

Appendix B. Avoidance, Minimization, and Mitigation Measures Identified in the Initial Study

The following avoidance, minimization, and mitigation measures were identified in the Initial Study prepared for the proposed project.

COAST GUARD CONDITIONS

1. The work shall be performed such that waterway traffic and navigational clearances are not affected, and the navigable depths are not impaired.
2. All flame or spark-producing welding, or other hazardous operations, shall be halted while vehicles are passing under the bridge.
3. Nothing may fall from the bridge or be deposited into the water. If anything is accidentally dropped into the water, immediate action shall be taken to remove it, and the waterway shall be cleared to the satisfaction of the Corps.
4. If temporary obstructions to navigation such as containment, scaffolding, catch barges, or other floating equipment become necessary, the proposal for such obstructions shall be provided to the Coast Guard Bridge Office at least 30 days in advance, for review and approval.
5. The Federal Water Pollution Control Act prohibits the discharge of oil, including oil-based paints, into the navigable waters of the United States. In the event of discharge, the responsible party shall immediately take action to halt the discharge and notify the National Response Center, U.S. Coast Guard, by calling (800) 424-8802. Failure to report such discharge may result in substantial fines, imprisonment, or both. The responsible party will be responsible for clean up costs, if any.
6. The Coast Guard office must be notified at least 2 weeks prior to beginning the work.
7. A Project Information Record must be completed and returned to the Coast Guard prior to beginning the work so the Coast Guard may contact the appropriate personnel to correct bridge deficiencies and hazards to navigation during the project.

AESTHETICS

1. The project will be designed to be visually compatible with the historic character of the bridge; see Cultural Resources.

2. Vegetated areas, disturbed by construction, shall be replanted; see Biological Resources.

AIR RESOURCES

1. Water exposed soil with adequate frequency to keep soil moist at all times.
2. Cover loads of haul/dump trucks securely.
3. Enclose, cover, or water twice daily any exposed piles of dirt, sand, gravel, or other construction debris.
4. At a minimum of three times per week, remove from all sidewalks/streets, all dirt and mud that has been generated from or deposited by construction equipment going to and from the construction site.
5. Revegetate disturbed areas immediately after the completion of construction to reduce erosion.
6. Construction activities shall comply with SMAQMD Rule 405 on dust and condensed fumes, so that emissions do not exceed hourly levels as regulated per processing weight.
7. Construction equipment shall be maintained and tuned at the interval recommended by the manufacturers to minimize exhaust emissions and odors and increase fuel efficiency.
8. Equipment idling shall be kept to a minimum when equipment is not in use. No piece of equipment shall be left to idle in one place for more than 30 minutes.
9. The contractor will be responsible for determining if any equipment requires a permit from either SMAQMD or YSAPCD. If a permit is required, the contractor will obtain it prior to construction.

BIOLOGICAL RESOURCES

1. Tree removal, if required, shall be conducted only outside the breeding season for migratory birds and raptors, including Swainson's hawk (generally between March 1 and August 15). If tree removal is required during the breeding season, before any trees are removed, the contractor shall hire a qualified biologist to conduct a focused nest survey for active migratory bird and raptor nests in the trees to be removed. If active migratory bird nests are found in the trees proposed to be removed, the contractor shall consult with the USFWS prior to any tree removal to develop a memorandum of understanding to promote the conservation of migratory bird populations. If an active raptor nest, including Swainson's hawk, is found, the contractor shall contact DFG prior to any tree removal to determine the need for a non-disturbance buffer or the need to monitor the nest. Removal of any active nest tree is expressly prohibited.

