Transbay Terminal/Caltrain Downtown Extension/Redevelopment Project
FEIS/FEIR Mitigation Monitoring and Reporting Program

UPDATED MITIGATION MEASURES PRESENTED AND ANALYZED IN FINAL EIS/EIR AS ADOPTED

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1. WIND

See discussion of wind impacts in Section 5.1.2 of the Final EIS/EIR. Mitigation measures include:

W 1 – The San Francisco Redevelopment Agency (Agency) shall consider potential wind effects of an individual project for the Redevelopment area. If necessary, perform wind tunnel testing in accordance with City Planning Code Section 148. If exceedences of the wind hazard criterion should occur for any individual project, require design modifications or other mitigation measures to mitigate or eliminate these exceedences. Tailor mitigation measures to the individual needs of each project. Examples of mitigation measures include articulation of building sides and softening of sharp building edges.

2. PROPERTY ACQUISITION/RELOCATION

See discussion of property acquisition impacts, Section 5.2 of the Final EIS/EIR. Mitigation measures include:

Prop 1 – TJPA shall apply federal Uniform Relocation Act (Public Law 91-646) and California Relocation Act (Chapter 16, Section 7260 et seq. of the Government Code) and related laws and regulations governing both land acquisition and relocation. All real property to be acquired will be appraised to determine its fair market value before an offer is made to each property owner. (Minimum relocation payments are detailed in the laws, and include moving and search payments for businesses.) Provide information, assistance, and payments to all displaced businesses in accordance with these laws and regulations.

3. SAFETY AND EMERGENCY SERVICES

See discussion of safety and emergency services, Section 5.4 of the Final EIS/EIR. Mitigation measures include:

Saf 1 – TJPA shall provide Project plans to the San Francisco Fire Department for its review to ensure that adequate life safety measures and emergency access are incorporated into the design and construction of Project facilities.

Saf 2 – TJPA shall prepare a life safety plan including the provision of on-site measures such as a fire command post at the Terminal, the Fire Department's 800-megahertz radio system and all necessary fire suppression equipment.

Saf 3 – TJPA shall prepare a risk analysis to accurately determine the number of personnel necessary to maintain an acceptable level of service at Project facilities.

4. NOISE – OPERATIONS

See discussion of noise impacts, Section 5.8 of the Final EIS/EIR. Mitigation measures include:

NoiO 1 – TJPA shall apply noise mitigation at the following locations adjacent to the bus storage facility:

- Provide sound insulation to mitigate noise impacts at the residences north of the AC Transit Facility at the corner of Perry and Third Street. At a minimum, apply sound insulation to the façade facing the bus storage facility (the south façade).
- Construct two noise barriers to mitigate noise impacts to Residences south of the AC Transit Facility along Stillman Street. The first noise barrier would be approximately 10-12 feet high and run along the southern edge of the AC Transit storage facility. The second noise barrier would be approximately 5-6 feet high and would be located on the portion of the ramp at the southwestern corner of the AC Transit facility. Treat the noise barriers with an absorptive material on the side facing the facility to minimize the potential for reflections off the underside of the freeway.
- Construct a noise barrier to mitigate noise impacts to residences south of the Golden Gate Transit Facility along Stillman Street. The barrier would be approximately 10-12 feet high and run along the southern and a portion of the eastern edge of the Golden Gate Transit storage facility. Treat the noise barriers with an absorptive material on the side facing the facility to minimize the potential for reflections off the underside of the freeway.

NoiO 2 – TJPA shall landscape the noise walls. Develop the actual design of the walls in cooperation with area residents.

NoiO 3 – TJPA shall construct noise walls prior to the development of the permanent bus facilities.

5. NOISE – CONSTRUCTION

See discussion of construction noise impacts, Section 5.21.10 of the Final EIS/EIR. Mitigation measures include:

NoiC 1 – TJPA shall comply with San Francisco noise ordinance. The noise ordinance includes specific limits on noise from construction. The basic requirements are:

- Maximum noise level from any piece of powered construction equipment is limited to 80 dBA at 100 ft. This translates to 86 dBA at 50 feet.
- Impact tools are exempted, although such equipment must be equipped with effective mufflers and shields. The noise control equipment on impact tools must be as recommended by the manufacturer and approved by the Director of Public Works.
- Construction activity is prohibited between 8 p.m. and 7 a.m. if it causes noise that exceeds the ambient noise plus 5 dBA.

The noise ordinance is enforced by the San Francisco DPW, which may waive some of the noise requirements to expedite the Project or minimize traffic impacts. For example, along Townsend Street where much of the land use is commercial, business owners may prefer nighttime

construction since it would reduce disruption during normal business hours. The DPW waivers usually allow most construction processes to continue until 2 a.m., although construction processes that involve impacts are rarely allowed to extend beyond 10 p.m. This category would include equipment used in demolition such as jackhammers and hoe rams, and pile driving. It is not anticipated that the construction documents would have specific limits on nighttime construction. There may be times when nighttime construction is desirable (e.g., in commercial districts where nighttime construction would be less disruptive to businesses in the area) or necessary to avoid unacceptable traffic disruptions. Since the construction would be subject to the requirements of the San Francisco noise regulations, in these cases, the contractor would need to work with the DPW to come up with an acceptable approach balancing interruption of the business and residential community, traffic disruptions, and reducing the total duration of the construction.

NoiC 2 – TJPA shall conduct noise monitoring. The purpose of monitoring is to ensure that contractors take all reasonable steps to minimize noise.

NoiC 3 – TJPA shall conduct inspections and noise testing of equipment. This measure will ensure that all equipment on the site is in good condition and effectively muffled.

NoiC 4 – TJPA shall implement an active community liaison program. This program would keep residents informed about construction plans so they can plan around periods of particularly high noise levels and would provide a conduit for residents to express any concerns or complaints about noise.

NoiC 5 – TJPA shall minimize use of vehicle backup alarms. Because backup alarms are designed to get people's attention, the sound can be very noticeable even when their sound level does not exceed the ambient, and it is common for backup alarms at construction sites to be major sources of noise complaints. A common approach to minimizing the use of backup alarms is to design the construction site with a circular flow pattern that minimizes backing up of trucks and other heavy equipment. Another approach to reducing the intrusion of backup alarms is to require all equipment on the site to be equipped with ambient sensitive alarms. With this type of alarm, the alarm sound is automatically adjusted based on the ambient noise. In nighttime hours when ambient noise is low, the backup alarm is adjusted down.

NoiC 6 – TJPA shall include noise control requirements in construction specifications. These should require the contractor to:

- Perform all construction in a manner to minimize noise. The contractor should be required to select construction processes and techniques that create the lowest noise levels. Examples are using predrilled piles instead of impact pile driving, mixing concrete offsite instead of onsite, and using hydraulic tools instead of pneumatic impact tools.
- Use equipment with effective mufflers. Diesel motors are often the major noise source on construction sites. Contractors should be required to employ equipment fitted with the most effective commercially available mufflers.

- Perform construction in a manner to maintain noise levels at noise sensitive land uses below specific limits.
- Perform noise monitoring to demonstrate compliance with the noise limits. Independent noise monitoring should be performed to check compliance in particularly sensitive areas.
- Minimize construction activities during evening, nighttime, weekend and holiday periods. Permits would be required before construction can be performed in noise sensitive areas during these periods.
- Select haul routes that minimize intrusion to residential areas. This is particularly important for the trench alternatives that will require hauling large quantities of excavation material to disposal sites.

Controlling noise in contractor work areas during nighttime hours is likely to require some mixture of the following approaches:

- Restrictions on noise producing activities during nighttime hours.
- Laying out the site to keep noise producing activities as far as possible from residences, to minimize the use of backup alarms, and to minimize truck activity and truck queuing near the residential areas.
- Use of procedures and equipment that produce lower noise levels than normal. For example, some manufacturers of construction equipment can supply special noise control kits with highly effective mufflers and other materials that substantially reduce noise emissions of equipment such as generators, tunnel ventilation equipment, and heavy diesel power equipment including mobile cranes and front-end loaders.
- Use of temporary barriers near noisy activities. By locating the barriers close enough to the noise source, it is possible to obtain substantial noise attenuation with barriers 10 to 12 feet high even though the residences are 30 to 40 feet higher than the construction site.
- Use of partial enclosures around noisy activities. It is sometimes necessary to construct shed-like structures or complete buildings to contain the noise from nighttime activities.

6. VIBRATION – OPERATIONS

See discussion of vibration impacts, Section 5.8.8 of the Final EIS/EIR. Mitigation measures include:

VibO 1 – TJPA shall use high-resilience track fasteners or a resiliently supported tie system for the Caltrain Downtown Extension for areas projected to exceed vibration criteria, including the following locations: (1) Live/Work Condos, 388 Townsend Street (Hubbell and Seventh), (2) San Francisco Residences on Bryant (Harrison Parking Lot Site), (3) Clock Tower Building, and Second Street High Rise and (4) new Marriott Courtyard (Marine Firefighter's Union).[1]

[1] After mitigation, groundborne noise impact at 388 Townsend Street and vibration impact at the Clocktower Building would still exceed the FTA impact threshold by one decibel. This level of impact would not constitute a substantial adverse change requiring further mitigation, in terms of FTA guidance. The next level of vibration buffering that would be effective would be to install floating slab under the Caltrain alignment trackage for 600 to

7. VIBRATION – CONSTRUCTION

See discussion of construction vibration impacts, Section 5.21.10 of the Final EIS/EIR. Mitigation measures include:

VibC 1 – TJPA shall limit or prohibit use of construction techniques that create high vibration levels. At a minimum, processes such as pile driving would be prohibited at distances less than 250 feet from residences.

VibC 2 – TJPA shall restrict procedures that contractors can use in vibration sensitive areas. (It is often possible to employ alternative techniques that create lower vibration levels. For example, unrestricted pile driving is one activity that has considerable potential for causing annoying vibration. Using the cast-in-drilled-hole piling method instead will eliminate most potential for vibration impact from the piling.)

VibC 3 – TJPA shall require vibration monitoring during vibration intensive activities.

VibC 4 – TJPA shall restrict the hours of vibration intensive activities such as pile driving to weekdays during daytime hours.

VibC 5 – TJPA shall investigate alternative construction methods and practices to reduce the impacts in coordination with the construction contractor if resident annoyance from vibration becomes a problem.

VibC 6 – TJPA shall include specific limits, practices and monitoring and reporting procedures for the use of controlled detonation. Control and monitor use of controlled detonation to avoid damage to existing structures. Include specific limits, practices, and monitoring and reporting procedures within contract documents to ensure that such construction methods, if used, would not exceed safety criteria.

8. SOILS/GEOLOGY

See discussion of geologic impacts in Section 5.9 and construction impacts and approaches in Sections 5.20 and 5.21.17 of the Final EIS/EIR. Mitigation measures include:

SG 1 – TJPA shall monitor adjacent buildings for movement and, if movement is detected, take immediate action to control the movement.

SG 2 – TJPA shall apply geotechnical and structural engineering principles and conventional construction techniques similar to the design and construction of high-rise buildings and tunnels

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800 feet on either side of each building (at a construction cost of $1,000 per linear foot), which would add installed costs approaching one million dollars or even more per building. Such high costs would not be a prudent and reasonable expenditure to eliminate the last one decibel of impact at these two sites. Per FTA guidelines, "to be feasible, the measure, or combination of measures, must be capable of providing a significant reduction of the vibration levels, at least 5 dB, while being reasonable from the standpoint of the added cost."

throughout the downtown area. Apply design measures and utilize pile-supported foundations to mitigate potential settlement of the surface and underground stations.

SG 3 – TJPA shall design and construct structural components of the Project to resist strong ground motions approximating the maximum anticipated earthquake (0.5g). The cut-and-cover portions will require pile supports to minimize non-seismic settlement in soft compressible sediments (Bay Mud). The underground Caltrain station at Fourth and Townsend will require pile-supported foundations due to the presence of underlying soft sediments.

SG 4 – TJPA shall underpin existing building, where deemed necessary, to protect existing structures from potential damage that could result from excessive ground movements during construction. Design the tunneling and excavation procedures (and construction sequence), and design of the temporary support system with the objective of controlling ground deformations within small enough levels to avoid damage to adjacent structures. Where the risk of damage to adjacent structures is too great, special measures will be implemented such as: (1) underpinning, (2) ground improvement, and/or (3) strengthening of existing structures to mitigate the risks.

As part of the initial studies performed in 1996, preliminary plans were developed to protect/strengthen existing structures to mitigate the risk of adverse impacts of tunneling on existing structures. Underpinning, if it is deemed necessary, is one of the options for mitigating adverse effects of tunneling on the existing buildings. Underpinning involves modification of the foundations of the building so that the superstructure loads can be transferred beyond the zone of influence of tunneling. Underpinning may include internal strengthening of the superstructure, bracing, reinforcing the existing foundations, or replacing existing foundations with deep foundations embedded outside the tunnel zone of influence. Alternatives, in lieu of underpinning, involve strengthening the rock between the building and the crown of the tunnel. Grouting in combination with inclined pin piles can be used not only to strengthen the rock but make the rock mass over the tunnel act as a rigid beam, allowing construction of tunnels with no adverse effects on the buildings supported on shallow foundations over the tunnel.

Preliminary plans for underpinning have been developed that allow cost estimates to be made for underpinning. During the detailed design phase of the Project, underpinning plans will be developed specific to each of the buildings that may require it. It is not necessary at this stage of the Project to develop detailed underpinning plans.

These issues will be addressed on a case by case basis, along the alignment, during the detailed design phase of the Project. The methodology that is proposed for the Caltrain Downtown Extension, i.e., to design the support system to control ground deformations within tolerances and selectivity strengthen structures that may be too weak to resist even small deformations, was successfully used for the Muni Metro Turnback project, and are deemed to be effective for the Caltrain Downtown Extension Project as well.

SG 5 – TJPA shall assure proper design and construction of pile-supported foundations for structures to control potential settlement of the surface. Stability of excavations and resultant impacts on adjacent structures can be controlled within tolerable limits by proper design and implementation of the excavation shoring systems.

9. UTILITIES

See discussion of utility impacts, Sections 5.12 and 5.21.12 of the Final EIS/EIR. Mitigation measures include:

Util 1 – TJPA shall coordinate with utility providers during preliminary engineering, continuing through final design and construction. Utilities would be avoided, relocated, and/or supported as necessary during construction activities to prevent damage to utility systems and to minimize disruption and degradation of utility service to local customers.

10. CULTURAL AND HISTORIC RESOURCES

See discussion of cultural and historic resources impacts, Section 5.14 of the Final EIS/EIR. Mitigation measures include:

CH 1 –Comply with the provision of the signed Memorandum of Agreement (MOA) between the Federal Transit Administration (FTA), the State Historic Preservation Officer (SHPO), and the TJPA[2].

