Bridge Type Selection Report

Five Wounds Trail

City of San Jose

August 02, 2023

→ The Power of Commitment



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Executive Summary

The trestle bridge along the future Five Wounds Trail is located north of the intersection of Story Road and Senter Road where it crosses Coyote Creek and Trail in San Jose, CA. The Project is a covered activity within the Santa Clara Valley Habitat Plan. This report summarizes the three alternatives considered, discusses the potential CEQA and permitting requirements of each, and identifies a recommended bridge alternative for the project design phase. It is our understanding the City is embarking on the Five Wounds Master Plan, and associated CEQA document, that will include the trestle. However, because the timeline and outcome of that process is unclear at this time, the CEQA requirements discussed for each alternative herein assume a CEQA approach specific to the bridge improvements only.



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1. Introduction

1.1 Project Description

The following report summarizes the considerations associated with various bridge type alternatives for the proposed bridge replacement on Five Wounds Trail that crosses Coyote Creek, north of the intersection of Story Road and Senter Road in San Jose, CA.

1.2 Bridge Alternatives

Three alternatives are considered for this report and the following:

Alternative 1: Fully retrofit existing trestle bridge for multi-purpose trail use

Alternative 2: Demolish existing bridge and construct a new single-span weathering steel truss bridge

Alternative 3: Retrofit existing bridge for collapse prevention and construct new single-span weathering steel truss bridge adjacent to the existing bridge

The landfill site is not a PRNS resource, but providing vehicle access to the site can support a variety of future development or conservation efforts. None of the considered alternatives provide a viable route for maintenance, service, police and ranger vehicles to easily and quickly reach the site. The site's topography and undeveloped state prevent regular observation by San Jose Police Department and PRNS Park Rangers. Coyote Creek Trail is paved and rated for vehicle use, but lack of width and turn-around points, and topography prevent full access and observation of the landfill site. This related issue was not considered and a future study for a 4th alternative is recommended.

1.3 Scope and limitations

This report has been prepared by GHD for City of San Jose and may only be used and relied on by City of San Jose for the purpose agreed between GHD and City of San Jose as set out in section 1.1 of this report. GHD otherwise disclaims responsibility to any person other than City of San Jose arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible. The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring after the date that the report was prepared. GHD has prepared this report based on information provided by City of San Jose and others who provided information to GHD, which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

2. Project Description

2.1 Project Background

The Five Wounds Trail Feasibility Study was prepared (August 30, 2022), which evaluated the project area from Story Road and Senter Road intersection to the Whitton Avenue crossing, an approximately 1.5 mile segment. The study identified a preferred trail alignment and additional technical studies that may be needed to inform the master planning process. Crossing Coyote Creek at the existing trestle bridge was an area identified for further investigation.

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Following the Feasibility Study, further technical analysis will be conducted, followed by master planning and environmental compliance requirements, design development, construction documentation, permitting, construction bid and award, and remediation and project construction.

The timber trestle bridge was originally constructed in 1922 by Western Pacific Railroad to connect the San Jose Branch with the main line at Niles Canyon in Alameda County. It is an open-deck pile-supported timber trestle consisting of 13 intermediate timber pile bents, two timber pile abutments, and is approximately 250 ft long. The superstructure consists of longitudinal timber girders supporting 8x8 timber ties, along with a small metal grating catwalk and handrails.

2.2 Proposed Project

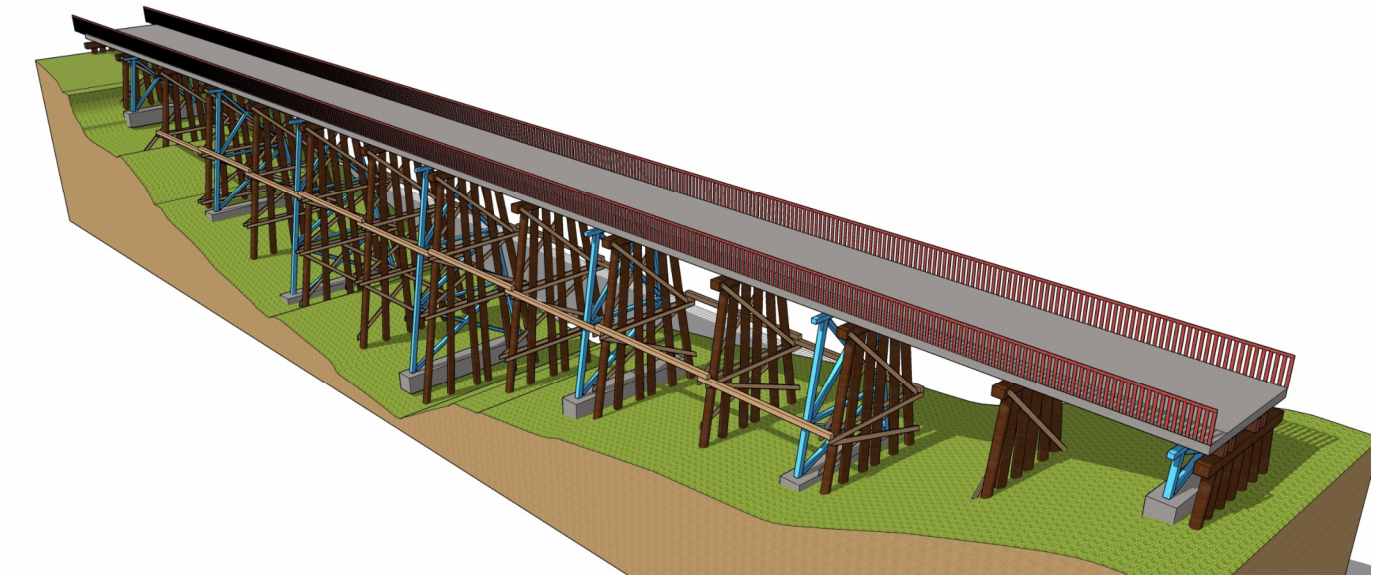
The San Jose Branch line is no longer in operation and a portion of the original railway is proposed to be converted as a continuation of a shared use trail called the Five Wounds Trail to cross Coyote Creek. The tracks have been removed but no rehabilitation has been performed and is currently fenced off from public access. This project is to create trail access either by retrofitting the existing bridge or by constructing a modern bridge. The retrofit alternative would completely rehabilitate the bridge to modern standards for multi-purpose trail use. The proposed new bridge would be a single span simply-supported bridge to eliminate the need for permanent support structures in the creek.

2.3 Previous Studies

The following studies were referenced and their conclusions were considered in this bridge type selection report:

- “Five Wounds Trail Feasibility Study” dated August 30, 2022 by RRM Design Group. Study identified crossing Coyote Creek at the existing trestle bridge as an area for further technical analysis.
- “Structural Evaluation, Five Wounds Trail – Trestle Bridge” dated July 26, 2023 by GHD for a full analysis of the existing condition of the bridge. The evaluation finds that the existing bridge condition would require extensive retrofit to be placed in service as a pedestrian bridge, or would require minor retrofit to remain in place. Without any retrofit, the existing bridge is adequate to support its own weight, and to resist short-term wind loading. However, due to an inadequate lateral force resisting system, the typical trestle supports are at risk of partial collapse during a high-probability, low-severity seismic event.
- “Coyote Creek Trestle Historic Resources Evaluation” dated July 13, 2023 by TreanorHL. While the trestle bridge is not currently identified as a historical landmark, it appears to be eligible for listing. Report outlines the process and steps to be taken, and additional studies and technical reports to be prepared in order to demolish the existing trestle.
- “Secretary of Interior’s Standards Compliance Report” dated July 21, 2023 by TreanorHL. Report outlines the compliance with the proposed major and minor retrofits to the existing trestle.

