

## Western Pacific's Willow Glen Trestle/the structure

### Overview.

This analysis considers the trestle structure in the context of its times and its region. A separate section consider the trestle in the context of local history. Also, comments are offered on the analysis contained in the DEIR "Three Creeks Trail Pedestrian Bridge" January, 2015. The trestle is a unique regional resource exemplifying railroad construction methods of early 20<sup>th</sup> Century.

### **California Register of Historical Resources Eligibility Criteria 3**

Embodies the **distinctive characteristics of type, period, region, or method of construction** or represents the work of a master or possesses high artistic value.

### **City of San Jose Historic Landmark Designation Criteria (subset)**

Its embodiment of distinguishing characteristics of an architectural type or specimen.

Its embodiment of elements or architectural or engineering design, detail, materials, or craftsmanship that represent a significant architectural innovation or that is unique.

The Willow Glen Trestle over Los Gatos Creek on the Western Pacific's Beltline from Niles to West San Jose was the final creek crossing into the highly desirable industrial district of San Jose region.<sup>1</sup> The trestle is pile bent construction and about 25 ft above the current stream bed height and roughly 210.5 feet long.<sup>2</sup> According to the same consultant, the bridge shows evidence of receiving routine maintenance during its railroad operation years (1922-1998).

There are two types of wooden trestles: pile bent and wood framed trestle. The pile bent trestle consists of piles that are driven into the ground. Groupings of piles arranged in a line are capped together to form a bent. The piles are tree trunks, sheared of branches. Because trees are used, the upper limit in height is 25 to 30 feet and seldom used for heights this tall.<sup>3</sup> Pile trestles are used where ground is soft or may be covered with water; also where the distance from the ground to the

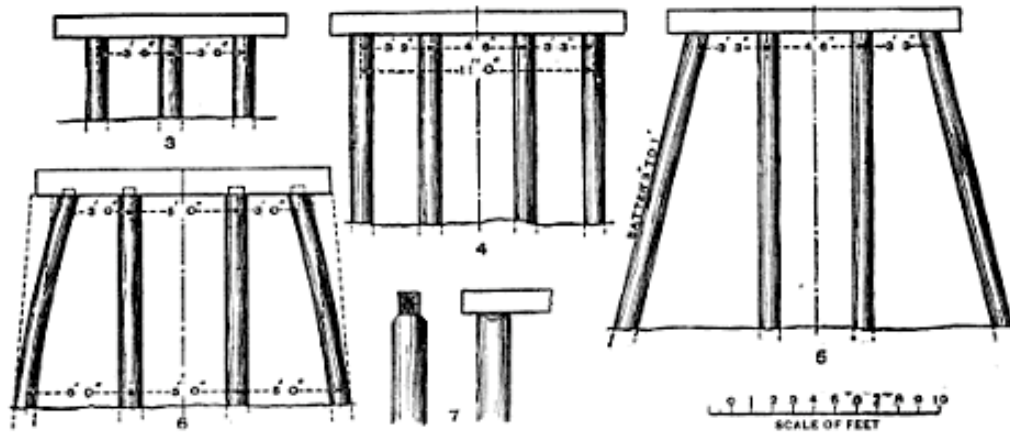
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<sup>1</sup> "Offer of 10 acres made to railroad. Western Pacific Vice President says Company determined to reach industries. Says Attitude of Willow Glen is purely destruction—has no faith in results. " "Rail Board asked to Order Union Station" "Railroad Commission to Resume WP Matter." San Jose Mercury Herald. 1917 Sep28

<sup>2</sup> Three Creeks Trail Railroad Trestle at Los Gatos Creek. CH2MHill. October 8, 2012.