CH 2 – **Professional Qualifications.** Assure all activities regarding history, historic preservation, historic architecture, architectural history, historic and prehistoric archaeology are carried out by or under the direct supervision of persons meeting, at a minimum, the Secretary of the Interior's professional qualifications standards (48 FR 44738-9) (PQS) in these disciplines. Nothing in this stipulation may be interpreted to preclude any signatory or any agent or contractor thereof from using the properly supervised services or persons who do not meet the PQS.

Historic Preservation Standards. Assure all activities regarding history, historic preservation, historic architecture, architectural history, historic and prehistoric archaeology are carried out to reasonably conform to the Secretary of Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 FR 44716-44740) as well as to applicable standards and guidelines established by SHPO.

Curation and Curation Standards. Ensure that FTA and TJPA shall, to the extent permitted under sections 5097.98 and 5097.991.[sic] of the California Public Resources Code, materials and records resulting from any archaeological treatment or data recovery that may be carried out pursuant to this MOA, are curated in accordance with 36 CFR Part 79.

CH 3 – Integrate into the design of the new terminal a dedicated space for a permanent interpretive exhibit. The interpretive exhibit will include at a minimum, but is not necessarily limited to: plaques or markers, a mural or other depiction of the historic Transbay Transit Terminal (TTT), ramps, or Key System, or other interpretive material.

CH 4 – Consult with the State Department of Transportation (Department) regarding the availability of historical documentary materials for the creation of the permanent interpretive

[2] A copy of the Memorandum of Agreement is included as Appendix G of the Final EIS/EIR.

display of the history of the original TTT building and its association with the San Francisco-Oakland Bay Bridge. Department will assist TJPA in planning the scope and content of the proposed interpretive exhibit. Invite the Oakland Heritage Alliance, the San Francisco Architectural Heritage, the California State Railroad Museum, and the Western Railway Museum to participate in this consultation. While retaining responsibility for the development of the exhibit, TJPA will jointly consider the Department's and participating invitees' recommendations when finalizing the exhibit design. TJPA will produce, install, and maintain the exhibit.

CH 5 – Consult with the City of Oakland about its possible interest in having a similar interpretive exhibit in the East Bay. If agreement is reached prior to completion of final design of the Transbay Terminal, TJPA will provide and deliver exhibit materials to a venue that is mutually satisfactory to TJPA and the City of Oakland.

CH 6 – Identify, in consultation with Department, elements of the existing TTT that may be suitable for salvage and interpretive use by museums. Within two years following execution of this MOA by FTA and SHPO, TJPA will offer any elements identified as suitable for salvage and interpretive use to San Francisco Architectural Heritage, the California State Railroad Museum, Sacramento, the Western Railway Museum, the Oakland Museum, and any other interested parties. Remove any elements selected in a manner that minimizes damage and deliver with legal title to the recipient. Items not accepted by interested parties for salvage or interpretive use within the time frame specified herein will receive no further consideration.

CH 7 – **Oakland Museum of California Exhibit** – Consult with Department and the Oakland Museum about contributing to Department's exhibit and the production of an interpretive video at the Oakland Museum relating to the history and engineering of the major historic state bridges of the San Francisco Bay Area. TJPA will propose contributions to such an exhibit and video that would be related to the history of the TTT, bus ramp loop structures, and the Key System. Items contributed by TJPA to such an exhibit may include photographs, drawings, videotape, models, oral histories, and salvaged components from the TTT.

CH 08 – Assist the Oakland Museum by contributing up to $50,000 toward the cost of preparing and presenting the exhibit and preparing an exhibit catalog or related museum publication in conjunction with the exhibit, in a manner and to the extent that is mutually satisfactory to TJPA, Department, and the Oakland Museum. A separate agreement will outline the negotiated financial contributions.

Work with the Oakland Museum and assist in the preparation of an exhibit and interpretive video if consultation results in agreement between TJPA and the Oakland Museum prior to demolition of the existing TTT.

CH 9 – Request that SHPO, prior to the start of any work that would have an adverse effect on components of the Bay Bridge that are historic properties, determine whether these components, including the TTT and associated ramps, have been adequately recorded in existing documents. If SHPO determines that, collectively, such documents, which include the Department's past recordation of a series of remodeling and seismic retrofit project that have occurred since 1993, adequately document the TTT and ramps, then no further documentation will be necessary.

Seek, with the assistance of the Department, to obtain the original drawings of the TTT by architect T. Pflueger.

If SHPO determines that existing documentation is adequate, compile such documentation into a comprehensive record. Components to be included in the review of past documentation are:

- 425 Mission Transbay Transit Terminal (APN 3719-003, 3720-001, 3721-006);
- Upper Deck San Francisco Approaches or North Connector, Bridge #34-116F;
- Upper Deck San Francisco Approaches or Center Ramps, Bridge #34-118L;
- San Francisco Approaches or Lower Deck On-Ramp, Bridge #34-118R;
- Transbay Terminal Loop ramp, Bridge #34-119Y; and
- Harrison Street over-crossing Bridge #34-120Y.

Consult further with SHPO, if SHPO determines that existing documentation does not constitute adequate recordation of the Bay Bridge components addressed hereunder. SHPO will determine what level and type of additional documentation is necessary.

Provide xerographic copies of this documentation to the SHPO and the Department Headquarters Library, upon a written determination by SHPO that all documentation prescribed hereunder is satisfactory, to the History Center at the San Francisco Public Library, San Francisco Architectural Heritage, the Oakland History Room of the Oakland Public Library, the Oakland Museum of California, the Western Railway Museum, and Department District 4 Office. Thereafter, TJPA may proceed with that aspect of the Project that will adversely affect the historic properties documented hereunder.

CH 10 – Within 180 days after FTA determines that the Project has been completed, TJPA, in consultation with FTA and SHPO, will re-revaluate the Bay Bridge, a property listed on the NRHP, and determine whether the National Register nomination should be amended or whether the bridge no longer qualifies for listing and should be removed from the National Register. As appropriate, TJPA will prepare and submit to the FTA and SHPO either an amended nomination or petition for removal, to be processed according to the procedures set forth in 36 CFR Part 60 (60.14 and 60.15).

CH 11 – Develop and implement measures, in consultation with the owners of historic properties immediately adjoining the construction sites, to protect the contributing elements of the Second and Howard Streets Historic District and the Rincon Point/South Beach Historic Warehouse Industrial District from damage by any aspect of the Project. Such measures will include, but are not necessarily limited to those identified in the MOA.

The protective measures herein stipulated will be developed and implemented by TJPA prior to the commencement of any aspect of the Project that could have an adverse effect on historic properties immediately adjoining the construction sites herein identified. In addition, TJPA will monitor the effectiveness of the protective measures herein stipulated and will supplement or modify these measures as and where necessary in order to ensure that they are effective. The historic properties covered by the terms of this paragraph are shown in the following table.

Affected Historic Properties During Construction				
Address/ Assessors Parcel Number	**NRHP Status**	**Contributing Element of**	**Const. Date**	**Type of Impact**
589-591 Howard Street / 3736-098	1D	Second & Howard District & New Montgomery / Second Street	1906	Cut-and-cover construction nearby
163 Second Street / 3721-048	1D		1907	
166-78 Townsend Street / 3788-012	3D	Rincon Point/South Beach District & South End District	1910 [1] 1988 [2]	Cut-and-cover construction nearby. Need construction easement
640 Second Street / 3788-002	252	Rincon Point/South Beach District & South End District	1926	Tunnel under or near property
650 Second Street / 3788-049 through 3788-073	252		1922	
670-680 Second Street / 3788-043, 3788-044	252 (670), 3D (680)		1913	
301-321 Brannan Street / 3788-037	3D		1909	
130 Townsend Street / 3788-008	3D		1910 [1] 1895-6 [2]	
136 Townsend Street / 3788-009	3D		1902 [1] 1913 [2]	
144-46 Townsend Street / 3788-009A	3D		1922	
148-54 Townsend Street / 3788-010	3D		1922	
162-164 Townsend Street / 3788-081	3D		1919	

Notes: National Register Status Codes are as follows:

1	Listed on the NRHP
2S1	Determined eligible for listing by the Keeper of the Register
2S2	Determined eligible for listing by the consensus of the SHPO and federal agency
1D	Listed on the National Register as a contributor to a district or multi-resource property
2D2	Determined eligible as a contributor by consensus determination
3D	Appears eligible as a contributor to a fully documented district

[1] Caltrans, 1983, [2] Corbett and Bradley, 1996

Source: JRP Historical Consulting, Parsons Transportation Group, 2001

CH 12 – TJPA will take the effect of the Project on the three historic properties listed below into account by recording these properties in accordance with the terms herein set forth. These buildings are:

- 191 2nd Street, (APN: 3721-022), and
- 580-586 Howard Street, (APN: 3721-092 through 3721-106), and
- 165-173 2nd Street, (APN: 3721-025).

Prior to taking any action that could adversely affect these properties, consult SHPO and SHPO will determine the type and level of recordation that is necessary for these properties. Upon a written determination by SHPO that all documentation prescribed hereunder is complete and satisfactory, submit a copy of this documentation to SHPO, with xerographic copies to the History Center at the San Francisco Public Library, San Francisco Architectural Heritage, and the Oakland History Room of the Oakland Public Library. Thereafter, proceed with that aspect of the Project that will adversely affect the historic properties documented hereunder.

If SHPO does not respond within 45 days of receipt of each submittal of documentation prescribed herein, assume that SHPO has determined that said documentation is adequate and may proceed with that aspect of the Project that will adversely affect the historic properties documented hereunder.

CH 13 – Repair, in accordance with the Secretary of the Interior's Standards for Rehabilitation, any damage to contributing elements of the Second and Howard Streets Historic District and the Rincon Point/South Beach Historic Warehouse Industrial District resulting from the Project.

Photograph the condition of the contributing elements prior to the start of the Project to establish the baseline condition for assessing damage. Consult with property owner(s) about the appropriate level of photographic documentation of building interiors and exteriors. Provide a copy of this photographic documentation to the property owner(s), and retain on file.

Submit repair plans and specifications to SHPO for review and comment, if repair of inadvertent damage resulting from the Project is necessary, to ensure that the work conforms to the Secretary of the Interior's Standards for Rehabilitation. Consult with SHPO to establish a mutually satisfactory time frame for the SHPO's review. TJPA will carry out any repairs required hereunder in accordance with the comments of SHPO.

CH 14 – Within 180 days after FTA determines that the Project has been completed, TJPA, in consultation with FTA and SHPO, will re-revaluate the Second and Howard Streets Historic District and determine whether the National Register nomination should be amended or whether the district no longer qualifies for listing and should be removed from the National Register. As appropriate, TJPA will prepare and submit to the FTA and SHPO either an amended nomination or petition for removal, to be processed according to the procedures set forth in 36 CFR Part 60 (60.14 and 60.15).

CH 15 – Within 45 days following execution of MOA, consult with FTA, SHPO, JPB and CCSF to initiate the process of determining how archaeological properties that may be affected by the Project will be identified, whether and how the NRHP eligibility of such properties may be addressed, and whether and how the Project's effects, if any, on those archaeological properties

that may be considered historic properties for purposes of this MOA, may be taken into account. FTA and TJPA to invite Caltrans to participate in this consultation. Determine the time frame for this consultation with the consulting parties through consensus.

Consultation will at minimum be informed by, and take into account, the following documents: Attachment 6, "Standard Treatment of Archaeological Sites: Data Recovery Plan," of the "Programmatic Agreement among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Office, 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;" "Archaeological Research Design and Treatment Plan for SF-480 Terminal Separation Rebuild (Praetzellis and Praetzellis, 1993)" and " The San Francisco-Oakland Bay Bridge, West Approach Replacement: Archaeological Research Design and Treatment Plan (Ziesing, 2000); "Revised Historical Archaeology Research Design for the Central Freeway Replacement Project (Thad M. Van Bueren, Mary Praetzellis, Adrian Praetzellis, Frank Lortie, Brian Ramos, Meg Scantlebury and Judy D. Tordoff)."

CH 16 – If the consulting parties agree that a treatment plan for archaeological properties should be prepared, prepare a Treatment Plan for archeological resources that provides for the identification, evaluation, and treatment of archaeological properties that may be affected by the Project and that conform to the requirements above of item CH13 1) and take into account the information contained in items CH13 2) and CH13 3) and conform to any other standards, documentation, or guidance that the consulting parties may specify

If the consulting parties agree that the Treatment Plan will address historic archaeological properties as well as prehistoric archaeological properties, ensure that appropriately qualified historians prepare a historic context(s) that will be used by an interdisciplinary team consisting at a minimum of historians and historic archaeologist.

The historic context will, at a minimum:

1) identify significant research themes and topics that relate to the historic period(s) addressed by the historic context(s)

2) determine what types of historic archaeological properties, if any, that may usefully and significantly contribute to research themes and topics deemed by the historic context(s) study to be important

3) identify the specific components and constituents (features, artifacts, etc., if any, of historic archaeological property types that can factually and directly, contribute data important to our understanding of significant historic research themes and topics

4) determine the amount (sample size, etc.) of archaeological excavation and related activity that is needed to provide the range and type of factual data that will contribute to our understanding of significant historic research themes and topics

Submit the draft Treatment Plan to the other consulting parties for review and comment. The consulting parties have 45 days from receipt of the draft Treatment Plan to comment in writing to FTA and TJPA. Failure of the consulting parties to respond within this time frame shall not preclude FTA and TJPA from finalizing the draft Treatment Plan to their satisfaction.
Before finalizing the draft Treatment Plan, FTA and TJPA to provide the consulting parties with written documentation indicating whether and how the draft Treatment Plan will be modified. Unless any consulting party objects to this documentation in writing to FTA and TJPA within 15 days following receipt, finalize the draft Treatment Plan as deemed appropriate by FTA and TJPA, and proceed to implement the final Treatment Plan.

If FTA and TJPA propose to modify the final Treatment Plan, they will notify the consulting parties concurrently in writing about the proposed modifications. The consulting parties will have 15 days from receipt of notification to comment in writing to FTA and TJPA. Failure of the consulting parties to respond within this time frame shall not preclude FTA and TJPA from modifying the final Treatment Plan to their satisfaction.

Before modifying the final Treatment Plan, FTA and TJPA will provide the consulting parties with written documentation indicating whether and how the final Treatment Plan will be modified. Unless any consulting party objects to this documentation in writing to FTA and TJPA within 15 days following receipt, modify the final Treatment Plan as appropriate, and proceed to implement the modified final Treatment Plan.

CH 17 - 1) Within two years after FTA, in consultation with TJPA, has determined that all fieldwork required by the Treatment Plan has been completed, prepare a draft technical report that documents the results of implementing the Treatment Plan and distributes this draft technical report to the other MOA signatories for review. The reviewing parties will be afforded 60 days following receipt of the draft technical report to submit any written comments to FTA and TJPA. Failure of the reviewing parties to respond within this time frame shall not preclude FTA from authorizing TJPA to revise the draft technical report as FTA and TJPA deem appropriate.
FTA will provide the reviewing parties with a written documentation indicating modifications in accordance with any reviewing party comments. Unless the reviewing parties object to this documentation in writing to FTA and TJPA within 30 days following receipt, modify the draft technical report as FTA and TJPA deem appropriate. Thereafter, issue the technical report in final form and distribute this document in accordance with paragraph CH15 2).

