

## APPENDIX C: MITIGATION MEASURES

### General Avoidance Measures

The high-speed rail (HSR) design was refined to avoid certain types of adverse effects, specifically noise and vibration. Adverse noise and vibration effects on historic properties could occur during construction activities and during operation of the HSR system. The following general avoidance measures have been developed to avoid effects on multiple historic properties on the HSR system. The adverse effects identified for the Robertson Boulevard Tree Row do not include noise and vibration concerns, so the general avoidance measures described subsequently would not apply to that historic property. Noise and vibration effects may be of concern for as-yet unevaluated historic architectural resources that may be found eligible once the phased identification procedures included in the built environment treatment plan (BETP) are implemented.

#### General Avoidance Measure #: Noise Effects

Operations noise has the potential to cause indirect adverse effects on historic properties that have an inherent quiet quality that is part of a property's historic character and significance (36 CFR 800.5[a][2][iv] and [v]). The objective of this treatment is to develop design solutions or construction methods to minimize adverse operations noise effects on historic properties that have qualities that make them sensitive noise receptors. The primary requirement of this treatment is to document the consideration of operations noise reduction methods and an assessment of the reduction of operations noise levels associated with the alternative designs. If alternatives are deemed infeasible, or would not notably reduce noise effects, this would be clearly explained in a technical memorandum for use in conferring with the Memorandum of Agreement (MOA) consulting parties.

#### General Avoidance Measure #2: Vibration Effects

Steps to address potential adverse effects on historic properties would include developing methods to avoid construction vibration effects. Potential structural damage caused by construction vibration is anticipated only from impact pile driving very close to buildings. Vibration from impact pile driving during construction could reach up to 0.12 inch per second peak particle velocity, or approximately 90 root mean square vibration velocity level, decibels, at 135 feet from the Central Valley Wye centerline. This level could cause the physical destruction, damage, or alteration of historic properties within 135 feet. Because impact pile driving could cause indirect adverse effects, alternative construction methods causing vibration of less than 0.12 inch per second peak particle velocity would be employed near historic properties, or California Environmental Quality Act (CEQA) historical resources, located within 135 feet of the centerline. Implementation of this condition (development of alternative construction methods) would minimize adverse vibration effects on historic properties.

### General Mitigation Measures

The following general mitigation measures have been developed to mitigate effects on multiple historic properties along the HSR system. The BETP for the Merced to Fresno Section includes detailed direction for conditions and treatments for the Robertson Boulevard Tree Row (Map ID 423), including property-specific guidance for conducting each of the general mitigation measures described in the remainder of this appendix. These measures may also need to be applied to yet unevaluated historic architectural resources that may be found eligible once the phased identification procedures included in the BETP are implemented. If newly identified built historic properties would be adversely affected, the BETP would be amended to describe how these general mitigation measures or other property-specific measures would be implemented.

#### General Mitigation Measure #1: Plan for Repair of Inadvertent Damage

A plan for repair of inadvertent damage would be prepared and implemented as a treatment to minimize inadvertent adverse effects on historic properties caused by construction activities. The plan content would be detailed in the BETP and developed before construction begins. The plan

would use any survey or pre-construction photographic documentation prepared for the property as part of the baseline condition for assessing damage. The plan would describe the protocols for documentation of inadvertent damage (should it occur), as well as notification, coordination, and reporting to the State Historic Preservation Officer (SHPO) and the owner of the historic property. The plan would direct that inadvertent damage to historic properties be repaired in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties (U.S. Department of the Interior 1995). The plan would be developed in coordination with the California High-Speed Rail Authority (Authority) and the Federal Railroad Administration (FRA), and would be submitted to the SHPO for review and comment.

## **General Mitigation Measure #2: Recordation and Documentation of Historic Properties**

Historic properties that would be physically altered, damaged, relocated, or destroyed by the selected Central Valley Wye alternative would be documented in detailed recordation that includes photography. This documentation may consist of preparation of updated recordation forms (DPR 523), or may be consistent with the Historic American Buildings Survey, the Historic American Engineering Record, or the Historic American Landscape Survey programs; a Historic Structure Report; or other recordation methods detailed in the BETP. The recordation undertaken by this treatment would focus on the aspect of integrity and significance that would be affected for each historic property subject to this treatment. For example, historic properties in an urban setting that would experience an adverse visual effect would be photographed to capture exterior and contextual views; interior spaces would not be subject to recordation if they would not be affected. Consultation with the SHPO and the consulting parties would be conducted for the historic architectural resources to be documented. Recordation documents would follow the appropriate guidance for the recordation format and program selected.

