldest surviving example of a steel reinforced concrete arch bridge in California. Approximately 80 feet long, and with a useful width of 24.3 feet, the bridge retains a high degree of historic integrity as it is fundamentally unaltered from its original construction.

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### Narrative Description

113 years after it was opened, Half Moon Bay's Pilarcitos Creek Bridge continues in largely unaltered form to carry northbound and southbound vehicle and pedestrian traffic, as well as a vital city water main that supplies the southern half of the entire town. The bridge, approximately 80 feet in span and with a deck width of 24.3 feet and a total width of 32.3, feet is a closed spandrel concrete arch with steel reinforcement throughout. In an odd and highly innovative design feature the reinforcement for the concrete throughout the bridge is not the typical

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steel rebar passively set into the concrete, but is instead comprised of 1.5" braided steel and hemp cable that had been previously used and then retired by the California Street Cable Car Company.

Some of the actual design and as-built drawings of the bridge have been found, as have several drawings for two additional bridges that were simultaneously built in San Mateo County by the same designers. Thus there is a wealth of relevant archival information detailing the design and construction of the bridge.

Curtis Tobey's first attempt at a prestressed concrete arch bridge, also designed for San Mateo County, was approved by the Board of Supervisors on September 6, 1898; but that bridge (the Bear Gulch Bridge) would not be started or completed until after the Pilarcitos Creek Bridge was already finished. The Bear Gulch Bridge is nearly identical in every way to the Pilarcitos Creek Bridge, with the only significant difference being the length and size of the span and arch. (It is a much smaller bridge.) But instead of being built in early 1899, the Bear Gulch Bridge Project languished after the contractor responsible for building the bridge declared that the "specifications were defective to such an extent that structure if built thereto would be utterly worthless."

While the County waffled on the Bear Gulch Bridge, Half Moon Bay businessman and County Supervisor Joseph Debenedetti reached out to Tobey, and together with County Surveyor Davenport Bromfield modified the Bear Gulch design to work over the Pilarcitos Creek in Half Moon Bay. The Board of Supervisors in San Mateo County approved the plans on December 18, 1899, listing Tobey as the architect and Bromfield as the engineer. In total three bridges of nearly identical design would be completed in the County in 1900-1901, the first and by far the largest of which was the Pilarcitos Creek Bridge, the second of which was the El Cerrito or San Mateo Creek Bridge (Second Crossing), and the last of which was the Bear Gulch Bridge.

The foundation of the Pilarcitos Creek Bridge was originally drawn with 32 timber piles on each end, each of which was to be 30 feet long. But based upon the as-built drawings that remain, as well as the minutes of the May 07, 1900 San Mateo County Supervisors meeting, the plan was changed, with a total of 66 piles being used on each end, and an additional 95 yards of concrete added to the foundations of the bridge as well. From the abutment rose the sectioned-circle arch span, 60 feet in width at the creekbed, and consisting of two spandrels and two internal ribs. Instead of the usual matrix of steel rebar laced throughout the concrete portions of the structure, there were tensioned cables running from the base of each arch across the arch to the base on the other side of the bridge. There were also 14 cables that ran across the span, linking the tensioned cables running spanwise through the arch. Finally there were at least eight threaded steel rods that pass crosswise through the spandrels and ribs of the bridge in an additional attempt to place the structure under compression. At the attachment point of each rod there was an approximately 8"x 8" steel gusset plate that the rod passes through, and two large nuts, one to provide tension and the other acting as a jam nut. (See Photograph 7) Tobey's own drawings from the nearly identical Bear Gulch Bridge and the two San Mateo Creek Bridges label the arch-spanning

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cables as “tensioned cable,” thereby clearly illustrating his intent to prestress the cables and thence the structure. (Tobey credits this design in a 1947 article written by him for *Architect and Engineer* magazine to his observation of a wax candle and a “child’s short stick of popular rock candy. In unsuccessful attempts to break the candle and the stick of candy I found that the wick embedded in the candle and the string in the stick of candy acted in tension to resist breakage, while the wax and candy reacted to compression, crushing under the breaking stress.” )

The spandrels of the bridge extend upwards to act as the protective rails for the roadbed, and each concrete railing is adorned at each end by a simple bollard. There is also an original curbing running the entire span of the bridge on the inside shoulder of the roadbed.

In addition to the roadway contained within the concrete confines of the bridge, a wooden walkway was mounted to the west side of the bridge during the interwar period using steel brackets. The same riveted steel beams that support the western walkway also support a 10” water main that is attached to the underside of the supports. This main supplies the entire town south of the bridge with water.

The Pilarcitos Creek Bridge provided the only access to the downtown section of Half Moon Bay and points south until the construction of the Route 1 bypass, which opened in August of 1955. In 1991, between the 1986 and 1993 Caltrans survey of historical bridges, an additional walkway was added to the east side of the structure. Substantially similar to the original western walkway, it remains one of only two non-period adornments on the bridge, the other being two streetlights at the northern end of the bridge.

Today the Pilarcitos Creek Bridge is nearly identical to photographs taken in the early 1900’s and throughout the past century. The topside bollards and deck look fairly identical; albeit with the scars of 113 years of road travel decorating their surfaces. With the exception of the eastern walkway, the integrity of the bridge itself is remarkably intact, as are its original dimensions if the eastern walkway is excluded. (It should be noted that both walkways could be removed as neither is a structural adornment to the exterior of the actual physical structure of the bridge.)

The 2003 Caltrans historic bridges survey accurately noted that local businesses, especially on the north side of the bridge, have slightly diminished the integrity of the original location and setting, although the creekbed lies virtually untouched in the 100 yards upstream or downstream from the bridge. The downtown area immediately south of the bridge also remains largely untouched by modern progress.

The overall feeling and association of the bridge, both with the local community and with peregrinating travelers is roughly the same as it has been since the bridge was built: A gateway to a more prosaic and reflective existence. Nearly every photo taken of Main Street over the past 100 years has the bridge either front and center or otherwise present, making it a highly relevant and associated part of Half Moon Bay’s overall historical narrative.

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Overall, and as noted previously by Caltrans, the Pilarcitos Creek Bridge has maintained an extraordinarily high degree of integrity of location, design, setting, materials, workmanship, feeling, and association. Nearly all structural components are original, and the bridge retains its original dimensions, location, and context for the community of Half Moon Bay.

### 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.
- 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 grave
- D. A cemetery
- E. A reconstructed building, object, or structure
- F. A commemorative property
- G. Less than 50 years old or achieving significance within the past 50 years

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**Areas of Significance**

(Enter categories from instructions.)

Architecture  
Transportation  
Community Planning and Development

**Period of Significance**

1900-1955  
\_\_\_\_\_  
\_\_\_\_\_

**Significant Dates**

August 7, 1900  
\_\_\_\_\_  
\_\_\_\_\_

**Significant Person**

(Complete only if Criterion B is marked above.)

Debenedetti, Joseph W.

**Cultural Affiliation**

\_\_\_\_\_

**Architect/Builder**

Tobey, Curtis (Architect and Engineer)  
Bromfield, Davenport (County Surveyor and Engineer)  
Mattingly, R.C. (Builder)  
Heafey, W (Builder)

**Statement of Significance Summary Paragraph** (Provide a summary paragraph that includes level of significance, applicable criteria, justification for the period of significance, and any applicable criteria considerations.)

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**Summary Paragraph**

The bridge known variously as the Pilarcitos Creek Bridge and the Main Street Bridge is significant under Criterion A at the local level of significance because of its direct association with the development of the community of Half Moon Bay, as well as the coastal regions to the south of the town, and it remains a classic example of the innovative and expansive approach to construction that San Mateo County took in an effort to meet the rapidly increasing demands on

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their transportation infrastructure at the dawn of the 20<sup>th</sup> century. It is eligible under Criterion B at the local level of significance because the driving force behind the design and construction of the bridge was notable resident and immigrant/businessman/politician Joseph W. Debenedetti. The bridge is also eligible under Criterion C at the local level of significance as a distinct and extremely rare and early example of the use of prestressed reinforced concrete for spanning small to medium lengths, as designed by engineer and architect Curtis Tobey. The bridge is nominated under the Historic Highway Bridges of California Multiple Property Document as an eligible example of the Concrete Arch Bridge Type. (Pages F-3 and F-4 of the MPD) The period of significance is from 1900-1955, during which the bridge served as the only point of access to the town from the north.

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**Narrative Statement of Significance** (Provide at least **one** paragraph for each area of significance.)

**Criterion A: Development of Half Moon Bay and the Peninsula Coast**

The often overlooked Pilarcitos Creek Bridge in Half Moon Bay has been integral to the town of Half Moon Bay since it was built in 1900, safely depositing pedestrian and vehicle traffic across the stream and into the heart of the small but thriving downtown commercial center for the last 113 years.

Prior to the year 1900, individuals travelling south along the peninsula coast were forced to cross a small rickety wooden bridge that spanned Pilarcitos Creek just to the north of SpanishTown, or San Benito as the town was originally known. In the words of B.A. Griffith, recollecting the small pre-1900 bridge, "Imagine a steep pitch down to the bridge, which was not very high above the water of Pilarcitos Creek, then another steep climb to the level of the street beyond..."

Thus as the new century of the automobile was dawning in America, the little town of Half Moon Bay was serviced by a single wooden trestle bridge, over which automobile traffic was virtually impossible. In addition to the restrictions this bridge placed upon Half Moon Bay, it also severely restricted travel down the coast towards Pescadero and Santa Cruz County.

Over the next 100 years, and in particular during the relevant period 1900-1955, Half Moon Bay became the gateway for millions of vacationing tourists, travelers, and San Mateo County residents as they enjoyed the beaches, the town, and points south, all of which were now accessible thanks to the new Pilarcitos Creek Bridge. The bridge was the forerunner of what would be an explosion of bridge building in the County, each one of which served to foster and grow the nascent state highway system.