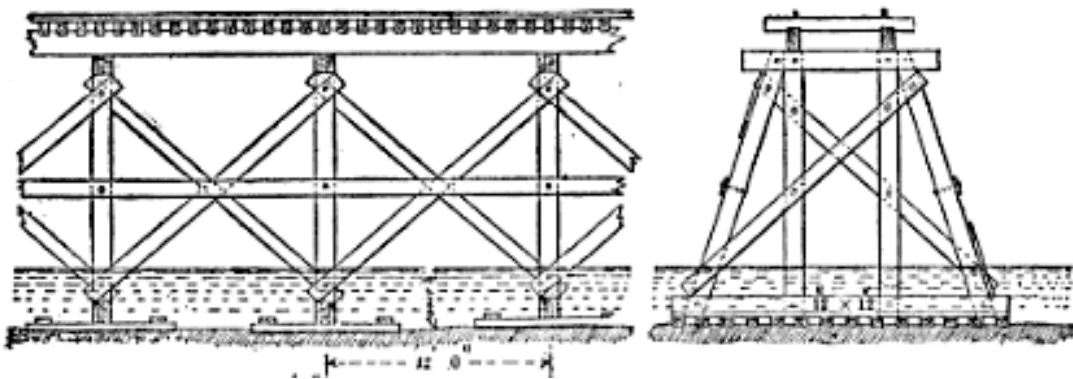
<sup>3</sup> Foster, Wolcott Cronk. A treatise on wooden trestle bridges and their concrete substitutes. 1913. Page 6.

rail is not great.<sup>4</sup> **Pile bents** between 10 and 20 feet should have 1 cross structure.<sup>5</sup> *This is like the Willow Glen Trestle.*



FIGS. 3 TO 7.—PILE-BENTS.

The second kind of wooden trestle is a **framed bent**. These trestles have foundations and the wooden members are milled into squared edges. They can be built into taller structures. *This is **not** the Willow Glen Trestle.*<sup>6</sup>



### Analysis of DEIR on criteria 3 (California)

The Los Gatos Creek Bridge represents an important example within its context of building practices at a particular time in history. It is both a typical and atypical type of structure. The structure follows the general design of pile bent trestles as described in publications of the time period. However, it is atypical in the following ways:

--It has a varying number of pilings in each bent, with 5, 6, 7 or 8 pilings. Though reference is made in the historic report that the bridge is a "6-pile" railroad trestle

<sup>4</sup> Foster. Page 7.

<sup>5</sup> Foster. Page 10.

<sup>6</sup> Foster. Page 52.

suggesting the repairs detracted from the structure. However, no attempt was made to explain the atypicality of the 5-piling bents (Bent 3 and Bent 14) that have fewer than 6 piles and no piles from repairs.

--The trestle's height is atypical for wooden pile bent trestles according to engineering books of the time period.<sup>7</sup> Twenty-five feet was at the upper limit for pile bent structures during this time period. Pile bents require single tree trunks. Availability of such tall pieces of timber were limited in the best of times. Further, this trestle was built immediately after World War I and many utilities and railroads needed these tall pieces to do construction and maintenance deferred by the nationalization of the railroads during the war and the limitations imposed by war. The selection of this type of structure instead of a framed trestle is not usual according to Foster. Constructing a foundation in the creek bed would have been easy. There is a long extended dry period and the creek flow was controlled by multiple dams on the tributaries to Los Gatos Creek.<sup>8</sup> Little water flowed beyond the Kirk Irrigation ditch diversion upstream of this trestle. Further, there was no urgency—other construction on the “Beltline” did not finish until 1922. The trestle could have been built as a framed trestle. Instead, the decision was made to build it as a piled trestle at the upper end of recommended heights and available timber.

--A National Park Service White paper provides guidance about “Evaluating Common Resources” and suggests separating into subtypes.<sup>9</sup> The consultant separates the wooden trestles into pile bent and framed claiming that Richard Cook author of the 1987 book *The Beauty of Railroad Bridges* came up with this distinction. However, this distinction was made clear in the early editions (1913 and earlier) of Wolcott Cronk Foster's *A Treatise of Wood Trestle Bridges*. However, more appropriately, the analysis should be based on the uniqueness and rarity of tall (25 ft) and long (210 ft) pile bent trestles.

--A further subdivision could be time period of construction as is done with buildings. This bridge was constructed shortly after World War I, just after the Federal Government stopped operating the trains. All railroads scrambled to make reports to roads and rolling stock that had been placed “on hold” while the Federal government operated the railroads. Significant differences in construction and availability of materials exist between this immediate post-war time period and other time periods.

--The inventories used by the consultant to argue that this long and tall pile bent bridge is ubiquitous were from the Sacramento region of Southern Pacific and limited to identifying wood trestles by open deck and ballast deck. The bridges were not categorized by how the engineers of the historic time period categorized:

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<sup>7</sup> Foster. Ibid.