Before construction, consultation would be initiated with the SHPO and other relevant parties to the Memorandum of Agreement (MOA) to identify the appropriate type of documentation. In general, photography would capture views of the historic property from multiple views and could include reproduction of historic images as well. All fieldwork necessary for photographic documentation, architectural or engineering drawings, cartography, and digital recordation through geographic information systems or global positioning systems would be completed before construction begins. The written data would include a historic narrative for the historic property that would use inventory, evaluation, and nomination documents to the extent possible.

Preparation of the photo documentation may require coordination with an interdisciplinary team, which may include an architectural historian, a historian, and a photographer. The BETP would detail the required personnel and qualification standards for these preparers. The Authority and FRA would submit the documentation to the SHPO for review and comment. The BETP would also identify the distribution of printed and electronic copies of the photo documentation, as well as permanent archival disposition of the record, if applicable.

## **Measures and Conditions Proposed to Avoid Adverse Effects on Unknown Historic Properties**

As stipulated in the Section 106 Programmatic Agreement (PA), Section VI.E, phased identification may occur in situations where the identification of historic properties cannot be completed during the environmental review process. Archaeological survey of the entire area of potential effects (APE) has not been completed due to property access restrictions. Additionally, survey of a portion of the built environment APE has not been conducted due to property access restrictions. Identification efforts would be completed following approved phased identification strategies stipulated in the Section 106 PA, Merced to Fresno MOA, and Merced to Fresno Archaeological Treatment Plan (Authority and FRA 2011, 2013a, 2013b).

The Authority would implement mitigation measures (**CUL-MM#1**, **CUL-MM#2**, and **CUL-MM#3**) to reduce the potential effects on unknown historic properties that may be encountered during phased identification.

### **CUL-MM#1: Amend Archaeological and Built Environment Treatment Plans**

As required by the MOA, the ATP would be amended as needed by the Authority, in consultation with the signatories to the MOA, and would be consistent with the requirements of the PA Stipulation VIII.B. The ATP amendment would identify specific steps and responsible parties for MOA compliance; for example, the roles and qualifications of staff; a process consistent with Section 106 and the PA; summary of archaeological resources and anticipated archaeological types; expectations for survey design; excavation strategy; relevant research questions; a monitoring plan specifying protocols of monitoring; reporting requirements; curation planning.

The BETP amendment would detail treatment measures for historic properties located within the APE that would be adversely affected by the project or have the potential to be damaged by construction activities. It would include, at a minimum, treatments to reduce adverse impacts and would include treatments to be employed before, during, or after construction. Implementation would be coordinated with the construction schedule; the related timing requirements would be included in the BETP.

This mitigation measure is anticipated to be effective because the identification of these steps provides guidance and the procedure necessary to reduce potential impacts on archaeological and historic architectural resources identified during survey or construction. Implementation of this measure would not trigger secondary environmental impacts because it would not change the scope, scale, or location of construction activities beyond those that have been described as part of the Central Valley Wye alternatives.

### **CUL-MM#2: Mitigate Adverse Impacts on Archaeological and Built Environment Resources Identified During Phased Identification. Comply with the Stipulations Regarding the Treatment of Archaeological and Historic Built Resources in the PA and MOA**

Once parcels are accessible and surveys have been completed (CUL-IAMF#3, Preconstruction Cultural Resource Surveys), including consultation as stipulated in the MOA, additional archaeological and built environment resources may be identified. For newly identified eligible properties that would be adversely affected, the following process would be followed, which is presented in detail in the BETP and ATP:

