Sixth Addendum to the
Transbay Terminal/Caltrain Downtown Extension/Redevelopment Project
Final Environmental Impact Statement/Environmental Impact Report
(SCH #95063004)

I. INTRODUCTION

In April 2004, the Transbay Terminal/Caltrain Downtown Extension/Redevelopment Project (Transbay Program) Final Environmental Impact Statement/Environmental Impact Report (2004 FEIS/EIR) (SCH #95063004) was certified by the City and County of San Francisco, the Peninsula Corridor Joint Powers Board, and the San Francisco Redevelopment Agency. As used herein, "FEIS/EIR" includes all subsequently approved addenda, which have been prepared pursuant to Section 15164 of the Guidelines implementing the California Environmental Quality Act (CEQA), and are listed below:

- A first addendum to the 2004 FEIS/EIR evaluated modifications to the Transbay Transit Center design and construction staging, and revisions to the Temporary Terminal site plan. The First Addendum was adopted by the Transbay Joint Powers Authority (TJPA) Board of Directors on June 2, 2006.

- A second addendum evaluated modifications to the Locally Preferred Alternative for the Caltrain Downtown Extension Project, including design provisions to allow future construction of a Townsend/Embarcadero/Main Loop, and the delay in construction of tail tracks on Main Street pending the outcome of future rail planning studies to accommodate California High-Speed Rail. The Second Addendum was adopted by the TJPA Board on April 17, 2007.

- A third addendum evaluated adding 546 Howard Street, which was identified in the 2004 FEIS/EIR for partial acquisition, to the list of properties identified for full acquisition. The Third Addendum was adopted by the TJPA Board on January 17, 2008.

- A fourth addendum evaluated the configuration, boarding platforms and waiting areas, bus staging areas, and street design associated with the Temporary Terminal. The Fourth Addendum was adopted by the TJPA Board on October 17, 2008.

- A fifth addendum evaluated the building design for the Transbay Transit Center, specifically, (1) the exterior façade of the upper levels and (2) a pedestrian bridge over Beale Street. The Fifth Addendum was adopted by the TJPA Board on April 9, 2009.

II. SUMMARY DESCRIPTION OF SIXTH ADDENDUM

At the time of certification of the 2004 FEIS/EIR, some design components of the Transbay Program were evaluated at a program level, because project specifics could not be identified in advance of project-level design. Subsequent to certification of the 2004 FEIS/EIR, engineering was initiated for the bus ramps connecting the Bay Bridge (Interstate 80 [I-80]) and the Transbay Terminal (now referred to as the Transit Center). The proposed design includes three new refinements. The first is a cable-stayed ramp connecting the bus ramps with the Transit Center.

The second is the widening of the bus exit off the Fremont Street ramp from westbound I-80; the bus exit is used exclusively for buses to exit I-80 and access the proposed bus ramps leading to the Transit Center. Additionally, since certification of the FEIS/EIR, the footprint for the bus ramp component has been modified to meet the project's design and performance criteria, which is the third refinement. Figure 1 shows the footprint of the proposed refinements to the design for the bus ramp component.

III. PROPOSED BUS RAMP DESIGN REFINEMENTS

This Sixth Addendum evaluates the potential impacts associated with proposed refinements to the design and configuration of the bus ramp component of the Transbay Program, identified by the following three elements.

A. Cable-Stayed Ramp Accessing the Transit Center

The proposed bus ramps linking the Transit Center with I-80 would be a single-level structure, as identified and evaluated in the First Addendum. The First Addendum identified the bus ramps as a single-level ramp approximately 40 feet above street level, and approximately 20 feet lower than the top of the stacked bus ramp component identified in the 2004 FEIS/EIR.

Since certification of the 2004 FEIS/EIR and adoption of the First Addendum, a cable-stayed ramp has been designed to connect the bus ramps to the southwestern end of the Transit Center (see Figure 2). The cable-stayed ramp is the portion of the bus ramps that begins just south of Howard Street and runs northwest to cross over Natoma Street. There would be approximately 32 feet of clearance between Howard Street and the underside of the bus ramps, and approximately 29 feet of clearance between Natoma Street and the underside of the bus ramps.

The cable-stayed ramp would have a tower approximately 90 feet above the bus deck and approximately 127 feet above the ground surface (see Figure 3). The ramp would be supported by 16 cables (eight supporting each side of the tower), each approximately 12 inches in diameter. The cable-stayed ramp, including a steel deck connecting to the Transit Center, would be approximately 330 feet long.

B. Fremont Street Ramp Modifications

The existing bus exit off the Fremont Street ramp is a 12-foot-wide, single-lane exit ramp designed by Caltrans and built in 2008 as part of the West Approach Seismic Safety Project, a portion of the San Francisco-Oakland Bay Bridge Project. The bus exit is intended to provide the transition from I-80 to the bus ramps leading to the Transit Center. As part of the proposed refinements, the Fremont Street ramp would be widened by up to approximately 12 feet (see Figure 2).