The construction of the Pilarcitos Creek Bridge, in conjunction with other bridges spurred by the development of the roadways, would serve the rapidly growing eastern shore of the San Francisco Peninsula, allowing families living there to travel to the coast in relatively quick and

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safe fashion, and beginning a tradition of weekend traffic-jams that continues to this day- created by the many thousands of visitors that come to the community and the coast each year.

It is without question that the precarious nature of this bridge and the crossing prior to 1900 was obvious, and while it isn't possible to know what would have happened if the bridge hadn't been built, it remains safe to say that the explosive growth of the peninsula and coastside would not have happened without the Pilarcitos Creek Bridge leading the way.

### **Criterion B: The Individual Significance of Joseph W. Debenedetti**

Enter Joseph W. Debenedetti, who as it turns out was the right person in the right place, and at the right time.

Joseph Debenedetti left Italy for the United States sometime around 1870, eventually finding his way to Half Moon Bay, where he would live for the rest of his life. He built his first property at 711 Main Street and lived there until after the turn of the century. Debenedetti, like local contemporaries Manuel Cunha and Angelo Boitano, found great success in his adopted new home, becoming a prosperous local businessman and investor, and personally driving much of the growth of the small community during the final 25 years of the 19<sup>th</sup> century. By the end of the 19<sup>th</sup> century Debenedetti had risen in prominence both locally and in the County of San Mateo, a fact made clear by his election to the County Board of Supervisors in the late 1890's. It was in this dual role, as businessman and County Supervisor, that Debenedetti would leave his most lasting mark on Half Moon Bay and on the entire peninsula south of San Francisco.

While Debenedetti's original home at 711 Main Street remains standing, as does 400-416 Main Street, which was built in 1906, it is the modest yet ambitious bridge over Pilarcitos Creek that he sponsored and fostered into existence in 1900 that will remain as his everlasting legacy.

By the late 1890s, and in the face of a clear need for modern and easily constructed crossings, at least one bridge had already been designed for San Mateo County by local San Francisco Engineer Curtis Tobey and San Mateo County Surveyor Davenport Bromfield, and a contract had been let for its construction. Yet it wasn't built. Instead the contract was cancelled when the contractor declared that the "specifications were defective to such an extent that structure if built thereto would be utterly worthless."

It is hard to imagine today a scenario that would have a contractor dictating to an engineering firm, or a county government acquiescing to such brash behavior, nonetheless this resistance was what Tobey, Debenedetti and Bromfield faced when they collaborated on a different bridge for the County, this time in Half Moon Bay. Whether through his business acumen, his presence, or his political prowess, Debenedetti managed to join the disparate parties, and in so doing to construct a unique monument that would prove to be the antithesis of "utterly worthless" for more than 113 years.

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The October 8, 1900 issue of *The San Francisco Call* sums up both the significance of Debenedetti, and the profound effect the bridge would have on the local economy. Underneath a prominent photograph on the front page of the paper that depicted the new bridge, was a short narrative, which included the following: "To Supervisor Joseph Debenedetti is due the credit of having secured for the city the splendid structure which is not only an ornament, but fills a long felt necessity." (*sic*)

As fate would have it Debenedetti and the bridge would have a further association, this one created after the devastating 1906 San Francisco Earthquake. The disaster destroyed Debenedetti's original wood frame Market on Main Street, and after the quake Debenedetti took notice of the fact that the reinforced concrete bridge remained standing and fundamentally unharmed by the temblor. The resultant of this observation was his decision to build the replacement market out of concrete instead of out of wood. In fact he was so enamored with the bridge that he chose to use the leftover concrete materials that had been used in the manufacturing of the bridge itself. Thus the Debenedetti Building and the Pilarcitos Creek Bridge share a common history, common foundation and materials, and a common and very human component, without which neither would have come into existence.

Additional evidence of Debenedetti's involvement with both the bridge and the concrete it was built with is the fact that it is still possible today to walk down Main Street in Half Moon Bay and find concrete sidewalks of unknown vintage that have the seal of "Debenedetti Concrete" clearly present.

Whether through dumb luck, or the availability of local materials, or an impromptu ride on a cable car, or otherwise sheer brilliance, Curtis Tobey and, to a lesser extent, Davenport Bromfield, exerted an influence on their community, and on their time, that in hindsight was far in excess of that given by their peers. Yet the genesis of the project, and the future benefits it would provide must remain on Joseph W. Debenedetti's shoulders, as he was the glue that brought the operation together, the politician that rallied the County behind the project, and the visionary businessman that recognized, and then acted, upon the critical need for such a bridge in such a place.

All three of these individual men impacted San Mateo County in immeasurable ways, and the resultant of their work was so far before its time that it is hard to comprehend or evaluate how they were able to achieve such brilliance in such a short period of time.

### **Criterion C: Distinct Characteristics of Type and Design**

It is very likely that the Pilarcitos Creek Bridge was the first successful prestressed concrete structure built by anyone on earth. Prestressed concrete remains one of the most important and significant advances in building materials and design in history, revolutionizing the post-WWII

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era and changing the urban landscape forever. Without the invention and further development of prestressed concrete the world as we know it quite literally would not exist. While the method of prestressing used in the Pilarcitos Creek Bridge is very primitive, it nonetheless shows a clear knowledge and understanding of the mechanical benefits that prestressing concrete can provide.

Despite its ubiquity and presence in today's world, prestressed concrete was not functionally or widely used prior to the mid to late 1940's. The first patent for prestressed concrete was issued to an American named P.H. Jackson in 1888, although his patent was for prestressed concrete pavement and not for a complex arch bridge. The first patent for structurally useful prestressing would be issued in 1928, when French engineer and scientist Eugene Fryessinet coalesced his experiences into a coherent design paradigm. Yet, and despite continued advances, prestressing concrete would not see widespread use in Europe until after WWII, and in the United States it is commonly accepted that the first prestressed concrete structure ever constructed anywhere in the country was the Walnut Lane Memorial Bridge in Philadelphia.

The Pilarcitos Creek Bridge was, like much of America, far ahead of its time. In fact it was so far ahead that the engineering marvel that Curtis Tobey and Davenport Bromfield designed and built wouldn't be replicated in the United States until after the dawn of the atomic age 50 years later.

Typical reinforced concrete designs from the period were made by building a matrix of steel latticework out of steel rebar. The concrete was then poured over and around the steel, forming a mutually beneficial bond as the concrete would chemically and physically adhere to the surface of the steel, thereby greatly enhancing the structural capabilities of the concrete structure. Yet simple reinforced concrete has significant limitations, not least of which are the structurally defining, unyielding, and inflexible characteristics of the solid steel and the solid concrete.

When used in a bridge like the Pilarcitos Creek Bridge the primary force acting on the bridge is one of compression, which is provided by gravity and the overall weight of the structure itself, and when simple reinforced concrete is used the only way for the bridge to inexorably go is down. Tobey and Bromfield obviously figured this out for themselves, and as a result contrived and implemented a very early solution to what is now known in the modern world as prestressed concrete.

Prestressing concrete is a technique that greatly increases the strength and longevity of load bearing concrete structures by using the tension within the steel reinforcement to distribute more of the compressive forces that the structure experiences. Despite the fact that the concept of prestressed concrete was patented in 1888, it has usually been offered that it wasn't practically used in the U.S. until the early 1950s, when the Walnut Lane Memorial Bridge would be erected in Pennsylvania. The reasons for this long gestation period are simple: Despite the obvious advantages in longevity and strength that a prestressed structure would have, the necessary materials for creating the tensioned steel were not yet in existence. Or so everyone except Curtis Tobey seemed to think.

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In a modern prestressed structure, the reinforcing steel in the bottom part of the beams, which will be subjected to tensile forces when in service, is placed in tension before the concrete is poured around it. Once the concrete has hardened, the tension on the reinforcing steel is released, placing a built-in compressive force on the structure. When loads are applied to the structure, the reinforcing steel takes on more stress than it would otherwise, and the tensile stresses in the concrete itself are reduced. An added benefit of prestressing concrete is that since the concrete is always under compression it is less subject to cracking and failure.

To understand why the design of the Pilarcitos Creek Bridge remains relevant, despite being a very distant relation to the modern day interpretation of prestressing, it is useful to look at a contemporaneous analog. Imagine for a moment if someone were to assert that the Wright Brother's 1903 Flyer was not an airplane, solely because when placed against modern day equivalents it had none of the modern day features that an airplane is supposed to have. As one example: The Flyer had no ailerons, but instead had what was, for its time, an ingenious method of warping the wings in a practical, if highly inefficient and somewhat ineffective way. Would such a scheme be used on an airplane designed and built within the last 80 years? Absolutely not. Was the method effective? Not particularly, although it did provide at least rudimentary control over the roll axis of the airplane. But did the method show the intent and knowledge of its designers in addressing the fundamental technical challenges pertaining to controlling an aircraft in three dimensions? Absolutely.

Thus the Wright Flyer is immensely significant as the first successful precursor to the modern airplane as we know it today, even though many of its technical solutions were primitive and are unrecognizable in the modern solution to the problem of heavier-than-air flight. The technology of the Pilarcitos Creek Bridge is similarly significant as it is one of the only, if not the only, remaining examples of early attempts at prestressing concrete structures.

A quick review of the known facts relevant to the bridge validates the veracity of the previous paragraphs as follows:

1. The drawings associated with the bridge specifically show "Tension(ed) Cable," and there is a cable artifact present today that confirms the presence of Hallidie cable in the bridge. (The architect also confirmed the presence of the tensioned cable in a 1947 article referenced in the Nomination.)
2. It isn't disputed that the bridge contains braided high tensile-strength steel and hemp Hallidie cables, and this fact, when combined with the documentary evidence available, shows that these cables were anchored to the abutments and placed under tension across the length of the arch-rings *before the concrete was poured around them*. The method of providing tension is unknown, as is the overall efficacy and impact the design had on the longevity of the structure. Nonetheless the historical record and *all available evidence*

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show that it is an indisputable fact that the bridge was built with pretensioned steel and hemp cables placed throughout the concrete structure.