<sup>8</sup> History of Dams of Los Gatos Creek Watershed. [www.scvwd.org](http://www.scvwd.org). Accessed March 15, 2015.

<sup>9</sup> NPS. 2009. [www.nps.gov/nr/...3.../NCSHPO\\_Common\\_Property\\_Types.pdf](http://www.nps.gov/nr/...3.../NCSHPO_Common_Property_Types.pdf)

pile bent and framed trestle. No analysis is made by height and length. Further the national survey does not make these distinctions by subcategory either. Given that the consultant acknowledges the importance of using sub-types, these are inappropriate inventories with which to dismiss the subject trestle and call it "ubiquitous."<sup>10</sup>

--The trestle is a long-span of over 210 ft. An inventory of Santa Clara County trestles was made. There are few all-wooden pile bent trestles overall and few this tall (25 ft), and longer than 59 ft. By the numbers, what remains:

- 1 wooden pile bent tall ( $\geq 25$  ft) and long (over 200 ft) trestle is owned by San Jose subject WPRR bridge over Los Gatos Creek
- 2 wooden pile bent tall ( $\geq 25$  ft) and long (over 50 ft) trestles are owned by UPRR
  - one is in San Jose on abandoned WPRR line
  - one is at San Benito County line on Hollister branch (south of Gilroy)
- 1 wooden pile bent not tall ( $< 25$  ft) and long (over 50ft) trestle north of Alviso in San Francisco Bay.

All other similar all-wooden pile bent trestles have been demolished, are scheduled for demolishing or changed to I-beams or concrete footings. No other all-wooden trestles are known in Santa Clara County; however, a few short spans of two bents over culverts and channelized small creeks might still be all-wooden pile bent but were not identified by this author's field team due to views blocked by inaccessible locations.

Notably all but two of the Western Pacific's trestles of any size or design in Santa Clara County have been or will be demolished. If this subject trestle at Los Gatos Creek is removed, only ONE Western Pacific trestle will remain in Santa Clara County (at Coyote Creek)

In scoping questions, Cathy Rubin asked "Are there other similar bridges within San Jose that we could visit that would tell the same story? Are they in walking distance? Biking distance?...get in cars and drive who knows how far? ..tell the same story?"

Cathy, at this writing there are 4 Western Pacific trestles of any kind in Santa Clara County. Two are scheduled to be demolished; there is nothing that can be done to save them. This subject trestle is at risk of demolishing. There is one other trestle at Coyote Creek near Story Road and it is owned by the Union Pacific on the abandoned line. No tracks lead to it; it is at risk. No other trestles tell the Western Pacific story in Santa Clara County; they are all gone.

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<sup>10</sup> Interestingly, bridge inventories are not required by the Federal Railroad Administration or the California governing bodies, unlike the California State Highway Commission. Recent Federal legislation will change this as a result of concerns about the shipment of oil crude.

If you want to view another nice tall and long all-wooden trestle, you can drive south of Gilroy to the Union Pacific's active Hollister line. It crosses the Pajaro River. It can be viewed from Highway 25's shoulder, but take binoculars. The crossing is blocked by private property. There are no other tall or long wooden trestles of any construction type (pile-bent or framed trestle) design in Santa Clara County. If you wish to view a long trestle that is not tall, you can take a canoe to the Don Edwards National wildlife preserve in San Francisco Bay. Or you may view the trestle with binoculars from the trails on the levees. This trestle was built for the Southern Pacific and does not tell the same story. There are a few trestles with concrete construction or I-beam construction.

The Los Gatos Creek trestle is unique in Santa Clara County. It is owned by the City of San Jose and could be protected. It represents one of THREE remaining similar trestle bridges in the County of Santa Clara where many wooden pile bent trestles were once in service and now have all but 3 have been or will be removed. This qualifies the trestle for historic standing under City of San Jose—it embodies a particular type—a tall ( $\geq 25$  ft), long ( $> 210$  ft) pile bent wooden trestle and it is very nearly unique. It is the last one of two in the City of San Jose and the city already owns it, and it is publicly accessible in context!