2) Distribute copies of the final technical report documenting the results of the Treatment Plan implementation to the other signatory parties, to any consulting Native American Tribe if prehistoric, protohistoric or ethnographic period archaeological properties were located and addressed under the Treatment Plan, and to the appropriate California Historical Resources Information Survey (CHRIS) Regional Information Center, subject to the terms of Stipulation IV. E (CH19).

3) Prepare a written draft document that communicates in lay terms the results of Treatment Plan implementation to members of the interested public. Distribute this written draft document for review and comment concurrently with and in the same manner as that prescribed for the draft written technical report prescribed by paragraph C.1. of this stipulation. If the draft document

prescribed hereunder is a publication such as a report or brochure, then distribute such publication to the other signatory parties, to any consulting Native American Tribe as applicable, and to any other entity that the signatory parties and, as applicable, any consulting Native American Tribe, through consultation as appropriate, subject to the terms of Stipulation IV.E (CH 19).

4) Prepare a written annual report describing the status of its efforts to comply with the terms of Stipulations II – IV, inclusive, of this MOA. Prepare the annual report following the end of each fiscal year (July 1 to June 30) that this MOA is in effect and distributed it to all MOA signatories by July 30 of each year until FTA and the SHPO through consultation determine that the requirements of stipulations II – IV, inclusive of this MOA have been satisfactorily completed.

CH 18 - If the consulting parties agree that a plan for treatment of archaeological properties will not be prepared, then address any archaeological properties discovered during implementation of any aspect of the Project pursuant to 36 CFR 800.13(b)(3).
If the consulting parties agree that a plan for treatment of archaeological properties will not be prepared, then any archaeological properties discovered during implementation of any aspect of the Project will be addressed by TJPA pursuant to 36 CFR 800.13(b)(3).

CH 19 - The signatories to the MOA acknowledge that historic properties covered by this MOA are subject to the provisions of Section 304 of the National Historic Preservation Act of 1966, as amended, and Section 6254.10 of the California Government Code (Public Records Act), relating to the disclosure of archaeological site information and, having so acknowledged, will ensure that all actions and documentation prescribed by this Agreement are consistent with Section 304 of the National Historic Preservation Act of 1966, as amended, and Section 6254.10 of the California Government Code.

CH 20 - The parties to the MOA agree that Native American burials and related items discovered during implementation of the terms of the MOA and of the Project will be treated in accordance with the requirements of Section 7050.5(b) of the California Health and Safety Code. If, pursuant to Section 7050.5(c) of the California Health and Safety Code, the county coroner/medical examiner determines that the human remains are, or may be of Native American origin, then the discovery shall be treated in accordance with the provisions of Section 5097.98(a)-(d) of the California Public Resources Code. TJPA will ensure that to the extent permitted by applicable law and regulation, the views of any consulting Native American Tribe and the Most Likely Descendant(s) are taken into consideration when decisions are made about the disposition of other Native American archaeological materials and records.

11. HAZARDOUS MATERIALS/WASTE - OPERATIONS

See discussion of hazardous material and waste impacts, Section 5.15 of the Final EIS/EIR. Mitigation measures include:

HWO 1 – The Peninsula Corridor Joint Powers Board (JPB) – the agency responsible for operating Caltrain – shall construct and operate any fueling facility in compliance with local, state and Federal regulations regarding handling and storage of hazardous materials.

HWO 2 – JPB shall equip diesel fuel pumps with emergency shut-off valves and, in compliance with U.S. EPA requirements, fuel Underground Storage Tanks (USTs) would be equipped with leak detection and monitoring systems.

HWO 3 – JPB shall employ the use of secondary containment systems for any aboveground storage tanks.

HWO 4 – JPB shall store cleaning solvents in 55-gallon drums, or other appropriate containers, within a bermed area to provide secondary containment.

HWO 5 – JPB shall slope paved surfaces within the fueling facility and the solvent storage area to a sump where any spilled liquids could be recovered for proper disposal.

HWO 6 – JPB shall follow California OSHA and local standards for fire protection and prevention for the handling and storage of fuels and solvents.

HWO 7 – JPB shall prepare a Hazardous Materials Management/ Business Plan and file with the San Francisco Department of Public Health.

12. HAZARDOUS MATERIALS/WASTE – CONSTRUCTION

See discussion of hazardous material and waste impacts during construction, Section 5.21.15 of the Final EIS/EIR. Mitigation measures include:

HMC 1 – TJPA shall follow California OSHA and local standards for fire protection and prevention. Handling and storage of fuels and other flammable materials during construction

will conform to these requirements, which include appropriate storage of flammable liquids and prohibition of open flames within 50 feet of flammable storage areas.

HMC 2 – TJPA shall perform detailed investigations of the potential presence of contaminants in soil and groundwater prior to construction, using conventional drilling, sampling, and chemical testing methods. Based on the chemical test results, a mitigation plan will be developed to establish guidelines for the disposal of contaminated soil and discharge of contaminated dewatering effluent, and to generate data to address potential human health and safety issues that may arise as a result of contact with contaminated soil or groundwater during construction. The investigation and mitigation plan will follow the requirements of the City and County of San Francisco's Article 22A in the appropriate areas along the alignment.

With construction projects of this nature and magnitude, there are typically two different management strategies that can be employed to address contaminated soil handling and disposal issues. Contaminated soil can be excavated and stockpiled at a centralized location and subsequently sampled and analyzed for disposal profiling purposes in accordance with the requirements of the candidate disposal landfill. Alternatively, soil profiling for disposal purposes can be done in-situ so when soil is excavated it is loaded directly on to trucks and hauled to the appropriate landfill facility for disposal based on the in-situ profiling results. A project of this nature could also combine both strategies.

HMC 3 – TJPA shall cover with plastic sheeting soils removed during excavation and grading activities that remain at a centralized location for an extended period of time to prevent the generation of fugitive dust emissions that migrate offsite.

HMC 4 – TJPA shall use a licensed waste hauler, applying appropriate manifests or bill of lading procedures, as required to haul soil for disposal at a landfill or recycling facility.

HMC 5 – TJPA shall use chemical test results for groundwater samples along the alignment to obtain a Batch Discharge Permit under Article 4.1 of the San Francisco Department of Public Works as well as to evaluate requirements for pretreatment prior to discharge to the sanitary sewer. Effluent produced during the dewatering of excavations will be collected in onsite storage tanks and periodically tested, as required under discharge permit requirements, for potential contamination to confirm the need for any treatment prior to discharge. If required, treatment may include:

- Settling to allow particulate matter (total suspended solids) to settle out of the effluent in order to reduce the sediment load as well as reduce elevated metal and other contaminant concentrations that may be associated with suspended sediments; and/or
- Construction of a small-scale batch waste water treatment system to remove dissolved contaminants (mainly organic constituents such as petroleum hydrocarbons (gas, diesel, and oils), BTEX, and VOCs) from the dewatering effluent prior to discharge to the sanitary sewer. A treatment system would also likely employ the use of filtration to remove suspended solids.

HMC 6 – TJPA shall develop a detailed mitigation plan for the handling of potentially contaminated soil and groundwater prior to starting Project construction.

HMC 7 – TJPA shall design dewatering systems to minimize downward migration of contaminants that can result from lowering the water table if necessary based on environmental conditions. As necessary, shallow soils with detected contamination would be dewatered first using wells screened only in those soils. Dewatering of deeper soils would then be performed using wells screened only in the zone to be dewatered. Dewatering wells would be installed using drilling methods that prohibit shallow contaminated soils from being carried deeper into the boreholes.

HMC 8 – TJPA shall require that workers performing activities on site that may involve contact with contaminated soil or groundwater have appropriate health and safety training in accordance with 29 CFR 1910.120.

A Worker Health and Safety Plan (HSP) will be developed for the Project and monitored for the implementation of the plan on a day-to-day basis by a Certified Industrial Hygienist (CIH). The HSP will include provisions for:

- Conducting preliminary site investigations and analysis of potential job hazards;
- Personnel protective equipment;
- Safe work practices;
- Site control;
- Exposure monitoring;
- Decontamination procedures; and
- Emergency response actions.

The HSP will specify mitigation of potential worker and public exposure to airborne contaminant migration by incorporating dust suppression techniques in construction procedures. The plan will also specify mitigation of worker and environmental exposure to contaminant migration via surface water runoff pathways by implementation of comprehensive measures to control drainage from excavations and saturated materials excavated during construction.

HMC 9 – TJPA shall review existing asbestos surveys, abatement reports, and supplemental asbestos surveys, as warranted. Perform an asbestos survey for buildings to be demolished, as required. Asbestos-containing building materials (ACM) will require abatement prior to building demolition. Removal and disposal of ACM will be performed in accordance with applicable local, state, and federal regulations.

HMC 10 – TJPA shall perform a lead-based paint survey for buildings to be demolished to determine areas where lead-based paint is present and the possible need for abatement prior to demolition.

13. PEDESTRIANS

See discussion of pedestrian impacts, Section 5.19.6.1 of the Final EIS/EIR. Mitigation measures include:

Ped 1 – Agency and City shall use future construction or redevelopment as opportunities to increase building set-backs thereby increasing sidewalk widths. Particular areas where such widening is most needed include:

- Southeast corner Fremont/Mission Street;
- Northeast corner First/Mission Street;
- North side of Mission Street between First and Fremont; and
- Sidewalks south of Howard Street along Folsom, First, Fremont, and Beale that are less than 10 feet wide.

Ped 2 – Agency and City shall eliminate or reduce sidewalk street furniture such as newspaper boxes and magazine racks in the immediate Transbay Terminal area on corners.

Ped 3 – City shall retime traffic light signalization. This could improve pedestrian levels of service at each of the intersections studies that fall into LOS F.

Ped 4 – City shall provide crosswalk signalization at intersections where they do not exist already, such as Folsom and Beale streets.

Ped 5 – City shall provide cross-walk count-down signals at intersections and cross-walks immediately surrounding the new Transbay Terminal.

Ped 6 –TJPA shall ensure that Transbay Terminal design increases corner and sidewalk widths at the four intersections immediately surrounding the Transbay Terminal.

Ped 7 – TJPA shall provide lights within crosswalks to warn when pedestrians are present in the crosswalk, such as at the cross-walk associated with the mid-block bus loading area.

14. PRE-CONSTRUCTION ACTIVITIES

See discussion of construction impacts, Section 5.20.1 of the Final EIS/EIR. Mitigation measures include:

PC 1 – TJPA shall complete a pre-construction building structural survey to determine the integrity of existing buildings adjacent to and over the proposed Caltrain Downtown Extension. Use this survey to finalize detailed construction techniques along the alignment and as the baseline for monitoring construction impacts during and following construction.

PC 2 – TJPA shall contact and interview individual businesses along the Caltrain Extension alignment to gather information and develop an understanding of how these businesses carry out

their work. This survey will identify business usage, delivery/shipping patterns, and critical times of the day or year for business activities. Use this information to assist in: (a) the identification of possible techniques during construction to maintain critical business activities, (b) analyze alternative access routes for customers and deliveries to businesses, (c) develop traffic control and detour plans, and (d) finalize construction practices.

PC 3 – TJPA shall complete detailed geotechnical investigation, including additional sampling (drilling and core samples) and analyses of subsurface soil/rock conditions. Use this information to design the excavation and its support system to be used in the retained cut, cut-and-cover, and tunnel portions of the Caltrain Downtown Extension.

PC 4 – TJPA shall establish community construction information/outreach program to provide on-going dialogue among the TJPA and the affected community regarding construction impacts and possible mitigation/solutions. Include dedicated personnel for an outreach office in the construction area to deal with construction coordination.

PC 5 – TJPA shall establish site and field offices located along the Caltrain Downtown Extension alignment. Field office staff, in conjunction with other staff, will:

- Provide the community and businesses with a physical location where information pertaining to construction can be exchanged,
- Enable TJPA and JPB to better understand community/business needs during the construction period,
- Allow TJPA and JPB to participate in local events in an effort to promote public awareness of the Project,
- Manage construction-related matters pertaining to the public,
- Notify property owners, residences, and businesses of major construction activities (e.g., utility relocation/disruption and milestones, re-routing of delivery trucks),
- Provide literature to the public and press,
- Promote and provide presentations on the Project via a Speakers Bureau,
- Respond to phone inquires,
- Coordinate business outreach programs,
- Schedule promotional displays, and
- Participate in community committees.

PC 6 – TJPA shall implement an information phone line to provide community members and businesses the opportunity to express their views regarding construction. Review calls received and, as appropriate, forward the message to the necessary party for action (e.g., utility company, fire department, the Resident Engineer in charge of construction operations). Information available from the telephone line will include current Project schedule, dates for upcoming community meetings, notice of construction impacts, individual problem solving, construction

complaints and general information. Phone service would be provided in English, Cantonese, and Spanish and would be operated on a 24-hour basis.

PC 7 – TJPA shall develop traffic management plans. Traffic management plans to maintain access to all businesses will be prepared for areas affected by surface or cut-and-cover construction. In addition, daily cleaning of work areas would be performed by contractors for the duration of the construction period. Provisions would be contained in construction contracts to require the maintenance of driveway access to businesses to the extent feasible.

15. GENERAL CONSTRUCTION MEASURES

See discussion of construction staging and methods and construction impacts, Sections 5.20 and 5.21 of the Final EIS/EIR. Mitigation measures include:

GC 1 – TJPA shall disseminate information to community in a timely manner regarding anticipated construction activities.

GC 2 – TJPA shall provide signage. Work with establishments affected by construction activities to develop appropriate signage for display that directs both pedestrian and vehicular traffic to businesses via alternate routes.

GC 3 – TJPA shall install level deck. Install decking at the cut-and-cover sections to be flush with the existing street or sidewalk levels.

GC 4 – TJPA shall provide for efficient sidewalk design and maintenance. Wherever feasible, maintain sidewalks at the existing width during construction. Where a sidewalk must be temporarily narrowed during construction (e.g., deck installation), restore it to its original width during the majority of construction period. (In some places this may require placing the temporary sidewalk on the deck.) Each sidewalk design should be of good quality and approved by the Resident Engineer prior to construction. Handicapped access will be maintained during construction where feasible.

GC 5 – TJPA shall provide construction site fencing of good quality, capable of supporting the accidental application of the weight of an adult without collapse or major deformation. Where covered walkways or other solid surface fencing is installed, establish a program to allow for art work (e.g., by local students) on the surface(s).