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3. Alternative 1 – Retrofit Existing Bridge for Trail Use

3.1 Description

Alternative 1 will incorporate requirements of Analysis 2 and 3 as described in the Structural Evaluation report. The existing trestle bridge structure can support its own weight and resist short-term wind loading. While it was historically used for rail traffic and still has significant capacity to resist vertical loads, there are locations with severe deterioration. At its current state, the trestle supports are at risk of partial collapse from a relatively high probability, low severity seismic event, quantifiable as a seismic event with a 20% risk of occurrence within 50 years, due to deteriorated connections and inadequate lateral support system. A “collapse prevention / self-sustained” retrofit is presented in Analysis 2 of the evaluation report outlining the options for preserving the bridge as close to its existing condition as possible, though this would not be suitable for use as a pedestrian bridge. Analysis 3 presents a “Retrofit for Multi-Purpose Trail” centering primarily on the existing timber bents, while the life safety retrofit involves the construction of seven new steel bents and new longitudinal stringers at the deck level.

Collapse Prevention Retrofit

Over time, the bolts, diagonal braces, and connections between the timber members of the bridge have significantly deteriorated, leaving the structure vulnerable and at risk of partial collapse during a seismic event. To prevent this, the collapse prevention retrofit would replace the existing bolts and diagonal braces and add new steel plates to reinforce the connections between the timber members. These measures would not only improve the capacity and durability of the structure but also provide greater protection against future deterioration and potential collapse. However, it should be noted that this level of retrofitting alone would not be sufficient to allow for safe pedestrian use of the bridge, and additional measures would be needed.

Figure 1 shows a typical existing connection and Figure 2 shows the corresponding proposed repair with new bolts and connection plate. Figure 3 Shows a typical bent in elevation with the proposed repairs highlighted in blue and pink.

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Figure 1 *Typical eroded connection at timber bent*

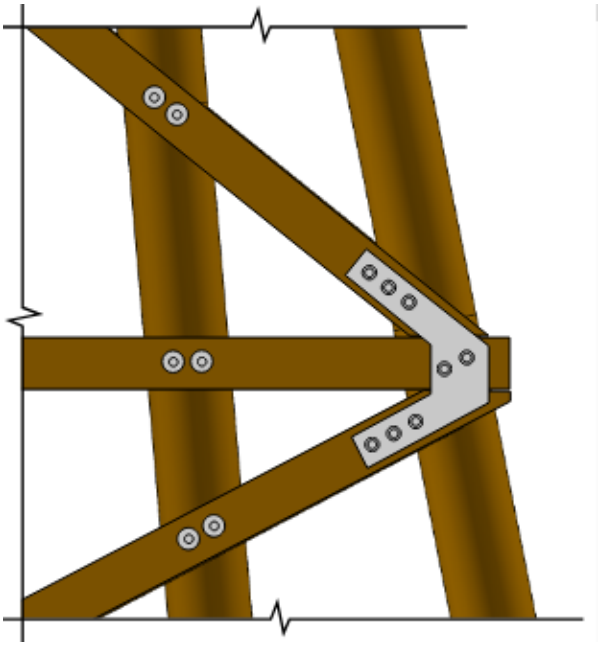


Figure 2 *Schematic view of new connection bolts and steel bracing*

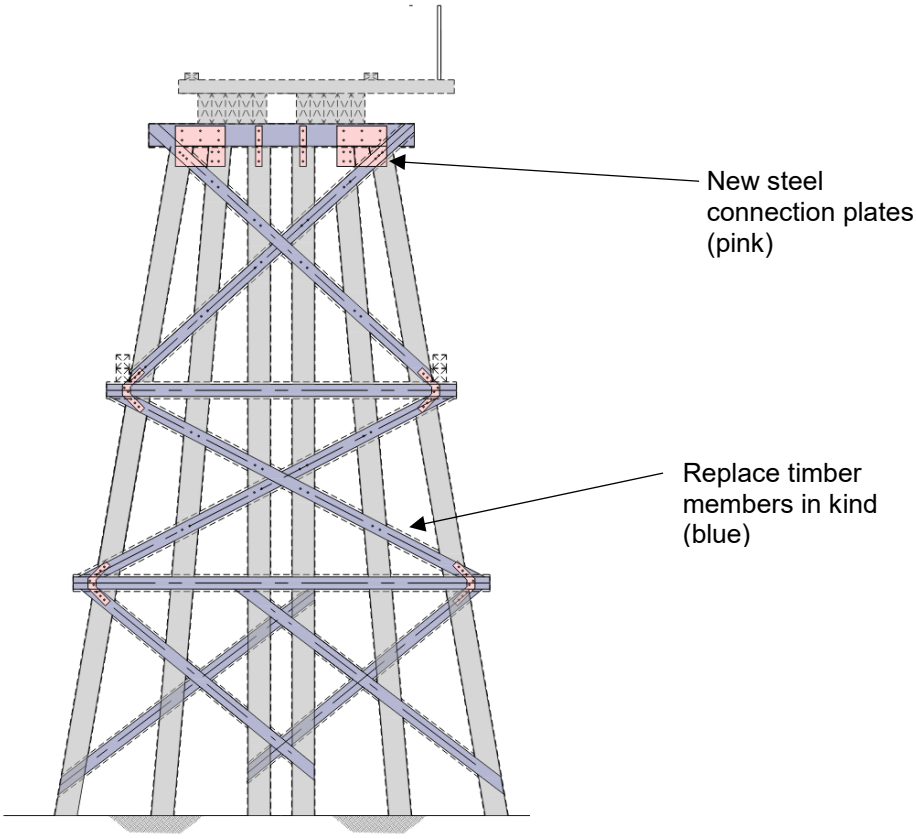


Figure 3 *Typical bent elevation (collapse prevention retrofit)*

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Life Safety Retrofit

The Structural Evaluation report concluded that the existing trestle bridge lacks sufficient lateral capacity. To address this issue, a major retrofit is needed, which involves the installation of the elements described under Collapse Prevention Retrofit with the addition of new steel bents between every two timber bents as shown in Figure 4. These supplementary structures would provide lateral support that are deficient in the existing timber bents.

New framing members would also be required in the superstructure to allow loads to transfer into the new bents. Finally, the existing railroad ties and catwalk will be replaced with a new deck and guardrails.

An example schematic sketch of the new bents is shown in Figure 4 and shown in elevation view in Figure 5.