In the Writ, Friends of Willow Glen Trestle, Susan Landry state the subject bridge is the only timber trestle still in place on Western Pacific line in Willow Glen. More properly, it is the only one that could be saved. The other one at the Guadalupe River is destined for removal for a Santa Clara Valley Water District flood control project.

The DEIR consultant uses Cook's beautiful "coffee table" picture book about Railroad Bridges to demonstrate that only framed trestle bridges were sufficiently interesting to be included in the book. From this decision on aesthetics, the DEIR concludes "The tall framed trestles, for example, achieved great engineering significance and incredible beauty. The far more common pile bent trestles are so common as to make it unlikely that anyone would be significant under National Register Criteria C." The consultant is arguing that aesthetics and engineering determine Criteria C rather than the style of construction of this particular subtype: all-wooden pile bent trestle that is tall ( $\geq 25$  ft) and long (210 ft). Historic structures do not have to be pretty.

The language of Criteria C (NPS) and Criteria 3 (California) state:  
Embodies the distinctive characteristics of a type, period, or method of construction:

This trestle is long (210 ft), tall for its type (25 ft), wooden, pile bent trestle built in the Interwar years (completed 1922). Considering the local Santa Clara County inventory for trestles of this subtype, **there are only three standing (two with uncertain status and one at the San Benito County line). All others have been demolished, replaced, or are slated for removal.**

Based on this inventory of this subtype of wooden trestle in Santa Clara County, another aspect of the NPS White Paper on Common Structures applies: “Property types should be considered common in terms of their current prevalence. “ The consultant uses national data from Foster (1917) to indicate prevalence of wooden trestles (700,000 of any type). Also, the consultant estimates from a 1999 survey that only 24,000 timber trestles of any type remain—a 97% decline. Wooden trestles of any type are a disappearing historic resource.

The consultant uses the most recent **archived** (1970) bridge log of the Southern Pacific’s Sacramento Branch to argue prevalence of timber trestles of any type. Importantly, the NPS White Paper indicates that **current prevalence** should be used for common structures and this inventory is 45 years old! Further, the covers a period when lumbering was still very active in the mountains. Since then, many lines have been abandoned.

The examined Sacramento Division region is not at all comparable to Santa Clara County nor many parts of California. For example, the 1970’s report’s area is very well-watered—including mighty rivers and their tributaries such as the Sacramento and American Rivers as well as the Bay Delta. The report also covers the mountains of the Sierra Nevada! Contrast this to Santa Clara County where no train lines currently exist in the mountains and the mightiest water courses are creeks that flood. (Coyote, Guadalupe, Los Gatos, Pajaro, and San Francisquito Creek). Quite clearly, the regions are not at all comparable for estimating prevalence of bridge types.

The NPS White paper further discusses: “Some once-common property types have dwindled in numbers significantly, even since the introduction of today’s historic preservation programs. For example, one-room schools (even derelict examples) are no longer a common sight in many rural landscapes. Once-common resources need to be fully described, including a description of property subtypes. However, the more stringent integrity requirements that may apply to today’s common properties, should not apply to an evaluation of examples of once-common, but vanishing, property types.” There are very few tall and long all-wooden pile-bent trestles in Santa Clara County. A modern inventory—rather than the 1970 Sacramento area inventory—might provide similar results in other parts of California. Nevertheless, it suggests that less stringent standards for integrity should be used for this structure than might otherwise be needed because there are so few left of this subtype.

NPS. State Historic Preservation Offices and local jurisdictions have a long history of declaring structures historic when there are few of their type remained. Examples include: New York’s Tenement Museum—one of the last tenements in Manhattan, but once very common and not aesthetically pleasing nor great architecture; slave quarters on various farming properties; one room school houses; water towers; barns. San Jose has a long history of preservation as well. For example, KB Homes

was required to preserve the water tower at Del Monte. Barry Swenson was required to save the water pump building at his Duckett Way condominium structure. History is preserving an old barn on its campus at Kelley Park. As these structures become rare, the common becomes uncommon and preservation is needed to communicate the story of the structure. Can we expect no less from the City of San Jose for a structure it already owns?

The consultant did not discuss aspects of qualification for the National Register/ However analysis of integrity is helpful when considering a historic resource. The National Park Service asks for an analysis of integrity of location, design, setting, materials, workmanship, feeling, and association.