- The Authority would consult with the MOA signatories and consulting parties to determine the preferred treatment of the properties/resources and agree upon appropriate mitigation measures.
- For California Register of Historical Resources (CRHR)-eligible archaeological resources, the Authority would determine if these resources can feasibly be preserved in place, or if data recovery is necessary. The methods of preservation in place would be considered in the order of priority provided in CEQA Guidelines section 15126.4(b)(3). If data recovery is the only feasible treatment, the Authority would adopt a data recovery plan as required under CEQA Guidelines section 15126.4(b)(3)(C).
- Should data recovery be necessary, the contractor's principal investigator, in consultation with the MOA signatories and consulting parties, would prepare a data recovery plan, and, upon approval from the MOA signatories, would undertake data recovery.
- For archaeological resources the Authority would also determine if the resource is a unique archaeological site under CEQA. If the resource is not an historical resource but is an archaeological site the resource would be treated as required in California Public Resources Code 21083.2 by following protection, data recovery, and other appropriate steps outlined in the ATP. The review and approval requirements for these documents is outlined in the ATP.
- For historic built resources, the contractor's principal investigator would amend the BETP to include the treatment and mitigation measures agreed upon in consultation between the MOA signatories and consulting parties. The contractor's principal investigator would implement the treatment and mitigation measures accordingly.

### **CUL-MM#3: Halt Work in the Event of an Archaeological Discovery and Comply with the PA, MOA, ATP, and all State and Federal Laws, as Applicable**

Should there be an unanticipated discovery during construction (any ground-disturbing activities), the contractor would follow the procedures for unanticipated discoveries as stipulated in the PA, MOA, and associated ATP. The procedures must also be consistent with the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 Fed. Reg. 44716-42), as amended (National Park Service) and Guidelines for the Implementation of CEQA, as amended (Title 14 Cal. Code Regs. Chapter 3, Article 9, Sections 15120-15132). Should the discovery include human remains, the contractor, Authority, and FRA would comply with federal and state regulations and guidelines regarding the treatment of human remains, including relevant sections of Native American Graves Protection and Repatriation Act (California Health and Safety Code, § 8010 et seq.; and California Public Resources Code (CPRC) § 5097.98); and consult with the Native American Heritage Commission, tribal groups, and the SHPO.

- In the event of an unanticipated archaeological discovery, the contractor would cease work in the immediate vicinity of the find, based on the direction of the archaeological monitor or the apparent location of cultural resources if no monitor is present. If no qualified archaeologist is present, no work can commence until it is approved by the qualified archaeologist in accordance with the MOA, ATP, and monitoring plan. The contractor's qualified archaeologist would assess the potential significance of the find and make recommendations for further evaluation and treatment as necessary. These steps may include evaluation for the CRHR and National Register of Historic Places (NRHP) and necessary treatment to resolve significant effects if the resource is an historical resource or historic property. If, after documentation is reviewed and approved by the Authority and FRA, and the SHPO concurs that the resource is eligible for the NRHP, or the Authority determines it is eligible for the CRHR, preservation in place would be considered by the Authority in the order of priority provided in CEQA Guidelines section 15126.4(b)(3) and in consultation with the signatories and consulting parties to the MOA. If data recovery is the only feasible mitigation the contractor's qualified principal investigator would prepare a data recovery plan as required under CEQA Guidelines § 15126.4(b)(3)(C), the MOA, and ATP, for the Authority's approval.

The contractor would notify the Authority, who would notify the California State Lands Commission (CSLC), if the find is a cultural resource on or in the submerged lands of California and consequently under the jurisdiction of the CSLC. The Authority would comply with all applicable rules and regulations promulgated by CSLC with respect to cultural resources in submerged lands.

If human remains are discovered on state-owned or private lands, the contractor would contact the relevant county coroner to allow the coroner to determine if an investigation regarding the cause of death is required. If no investigation is required and the remains are of Native American origin, the Authority would contact the Native American Heritage Commission to identify the most likely descendant. The most likely descendant would be empowered to reinter the remains with appropriate dignity. If the most likely descendant fails to make a recommendation the remains would be reinterred in a location not subject to further disturbance and the location would be recorded with the Native American Heritage Commission and relevant information center of the California Historical Resources Information System.

If human remains are part of an archaeological site, the Authority and contractor would, in consultation with the MLD and other consulting parties, consider preservation in place as the first option, in the order of priority called for in CEQA Guidelines section 15126.4(b)(3).

In consultation with the relevant Native American tribes, the Authority may conduct scientific analysis on the human remains if called for under a data recovery plan and amenable to all consulting parties. The Authority would work with the most likely descendant to satisfy the requirements of California Public Resources Code section 5097.98. Performance tracking of this mitigation measure would be based on successful implementation and approval of the documentation by the SHPO and appropriate consulting parties.