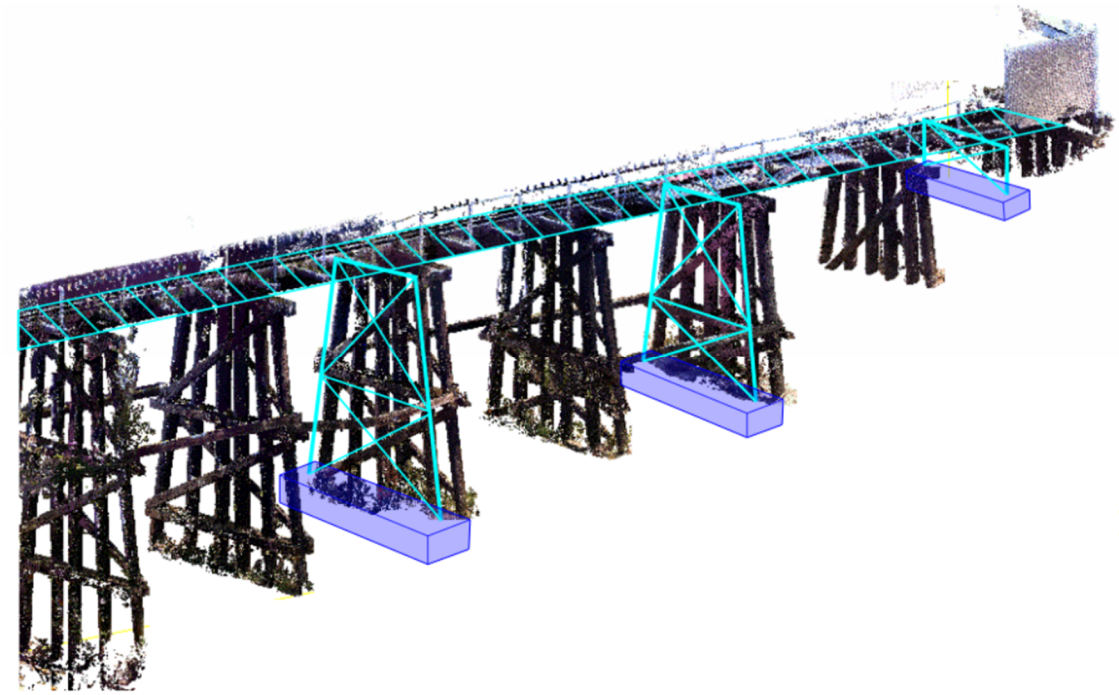


Figure 4 *New steel bents (in teal) between every two timber bents*

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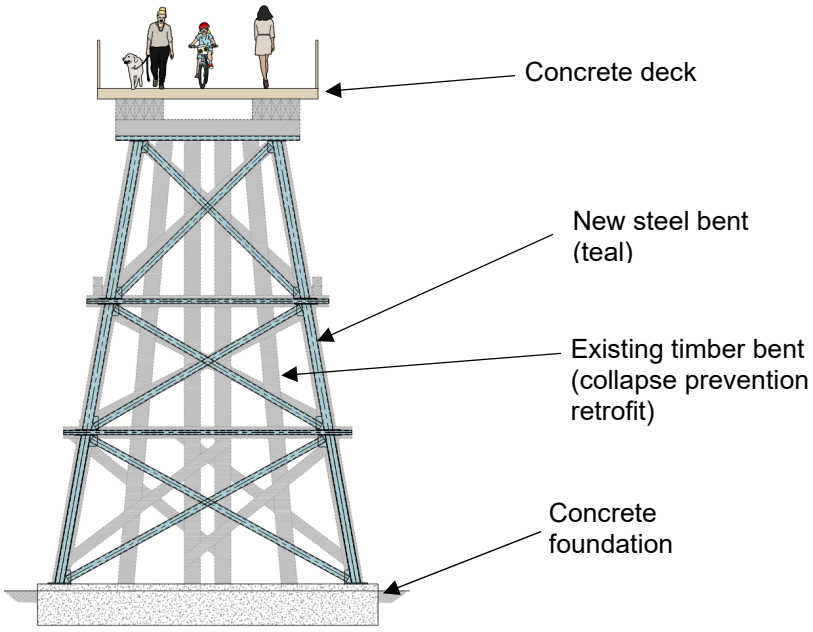


Figure 5 Typical bent elevation (life safety retrofit)

3.2 CEQA Considerations and Resource Agency Permits

Alternative 1 would rehabilitate the existing bridge to meet current standards. Rehabilitation would not require new abutments but would require installation of as many as seven additional steel bents for lateral stability. At least two of the new bents would be within Coyote Creek below the ordinary high water mark (OHWM), with additional bents between the OHWM and the top of bank. Work within the creek may be subject to construction windows, and could require a habitat assessment, pre-construction surveys, and implementation of conditions and payment of fees as defined in the Santa Clara Valley Habitat Plan. In addition, temporary disturbance could result from construction equipment including the concrete trucks and boom pump trucks which would require access at both sides in order to place the foundation concrete for each new bent.

As noted in the Executive Summary, the CEQA requirements discussion assumes a CEQA approach specific to the bridge rehabilitation, within the limits of GHD's review.

CEQA

Since Alternative 1 involves rehabilitation of an existing structure and would be required to comply with the conditions of the Santa Clara Valley Habitat Plan, it could qualify for a CEQA Exemption. Class 1, Existing Facilities, covers repairs to existing public facilities. As long as there would be no new impacts that are not already regulated and mitigated under the Santa Clara Valley Habitat Plan, this is a feasible and legally defensible path. Likewise, although the structure as been determined to be eligible for the National Register of Historic Places, there are set standards in place to follow for the rehabilitation of a potentially historic structure as outlined by the Secretary of Interior Standards for Historic Structures. The CEQA Guidelines do include a list of exceptions to the use of certain exemptions that would need to be considered in light of the project, and that could be documented in a memo for the City's files. Once the project is approved, a Notice of Exemption would be filed with the County Clerk and State Clearinghouse. The process could be complete in approximately 2 months. If it is found that a CEQA Exemption will not work, then an Initial Study/Mitigated Negative Declaration would be the next option to pursue. An IS/MND process would require more extensive analysis and a public circulation period. The IS/MND process could take 6 to 8 months.

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Resource Agency Permitting

The following describes the anticipated permitting requirements for Alternative 1, which includes installation of steel bents within Coyote Creek. The permitting process would take 8 to 10 months from the time a minimum 50% Design is available and impacts can be reasonably calculated.

Santa Clara Valley Habitat Plan (Reporting Form for Public Projects)

Implementation of the project would include ground disturbance and therefore, it would be subject to the terms and conditions in the SCV Habitat Plan. A preliminary review of the Habitat Plan Fees and Conditions Worksheet for Public Projects and Geobrowser online mapping tool was conducted to determine if any special biological surveys are required for the bridge location, and applicable fees and general conditions.

The project area was mapped in the Geobrowser to produce a parcel report. According to the report, the bridge crossing is mostly located within Willow Riparian Forest and Scrub. Coyote Creek is designated Category 1 Stream Buffers and Setbacks (150 feet). As described in the Worksheet for Public Projects (e.g., instructions), a field-verified land cover map would need to be prepared by a qualified biologist in order to determine actual site conditions.

The project appears to be a covered activity under the “In-Stream Capital Projects - Streamside Trails and Crossings” category. The term in-stream is defined as the streambed and bank and the surrounding adjacent riparian corridor. This category includes activities in and over the stream channel, along the stream bank, and adjacent lands at top-of-bank within the riparian corridor, including pedestrian bridges.

Applicable fees would include “Fee Zone B” and “Willow Riparian Forest and Scrub,” both of which are determined by the project footprint and amount of disturbance.

US Army Corps of Engineers (RGP #18)

The Army Corps of Engineers (USACE) has permitting authority over activities affecting waters of the United States. Under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act, the USACE has authority over all waters including wetlands that have sufficient nexus to interstate commerce (e.g., navigable waters and their tributaries, such as Coyote Creek). If jurisdictional waters (below the OHWM for Coyote Creek) are impacted during construction or operation of the project, then a Corps Section 404 permit would be required.