16. AIR EMISSIONS – CONSTRUCTION

See discussion of air emission impacts from construction, Section 5.21.9 of the Final EIS/EIR. The following mitigation measures are derived from the "basic control measures" and the "enhanced control measures" recommended by the Bay Area Air Quality Management District (BAAQMD). Mitigation measures include:

AC 1 – TJPA shall assure that, as part of the contract provisions, the Project contractor is required to implement the measures below at all Project construction sites.

AC 2 – TJPA shall water all active construction areas at least twice daily. Ordinance 175-91, passed by the San Francisco Board of Supervisors on May 6, 1991, requires that non-potable water be used for dust control activities; therefore, the Project contractor would be required to obtain reclaimed water from the City's Clean Water Program or other appropriate sources.

AC 3 – TJPA shall cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard.

AC 4 – TJPA shall pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites.

AC 5 – TJPA shall sweep daily (with water sweepers) all paved access roads, parking areas and staging areas at construction sites.

AC 6 – TJPA shall sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets.

AC 7 – TJPA shall install sandbags or other erosion control measures to prevent silt runoff to public roadways.

AC 8 – TJPA shall replant vegetation in disturbed areas as quickly as possible.

AC 9 – TJPA shall minimize use of on-site diesel construction equipment, particularly unnecessary idling.

AC 10 – TJPA shall shut off construction equipment to reduce idling when not in direct use.

AC 11 – TJPA shall, where feasible, replace diesel equipment with electrically powered machinery.

AC 12 – TJPA shall locate diesel engines, motors, or equipment as far away as possible from existing residential areas.

AC 13 – TJPA shall properly tune and maintain all diesel power equipment.

AC 14 – TJPA shall suspend grading operations during first and second stage smog alerts, and during high winds, i.e., greater than 25 miles per hour.

AC 15 – TJPA, shall, upon completion of the construction phase, buildings with visible signs of dirt and debris from the construction site shall be power washed and/or painted (given that permission is obtained from the property owner to gain access to and wash the property with no fee charged by the owner).

17. VISUAL/AESTHETICS – CONSTRUCTION

See discussion of visual/aesthetic impacts from construction, Section 5.21.16 of the Final EIS/EIR. Short-term visual changes as a result of construction activities are a common and accepted feature of the urban environment, and generally, mitigation is not required. Nonetheless, mitigation measures include:

VA 1 – TJPA shall assure that construction crews working at night direct any artificial lighting onto the work site in order to minimize "spill over" light or glare effects on adjacent areas.

VA 2 – TJPA shall assure that contractors make all efforts possible to minimize specific aesthetic and visual effects of construction identified by neighborhood businesses and residents.

TRANSBAY TERMINAL/CALTRAIN DOWNTOWN EXTENSION/ REDEVELOPMENT PROJECT MITIGATION MONITORING AND REPORTING PROGRAM

INTRODUCTION

Assembly Bill (AB) 3180 was enacted by the State Legislature to provide a mechanism to ensure that mitigation measures adopted through the California Environmental Quality Act ("CEQA") process are implemented in a timely manner and in accordance with the terms of project approval. Under AB 3180, local agencies are required to adopt a monitoring or reporting program designed to ensure compliance during project implementation.

The Transbay Terminal/Caltrain Downtown Extension/Redevelopment Project Mitigation Monitoring and Reporting Program ("Mitigation Monitoring Program"), pursuant to AB 3180, CEQA Section 21081.6 and CEQA Guidelines Section 15091, provides the basic framework through which adopted mitigation measures will be monitored to ensure implementation.

ORGANIZATION

The Mitigation Monitoring Program is organized in a table format, keyed to each adopted Final EIS/EIR mitigation measure. For each measure, the table: (1) lists the mitigation measure; (2) specifies the party responsible for implementing the measure; (3) establishes a schedule for mitigation implementation; (4) assigns mitigation monitoring responsibility; and (5) establishes monitoring actions and a schedule for mitigation monitoring.

IMPLEMENTATION

While the Mitigation Monitoring Program generally outlines the actions, responsibilities and schedule for mitigation monitoring, it does not attempt to specify the detailed procedures to be used to verify implementation (e.g., interactions between the Project Sponsor – the Transbay Joint Powers Authority, the San Francisco Redevelopment Agency and City departments, use of private consultants, signed-off on plans, site inspections, etc.). Specific monitoring procedures are either contained in approval documents or will be developed at a later date, closer to the time the mitigation measures will actually be implemented.

The majority of the measures will be monitored primarily by the Transbay Joint Powers Authority (TJPA), in consultation with other City and non-City agencies, as part of the site permit, building permit processes or other report.

TRANSBAY TERMINAL/CALTRAIN DOWNTOWN EXTENSION/REDEVELOPMENT PROJECT
FEIS/FEIR MITIGATION MONITORING AND REPORTING PROGRAM

MITIGATION MEASURE	Responsibility for Implementation	MITIGATION SCHEDULE	Monitoring Responsibility	Monitoring Actions/Schedule
Wind				
W 1 – Consider potential wind effects of an individual project for the Redevelopment area. If necessary, perform wind tunnel testing in accordance with City Planning Code Section 148. If exceedences of the wind hazard criterion should occur for any individual project, require design modifications or other mitigation measures to mitigate or eliminate these exceedences. Tailor mitigation measures to the individual needs of each project. Examples of mitigation measures include articulation of building sides and softening of sharp building edges.	San Francisco Redevelopment Agency (Agency)	During environmental review process preceding approval of each individual project in Transbay Redevelopment Area	Agency	Apply project review procedures for wind when projects are developed by or proposed to Agency.
Property Acquisition/Relocation				
Prop 1 – Apply federal Uniform Relocation Act (Public Law 91 646) and California Relocation Act (Chapter 16, Section 7260 et seq., of the Government Code) and related laws and regulations governing both land acquisition and relocation. All real property to be acquired will be appraised to determine its fair market value before an offer is made to each property owner. (Minimum relocation payments are detailed in the laws, and include moving and search payments for businesses.) Provide information, assistance, and payments to all displaced businesses in accordance with these laws and regulations.	City and County of San Francisco (CCSF), Agency, and TJPA	Prior to and during property acquisition and relocation activities	TJPA	TJPA to report to Board on compliance during acquisition and relocation activities.
Safety and Emergency Services				
Saf 1 – Provide project plans to the San Francisco Fire Department for its review to ensure that adequate life safety measures and emergency access are incorporated into the design and construction of Project facilities	Transbay Joint Powers Authority (TJPA)	Prior to project facility permitting and during construction	TJPA	Project facility plans to be forwarded to CCSF Fire Department prior to permit issuance. Inspect installation during construction.

MITIGATION MEASURE	Responsibility for Implementation	MITIGATION SCHEDULE	Monitoring Responsibility	Monitoring Actions/Schedule
Saf 2 – Prepare a life safety plan including the provision of on-site measures such as a fire command post at the Terminal, the Fire Department's 800-megahertz radio system and all necessary fire suppression equipment	TJPA	Prior to project facility permitting	TJPA	TJPA to develop life safety plan during facility design phases and implement during testing and startup up phase.
Saf 3 – Prepare a risk analysis to accurately determine the number of personnel necessary to maintain an acceptable level of service at Project facilities.	TJPA	Prior to project facility permitting	TJPA	TJPA to develop risk analysis during facility design phase.
Noise – Operations				
NoiO 1 – Apply noise mitigation at the following locations adjacent to the bus storage facility: • Provide sound insulation to mitigate noise impacts at the residences north of the AC Transit Facility at the corner of Perry and Third Street. At a minimum, apply sound insulation to the façade facing the bus storage facility (the south façade). • Construct two noise barriers to mitigate noise impacts to residences south of the AC Transit Facility along Stillman Street. The first noise barrier would be approximately 10 to 12 feet high and run along the southern edge of the AC Transit storage facility. The second noise barrier would be approximately 5 to 6 feet high and would be located on the portion of the ramp at the southwestern corner of the AC Transit facility. Treat the noise barriers with an absorptive material on the side facing the facility to minimize the potential for reflections off the underside of the freeway. • Construct a noise barrier to mitigate noise impacts to residences south of the Golden Gate Transit Facility along	TJPA	During construction	TJPA	TJPA to design detailed noise mitigation during preliminary and final design phases. TJPA engineering staff to inspect installation and/or construction of mitigation measures.

MITIGATION MEASURE	Responsibility for Implementation	Mitigation Schedule	Monitoring Responsibility	Monitoring Actions/Schedule
Stillman Street. The barrier would be approximately 10 to 12 feet high and run along the southern and a portion of the eastern edge of the Golden Gate Transit storage facility. Treat the noise barriers with an absorptive material on the side facing the facility to minimize the potential for reflections off the underside of the freeway.				
NoiO 2 – Landscape the noise walls. Develop the actual design of the walls in cooperation with area residents.	TJPA	During preliminary and final design	TJPA	TJPA to work with area residents during design of noise walls.
NoiO 3 – Construct noise walls prior to the development of the permanent bus facilities.	TJPA	During schedule development, construction document preparation and construction	TJPA	TJPA to develop program schedule and contract documents to implement this construction sequencing requirement.
Noise – Construction				
NoiC 1 – Comply with San Francisco noise ordinance. The noise ordinance includes specific limits on noise from construction. The basic requirements are: • Maximum noise level from any piece of powered construction equipment is limited to 80 dBA at 100 feet. This translates to 86 dBA at 50 feet. • Impact tools are exempted, although such equipment must be equipped with effective mufflers and shields. The noise control equipment on impact tools must be as recommended by the manufacturer and approved by the Director of Public Works.	TJPA	During preparation of construction contract documents and construction	TJPA	TJPA to work with CCSF Department of Public Works (DPW) regarding construction noise mitigation program.

MITIGATION MEASURE	Responsibility for Implementation	Mitigation Schedule	Monitoring Responsibility	Monitoring Actions/Schedule
• Construction activity is prohibited between 8 p.m. and 7 a.m. if it causes noise that exceeds the ambient noise plus 5 dBA The noise ordinance is enforced by the San Francisco DPW, which may waive some of the noise requirements to expedite the project or minimize traffic impacts. For example, along Townsend Street where much of the land use is commercial, business owners may prefer nighttime construction since it would reduce disruption during normal business hours. The DPW waivers usually allow most construction processes to continue until 2 a.m., although construction processes that involve impacts are rarely allowed to extend beyond 10 p.m. This category would include equipment used in demolition such as jackhammers and hoe rams, and pile driving. It is not anticipated that the construction documents would have specific limits on nighttime construction. There may be times when nighttime construction is desirable (e.g., in commercial districts where nighttime construction would be less disruptive to businesses in the area) or necessary to avoid unacceptable traffic disruptions. Since the construction would be subject to the requirements of the San Francisco noise regulations, in these cases, the contractor would need to work with the DPW to come up with an acceptable approach balancing interruption of the business and residential community, traffic disruptions, and reducing the total duration of the construction.				
NoiC 2 – Conduct noise monitoring. The purpose of monitoring is to ensure that contractors take all reasonable steps to minimize noise.	TJPA	During construction	TJPA	Monitoring data to be provided to CCSF DPW.
NoiC 3 – Conduct inspections and noise testing of equipment. This measure will ensure that all equipment on the site is in good condition and effectively muffled	TJPA	During construction	TJPA	Perform monitoring during construction.

MITIGATION MEASURE	Responsibility for Implementation	Mitigation Schedule	Monitoring Responsibility	Monitoring Actions/Schedule
NoiC 4 – Implement an active community liaison program. This program would keep residents informed about construction plans so they can plan around periods of particularly high noise levels and would provide a conduit for residents to express any concerns or complaints about noise.	TJPA	During construction	TJPA	TJPA to develop and initiate community liaison program during final design prior to construction. Program will continue during construction.
NoiC5 – Minimize use of vehicle backup alarms. Because backup alarms are designed to get people's attention, the sound can be very noticeable even when their sound level does not exceed the ambient, and it is common for backup alarms at construction sites to be major sources of noise complaints. A common approach to minimizing the use of backup alarms is to design the construction site with a circular flow pattern that minimizes backing up of trucks and other heavy equipment. Another approach to reducing the intrusion of backup alarms is to require all equipment on the site to be equipped with ambient sensitive alarms. With this type of alarm, the alarm sound is automatically adjusted based on the ambient noise. In nighttime hours when ambient noise is low, the backup alarm is adjusted down.	TJPA	During construction document preparation and construction	TJPA	Review contract specifications during final design and inspect construction.
NoiC 6 – Include noise control requirements in construction specifications. These should require the contractor to • Perform all construction in a manner to minimize noise. The contractor should be required to select construction processes and techniques that create the lowest noise levels. Examples are using predrilled piles instead of impact pile driving, mixing concrete offsite instead of onsite, and using hydraulic tools instead of pneumatic impact tools.	TJPA	Final design and construction	TJPA	TJPA to develop detailed noise control requirements during preliminary engineering and final design. Ensure contractor obtains permits if necessary. Inspect construction activities for compliance and monitor noise levels. Where applicable, coordinate with CCSF departments with jurisdiction over activities, such

MITIGATION MEASURE	Responsibility for Implementation	Mitigation Schedule	Monitoring Responsibility	Monitoring Actions/Schedule
• Use equipment with effective mufflers. Diesel motors are often the major noise source on construction sites. Contractors should be required to employ equipment fitted with the most effective commercially available mufflers. • Perform construction in a manner to maintain noise levels at noise sensitive land uses below specific limits. • Perform noise monitoring to demonstrate compliance with the noise limits. Independent noise monitoring should be performed to check compliance in particularly sensitive areas. • Minimize construction activities during evening, nighttime, weekend and holiday periods. Permits would be required before construction can be performed in noise sensitive areas during these periods. • Select haul routes that minimize intrusion to residential areas. This is particularly important for the trench alternatives that will require hauling large quantities of excavation material to disposal sites. Controlling noise in contractor work areas during nighttime hours is likely to require some mixture of the following approaches: • Restrictions on noise producing activities during nighttime hours. • Laying out the site to keep noise producing activities as far as possible from residences, to minimize the use of backup alarms, and to minimize truck activity and truck queuing near the residential areas. • Use of procedures and equipment that produce lower noise				CCSF Department of Parking and Traffic (DPT) and DPW.

MITIGATION MEASURE	Responsibility for Implementation	Mitigation Schedule	Monitoring Responsibility	Monitoring Actions/Schedule
levels than normal. For example, some manufacturers of construction equipment can supply special noise control kits with highly effective mufflers and other materials that substantially reduce noise emissions of equipment such as generators, tunnel ventilation equipment, and heavy diesel power equipment including mobile cranes and front-end loaders. • Use of temporary barriers near noisy activities. By locating the barriers close enough to the noise source, it is possible to obtain substantial noise attenuation with barriers 10 to 12 feet high even though the residences are 30 to 40 feet higher than the construction site. • Use of partial enclosures around noisy activities. It is sometimes necessary to construct shed-like structures or complete buildings to contain the noise from nighttime activities.				