## Property-Specific Measures and Conditions Proposed to Avoid Adverse Effects on Historic Properties

*California High-Speed Rail Statewide Draft Project Environmental Impact Report/ Environmental Impact Statement, Appendix 2-B, Impact Avoidance and Minimization Features* (Authority and FRA 2017a) describes planning requirements to avoid impacts on cultural resources. Mitigation measures were presented in the Merced to Fresno Section MOA (Authority and FRA 2012) for historic properties affected by the Merced to Fresno Section, including the Robertson Boulevard Tree Row. The Draft Supplemental EIR/EIS (Authority and FRA 2017b) describes mitigation measures for historic properties in the Central Valley Wye alternatives and electrical interconnections and network upgrades (EINU), and these measures are described in *Measures and Conditions Proposed to Avoid Adverse Effects on Unknown Historic Properties* of this appendix.

All Central Valley Wye alternatives would result in partial destruction of a portion of one known historic resource, the Robertson Boulevard Tree Row, this effect under Section 106 would be adverse. The Authority would review the mitigation measures identified for the resource as outlined in the Merced to Fresno MOA and further consult with the signatories and interested parties on the appropriateness of all mitigation. The mitigation measures as currently determined (**CUL-MM#4 Mitigation for Permanent Demolition, Destruction, Relocation, or Alteration of Historic Architectural Resources or Setting—Robertson Boulevard Tree Row**) would help reduce effects but they cannot fill in all the gaps in the tree row at the interchange and where the HSR would cross Robertson Boulevard or where subsequent road improvements are proposed.

If any additional historic architectural resources are discovered in the APE in the course of the surveys on as-yet inaccessible land, the Central Valley Wye alternatives' design stipulates that a plan for the protection of historic built resources and repair of inadvertent damage may be required by the MOA prior to construction (CUL-IAMF#6, Preconstruction Conditions Assessment, Plan for Protection of Historic Built Resources, and Repair of Inadvertent Damage). The plan would identify protective measures implemented prior to construction and protocols to r and repair inadvertent adverse effects on historic properties potentially caused by construction activities.

Further, the Authority requires that the built environment monitoring plan be amended prior to construction and implemented prior to ground-disturbing activities to describe the properties that would require monitoring, the type of activities or resources that would require full-time monitoring or spot checks, the required number of monitors for each construction activity, and the parameters that would influence the level of effort for monitoring (CUL-IAMF#7, Built Environment Monitoring Plan). These monitoring procedures would reduce the potential for inadvertent effects on historic architectural resources. Any potential vibration effects on as-yet-unidentified historic architectural resources would be avoided by the Central Valley Wye alternatives' design, which would require implementation of the protection measures developed in the plan for protection of historic resources and repair of inadvertent damage and in the built environment treatment plan (CUL-IAMF#8, Implement Protection and Stabilization Measures). These measures would include alternative construction methods for addressing potential vibration effects on historic properties during construction.

## References

Authority	California High-Speed Rail Authority
FRA	Federal Railroad Administration

- California High-Speed Rail Authority (Authority) and Federal Railroad Administration (FRA). 2011. *Programmatic Agreement among the Federal Railroad Administration, Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California High-Speed Rail Authority Regarding Compliance with Section 106 of the National Historical Preservation Act as it Pertains to the California High-Speed Train Project (PA)*. Sacramento and Washington, DC.
- . 2012. *California High-Speed Train Merced to Fresno Section: Memorandum of Agreement for the Treatment of Adverse Effects on Historic Properties under Section 106 of the National Historic Preservation Act. Record of Decision, Appendix A*. Sacramento and Washington, DC.
- . 2013a. *California High-Speed Train Merced to Fresno Section Memorandum of Agreement (MOA)*. Sacramento and Washington, DC.
- . 2013b. *California High-Speed Train Merced to Fresno Section Memorandum of Agreement 2-Attachment 2 Archaeological Treatment Plan (ATP)*. Sacramento and Washington, DC.
- . 2017a. *California High-Speed Rail Statewide Draft Project Environmental Impact Report/Environmental Impact Statement Appendix 2-B Impact Avoidance and Minimization Features*. Sacramento and Washington, DC.
- . 2017b. *California High-Speed Rail Merced to Fresno Section: Central Valley Wye Draft Supplemental Environmental Impact Report/Environmental Impact Statement*. Sacramento and Washington, DC.
- U.S. Department of the Interior. 1995. *Secretary of the Interior's Standards and for the Treatment of Historic Properties*. National Park Service; Washington, D.C.