In 2006, the San Francisco Redevelopment Commission approved the Transbay Streetscape and Open Space Concept Plan. This plan identified areas under the bus ramps that could potentially be used as recreational hardcourts or pedestrian mews. The area afforded by column spacing and overhead clearances under the Fremont Street ramp could be used for such purposes.

C. Bus Ramp Footprint

The proposed bus ramps would be in generally the same position as the previous ramp on the western side of the Transit Center site and would parallel Essex Street, as identified in the FEIS/EIR. Following adoption of the First Addendum, one previously planned bus level of the Transit Center was eliminated. As a result, the bus ramps linking the building with I-80 would be a single-level structure rather than the two-level, stacked-ramp concept described for the Locally Preferred Alternative in the 2004 FEIS/EIR. See Figure 4, Previously Approved and Proposed Design of the Bus Ramp Component, which shows the bus ramp locations in the 2004 FEIS/EIR and the First Addendum as compared to the proposed refined design. The pink line in Figure 4 represents previously approved bus ramp areas, the light blue line represents proposed design areas, and the purple line shows the overlap between the two designs.

The proposed footprint is substantially similar to the previously approved design, with the exception of the eastbound I-80 on- and off-ramps, which now encircle the Sterling Street Substation. The eastbound I-80 on- and off-ramps would overlay or be adjacent to an existing ramp structure, and are similar to what was evaluated in the FEIS/EIR.

IV. ENVIRONMENTAL ISSUES

The FEIS/EIR evaluated the following natural resources and urban systems categories: Land Use/Wind/Shadow, Displacements and Relocations, Socio-economics, Community Facilities and Services/Safety and Security, Parklands/Schools/Religious Institutions, Air Quality, Noise and Vibration, Geology and Seismology, Water Resources and Floodplains, Utilities, Historic and Cultural Resources, Hazardous Materials, Visual and Aesthetics, Transit/Traffic/Parking, and Construction Methods and Impacts.

In the preparation of this Sixth Addendum, it has been determined that the modifications to the Transbay Program ramp component would have the potential to affect two of these environmental categories. This Addendum analyzes the potential environmental impacts in the following environmental categories: (A) Historic and Cultural Resources and (B) Visual and Aesthetic Resources.

A. Historic and Cultural Resources

a. Cable-Stayed Ramp Accessing the Transit Center

Construction and operation of the proposed cable-stayed ramp would not result in impacts to new or previously unevaluated historic or cultural resources. The structure would be located in the previously evaluated Area of Potential Effect (APE) for the Transbay Program.

b. Fremont Street Ramp Modifications

The Fremont Street ramp is not a historic resource because it was constructed in 2008 as part of the San Francisco-Oakland Bay Bridge West Approach Seismic Safety Project to replace the

original Fremont Street ramp.[1] As part its analysis, documented in a memorandum entitled, *San Francisco Transbay Terminal Bus Ramp Documentation and Analysis* (Appendix 1 hereto) JRP Historical Consulting, LLC, found that because the Fremont Street ramp is a component of the Transbay Program, for which Section 106 consultation was completed in accordance with the Memorandum of Agreement between the Federal Transit Administration and the California State Historic Preservation Officer Regarding the Transbay Terminal/Caltrain Downtown Extension/ Redevelopment Project in San Francisco, California, no additional compliance would be necessary under Section 106 or CEQA.

c. Bus Ramp Footprint

The proposed refined design for the bus ramps would result in the ramp passing closer to the Sterling Street Substation than the configuration identified in the FEIS/EIR. This building possesses a high degree of integrity and is eligible for listing on the NRHP as a contributing element of the Bay Bridge, which itself is listed. However, the substation is included in the NRHP not for its specific history, aesthetic or architectural characteristics, or setting, but rather as a contributing element to the Bay Bridge. None of the important contributing elements to its eligibility would be diminished by construction of the bus ramps; therefore, a constructive use[2] would not occur. The proposed design refinements would not demolish or damage the substation (William Self Associates, 2010) (Appendix 2).

Impacts to the previously existing Transbay Terminal Bus Ramp were considered to be significant and unavoidable in the FEIS/EIR, even with mitigation (page 7-6 to 7-7 of the 2004 FEIS/EIR). The final bus ramp location would not result in new or substantially more severe significant impacts to historic and cultural resources beyond those previously evaluated in the FEIS/EIR.

B. Visual and Aesthetic Resources

a. Cable-Stayed Ramp Accessing the Transit Center

The proposed cable-stayed ramp is designed to minimize visual impacts in the area. The cables connecting the ramp to the tower would likely be a neutral color such as light grey and would connect to a single, slender tower. The tower would be approximately 90 feet above the bus deck and approximately 127 feet above the ground surface (see Figure 3). The cables would be spaced to allow views through the structure. The tower would exceed the height of the Transit Center by approximately 43.5 feet, but would be located in an area that is already developed with taller buildings. As identified in the FEIS/EIR, the physical character of the area is a combination of low-, mid-, and high-rise buildings, ranging from early twentieth-century historic structures and districts to new single and clustered office towers (page 4-67 of the 2004 FEIS/EIR).