3. As tension is a form of stress, and as the underlying reinforcement for the bridge was placed under tension prior to the pouring of concrete, it is clearly inarguable that the bridge must be, in whatever primitive form, a prestressed and reinforced concrete structure.

As a result, the Pilarcitos Creek Bridge, like the Wright Flyer that followed three years later, is representative of some of our first and finest technological baby-steps taken at the dawn of the last century. The fact that the form and implementation of the prestressing doesn't meet modern definitions of that technique does not in any way disqualify the genius in the design from recognition, nor does it mitigate the fact that the architect of the bridge clearly understood the physical principles and benefits of prestressing in a way that was more advanced than his peers.

Additional proof of Tobey's advanced design can be found in the numerous Patents and Patent applications that were filed in the 10-year period after the bridge was built, all of which describe some form of introducing tension and stress into the reinforcement of concrete arch bridges. One method that is representative of the crude attempts by designers to duplicate Tobey's innovation involved placing two long iron bars that would be flexed across the arch ring, from the crown all the way to each abutment. At the crown the bars would be placed in a sleeve that could be bolted around them to provide and hold the tension while the concrete was poured around the steel. (It is not known whether this method was ever used to actually construct a bridge.)

By 1900 San Francisco was a booming industrial metropolitan center, one that also happened to be very hilly; and over the previous 25 years an ingenious method of public transportation had been contrived as a result. The steep hills made for an interesting challenge, which was solved by the construction of several independent cable car lines, one of which was started by Leland Stanford and was known as the California Street Cable Railroad. One outgrowth of the engineering feat of the cable car system was the provision for the manufacture of very long high tensile strength braided steel cables. Andrew Hallidie is widely credited with adapting and evolving braided cable or wire rope into the formula used by Stanford's railroad: Multi-stranded wire wrapped around a braided hemp core made up of far thinner hemp fibers.

Whether Curtis Tobey saw the potential in those cables alone or in concert with someone else may well remain a mystery forever, but the reality remains that the steel reinforcement for the concrete of the Pilarcitos Creek Bridge was provided by steel and hemp cables made by the California Street Cable Railroad. Most remarkably: Those steel and hemp cables were placed under tension, thereby prestressing the structure, and thus providing at least one reason that can possibly explain the bridge's extreme longevity.

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While the Walnut Lane Memorial Bridge in Philadelphia is widely credited as the genesis of modern prestressed concrete design in the United States, stressed as it is with steel tendons made of stranded and braided steel cabling, it remains a simple fact that the Walnut Lane Memorial Bridge was designed and built with braided steel cable tendons 50 years *after* the functionally and mechanically identical materials were used to build the Pilarcitos Creek Bridge.

All three San Mateo County Bridges designed by Tobey and Bromfield have proven that they were clearly 50 years or more before their time, and have proven to be extremely functional, despite being planned and created by local city or county agencies and engineers. This trend of local funding, design, and construction of highway bridges would continue in California until 1924, even though the State Highway Commission was created in 1912 to specifically address the quickly increasing demand for engineering and construction expertise. It was the nascent Commission that first quantified the statewide significance of the design criteria of the three San Mateo Bridges when, in 1912, it released a policy statement pertaining to bridge design, stating that it was "in favor of concrete structures wherever such structures are consistently possible because of their substantial permanency."

The Commission clearly practiced what it preached, and by 1920 the evolution in design and utilization for short and medium span bridges in California was complete, as is evidenced in a study by the U.S. Bureau of Public Roads, which found that of 47 bridges designed by California Highway Commission Staff prior to 1920, 39 of them were of reinforced concrete. Thus, and despite countless variations in terrain, topography, intent and design, roughly four out of every five bridges built in the eight year period from 1912 through 1920 were premised upon the very basic design model pioneered and epitomized by the Lake Alford and Pilarcitos Creek Bridges.

Alas the more advanced features contained within the design and the structure of the Pilarcitos Creek Bridge would remain hidden from view until 2013.

Tobey's bridge stands today as mute testament to the astonishing engineering prowess of its designers, as well as the validity of the methods and materials of construction which they utilized. If nothing else the genius present in the design remains evident in the mere existence of their structure today, carrying motorists and pedestrians safely and effectively more than a century after their design was built, and doing so despite standing within 25 miles of the epicenters of two of the most destructive earthquakes in U.S. history, both of which measured in excess of 7.0 on the Richter scale.

Despite the cutting edge design of the bridge, and as well the concerns at the time it was built, it remains the case that the bridge has held up through 113 years of traffic, much of which has been of a weight unimagined by the designers. Today the bridge sees roughly 8,000 daily crossings by a wide range of vehicles and pedestrians, and the simple fact of the bridge's existence and continued use show conclusively that the Pilarcitos Creek Bridge as it was conceived and constructed in 1899-1900 would prove to be timeless, surviving as it did both the 1906 and 1989

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earthquakes, and in the process predating the technique that would revolutionize the world of construction engineering 50 years later.

The Pilarcitos Creek Bridge, along with dozens of other California bridges, was listed in the California Register in 1986, when it was also declared as eligible for listing in the National Register of Historic Places. This eligibility was ratified in 2004 under a Multiple Property Documentation form approved by the Keeper of the Register.

Adding support to the significance of the Main Street Bridge was its listing in the book *Historic Highway Bridges of California*, which was published by the California Department of Transportation in conjunction with the Multiple Property Document prepared as a result of a survey of statewide highway bridges.

The Pilarcitos Creek Bridge clearly meets the registration requirements of the Historic Bridges in California Multiple Property Submission (MPS) for several significant reasons. Perhaps the most compelling support of this claim is made on Section E, Page 2 of the MPS, where the bridge and the details of its construction are specifically cited as being a relevant part of the narrative history that supports the MPS.

Additionally the bridge meets the requirements of the Historic Bridges in California MPS because it is uniquely representative of the skills and techniques of California bridge designers and architects in adapting reinforced concrete spans for the wide use they would see in the subsequent 50 year period. The design and construction of the bridge filled a specific need that was becoming more pressing in the late 19<sup>th</sup> century, for bridges that were relatively easy to build, relatively inexpensive, and that could span modest distances while simultaneously standing up under heavy loads. The Pilarcitos Creek Bridge stands among the very last of its kind still in active daily use by an entire community.

As a result of the foregoing, the bridge is thus worthy of listing under Criterion A as it was a key element in the Northern California highway system from its very earliest existence, specifically sparking the development and growth of both Half Moon Bay and also the communities to the north and south of the bridge during the period 1900 to 1955. It is eligible under Criterion B as the individual responsible for the design and construction of the bridge was a locally significant immigrant, businessman and politician, without whom the region would not have grown as quickly or extensively as it did. Finally, the bridge is also worthy of listing under Criterion C, as it remains a uniquely distinctive example of type, period and method of construction, as well as a stunning example of construction methodology and design far in advance of its period. The period significance for the bridge is the year 1900.

When evaluated using the *California Department of Transportation Evaluation System for NRHP Eligibility* as enumerated in the Historic Highway Bridges of California MPS the bridge

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received a score of 72 in 1986, and 64 in 2003, both of which are far in excess of the score of 48 that is the accepted norm for inclusion on the National Register, and neither of which takes into account the historical significance of the prestressed concrete design of the bridge. In any case both scores argue very favorably for the bridge's inclusion on the National Register of Historic Places under the Historic Highway Bridges of California MPS.

---

## 9. Major Bibliographical References

**Bibliography** (Cite the books, articles, and other sources used in preparing this form.)

Curtis Tobey, "World's First Steel Reinforced Concrete Structure"; Architect and Engineer Magazine (July 1947): 12-13

Tyson Dinges MS, "The History of Prestressed Concrete: 1888 to 1963." Kansas State University, Manhattan Kansas, Department of Architectural Engineering and Construction Science, 2009

Dario Gasparini, "The Prestressing of Structures: a Historical Review," publisher and date unknown

Bernard Marrey and Jupp Grote, "The story of prestressed concrete from 1930 to 1945: A step towards the European Union," From Proceedings of the First International Congress on Construction History, (Madrid, 20<sup>th</sup>-24<sup>th</sup> January, 2003)

California Department of Transportation, Historic Highway Bridges of California, (1990)

San Mateo County Department of Public Works Archive, County Road Maps 3

Evaluation Summary (NRHP Eligibility), California Department of Transportation, (1986, 2003), 1-5

State of California – The Resources Agency Department of Parks and Recreation Historic Resources Inventory; "Joseph W. Debenedetti"

State of California -- The Resources Agency Department of Parks and Recreation Historic Resources Inventory; "J. Benedetti Block"

"SPLENDID NEW BRIDGE OVER PILARCITOS CREEK"; The San Francisco Call October 8, 1900

Galen Wolf, The Town That Was, 6

Pilarcitos Creek Bridge  
Name of Property

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*Sanborn Map Company, "Half Moon Bay, San Mateo Co. Cal. October 1911; Water Works" (1911), 2*

*B.A. Griffith, "Excerpts from the Memoirs of B. A. Griffith (written in 1923)" La Peninsula, Journal of the San Mateo County Historical Association Vol. X, No. 4, (Feb, 1960)*

**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 # \_\_\_\_\_  
 recorded by Historic American Landscape Survey # \_\_\_\_\_

**Primary location of additional data:**

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

Name of repository: San Mateo County Historical Society and Archive

**Historic Resources Survey Number (if assigned):** \_\_\_\_\_

**10. Geographical Data**

**Acreege of Property** 1

Use either the UTM system or latitude/longitude coordinates

**Latitude/Longitude Coordinates**

Datum if other than WGS84: \_\_\_\_\_  
(enter coordinates to 6 decimal places)

Pilarcitos Creek Bridge  
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- |                        |                        |
|------------------------|------------------------|
| 1. Latitude: 37.466021 | Longitude: -122.428880 |
| 2. Latitude:           | Longitude:             |
| 3. Latitude:           | Longitude:             |
| 4. Latitude:           | Longitude:             |

Or

**UTM References**

Datum (indicated on USGS map):

NAD 1927 or  NAD 1983

- |          |           |           |
|----------|-----------|-----------|
| 1. Zone: | Easting:  | Northing: |
| 2. Zone: | Easting:  | Northing: |
| 3. Zone: | Easting:  | Northing: |
| 4. Zone: | Easting : | Northing: |

**Verbal Boundary Description** (Describe the boundaries of the property.)

The property is located entirely within the City of Half Moon Bay. It is today an automobile and pedestrian bridge that carries Main Street traffic across the Pilarcitos Creek. The bridge is located at Latitude: 37.466021, and Longitude: -122.428880.