2. If construction activities are to occur during the breeding season for migratory birds and raptors, including Swainson's hawk (generally between March 1 and August 15), a qualified biologist shall conduct a focused nest survey during the spring or early summer (April through July) to determine the presence of active nests within 0.4 km (0.25 mi) of the project site. If any active migratory bird nests are found in this area, the contractor shall consult with the USFWS prior to construction activities to develop a memorandum of understanding to promote the conservation of migratory bird populations. If an active raptor nest, including Swainson's hawk, is found, the contractor shall contact DFG prior to construction to determine the need for a non-disturbance buffer or the need to monitor the nest.
3. The contractor is responsible for avoiding impacts on nesting swallows. Planned bridge work cannot harass or harm swallows, and this must be communicated to the contractor via the Special Provisions. Activities that result in the harassment or harm of swallows violate the Migratory Bird Treaty Act, and violations are punishable by a fine or jail time or both. A permit from DFG and USFWS is required if active nests are to be removed. Options for avoiding and minimizing impacts to swallows include the following:
 - a. Work outside the swallows nesting season (March to August).
 - b. If construction is to occur during the swallow nesting season, a qualified biologist is required to inspect the nests to ensure that no birds are using them. If the nests are abandoned, the contractor shall remove the nests before March 1 and either prohibit nesting during construction or actively discourage nesting as described below.
 - c. The contractor may prohibit nesting by covering the outside of the bridge with mesh net or poultry wire to prevent the swallows from having access to the structure to construct new nests. The netting or poultry wire must be sized to prohibit access to the bridge (recommended size is 1.3 to 1.9 centimeters, or 0.5 to 0.75 inch). The netting also must be anchored so that swallows cannot attach their nests to the bridge through gaps in the net. All net installation shall occur before March 1.
 - d. The contractor may actively discourage nesting by knocking down the old nests before the start of nesting season and keeping the nests knocked down throughout the nesting season. After nesting season begins, partially constructed nests will need to be knocked down every 2–3 days. After a nest is completed, it can no longer be removed until nesting season is over.
 - e. The contractor may stage the work so that the work that brings the contractor close to swallow nests can be accomplished before the start of nesting season or after nesting season.
4. Before any ground-disturbing activity or any activity on the banks of the river, the contractor shall be required to install a minimum 1.2-m- (4-ft-) high temporary plastic mesh-type construction fence (Tensor Polygrid or equivalent) around the dripline of trees and riparian vegetation to be protected without hindering construction activities. This fencing will delineate the maximum extent of ground disturbance and protect existing

vegetation. The exact location of the fencing will be determined by a qualified biologist with the goal of protecting sensitive biological resources and prohibiting access by northwestern pond turtles. The fencing will be tightly strung on posts with a maximum 3-m (10-ft) spacing. The fencing will be installed in a manner to prevent any equipment from unnecessarily extending the work area beyond that necessary to complete the work. The fencing shall be checked and maintained weekly until all construction is complete.

5. The Special Provisions shall prohibit any storage, parking, or construction staging in the riparian corridor.
6. The contractor is responsible for avoiding impacts on bats that may be using the bridge. A qualified bat biologist shall conduct visual or acoustic surveys or both during the spring, summer, and fall before the start of construction and again periodically during the construction season to document bat activity and types of bat roosts at Tower Bridge. Bat surveys shall be conducted at least once during each of the seasons mentioned above using a combination of survey methods as described below:
 - a. Visual inspection of the bridge and associated structures for bat signs, such as urine stains and guano.
 - b. Emergence surveys to determine an estimate of roosting bat numbers.
 - c. Acoustic surveys to attempt to identify bat species using the bridge.

If bats are found, the contractor shall consult with Caltrans and DFG to determine measures to minimize temporary impacts during construction. These measures may include excluding bats from the bridge, avoiding work near bat roosts, conducting construction activities during the time of day that surveys predict the least degree of impacts on bats, and/or constructing and placing bat boxes near the bridge.

7. The contractor shall avoid and minimize potential temporary and permanent impacts on aquatic species. Actions that will be prohibited by the Special Provisions include the following:
 - a. No equipment or materials will be allowed in the flowing water of the Sacramento River except for barges that may be required for construction.
 - b. Ground disturbance will be minimized.
 - c. Caltrans requires construction contractors to implement standard procedures and practices that are intended to reduce impacts on water quality associated to roadway-related construction. Implementation of these standard procedures and practices would substantially reduce or eliminate most of the potential impacts that could otherwise be associated with project construction. These procedures and practices are included in the construction contract documents through reference to Caltrans' Standard Specifications, and inclusion of measures identified in Caltrans' Standard Specifications for water pollution control. Additional procedures and practices are also described in the Caltrans Storm Water Quality Handbooks Construction

Contractor's Guide and Specifications. These procedures and practices were developed to comply with the NPDES storm water permit program.

