FINDING OF NO ADVERSE EFFECT WITH STANDARD CONDITIONS

Stevenson Bridge Rehabilitation Project

Solano County/Yolo County, CA

Federal Project No.: BRLS-5923(059)

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Table of Contents

Introduction

Solano County (County), in conjunction with Yolo County, the California Department of Transportation (Caltrans), and the Federal Highway Administration (FHWA), is proposing to rehabilitate Bridge 23C0092 over Putah Creek. Bridge 23C0092 is a two-lane, two-span, reinforced-concrete through-arch bridge that crosses the Solano/Yolo County line at Putah Creek. The road on the Solano County side of the bridge is Stevenson Bridge Road; the road on the Yolo County side of the bridge is County Road 95A. The project location is approximately 5 miles west of the city of Davis and 8 miles east of the city of Winters. Project vicinity and location maps, the Area of Potential Effects (APE), and images of the bridge are included in Appendix A.

Bridge 23C0092 has been identified by Caltrans as being both functionally obsolete and structurally deficient. In 2007 a study was conducted to assess the feasibility of rehabilitating the existing bridge. The study recommendations are described in the "Feasibility Study for Stevenson Bridge Road Bridge over Putah Creek, Bridge Number: 23C0092, Location 04-SOL/03-YOL Co. Line" (Feasibility Study) dated February 1, 2007, prepared by TRC Imbsen for the County of Solano. The Feasibility Study determined that the bridge is past its design life span, is scour critical, has seismic deficiencies and provides the basis for developing the proposed project activities discussed in this document. The Feasibility Study presented two options that included a range of activities to correct the structural and seismic deficiencies. Subsequent analysis performed by the County resulted in the current project activities outlined in Section 1 and illustrated in Appendix B.

The County proposes to rehabilitate and seismically retrofit Bridge 23C0092 to correct the structural deficiencies and realign the south approach of Stevenson Bridge Road to correct geometric deficiencies. Additional proposed project activities include a staging area; construction of an access road, a temporary creek crossing, a traffic detour; and possible utility relocation that are discussed in Section 1.

The project will utilize federal funds; therefore, it must comply with Section 106 of the National Historic Preservation Act of 1966 (Section 106), as amended. Section 106 compliance activities to date include the preparation of a Historic Property Survey Report (HPSR), which included an Archaeological Survey Report (ASR) by Tremaine & Associates, Inc. and a Historic Resources Evaluation Report (HRER) by Mead & Hunt, Inc. The HPSR and its attachments, ASR and HRER, were completed and approved by Caltrans District 4 on January 7, 2013. The date of State Historic Preservation Officer (SHPO) consultation/concurrence on the HPSR, ASR, and HRER was on February 5, 2013. No responses have been received through public participation under Section 106 by the County – copies of correspondence related to the Finding of Effect are provided in Appendix C.

This Finding of Effect (FOE) report follows guidance provided in Caltrans' *Standard Environmental Reference* (SER)*, Volume 2 – Cultural Resources* (Volume 2) (2014 Update) and was completed in accordance with the *First Amended Programmatic Agreement Among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation Regarding Compliance With Section 106 of the National Historic Preservation Act, as it pertains to the administration of the Federal-Aid Highway Program in California*, which was executed in January 2014 (Section 106 PA). For the undertaking as a whole, Caltrans, on behalf of FHWA, in applying the Criteria of Adverse Effect, proposes that a Finding of

No Adverse Effect - Standard Conditions – Secretary of Interior's Standards (FNAE-SC-SOIS). The SOIS Action Plan will comply with the SOIS for Rehabilitation. The SOIS Action Plan is included in Appendix D.

1. Description of the Undertaking

The County proposes to rehabilitate and seismically retrofit Bridge 23C0092 and realign the south approach of Stevenson Bridge Road. Preliminary seismic assessment of the bridge showed that many of the existing structural components are unable to withstand seismic loads without seismic retrofitting. Flexural and shear demands exceeded the corresponding capacities of the existing structural elements, requiring retrofit or replacement of significant structural members in order for this bridge to remain serviceable after a credible seismic event. In addition, the hydraulic analysis determined that the substructure is scour critical and scour mitigation will be required to prevent further scour around the existing footings at pier locations. A description of the conceptual seismic retrofit design and scour protection as described below, will address these structural issues. The south approach alignment must be realigned to meet current traffic safety standards. Proposed project activities are as follows and will follow the Secretary of the Interior's Standards for the Treatment of Historic Properties (SOIS) for Rehabilitation:

Bridge Superstructure Treatment

- Add fiber-wrapped jacketing on the arches and overhead braces.

- Replace or fiber wrap one or more spandrel columns.

- Strengthen exterior longitudinal girders and longitudinal and/or transverse interior girders by addition of reinforced-concrete girders to be attached only on interior existing girders. Addition of longitudinal and/or transverse interior girders will be directly underneath the bridge deck and will be utilized only if necessary.

- Concrete rehabilitation (remove and replace unsound, delaminated, and spalled areas) for the superstructure (arches, overhead braces, spandrel columns, and girder locations) including the deck surface area. Caltrans Standard Specifications and Caltrans Standard Special Provisions (SSPs), which apply to remove and replace unsound concrete will be required.

- Concrete cleaning of the existing bridge, including removal of biomass (moss or lichen) and surface paint (graffiti). Caltrans Standard Specifications and SSPs which apply to concrete cleaning on the existing bridge for rehabilitation will be required.

- In-kind replacement of portions of existing concrete railings on approach spans and outside of the reinforced-concrete bridge arches using State of California Department of Transportation approved vehicular barrier rail that meet the SOIS for Rehabilitation. Portions of existing railings inside and in between the reinforced-concrete bridge arches will be rehabilitated with in-kind repair.

Bridge Substructure Treatment

- Add fiber-wrapped or reinforced-concrete jacketing to Piers 2, 3 and 4 (unless structural design modelling study indicates replacement with same cross section of existing column supports). If determined necessary to replace the existing column supports, the supports will be replaced in-kind.

- Connect existing Pier 2 columns with a reinforced-concrete shear wall to match existing faces of columns and bent cap.

- Reinforced-concrete jacketing of bent caps at pier locations.

- Retrofit footings with additional support pilings and reinforced-concrete jacketing at all pier locations below the existing groundlines or buried under rip-rap (rock) scour protections, which would not be visible to the public.

- Construct up to two cast-in-drilled-holes (CIDH) pilings with pile cap (catcher block) at north abutment location and construct up to two CIDH pilings with pile cap (catcher block) at south abutment location.

- Add reinforced-concrete seat extenders at north and south abutment locations to be attached to face of existing abutments and new CIDH pile cap (catcher block) underneath the existing bridge deck and superstructure, only as determined necessary.

- Strengthen or replace the existing retaining wall on south abutment, as determined necessary. If determined necessary to replace retaining wall, the wall will be replaced in-kind.

- Concrete rehabilitation (remove and repair unsound, delaminated, and spalled areas) for the entire support structure of the existing bridge (columns, bent caps, abutments, wingwalls, retaining wall, and footings). Caltrans Standard Specifications and SSPs, which apply to concrete rehabilitation will be required.

- Install rip-rap (rock) scour protection measures around pier footings (with the extent of the scour protection measures, approximately ten feet circumference of excavation immediately surrounding Piers 1, 2 and 3) and rip-rap slope protection on banks adjacent to abutment locations. Rip-rap will be placed after seismic retrofitting pile installation and concrete work activities have been completed. Any rip-rap needed for this project is to prevent scour at pier locations and to stabilize creek banks. This bridge was determined scour critical by Caltrans in 2008.

Bridge Approach Treatment

- Realign the road to the south of the existing bridge structure and add guardrail end treatments for crash protection to south and north approach to improve safety.

Road Approach Realignment Discussion - Realignment of Stevenson Bridge Road will eliminate two sharp turns just south and east of the bridge, one of which is approximately 90 degrees. The roughly 1,000-foot required road realignment will go through an existing orchard and transition onto the existing road alignment near Strathgordon Lane. The realigned road will comply with County standards and provide for safer vehicle passage. Realignment of the south approach will require right of way (ROW) acquisition from one privately owned parcel, APN 0107-020-040 (9415 Stevenson Bridge Road). Fill for the realignment will be needed to create the new roadway alignment within the APE. No buildings or other structures on the privately owned parcel will need to be relocated or removed as a result of the proposed realignment.

Staging Area Discussion - The area above the northeast creek bank between County Road 95A and the access road will be used as a staging area. General bridge construction equipment will be used including, but not limited to, haul trucks, backhoes, dump trucks, excavators, grade-alls, bulldozers, drilling equipment, chipping guns, pile drivers, pile drilling equipment, concrete delivery trucks and placement pumps, water trucks, and service vehicles.

Access Road and Temporary Creek Crossing Discussion - A temporary access road will be constructed on the east side of the bridge, on the north bank of Putah Creek, to access piers. The access road will be composed of gravel and allow construction equipment to access the creek bed and the underside of the bridge between Piers 1 and 2, using culverts, or a temporary low-span bridge, or other approved method.

Traffic Detour Discussion **-** Road closure will be required during road realignment and bridge seismic retrofit and rehabilitation work. Traffic will be detoured for a portion of the total construction time using a detour loop along Stevenson Bridge Road, Sievers Road, Pedrick Road, Russell Boulevard, and County Road 95A with a minimum easterly detour length of 9.4 miles via Pedrick Road crossing over Putah Creek and Russell Boulevard (Bridge No. 23C0033) and a maximum westerly detour length of 13.7 miles via the I-505 crossing over Putah Creek using Putah Creek Road and Russell Boulevard.

Utility Relocation Discussion **-** Overhead poles with electric and telephone lines are located adjacent to the bridge and its approaches. It is uncertain whether the poles and lines will need to be relocated. If relocation is necessary, the utility companies will be required to move the utilities prior to construction.

See Appendix B for an illustration of proposed activities.

2. Public Participation

In December 2010, the Native American Heritage Commission (NAHC) was contacted with a request for a query of their Sacred Lands File and a list of Native American contacts. The NAHC responded on December 2010, noting no Native American cultural resources had been recorded within the project area. The NAHC also provided a list of Native American individuals and organizations that might have concerns with or interest in the current undertaking. Native American individuals and organizations were contacted by letter in January 2011. The results of Native American coordination and public involvement related to archaeological resources is provided in the HPSR.

In an effort to establish public outreach and to inquire about the local history of the project area, relevant preservation groups within Solano and Yolo County, including the Solano County Genealogical Society, Solano County Historical Society, Yolo County Historical Museum (Gibson House), and the Yolo County Historical Society, were contacted in January 2011. No responses were received during these efforts. In addition, a meeting with the Lower Putah Creek Coordinating Council to present the proposed Stevenson Bridge Road Bridge Seismic Retrofit Project was conducted in Vacaville, California with the public in December 2013. Public comments on this proposed project were addressed by Solano County at this public meeting administered by the Lower Putah Creek Coordinating Council. Copies of this public involvement correspondence is included in the HPSR.

After the August 2014 seismic event in Napa County, American Canyon, and surrounding areas in Solano County, there was an immediate rise in interest from the public on the status of the rehabilitation of Bridge 23C0092. Concerns were related to any potential damage the bridge may have suffered from the event, as well as its exposure to future events. It should be noted that the local farmers and cyclists are particularly interested in this project as it provides a vital link between the two counties across Putah Creek. The County will include discussion regarding the seismic inadequacy of the bridge in all planned future public meetings at the Board of Supervisors (Solano and Yolo counties), Solano County Water Agency, and the Lower Putah Creek Coordinating Council. The current seismic deficiencies of the existing bridge structure, in light of recent events, make this project a priority for Solano County, Yolo County, and the public to provide for a safer and more dependable link between the two counties.