The trestle is in its original location.

The trestle maintains its operational design and could be reversed to original condition. Although bents have been added as repairs, it remains as it was when operational. Safety fences have been installed and, ties and rails removed. It could be reversed to its original construction condition.

The trestle remains in the creek bed setting. Visually, the alignment of the right of way remains, although tracks and ties have been removed. Significant trees that are evident in historic pictures of the trestle remain evident. Homes remain on the Willow Glen side and industrial buildings remain on the Midtown side, including those that were extant at the time of construction.

Materials used to maintain the trestle are similar as those when it was originally constructed. Replacement and additional piles are composed of tree trunks. Bents and cross frames are made of wood and milled to match the original structure.

Workmanship remains as it was in 1922. The trestle was built to be a workhorse for the railroad without regard to aesthetics. The piles were built with asymmetry in each bent and with an unequal number of piles conforming to the geometry of the creek bed. Yet, the 13 bents were separated by uniform distance. Structural calculations for the bridge design were done without benefit of a calculator and within the department of San Jose native W.H. Smitten (1873-1953) who started as a rodman for the Southern Pacific in 1900 and then worked up to structural engineer, prior to serving the US Army Corps of Engineers in Washington State and in France during World War I followed by taking the head Bridge Engineer job at Western Pacific in 1921.<sup>11</sup> Smitten remained responsible for all Western Pacific bridge engineering until his retirement in 1947. The use of additional piles and frames for repairs was common and congruent with the original nature of the initial construction, ie adjusted for the conditions. Construction reflected the best judgment of on the ground professionals with many years of experience and no calculator and no computing capability for modern mathematical modeling of stress loads as demonstrated in the feasibility study. The alignment was not used after 1998 and the repairs reflect the in the field mathematical modeling of the time.

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<sup>11</sup> Various trade publications, e.g. Railway Maintenance Engineer. Vol. 17, No 12.and Railway Engineering and Maintenance 1947

Feeling. The trestle is surrounded by a lush riparian environment. Those who view historic photos from the 1950s cannot tell the difference between then and now. Views along the alignment remain the same except for the removal of tracks. Visitors underneath the trestle express awe. There are no visual intrusions. Today's children play under the bridge in the creek as they did in 1928.<sup>12</sup>

Association. The trestle crosses the creek which is in its original 1922 form, ie not channelized. It is connected to the Right of Way which has been maintained as open space. The buildings and roads in the area remain the same. A person walking over the trestle and along the Right of Way into Willow Glen will immediately recognize how the Western Pacific Willow Glen Spur alignment at a diagonal disrupted the life of Willow Glen residents and affected the patterns of development during the decade of 1920s. The trestle still links an industrial area (Midtown) to a "high class" residential area, Willow Glen. The association to the story of the trestle and the Western Pacific is strong.



San Jose News - Sep 12, 1928 [Browse the](#)

## *Glen Kiddies, Must Wait One Year for Swim*

Children have been congregating from all sections of the Willows during the past few warm days to inspect the wading pool and playground which C. Nielsen, pioneer resident of the community, has been building on the corner of Coe and Lincoln Avenues, in the Los Gatos creek bed just below a group of buildings he owns on that corner.

According to Nielsen, many of the children gathered because of an article in The News several weeks ago, that the wading pool was completed, and ready for use.

They were sadly disappointed, however, to find that, though the wading pool is completed there is no water to go wading in. Nielsen has completed the dam at a cost of \$100 and promises the children that they will be able to wade to their heart's content next summer.

<sup>12</sup> "Glen Kiddies Must Wait One Year For Swim." San Jose News. 1928 Sept. 12.



**Table.**

**Santa Clara County inventory of similar wooden pile bent trestle structures:**

**Western Pacific “Beltline” in Santa Clara County (photos follow):**

**Still Standing--Future Status Uncertain**

1. Subject bridge Los Gatos Creek. Owned by City of San Jose. 13 bents.
2. Coyote Creek near Story Road. Part of a City of San Jose 2008 Coyote Creek Trail master plan including historic interpretation. Owned by UPRR.<sup>13</sup>

**Demolition Planned**

3. Silver Creek near Eggo and Highway 101 on the Beltline. Less high than subject bridge and much shorter. Demolition planned as part of tail track construction for a VTA/BART tail track.<sup>14</sup> Four bents.
4. Guadalupe River south of Alma Street at Falcon Place will be demolished as part of the Guadalupe River flood control project.<sup>15</sup> Current bridge is shorter and with fewer bents than subject bridge.