MITIGATION MEASURE	Responsibility for Implementation	Mitigation Schedule	Monitoring Responsibility	Monitoring Actions/Schedule
Vibration – Operations				
VibO1 – Use high-resilience track fasteners or a resiliently supported tie system for the Caltrain Downtown Extension for areas projected to exceed vibration criteria, including the following locations: (1) Live/Work condos, 388 Townsend Street (Hubbell an Seventh), (2) San Francisco Residences on Bryant (Harrison Parking Lot Site), (3) Clock Tower Building, and Second Street High Rise and (4) new Marriott Courtyard (Marine Firefighter's Union).	TJPA	During preliminary engineering, final design and construction	TJPA	TJPA to develop locations/use of resilience track fasteners or resiliently supported tie system during preliminary engineering and final design. Review construction documents and inspect installation. Whare applicable, coordinate with CCSF departments with jurisdiction over activities, such as CCSF Department of Building Inspection (DBI) and DPW.
Vibration – Construction				
VibC1 – Limit or prohibit use of construction techniques that create high vibration levels. At a minimum, processes such as pile driving would be prohibited at distances less than 250 feet from residences.	TJPA	During preliminary engineering, final design and construction	TJPA	TJPA to ensure preliminary design, final design and contract documents preclude use of pile driving equipment within 250 feet of residences. Construction management and inspection will monitor contractors' activities to ensure compliance. Where applicable, coordinate with CCSF departments with jurisdiction over activities, such as DBI and DPW.

MITIGATION MEASURE	Responsibility for Implementation	Mitigation Schedule	Monitoring Responsibility	Monitoring Actions/Schedule
VibC 2 – Restrict procedures that contractors can use in vibration sensitive areas. (It is often possible to employ alternative techniques that create lower vibration levels. For example, unrestricted pile driving is one activity that has considerable potential for causing annoying vibration. Using the cast-in-drilled-hole piling method instead will eliminate most potential for vibration impact from the piling.)	TJPA	During preliminary engineering, final design and construction	TJPA	TJPA to establish construction vibration design standards during final design. Include provisions in contract documents and monitor contractors' activities to ensure compliance. Where applicable, coordinate with CCSF departments with jurisdiction over activities, such as DBI and DPW.
VibC 3 – Require vibration monitoring during vibration intensive activities.	TJPA	During construction	TJPA	TJPA to include provisions for vibration monitoring in construction contract documents or perform monitoring under a separate contract. Where applicable, coordinate with CCSF departments with jurisdiction over activities, such as DBI and DPW.
VibC 4 – Restrict the hours of vibration intensive activities such as pile driving to weekdays during daytime hours.	TJPA	During design and construction	TJPA	TJPA to include provisions in contract documents and monitor contractors' activities to ensure compliance.
VibC 5 – Investigate alternative construction methods and practices to reduce the impacts in coordination with the construction contractor if resident annoyance from vibration becomes a problem.	TJPA	During final design and during construction	TJPA	TJPA to include provisions in contract documents and monitor contractors' activities to ensure compliance. Where applicable, coordinate with CCSF departments with jurisdiction over activities, such as DBI and DPW.

MITIGATION MEASURE	Responsibility for Implementation	Mitigation Schedule	Monitoring Responsibility	Monitoring Actions/Schedule
VibC 6 – Include specific limits, practices and monitoring and reporting procedures for the use of controlled detonation. Control and monitor use of controlled detonation to avoid damage to existing structures. Include specific limits, practices, and monitoring and reporting procedures within contract documents to ensure that such construction methods, if used, would not exceed safety criteria.	TJPA	During final design and during construction	TJPA	TJPA to establish detailed limits, practices, and monitoring program for controlled detonation during final design. Include provisions in contract documents and monitor contractors' activities to ensure compliance. Where applicable, coordinate with CCSF departments with jurisdiction over activities, such as DBI and DPW.
Soils/Geology				
SG 1 – Monitor adjacent buildings for movement, and if movement is detected, take immediate action to control the movement.	TJPA	During construction	TJPA	TJPA to include provisions in contract documents requiring such monitoring and corrective measures and inspect contractors' activities to ensure compliance. Where applicable, coordinate with CCSF departments with jurisdiction over activities, such as DBI and DPW.
SG 2 – Apply geotechnical and structural engineering principles and conventional construction techniques similar to the design and construction of high-rise buildings and tunnels throughout the downtown area. Apply design measures and utilize pile-supported foundations to mitigate potential settlement of the surface and underground stations.	TJPA	During preliminary engineering and final design	TJPA	TJPA to review design and contract documents to ensure implementation. Where applicable, coordinate with CCSF departments with jurisdiction over activities, such as DBI and DPW.
SG 3 – Design and construct structural components of the project to resist strong ground motions approximating the maximum anticipated earthquake (0.5g). The cut-and-cover portions will require pile supports to minimize non-seismic settlement in soft compressible sediments (Bay Mud). The underground Caltrain station at Fourth and Townsend will require pile-supported foundations due to the presence of underlying soft sediments.	TJPA	During preliminary engineering, final design and construction	TJPA	TJPA to design structural components to meet seismic standards during preliminary engineering and final design. Review design, contract documents and construction activities to ensure implementation. Where applicable, coordinate with JPB and CCSF departments with jurisdiction

MITIGATION MEASURE	Responsibility for Implementation	Mitigation Schedule	Monitoring Responsibility	Monitoring Actions/Schedule
				over activities, such as DBI and DPW.
SG 4 – Underpin existing building, where deemed necessary, to protect existing structures from potential damage that could result from excessive ground movements during construction. Design the tunneling and excavation procedures (and construction sequence), and design of the temporary support system with the objective of controlling ground deformations within small enough levels to avoid damage to adjacent structures. Where the risk of damage to adjacent structures is too great, special measures will be implemented such as: (1) underpinning, (2) ground improvement, and/or (3) strengthening of existing structures to mitigate the risks. Underpinning may include internal strengthening of the superstructure, bracing, reinforcing existing foundations, or replacing existing foundations with deep foundations embedded outside the tunnel zone of influence. Alternatives, in lieu of underpinning, involve strengthening the rock between the building and crown of tunnel. Grouting in combination with inclined pin piles can be used not only to strengthen the rock, but also make the rock mass over the tunnel act as a rigid beam, allowing construction of tunnels with no adverse effects on the buildings supported on shallow foundations over the tunnel.	TJPA	During preliminary engineering, final design and construction	TJPA	TJPA to design tunneling, excavation procedures, underpinning, strengthening existing structures or ground improvement to protect existing structures from damage Include provisions in contract documents requiring contractors to implement measures during construction. Monitor construction activities to ensure compliance. Where applicable, coordinate with CCSF departments with jurisdiction over activities, such as DBI and DPW.

MITIGATION MEASURE	Responsibility for Implementation	Mitigation Schedule	Monitoring Responsibility	Monitoring Actions/Schedule
SG 5 – TJPA shall assure proper design and construction of pile-supported foundations for structures to control potential settlement of the surface. Stability of excavations and resultant impacts on adjacent structures can be controlled within tolerable limits by proper design and implementation of the excavation shoring systems.	TJPA	During preliminary engineering, final design and construction	TJPA	TJPA to ensure foundations and excavation shoring systems are designed and constructed to minimize and control settlement and impacts on adjacent structures. Where applicable, coordinate with CCSF departments with jurisdiction over activities, such as DBI and DPW.
Utilities				
Util 1 – Coordinate with utility providers during preliminary engineering, continuing through final design and construction. Utilities would be avoided, relocated, and/or supported as necessary during construction activities to prevent damage to utility systems and to minimize disruption and degradation of utility service to local customers.	TJPA	During preliminary engineering, final design and construction	TJPA	TJPA to identify utilities; design relocations or protection measures where required; and include requirements in contract documents. Monitor construction activities to ensure implementation of all required measures.
Cultural and Historic Resources				
CH 1 – Comply with the provision of the signed Memorandum of Agreement (MOA) between the Federal Transit Administration, the State Historic Preservation Officer, and the TJPA.	TJPA	During preliminary engineering, final design and construction	TJPA	TJPA will assure compliance with MOA provisions during preliminary engineering, final design and construction, as described below.

MITIGATION MEASURE	Responsibility for Implementation	Mitigation Schedule	Monitoring Responsibility	Monitoring Actions/Schedule
CH 2 – – **Professional Qualifications.** Assure all activities regarding history, historic preservation, historic architecture, architectural history, historic and prehistoric archaeology are carried out by or under the direct supervision of persons meeting, at a minimum, the Secretary of the Interior's professional qualifications standards (48 FR 44738-9) (PQS) in these disciplines. Nothing in this stipulation may be interpreted to preclude any signatory or any agent or contractor thereof from using the properly supervised services or persons who do not meet the PQS. **Historic Preservation Standards.** Assure all activities regarding history, historic preservation, historic architecture, architectural history, historic and prehistoric archaeology are carried out to reasonably conform to the Secretary of Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 FR 44716-44740) as well as to applicable standards and guidelines established by SHPO. **Curation and Curation Standards.** Ensure that FTA and TJPA shall, to the extent permitted under sections 5097.98 and 5097.991.[sic] of the California Public Resources Code, materials and records resulting from any archaeological treatment or data recovery that may be carried out pursuant to this MOA, are curated in accordance with 36 CFR Part 79.	TJPA	During preliminary engineering, final design and construction	TJPA	Prior to initiation of design and construction activities, TJPA will require submission of and review qualifications of professionals performing the MOA activities to assure that Secretary of Interior standards are met.
CH 3 – Integrate into the design of the new terminal a dedicated space for a permanent interpretive exhibit. The interpretive exhibit will include at a minimum, but is not necessarily limited to: plaques or markers, a mural or other depiction of the historic Transbay Transit Terminal (TTT), ramps, or Key System, or other interpretive material.	TJPA	During preliminary engineering and final design	TJPA	TJPA will include space for interpretive exhibit in terminal during design. Review contract documents and construction submittals and activities to ensure implementation.

MITIGATION MEASURE	Responsibility for Implementation	Mitigation Schedule	Monitoring Responsibility	Monitoring Actions/Schedule
CH 4 – Consult with the State Department of Transportation (Department) regarding the availability of historical documentary materials for the creation of the permanent interpretive display of the history of the original TTT building and its association with the San Francisco- Oakland Bay Bridge. Department will assist TJPA in planning the scope and content of the proposed interpretive exhibit. Invite the Oakland Heritage Alliance, the San Francisco Architectural Heritage, the California State Railroad Museum, and the Western Railway Museum to participate in this consultation. While retaining responsibility for the development of the exhibit, TJPA will jointly consider the Department's and participating invitees' recommendations when finalizing the exhibit design. TJPA will produce, install, and maintain the exhibit.	TJPA	During preliminary engineering and final design	TJPA	TJPA will consult with Department regarding availability of documentary materials. TJPA will invite participation in this review from the other designated parties. TJPA will produce, install, and maintain the exhibit in the new Transbay Terminal.
CH 5 – Consult with the City of Oakland about its possible interest in having a similar interpretive exhibit in the East Bay. If agreement is reached prior to completion of final design of the Transbay Terminal, TJPA will provide and deliver exhibit materials to a venue that is mutually satisfactory to TJPA and the City of Oakland.	TJPA	During preliminary engineering and final design	TJPA	During preliminary engineering and final design, TJPA will consult with City of Oakland regarding its possible interest in establishing an exhibit. TJPA will provide and deliver exhibit materials to a venue in the City of Oakland that is mutually satisfactory to TJPA and the City of Oakland should such an exhibit be developed.
CH 6 – Identify, in consultation with Department, elements of the existing TTT that may be suitable for salvage and interpretive use by museums. Within two years following execution of this MOA by FTA and SHPO, TJPA will offer any elements identified as suitable for salvage and interpretive use to San Francisco Architectural Heritage, the California State Railroad Museum, Sacramento, the Western Railway Museum, the Oakland Museum, and any other interested parties. Remove any elements selected in a manner that minimizes damage and deliver with legal title to the recipient. Items not accepted by interested	TJPA	During preliminary engineering and final design	TJPA	Acceptance of items by interested parties must be completed at least 90 days prior to demolition of the Transbay Terminal

MITIGATION MEASURE	Responsibility for Implementation	Mitigation Schedule	Monitoring Responsibility	Monitoring Actions/Schedule
parties for salvage or interpretive use within the time frame specified herein will receive no further consideration.				
CH 7 – Consult with Department and the Oakland Museum about contributing to Department's exhibit and the production of an interpretive video at the Oakland Museum relating to the history and engineering of the major historic state bridges of the San Francisco Bay Area. TJPA will propose contributions to such an exhibit and video that would be related to the history of the TTT, bus ramp loop structures, and the Key System. Items contributed by TJPA to such an exhibit may include photographs, drawings, videotape, models, oral histories, and salvaged components from the TTT.	TJPA	During preliminary engineering and final design	TJPA	TJPA will produce and deliver to the Oakland Museum agreed-upon materials for such an exhibit and interpretive video.
CH 8 – Assist the Oakland Museum by contributing up to $50,000 toward the cost of preparing and presenting the exhibit and preparing an exhibit catalog or related museum publication in conjunction with the exhibit, in a manner and to the extent that is mutually satisfactory to TJPA, Department, and the Oakland Museum. A separate agreement will outline the negotiated financial contributions. Work with the Oakland Museum and assist in the preparation of an exhibit and interpretive video if consultation results in agreement between TJPA and the Oakland Museum prior to demolition of the existing TTT.	TJPA	During preliminary engineering and final design	TJPA	TJPA will work with Oakland Museum and assist in the preparation of an exhibit and an interpretive video if consultation results in an agreement between TJPA and Oakland Museum prior to demolition of the existing Transbay Terminal

MITIGATION MEASURE	Responsibility for Implementation	Mitigation Schedule	Monitoring Responsibility	Monitoring Actions/Schedule
CH 9 – Request that SHPO, prior to the start of any work that would have an adverse effect on components of the Bay Bridge that are historic properties, determine whether these components, including the TTT and associated ramps, have been adequately recorded in existing documents. If SHPO determines that, collectively, such documents, which include the Department's past recordation of a series of remodeling and seismic retrofit project that have occurred since 1993, adequately document the TTT and ramps, then no further documentation will be necessary.	TJPA	During preliminary engineering and final design	TJPA	TJPA will consult with the SHPO regarding adequacy of prior recordation efforts.
Seek, with the assistance of the Department, to obtain the original drawings of the TTT by architect T. Pflueger.				TJPA will work with Department to seek original drawings of the Transbay Transit Terminal.
If SHPO determines that existing documentation is adequate, compile such documentation into a comprehensive record. Components to be included in the review of past documentation are: • 425 Mission Transbay Transit Terminal (APN 3719-003, 3720-001, 3721-006); • Upper Deck San Francisco Approaches or North Connector, Bridge #34-116F; • Upper Deck San Francisco Approaches or Center Ramps, Bridge #34-118L; • San Francisco Approaches or Lower Deck On-Ramp, Bridge #34-118R; • Transbay Terminal Loop ramp, Bridge #34-119Y; and • Harrison Street over-crossing Bridge #34-120Y.				If SHPO determines that existing documentation is adequate, compile such documentation into a comprehensive record.
Consult further with SHPO, if SHPO determines that existing documentation does not constitute adequate recordation of the Bay Bridge components addressed hereunder. SHPO will determine what level and type of additional documentation is necessary.				If SHPO determines that existing documentation does not constitute adequate recordation of the Bay Bridge components, then TJPA and SHPO will consult further and SHPO will determine what level and type of additional documentation is necessary.
Provide xerographic copies of this documentation to the SHPO and the Department Headquarters Library, upon a written				