As part of public participation under Section 106, the County sent letters describing the proposed project and asking for comments, information or interest in reviewing the FOE and SOIS Action Plan to the Solano County Historical Society, Solano County Genealogical Society, Yolo County Historical Museum (Gibson House), Yolo County Historical Society, Historic Bridge Foundation, and the California Preservation Foundation in April 2015, requesting comments by May 2015. To date, the County has not received any responses. Copies of correspondence related to the public participation related to the Finding of Effect for the proposed project are provided in Appendix C.

3. Description of Historic Properties

A. Steps taken to identify historic properties within the APE

The historic/architectural APE was defined to include Bridge 23C0092 and the first tier of parcels located along Stevenson Bridge Road adjacent to realignment activities. An HRER was prepared in May 2012 to summarize field survey efforts and public involvement, and document historic properties within the APE for the proposed project. Background and resource-specific research conducted for the project is outlined in the HRER. An Information Center search for an area within one mile of the project site was completed at the Northwest Information Center (NWIC) at Sonoma State University on January 7, 2011 (NWIC File No. 10-0627). The search identified one resource, Bridge 23C0092, located in the APE for built environment resources that is listed in the State Office of Historic Preservation (OHP) Historic Properties Directory and determined eligible for listing in the National Register of Historic Places (National Register) in Caltrans' *Historic Bridge Inventory*. Field survey efforts also identified the Clark Farmstead at 9415 Stevenson Bridge Road, which was determined not eligible for listing in the National Register. No other

properties within the APE are listed, eligible, or potentially eligible for listing in the California Register of Historical Resources (California Register) or the National Register, nor are any properties located in the APE listed as California Historical Landmarks or California Points of Interest.

The APE for archaeological resources included the Right-of-Way (ROW) and all areas where there will be ground-disturbing activities. An ASR was prepared in May 2012 to summarize efforts to identify archaeological resources. The only resource identified within the APE was a previously recorded historic refuse scatter (P-48-000785), which was determined not eligible for listing in the National Register. No archaeological resources within the APE are listed, eligible, or potentially eligible for listing in the California or National Registers. Additional information about efforts to identify archaeological resources and public involvement is summarized in the HPSR.

Bridge 23C0092 is the only resource within the historic/architectural and archaeological APEs that is listed, eligible, or potentially eligible for listing in the National Register.

B. Bridge 23C0092 over Putah Creek

The California Department of Parks and Recreation (DPR) 523 Form in the HPSR provides a description of Bridge 23C0092, which includes the history, description, and assessment of significance and integrity, and identifies the character-defining features of the bridge. A summary of relevant information from the DPR 523 Form as it pertains to the application of the Criteria of Adverse Effect is provided below.

(1) Description

Bridge 23C0092 is a two-span, reinforced-concrete, open-spandrel, through, tied parabolic arch bridge. Each span measures 108 feet long. The total length of the bridge is 298 feet and includes two reinforced-concrete girder approach spans, each 40 feet long. The two-lane bridge is 24.2 feet wide. It features an open reinforced-concrete railing with rectangular balustrades and end posts with inscribed panels. Exterior girders also features inscribed panels. The bridge has no pedestrian walkways.

(2) History and significance

A petition to establish Stevenson Bridge Road and a bridge at the crossing with Putah Creek began in 1862 to provide a route for farmers to cross Putah Creek further east than an existing crossing near Winters. The road was constructed through the Andrew and George Stevenson ranch in Solano County in 1867. A truss bridge (nonextant) was also constructed at the same time as the road. Stevenson Bridge Road was one of many rural roads within south-central Yolo County and northern Solano County that existed in the late nineteenth century to provide access to main routes that connected the communities of Yolo and Solano Counties. Putah Creek Road provided east-west access to agricultural fields south of Putah Creek, and Winters Road provided north-south access between Fairfield and Vacaville to Davis by way of Russell Boulevard/County Road 32.

The original alignment of Stevenson Bridge Road traveled due north, where it crossed over Putah Creek further to the east than the current bridge location. Between 1890 and 1905 Stevenson Bridge Road was realigned, resulting in two consecutive turns of approximately 90 degrees in the

road; one located at the south approach and the other located approximately 450 feet east of the existing bridge, similar to its current alignment. This realignment likely indicates the construction of a second bridge built to carry the road over Putah Creek. During the late nineteenth and early twentieth century, additional road construction occurred in the area to provide access to newly subdivided ranches.

Bridge 23C0092 appears to be the third bridge to cross Putah Creek along Stevenson Bridge Road, likely due to frequent flooding of Putah Creek. The concrete arch bridge was designed by Solano County engineer Asa Proctor and constructed in 1923 by J.L. Webster. It is an early and rare example of this bridge type. Bridge 23C0092 is eligible for listing in the National Register under *Criterion C* as a rare example of a reinforced-concrete through tied arch bridge at the local level of significance. The bridge was included in a 2004 study of concrete arch bridges conducted by Caltrans, which is summarized in *Caltrans Historic Bridge Inventory Update: Concrete Arch Bridges, Volume 1*.

(3) Period of significance and historic property boundary

The period of significance of Bridge 23C0092 corresponds to its construction date of 1923. The historic boundary includes the bridge itself. A map and images depicting the bridge are provided in Appendix A.

(4) Character-defining features

The character-defining features of Bridge 23C0092 include the following:

- Structural features: Reinforced-concrete arches tied to reinforced longitudinal exterior girders. This feature also includes the reinforced-concrete overhead braces connecting the arches and the vertical spandrel columns connecting the arches to the longitudinal girders. Since the bridge is eligible under Criterion C as a rare example of a reinforced-concrete through tied arch bridge, its structural features are most significant.

- Aesthetic features: Open reinforced-concrete railing, integrated between the vertical spandrel columns with inscribed panels; flared solid concrete end posts with recessed panels over the wingwalls; and longitudinal exterior girders with inscribed panels. While important, aesthetic features are not the primary features from which the bridge derives significance.

(5) Integrity

Historic integrity is the authenticity of a bridge's historic identity, evidenced by the survival and/or rehabilitation of physical characteristics that existed during the bridge's historic period. Historic integrity is conveyed through seven aspects: location, design, setting, materials, workmanship, feeling, and association.

Bridge 23C0092 retains a high degree of integrity in terms of design, location, feeling, setting, and association and a moderate level of integrity of materials and workmanship. The bridge has not been altered since its original construction and, as such, retains a high degree of integrity of design. The surroundings of the bridge are rural and continue to reflect its historic environment.

As such, the bridge retains a high degree of location, feeling, setting, and association. The bridge retains most of its original concrete construction materials but has substantial amounts of non-historic graffiti on most surfaces. The graffiti is less than 50 years in age, applied outside the period of significance, and is not considered a significant feature. Efforts to remove the graffiti over the years has resulted in the loss of portions of concrete material, which is most evident on the open reinforced-concrete railing, the vertical spandrel columns with inscribed panels, and the flared solid concrete end posts with recessed panels over the wingwalls. The bridge also exhibits areas of spalling resulting in some loss of concrete material. Vehicle impacts to the southeast flared end post result in some loss of concrete material. Since the graffiti obscures large portions of the surface and there has been some loss of concrete due to cleaning and vehicle impacts, the bridge retains a moderate level of integrity of materials and workmanship.

4. Application of the Criteria of Adverse Effect

Under Section 106 regulations—36 CFR Part 800.5(a)(1)—adverse effects occur when an undertaking may directly or indirectly alter characteristics of a historic property that qualify it for inclusion in the National Register. 36 CFR Part 800.5(a)(2) provides seven examples of adverse effects on historic properties. The seven examples of adverse effects include:

(i) Physical destruction of or damage to all or part of the property;

(ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access, that is not consistent with the Secretary's standards for the treatment of historic properties (36 CFR part 68) and applicable guidelines;

(iii) Removal of the property from its historic location;

(iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;

(v) Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features;

(vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and

(vii) Transfer, lease, or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

The proposed project will not damage or destroy all or part of the bridge; therefore example (i) does not apply. Instead, existing historic fabric will be repaired in-kind or replaced in-kind with materials that match in design, color, and texture where material is too deteriorated to allow for repair.

The proposed project will not remove Bridge 23C0092 from its historic location; therefore example (iii) does not apply.

The proposed project will not result in neglect of the structure or a transfer of ownership; therefore, examples (vi) and (vii) are not applicable.

The examples that may apply to the proposed project are (ii), (iv), and (v). These examples were considered within the context of Caltrans' guidance in the SER, Volume 2, Chapter 7, Section 7-12.3 and are discussed in detail below.

Appendix B includes a figure that illustrates the location of proposed activities on the bridge. The SOIS Action Plan specifies that as rehabilitation and seismic retrofit Plans, Specifications and Estimates (PS&E) package is developed they will be reviewed to ensure that they adhere to the SOIS for Rehabilitation; the Standard Conditions outlined in *Exhibit 7.4: Historic Bridges and Tunnels No Adverse Effects with Standard Conditions* in Caltrans' Standard Environmental Reference (Exhibit 7.4); applicable technical bulletins, such as National Park Service (NPS) *Preservation Briefs* noted below; and special provisions.

A. Example (ii) - Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access, that is not consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties (36 CFR part 69) and applicable guidelines

The project proposes to rehabilitate Bridge 23C0092 in order to seismically retrofit the bridge to address structural deficiencies while maintaining its historic character. The structural seismic retrofit will require concrete cleaning, strengthening features, such as jacketing with reinforced-concrete to the substructure and fiber wrapping to both the substructure and superstructure, which follow the existing lines of the bridge. Such seismic retrofit treatment, as described herein, will be completed in a manner that meets the SOIS for Rehabilitation and retains the geometry of the existing structural elements of the bridge. Other strengthening elements prioritized in this seismic retrofit approach will be hidden, where feasible, from the travelling public underneath the existing bridge deck and substructure.

Analysis:

Proposed rehabilitation and seismic retrofit activities for Bridge 23C0092 have the potential to effect the historic integrity of Bridge 23C0092. Discussed below are the specific proposed activities with an analysis of the scale of impact of these activities and how adverse effects will be avoided by adhering to the SOIS for Rehabilitation and meeting the Standard Conditions of Exhibit 7.4.

Concrete cleaning

Concrete cleaning on the bridge has the potential to impact the structure's integrity of materials and workmanship. Non-destructive methods will be used to clean the concrete surface and remove graffiti. During design the technical guidance in Caltrans Exhibit 7.4, NPS *Preservation*

Brief 15: Preservation of Historic Concrete and NPS *Preservation Brief 38: Removing Graffiti from Historic Masonry* (which provides guidelines for removing graffiti from concrete surfaces), will be used to determine the gentlest possible treatment for cleaning concrete that will be effective. Appropriate cleaning may include water, compressed air, detergent cleaners, or mild diluted acid cleaners.

Cleaning processes will be tested on small areas of the bridge to determine the gentlest possible treatment that will be effective. Special provisions will be developed during design and reviewed by a professionally qualified architectural historian meeting Caltrans PQS standards outlined in Attachment 1 of the Section 106 PA (Qualified Architectural Historian), and approved Caltrans Architectural Historian for inclusion in the PS&E package that incorporate the results and indicate the cleaning process to be used.

Cleaning with water or compressed air following testing on small areas is a non-destructive method listed as a Standard Condition in Exhibit 7.4. Exhibit 7.4 provides guiding principles for rehabilitating concrete that will be incorporated into design and the PS&E package for a no adverse effect.