Depending on the extent of the activity, the project could be covered under the Regional General Permit (RGP) #18. This permit provides a framework for integrating and streamlining waters permitting under Section 404 of the Clean Water Act with the endangered species permitting already in place under the SCV Habitat Plan. The RGP covers 17 categories of activities, setting thresholds for impacts that range from less than 0.1 acre to 0.5 acre and providing an expedited process for reviewing and processing project-specific waters permits. The RGP helps to ensure consistent and streamlined waters permitting for projects covered by the SCV Habitat Plan that have impacts to waters of the U.S.

Alternative 1 would have permanent impacts below the OHWM from placement of the concrete footings.

San Francisco Bay Regional Water Quality Control Board (401 Certification)

While Section 401 Water Quality Certifications are required when the activity results in fill or discharge directly below the OHWM of waters of the United States, any activity that results or may result in a discharge that directly or indirectly impacts waters of the State or the beneficial uses of those waters are subject to Waste Discharge Requirements under California's Porter-Cologne Water Quality Control Act (Porter-Cologne). In practice, State waters typically include impacts to a stream channel up to the top of bank and associated riparian areas. Therefore, at Coyote Creek, the State would likely take jurisdiction between the OHWM and the top of bank, and the willow riparian area.

Alternative 1 would have permanent impacts below the OHWM and within the willow riparian from placement of the concrete footings for the steel bents.

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California Department of Fish and Wildlife

Fish and Game Code section 1602 requires notification to the CDFW prior to commencing any activity that may: 1) substantially divert or obstruct the natural flow of any river, stream or lake; 2) substantially change or use any material from the bed, channel or bank of any river, stream, or lake; or 3) deposit debris, waste or other materials that could pass into any river, stream or lake. If the project alters the existing streambed or banks of Coyote Creek, including removing or impacting riparian vegetation, a Lake and Streambed Alteration Agreement would be required.

Alternative 1 would impact the bed, channel, bank, and riparian area from placement of the concrete footings for the steel bents. In addition, riparian vegetation would likely be removed.

3.3 Acquisition and Easement

No land acquisitions are anticipated for this alternative. Subject parcel and adjacent parcels are owned by the City of San Jose. An encroachment permit from Valley Water may be required.

3.4 Costs

- Total Construction Cost Estimate: $7.42M
- Construction Contingency (10%): $0.74M
- Final Engineering/Design: $0.89M
- Construction Engineering: $0.74M
- City Staff Cost (project management and inspection): $2.23M
- Annual Inspection Cost: $13,000
- Annual Maintenance Cost (regular monitoring, debris removal and tree trimming): $12,000
- Potential Fire Damage: $100,000 per year depending on severity

The cost of project delivery, inspection, and maintenance represented above are subject to change due to fluctuations of the construction market and unforeseen field conditions. The potential extent of the estimated amount of $100,000 per year provided is based on assumptions from a Fire Commissioner. See section 3.6 Maintenance for further discussion.

3.5 Duration

Five Wounds Master Plan and CEQA IS/MND (24 months)

- Master Plan: 24 months
- IS/MND: 6 to 8 months

Five Wounds Trail Coyote Creek Trestle Final Design, and Construction (23 months)

- Environmental Permitting: 8 to 10 months
- Prepare Plans, Specifications and Cost Estimate: 15 months
- Construction: 8 months

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3.6 Maintenance

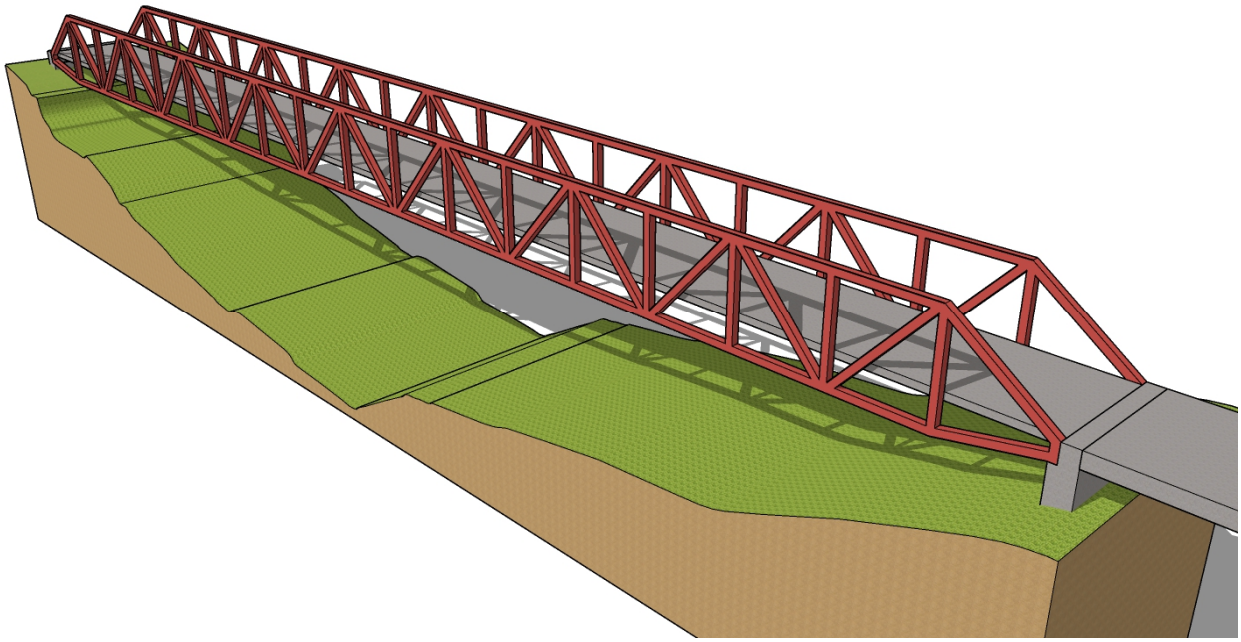
The existing timber trestle bridge is approximately 100 years old and many structural elements exhibit significant section loss. During the retrofit process, the poor-quality elements, including the fire damaged bent would be replaced or repaired. However, over time, other members or connections will continue to age and degrade. The trestle bridge would require continual maintenance over its lifetime. Being a timber structure, it is also more susceptible to fire damage. Additionally, the intermediate timber and steel bents would be submerged in the creek and debris would catch on the leading edge of the bents.

Routine inspection shall be carried out by staff each year in a standard format to examine the structure to detect evidence of distress that might require repair or maintenance attention.

Maintenance includes routine activities such as removal of debris, sediment and grass, and tree trimming.

Maintenance for the existing trestle would also include minor repair of damages requiring no design input to decide the treatment or rectify the defects.

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4. Alternative 2 – Steel Truss Bridge, Demolish Existing Bridge

4.1 Description

Alternative 2 is to demolish the existing timber trestle bridge and construct a new 250-foot span weathering steel truss bridge in the same or similar alignment. It is a single-span simply-supported bridge with two steel Pratt trusses. Transverse floor beams are used to connect the two trusses together, providing support for the concrete deck. The concrete deck may be precast prestressed concrete planks. This type of bridge can be prefabricated and transported to the site in modular sections, then assembled on-site.

This type of bridge is constructed with weathering steel, which is a specially designed alloy that forms an exterior rust barrier, creating a low-maintenance surface that does not require painting or cleaning. Weathering steel truss bridges are ideal for locations that require low-maintenance structures that can withstand harsh environmental conditions.