**Boundary Justification** (Explain why the boundaries were selected.)

The boundary is the footprint of the existing Pilarcitos Creek Bridge and its approaches.

Pilarcitos Creek Bridge  
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---

### 11. Form Prepared By

name/title: David C. Eblovi/President  
organization: The EMCOC  
city or town: Half Moon Bay state: CA zip code: 94019  
e-mail: david@wegetinfotech.com

telephone: 650-814-0037  
date: October 01, 2013

---

### Additional Documentation

Submit the following items with the completed form:

- **Maps:** A **USGS map** or equivalent (7.5 or 15 minute series) indicating the property's location.
  - **Sketch map** for historic districts and properties having large acreage or numerous resources. Key all photographs to this map.
  - **Additional items:** (Check with the SHPO, TPO, or FPO for any additional items.)
- 

### Property Owner

name: The City of Half Moon Bay  
street and number: 501 Main Street, Half Moon Bay, CA 94019  
contact: Laura Snideman, City Manager  
telephone number: 650-726-8270

---

### Photographs

Submit clear and descriptive photographs. The size of each image must be 1600x1200 pixels (minimum), 3000x2000 preferred, at 300 ppi (pixels per inch) or larger. Key all photographs to the sketch map. Each photograph must be numbered and that number must correspond to

the photograph number on the photo log. For simplicity, the name of the photographer, photo date, etc. may be listed once on the photograph log and doesn't need to be labeled on every photograph.

Pilarcitos Creek Bridge

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### Photo Log

Name of Property: Pilarcitos Creek Bridge

City or Vicinity: Half Moon Bay

County: San Mateo

State: CA

Photographer: David C. Eblovi

Date Photographed: September 27, 2013

Description of Photograph(s) and number, include description of view indicating direction of camera:

- 1 of 8. Typical Friday morning in Half Moon Bay; View of the southbound entry to the bridge, and Main Street in the distance.
- 2 of 8. View of the northbound entry to the bridge from the roadway.
- 3 of 8. View of the eastern bridge spandrel and associated members.
- 4 of 8. View of western spandrel, period walkway and supports, and city water main.
- 5 of 8. View of steel cable and hemp rope dangling from underside the southeast corner of the concrete arch.
- 6 of 8. Threaded and tensioned steel rods and gusset plate assembly on the outside southeast spandrel wall.
- 7 of 8. Photo taken from southeast corner of the arch, showing location of cable artifact and impressions made by the boards of the concrete form.
- 8 of 8. View to the east of Memorial Plaque mounted on the inside of the eastern concrete railing of the span.

**Paperwork Reduction Act Statement:** This information is being collected for applications to the National Register of Historic Places to nominate properties for listing or determine eligibility for listing, to list properties, and to amend existing listings. Response to this request is required to obtain a benefit in accordance with the National Historic Preservation Act, as amended (16 U.S.C.460 et seq.).

**Estimated Burden Statement:** Public reporting burden for this form is estimated to average 100 hours per response including time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding this burden estimate or any aspect of this form to the Office of Planning and Performance Management, U.S. Dept. of the Interior, 1849 C. Street, NW, Washington, DC.

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**Figure Log**

- 1. Google Map showing location of bridge**
- 2. Drawing of Pilarcitos Creek Bridge with construction support structures**
- 3. As-built drawing of Pilarcitos Creek Bridge, top elevation**
- 4. As-built drawing of Pilarcitos Creek Bridge, side elevation**
- 5. Side view drawing showing “tension cables” on bridge plan**
- 6. Blueprint of bridge, side elevation**
- 7. Joseph Debenedetti**
- 8. J. Debenedetti Building**

**Figure 1: Google Maps sketch map showing bridge location**



Latitude: 37.466021, and Longitude: -122.428880

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Figure 2: Drawing of Pilarcitos Creek Bridge with construction support structures

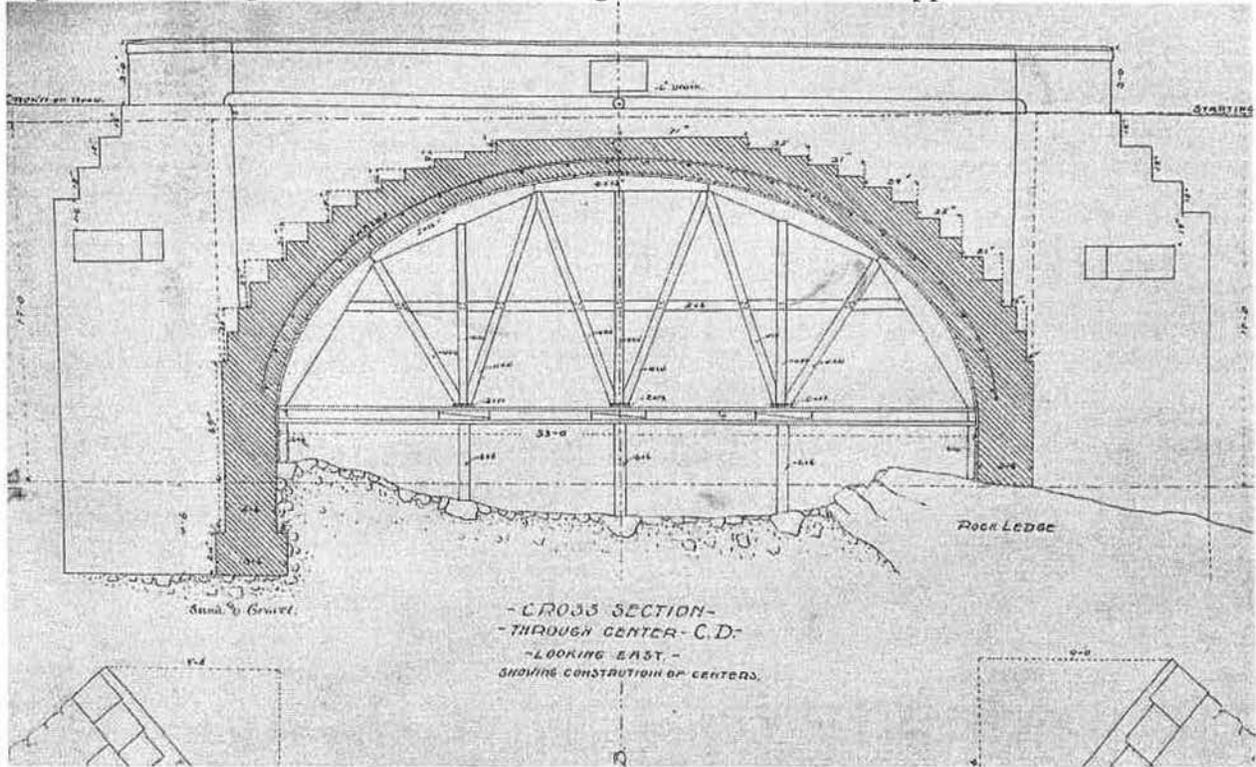
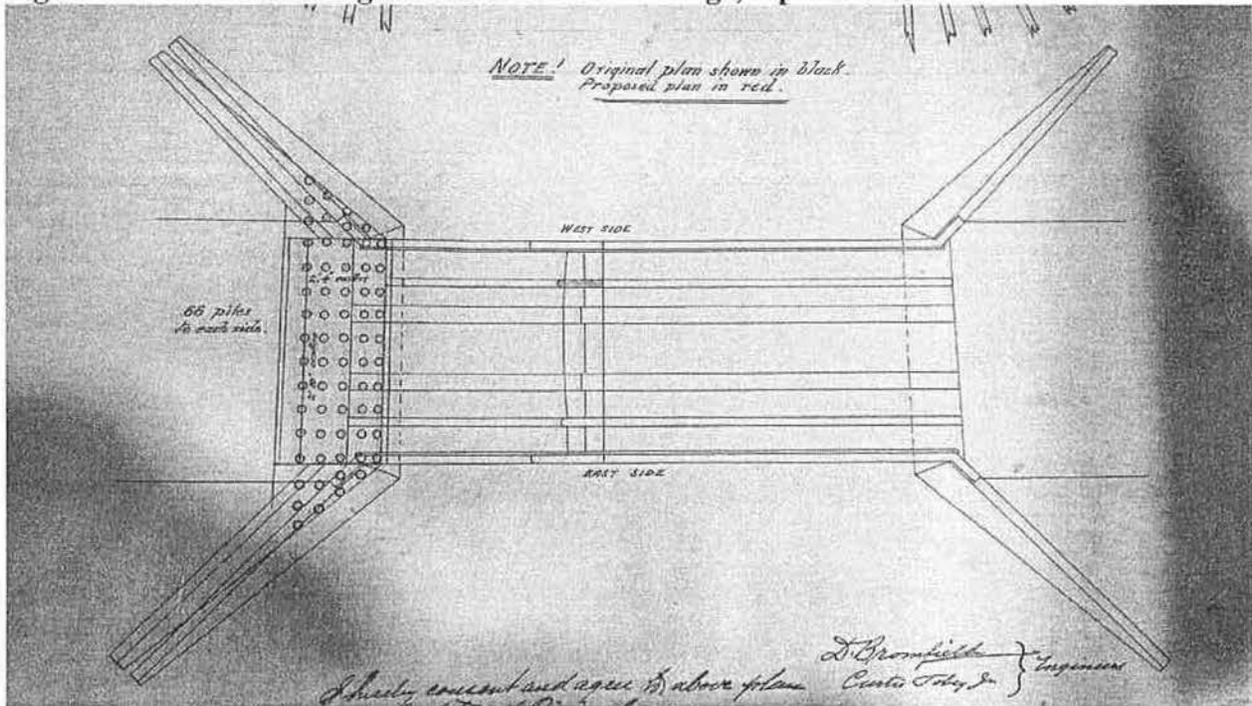