**Demolished**

All Western Pacific Beltline trestles of all subtypes from Hwy 101 to Alameda County have been destroyed by VTA/BART Phase I construction.<sup>16</sup>

**Southern Pacific/Caltrain to Monterey County/Union Pacific Mainline**

**Demolition Planned**

1. Over Los Gatos Creek south of Diridon Station. <sup>17</sup>

**Demolished.**

2. All wooden pile bent trestles replaced with concrete or metal I bars.<sup>18</sup>

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<sup>13</sup> City of San Jose. Coyote Creek Trail Master Plan. 2008. Lower Silver Creek to Story Road.

<sup>14</sup> VTA/BART Phase I Construction Documents. <http://www.vta.org> Accessed 2014 October 30.

<sup>15</sup> Santa Clara Valley Water District Guadalupe River Flood Control Plans, map ACPP\_009.pdf. Dated 6/6/2000. Downloaded from SCVWD secure dropbox on 2013 August 27.

<sup>16</sup> VTA/BART Construction documents. Ibid.

<sup>17</sup> Caltrain. Los Gatos Creek Bridge Replacement IS/MND.

<sup>18</sup> By inspection.

### **Southern Pacific College Park to Niles via Japantown and Milpitas.**

#### **Demolished/Replaced**

1. Guadalupe River near Coleman Avenue<sup>19</sup>
2. Over Coyote Creek at Schallenberger. Replaced with Concrete pylons. Date unknown. By visual inspection.
3. No other all-wooden pile bent trestle is known to Alameda County line.

### **Southern Pacific Newhall WYE Santa Clara to Alviso (mainline)**

#### **Existing**

1. Wooden pile bent trestle through Don Edwards Wildlife Reserve In San Francisco Bay. Over water. Not tall but long. Might not be all wooden. (Hard to inspect fully.)

#### **Demolished/Replaced**

2. No other all-wooden pile bent trestle identified.

### **Southern Pacific Hollister Branch-Gilroy to San Benito County**

#### **Existing**

1. Over Pajaro River near Bolsa Road (Highway 25). Owned by UPRR. At San Benito County line.

### **Southern Pacific Lick Branch, Hillsdale Branch, New Almaden Branch, Camden line, Los Gatos Line, Pacific Coast line, Los Altos Line, Vasona Line.**

All trestles on these abandoned lines have been removed or demolished.

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<sup>19</sup> City of San Jose and Santa Clara Valley Water District joint memo dated April 24, 2012. [http://www3.sanjoseca.gov/clerk/Agenda/20120424/20120424\\_0701.pdf](http://www3.sanjoseca.gov/clerk/Agenda/20120424/20120424_0701.pdf) Accessed March 15, 2015.

Photos of Similar All-Wooden Trestles in Santa Clara County.

1. Western Pacific Over Los Gatos Creek in Willow Glen. **Subject Bridge.** At Risk.<sup>20</sup>



2. Western Pacific. Over Coyote Creek. Near Story Road. At Risk.<sup>21</sup>



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<sup>20</sup> Ames, Larry. 2014. Ibid.

<sup>21</sup> By shed 47. <http://www.trainorders.com/discussion/read.php?11,794985>  
Accessed March 12, 2015.

3. Western Pacific over Silver Creek at Eggo Way. Demolition Planned.<sup>22</sup>



4. Western Pacific over Guadalupe River at Falcon Place. Demolition Planned.<sup>23</sup>



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<sup>22</sup> Google Street View. <http://www.google.com> Accessed March 12, 2015.

<sup>23</sup> Google Aerial View. <http://www.google.com> Accessed March 12, 2015.

5. Southern Pacific. Hollister Branch. Over Pajaro River. Santa Clara/San Benito County line.<sup>24</sup> Active UPRR line. Near Highway 25 (Bolsa Road)



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<sup>24</sup> Google Street View. [Http://www.google.com](http://www.google.com) Accessed March 12, 2015.