The proposed non-destructive method of cleaning concrete will adhere to the SOIS for Rehabilitation as a Standard Condition listed in Exhibit 7.4. Concrete cleaning is consistent with the following SOIS for Rehabilitation:

- Under Standards 2 and 5: By adhering to NPS *Preservation Brief 15: Preservation of Historic Concrete* and NPS *Preservation Brief 38: Removing Graffiti from Historic Masonry*, the historic character of the bridge will be retained and the distinctive concrete finish and craftsmanship that characterize the bridge will be preserved.

- Under Standard 7: By adhering to NPS *Preservation Brief 15: Preservation of Historic Concrete* and NPS *Preservation Brief 38: Removing Graffiti from Historic Masonry,* physical treatments such as sandblasting that cause damage to historic materials will be avoided and non-destructive methods will be used resulting in the gentlest means possible to clean the concrete.

Since the surface of the bridge already exhibits loss of concrete material from past graffiti removal, and this activity meets the SOIS for Rehabilitation, it will not result in diminished integrity of design, materials, or workmanship. The other aspects of integrity—feeling, setting, location and association—will not be affected by concrete cleaning because the historic character, spatial arrangement, and environment will remain intact. Work completed in this manner has a low impact on the integrity of the bridge.

Replacement of spandrel columns

The replacement of spandrel columns has the potential to impact integrity of design, materials, and workmanship. Work will follow the SOIS for Rehabilitation and consist of in-kind replacement

with new spandrel columns that match the existing spandrel columns in design, color, texture, and material.

Caltrans guidance in Exhibit 7.4 and the technical guidance outlined in NPS *Preservation Brief 15: Preservation of Historic Concrete*, will be used to identify the appropriate methods for in-kind replacement of concrete spandrel columns. Careful concrete mix formulation, placement, and finishing are required so that replacement concrete spandrel columns will match the historic spandrel columns. The County will require the development of trial mock-ups to be completed by the contractor as a special provision in the PS&E package. The trial mock-ups will be used to evaluate the proposed replacement concrete and construction techniques to determine the best match between the original concrete and the new concrete in color, finish and texture. Trial mock-ups will be reviewed by a Qualified Architectural Historian and the selected result approved by the Caltrans Architectural Historian. Upon approval, the County will require the contractor to complete work following mixing and finishing techniques from the approved mock-up. The County will ensure this special provision is included in the PS&E package.

In-kind replacement of structural members (such as beams, girders, stringers) on historic bridges is a Standard Condition of Exhibit 7.4. Material will be replaced in-kind and this activity is consistent with the following SOIS for Rehabilitation:

- Under Standard 1: The purpose of the project is to rehabilitate and seismically retrofit the bridge through in-kind repair or replacement so that it continues to serve its function as a crossing of Putah Creek. It will continue to be used as it was historically and its distinctive features, aspects of integrity, and spatial relationships in which it derives significance will be retained.

- Under Standards 2, 5, and 6: By adhering to NPS *Preservation Brief 15: Preservation of Historic Concrete*, the historic character of the bridge will be retained and preserved. Structural members that relate to its important design features and will be retained. Work on these features will consist of in-kind repair and where required in-kind replacement. New concrete added will match the existing spandrel columns in design, color, texture, finish and material.

Work completed in this manner will have a low impact on the integrity of design, materials, and workmanship of the bridge since few of the 24 spandrel columns are expected to be replaced (specifically, those that are too deteriorated to repair) and replacement will be conducted in-kind following the SOIS for Rehabilitation. The other aspects of integrity—feeling, setting, location and association—will not be affected by the replacement of spandrel columns because the historic character, spatial arrangement, and environment will remain intact. Work completed in this manner has a low impact on the integrity of the bridge.

Railings

The in-kind repair of railings between the arches and replacement of railings located outside the arches with a historically compatible design has the potential to impact integrity of design,

materials, and workmanship. In-kind repair of railings between the arches has a low impact on the integrity of the bridge. Areas of patching, bonding and filling voids will be compatible with the design of the historic railing and match the color, texture, finish and material. In-kind repair of railings is a Standard Condition of Exhibit 7.4. Caltrans guidance in Exhibit 7.4, and NPS *Preservation Brief 15: Preservation of Historic Concrete*, will be used to identify the appropriate methods for repair of concrete railings. Concrete patching, bonding and fill should match historic concrete through careful mix formulation and finishing so that repairs match the historic concrete. Methods will be developed to determine the best match between the replacement concrete and the original concrete on the bridge. The County will require the development of trial mock-ups to be completed by the contractor as a special provision in the PS&E package. The trial mock-ups will be used to evaluate the proposed concrete repair work and construction techniques to determine the best match between the original concrete and the new concrete in color, finish, and texture. Trial mock-ups will be reviewed by a Qualified Architectural Historian and the selected result approved by the Caltrans Architectural Historian. Upon approval, the County will require the contractor to complete work following the mixing and finishing techniques from the approved mock-up. The County will ensure this special provision is included in the PS&E package.

In order to meet current California Manual on Uniform Traffic Control Devices (MUTCD) requirements and Caltrans safety and crash testing requirements, existing barrier railings located outside of the bridge arches and along the approach spans are proposed to be replaced with new barrier railing to meet current safety standards. In these areas replacement with a historically compatible design is required rather than in-kind repair. The railings are an aesthetic feature and are not the primary feature from which the bridge derives significance. Since replacement with a historically compatible design includes only a portion of the overall railing on the bridge, this activity has a medium impact on the integrity of the bridge. To reduce and minimize this impact, the replacement railing outside the arches are to be historically compatible with the existing railing in design, color, texture, and material. Visualizations of Caltrans standard railings that meet minimum safety standards will be used to evaluate the proposed replacement railings and to determine a design that is most compatible with the existing railing.

In-kind repair of railings is a Standard Condition of Exhibit 7.4 and by following *Preservation Brief 15: Preservation of Historic Concrete* this work will meet the SOIS for Rehabilitation.

- Under Standard 1: The purpose of the project is to rehabilitate and seismically retrofit the bridge through in-kind repair or replacement so that it continues to serve its function as a crossing of Putah Creek. It will continue to be used as it was historically and its distinctive features, aspects of integrity, and spatial relationships in which it derives significance will be retained.

- Under Standards 2, 5, and 6: By adhering to NPS *Preservation Brief 15: Preservation of Historic Concrete*, aesthetic features that characterize the bridge will be retained and preserved. Work on the bridge railings will consist of in-kind repair and, where required, replacement with a historically compatible design. New concrete material added will match the existing railings in design, color, texture, finish, and material.

Overall work completed on the railings in this manner will have a low impact on the integrity of design, materials, and workmanship since repair will be conducted in-kind or replaced with a historically compatible design. The other aspects of integrity – feeling, setting, location and association - will not be affected by in-kind repair and in-kind replacement of railings because the historic character, spatial arrangement, and environment will remain intact.

Fiber wrap

Seismic retrofit activities to the superstructure will include adding fiber-wrapped jacketing to the arches, spandrel columns, and overhead braces only as needed. Fiber wrap will not be applied to the railings. Fiber wrapping of existing reinforced-concrete structural members is generally implemented using carbon fiber reinforced polymer (CFRP), glass fiber reinforced polymer (GFRP) or aramid fiber reinforced polymer (AFRP). Caltrans has most often authorized composite fiber wrapping as an alternative to steel jacketing or structural member replacement (Caltrans Memo to Designers 20-4). All fiber wrapping is based on the technology of combining reinforcement of a unidirectional fabric made of fiber that can be impregnated onsite with a laminating resin coating to create the fiber wrap.

Fiber wrapping of members has the potential to impact integrity of materials, design, and workmanship. The application of fiber wrap to existing bridge members will result in a marginal increase in the thickness of these members (less than 0.25 of an inch) and will conform to the existing design of the superstructure. To reduce and minimize this impact, work will follow Caltrans guidance in Exhibit 7.4. During design the County will require the contractor to consult technical guidance outlined in NPS *Preservation Brief 15: Preservation of Historic Concrete*, and work with the Architectural Historian to identify the appropriate methods for the application and finish and texture of this coating. The County will require trial mock-ups to be completed by the contractor as a special provision in the PS&E package to identify a final coating to the fiber wrap that best matches the original concrete in color, finish, and texture. Trial mock-ups will be reviewed by a Qualified Architectural Historian and the selected result approved by the Caltrans Architectural Historian. Upon approval, the County will require the contractor to complete work following the finishing techniques from the approved mock-up. The County will ensure this special provision is included in the PS&E package.

The application of sealants or coatings will adhere to the SOIS for Rehabilitation, which is a Standard Condition listed in Exhibit 7.4. The application of fiber wrapping and coating is consistent with the following SOIS for Rehabilitation:

- Under Standard 1: The purpose of the project is to rehabilitate and seismically retrofit the bridge. The bridge will continue to be used as it was historically and its distinctive structural and aesthetic features, aspects of integrity, and spatial relationships in which it derives significance will be retained.

- Under Standards 2, 5 and 6: Fiber wrapping will not result in the removal of materials. The final coating of fiber-wrapped members will match the design, color, texture, finish,

and material of existing structural members. The marginal increase in thickness works to retain the design, and by adhering to the technical guidance outlined in NPS *Preservation Brief 15: Preservation of Historic Concrete* for the application of the final coating, the distinctive concrete finish of the bridge will be preserved.

Since the bridge already exhibits some loss of concrete material and workmanship from past graffiti removal, the fiber wrapping will impact aspects of integrity (workmanship and materials) that have already been diminished. Overall work completed in the manner above will have a low impact on the integrity of design, materials, and workmanship since work will adhere to the SOIS for Rehabilitation. The other aspects of integrity—feeling, setting, location and association—will not be affected by fiber wrapping because the historic character, spatial arrangement, and environment will remain intact. Work completed in this manner has a low impact on the integrity.

Concrete rehabilitation

Repair of unsound, spalled, or delaminated concrete by patching, bonding, and filling voids on the superstructure (arches, overhead braces, spandrel columns, girders, and deck surface area) has the potential to impact integrity of materials, design, and workmanship.

In-kind repair of concrete (patching, bonding, and filling voids) is a Standard Condition of Exhibit 7.4. Caltrans guidance in Exhibit 7.4 and NPS *Preservation Brief 15: Preservation of Historic Concrete*, will be used to identify the appropriate methods for patching, bonding and fill to match historic concrete through careful mix formulation and finishing so that repairs match the historic concrete. The County will require the development of trial mock-ups to be completed by the contractor as a special provision in the PS&E package. The trial mock-ups will be used to evaluate the proposed replacement concrete and construction techniques to determine the best match between the original concrete and the new concrete in color, finish, and texture. Trial mock-ups will be reviewed by a Qualified Architectural Historian and the selected result approved by the Caltrans Architectural Historian. Upon approval, the County will require the contractor to complete work following the mixing and finishing techniques from the approved mock-up. The County will ensure this special provision is included in the PS&E package.

In-kind repair (patching, bonding, and filling voids in concrete) after first testing the repair method on a small area to confirm compatible texture and color is a Standard Condition of Exhibit 7.4. Material will be replaced in-kind and this activity is consistent with the SIOIS for Rehabilitation:

- Under Standard 1: The purpose of the project is to rehabilitate and seismically retrofit the bridge through in-kind repair of concrete so that it continues to serve its function as a crossing of Putah Creek. It will continue to be used as it was historically and its distinctive features, aspects of integrity and spatial relationships in which it derives significance will be retained.

- Under Standards 2, 5, and 6: By adhering to NPS *Preservation Brief 15: Preservation of Historic Concrete*, the historic character of the bridge will be retained and preserved. In-

kind concrete repair of features will result in new concrete that will match the historic concrete in design, color, texture, finish, and material.