Figure 3: As-built drawing of Pilarcitos Creek Bridge, top elevation



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Figure 4: As-built drawing of Pilarcitos Creek Bridge, side elevation

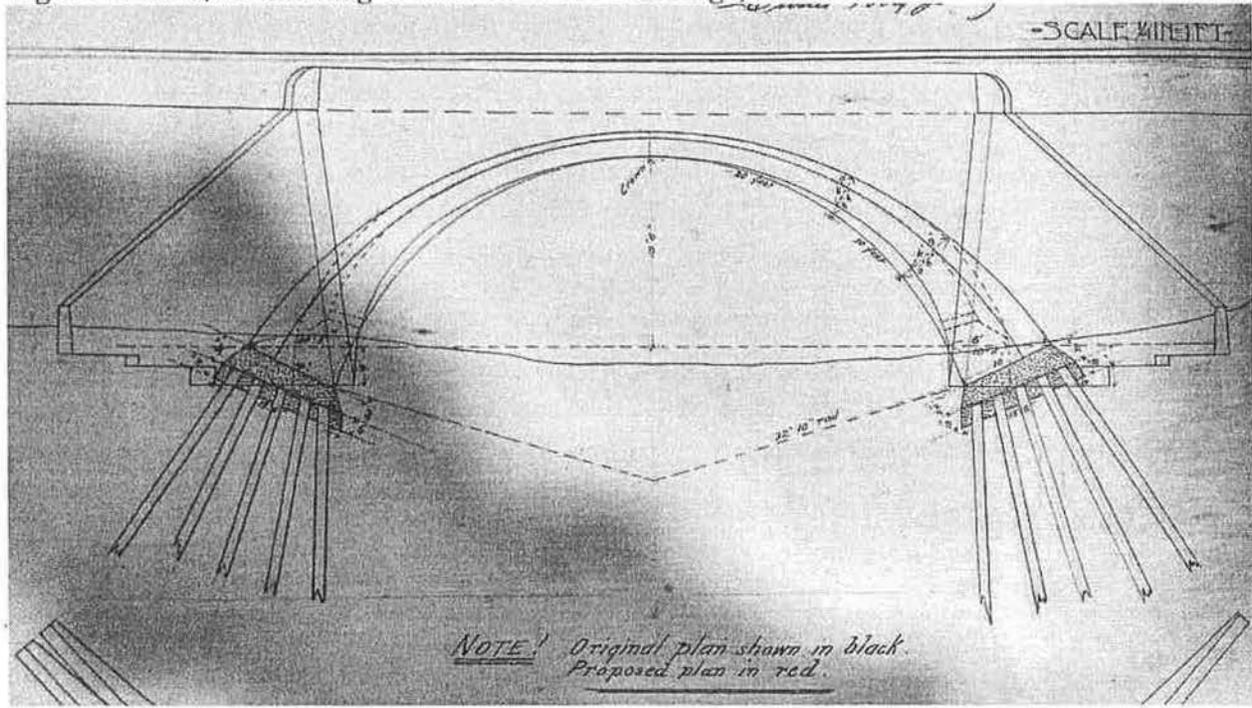
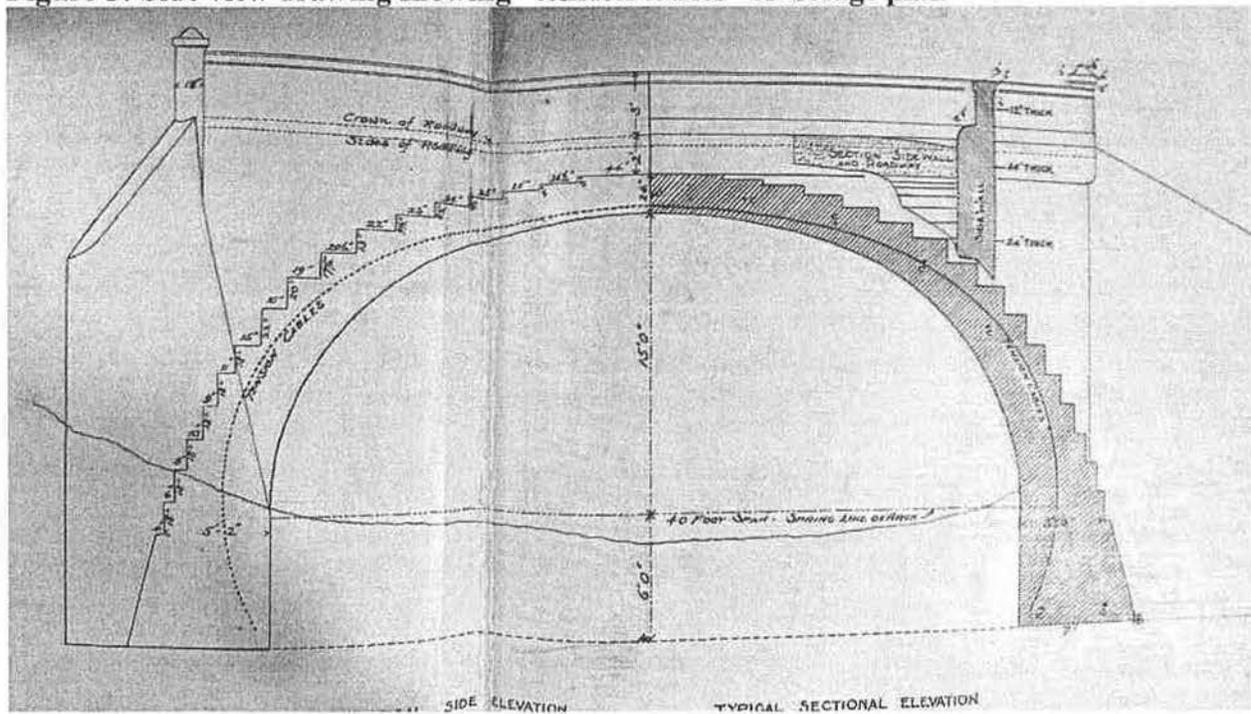


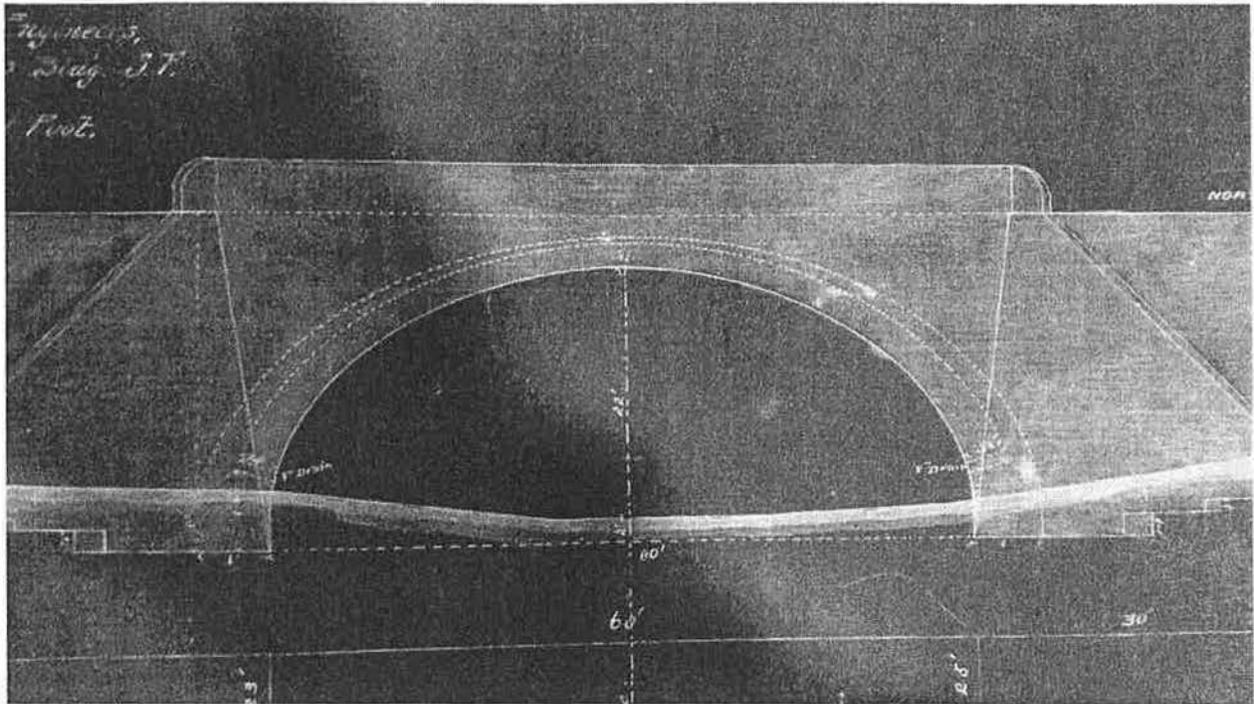
Figure 5: Side view drawing showing "tension cables" on bridge plan



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**Figure 6: Blueprint of bridge, side elevation**



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**Figure 7: Joseph Debenedetti, Half Moon Bay businessman and county supervisor who advocated for a modern bridge into downtown Half Moon Bay**