MITIGATION MEASURE	Responsibility for Implementation	Mitigation Schedule	Monitoring Responsibility	Monitoring Actions/Schedule
determination by SHPO that all documentation prescribed hereunder is satisfactory, to the History Center at the San Francisco Public Library, San Francisco Architectural Heritage, the Oakland History Room of the Oakland Public Library, the Oakland Museum of California, the Western Railway Museum, and Department District 4 Office. Thereafter, TJPA may proceed with that aspect of the Project that will adversely affect the historic properties documented hereunder.				If no response from SHPO within 45 days of receipt of each submittal of documentation, TJPA may assume that said documentation is adequate and may proceed with the project. TJPA will ensure that these records are accepted by SHPO prior to demolition of the TTT and provide copies of the documentation to designated agencies. Then, TJPA will proceed with the aspect of the project that will adversely affect the historic properties documented.
CH 10 – Within 180 days after FTA determines that the Project has been completed, TJPA, in consultation with FTA and SHPO, will re-revaluate the Bay Bridge, a property listed on the NRHP, and determine whether the National Register nomination should be amended or whether the bridge no longer qualifies for listing and should be removed from the National Register. As appropriate, TJPA will prepare and submit to the FTA and SHPO either an amended nomination or petition for removal, to be processed according to the procedures set forth in 36 CFR Part 60 (60.14 and 60.15).	TJPA	Within 180 days after FTA determines that the Project has been completed	TJPA	As appropriate, TJPA will prepare and submit to the FTA and SHPO either an amended nomination or petition for removal, to be processed according to the procedures set forth in 36 CFR part 60 (60.14 and 60.15). TJPA will coordinate these efforts with the CCSF Planning Department.
CH 11 – Develop and implement measures, in consultation with the owners of historic properties immediately adjoining the construction sites, to protect the contributing elements of the Second and Howard Streets Historic District and the Rincon Point/South Beach Historic Warehouse Industrial District from damage by any aspect of the Project. Such measures will include, but are not necessarily limited to those identified in the MOA. The protective measures herein stipulated will be developed and implemented by TJPA prior to the commencement of any aspect	TJPA	During preliminary engineering, final design, and construction	TJPA	TJPA will contact owners of record of historic properties that will be affected (but that will not be acquired and demolished) by the Project. TJPA will provide and review this mitigation monitoring program with the owners via correspondence and/or public and face-to-face meetings. TJPA will coordinate these efforts with the CCSF Planning Department prior to commencement of any aspect of the

MITIGATION MEASURE	Responsibility for Implementation	Mitigation Schedule	Monitoring Responsibility	Monitoring Actions/Schedule
of the Project that could have an adverse effect on historic properties immediately adjoining the construction sites herein identified. In addition, TJPA will monitor the effectiveness of the protective measures herein stipulated and will supplement or modify these measures as and where necessary in order to ensure that they are effective. The historic properties covered by the terms of this paragraph are • 589-591 Howard Street/3736-098, NRHP Status: 1D, Contributing Element of Second & Howard District & New Montgomery/Second Street, Const. Date: 1906, Type of Impact: Cut-and-cover construction nearby. • 163 Second Street/3721-048, NRHP Status: 1D, Contributing Element of Second & Howard District & New Montgomery/Second Street, Const. Date: 1907, Type of Impact: Cut-and-cover construction nearby. • 166-78 Townsend Street/3788-012, NRHP Status: 3D Contributing Element of Rincon Point/South Beach District & South End District, Const. Date: 1910 [1], 1988 [2], Type of Impact: Cut-and-cover construction nearby. Need construction easement. • 640-Second Street/3788-002, NRHP Status: 252, Contributing Element of Rincon Point/South Beach District & South End District, Const. Date: 1926, Type of Impact: Tunnel under or near property • 650 Second Street/3788-049 through 3788-073, NRHP Status: 252, Contributing Element of Rincon Point/South Beach District & South End District, Const. Date: 1922, Type of Impact: Tunnel under or near property • 670-680 Second Street/3788-043, 3788-044, NRHP Status: 252 (670), 3D (680), Contributing Element of Rincon Point/South				project that could have any adverse effect on historic properties immediately adjoining the construction sites herein identified. TJPA will monitor the effectiveness of the protective measures and will supplement or modify these measures as and where necessary in order to ensure that they are effective.

MITIGATION MEASURE	Responsibility for Implementation	Mitigation Schedule	Monitoring Responsibility	Monitoring Actions/Schedule

Beach District & South End District, Const. Date: 1913, Type of Impact: Tunnel under or near property

- 301-321 Brannan Street/3788-037, NRHP Status: 3D, Contributing Element of Rincon Point/South Beach District & South End District, Const. Date: 1909, Type of Impact: Tunnel under or near property

- 130 Townsend Street/3788-008, NRHP Status: 3D, Contributing Element of Rincon Point/South Beach District & South End District, Const. Date: 1910 [1], 1895-6 [2], Type of Impact: Tunnel under or near property

- 136 Townsend Street/3788-009, NRHP Status: 3D, Contributing Element of Rincon Point/South Beach District & South End District, Const. Date: 1902 [1], 1913 [2], Type of Impact: Tunnel under or near property

- 144-46 Townsend Street/3788-009A, NRHP Status: 3D, Contributing Element of Rincon Point/South Beach District & South End District, Const. Date: 1922, Type of Impact: Tunnel under or near property

- 148-54 Townsend Street/3788-010, NRHP Status: 3D, Contributing Element of Rincon Point/South Beach District & South End District, Const. Date: 1922, Type of Impact: Tunnel under or near property

- 162-164 Townsend Street/3788-081, NRHP Status: 3D, Contributing Element of Rincon Point/South Beach District & South End District, Const. Date: 1919, Type of Impact: Tunnel under or near property

Notes: National Register Status Codes are as follows:
1 – Listed on the NRPH
251 – Determined eligible for listing by the Keeper of the

MITIGATION MEASURE	Responsibility for Implementation	Mitigation Schedule	Monitoring Responsibility	Monitoring Actions/Schedule
Register 252 – Determined eligible for listing by the consensus of the SHPO and federal agency 1D – Listed on the National Register as a contributor to a district or multi-resource property				
CH 12 –TJPA will take the effect of the Project on the three historic properties listed below into account by recording these properties in accordance with the terms herein set forth. These buildings are: • 191 2nd Street, (APN: 3721-022), • 580-586 Howard Street, (APN: 3721-092 through 3721-106), and • 165-173 2nd Street, (APN: 3721-025) Prior to taking any action that could adversely affect these properties, consult SHPO and SHPO will determine the type and level of recordation that is necessary for these properties. Upon a written determination by SHPO that all documentation prescribed hereunder is complete and satisfactory, submit a copy of this documentation to SHPO, with xerographic copies8 to the History Center at the San Francisco Public Library, San Francisco Architectural Heritage, and the Oakland History Room of the Oakland Public Library. Thereafter, proceed with that aspect of the Project that will adversely affect the historic properties documented hereunder. If SHPO does not respond within 45 days of receipt of each submittal of documentation prescribed herein, assume that SHPO has determined that said documentation is adequate and may proceed with that aspect of the Project that will adversely affect the historic properties documented hereunder.	TJPA	During preliminary engineering and final design	TJPA	TJPA will consult SHPO and SHPO will determine the type of recordation necessary for the properties. TJPA will submit a copy of this documentation to SHPO, upon a written determination by SHPO that all documentation prescribed hereunder is complete and satisfactory, with copies to the designated agencies. If no response from SHPO within 45 days of receipt of each submittal of documentation, then TJPA may proceed with the project.

MITIGATION MEASURE	Responsibility for Implementation	Mitigation Schedule	Monitoring Responsibility	Monitoring Actions/Schedule
CH 13 – Repair, in accordance with the Secretary of the Interior's Standards for Rehabilitation, any damage to contributing elements of the Second and Howard Streets Historic District and the Rincon Point/South Beach Historic Warehouse Industrial District resulting from the Project. Photograph the condition of the contributing elements prior to the start of the Project to establish the baseline condition for assessing damage. Consult with property owner(s) about the appropriate level of photographic documentation of building interiors and exteriors. Provide a copy of this photographic documentation to the property owner(s), and retain on file. Submit repair plans and specifications to SHPO for review and comment, if repair of inadvertent damage resulting from the Project is necessary, to ensure that the work conforms to the Secretary of the Interior's Standards for Rehabilitation. Consult with SHPO to establish a mutually satisfactory time frame for the SHPO's review. TJPA will carry out any repairs required hereunder in accordance with the comments of SHPO.	TJPA	Prior to, during, and following construction	TJPA	TJPA will repair any damage to contributing elements. TJPA will photograph condition of contributing properties prior to the start of the Project to establish the baseline condition for assessing damage. TJPA will consult with property owner(s) about the appropriate level of photographic documentation of building interiors and exteriors, provide a copy of this photographic documentation to the property owner(s), and retain copy on file by TJPA. TJPA will submit repair plans and specifications to SHPO for review and comment, if repair of inadvertent damage is necessary, to ensure conformance to the Secretary of the Interior's Standards for Rehabilitation.
CH 14 – Within 180 days after FTA determines that the Project has been completed, TJPA, in consultation with FTA and SHPO, will re-revaluate the Second and Howard Streets Historic District and determine whether the National Register nomination should be amended or whether the district no longer qualifies for listing and should be removed from the National Register. As appropriate, TJPA will prepare and submit to the FTA and SHPO either an amended nomination or petition for removal, to be processed according to the procedures set forth in 36 CFR Part 60 (60.14 and 60.15).	TJPA	Within 180 days after FTA determines that the Project has been completed	TJPA	As appropriate, TJPA will prepare and submit to the FTA and SHPO either an amended nomination or petition for removal, to be processed according to the procedures set forth in 36 CFR part 60 (60.14 and 60.15). TJPA will coordinate these efforts with the CCSF Planning Department.

MITIGATION MEASURE	Responsibility for Implementation	Mitigation Schedule	Monitoring Responsibility	Monitoring Actions/Schedule
CH 15 – Within 45 days following execution of MOA, consult with FTA, SHPO, JPB and CCSF to initiate the process of determining how archaeological properties that may be affected by the Project will be identified, whether and how the NRHP eligibility of such properties may be addressed, and whether and how the Project's effects, if any, on those archaeological properties that may be considered historic properties for purposes of this MOA, may be taken into account. FTA and TJPA to invite Caltrans to participate in this consultation. Determine the time frame for this consultation with the consulting parties through consensus. Consultation will at minimum be informed by, and take into account, the following documents: 1) Attachment 6, "Standard Treatment of Archaeological Sites: Data Recovery Plan," of the "Programmatic Agreement among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Office, 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;" 2) "Archaeological Research Design and Treatment Plan for SF-480 Terminal Separation Rebuild (Praetzellis and Praetzellis, 1993)" and " The San Francisco-Oakland Bay Bridge, West Approach Replacement: Archaeological Research Design and Treatment Plan (Ziesing, 2000); 3) "Revised Historical Archaeology Research Design for the Central Freeway Replacement Project (Thad M. Van Bueren, Mary Praetzellis, Adrian Praetzellis, Frank Lortie, Brian Ramos, Meg Scantlebury and Judy D. Tordoff)."	TJPA	During preliminary engineering phase	TJPA	SHPO, FTA, SHPO, TJPA, JPB, and CCSF will consult to determine how archaeological properties will be identified, whether and how the NRHP eligibility of such properties may be addressed, and whether and how the Project's effects, if any, on those archaeological properties that may be considered historic properties may be taken into account. Invite Caltrans to participate in this consultation. The consultation will take into account the designated documents.

MITIGATION MEASURE	Responsibility for Implementation	Mitigation Schedule	Monitoring Responsibility	Monitoring Actions/Schedule
CH 16 – If the consulting parties agree that a treatment plan for archaeological properties should be prepared, prepare a Treatment Plan for archaeological resources that provides for the identification, evaluation, and treatment of archaeological properties that may be affected by the Project and that conform to the requirements above of item CH13 1) and take into account the information contained in items CH13 2) and CH13 3) and conform to any other standards, documentation, or guidance that the consulting parties may specify. If the consulting parties agree that the Treatment Plan will address historic archaeological properties as well as prehistoric archaeological properties, ensure that appropriately qualified historians prepare a historic context(s) that will be used by an interdisciplinary team consisting at a minimum of historians and historic archaeologist. The historic context will, at a minimum: 1) identify significant research themes and topics that relate to the historic period(s) addressed by the historic context(s) 2) determine what types of historic archaeological properties, if any, that may usefully and significantly contribute to research themes and topics deemed by the historic context(s) study to be important 3) identify the specific components and constituents (features, artifacts, etc., if any, of historic archaeological property types that can factually and directly, contribute data important to our understanding of significant historic research themes and topics 4) determine the amount (sample size, etc.) of archaeological excavation and related activity that is needed to provide the range and type of factual data that will contribute to our understanding of significant historic research themes and topics	TJPA	During preliminary engineering	TJPA	TJPA will assure completion of comprehensive treatment plan consistent with the content required in the MOA, if the consulting parties agree that a treatment plan for archaeological properties is to be prepared. TJPA shall transmit this plan to the signatories of the MOA. TJPA will ensure that appropriately qualified historians prepare a historic context(s) that includes the specified information for use by an interdisciplinary team consisting at a minimum of historians and historic archaeologist, if the consulting parties agree that the Treatment Plan will address historic archaeological properties as well as prehistoric archaeological properties.