8. The contractor shall prepare and implement a spill prevention program that includes the following measures:
 - a. All materials and fluids that may be harmful to the aquatic system will be stored in staging areas that are more than 7.62 m (25 ft) away from the river.
 - b. The contractor shall have on hand absorbent material to be used in case of accidental spills.
 - c. All construction equipment must be in good working order, must be clean of significant fuel and lubrication, and must not have leaks.
9. The contractor shall avoid any impacts on trees and shall be responsible for damage to trees. Any trees damaged during construction activities shall be assessed by a qualified arborist using the International Society of Arboriculture appraisal guide. The contractor's responsibility for damaged trees shall be determined by Caltrans.
10. Tree removal shall be strongly discouraged by the Special Provisions and shall be avoided to the maximum extent possible. Any native tree removed as a result of the project shall be compensated for consistent with City of Sacramento or City of West Sacramento ordinance requirements. If any native trees are removed, a planting plan prepared by a licensed landscape architect with experience with riparian plantings in the Sacramento area shall be required. Replacement trees shall be of the same species as those removed. Replacement trees shall be planted at the project site. Monitoring of the planting plan shall be conducted annually for 5 years with a goal of 80% survival. If fewer than 80% of the replacement trees have survived at the end of the 5-year monitoring period, replanting and an additional 5 years of monitoring shall be conducted.
11. The contractor shall be responsible for avoiding the introduction of new noxious weeds or the spread of weeds documented at the project site. Measures that will be incorporated into the Special Provisions include:
 - a. Ground disturbance will be minimized.
 - b. Seed disturbed areas with certified weed-free native and nonnative mixes. Any mulch used during the project will be certified weed-free mulch.
 - c. Any construction equipment to be used on the banks of Sacramento River will be cleaned immediately prior to transporting into the project site.
 - d. Immediately after construction, a follow-up inventory of the construction area will occur to verify that construction activities have not resulted in the introduction of new noxious weed infestations. If new noxious weed infestations are located during the follow-up inventory, small, isolated infestations will be treated with approved

eradication methods at an appropriate time to prevent and/or destroy viable plant parts or seed.

CULTURAL RESOURCES

1. If subsurface archaeological or historical remains are discovered during construction, work in the area shall stop immediately and a qualified archaeologist and a representative of the Native American Heritage Commission shall be consulted to develop, if necessary, further mitigation measures to reduce any archaeological impact to a less-than-significant level before construction continues.
2. If human burials are encountered, all work in the area shall stop immediately and the Sacramento County Coroner's office shall be notified immediately. If the remains are determined to be Native American in origin, both the Native American Heritage Commission and any identified descendants must be notified and recommendations for treatment solicited (CEQA Section 15064.5); Health and Safety Code Section 7050.5; Public Resources Code Sections 5097.94 and 5097.98.

GEOLOGY AND SOILS

1. As a matter of standard practice, a Storm Water Pollution Prevention Plan (SWPPP) will be prepared prior to construction and implemented throughout construction activities. Typical elements of a SWPPP include the following; a site-specific SWPPP will be prepared by the contractor prior to construction.
2. Existing vegetation will be retained where possible.
3. Temporary erosion control measures will be used for disturbed areas.
4. The contractor will be required to comply with the Sacramento City Code to prevent erosion of soils during construction (Ordinance 15.88.250). This ordinance requires the project applicant to show erosion and sediment control methods on the improvement plans. These plans also show the methods to control urban runoff pollution from the project site during construction. In addition, the majority of the proposed project site will be built, landscaped, and paved on completion of the project, which will help prevent erosion.