The construction process involves lifting the bridge into place using mobile cranes and bearing it on cast-in-place concrete abutments at each end. Figure 6 shows a longitudinal view of this type of bridge, while Figure 7 shows an example of a completed weathering steel bridge.

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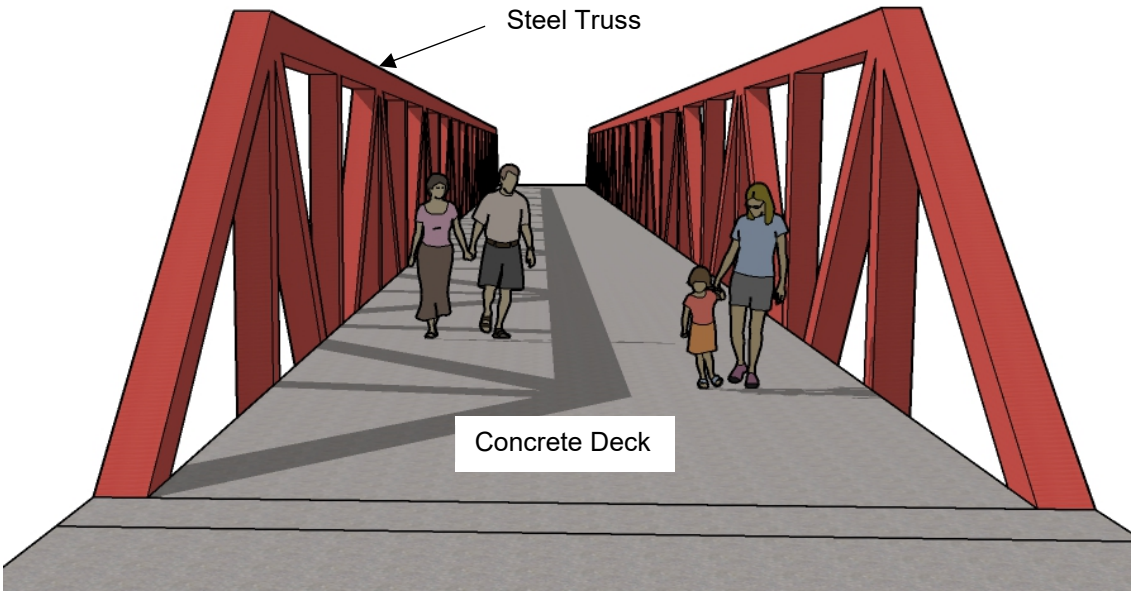


Figure 6 Longitudinal View of Alternative 2



Figure 7 Example weathering steel truss bridge

The steel pieces of the bridge will be fabricated in modular pieces which are trucked in and assembled on the ground in close proximity to the bridge site. Cranes will lift the completed bridge trusses into place, either a single large crane or two cranes in tandem at both abutments. Workers will then install the floor beams and the deck pans for forming the concrete deck. No temporary supports will be required within the waterway.

This alternative provides less environmental impacts by offering a single span solution that keeps improvements out of the creek bed and reduces maintenance. The weathering steel surface naturally forms a thin coating of rust that protects rest of the steel. Thus, this bridge would not require coating or coating inspections.

4.2 CEQA Considerations and Resource Agency Permits

Alternative 2 does not require any new fill inside the creek bed or channel because it is a single span bridge. However, temporary impacts within the channel would occur during demolition of the existing bridge. The single span bridge would result in fill from the abutments and disturbance at the top of bank and in the riparian area. Like Alternative 1, Alternative 2 also would have temporary impacts during construction on either side of the creek. Concrete trucks would need access at both sides to place concrete for the abutments. There would also need to be access for heavy

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cranes to lift the bridge trusses into place. It may not be feasible to place a single large crane in the creek and therefore Alternative 2 would likely require two cranes, one at each abutment, for tandem lifting operation. Work along the banks of the creek may be subject to construction windows, and could require a habitat assessment, pre-construction surveys, and implementation of conditions and payment of fees as defined in the Santa Clara Valley Habitat Plan.

As noted in the Executive Summary, the CEQA requirements discussion assumes a CEQA approach specific to the bridge replacement and demolition, within the limits of GHD's review.

CEQA

Alternative 2 would demolish the existing bridge which has been determined to be eligible for the National Register of Historic Places. As there is currently no feasible way to mitigate the impact from demolition of the structure, an Environmental Impact Report (EIR) would likely be required. This would allow the City to make findings that the historic impact is acceptable due to overriding concerns, such as economic, legal, social, or technological, and approve the project. The EIR process would involve public scoping, detailed analysis, public circulation, and response to comments, taking from 12 to 18 months.

Resource Agency Permitting

The following describes the anticipated permitting requirements for Alternative 2. Although this alternative clear-spans the creek, it would still involve disturbance within the bed of the creek during demolition of the existing trestle. The permitting process would take 8 to 10 months from the time a minimum 50% Design is available and impacts can be reasonably calculated.

Santa Clara Valley Habitat Plan (Reporting Form for Public Projects)

Implementation of the project would include ground disturbance and therefore, it would be subject to the terms and conditions in the SCV Habitat Plan. A preliminary review of the Habitat Plan Fees and Conditions Worksheet for Public Projects and Geobrowser online mapping tool was conducted to determine if any special biological surveys are required for the bridge location, and applicable fees and general conditions.

The project area was mapped in the Geobrowser to produce a parcel report. According to the report, the bridge crossing is mostly located within Willow Riparian Forest and Scrub. Coyote Creek is designated Category 1 Stream Buffers and Setbacks (150 feet). As described in the Worksheet for Public Projects (e.g., instructions), a field-verified land cover map would need to be prepared by a qualified biologist in order to determine actual site conditions.

The project appears to be a covered activity under the "In-Stream Capital Projects - Streamside Trails and Crossings" category. The term in-stream is defined as the streambed and bank and the surrounding adjacent riparian corridor. This category includes activities in and over the stream channel, along the stream bank, and adjacent lands at top-of-bank within the riparian corridor, including pedestrian bridges.

Applicable fees would include "Fee Zone B" and "Willow Riparian Forest and Scrub," both of which are determined by the project footprint and amount of disturbance.

US Army Corps of Engineers (RGP #18)

The Army Corps of Engineers (USACE) has permitting authority over activities affecting waters of the United States. Under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act, the USACE has authority over all waters including wetlands that have sufficient nexus to interstate commerce (e.g., navigable waters and their tributaries, such as Coyote Creek). If jurisdictional waters (below the OHWM for Coyote Creek) are impacted during construction or operation of the project, then a Corps Section 404 permit would be required.

Depending on the extent of the activity, the project could be covered under the Regional General Permit (RGP) #18. This permit provides a framework for integrating and streamlining waters permitting under Section 404 of the Clean Water Act with the endangered species permitting already in place under the SCV Habitat Plan. The RGP covers 17

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categories of activities, setting thresholds for impacts that range from less than 0.1 acre to 0.5 acre and providing an expedited process for reviewing and processing project-specific waters permits. The RGP helps to ensure consistent and streamlined waters permitting for projects covered by the SCV Habitat Plan that have impacts to waters of the U.S.

Alternative 2 would result in temporary impacts below the OHWM.