Concrete rehabilitation will have a low impact on the integrity of design, materials, and workmanship since repair will be conducted in-kind following the SOIS for Rehabilitation. The other aspects of integrity—feeling, setting, location, and association—will not be affected by in-kind repair concrete repair because the historic character, spatial arrangement, and environment will remain intact.

Strengthening longitudinal girders
Longitudinal and/or transverse girders will be added to the underside of the bridge deck in order to strengthen existing girders. This activity has the potential to impact integrity of design.

Caltrans guidance in Exhibit 7.4 and NPS *Preservation Brief 15: Preservation of Historic Concrete*, will be used to identify the appropriate methods for the addition of new concrete girders. New concrete girders will be cast to be compatible with but not match the historic concrete. Work will entail careful mix formulation, placement, and finishing so that work is differentiated from but compatible with the historic concrete members as not to create a false sense of historical development. The County will require the development of trial mock-ups to be completed by the contractor as a special provision in the PS&E package. The trial mock-ups will be used to evaluate the proposed new concrete work design and finishing techniques to determine so that new concrete is differentiated from but compatible with the historic concrete in color, finish and texture. Trial mock-ups will be reviewed by a Qualified Architectural Historian and the selected result approved by the Caltrans Architectural Historian. Upon approval, the County will require the contractor to complete work following the casting, mixing, and finishing techniques from the approved mock-up. The County will ensure this special provision is included in the PS&E package.

New additions of longitudinal and/or transverse girders to the underside of the deck will be completed in this manner and consistent with NPS *Preservation Brief 15* and will meet the following SOIS for Rehabilitation:

- Under Standard 1: The purpose of the project is to rehabilitate and seismically retrofit the bridge. The addition of new longitudinal and/or transverse girders to the underside of the deck will strengthen structural members and allow the bridge to continue to serve its function as a crossing of Putah Creek.

- Under Standards 2 and 5: New girders will not result in the removal of materials or alteration of the features or spatial relationships that characterize the bridge. New concrete girders will adhere to the technical guidance outlined in NPS *Preservation Brief 15: Preservation of Historic Concrete* and will be compatible with but differentiated from the design, color, texture, finish, and material of existing adjacent historic concrete members.

- Under Standard 3 and 9: The addition of new girders does not destroy historic concrete material. Efforts will include differentiating the concrete on the new girders from the adjacent historic concrete as not to create a false sense of historical development. The new girders will be hidden from the traveling public but will be compatible in terms of massing, size, and scale.

New additions of longitudinal and/or transverse girders to the underside of the deck completed in this manner will have a low impact on the integrity of design, materials, and workmanship since repair and replacement will be conducted in-kind following the SOIS for Rehabilitation and the new girders will not be visible to the traveling public. The other aspects of integrity—feeling, setting, location, and association—will not be affected by this activity because the historic character, spatial arrangement, and environment will remain intact. Work completed in this manner has a low impact on the integrity.

Substructure and retaining wall

Proposed substructure changes include jacketing Piers 1, 2, and 3 with reinforced concrete or fiber wrapping; filling in pier columns with reinforced concrete shear walls; reinforcing bent caps for additional strength; retrofit footings below grade; new CIDH pilings and concrete seat extenders to both abutments and CIDH pilings underneath the existing bridge deck and superstructure, only as determined necessary; strengthening or in-kind replacement of the existing retaining wall on south abutment; and installation of rip-rap (rock) scour protection measures around pier footings and rip-rap slope protection on banks adjacent to abutment locations.

Although important to the function of the bridge and considered historic fabric, the substructure and its components do not contribute to the significance of the bridge under *Criterion C* and proposed activities will not detract from the character-defining structural and aesthetic features of the superstructure from which the bridge derives its significance. However, because it is considered historic fabric this work has the potential to impact the overall integrity of the bridge. To reduce and minimize any impacts, this treatment will consist of the same approach as identified for strengthening longitudinal girders above, in which the design, color, and texture of new concrete is compatible but does not match the original so that work is differentiated from, but compatible with the historic concrete members to not create a false sense of historical development.

Work completed in this manner and consistent with NPS *Preservation Brief 15* meets the SOIS for Rehabilitation Standards 1, 2, 3, 5, and 9 as stated above and will have a low impact on the integrity of design, materials, and workmanship since repair and replacement will adhere to the SOIS for Rehabilitation. The other aspects of integrity—feeling, setting, location, and association—will not be affected because the historic character, spatial arrangement, and environment will remain intact. Work completed in this manner has a low impact on the integrity.

Unforeseen site conditions encountered during construction may require changes to elements of the substructure that would not be visible, such as retrofitting of footings with additional support

pilings and reinforced-concrete jacketing at pier locations below the existing groundlines or buried beneath rip-rap (rock) scour protections. Since these elements are not visible these changes will not affect the integrity of the bridge.

Bridge Approach and road realignment
Realignment of the road to the south of the bridge and the addition of guardrail end treatments to south and north approach to improve safety has the potential to impact the structure's integrity. The bridge approach and roadway do not contribute to the significance of the bridge under *Criterion C* and proposed activities will not detract from the character-defining structural and aesthetic features of the superstructure from which the bridge derives its significance or result in the loss of historic fabric. However, this work has the potential to impact the overall integrity of the bridge, in particular integrity of setting and feeling.

Guardrail end treatments will be installed between the roadway and the historic bridge structure but will not be attached to the bridge. The realignment of the road to the south will not detract from the ability of bridge to convey its historic function and use to carry vehicular traffic over Putah Creek. This work meets the following SOIS for Rehabilitation:

- Under Standards 1: The purpose of the project is to rehabilitate and seismically retrofit the bridge. The realignment of the road will allow the bridge to continue to serve its function as a crossing of Putah Creek.

- Under Standards 2 and 5: The realignment of the road to the south does not result in the loss of historic materials or alterations of the structural and aesthetic features or spatial relationships that characterize the bridge. The bridge will still carry traffic over Putah Creek, thereby maintaining its historic spatial relationship to the road.

The road realignment is a change within the surrounding environment, but the historic function of the bridge will remain intact. This work will not result in the loss of integrity of design, materials, and workmanship of the physical features of the bridge itself. The integrity of location and association will be unaffected because the historic function carrying vehicular traffic over Putah Creek will remain intact. This work will have a low impact on integrity of setting and feeling by introducing a new approach alignment.

B. Example (iv) - Change of the character of the property's use or physical features within the property's setting that contribute to its historic significance

The proposed project includes realignment of the south approach, a staging area, an access road, a temporary creek crossing, temporary traffic detour, and possible utility relocation. If determined necessary, a retaining wall on the south side of the bridge will be replaced or strengthened and new rock slope protection will be added along the creek banks and abutments. Appendix B includes an illustration by the County showing the conceptual retrofit design indicating the location of project activities.

Analysis:
Bridge 23C0092 will continue in its historic and current function as a vehicular bridge across Putah Creek and the project will not result in a change of use. No physical features within the setting that contribute to the significance of the bridge will be affected by the proposed project. The proposed realignment of the south approach, proposed staging area, access road, temporary creek crossing, traffic detour, and possible utility relocation will not alter the setting of the bridge.

This work meets the following SOIS for Rehabilitation:

- Under Standards 1: The purpose of the project is to rehabilitate and seismically retrofit the bridge. This work allows the bridge to continue to serve its historic function as a vehicular crossing of Putah Creek.

- Under Standards 2 and 5: The realignment of the road to the south and other work listed above does not result in the loss of historic materials or alterations of the structural and aesthetic features or spatial relationships that characterize the bridge. The bridge will still carry traffic over Putah Creek, thereby maintaining its spatial relationship to the road.

The road realignment is a change within the surrounding environment, but the historic function of the bridge will remain intact. This work will not result in the loss of integrity of design, materials, or workmanship of the physical features of the bridge itself. The integrity of location and association will be unaffected because the historic function of the bridge carrying vehicular traffic over Putah Creek will remain intact. This work will have a low impact on integrity of setting and feeling due to new road alignment.

C. Example (v) - Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features

Analysis:
Proposed rehabilitation and seismic retrofit activities for Bridge 23C0092 would not introduce visual elements other than those needed for rehabilitation of superstructure and substructure elements. Such visual changes are already considered and addressed above.

The bridge approach and roadway do not contribute to the significance of the bridge under *Criterion C* and proposed activities will not detract from the character-defining structural and aesthetic features of the superstructure from which the bridge derives its significance. However, this work will introduce minor visual elements with the potential to impact the overall integrity of the bridge, in particular integrity of setting and feeling. Guardrail end treatments are a common feature along bridges and will not hide historic features or otherwise impair the ability of Bridge 23C0092 to convey its significance. The realignment of the road to the south will not detract from the ability of bridge to convey its historic function and historic use to carry vehicular traffic over Putah Creek. While the road realignment will detract slightly from integrity of feeling and setting because the historic environment to the south of the bridge will be altered, the work will not result in the loss of integrity of design, materials or workmanship of the bridge itself and integrity of

location and association will be unaffected. This work will have a low impact on the integrity of the bridge.

No atmospheric or audible elements that diminish the integrity of the bridge will be added to the structure or introduced into the setting. Typical bridge and roadway construction equipment will be utilized during testing and construction. The use of construction equipment will result in the temporary increase in vibration and audible levels during construction activities. Care will be taken during construction to avoid impact to the structure's integrity. A Qualified Architectural Historian will be on-site at appropriate intervals to observe key project activities.

This work meets the following SOIS for Rehabilitation:

- Under Standards 1: The purpose of the project is to rehabilitate and seismically retrofit the bridge. This work allows the bridge to continue to serve its function as a crossing of Putah Creek.

- Under Standards 2 and 5: The realignment of the road to the south and other work listed above does not result in the loss of historic materials or alterations of the structural and aesthetic features or spatial relationships that characterize the bridge. The bridge will still carry traffic over Putah Creek, thereby maintaining its spatial relationship to the road.

Bridge rehabilitation and seismic retrofit activities will adhere to the SOIS for Rehabilitation, follow the technical guidance of the NPS, and will include on-site monitoring by Caltrans Local Assistance Environmental Planner for consistency with the SOIS Action Plan. As such, these activities will have a low impact on the integrity of setting and feeling, and the integrity of design, materials, workmanship, association, and location will be unaffected. This work will have a low impact on integrity of the bridge.

5. Conditions Under Which a Finding of No Adverse Effect is Applicable

Proposed project activities have the potential to impact the integrity of the bridge. Conditions under which to reach a FNAE-SC-SOIS include the development and implementation of the SOIS Action Plan. The SOIS Action Plan identifies the conditions in which the proposed work will be consistent with the SOIS for Rehabilitation and the parties responsible for implementing the conditions to allow Caltrans to reach a determination of FNAE-SC-SOIS in accordance with Section 106 Programmatic Agreement Stipulation X.B(1)(b) and Attachment 5 of the PA. Conditions included in the SOIS Action Plan include:

A. Pre-Construction

The County will submit design plans to Caltrans for review prior to commencement of proposed project activities to ensure the proposed project activities are consistent with the SOIS for Rehabilitation. The County will require testing and trial mock-ups by the contractor as indicated in Section 4. The County will ensure these special provisions are included in the PS&E package. A Qualified Architectural Historian and Caltrans Architectural Historian will review and provide comment on design plans at 35-percent, 65-percent, and 100-percent completion stages in the development of the PS&E package to ensure that SOIS requirements for the project are clearly described and illustrated. The County will address comments and resubmit revised design plans and specifications as requested by Caltrans. Caltrans

Architectural Historian will review and approve the PS&E package to ensure that SOIS requirements for the project are clearly described and illustrated and ensure the SOIS Action Plan is included in Environmental Commitment Record (ECR). During pre-constrcution, the develpement of trial mock-ups will be completed by the contractor as indicated in Section 4. The results of testing and trial mock-ups will be reviewed by a Qualified Architectural Historian and the selected result approved by the Caltrans Architectural Historian. Upon approval, the County will require the contractor to complete work following techniques from the approved mock-up in conformance with the SOIS for Rehabilitation. Each pre-construction task, stage, and responsible party is listed in the SOIS Action Plan.