[1] The original Fremont Ramp, Bridge #34 0116F, was a contributing element of the Bay Bridge property; however, it was removed in its entirety in April 2004 by the West Approach Seismic Safety Project, and replaced with Bridge #34 0127S. Detailed discussion of the project and the removal of the Fremont Ramp is included in Alec Melkonian's *San Francisco-Oakland Bay Bridge West Approach Seismic Retrofit Project* (District 4 Graphic Services, 2009).
[2] A constructive use occurs when a project's proximity impacts are such that the features or attributes that qualify a resource for listing on the NRHP are substantially diminished (see Appendix 2).

Additionally, under the proposed Transit Center District Plan, additional tall buildings would be constructed in the area. Currently, the area adjacent to the proposed cable-stayed ramp is zoned for buildings up to 450 feet. The public draft of the Transit Center District Plan (November 2009) proposed zoning heights ranging from 350 to 750 feet in the immediate vicinity of the proposed cable-stayed ramp.

The cable-stayed ramp would be consistent with the FEIS/EIR, because it was determined that the overall character of the Transbay Program area would change from a low-rise area dominated by early twentieth-century industrial buildings interspersed with surface parking lots to a more dense urban area of newer mid- and high-rise buildings with over 80-foot-high bases (page 5-116 of the 2004 FEIS/EIR). The tower would extend beyond the height of the Transit Center, but would be designed to be visually consistent with surrounding taller buildings in this urban environment, and would enhance the visual design in the area. Therefore, the cable-stayed ramp would not result in new or additional impacts to visual or aesthetic resources beyond those previously evaluated in the FEIS/EIR.

b. Fremont Street Ramp Modifications

The modifications to the Fremont Street ramp would result in the widening of an existing freeway ramp to connect the bus ramps and the Transit Center. As identified in the FEIS/EIR, blocks and streets in the project area are punctuated by vehicular overpasses from the highway, the Bay Bridge, related off-ramps, and bus ramps. The Fremont Street ramp modifications would be consistent with the existing ramps in the area and the proposed bus ramps. The widening of the Fremont Street ramp bus exit would not result in new or more visually intrusive features; therefore, the widening of the Fremont Street ramp bus exit would not result in new or additional impacts to visual or aesthetic resources beyond what were previously evaluated in the FEIS/EIR.

c. Bus Ramp Footprint

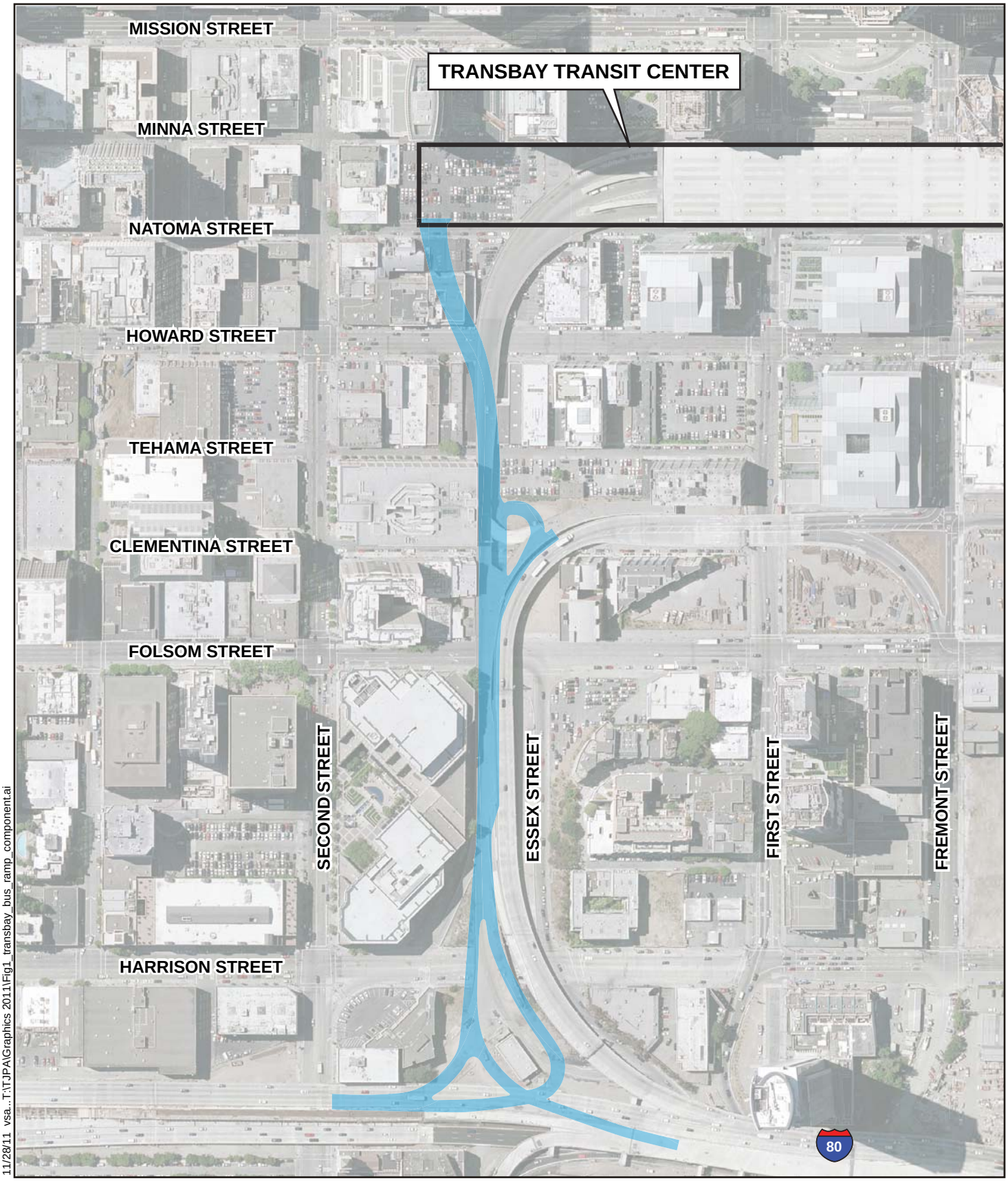
Following adoption of the First Addendum, one previously planned bus level of the Transit Center was eliminated. As a result, the bus ramps linking the building with I-80 would be confined to a single-level structure. The First Addendum concluded that the bus ramp component would be less visually intrusive than the former ramps, and no other impacts were identified as a result of the bus ramp configuration (pages 15 and 17 of the First Addendum).