San Francisco Bay Regional Water Quality Control Board (401 Certification)

While Section 401 Water Quality Certifications are required when the activity results in fill or discharge directly below the OHWM of waters of the United States, any activity that results or may result in a discharge that directly or indirectly impacts waters of the State or the beneficial uses of those waters are subject to WDRs under California's Porter-Cologne Water Quality Control Act (Porter-Cologne). In practice, State waters typically include impacts to a stream channel up to the top of bank and associated riparian areas. Therefore, at Coyote Creek, the State would likely take jurisdiction between the OHWM and the top of bank, and the willow riparian area.

Alternative 2 would have temporary impacts below the OHMW and permanent impacts within the willow riparian.

California Department of Fish and Wildlife

Fish and Game Code section 1602 requires notification to the CDFW prior to commencing any activity that may: 1) substantially divert or obstruct the natural flow of any river, stream or lake; 2) substantially change or use any material from the bed, channel or bank of any river, stream, or lake; or 3) deposit debris, waste or other materials that could pass into any river, stream or lake. If the project alters the existing streambed or banks of Coyote Creek, including removing or impacting riparian vegetation, a Lake and Streambed Alteration Agreement would be required.

Alternative 2 would temporarily impact the channel during demolition, and permanently impact the bank and riparian area from placement of the abutments. In addition, riparian vegetation would likely be removed.

4.3 Acquisition and Easement

No land acquisitions are anticipated for this alternative. Subject parcel and adjacent parcels are owned by the City of San Jose. An encroachment permit from Valley Water may be required.

4.4 Costs

- Total Construction Cost Estimate (2029): $7.69M
- Construction Contingency (10%): $0.76M
- Final Engineering/Design: $0.92M
- Construction Engineering: $0.77M
- City Staff Cost (project management and inspection): $2.32M
- Annual Inspection Cost: $7,000
- Annual Maintenance Cost (debris removal and tree trimming): $3,700*
    - *0.2 part time maintenance assistant

The costs of project delivery, inspection, and maintenance represented above are subject to change due to fluctuations of the construction market and unforeseen field conditions. See section 4.6 Maintenance for further discussion.

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4.5 Duration

Five Wounds Master Plan and EIR (30 months)

- Master Plan: 24 months
- Environmental Impact Report: 24 to 30 months

Five Wounds Trail Coyote Creek Trestle Final Design, and Construction

- Environmental Permitting: 8 to 10 months
- Prepare Plans, Specifications and Cost Estimate: 15 months
- Construction: 6 months

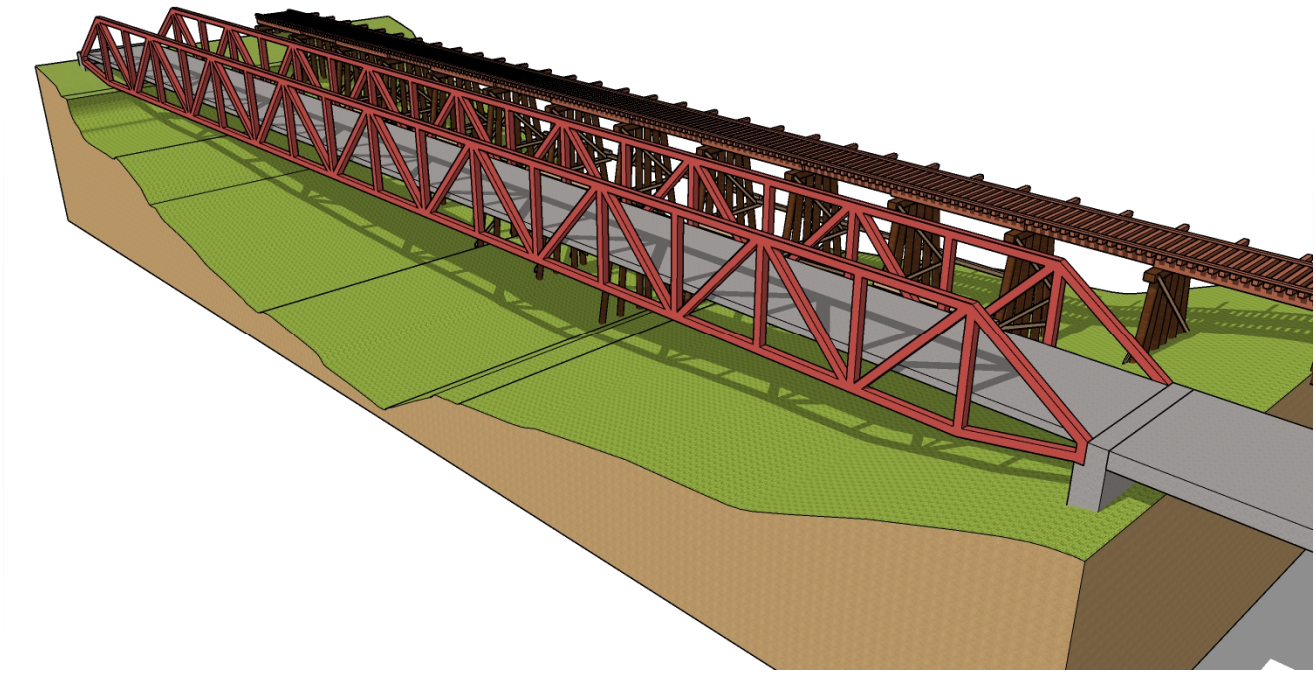
4.6 Maintenance

The weathering steel bridge would not require any major maintenance. Aside from periodic inspections, there are no anticipated maintenance items.

Routine inspection shall be carried out by staff each year in a standard format to examine the structure to detect evidence of distress that might require repair or maintenance attention.

Maintenance includes routine activities such as removal of debris, sediment and grass, and tree trimming.

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5. Alternative 3 – Steel Truss Bridge, Collapse Prevention Retrofit of Existing Bridge

5.1 Description

Alternative 3 is a combination of the collapse prevention retrofit from Alternative 1 and the new weathering steel truss bridge from Alternative 2 if the existing bridge could not be demolished. The existing bridge would undergo a collapse prevention retrofit that involves strengthening the existing timber members and adding new steel plates and bolts to enhance the connections between the members. This retrofit would improve the structural integrity of the existing bridge and increase its overall capacity, preventing collapse due to a significant seismic event.

In addition to the collapse prevention retrofit, a new 250-foot span weathering steel truss bridge would be constructed adjacent to the existing bridge. The new bridge would be prefabricated in modular sections and assembled on-site, then lifted into place using mobile cranes, as described in Alternative 2. Alternative 3 would be the most difficult in terms of construction as access would be limited when considering the contractors must avoid and protect the existing bridge.

The existing bridge would not be open to the public and is in place to showcase the historical bridge while the new bridge would serve as a pedestrian and bicycle bridge on the Five Wounds Trail.

5.2 CEQA Considerations and Resource Agency Permits

Alternative 3 would retrofit the existing bridge to prevent collapse and install the clear-span bridge described in Alternative 2. The retrofit of the existing bridge would require temporary access within Coyote Creek to install the new connections and plates, resulting in temporary disturbance below OHWM and along the channel during construction. Alternative 3 would require all of the construction requirements as Alternative 2, with the added constraint of narrower access. As with Alternative 2, abutments would result in permanent impacts within the willow riparian and construction

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access would be needed on both banks resulting in temporary impacts. Work along the banks of the creek may be subject to construction windows, and could require a habitat assessment, pre-construction surveys, and implementation of conditions and payment of fees as defined in the Santa Clara Valley Habitat Plan.