B. During Construction

During the course of rehabilitation activities, the Caltrans Local Assistance Environmental Planner will conduct spot inspections as needed to ensure the ECR provisions are met to monitor and observe ongoing compliance with the SOIS Action Plan. Unforeseen site conditions encountered during construction may require changes to elements of the substructure that would not be visible, such as retrofitting of footings with additional support pilings and reinforced-concrete jacketing at pier locations below the existing groundlines or buried beneath rip-rap (rock) scour protections. Since these elements are not visible, such work if required would not need to be reviewed by Caltrans. Changes would require review and approval by the Caltrans Architectural Historian to ensure consistency with the SOIS for rehabilitation and to notify the other consulting parties. Each task, stage, and responsible party once construction is underway is listed in the SOIS Action Plan.

C. Post Construction

A Qualified Architectural Historian will conduct a post-rehabilitation site visit and prepare updated Department of Parks and Recreation (DPR) 523 forms and submit to Caltrans PQS for review. The Caltrans PQS will review and approve the updated DPR 523 forms. A Qualified Architectural Historian will submit the Caltrans approved DPR 523 forms to the Northwest Information Center according to the SOIS Action Plan.

Appendix D provides the SOIS Action Plan.

6. Conclusion

The County's seismic retrofit of Bridge 23C0092 includes strengthening structural members with fiber wrap. The application of fiber wrap has the potential to impact integrity of materials, design, and workmanship. To reduce and minimize this impact, work will follow Caltrans guidance in Exhibit 7.4. Work completed in the manner described in Section 4 will have a low impact on the integrity of design, materials, and workmanship since work will adhere to the SOIS for Rehabilitation. The other aspects of integrity—feeling, setting, location, and association—will not be affected by fiber wrapping because the historic character, spatial arrangement, and environment will remain intact.

Additional activities include in-kind repair of railings inside the arches, replacement of railings outside the arches, and in-kind replacement of spandrel columns. To reduce and minimize this impact, work will follow Caltrans guidance in Exhibit 7.4. Work completed in the manner described in Section 4 will have a low impact on the integrity of design, materials, and workmanship since work will adhere to the SOIS for Rehabilitation. The other aspects of integrity—feeling, setting, location, and association—will not be

affected by these activities because the historic character, spatial arrangement, and environment will remain intact.

Bridge rehabilitation and seismic retrofit activities qualify as Standard Conditions because they are listed in Exhibit 7.4 and will adhere to the SOIS for Rehabilitation, the technical guidance of the NPS, and will include review and monitoring by a professionally qualified architectural historian meeting Caltrans PQS standards outlined in Attachment 1 of the Section 106 PA.

Work will not substantially diminish integrity and is consistent with the SOIS for Rehabilitation, which will enable the engineering significance of this two-span, concrete, open spandrel, through arch bridge to be retained. The activities listed above do not meet the criteria for adverse effects.

Caltrans, as assigned by the FHWA and pursuant to the Section 106 PA Stipulation X.B(1)(b) and Attachment 5 of the PA proposes that a FNAE-SC-SOIS is appropriate for this project.

7. Preparer Qualifications

Chad Moffett, M.A.
Mead & Hunt, Inc.
With 17 years of professional cultural resource management experience, Chad meets and exceeds the educational and professional qualifications of the *Secretary of the Interior's Standards for Professional Qualification* (per 48 FR 44738-44739) in history and architectural history and meets Caltrans PQS standards outlined in Attachment 1 of the Section 106 PA as principal architectural historian.

Timothy Smith, M.A.
Mead & Hunt, Inc.
Mr. Smith is an architectural historian with 13 years of experience in documenting, evaluating, and researching historic buildings, bridges, and landscapes. He meets and exceeds the educational and professional qualifications of the *Secretary of the Interior's Standards for Professional Qualification* (per 48 FR 44738-44739) in history and architectural history and Caltrans PQS standards outlined in Attachment 1 of the Section 106 PA as architectural historian. Timothy assisted in the preparation the report.

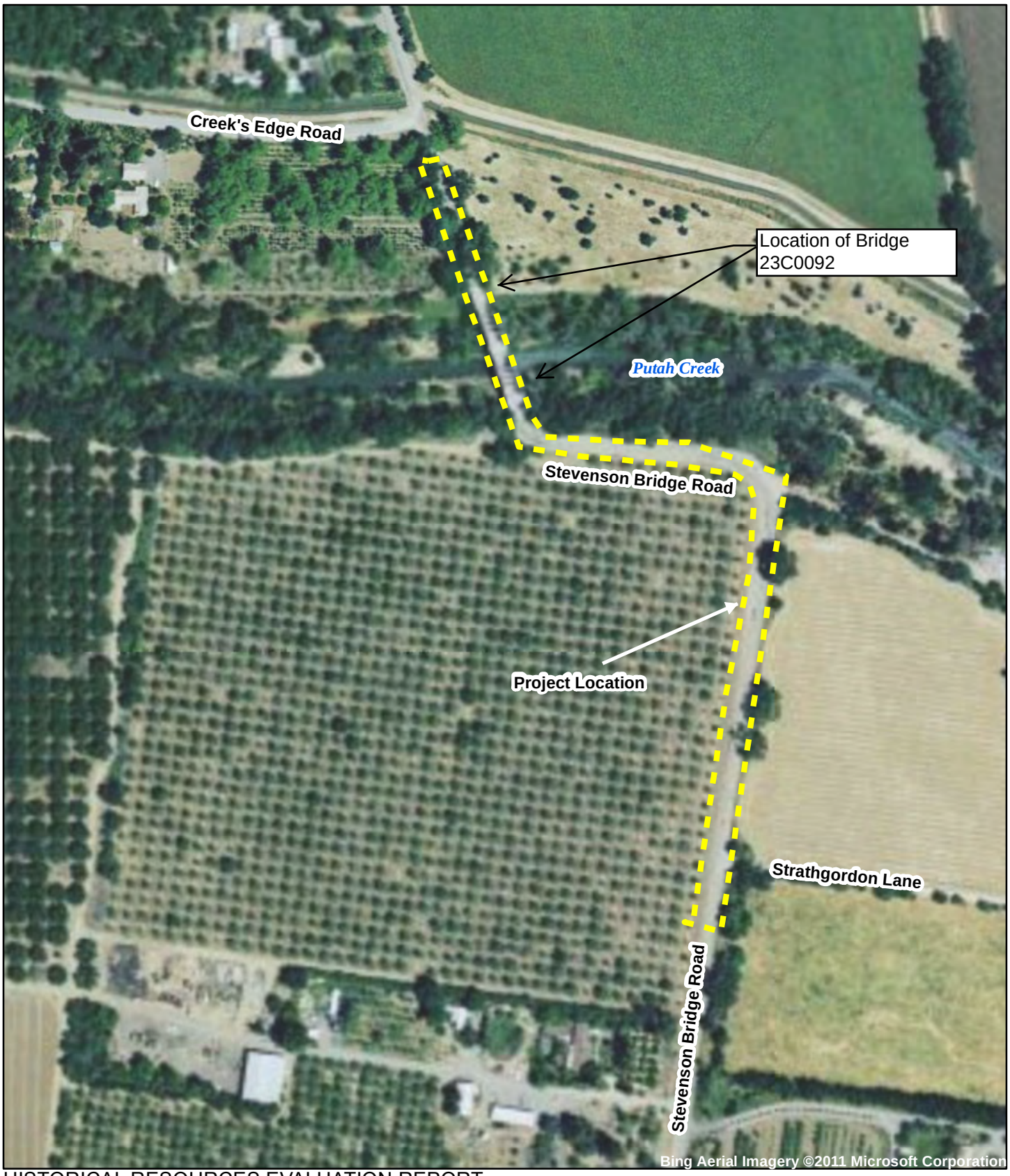
Appendix A. Maps and Images

Appendix A – Project Vicinity Map

HISTORICAL RESOURCES EVALUATION REPORT
Stevenson Road Bridge Rehabilitation Project at Putah Creek
Solano County, CA
Federal Project No.: BRLS-5923(059)

Mead & Hunt

Appendix A – Project Location Map



HISTORICAL RESOURCES EVALUATION REPORT
Stevenson Road Bridge Rehabilitation Project at Putah Creek
Solano County, CA
Federal Project No.: BRLS-5923(059)

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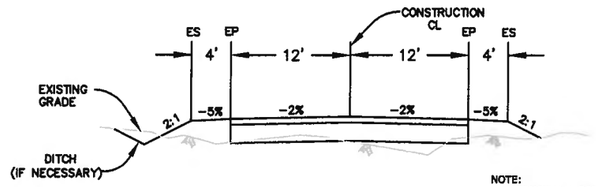
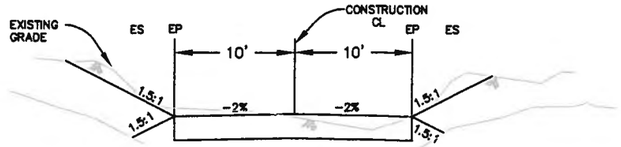
Mead & Hunt



TYPICAL SECTION
STEVENSON BRIDGE ROAD

NOT TO SCALE

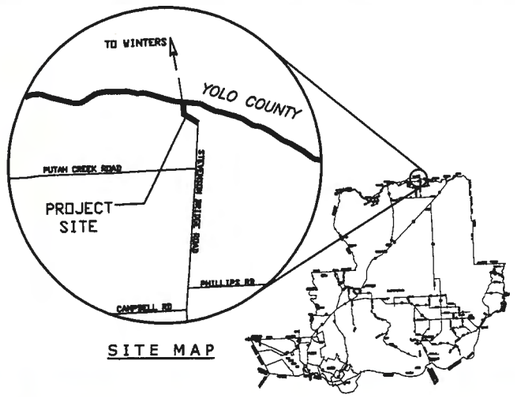
NOTE:
STRUCTURAL SECTION
(TO BE DETERMINED)