The proposed refined bus ramp location would not result in new or additional impacts to visual or aesthetic resources beyond those previously evaluated in the FEIS/EIR.

V. CONCLUSION

All significant impacts associated with the bus ramps were previously evaluated in the FEIS/EIR. The proposed design refinements to the Fremont Street ramp and bus ramps, including the bus ramp footprint and cable-stayed ramp, are similar to previous design components evaluated in the FEIS/EIR, and no new or substantially more severe significant impacts have been identified or are anticipated to be identified, nor would these elements substantially change the severity or significance of the environmental impacts disclosed in the FEIS/EIR.

Therefore, the modifications to the Fremont Street ramp, design of the components of the bus ramps, and the footprint for the bus ramps described in this Addendum would not require major revisions to the FEIS/EIR due to new or substantially increased significant environmental effects. Furthermore, there have been no substantial changes with respect to the circumstances under which these design refinements would be undertaken that would require major revisions of the FEIS/EIR due to new or substantially increased significant environmental effects; and there has been no discovery of new information of substantial importance that would trigger or require major revisions to the FEIS/EIR due to new or substantially increased significant environmental effects. Therefore, no subsequent or supplemental environmental impact report is required pursuant to CEQA Guidelines Sections 15162 and 15163 prior to approval of the design refinements as described in this Addendum.



11/28/11 vsa...T:\TJPA\Graphics 2011\Fig1_transbay_bus_ramp_component.ai

LEGEND

- Location of Transbay Transit Center
- Proposed Design Footprint for the Bus Ramp Component