MITIGATION MEASURE	Responsibility for Implementation	Mitigation Schedule	Monitoring Responsibility	Monitoring Actions/Schedule
Submit the draft Treatment Plan to the other consulting parties for review and comment. The consulting parties have 45 days from receipt of the draft Treatment Plan to comment in writing to FTA and TJPA. Failure of the consulting parties to respond within this time frame shall not preclude FTA and TJPA from finalizing the draft Treatment Plan to their satisfaction. Before finalizing the draft Treatment Plan, FTA and TJPA to provide the consulting parties with written documentation indicating whether and how the draft Treatment Plan will be modified. Unless any consulting party objects to this documentation in writing to FTA and TJPA within 15 days following receipt, finalize the draft Treatment Plan as deemed appropriate by FTA and TJPA, and proceed to implement the final Treatment Plan.	TJPA	During preliminary engineering phase	TJPA and FTA	TJPA will submit the draft Treatment Plan to the consulting parties for review and comment. Before finalizing the draft Treatment Plan, FTA and TJPA will provide the consulting parties whether and how the draft Treatment Plan will be modified. TJPA will ensure that the consulting parties have 15 days following receipt of notification of the modifications to comment in writing about the proposed modifications. Unless consulting party objects, FTA and TJPA will finalize the draft Treatment Plan as they deem appropriate, and TJPA and FTA will implement the final Treatment Plan.
If FTA and TJPA propose to modify the final Treatment Plan, they will notify the consulting parties concurrently in writing about the proposed modifications. The consulting parties will have 15 days from receipt of notification to comment in writing to FTA and TJPA. Failure of the consulting parties to respond within this time frame shall not preclude FTA and TJPA from modifying the final Treatment Plan to their satisfaction. Before modifying the final Treatment Plan, FTA and TJPA will provide the consulting parties with written documentation indicating whether and how the final Treatment Plan will be modified. Unless any consulting party objects to this documentation in writing to FTA and TJPA within 15 days following receipt, modify the final Treatment Plan as appropriate, and proceed to implement the modified final Treatment Plan.	TJPA	During preliminary engineering phase	TJPA and FTA	FTA and TJPA will provide the consulting parties whether and how the final Treatment Plan will be modified. TJPA will ensure that the consulting parties have 15 days following receipt of notification of the modifications to comment in writing about the proposed modifications. Unless consulting party objects, FTA and TJPA will modify the final Treatment Plan as they deem appropriate, and TJPA and FTA will proceed to implement the modified final Treatment Plan.

MITIGATION MEASURE	Responsibility for Implementation	Mitigation Schedule	Monitoring Responsibility	Monitoring Actions/Schedule
CH 17 – 1) Within two years after FTA, in consultation with TJPA, has determined that all fieldwork required by the Treatment Plan has been completed, prepare a draft technical report that documents the results of implementing the Treatment Plan and distributes this draft technical report to the other MOA signatories for review. The reviewing parties will be afforded 60 days following receipt of the draft technical report to submit any written comments to FTA and TJPA. Failure of the reviewing parties to respond within this time frame shall not preclude FTA from authorizing TJPA to revise the draft technical report as FTA and TJPA deem appropriate.	TJPA	Within two years of completed fieldwork	TJPA and FTA	TJPA will prepare a draft technical report that documents the results of implementing the Treatment Plan and distribute this draft technical report to the other MOA signatories for review. FTA to authorize TJPA to revise draft as deemed appropriate by FTA and TJPA.
FTA will provide the reviewing parties with a written documentation indicating modifications in accordance with any reviewing party comments. Unless the reviewing parties object to this documentation in writing to FTA and TJPA within 30 days following receipt, modify the draft technical report as FTA and TJPA deem appropriate. Thereafter, issue the technical report in final form and distribute this document in accordance with paragraph CH15 2).				FTA will provide the reviewing parties with a written documentation indicating modifications in accordance with any reviewing party comments. Unless any reviewing party objects, FTA and TJA to issue technical report in final form and distribute in accordance with paragraph CH15 2).
2) Distribute copies of the final technical report documenting the results of the Treatment Plan implementation to the other signatory parties, to any consulting Native American Tribe if prehistoric, protohistoric or ethnographic period archaeological properties were located and addressed under the Treatment Plan, and to the appropriate California Historical Resources Information Survey (CHRIS) Regional Information Center, subject to the terms of Stipulation IV. E (CH19).				TJPA will distribute copies of the final technical report documenting the results of Treatment Plan implementation to other signatory parties, to any consulting Native American Tribe, as applicable, and to the appropriate CHRIS Regional Information Center.
3) Prepare a written draft document that communicates in lay terms the results of Treatment Plan implementation to members of the interested public. Distribute this written draft document for review and comment concurrently with and in the same manner as that prescribed for the draft written technical report prescribed by paragraph C.1. of this stipulation. If the draft document prescribed hereunder is a publication such as a report or				TJPA will prepare a written draft document that communicates in lay terms the results of Treatment Plan implementation to members of interested public.

MITIGATION MEASURE	Responsibility for Implementation	Mitigation Schedule	Monitoring Responsibility	Monitoring Actions/Schedule
brochure, then distribute such publication to the other signatory parties, to any consulting Native American Tribe as applicable, and to any other entity that the signatory parties and, as applicable, any consulting Native American Tribe, through consultation as appropriate, subject to the terms of Stipulation IV.E (CH 19).				
4) Prepare a written annual report describing the status of its efforts to comply with the terms of Stipulations II – IV, inclusive, of this MOA. Prepare the annual report following the end of each fiscal year (July 1 to June 30) that this MOA is in effect and distributed it to all MOA signatories by July 30 of each year until FTA and the SHPO through consultation determine that the requirements of stipulations II – IV, inclusive of this MOA have been satisfactorily completed.	TJPA	During preliminary engineering, final design, and construction	TJPA	TJPA will prepare an annual report describing its efforts to comply with the terms of stipulations II-IV.
CH 18 – If the consulting parties agree that a plan for treatment of archaeological properties will not be prepared, then address any archaeological properties discovered during implementation of any aspect of the Project pursuant to 36 CFR 800.13(b)(3).	TJPA	During construction phase	TJPA	If treatment plan not prepared, TJPA will address any archaeological properties discovered during implementation of any aspect of the Project pursuant to 36 CFR 800.13(b)(3).
CH 19 – The signatories to the MOA acknowledge that historic properties covered by this MOA are subject to the provisions of Section 304 of the National Historic Preservation Act of 1966, as amended, and Section 6254.10 of the California Government Code (Public Records Act), relating to the disclosure of archaeological site information and, having so acknowledged, will ensure that all actions and documentation prescribed by this Agreement are consistent with Section 304 of the National Historic Preservation Act of 1966, as amended, and Section 6254.10 of the California Government Code.	TJPA	During preliminary engineering phase	TJPA	TJPA will acknowledge that historic properties covered by the MOA are subject to the provisions specified in the MOA, relating to the disclosure of archaeological site information. TJPA will ensure that actions and documentation are consistent with same.

MITIGATION MEASURE	Responsibility for Implementation	Mitigation Schedule	Monitoring Responsibility	Monitoring Actions/Schedule
CH 20 – The parties to the MOA agree that Native American burials and related items discovered during implementation of the terms of the MOA and of the Project will be treated in accordance with the requirements of Section 7050.5(b) of the California Health and Safety Code. If, pursuant to Section 7050.5(c) of the California Health and Safety Code, the county coroner/medical examiner determines that the human remains are, or may be of Native American origin, then the discovery shall be treated in accordance with the provisions of Section 5097.98(a)-(d) of the California Public Resources Code. TJPA will ensure that to the extent permitted by applicable law and regulation, the views of any consulting Native American Tribe and the Most Likely Descendant(s) are taken into consideration when decisions are made about the disposition of other Native American archaeological materials and records.	TJPA	Prior to, during, and following construction	TJPA	TJPA agree that Native American burials and related items discovered during implementation of the terms of the MOA and of the Project will be treated in accordance with the requirements specified. If, pursuant to Section 7050.5(c) of the California Health and Safety Code, the county coroner/medical examiner determines that the human remains are, or may be of Native American origin, then the discovery shall be treated in accordance with the provisions specified. TJPA will ensure that to the extent permitted by applicable law and regulation, the views of any consulting Native American Tribe and the Most Likely Descendant(s) are taken into consideration when decisions are made about the disposition of other Native American archaeological materials and records.
Hazardous Materials/Waste – Operations				
HWO 1 – Construct and operate any Caltrain fueling facility in compliance with local, state and Federal regulations regarding handling and storage of hazardous materials. (Caltrain Joint Powers Board (JPB)/TJPA)	Caltrain Joint Powers Board (JPB)	During construction and operations	TJPA	Review design and contract documents to ensure compliance with all applicable regulations. Obtain all applicable permits. Inspect construction to ensure compliance with contract documents and regulations. Inspect operations, and comply with all permitting and reporting requirements.

MITIGATION MEASURE	Responsibility for Implementation	Mitigation Schedule	Monitoring Responsibility	Monitoring Actions/Schedule
HWO 2 – Equip diesel fuel pumps with emergency shut-off valves and, in compliance with U.S. EPA requirements, fuel Underground Storage Tanks (USTs) would be equipped with leak detection and monitoring systems.	JPB	During operations	TJPA	Review design and contract documents to ensure compliance with all applicable regulations. Obtain all applicable permits. Inspect construction to ensure compliance with contract documents and regulations. Inspect operations, and comply with all permitting and reporting requirements
HWO 3 – Employ the use of secondary containment systems for any aboveground storage tanks.	JPB	During operations	TJPA	Secondary containment to be included in facility design and construction and maintained during operations
HWO 4 – Store cleaning solvents in 55-gallon drums, or other appropriate containers, within a bermed area to provide secondary containment.	JPB	During operations	TJPA	Inspect operations, and comply with all permitting and reporting requirements
HWO 5 – Slope paved surfaces within the fueling facility and the solvent storage area to a sump where any spilled liquids could be recovered for proper disposal.	JPB	During construction and operations	TJPA	Sloped paved surfaces and sump to be included in facility design
HWO 6 – Follow California OSHA and local standards for fire protection and prevention for the handling and storage of fuels and solvents.	JPB	During operations	TJPA	Review design and contract documents to ensure compliance with all applicable regulations. Obtain all applicable permits. Inspect construction to ensure compliance with contract documents and regulations. Inspect operations, and comply with all permitting and reporting requirements

MITIGATION MEASURE	Responsibility for Implementation	Mitigation Schedule	Monitoring Responsibility	Monitoring Actions/Schedule
HWO 7 – Prepare a Hazardous Materials Management/Business Plan and file with the CCSF Department of Public Health.	JPB	During final design	TJPA	JPB to prepare and TJPA to file Hazardous Materials Management/ Business Plan with CCSF Department of Public Health (DPH)
Hazardous Materials/Waste – Construction				
HMC 1 – Follow California OSHA and local standards for fire protection and prevention. Handling and storage of fuels and other flammable materials during construction will conform to these requirements, which include appropriate storage of flammable liquids and prohibition of open flames within 50 feet of flammable storage areas.	TJPA	During construction	TJPA	Review design and contract documents to ensure compliance with all applicable regulations. Obtain all applicable permits. Inspect construction to ensure compliance with contract documents and regulations.
HMC 2 – Perform detailed investigations of the potential presence of contaminants in soil and groundwater prior to construction, using conventional drilling, sampling, and chemical testing methods. Based on the chemical test results, a mitigation plan will be developed to establish guidelines for the disposal of contaminated soil and discharge of contaminated dewatering effluent, and to generate data to address potential human health and safety issues that may arise as a result of contact with contaminated soil or groundwater during construction. The investigation and mitigation plan will follow the requirements of the City and County of San Francisco's Article 22A in the appropriate areas along the alignment. With construction projects of this nature and magnitude, there are typically two different management strategies that can be employed to address contaminated soil handling and disposal issues. Contaminated soil can be excavated and stockpiled at a centralized location and subsequently sampled and analyzed for disposal profiling purposes in accordance with the requirements of the candidate disposal landfill. Alternatively, soil profiling for	TJPA	During construction	TJPA	Review design and contract documents to ensure compliance with all applicable regulations. Obtain all applicable permits. Inspect construction to ensure compliance with contract documents and regulations. Where applicable, coordinate with CCSF departments with jurisdiction over activities, such as DPH and DPW.

MITIGATION MEASURE	Responsibility for Implementation	Mitigation Schedule	Monitoring Responsibility	Monitoring Actions/Schedule
disposal purposes can be done in-situ so when soil is excavated it is loaded directly on to trucks and hauled to the appropriate landfill facility for disposal based on the in-situ profiling results. A project of this nature could also combine both strategies.				
HMC 3 – Cover with plastic sheeting soils removed during excavation and grading activities that remain at a centralized location for an extended period of time to prevent the generation of fugitive dust emissions that migrate offsite.	TJPA	During construction	TJPA	Review design and contract documents to ensure compliance. Obtain all applicable permits. Inspect construction to ensure compliance with contract documents and regulations.
HMC 4 – Use a licensed waste hauler, applying appropriate manifests or bill of lading procedures, as required to haul soil for disposal at a landfill or recycling facility.	TJPA	During construction	TJPA	Review design and contract documents to ensure compliance. Obtain all applicable permits. Inspect construction to ensure compliance with contract documents and regulations.
HMC 5 – Use chemical test results for groundwater samples along the alignment to obtain a Batch Discharge Permit under Article 4.1 of the San Francisco Department of Public Works as well as to evaluate requirements for pretreatment prior to discharge to the sanitary sewer. Effluent produced during the dewatering of excavations will be collected in onsite storage tanks and periodically tested, as required under discharge permit requirements, for potential contamination to confirm the need for any treatment prior to discharge. If required, treatment may include: o Settling to allow particulate matter (total suspended solids) to settle out of the effluent in order to reduce the sediment load as well as reduce elevated metal and other contaminant concentrations that may be associated with suspended	TJPA	During construction	TJPA	Review design and contract documents to ensure compliance. Obtain all applicable permits. Inspect construction to ensure compliance with contract documents and regulations. Where applicable, coordinate with CCSF departments with jurisdiction over activities, such as DPH and DPW.

MITIGATION MEASURE	Responsibility for Implementation	Mitigation Schedule	Monitoring Responsibility	Monitoring Actions/Schedule
sediments; and/or o Construction of a small-scale batch waste water treatment system to remove dissolved contaminants (mainly organic constituents such as petroleum hydrocarbons [gas, diesel, and oils], BTEX, and VOCs) from the dewatering effluent prior to discharge to the sanitary sewer. A treatment system would also likely employ the use of filtration to remove suspended solids.				
HMC 6 – Develop a detailed mitigation plan for the handling of potentially contaminated soil and groundwater prior to starting project construction.	TJPA	During final design	TJPA	Review detailed mitigation plan, include provisions in contract documents and inspect construction to ensure compliance. Where applicable, coordinate with CCSF departments with jurisdiction over activities, such as DPH and DPW. Obtain all applicable permits
HMC 7 – Design dewatering systems to minimize downward migration of contaminants that can result from lowering the water table if necessary based on environmental conditions. As necessary, shallow soils with detected contamination would be dewatered first using wells screened only in those soils. Dewatering of deeper soils would then be performed using wells screened only in the zone to be dewatered. Dewatering wells would be installed using drilling methods that prohibit shallow contaminated soils from being carried deeper into the boreholes.	TJPA	During final design and construction	TJPA	Include requirements in contract documents and monitor construction activities to ensure compliance. Where applicable, coordinate with CCSF departments with jurisdiction over activities, such as DPH and DPW
HMC 8 – Require that workers performing activities on site that may involve contact with contaminated soil or groundwater have appropriate health and safety training in accordance with 29 CFR 1910.120. A Worker Health and Safety Plan (HSP) will be developed for the project and monitored for the implementation of the plan on a day-to-day basis by a Certified Industrial Hygienist (CIH). The	TJPA	During construction	TJPA	Provide health-and-safety training prior to start of and at timely intervals during construction. Include requirements in contract documents and monitor construction activities to ensure compliance.