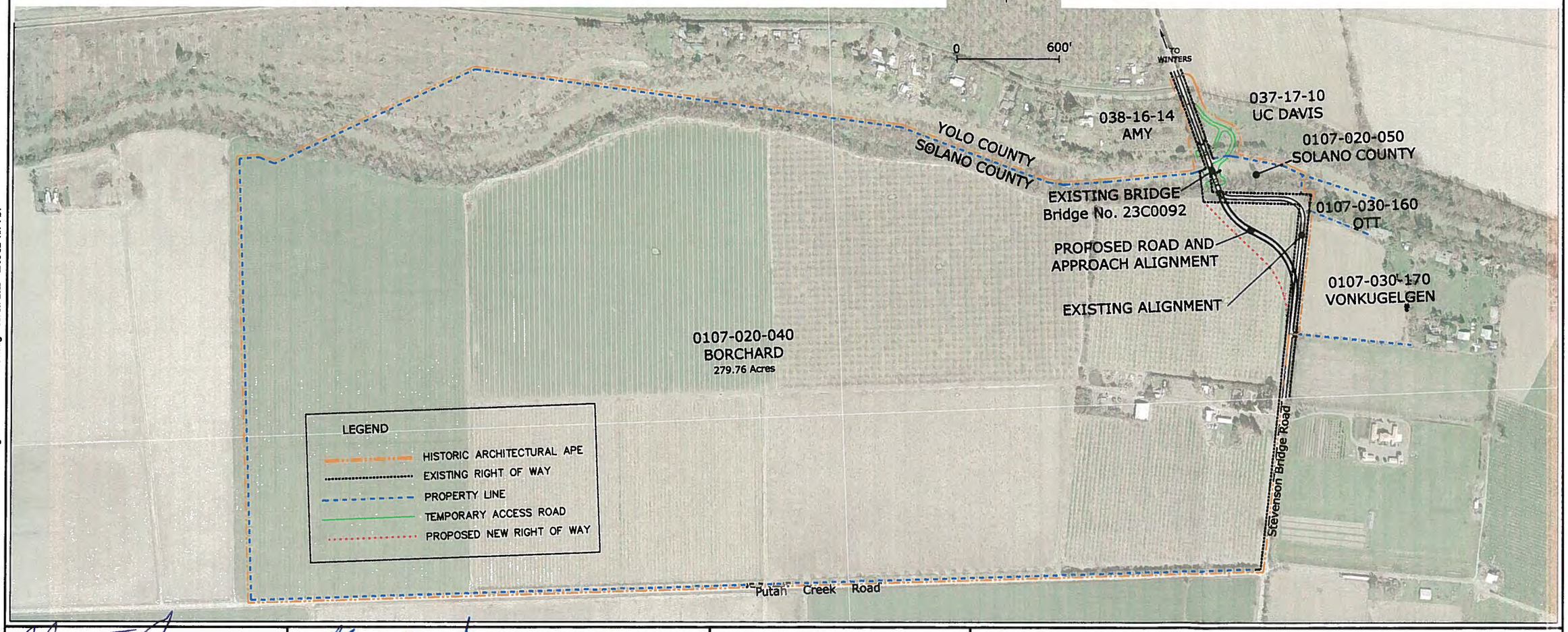
TYPICAL SECTION
TEMPORARY ACCESS ROAD

NOT TO SCALE

NOTE:
STRUCTURAL SECTION
(TO BE DETERMINED)



SITE MAP



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SIGNATURE, COUNTY PROJECT MANAGER SENIOR CIVIL ENGINEER	SIGNATURE, CALTRANS DISTRICT 4 LOCAL ASSISTANCE ENGINEER 7/22/11	SIGNATURE CALTRANS DISTRICT 4 PQS	STEVENSON BRIDGE ROAD AT PUTAH CREEK: BRIDGE REHABILITATION FEDERAL ID NO.: BRLS-5923 (059) Historic Architectural Area of Potential Effects

Photograph 1. Overview of south approach to bridge, view facing north.

Photograph 2. Elevation of Bridge 23C0092, view facing east.

Photograph 3. Character-defining structural features include reinforced concrete arches tied to reinforced exterior longitudinal girders; reinforced concrete overhead braces that connect the arches; and vertical hangar columns that connect the arches to the longitudinal girders. Detail view.

Photograph 4. Character-defining aesthetic features include an open reinforced concrete railing, integrated between the vertical hangar columns that connect the arches and longitudinal girders. Detail view.

Photograph 5. Solid end posts with incised panels, view facing northeast.

Photograph 6. Exterior girders may be strengthened by adding interior girders. These changes will not be visible to pedestrian or motorists that use the bridge. View facing southeast.

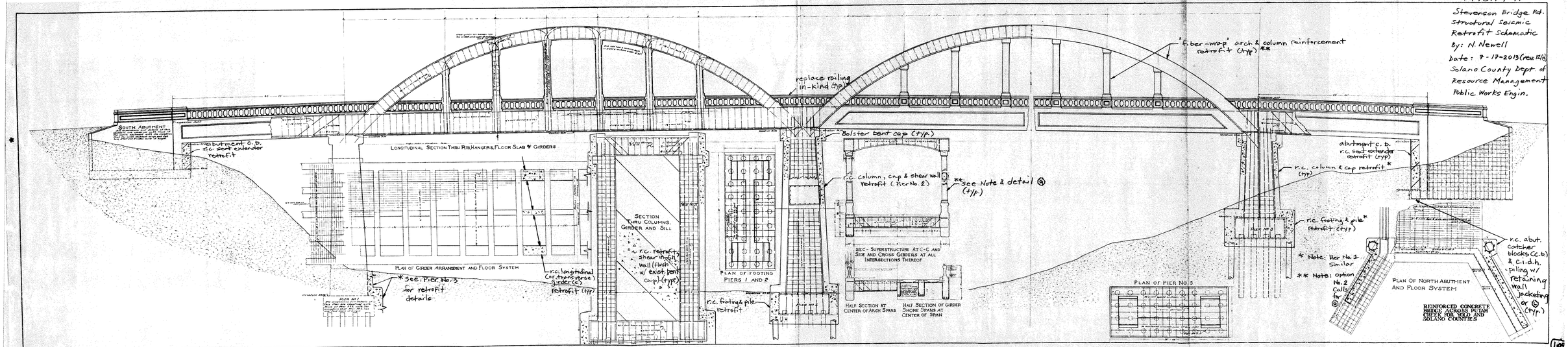
Photograph 7. Pier columns will be fiber wrapped and filled in with reinforced concrete shear walls. The piers are already partially filled in and adding a shear wall in between the pier columns would not detract from the character-defining structural and aesthetic features on the superstructure. View facing south.

Photograph 8. Footings at pier columns will be retrofitted. Detail view.

Appendix B. Plan of Proposed Activities

OPTION 1-A

Stevenson Bridge Rd.
Structural Seismic
Retrofit Schematic
By: N. Newell
Date: 7-17-2013 (rev 11/6)
Solano County Dept of
Resource Management
Public Works Engin.



Appendix C. Public Participation Documentation

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April 1, 2015

Solano County Genealogical Society
PO Box 2494
Fairfield, CA 94533

Subject: Stevenson Bridge Road, Bridge Rehabilitation Project
Solano County/Yolo County, CA
Federal Aid No. BRLS-5923(059)

Dear Solano County Genealogical Society:

Solano County (County), in conjunction with Yolo County, the California Department of Transportation (Caltrans), and the Federal Highway Administration (FHWA), is proposing to rehabilitate Bridge 23C0092 (Stevenson Bridge) over Putah Creek. Bridge 23C0092 is a two-lane, two-span, reinforce- concrete, through-arch bridge that crosses the Solano/Yolo County line at Putah Creek. The project location is approximately 5 miles west of the city of Davis and 8 miles east of the city of Winters. A map illustrating the project location is included as Attachment A and an inventory form providing a physical description and history of the bridge is included as Attachment B.

The County proposes to rehabilitate and seismically retrofit Bridge 23C0092 to correct its structural deficiencies and realign the south approach of Stevenson Bridge Road. Additional proposed project activities include a staging area; construction of an access road, a temporary creek crossing, and a traffic detour; and possible utility relocation as discussed in the current project description included as Attachment C.

The project would utilize federal funds; therefore, it must comply with Section 106 of the National Historic Preservation Act of 1966 (Section 106), as amended. Section 106 requires agencies overseeing undertakings that utilize federal funds to identify properties eligible for listing in the National Register of Historic Places (National Register) and work to avoid, minimize, or mitigate adverse effects that a project may have on those properties.

Section 106 is being completed by Caltrans according to the *First Amended Programmatic Agreement Among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act as it Pertains to the Administration of the Federal-Aid Highway Program in California*

(Section 106 PA) and its guidance in the Standard Environmental Reference, Volume 2 – Cultural Resources (see http://www.dot.ca.gov/ser/vol2/vol2.htm for additional information). Section 106 compliance activities to date include identification and evaluation efforts with the preparation of a Historic Property Survey Report (HPSR), which included an Archaeological Survey Report (ASR) by Tremaine & Associates, Inc. and a Historic Resources Evaluation Report (HRER) by Mead & Hunt, Inc. (Mead & Hunt). The HPSR and its attachments, ASR and HRER, were completed and approved by Caltrans District 4 on January 7, 2013. The date of State Historic Preservation Officer (SHPO) consultation and concurrence on the HPSR, ASR, and HRER occurred on February 5, 2013. One property eligible for the National Register within the area of potential effects has been identified: the Stevenson Bridge, which has been determined eligible for the National Register by Caltrans as part of its historic bridge inventory.

The County is currently working with Mead & Hunt to complete the preparation of a Finding of Effect (FOE) report that assesses whether proposed activities would adversely affect the historic features of the bridge. The County is working to develop an approach for rehabilitating the Stevenson Bridge in a manner consistent with rehabilitation following the Secretary of the Interior's Standards for the Treatment of Historic Properties (see http://www.nps.gov/tps/standards/rehabilitation.htm for more information on rehabilitation standards). In addition to the FOE, Caltrans requires that a Secretary of the Interior's Standards for the Treatment of Historic Properties Action Plan (Action Plan) be prepared. The next step is to prepare the Action Plan as part of the FOE report.

The Action Plan will outline the specific project activities and affected character-defining features of historic properties; the proposed treatment and how the proposed treatment meets the Secretary of the Interior's Standards; and any specific contractual language that may be required to ensure that construction contractors comply with the Action Plan. Further information on Caltrans' guidance on Action Plans can be found at http://www.dot.ca.gov/ser/vol2/ex_7_5_sois_plan.pdf.

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If you have any questions, please contact me at (707) 784-3155, or at nsburton@solanocounty.com.

Sincerely,

Nicholas S. Burton, P.E.
Engineering Services Supervisor

BILL EMLEN
Director
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TERRY SCHMIDTBAUER
Assistant Director
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DEPARTMENT OF RESOURCE MANAGEMENT

SOLANO COUNTY

Public Works – Engineering Services Division

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www.solanocounty.com

April 1, 2015

Solano County Historical Society
PO Box 3009
Fairfield, CA 94533

Subject: Stevenson Bridge Road, Bridge Rehabilitation Project
Solano County/Yolo County, CA
Federal Aid No. BRLS-5923(059)

Dear Solano County Historical Society:

Solano County (County), in conjunction with Yolo County, the California Department of Transportation (Caltrans), and the Federal Highway Administration (FHWA), is proposing to rehabilitate Bridge 23C0092 (Stevenson Bridge) over Putah Creek. Bridge 23C0092 is a two-lane, two-span, reinforce- concrete, through-arch bridge that crosses the Solano/Yolo County line at Putah Creek. The project location is approximately 5 miles west of the city of Davis and 8 miles east of the city of Winters. A map illustrating the project location is included as Attachment A and an inventory form providing a physical description and history of the bridge is included as Attachment B.

The County proposes to rehabilitate and seismically retrofit Bridge 23C0092 to correct its structural deficiencies and realign the south approach of Stevenson Bridge Road. Additional proposed project activities include a staging area; construction of an access road, a temporary creek crossing, and a traffic detour; and possible utility relocation as discussed in the current project description included as Attachment C.

The project would utilize federal funds; therefore, it must comply with Section 106 of the National Historic Preservation Act of 1966 (Section 106), as amended. Section 106 requires agencies overseeing undertakings that utilize federal funds to identify properties eligible for listing in the National Register of Historic Places (National Register) and work to avoid, minimize, or mitigate adverse effects that a project may have on those properties.