As noted in the Executive Summary, the CEQA requirements discussion assumes a CEQA approach specific to the bridge replacement and repairs, within the limits of GHD's review.

CEQA

As Alternative 3 involves reconstruction of an existing structure, repairs to an existing structure, and would be required to comply with the conditions of the Santa Clara Valley Habitat Plan, it could qualify for multiple CEQA Exemptions. Class 1, Existing Facilities, covers repairs to existing public facilities. Class 2, Replacement or Reconstruction, covers replacement of existing public facilities when there is negligible or no expansion of capacity. As long as there would be no new impacts that are not already regulated and mitigated under the Santa Clara Valley Habitat Plan, this is a feasible and legally defensible path. There is a list of exceptions to the exemptions that would need to be considered in light of the project, and that could be documented in a memo for the City's files. Once the project is approved, a Notice of Exemption would be filed with the County Clerk and State Clearinghouse. The process could be complete in approximately 2 months. If it is found that a CEQA Exemption will not work, then an Initial Study/Mitigated Negative Declaration would be the next option to pursue. An IS/MND process would require more extensive analysis and a public circulation period. The IS/MND process could take 6 to 8 months.

Resource Agency Permitting

The following describes the anticipated permitting requirements for Alternative 3. Although this alternative clear-spans the creek, it would still involve disturbance within the bed of the creek during repair of the existing trestle. The permitting process would take 8 to 10 months from the time a minimum 50% Design is available and impacts can be reasonably calculated.

Santa Clara Valley Habitat Plan (Reporting Form for Public Projects)

Implementation of the project would include ground disturbance and therefore, it would be subject to the terms and conditions in the SCV Habitat Plan. A preliminary review of the Habitat Plan Fees and Conditions Worksheet for Public Projects and Geobrowser online mapping tool was conducted to determine if any special biological surveys are required for the bridge location, and applicable fees and general conditions.

The project area was mapped in the Geobrowser to produce a parcel report. According to the report, the bridge crossing is mostly located within Willow Riparian Forest and Scrub. Coyote Creek is designated Category 1 Stream Buffers and Setbacks (150 feet). As described in the Worksheet for Public Projects (e.g., instructions), a field-verified land cover map would need to be prepared by a qualified biologist in order to determine actual site conditions.

The project appears to be a covered activity under the "In-Stream Capital Projects - Streamside Trails and Crossings" category. The term in-stream is defined as the streambed and bank and the surrounding adjacent riparian corridor. This category includes activities in and over the stream channel, along the stream bank, and adjacent lands at top-of-bank within the riparian corridor, including pedestrian bridges.

Applicable fees would include "Fee Zone B" and "Willow Riparian Forest and Scrub," both of which are determined by the project footprint and amount of disturbance.

US Army Corps of Engineers (RGP #18)

The Army Corps of Engineers (USACE) has permitting authority over activities affecting waters of the United States. Under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act, the USACE has authority over all waters including wetlands that have sufficient nexus to interstate commerce (e.g., navigable waters and their tributaries, such as Coyote Creek). If jurisdictional waters (below the OHWM for Coyote Creek) are impacted during construction or operation of the project, then a Corps Section 404 permit would be required.

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Depending on the extent of the activity, the project could be covered under the Regional General Permit (RGP) #18. This permit provides a framework for integrating and streamlining waters permitting under Section 404 of the Clean Water Act with the endangered species permitting already in place under the SCV Habitat Plan. The RGP covers 17 categories of activities, setting thresholds for impacts that range from less than 0.1 acre to 0.5 acre and providing an expedited process for reviewing and processing project-specific waters permits. The RGP helps to ensure consistent and streamlined waters permitting for projects covered by the SCV Habitat Plan that have impacts to waters of the U.S.

Alternative 3 would result in temporary impacts below the OHWM during construction.

San Francisco Bay Regional Water Quality Control Board (401 Certification)

While Section 401 Water Quality Certifications are required when the activity results in fill or discharge directly below the OHWM of waters of the United States, any activity that results or may result in a discharge that directly or indirectly impacts waters of the State or the beneficial uses of those waters are subject to WDRs under California's Porter-Cologne Water Quality Control Act (Porter-Cologne). In practice, State waters typically include impacts to a stream channel up to the top of bank and associated riparian areas. Therefore, at Coyote Creek, the State would likely take jurisdiction between the OHWM and the top of bank, and the willow riparian area.

Alternative 3 would have temporary impacts below the OHMW and permanent impacts within the willow riparian.

California Department of Fish and Wildlife

Fish and Game Code section 1602 requires notification to the CDFW prior to commencing any activity that may: 1) substantially divert or obstruct the natural flow of any river, stream or lake; 2) substantially change or use any material from the bed, channel or bank of any river, stream, or lake; or 3) deposit debris, waste or other materials that could pass into any river, stream or lake. If the project alters the existing streambed or banks of Coyote Creek, including removing or impacting riparian vegetation, a Lake and Streambed Alteration Agreement would be required.

Alternative 3 would have temporary impacts the channel during demolition, and permanent impacts to the bank and willow riparian from placement of the new abutments. In addition, riparian vegetation would likely be removed.

5.3 Acquisition and Easement

No land acquisitions are anticipated for this alternative. Subject parcel and adjacent parcels are owned by the City of San Jose. An encroachment permit from Valley Water may be required.

5.4 Costs

- Total Construction Cost Estimate (2028): $6.91M
- Construction Contingency (10%): $0.69M
- Final Engineering/Design: $0.83M
- Construction Engineering: $0.69M
- City Staff Cost (project management and inspection): $3.75M
- Annual Inspection Cost: $20,000
- Annual Maintenance Cost (regular monitoring, debris removal and tree trimming): $15,000*
    - *0.25 part time maintenance assistant to make sure bridge is secure
- Potential Fire Damage: $100,000 per year depending on severity

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The costs of project delivery, inspection, and maintenance represented above are subject to change due to fluctuations of the construction market and unforeseen field conditions. The potential extent of fire damage cannot be predicted or quantified at this time. The estimated amount of $100,000 per year provided is based on assumptions from a Fire Commissioner. See section 5.6 Maintenance for further discussion.

5.5 Duration

Five Wounds Master Plan and CEQA IS/MND (24 months)

- Master Plan: 24 months
- IS/MND: 6 to 8 months

Five Wounds Trail Coyote Creek Trestle Final Design and Construction (23 months)

- Environmental Permitting: 8 to 10 months
- Prepare Plans, Specifications and Cost Estimate: 15 months
- Construction: 8 months

5.6 Maintenance

The maintenance of Alternative 3 is in essence the maintenance of Alternatives 1 (Section 3.6) and 2 (Section 4.6) combined with the exception that there are no new bents.

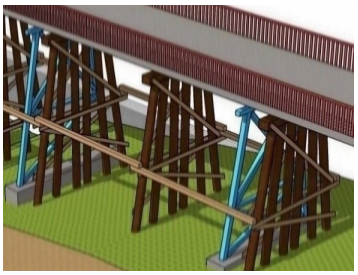
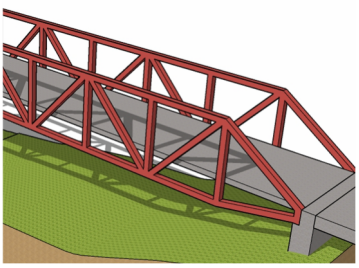
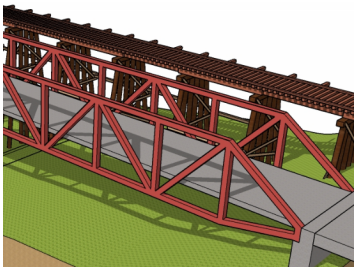
Routine inspection shall be carried out by staff each year in a standard format to examine the structure to detect evidence of distress that might require repair or maintenance attention.