MITIGATION MEASURE	Responsibility for Implementation	Mitigation Schedule	Monitoring Responsibility	Monitoring Actions/Schedule
HSP will include provisions for: • Conducting preliminary site investigations and analysis of potential job hazards; • Personnel protective equipment; • Safe work practices; • Site control; • Exposure monitoring; • Decontamination procedures; and • Emergency response actions. The HSP will specify mitigation of potential worker and public exposure to airborne contaminant migration by incorporating dust suppression techniques in construction procedures. The plan will also specify mitigation of worker and environmental exposure to contaminant migration via surface water runoff pathways by implementation of comprehensive measures to control drainage from excavations and saturated materials excavated during construction.				
HMC 9 – Review existing asbestos surveys, abatement reports, and supplemental asbestos surveys, as warranted. Perform an asbestos survey for buildings to be demolished, as required. Asbestos-containing building materials (ACM) will require abatement prior to building demolition. Removal and disposal of ACM will be performed in accordance with applicable local, state, and federal regulations.	TJPA	During preliminary engineering, final design and construction phases	TJPA	Determine extent of ACM throughout project site. Perform abatement work. prior to demolition. Include all regulatory requirements in contract documents and inspect construction to ensure compliance. Where applicable, coordinate with CCSF departments with jurisdiction over activities, such as DPH. Obtain all applicable permits.

MITIGATION MEASURE	Responsibility for Implementation	Mitigation Schedule	Monitoring Responsibility	Monitoring Actions/Schedule
HMC 10 – Perform a lead-based paint survey for buildings to be demolished to determine areas where lead-based paint is present and the possible need for abatement prior to demolition.	TJPA	During preliminary engineering prior to building demolitions	TJPA	Determine extent of lead contamination throughout project site. Perform abatement work prior to demolition if necessary. Include all regulatory requirements in contract documents and inspect construction to insure compliance. Where applicable, coordinate with CCSF departments with jurisdiction over activities, such as DPH. Obtain all applicable permits.
Pedestrians				
Ped 1 – Use future construction or redevelopment as opportunities to increase building set-backs thereby increasing sidewalk widths. Particular areas where such widening is most needed include: • The southeast corner of Fremont and Mission streets, • The northeast corner of First and Mission streets, • The north side of Mission Street between First and Fremont, and • Sidewalks south of Howard Street along Folsom, First, Fremont and Beale that are less than 10 feet wide.	Agency and CCSF	During future project reviews in Transbay Terminal area	Agency and CCSF	TJPA will forward guidance to Agency, CCSF Planning Department and DPW.
Ped 2 – Eliminate or reduce sidewalk street furniture such as newspaper boxes and magazine racks in the immediate Transbay Terminal area on corners.	Agency and CCSF	Prior to opening of new Transbay Terminal	Agency and CCSF	TJPA will forward guidance to Agency, CCSF Planning Department and DPW.
Ped 3 – Retime traffic light signalization. This could improve pedestrian levels of service at each of the intersections studies that fall into LOS F.	CCSF	Prior to opening of new Transbay Terminal	CCSF	TJPA will forward guidance to CCSF DPT.

MITIGATION MEASURE	Responsibility for Implementation	Mitigation Schedule	Monitoring Responsibility	Monitoring Actions/Schedule
Ped 4 – Provide crosswalk signalization at intersections where they do not exist already, such as Folsom and Beale streets.	CCSF	Prior to opening of new Transbay Terminal	CCSF	TJPA will forward guidance to CCSF DPT.
Ped 5 – Provide cross-walk count-down signals at intersections and cross-walks immediately surrounding the new Transbay Terminal.	CCSF	Prior to opening of new Transbay Terminal	CCSF	TJPA will forward guidance to CCSF DPT.
Ped 6 – Ensure that Transbay Terminal design increases corner and sidewalk widths at the four intersections immediately surrounding the Transbay Terminal.	TJPA and CCSF, DPW	During Transbay Terminal design phase	TJPA	TJPA and CCSF DPW, where applicable, to include sidewalk width expansion during preliminary and final design of new Transbay Terminal
Ped 7 – Provide lights within crosswalks to warn when pedestrians are present in the crosswalk, such as at the cross-walk associated with the mid-block bus loading area.	TJPA	Prior to opening of new Transbay Terminal	TJPA	TJPA to work with CCSF DPT to install cross-walk warnings
Pre-Construction Activities				
PC 1 – Complete a pre-construction building structural survey to determine the integrity of existing buildings adjacent to and over the proposed Caltrain Downtown Extension. Use this survey to finalize detailed construction techniques along the alignment and as the baseline for monitoring construction impacts during and following construction.	TJPA	Prior to preliminary engineering, final design and construction	TJPA	TJPA to perform building surveys during preliminary engineering. TJPA to include measures to protect existing buildings in final design and construction documents. TJPA to review design submittals, contract documents and construction activities to ensure implementation

MITIGATION MEASURE	Responsibility for Implementation	Mitigation Schedule	Monitoring Responsibility	Monitoring Actions/Schedule
PC 2 – Contact and interview individual businesses along the Caltrain Downtown Extension alignment to gather information and develop an understanding of how these businesses carry out their work. This survey will identify business usage, delivery/shipping patterns, and critical times of the day or year for business activities. Use this information to assist in: (a) the identification of possible techniques during construction to maintain critical business activities, (b) analyze alternative access routes for customers and deliveries to businesses, (c) develop traffic control and detour plans, and (d) finalize construction practices. (TJPA)	TJPA	During preliminary engineering, final design and construction	TJPA	TJPA to perform business activity survey during preliminary engineering. TJPA to include measures to maintain business activities and access in final design and construction documents. TJPA to review design submittals, contract documents and construction activities to ensure implementation.
PC 3 – Complete detailed geotechnical investigation, including additional sampling (drilling and core samples) and analyses of subsurface soil/rock conditions. Use this information to design the excavation and its support system to be used in the retained cut, cut-and-cover, and tunnel portions of the Caltrain Downtown Extension.	TJPA	During preliminary engineering and final design	TJPA	TJPA to obtain necessary permits from CCSF prior to performing drilling. TJPA to perform detailed geotechnical investigation during preliminary engineering. TJPA to review design submittals, contract documents and construction activities to ensure proper utilization of information obtained during investigation.
PC 4 – Establish community construction information/outreach program to provide on-going dialogue between the TJPA and the affected community regarding construction impacts and possible mitigation/solutions. Include dedicated personnel for an outreach office in the construction area to deal with construction coordination.	TJPA	During construction	TJPA	TJPA to establish program during final design prior to construction.

MITIGATION MEASURE	Responsibility for Implementation	Mitigation Schedule	Monitoring Responsibility	Monitoring Actions/Schedule
PC 5 – Establish site and field offices located along the Caltrain Downtown Extension alignment. Field office staff, in conjunction with other staff, will: • Provide the community and businesses with a physical location where information pertaining to construction can be exchanged, • Enable TJPA and JPB to better understand community/business needs during the construction period, • Allow TJPA and JPB to participate in local events in an effort to promote public awareness of the project, • Manage construction-related matters pertaining to the public, • Notify property owners, residences, and businesses of major construction activities (e.g., utility relocation/disruption and milestones, re-routing of delivery trucks), • Provide literature to the public and press, • Promote and provide presentations on the project via a Speakers Bureau, • Respond to phone inquires, • Coordinate business outreach programs, • Schedule promotional displays, and • Participate in community committees.	TJPA and JPB	During construction	TJPA	TJPA to establish program during final design and continue during construction.

MITIGATION MEASURE	Responsibility for Implementation	Mitigation Schedule	Monitoring Responsibility	Monitoring Actions/Schedule
PC 6 – Implement an information phone line to provide community members and businesses the opportunity to express their views regarding construction. Review calls received and, as appropriate, forward the message to the necessary party for action (e.g., utility company, fire department, the Resident Engineer in charge of construction operations). Information available from the telephone line will include current project schedule, dates for upcoming community meetings, notice of construction impacts, individual problem solving, construction complaints and general information. Phone service would be provided in English, Cantonese, and Spanish and would be operated on a 24-hour basis.	TJPA	During construction		TJPA to establish informational "Hot Line" during final design and continue during construction.
PC 7 – Develop traffic management plans. Traffic management plans to maintain access to all businesses will be prepared for areas affected by surface or cut-and-cover construction. In addition, daily cleaning of work areas would be performed by contractors for the duration of the construction period. Provisions would be contained in construction contracts to require the maintenance of driveway access to businesses to the extent feasible.	TJPA	During preliminary engineering, final design and construction	TJPA	TJPA to forward traffic management plans to CCSF DPT for review and approval. Include all requirements in construction documents and inspect implementation during construction.

MITIGATION MEASURE	Responsibility for Implementation	Mitigation Schedule	Monitoring Responsibility	Monitoring Actions/Schedule
General Construction Measures				
GC 1 – Disseminate information to community in a timely manner regarding anticipated construction activities.	TJPA	During construction	TJPA	TJPA to initiate program during final design and continue during construction.
GC 2 – Provide signage. Work with establishments affected by construction activities to develop appropriate signage for display that directs both pedestrian and vehicular traffic to businesses via alternate routes.	TJPA	Prior to and during construction	TJPA	TJPA to initiate signage program during final design and monitor contractors' installation during construction.
GC 3 – Install level deck. Install decking at the cut-and-cover sections to be flush with the existing street or sidewalk levels.	TJPA	During construction	TJPA	TJPA to design flush decking during preliminary and final design, include in construction documents and ensure installation during construction.
GC 4 – Provide for efficient sidewalk design and maintenance. Wherever feasible, maintain sidewalks at the existing width during construction. Where a sidewalk must be temporarily narrowed during construction (e.g., deck installation), restore it to its original width during the majority of construction period. (In some places, this may require placing the temporary sidewalk on the deck.) Each sidewalk design should be of good quality and approved by the Resident Engineer prior to construction. Handicapped access will be maintained during construction where feasible.	TJPA	During preliminary engineering and construction	TJPA	TJPA to work with CCSF DPW on design of sidewalk plans during preliminary and final design and ensure installation during construction.
GC 5 – Provide construction site fencing of good quality, capable of supporting the accidental application of the weight of an adult without collapse or major deformation. Where covered walkways or other solid surface fencing is installed, establish a program to allow for art work (e.g., by local students) on the surface(s).	TJPA	During design and construction	TJPA	TJPA to work with CCSF DPW, incorporate requirements in construction documents and inspect installation during construction

MITIGATION MEASURE	Responsibility for Implementation	Mitigation Schedule	Monitoring Responsibility	Monitoring Actions/Schedule
Air Emissions – Construction				
AC 1 – Assure that, as part of the contract provisions, the project contractor is required to implement the measures below at all project construction sites.	TJPA	During development of contract documents	TJPA	Include requirement in contract documents.
AC 2 – Water all active construction areas at least twice daily. Ordinance 175-91, passed by the San Francisco Board of Supervisors on May 6, 1991, requires that non-potable water be used for dust control activities; therefore, the project contractor would be required to obtain reclaimed water from the City's Clean Water Program or other appropriate sources.	TJPA	During construction	TJPA	Include requirements in contract documents and monitor construction activities to ensure compliance.
AC 3 – Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard.	TJPA	During construction	TJPA	Include requirements in contract documents and monitor construction activities to ensure compliance.
AC 4 – Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites.	TJPA	During construction	TJPA	Include requirements in contract documents and monitor construction activities to ensure compliance.
AC 5 – Sweep daily (with water sweepers) all paved access roads, parking areas and staging areas at construction sites.	TJPA	During construction	TJPA	Include requirements in contract documents and monitor construction activities to ensure compliance.
AC 6 – Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets.	TJPA	During construction	TJPA	Include requirements in contract documents and monitor construction activities to ensure compliance.
AC 7 – Install sandbags or other erosion control measures to prevent silt runoff to public roadways.	TJPA	During construction	TJPA	Include requirements in contract documents and monitor construction activities to ensure compliance.
AC 8 – Replant vegetation in disturbed areas as quickly as possible.	TJPA	During construction	TJPA	Include requirements in contract documents and monitor construction activities to ensure compliance.

MITIGATION MEASURE	Responsibility for Implementation	Mitigation Schedule	Monitoring Responsibility	Monitoring Actions/Schedule
AC 9 – Minimize use of on-site diesel construction equipment, particularly unnecessary idling.	TJPA	During construction	TJPA	Include requirements in contract documents and monitor construction activities to ensure compliance.
AC 10 – Shut off construction equipment to reduce idling when not in direct use.	TJPA	During construction	TJPA	Include requirements in contract documents and monitor construction activities to ensure compliance.
AC 11 – Where feasible, replace diesel equipment with electrically powered machinery.	TJPA	During construction	TJPA	Include requirements in contract documents and monitor construction activities to ensure compliance.
AC 12 – Locate diesel engines, motors, or equipment as far away as possible from existing residential areas.	TJPA	During construction	TJPA	Include requirements in contract documents and monitor construction activities to ensure compliance
AC 13 – Properly tune and maintain all diesel power equipment.	TJPA	During construction	TJPA	Include requirements in contract documents and monitor construction activities to ensure compliance.
AC 14 – Suspend grading operations during first and second stage smog alerts, and during high winds, i.e., greater than 25 miles per hour.	TJPA	During and following construction	TJPA	Include requirements in contract documents and monitor construction activities to ensure compliance.
AC 15 – Upon completion of the construction phase, buildings with visible signs of dirt and debris from the construction site shall be power washed and/or painted (given that permission is obtained from the property owner to gain access to and wash the property with no fee charged by the owner).	TJPA	During construction	TJPA	Include requirements in contract documents and monitor construction activities to ensure compliance.
Visual/Aesthetics - Construction				
VA 1 – Assure that construction crews working at night direct any artificial lighting onto the work site in order to minimize "spill over" light or glare effects on adjacent areas.	TJPA	During construction	TJPA	Include requirements in contract documents and monitor construction activities to ensure compliance.

MITIGATION MEASURE	Responsibility for Implementation	Mitigation Schedule	Monitoring Responsibility	Monitoring Actions/Schedule
VA 2 – Assure that contractors make all efforts possible to minimize specific aesthetic and visual effects of construction identified by neighborhood businesses and residents.	TJPA	During construction	TJPA	Include requirements in contract documents and monitor construction activities to ensure compliance.