0 200

Scale in Feet

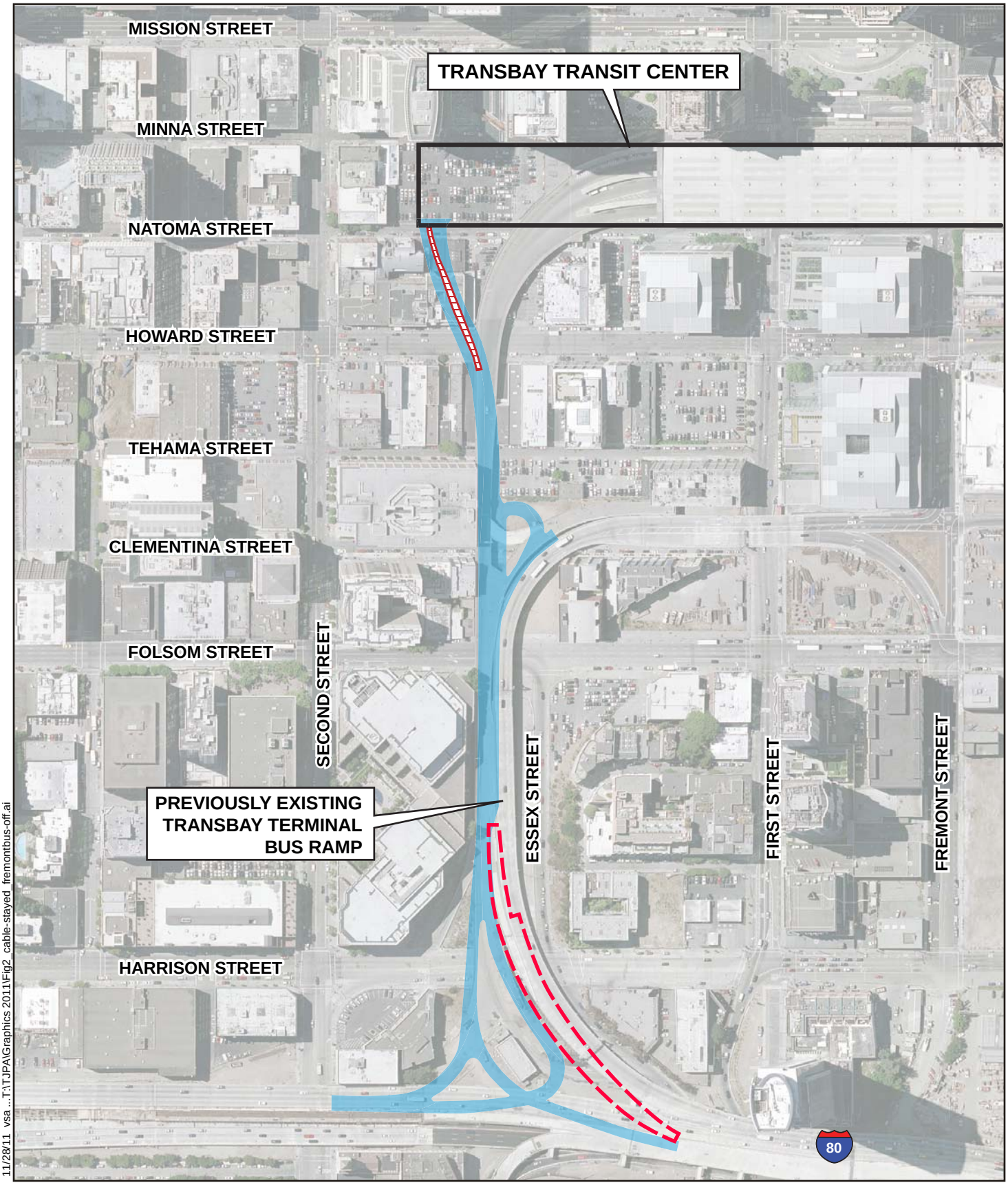
TRANSBAY PROGRAM
BUS RAMP COMPONENT

Transbay Transit Center
San Francisco, California

December 2011

URS

FIGURE 1



11/28/11 vsa ...T:\TJPA\Graphics 2011\Fig2_cable-stayed_fremontbus-off.ai

LEGEND

- Location of Transbay Transit Center
- Proposed Bus Ramp Design
- Cable-Stayed Ramp
- Fremont Street Ramp Modifications