Maintenance includes routine activities such as removal of debris, sediment and grass, and tree trimming.

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6. Conclusions and Recommendations

The matrix below summarizes each of the three alternatives.

	Alternative 1	Alternative 2	Alternative 3
			
Description	**Fully retrofit existing trestle bridge for collapse prevention and life safety.**	**Demolish existing bridge and construct new weathering steel truss bridge**	**Collapse prevention retrofit on existing bridge and construct new weathering steel truss bridge adjacent**
CEQA	**Class 1 Exemption or IS/MND**	**Environmental Impact Report**	**Class 1 and Class 2 Exemption or IS/MND**
Resource Agency Permits	**SCV Habitat Plan** **RGP #18** **SFBRWQCB 401 Certification** **CDFW SAA**	**SCV Habitat Plan** **RGP #18** **SFBRWQCB 401 Certification** **CDFW SAA**	**SCV Habitat Plan** **RGP #18** **SFBRWQCB 401 Certification** **CDFW SAA**
Acquisition & Easement	**No Property Acquisition** **VW Encroachment Permit**	**No Property Acquisition** **VW Encroachment Permit**	**No Property Acquisition** **VW Encroachment Permit**
Costs*	**Construction: $7.42M** **Construction Contingency: $0.74M** **Design/Engineering: $0.89M** **City Staff Cost: $2.23M** **Annual Inspect. Cost: $13k** **Annual Maint. Cost: $12k** **Potential Fire Damage: $100k**	**Construction: $7.69M** **Construction Contingency: $0.76M** **Design/Engineering: $0.92M** **City Staff Cost: $2.32M** **Annual Inspect. Cost: $7k** **Annual Maint. Cost: $3.7k**	**Construction: $6.91M** **Construction Contingency: $0.69M** **Design/Engineering: $0.83M** **City Staff Cost: $3.75M** **Annual Inspect. Cost: $20k** **Annual Maint. Cost: $15k** **Potential Fire Damage: $100k**
Duration	**47 months**	**57 months**	**47 months**

* The costs of project delivery, inspection, and maintenance represented above are subject to change due to fluctuations of the construction market and unforeseen field conditions. The potential extent of fire damage for

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Appendices

Appendix A

Engineer's Estimate

OPINION OF PROBABLE CONSTRUCTION COST **26-Jul-2023**

Alternative 1 - Full Retrofit

ITEM NO.	ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	ITEM PRICE	TOTAL
1	LIFE SAFETY RETROFIT	LS	1	$750,000	$750,000
2	INSTALATION (PER BENT)	EA	8	$250,000	$2,000,000
3	COLLAPSE PREVENTION RETROFIT OF TRESTLE BRIDGE (CONNECTIONS)	LS	1	$500,000	$500,000
4	CAST-IN-PLACE CONCRETE DECK	CY	118	$1,600	$188,889
4	PERMITTING INCLUDING FEES	LS	1	$150,000	$150,000
5	ENVIRONMENTAL PROTECTION AND MITIGATION (SCV HABITAT PLAN)	LS	1	$62,000	$62,000
6	CLEARING AND GRUBBING	LS	1	$30,000	$30,000
7	EXCAVATION	CY	550	$165	$90,750
8	STORMWATER POLLUTION PREVENTION PLAN	LS	1	$125,000	$125,000
9	MOBILIZATION (10%)	LS	1	$390,000	$390,000
				Subtotal	**$4,287,000**
				35% Contingency	**$1,501,000**
				General Conditons, Bonds and Insurance (15%)	**$644,000**
				Contractor Overhead and Profit (8%)	**$343,000**
				Inflation (Assumed 3% per year)	**$644,000**
				Total Construction Cost Estimate (2028)	**$7,419,000**

Final Engineering (12%)	**$891,000**
Construction Engineering (10%)	**$742,000**

OPINION OF PROBABLE CONSTRUCTION COST **26-Jul-2023**

Alternative 2 - Demo Existing, New Steel Truss Bridge

ITEM NO.	ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	ITEM PRICE	TOTAL
1	CONCRETE ABUTMENT	EA	2	$500,000	$1,000,000
2	WEATHERING STEEL TRUSS BRIDGE	EA	1	$860,000	$860,000
3	INSTALL BRIDGE	EA	1	$400,000	$400,000
4	PRECAST PRESTRESSED CONCRETE DECK	CY	118	$800	$94,445
5	PERMITTING INCLUDING FEES	LS	1	$150,000	$150,000
6	ENVIRONMENTAL PROTECTION AND MITIGATION (SCV HABITAT PLAN)	LS	1	$62,000	$62,000
7	CLEARING AND GRUBBING	LS	1	$30,000	$30,000
8	EXCAVATION	CY	2500	$165	$412,500
9	STORMWATER POLLUTION PREVENTION PLAN	LS	1	$125,000	$125,000
10	DEMOLISH EXISTING BRIDGE	LS	1	$1,000,000	$1,000,000
11	MOBILIZATION (10%)	LS	1	$310,000	$310,000
				Subtotal	**$4,444,000**
				35% Contingency	**$1,556,000**
				General Conditons, Bonds and Insurance (15%)	**$667,000**
				Contractor Overhead and Profit (8%)	**$356,000**
				Inflation (Assumed 3% per year)	**$667,000**
				Total Construction Cost Estimate (2029)	**$7,690,000**

Final Engineering (12%)	**$923,000**
Construction Engineering (10%)	**$769,000**

OPINION OF PROBABLE CONSTRUCTION COST **26-Jul-2023**

Alternative 3 - Collapse Prevention Retrofit of Existing, New Steel Truss Bridge

ITEM NO.	ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	ITEM PRICE	TOTAL
1	CONCRETE ABUTMENT	EA	2	$500,000	$1,000,000
2	WEATHERING STEEL TRUSS BRIDGE	EA	1	$860,000	$860,000
3	INSTALL BRIDGE	EA	1	$400,000	$400,000
4	PRECAST PRESTRESSED CONCRETE DECK	CY	118	$800	$94,445
5	COLLAPSE PREVENTION RETROFIT OF TRESTLE BRIDGE (CONNECTIONS)	LS	1	$500,000	$500,000
6	PERMITTING INCLUDING FEES	LS	1	$150,000	$150,000
7	ENVIRONMENTAL PROTECTION AND MITIGATION (SCV HABITAT PLAN)	LS	1	$62,000	$62,000
8	CLEARING AND GRUBBING	LS	1	$30,000	$30,000
9	EXCAVATION	CY	2500	$165	$412,500
10	STORMWATER POLLUTION PREVENTION PLAN	LS	1	$125,000	$125,000
11	MOBILIZATION (10%)	LS	1	$360,000	$360,000
				Subtotal	**$3,994,000**
				35% Contingency	**$1,398,000**
				General Conditons, Bonds and Insurance (15%)	**$600,000**
				Contractor Overhead and Profit (8%)	**$320,000**
				Inflation (Assumed 3% per year)	**$600,000**
				Total Construction Cost Estimate (2028)	**$6,912,000**

Final Engineering (12%)	**$830,000**
Construction Engineering (10%)	**$692,000**


GHD