Section 106 is being completed by Caltrans according to the *First Amended Programmatic Agreement Among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act as it Pertains to the Administration of the Federal-Aid Highway Program in California*

(Section 106 PA) and its guidance in the Standard Environmental Reference, Volume 2 – Cultural Resources (see http://www.dot.ca.gov/ser/vol2/vol2.htm for additional information). Section 106 compliance activities to date include identification and evaluation efforts with the preparation of a Historic Property Survey Report (HPSR), which included an Archaeological Survey Report (ASR) by Tremaine & Associates, Inc. and a Historic Resources Evaluation Report (HRER) by Mead & Hunt, Inc. (Mead & Hunt). The HPSR and its attachments, ASR and HRER, were completed and approved by Caltrans District 4 on January 7, 2013. The date of State Historic Preservation Officer (SHPO) consultation and concurrence on the HPSR, ASR, and HRER occurred on February 5, 2013. One property eligible for the National Register within the area of potential effects has been identified: the Stevenson Bridge, which has been determined eligible for the National Register by Caltrans as part of its historic bridge inventory.

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Public Works – Engineering Services Division

April 1, 2015

Yolo County Historical Museum (Gibson House)
512 Gibson Road
Woodland, CA 95695

Subject: Stevenson Bridge Road, Bridge Rehabilitation Project
Solano County/Yolo County, CA
Federal Aid No. BRLS-5923(059)

Dear Yolo County Historical Museum:

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April 1, 2015

Yolo County Historical Society
PO Box 1447
Woodland, CA 95776

Subject: Stevenson Bridge Road, Bridge Rehabilitation Project
Solano County/Yolo County, CA
Federal Aid No. BRLS-5923(059)

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Public Works – Engineering Services Division

April 1, 2015

Historic Bridge Foundation
Attn: Ms. Kitty Henderson
PO Box 66245
Austin, TX 78766

Subject: Stevenson Bridge Road, Bridge Rehabilitation Project
Solano County/Yolo County, CA
Federal Aid No. BRLS-5923(059)

Dear Ms. Henderson:

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Public Works – Engineering Services Division

April 1, 2015

California Preservation Foundation
Attn: Ms. Cindy Heitzman
5 Third Street, Suite 424
San Francisco, CA 94103

Subject: Stevenson Bridge Road, Bridge Rehabilitation Project
Solano County/Yolo County, CA
Federal Aid No. BRLS-5923(059)

Dear Ms. Heitzman:

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Sincerely,

Nicholas S. Burton, P.E.
Engineering Services Supervisor

Attachments

A. Project Vicinity and Location Maps
B. Inventory Form for Stevenson Bridge
C. Current Project Description

cc: Mr. Jeffery Little, Sycamore Environmental Consultants, Inc.
Mr. Chad Moffett, Mead & Hunt, Inc.

Attachment A. Project Vicinity and Location Maps

Appendix A – Project Vicinity Map

HISTORICAL RESOURCES EVALUATION REPORT
Stevenson Road Bridge Rehabilitation Project at Putah Creek
Solano County, CA
Federal Project No.: BRLS-5923(059)

N 0 1 2 4 6 8 Miles

Mead & Hunt

Appendix A – Project Location Map

HISTORICAL RESOURCES EVALUATION REPORT
Stevenson Road Bridge Rehabilitation Project at Putah Creek
Solano County, CA
Federal Project No.: BRLS-5923(059)

N

0 100 200 400 600 800 Feet

Mead & Hunt

Attachment B. Inventory Form for Stevenson Bridge

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code:
Other Listings
Review Code Reviewer Date

***Resource Name or #:** Bridge 23C0092 **Caltrans Map Reference No.:** 1
P1. Other Identifier:
***P2. Location: *a. County** Solano County **County/Route/Postmile:** Stevenson Bridge Road
b. Address Stevenson Bridge Road over Putah Creek
City N/A **Zip**
***c. UTM: USGS Quad:** Merritt Quadrangle, 7.5 Minute, 1952 **d. UTM:**
***e. Other Locational Data (APN #)** N/A

***P3a. Description:** (Briefly describe resource below)
Bridge 23C0092 is a reinforced concrete, open spandrel, through, tied parabolic arch bridge with two spans. Each span measures 108 feet long. The total length of the bridge is 298 feet and includes two reinforced concrete girder approach spans, each 40 feet long. The two-lane bridge is 24.2 feet wide. The bridge features open reinforced concrete railing with rectangular rail and end posts; the bridge has no pedestrian walkways. Concrete finishes have a smooth texture. The bridge spans Putah Creek and connects Solano and Yolo Counties.

***P3b. Resource Attibutes:** HP19 - Bridge
****P4. Resources Present:** ___Building x Structure ___Object ___Site ___District ___Elements of District ___Other

P5a. Photograph or Drawing (Photograph required for buildings, structures, and objects.)

P5b. Description of Photo: West elevation, view northeast
***P6. Date Constructed/Age:** 1923
X Historic ___Prehistoric ___Both
***P7. Owner and Address:** Solano County, Department of Public Works, 675 Texas Street, Fairfield, CA 94533
***P8. Recorded by:** Mead & Hunt, Inc., 180 Promenade Circle, Suite 240, Sacramento CA 95834
***P9. Date Recorded:** 6/1/11
***P10. Type of Survey:** x Intensive ___Reconnaissance ___Other **Describe:**

***P11. Report Citation:** *Historic Resources Evaluation Report, Stevenson Bridge Road Rehabilitation Project at Putah Creek*, prepared by Mead & Hunt, Inc. for Solano County Department of Resource Management and Caltrans District 4, 2011.

***Attachments:** ___NONE ___Map Sheet x Continuation Sheet x Building, Structure and Object Record ___Linear Resource Record ___Archaeological Record ___District Record ___Milling Station Record ___Rock Art Record ___Artifact Record ___Photograph Record ___Other (List):

State of California — The Resources Agency: Primary #
DEPARTMENT OF PARKS AND RECREATION HRI#

BUILDING, STRUCTURE, AND OBJECT RECORD

Map Reference No.: 1

***Resource Identifier:** Bridge 23C0092 ***NRHP Status Code:** 2S2

B1. Historic Name: Stevenson Bridge

B2. Common Name: Stevenson Bridge **County/Route/Postmile:** Solano/Stevenson Bridge Road

B3. Original Use: Vehicular Road Bridge **B4. Present Use:** Vehicular Road Bridge

***B5. Architectural Style:** Concrete

***B6. Construction History:** Constructed 1923

***B7. Moved?** x No ___ Yes ___ Unknown **Date:** N/A **Original Location:** N/A

***B8. Related Features** (describe below):
None.

B9a. Architect: Asa Proctor, Yolo County Engineer and Surveyor **B9b. Builder:** J. L. Webster

***B10. Significance: Theme:** Transportation **Area:** Rural, Solano County

Period of Significance: 1923 **Property Type:** Bridge (HP 19) **Applicable Criteria:** C

Bridge 23C0092 was designed by Asa Proctor, who served as the Yolo County Engineer and Surveyor beginning in 1910. In his role as County Engineer, Proctor designed a number of bridges in the county to replace earlier wood bridges. Bridge 23C0092 is also known as the Stevenson Bridge or the Putah Creek Bridge, which references the creek crossing and A.M. and G.B. Stevenson, early Yolo County ranchers who were also directors of the Vaca Valley Railroad Company.

(see Continuation Sheet, page 3)

B11. Additional Resource Attributes: N/A

B12. References:
(see Continuation Sheet, page 3)

B13. Remarks:
None

B14. Evaluator: Chad Moffett and Carol Roland, Mead & Hunt, Inc.
180 Promenade Circle, Suite 240
Sacramento, CA 95834

Date of Evaluation: June 1, 2011

(This space reserved for official comments.)

(Sketch Map with north arrow required.)

See Sketch Map attached.

B10. Significance: (continued)

Bridge 23C0092 was identified in the "Bridges of Yolo County" Historic Resources Inventory as one of 14 historically significant bridges remaining in Yolo County. The bridges identified in the multiple resource listing represented the oldest, most architecturally significant, and unaltered bridges in the county. Bridge 23C0092 was evaluated in Caltrans' *Historic Bridge Inventory* as eligibile under *Criterion C* for listing in the National Register of Historic Places (National Register) as "a rare example of a reinforced concrete through tied arch in California as the oldest bridge of this type in California and possibly the United States." Bridge 23C0092 retains good phsycial integrity and no change in eligibility for Bridge 23C0092 is proposed.

Character-defining features of Bridge 23C0092 include the following:

- Structural features: Reinforced concrete arches tied to reinforced longitudinal girders. This feature also includes the reinforced concrete overhead braces connecting the arches and the vertical spandrel columns connecting the arches to the longitudinal girders (see Image 3 on Continuation Sheet, page 4).

- Aesthetic features: Open reinforced concrete railing, integrated between the vertical spandrel columns with scribed panels; flared solid concrete parapets with recessed panels over the wingwalls (see Image 2 on Continuation Sheet, page 4 and Image 4 on Continuation Sheet, page 5); and scribed panels located on the longitudinal girders (see Image 3 on Continuation Sheet, page 4).

The bridge has substantial amounts of graffiti found on most surfaces (see Image 5 on Continuation Sheet, page 5). According to Robert Lichtenstein, et.al, "Graffiti is an invariably personal, usually specific, and sometimes crude expression that can be linked with broader social conditions and thus can have considerable historical value." Graffiti as an act of cultural expression, often relating to social dissent, has been historically linked to groups ranging from the early Romans to Native Americans. In current culture, graffiti is associated with using spraypaint to create a personal marking on a surface. The style of graffiti present on the bridge, known as "tagging," has its roots in New York in the late 1960s. While Bridge 23C0092 has likely experienced graffiti for many years, the graffiti on the structure appears less than 50 years in age and does not contain evidence of text or artistic works associated with historic events or trends in history. As such, the graffiti is not considered a significant feature of the bridge under *Criterion A* of the National Register or *Criterion 1* of the California Register.

B12. References (continued)

Lichtenstein, Robert, Randy Baloian, Damon Haydu, and Barry Price. *Cultural and Paleontoligcal Resources Investigations for the Proposed Topaz Solar Farm, California Valley, San Luis Obispo County*. Prepared for First Solar, Inc., April 2010.

Lifer. "Birth and Evolution." *Graffiti*. Available at http://csdt.rpi.edu/subcult/grafitti/culture/Birth_and_Evolution.html (accessed 2 February 2011).

Les, Kathleen. Historic Resources Inventory Form, "The Bridges of Yolo County." *Bridge 23C0092 Form*. 1986.

"Inventory of Concrete Arch Bridges." *Bridge 23C0092 Form*. Prepared for Caltrans by JRP Historical Consultants, Inc., January 2003 as part of Caltrans' *Historic Bridge Inventory*.

The references above were consulted in the preparation of this DPR Form. A historic context and bibliography of sources consulted that assisted in the evaluation of this property are found in the *Historic Resource Evaluation Report, Stevenson Bridge Road Bridge Rehabilitation Project at Putah Creek*, prepared by Mead & Hunt, Inc. for the Solano County Department of Resource Management and Caltrans District 4 in 2011.

Image 2. South portal and wing walls, view facing north.

Image 3. West elevation, two-span, reinforced concrete, open spandrel arches, view facing east.

Image 4. Reinforced concrete railing with rectangular window rail design and smooth concrete finish, view facing southeast.

Image 5. South abutment, U-shaped abutment with graffiti, view facing south.