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Scale in Feet

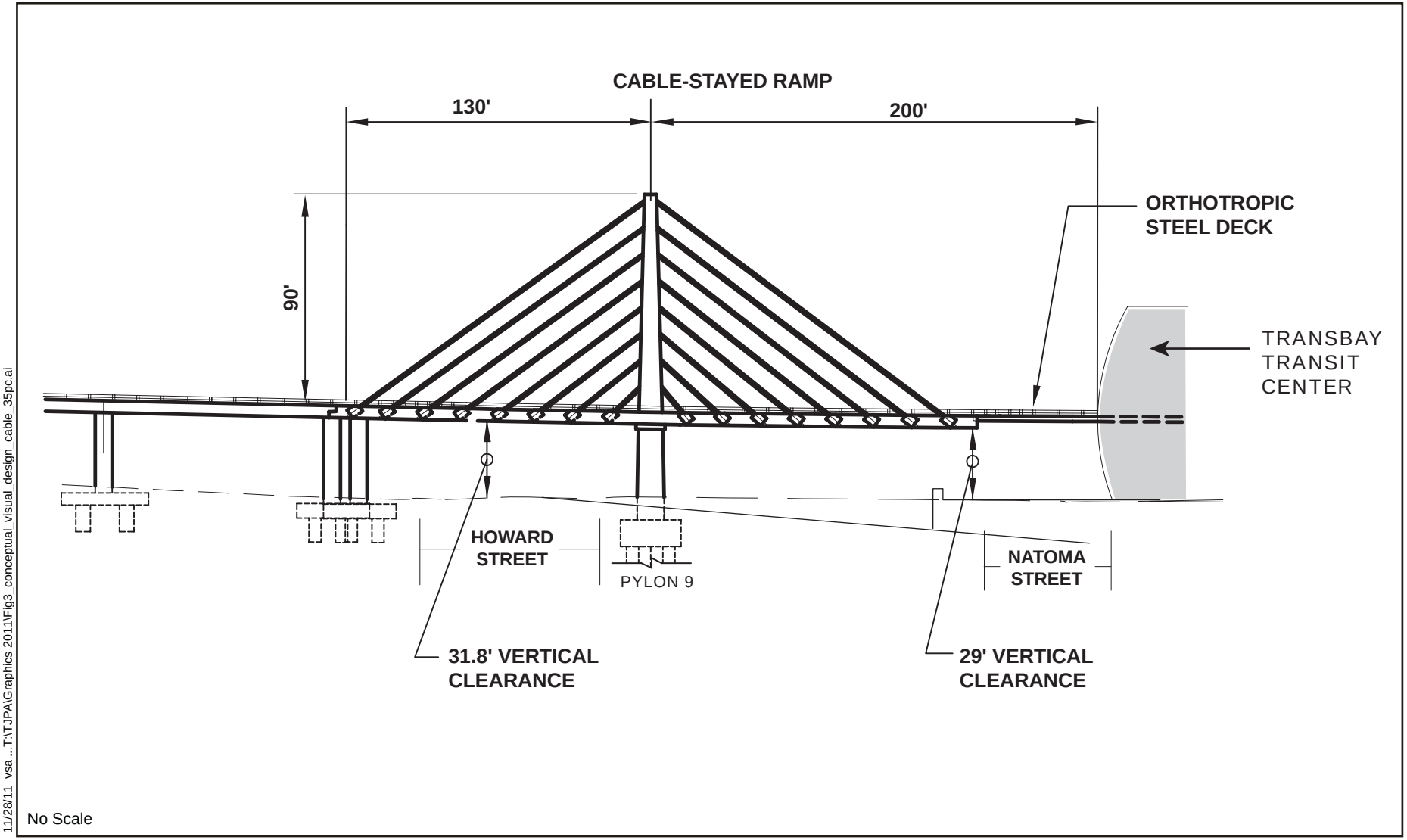
CABLE-STAYED RAMP AND FREMONT BUS-OFF RAMP

Transbay Transit Center
San Francisco, California

December 2011

URS

FIGURE 2



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Source:
Transbay Transit Center Seismic and Structural Review Commitee Presentation, October 10, 2011.