HAZARDS AND HAZARDOUS MATERIALS

1. The contractor shall provide full containment of the work area to ensure that the hazardous paint is contained and removed from the project site.
2. Coordination shall be made with the County of Sacramento Environmental Management Department, Hazardous Materials Division, and the necessary applications shall be filed.
3. All hazardous materials shall be disposed of at an approved disposal site and shall only be hauled by a current California registered hazardous waste hauler using correct manifesting procedures and vehicles displaying a current Certificate of Compliance. The Contractor shall identify by name and address the site where toxic substances shall be disposed of. No payment for removal and disposal services shall be made without a valid certificate from the approved disposal site that the material was delivered.
4. If contaminated soil and/or groundwater is encountered or if suspected contamination is encountered during project construction, work shall be halted in the area, and the type and extent of the contamination shall be identified. A qualified professional, in consultation with the appropriate federal, state, and/or local regulatory agencies, shall then develop an appropriate method to remediate the contamination.

HYDROLOGY AND WATER QUALITY

1. A containment system will be installed beneath the deck of the bridge. The planking, suspended by cables, will be covered with plastic to create a catch basin that will collect all the water, dirt, debris and paint that will be generated during widening of the sidewalks. This debris will be pumped out of the containment system, placed into 55-gallon drums and hauled off to an approved disposal site. A similar containment system will be developed on the ground for the approaches and the areas of the bridge where there is not enough clearance beneath the bridge for the suspended system. The contractor will be using sandbags and viscaine to create a catch basin from which they will pump the debris following the construction process. If the containment system beneath the approach spans requires the use of sandbags or plastic to create a catch basin, this may be considered "fill" by the Corps and trigger the need for a Section 404 permit and a Section 401 water quality certification.
2. Also included in the water quality permits and the standard Caltrans best management practices are spill prevention measures which require the following;
 - a. All materials and fluids that may be harmful to the aquatic system will be stored in the staging areas which are more than 7.62 m (25 ft) away from the river.
 - b. The contractor will have on hand absorbent material to be used in case of accidental spills.

- c. All construction equipment must be in good working order and clean of significant fuel and lubrication and is not to have leaks.

NOISE

1. Vehicles and other gas- or diesel-powered equipment shall be prohibited from unnecessary warming up, idling, and engine revving.
2. Construction activities shall comply with the City of Sacramento and City of West Sacramento noise ordinances.

TRANSPORTATION/TRAFFIC

1. Design plans will be prepared and submitted to Caltrans. Caltrans will coordinate with the cities and as necessary with the counties to ensure that traffic disruption is minimized during construction.
2. The contractor shall prepare a traffic management plan (TMP) and submit it to Caltrans and the Cities for review and approval. The TMP may include the following provisions:
 - a. Construction plans which detail specific roadway construction information; haul routes; signing for closures and/or detours; and public notification identifying location, scheduling, and duration of construction activities.
 - b. Traffic routing plans which address the specific requirements for traffic control, including construction timing for specific areas and traffic detours.
 - c. All public service agencies will be notified as to construction times and lane closures as well as lift span work.
 - d. Consideration will be given to minimizing traffic problems during the peak hour periods of 7:00 to 9:00 a.m. and 3:00 to 7:00 p.m.
 - e. As feasible, work on the lift span that requires the lift span to be in the elevated position will not be conducted from November 20 to January 10 to minimize economic effects on downtown Sacramento and will not be conducted during the baseball season (generally April through August).
 - f. Construction activities shall be coordinated with events at Raley Field to minimize conflicts with such events, as feasible.
 - g. Standard construction warning signs shall be installed in advance of the construction and at any intersection that provides access to the construction corridor.

- h. Affected businesses shall be notified several days in advance about any potential road closure.
 - i. The City of Sacramento, City of West Sacramento, and Caltrans shall be kept informed of the construction schedule.
 - j. Construction activities shall be coordinated with other projects on Tower Bridge, including the redecking project.
 - k. Prior to construction, the contractor will notify the Sacramento Regional Transit and the Yolo Regional Transit District of construction on the bridge and the resulting limited access. During construction activities not involving the lift span, at least two travel lanes shall remain open in each direction when feasible. Travel lanes shall be delineated by temporary traffic cones/barricades. Flag persons should control all directions of traffic, if necessary.
3. When only two lanes of travel on the bridge are open at one time, the lanes will be wide enough to accommodate Regional Transit vehicles.