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

Primary #
HRI#
Trinomial

Resource Identifier: Bridge 23C0092 **Caltrans Map Reference No.:** 1
County/Route/Postmile: Solano/Stevenson Bridge Road
Map Name: Merritt USGS 7.5 Quad ***Scale:** 1:24,000 ***Date of Map:** 1992

State of California — The Resources Agency DEPARTMENT OF PARKS AND RECREATION **SKETCH MAP**	Primary # HRI# Trinomial

*Resource Identifier: Bridge 23C0092 **Caltrans Map Reference No.:** 1

County/Route/Postmile: Solano/Stevenson Bridge Road

*Drawn by: Aerial View *Date: June 10, 2011

Attachment C. Current Project Description

Project Description

The County proposes to rehabilitate and seismically retrofit Bridge 23C0092 and realign the south approach of Stevenson Bridge Road. Preliminary seismic assessment of the bridge showed that many of the existing structural components are unable to withstand seismic loads without seismic retrofitting. Flexural and shear demands exceeded the corresponding capacities of the existing structural elements, requiring retrofit or replacement of significant structural members in order for this bridge to remain serviceable after a credible seismic event. In addition, the hydraulic analysis determined that the substructure is scour critical and scour mitigation will be required to prevent further scour around the existing footings at pier locations. The conceptual seismic retrofit design and scour protection, as described below, will address these structural issues. The south approach must be realigned to meet current traffic safety standards but are primarily to be conducted along the existing road connecting to the bridge south of the existing bridge structure. Proposed project activities are as follows and will follow the Secretary of the Interior's Standards for the Treatment of Historic Properties (SOIS):

Bridge Superstructure Treatment

- Add fiber-wrapped jacketing on the arch ribs and spandrels to be located only in bridge arch support portions of the superstructure.
- Replace or fiber wrap one or more hanger columns to be located only in the bridge arch support portions of the superstructure.
- Strengthen exterior longitudinal girders and longitudinal and/or transverse interior girders by adding reinforced-concrete girders to be attached only on interior sides of existing girders. Addition of longitudinal and/or transverse interior girders will be directly underneath the bridge deck and will be utilized only if necessary.
- Remove and replace unsound concrete (all unsound, delaminated, and spalled areas) for the entire superstructure of the existing bridge (arches, spandrels, hanger columns, and girder locations), including the deck surface area. Caltrans Standard Specifications and Caltrans Standard Special Provisions that apply to remove and replace unsound concrete will be required for this seismic retrofit project.
- Surface preparation of the existing bridge for rehabilitation, including repair of unsound concrete (less than 1.5 percent of total surface area for existing bridge) and removal of biomass (moss or lichen), surface paint, or graffiti. Caltrans Standard Specifications and

Caltrans Standard Special Provisions that apply to surface preparation of the existing bridge for rehabilitation will be required for this seismic retrofit project.

- Replace concrete railings only for portions of existing railings outside of the reinforced-concrete bridge arches using State of California Department of Transportation approved vehicular barrier rail with surface treatment that meets the SOIS. Rehabilitation of existing railings only for portions of existing railings inside and in between the reinforced-concrete bridge arches.

Bridge Substructure Treatment

- Add fiber-wrapped or reinforced-concrete jacketing to Piers 2, 3, and 4 (unless structural design modelling study indicates replacement with same cross section of existing column supports).
- Connect existing Pier 2 columns with a reinforced-concrete shear wall to match existing faces of columns and bent cap.
- Reinforced-concrete jacketing of bent caps at pier locations.
- Retrofit footings with additional support pilings and reinforced-concrete jacketing at all pier all locations below the existing groundlines or buried under rip-rap (rock) scour protections, which would not be visible to the public.
- Construct up to two cast-in-drilled-holes (CIDH) pilings with pile cap (catcher block) at north abutment location and construct up to two CIDH pilings with pile cap (catcher block) at south abutment location.
- Add reinforced-concrete seat extenders at north and south abutment locations to be attached to face of existing abutments and new CIDH pile cap (catcher block) underneath the existing bridge deck and superstructure, only as determined necessary.
- Strengthen or replace the existing retaining wall on south abutment, as determined necessary. If determined necessary to replace retaining wall, the removal and replacement limits will remain the same; however, the ratio of reinforcing steel (non-visible) to concrete (visible on exterior faces) will be increased.
- Remove and repair unsound concrete (all unsound, delaminated, and spalled areas) for the entire support structure of the existing bridge (columns, bent caps, abutments, wingwalls, retaining wall, and footings). The amount of unsound concrete proposed for

removal and repair has been estimated to be less than 1.5 percent of the total surface area of the existing bridge structure (see Appendix B). Caltrans Standard Specifications and Caltrans Standard Special Provisions that apply to removal and repair of unsound concrete will be required for this seismic retrofit project.

- Install rip-rap (rock) scour protection measures around pier footings (with the extent of the scour protection measures, approximately 10 feet circumference of excavation immediately surrounding Piers 1, 2, and 3) and rip-rap slope protection on banks adjacent to abutment locations. Rip-rap will be placed after seismic retrofitting pile installation and concrete work activities have been completed. Any rip-rap needed for this project is to prevent scour at pier locations and to stabilize creek banks. This bridge was previously determined scour critical by Caltrans in 2008.

Bridge Approach Treatment

- Realign the road to the south of the existing bridge structure and add guardrail end treatments for crash protection to south and north approach to improve safety.

Road Approach Realignment Discussion – Realignment of Stevenson Bridge Road will eliminate two sharp turns just south and east of the bridge, one of which is approximately 90 degrees. The roughly 1,000-foot required road realignment will go through an existing orchard and transition onto the existing road alignment near Strathgordon Lane. The realigned road will comply with County standards and provide for safer vehicle passage. Realignment of the south approach will require right of way (ROW) acquisition from one privately owned parcel, APN 0107-020-040 (9415 Stevenson Bridge Road). Fill for the realignment will be needed to create the new roadway alignment within the Area of Potential Effects (APE). No buildings or other structures on the privately owned parcel will need to be relocated or removed as a result of the proposed realignment.

Staging Area Discussion – The area above the northeast creek bank between County Road 95A and the access road will be used as a staging area. General bridge construction equipment will be used including, but not limited to, haul trucks, backhoes, dump trucks, excavators, grade-alls, bulldozers, drilling equipment, chipping guns, pile drivers, pile drilling equipment, concrete delivery trucks and placement pumps, water trucks, and service vehicles.

Access Road and Temporary Creek Crossing Discussion – A temporary access road will be constructed on the east side of the bridge, on the north bank of Putah Creek, to access piers. The

access road will be composed of gravel and allow construction equipment to access the creek bed and the underside of the bridge between Piers 1 and 2, using culverts, or a temporary low-span bridge, or other approved method.

Traffic Detour Discussion – Road closure will be required during road realignment and bridge seismic retrofit and rehabilitation work. Traffic will be detoured for a portion of the total construction time using a detour loop along Stevenson Bridge Road, Sievers Road, Pedrick Road, Russell Boulevard, and County Road 95A, with a minimum easterly detour length of 9.4 miles via Pedrick Road crossing over Putah Creek and Russell Boulevard (Bridge No. 23C-0033) and a maximum westerly detour length of 13.7 miles via the I-505 crossing over Putah Creek using Putah Creek Road and Russell Boulevard.

Utility Relocation Discussion – Overhead poles with electric and telephone lines are located adjacent to the bridge and its approaches. It is uncertain whether the poles and lines will need to be relocated. If relocation is necessary, the utility companies will be required to move the utilities prior to construction.

Appendix D. Secretary of the Interior's Standards for the Treatment of Historic Properties Action Plan

SOIS Action Plan For Stevenson Bridge Rehabilitation Project			
Stage	**Responsible Parties** *denotes primary responsibility	**Task**	**Date Task Completed**
Pre-Construction	• Professionally qualified architectural historian meeting Caltrans PQS standards outlined in Attachment 1 of the Section 106 PA (Qualified Architectural Historian) • Local Agency Project Manager* • Local Agency Engineer • Contractor	The Local Agency will require the development of trial mock-ups to be completed by the contractor to evaluate the proposed repair/replacement concrete and fiber wrap activities as indicated in Section 4 of the FOE. The trial mock-ups will be provided to the Architectural Historian and/or the Caltrans Architectural Historian.	
	• Professionally qualified architectural historian meeting Caltrans PQS standards outlined in Attachment 1 of the Section 106 PA (Qualified Architectural Historian)* • Local Agency Project Manager • Local Agency Engineer	Trial mock-ups will be reviewed by a Qualified Architectural Historian and the selected result approved by the Caltrans Architectural Historian. Upon approval, the County will require the contractor to complete work following the mixing and finishing techniques from the approved mock-up.	
	• Local Agency Project Manager* • Local Agency Engineer • Qualified Architectural Historian	The Local Agency will submit the PS&E package, including special provisions, to Caltrans for review at the 35%, 65%, and 100% stages.	
	• Caltrans Architectural Historian* • Caltrans Environmental Branch Chief • Caltrans Local Assistance Engineer	The Caltrans Architectural Historian will review for approval the PS&E package at the 35%, 65%, and 100% stages to ensure that SOIS requirements for the project are clearly described and illustrated in the PS&E package.	
	• Caltrans Architectural Historian* • Caltrans Environmental Branch Chief • Caltrans Local Assistance Engineer	Caltrans Architectural Historian will ensure the SOIS Action Plan is included in Environmental Commitment Record (ECR).	

SOIS Action Plan For Stevenson Bridge Rehabilitation Project			
Stage	**Responsible Parties** *denotes primary responsibility	**Task**	**Date Task Completed**
	• Local Agency Project Manager* • Local Agency Engineer • Qualified Architectural Historian	The Local Agency will notify the Caltrans Architectural Historian that construction is commencing two weeks prior to commencement.	
During Construction	• Caltrans Local Assistance Environmental Planner*	The Caltrans Local Assistance Environmental Planner will conduct spot inspections as needed to ensure the ECR provisions are met.	
	• Local Agency Project Manager* • Local Agency Engineer • Qualified Architectural Historian	A Qualified Architectural Historian will review changes to ensure they are consistent with the SOIS for Rehabilitation. The Local Agency will submit any proposed project changes to the Caltrans Architectural Historian for review and approval.	
	• Caltrans Architectural Historian* • Caltrans Environmental Branch Chief • Caltrans Local Assistance Engineer • Caltrans Environmental Planner	The Caltrans Architectural Historian will review for approval any proposed project changes to ensure changes are consistent with the SOIS for rehabilitation. The other consulting parties will be notified of the approved changes.	
Post Construction	• Local Agency Project Manager* • Local Agency Engineer • Qualified Architectural Historian • Caltrans Local Assistance Environmental Planner	The Local Agency Project Manager will inform the Caltrans Architectural Historian when construction is complete.	
	• Qualified Architectural Historian* • Local Agency Project Manager • Local Agency Project Engineer	A Qualified Architectural Historian will complete updated DPR 523 forms and submit to Caltrans for review.	

SOIS Action Plan For Stevenson Bridge Rehabilitation Project			
Stage	**Responsible Parties** *denotes primary responsibility	**Task**	**Date Task Completed**
	• Caltrans Architectural Historian* • Caltrans Environmental Branch Chief • Caltrans Local Assistance Engineer	The Caltrans Architectural Historian will review and approve the updated DPR 523 forms.	
	• Qualified Architectural Historian* • Local Agency Project Manager • Local Agency Project Engineer	A Qualified Architectural Historian will submit the Caltrans approved DPR 523 forms to the Northwest Information Center.	
Responsible Parties	Caltrans Architectural Historian** Caltrans Environmental Branch Chief Caltrans Local Assistance Engineer Caltrans Environmental Planner Local Agency Project Manager Local Agency Engineer Qualified Architectural Historian*** Contractor **The Caltrans Architectural Historian must be a PQS Principal Architectural Historian. ***The Qualified Architectural Historian is a representative of the Local Agency and must meet the Secretary of the Interior's Professional Qualification Standards for Architectural History or Historic Architecture.		