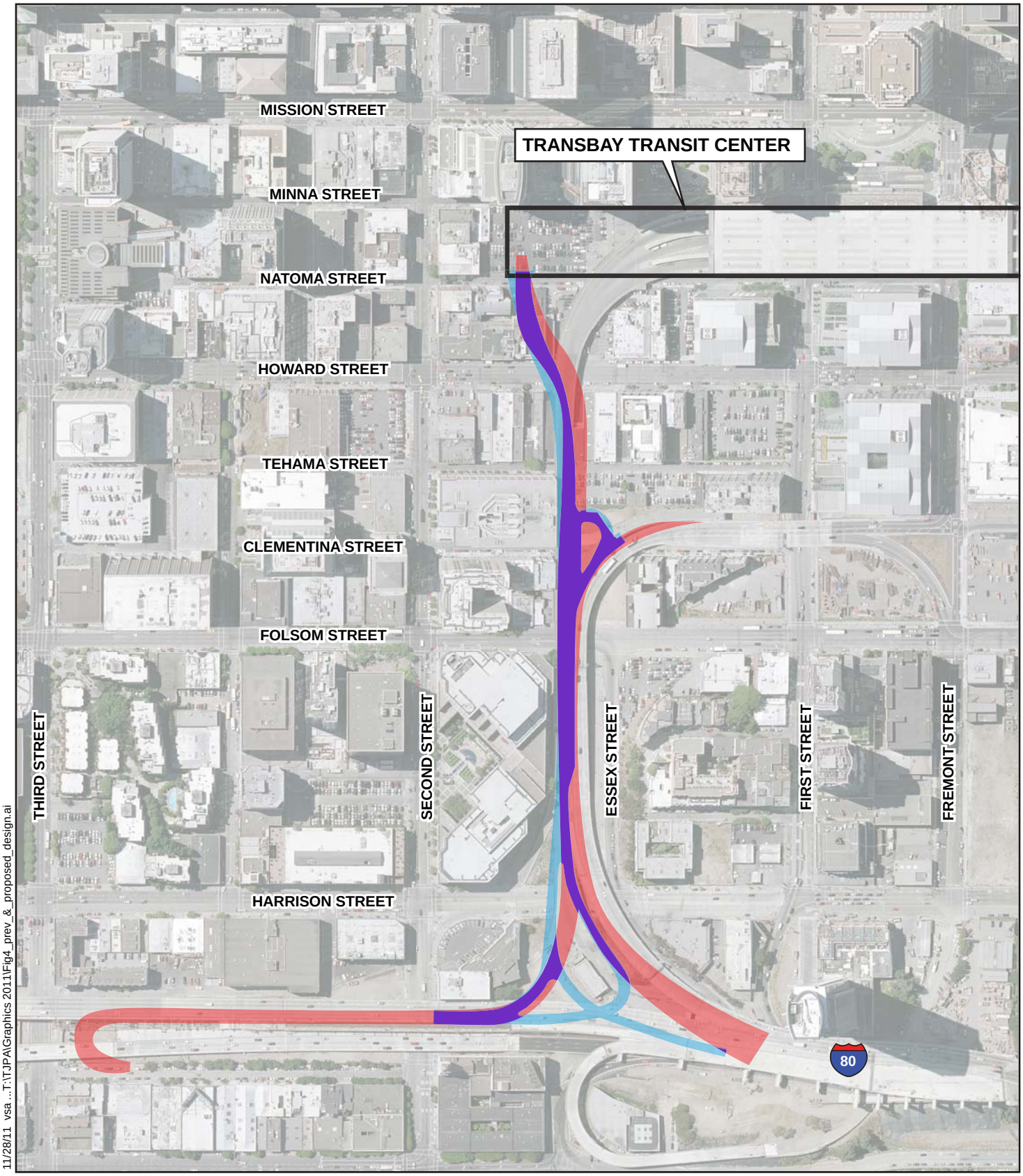
CONCEPTUAL VISUAL DESIGN OF THE CABLE-STAYED RAMP BASED ON 35% DESIGN

Transbay Transit Center
San Francisco, California

December 2011

URS

FIGURE 3



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LEGEND

- Location of Transbay Transit Center
- Bus Ramp Identified in Proposed Design
- Bus Ramp Identified in FEIS/EIR and Prior Addenda
- Area Common to Previous and Proposed Designs

0 240
Scale in Feet

PREVIOUSLY APPROVED AND PROPOSED DESIGN OF THE BUS RAMP COMPONENT

Transbay Transit Center
San Francisco, California

December 2011

URS

FIGURE 4

Appendix 1

JRP Historical Consulting, LLC, Memorandum
San Francisco Transbay Terminal Bus Ramp Documentation and Analysis

JRP HISTORICAL CONSULTING, LLC

2850 Spafford Street • Davis, CA 95618 • (530) 757-2521 • (530) 757-2566 Fax • www.jrphistorical.com

Stephen R. Wee, Principal / President
Rand F. Herbert, Principal / Vice President
Meta Bunse, Partner
Christopher D. McMorris, Partner

Memorandum

Re: Fremont Ramp Modifications Project and San Francisco Transbay Terminal Bus Ramp Documentation and Analysis
Date: June 28, 2011
To: Denise Heick, URS
From: Meta Bunse and Polly Allen, JRP Historical Consulting, LLC

This memorandum is in support of the Transbay Transit Center Program Fremont Ramp Modifications Project (Project), and addresses the developmental history and historic status of the former Transbay Transit Terminal Bus Ramp, portions of which were within the proposed project area. The Program proposes to widen the Fremont Street Off-Ramp (Bridge # 34 0127S), a concrete box girder bridge constructed in 2008. The Transbay Transit Center Program requires the alteration of portions of the former Transbay Terminal Bus Ramp (Bridge # 34 0119Y), a decommissioned and largely demolished structure associated with the San Francisco-Oakland Bay Bridge. See **Figure 1** for project location details.

The former Transbay Terminal Bus Ramp was a historic resource under both Section 106 of the National Historic Preservation Act and the California Environmental Quality Act (CEQA) as it applies to historic resources. The ramp was a contributing element of the San Francisco-Oakland Bay Bridge National Register Property (**Appendix A**). The extant Fremont Street Off-Ramp, however, is not an historic resource because it was constructed in 2008 as part of the San Francisco-Oakland Bay Bridge West Approach Seismic Retrofit Project to replace the demolished original Bay Bridge exit ramp (Bridge # 34 0116F). Because some subsurface footings of the original exit ramp may remain under the current Fremont Off-Ramp, this memorandum presents the Program actions and Section 106 and CEQA compliance activities undertaken to address the original ramps and any remaining footings.[1]

The memo is organized into three sections and includes a description of the former historic resource (Transbay Terminal Bus Ramp), a summary of the former resource's current Section 106 and CEQA status, and conclusions regarding compliance requirements. The memo concludes that the Transbay Transit Center Program has already satisfactorily fulfilled its Section 106 and CEQA responsibilities related to the former historic resource and that no further compliance actions are necessary under the current Project.