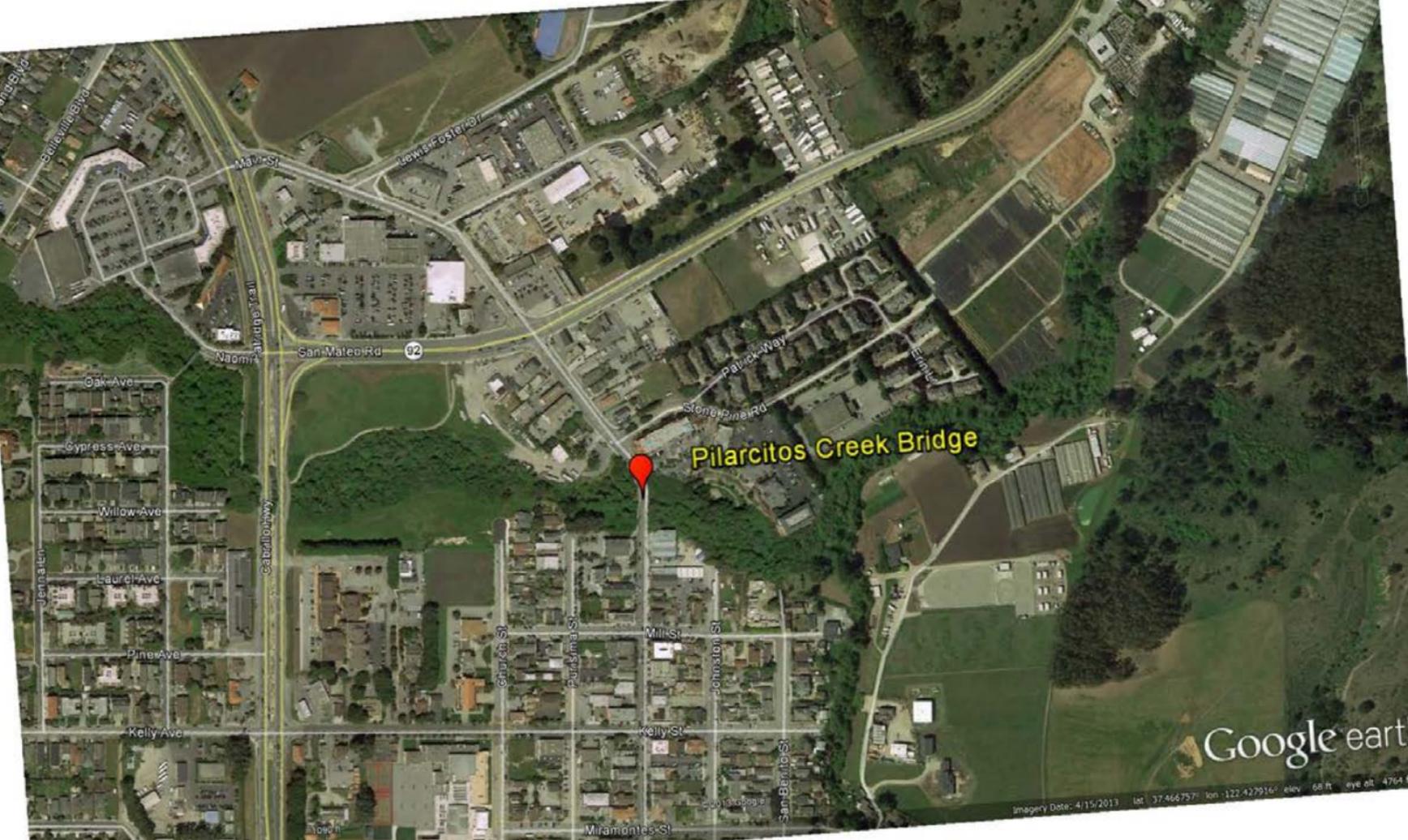


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**Figure 8: Joseph Debenedetti Block, constructed with leftover materials from bridge construction after the 1906 earthquake and fire**





Pilarcitos Creek Bridge

Google earth

Imagery Date: 4/15/2013 lat: 37.466757° lon: -122.427916° elev: 66 ft eye alt: 4764



HALF MOON BAY  
ART & PUMPKIN  
FESTIVAL  
OCT.  
19 & 20

7ADH384

STOP













FIRST CONCRETE BRIDGE ERECTED IN  
SAN MATEO Co. 1900  
J. DEBENEDETTI SUPERVISOR  
D. BROMFIELD & C. TOBEY JR. ENGINEERS  
R. C. MAITINGLY & W. HEAFEY CONTRACTORS

National Register of Historic Places  
Memo to File

# Correspondence

The Correspondence consists of communications from (and possibly to) the nominating authority, notes from the staff of the National Register of Historic Places, and/or other material the National Register of Historic Places received associated with the property.

Correspondence may also include information from other sources, drafts of the nomination, letters of support or objection, memorandums, and ephemera which document the efforts to recognize the property.

UNITED STATES DEPARTMENT OF THE INTERIOR  
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES  
EVALUATION/RETURN SHEET

REQUESTED ACTION: NOMINATION

PROPERTY NAME: Pilarcitos Creek Bridge

MULTIPLE NAME: Highway Bridges of California MPS

STATE & COUNTY: CALIFORNIA, San Mateo

DATE RECEIVED: 2/20/14      DATE OF PENDING LIST: 3/18/14  
DATE OF 16TH DAY: 4/02/14      DATE OF 45TH DAY: 4/08/14  
DATE OF WEEKLY LIST:

REFERENCE NUMBER: 14000110

REASONS FOR REVIEW:

APPEAL: N DATA PROBLEM: N LANDSCAPE: N LESS THAN 50 YEARS: N  
OTHER: N PDIL: N PERIOD: N PROGRAM UNAPPROVED: N  
REQUEST: N SAMPLE: N SLR DRAFT: N NATIONAL: N

COMMENT WAIVER: N

ACCEPT       RETURN       REJECT      4.7.14 DATE

ABSTRACT/SUMMARY COMMENTS:

Entered in  
The National Register  
of  
Historic Places

RECOM./CRITERIA \_\_\_\_\_

REVIEWER \_\_\_\_\_ DISCIPLINE \_\_\_\_\_

TELEPHONE \_\_\_\_\_ DATE \_\_\_\_\_

DOCUMENTATION see attached comments Y/N see attached SLR Y/N

If a nomination is returned to the nominating authority, the nomination is no longer under consideration by the NPS.



# CITY OF HALF MOON BAY

City Hall • 501 Main Street • Half Moon Bay • CA • 94019

January 8, 2014

California State Parks

Attn: Office of Historic Preservation

Carol Roland-Nawi, Ph.D., State Historic Preservation Officer

1725 23rd Street, Suite 100

Sacramento, California 95816

Subject: Comments on Pending Nomination of Pilarcitos Creek Bridge in  
Half Moon Bay to the National Register of Historic Places

Dear Ms. Roland-Nawi:

The City of Half Moon Bay is the owner and operator of the Pilarcitos Creek Bridge (Bridge # 35C-025) that is the subject of the National Register Registration/Nomination Form submitted to the Commission by David Eblövi, a local resident. It is our understanding that you will be considering this nomination at your upcoming February 7, 2014 meeting.

The City does not dispute that the Pilarcitos Creek Bridge is a historic resource. We are aware that the bridge was determined eligible for listing in the National Register in 1986 and, in fact, the bridge is included on the City's Historic Resources Inventory. The City does, however, disagree with some of the information contained in the Nomination Form prepared by Mr. Eblövi and the purpose of this letter is to provide you with the correct information.

Bridge 35C-25, variously called the Main Street Bridge and Pilarcitos Creek Bridge in Half Moon Bay, was determined eligible for listing in the National Register in 1986, under Criterion C, as one of the oldest reinforced concrete bridges in the state. The current National Register nomination would do nothing to alter the official status of the bridge, other than to move it from historic status code 2 (determined eligible) to 1 (listed in the National Register).

The Nomination Form does, however, make a far different case for eligibility than what was presented in 1986, a case that we feel is based upon factual errors and misinterpretation of National Register eligibility criteria. Irrespective of the status codes, it is important that National Register nomination be historically accurate and we would like to go on record objecting to two aspects of this nomination.

Carol Roland-Nawi

January 8, 2014

Page 2

Error #1: "A distinct and extremely rare and early example of the use of prestressed reinforced concrete for spanning small to medium lengths." (p. 8)

This statement is incorrect because the bridge emphatically is not a prestressed reinforced concrete bridge. There is a very substantial scholarly literature dealing with the history and the attributes of both prestressed and post-tensioned concrete construction [the two methods are similar, differing as to whether the applied tension occurs before or after concrete has been poured]. The concept is generally attributed to the great French engineer, Eugene Freyssinet, who in 1928 patented methods in which rebar could be stressed prior to pouring concrete. In 1933, he published an essay in which he laid out the three principles of prestressed concrete, as summarized by noted Princeton bridge historian David Billington: use of high strength steel; tensioning to a very high stress (at least 70,000 psi), and use of high strength concrete. This formula represents, to Billington: "the single most important new concept in structural engineering during the last half of the twentieth century." ("Historical Perspective on Prestressed Concrete," *PCI Journal*, Jan-Feb 2004: 15]

The Main Street Bridge has none of the characteristics called out by Freyssinet and Billington and is not a prestressed bridge as we understand that term. It is a reinforced concrete bridge that apparently uses twisted wire steel cable for rebar. The earliest reinforced concrete bridges often used what now seem odd types of metal for rebar, from old railroad ties to chains. A Californian, Ernest Ransome, is generally credited with developing the modern model of rebar, but it took some time for knowledge of that design to be widely adopted.

Error #2: Criterion B: Association with Joseph Debenedetti

National Register guidelines emphasize that Criterion B should applied to properties that "are associated with the productive life of the individual in the field in which (s)he achieved significance." Joseph Debenedetti was an important pioneer merchant in Half Moon Bay. As the Nomination Form notes, there are two extant resources in Half Moon Bay directly related to his life in town: his home, which still stands at 711 Main Street and, more significantly, his 1906 market at 400-416 Main Street, known as the Debenedetti Building. The Debenedetti Building is a Point of Historical Interest (SMA-038).

Carol Roland-Nawi

January 8, 2014

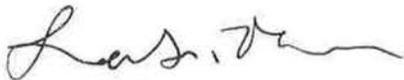
Page 3

The Debenedetti Building is the resource that best illustrates this pioneer merchant's contribution to the settlement of what was a very small coastal community. The Main Street Bridge, by contrast, is only distantly related to his career. Debenedetti was a member of the San Mateo County Board of Supervisors when the bridge was built and apparently lobbied of behalf of its construction. This, of course, is a common practice; a supervisor is expected to see that a fair share of resources are spent in his or her district. It is likely that most county-built bridges in the state bear the mark of advocacy by a local supervisor. Of the hundreds of National Register-eligible bridges in California, however, we know of none that has been found eligible under Criterion B, for the advocacy of the local elected official. Listing this bridge under Criterion B would represent a misapplication of Criterion B guidelines.

We respectfully request that 1) your decision on whether to approve this nomination take the information we have provided you into account, and 2) the final version of the Nomination Form be revised to reflect the information we have provided to you in this letter.

Thank you for the opportunity to provide input. Should you have any questions, please don't hesitate to contact me at [lsnideman@hmbcity.com](mailto:lsnideman@hmbcity.com) or at (650) 726-8270.

Sincerely,



Laura Snideman

City Manager

January 14, 2014

California State Parks  
Office of Historic Preservation  
Carol Roland-Nawi, Ph.D.  
1725 23rd Street, Suite 100  
Sacramento, California 95816

**Subject: Response to Comments by the City of Half Moon Bay on the Pending Nomination of the Pilarcitos Creek Bridge in Half Moon Bay to the National Register of Historic Places**

Dear Ms. Roland-Nawi:

I am writing as the interested individual who prepared and submitted the NRHP Nomination for the Half Moon Bay Pilarcitos Creek Bridge which will be considered at your next Board Meeting on February 7, 2014.

I am writing in response to the City of Half Moon Bay's comments (in a letter from City Manager Laura Snideman dated January 8, 2014) in order to further clarify and support the reasoning and accuracy of the Nomination as submitted.

The City of Half Moon Bay is the owner and operator of the Pilarcitos Creek Bridge (Bridge #35C-025) and by their own admission, "does not dispute that the Pilarcitos Creek Bridge is a historic resource," before going even further and specifically stating that the bridge has been eligible for listing on the NRHP since 1986 under Criterion C. Despite the fact that the City has committed to the immediate destruction of the bridge, and the additional fact that the City has failed to pursue listing on the Register in the 25 years since that eligibility was declared, they have nonetheless elected to weigh in on the current nomination because "it is important that National Register nomination be historically accurate." (sic), (Snideman Letter p.1)<sup>1</sup>

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<sup>1</sup> For a better understanding of the City's reasoning it is worth noting that the letter was almost certainly researched and written by one or more of the consultants that have been hired by the City to manage and oversee an \$8 million project, (which they themselves conceived and created) that will result in the demolition of the Main Street Bridge. The consultants so engaged, and contracted to share the \$2.9 million engineering budget include: CSG Associates, URS Corporation, David J. Powers and Associates, and most notably: Stephen Mikesell and ICF Corporation.

**ISSUE 1: “A distinct and extremely rare and early example of the use of prestressed reinforced concrete for spanning small to medium lengths.” (NRHP Form 10-900, Sec. 7-10 p.8)**

The City asserts in its letter that “This statement is incorrect because the bridge emphatically is not a prestressed reinforced concrete bridge.” (Snideman Letter, p. 2) With respect to the City Manager, this assertion is false and simply unsupported by any review of the factual and historically relevant information that is currently available.

The main flaw in the City’s argument is that it insists on judging the technical merit or efficacy of the documented prestressing of the bridge against a modern-day standard of design. A contemporaneous analog would be if someone were to assert that the Wright Brother’s 1903 Flyer was not an airplane, solely because when placed against modern day equivalents it had none of the modern day features that an airplane is supposed to have. As one example: The Flyer had no ailerons, but instead had what was, for its time, an ingenious method of warping the wings in a practical, if highly inefficient and somewhat ineffective way. Would such a scheme be used on an airplane designed and built within the last 80 years? Absolutely not. Was the method effective? Not particularly, although it did provide at least rudimentary control over the roll axis of the airplane. But did the method show the intent and knowledge of its designers in addressing the fundamental technical challenges pertaining to controlling an aircraft in three dimensions? Absolutely.

Thus the Wright Flyer is immensely significant as the first successful precursor to the modern airplane as we know it today, even though its technical solutions were primitive and are unrecognizable in the modern solution to the problem of heavier-than-air flight. The technology of the Pilarcitos Creek Bridge is similarly significant as it is one of the only, if not the only, remaining example of early attempts at prestressing concrete structures.

A quick review of the known facts relevant to the bridge validates the veracity of the previous paragraph as follows:

1. The drawings associated with the bridge specifically show “Tension(ed) Cable,” and there is a cable artifact present today that confirms the presence of Hallidie cable in the bridge. (The architect also confirmed the presence of the tensioned cable in a 1947 article referenced in the Nomination.)
2. It isn’t disputed that the bridge contains braided, (not “twisted” as incorrectly asserted by the City) high tensile-strength steel and hemp Hallidie cables, and this fact, when combined with the documentary evidence available, shows that these cables were anchored to the abutments and placed under tension across the length of the arch-rings *before the concrete was poured around them*. The method of providing tension is

unknown, as is the overall efficacy and impact the design had on the longevity of the structure. Nonetheless the historical record and *all available evidence* show that it is an indisputable fact that the bridge was built with pretensioned steel and hemp cables placed throughout the concrete structure.

3. As tension is a form of stress, and as the underlying reinforcement for the bridge was placed under tension prior to the pouring of concrete, it is clearly inarguable that the bridge must be, in whatever primitive form, a prestressed and reinforced concrete structure.

As a result, the Pilarcitos Creek Bridge, like the Wright Flyer that followed three years later, is representative of some of our first and finest technological baby-steps taken at the dawn of the last century. The fact that the form and implementation of the prestressing doesn't meet modern definitions of that technique does not in any way disqualify the genius in the design from recognition, nor does it mitigate the fact that the architect of the bridge clearly understood the physical principles and benefits of prestressing in a way that was more advanced than his peers. The proof of this assertion can be found in the numerous Patents and Patent applications that were filed in the 10-year period after the bridge was built, all of which describe some form of introducing tension and stress into the reinforcement of concrete arch bridges. One method that is representative of the crude attempts by designers to duplicate Tobey's innovation involved placing two long iron bars that would be flexed across the arch ring, from the crown all the way to each abutment. At the crown the bars would be placed in a sleeve that could be bolted around them to provide and hold the tension while the concrete was poured around the steel. (It is not known whether this method was ever used to actually construct a bridge.)

What these applications and Patents collectively show is that Curtis Tobey and his Pilarcitos Creek Bridge were far ahead of their contemporaries, as none of the subsequent offerings predates the construction of the Main Street Bridge, nor do any of them come even close to being as effective or elegant as Tobey's "Tension Cables." Thus the basic physical problem that Tobey's bridge tried to solve in primitive form in 1900 is the same one that "the great" Freyssinet would more effectively solve in 1928, using nearly identical materials, and in a technically similar way.

## **ISSUE 2: Criterion B: Association with Joseph Debenedetti**

The second point that the City of Half Moon Bay disagrees with is the Nomination's linking of Joseph Debenedetti and the bridge itself under Criterion B.

The assertions by the City in regards to Joseph Debenedetti are somewhat odd, as they make no attempt to assert that the bridge itself isn't significant, or that Joseph Debenedetti is not a

historically significant figure in Half Moon Bay history. Instead the argument offered posits that the Debenedetti Building located at 400-416 Main Street, “is the resource that best illustrates this pioneer merchant’s contribution to the settlement of what was a very small coastal community.” (Snideman Letter p. 3)

There are numerous problems with the City’s assertion.

1. The Debenedetti Building was built in 1906, after its wooden predecessor was destroyed in the 1906 San Francisco Earthquake. Debenedetti took notice of the fact that the bridge remained standing after the quake and elected to use concrete to build his replacement market as a direct result. In fact he was so enamored with the bridge that he chose to use, (possibly through less than legal means) the leftover concrete materials that were used in the manufacturing of the bridge itself. Thus the Debenedetti Building and the Pilarcitos Creek Bridge share a common history, common materials, and a common and very human component, without which neither would have come into existence.
2. There is no requirement or suggestion within the guidelines for Criterion B that the structure(s) in question be placed in a competitive evaluative process, whereby only the one deemed “most significant” or that “best represents” the individual’s contribution may be placed on the National Register under Criterion B. (Snideman Letter p. 3) As already documented, both in the Nomination itself and in this letter, Debenedetti is indelibly tied to the bridge in countless ways, from his eponymous 1906 building that shared common materials with the bridge, all the way to the plaque on the bridge that also bears his name.
3. Any assertion that Debenedetti’s market on Main Street was his premier contribution to “the settlement of what was a very small coastal community” is simply absurd, as is the assertion that the Pilarcitos Creek Bridge was only “distantly related” to his career. While Debenedetti’s market was surely important, it was the lack of a bridge prior to 1900 that limited access to, and passage through, Half Moon Bay. During this period there were numerous other markets in town, but until the advent of the Pilarcitos Creek Bridge in 1900 *there was no way to safely and comfortably access the town from the north*. Indeed this was such a vital need that the bridge has remained in continuous service to this day. Thus it was the Pilarcitos Creek Bridge that opened the necessary transportation access to Half Moon Bay and the Coastside to the South, and it is this bridge alone that allowed the town to prosper and grow as it did, both as a commercial hub, and as a tourist destination.

Joseph Debenedetti’s connection to the bridge is indisputable, as is his local significance and the local and regional significance of the bridge. The argument offered by the City Manager, while clearly stated, does not provide any factual basis for the conclusions made by the author, and as a result fails completely to override the obvious and numerous facts detailed in the NRHP Nomination that fairly and firmly support listing on the national Register under Criterion B.

I respectfully request that your consideration of the Nomination I have offered take into account the clarifications and details as provided above. I urge you to approve the Nomination at your next Board Meeting on February 7, 2014, despite the City's fairly transparent attempt to derail or delay the nomination in the clear interests of a politically driven agenda. (It remains the case that the author of the City's letter is the administrative head of a team that is committed to the demolition of this historic structure for what appear to be purely financial reasons, and despite overwhelming public opposition. Thus the City of Half Moon Bay is acutely aware of the political cost that destroying a nationally recognized historical artifact will entail, which helps to explain both its sudden apparent concern for historical accuracy, and as well its attempt to stall the Nomination process through the comments offered by Ms. Snideman.)

Thank you very much for the time and effort you and your staff have made on this project. I look forward to the opportunity to meet you next month at the OHP Board Meeting, and if there is anything I might do for you in the interim please do not hesitate to let me know.

Warmest Regards,

David C. Eblovi  
14 Muirfield Road  
Half Moon Bay, CA 94019  
david@wegetinfotech.com

**Pilarcitos Creek Bridge**  
**Half Moon Bay, San Mateo County, California**  
**Staff Report**

Pilarcitos Creek Bridge, also known as the Main Street Bridge or Bridge CA 0035C-25, is a steel-reinforced concrete bridge constructed in 1900. Approximately 80 feet long and 24 feet wide, the bridge consists of a single concrete arch supported by two concrete piers, with a concrete parapet on either side. A wooden walkway was added to the western side of the walkway in 1941, and another to the eastern side of the bridge in 1991. On the inside of the eastern parapet is a bronze plaque commemorating the bridge's completion in 1900, "First Concrete Bridge Erected In San Mateo Co. 1900." The property is nominated under the Historic Highway Bridges of California Multiple Property Document as an example of the Concrete Arch Bridge type.

The property is eligible for the National Register under Criterion A at the local level of significance for its association with the development of Half Moon Bay, serving as the only approach to the city's downtown from its construction in 1900 until 1955. It is eligible under Criterion B for its association with businessman and politician Joseph DeBenedetti, who was an active advocate for the bridge's construction and closely involved with the project to replace the earlier wooden bridge. It is eligible under Criterion C as an extremely rare and early prototype of prestressed reinforced concrete, designed by engineer and architect Curtis Tobey. The Pilarcitos Creek Bridge predates modern methods of prestressed concrete construction by several decades. The bridge uses Hallidie braided steel-and-hemp wire rope previously used by the city of San Francisco's cable car network. While not technically identical to modern prestressed concrete using rebar under tension, this method uses tensioned steel cable. Reinforced concrete uses steel reinforcing bars embedded passively in the concrete, not under tension, and thus a different method than used in the Pilarcitos Creek Bridge. The property retains a high degree of historic integrity due to limited modification to the bridge structure, other than the addition of two street lamps and the wooden walkways, distinct and separate elements of the bridge. The bridge has suffered physical deterioration, including points where the hemp-cored Hallidie wire rope cables are visible through cracks in the concrete.

The property is nominated by a resident of the city of Half Moon Bay. The owner, the City of Half Moon Bay, submitted a comment letter acknowledging that the property is an eligible historic resource but questioning Criteria B and C. The city's letter stated that bridges cannot be nominated under Criterion B, Joseph DeBenedetti's involvement was incidental, there is already an extant historic property associated with him, and that the bridge cannot be considered "prestressed concrete" because the method was not

patented until 1928 and uses Hallidie wire rope instead of rebar. The applicant responded via a revised draft, reinforcing Joseph Debenedetti's direct association with the bridge's construction. Bridges can be nominated under Criterion B, and multiple resources can be associated with the same person under Criterion B. The city contends that the most significant local property associated with Debenedetti's working life was his nearby store. However, his original store was destroyed in the 1906 earthquake. Inspired by the survival of the nearby bridge, he built the replacement store out of concrete, including leftover materials from bridge construction. The bridge also represents a property associated with Debenedetti's role as county supervisor, rather than a local businessman, and his involvement with the bridge's creation had significant effects on the growth of downtown Half Moon Bay. Regarding Criterion C, the applicant addressed the use of metal under tension in the bridge, as later patented by French engineer Eugene Freyssinet, as a previously unidentified predecessor to modern reinforced concrete. He compared the bridge to the Wright Flyer, which controlled roll via wing warping rather than ailerons, but is still considered an airplane. Unlike reinforced concrete, the cables of Pilarcitos Creek Bridge are under tension, indicating a method similar but not identical to modern prestressed concrete. The city did not dispute eligibility under Criterion A and acknowledges its status as a bridge previously determined eligible for the National Register as part of the "Historic Highway Bridges in California" MPD. One letter of support was received via email.

Staff recommends the Commission determine the Pilarcitos Creek Bridge eligible for the National Register under Criteria A, B and C at the local level of significance, with a period of significance of 1915-1955. Staff further recommends the State Historic Preservation Officer approve the nomination for forwarding to the National Park Service for listing in the National Register of Historic Places.

William Burg  
State Historian I  
January 16, 2014



# CITY OF HALF MOON BAY

City Hall • 501 Main Street • Half Moon Bay • CA • 94019

January 29, 2014

California State Parks

Attn: Office of Historic Preservation

Carol Roland-Nawi, Ph.D., State Historic Preservation Officer

1725 23rd Street, Suite 100

Sacramento, California 95816

**Subject:                   Comments on Pending Nomination of Pilarcitos Creek Bridge in  
Half Moon Bay to the National Register of Historic Places**

Dear Ms. Roland-Nawi:

The City of Half Moon Bay is the owner and operator of the Pilarcitos Creek Bridge (Bridge # 35C-025) that is the subject of the National Register Registration/Nomination Form submitted to the Commission by David Eblovi, a local resident. The City previously submitted a letter dated January 8, 2014 regarding this nomination.

On January 17, 2014, your staff provided us with a copy of the Staff Report for this nomination. The Staff Report contains the following statement: "The property is nominated on behalf of its owner, the City of Half Moon Bay, who submitted a letter in support of the nomination." For the following reasons, this statement is not accurate:

- The nomination was not submitted on behalf of the City. The City was not involved in any aspect of the nomination. The decision to prepare and submit the nomination, and all statements contained therein, did not involve the City.
- Our January 8<sup>th</sup> letter was neither a letter of support nor a letter of opposition to the nomination. The letter clearly states that the intent was to correct what we believe is inaccurate information in the nomination form.

We note that the Staff Report makes no mention of the material we submitted and there is no analysis by your staff as to whether there is agreement or disagreement with the material. The City respectfully requests that our comments be considered before proceeding with any decision on this nomination.

Sincerely,

Robert L. Kalkbrenner

Project Manager

**Burg, William@Parks**

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**From:** Correia, Jay@Parks  
**Sent:** Wednesday, January 22, 2014 8:51 AM  
**To:** Burg, William@Parks  
**Subject:** FW: Please include the Main St. Bridge (aka Debenedetti Bridge) on registry

For you...

Jay Correia  
State Historian III  
Supervisor, Registration Unit  
California State Office of Historic Preservation  
916-445-7008

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**From:** OHP, CALSHPO@Parks  
**Sent:** Wednesday, January 22, 2014 8:46 AM  
**To:** Correia, Jay@Parks  
**Subject:** FW: Please include the Main St. Bridge (aka Debenedetti Bridge) on registry

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**From:** great housemate [great.housemate@yahoo.com]  
**Sent:** Monday, January 20, 2014 6:53 PM  
**To:** OHP, CALSHPO@Parks  
**Subject:** Please include the Main St. Bridge (aka Debenedetti Bridge) on registry

Dear Estimable Members,

Please formally include the Main St. Bridge in Half Moon Bay to the historic registry at your upcoming meeting.

I have lived here in Half Moon Bay beginning in the early 1960's.

That gateway to our old business district is a feature that helps define the very character of our "historic business district"

Marketing Half Moon Bay as a historic place of interest was until recently one of the top priorities of the same city council that now downplays the historic significance of one of the premier sites we have on the coast of California.

If the Main St. Bridge is included on the registry, we will have an even better position from which to share our history.

Thank you for what I know will be a fair evaluation of the facts presented.

Respectfully yours,

Charles Samuelson P.O. Box 1596 El Granada Ca. 94018

**OFFICE OF HISTORIC PRESERVATION  
DEPARTMENT OF PARKS AND RECREATION**

1725 23<sup>rd</sup> Street, Suite 100  
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(916) 445-7000 Fax: (916) 445-7053  
calshpo@parks.ca.gov  
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February 18, 2014

Ms. Carol Shull, Keeper  
National Register of Historic Places  
National Park Service 2280  
1201 I (Eye) Street, NW  
Washington, DC 20005

Subject: **Pilarcitos Creek Bridge**  
**Half Moon Bay, San Mateo County, California**  
**National Register of Historic Places**

Dear Ms. Shull:

Enclosed please find the **Pilarcitos Creek Bridge** nomination to the National Register of Historic Places. This property is located in Half Moon Bay, San Mateo County, California. On February 8, 2014, the State Historical Resources Commission unanimously found the property eligible for the National Register under Criteria A, B, and C at the local level of significance.

The property is nominated by a resident of Half Moon Bay. The owner, the City of Half Moon Bay, provided two letters of comment drawing into question the nomination's eligibility under Criteria B and C. The applicant wrote a letter in reply and re-edited the nomination to include his responses prior to Commission review. One additional letter of support was also received.

If you have any questions regarding this nomination, please contact William Burg of my staff at 916-445-7004.

Sincerely,

for  
Carol Roland-Nawi, Ph.D.  
State Historic Preservation Officer

Enclosures