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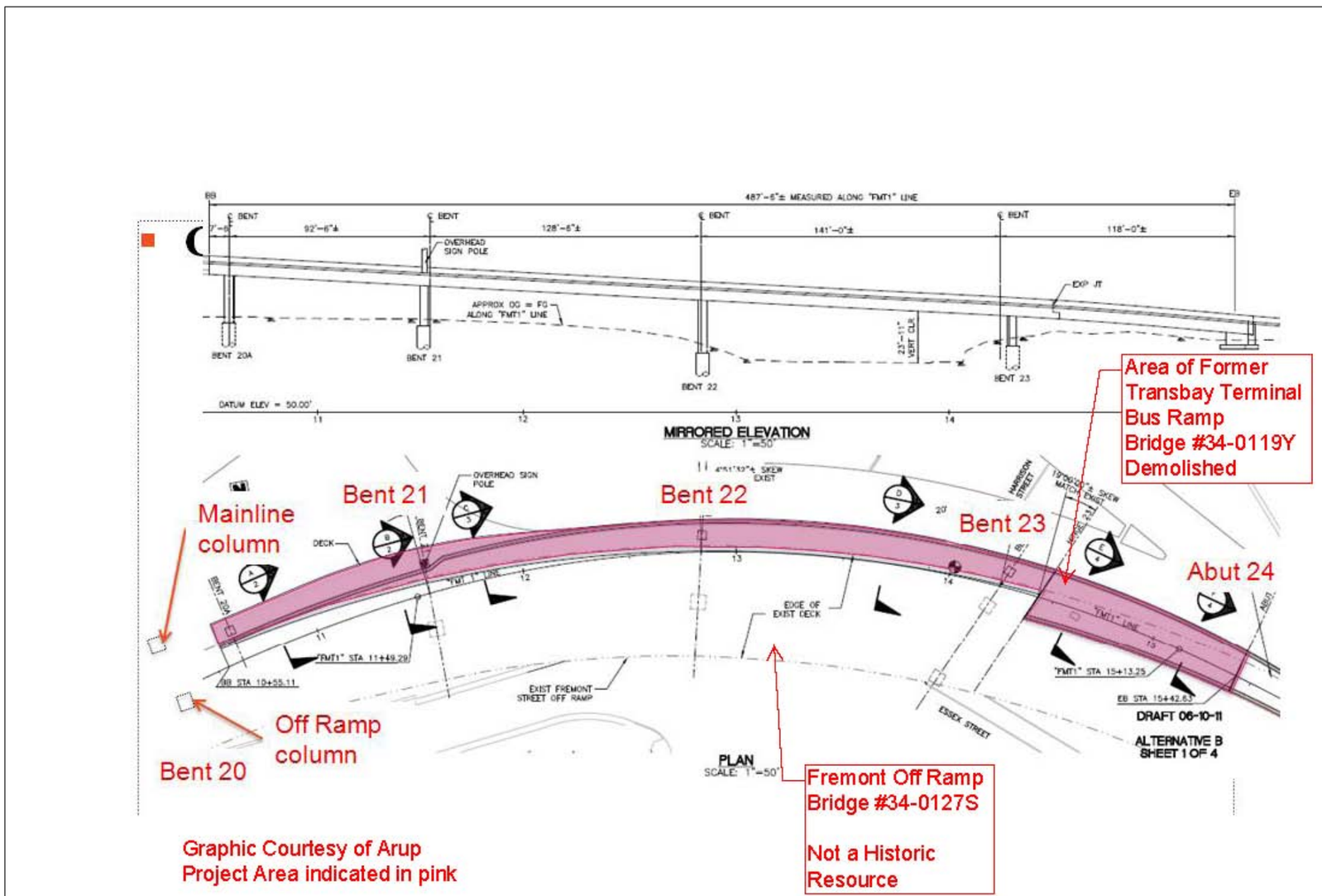
[1] The Transbay Terminal Bus Ramp is listed in the most recent Office of Historic Preservation Data File for San Francisco County (10-05-10). The original Fremont Ramp, Bridge # 34 0116F, was also a contributing element of the Bay Bridge property; however, it was removed in April 2004 by the West Approach Seismic Retrofit Project and replaced with Bridge # 34 0127S. Detailed discussion of the project and the removal of the Fremont Ramp are included in Alec Melkonian's *San Francisco-Oakland Bay Bridge West Approach Seismic Retrofit Project* (District 4 Graphic Services, 2009).


487'-6"± MEASURED ALONG "FMT1" LINE
BENT 20A
BENT 21
BENT 22
BENT 23
92'-6"±
128'-6"±
141'-0"±
118'-0"±
OVERHEAD SIGN POLE
EXP JT
APPROX OG = FG ALONG "FMT1" LINE
23'-11" VERT CLR
DATUM ELEV = 50.00'
MIRRORED ELEVATION
SCALE: 1"=50'
Area of Former Transbay Terminal Bus Ramp Bridge #34-0119Y Demolished
Mainline column
Bent 21
Bent 22
Bent 23
Abut 24
Off Ramp column
Bent 20
EDGE OF EXIST DECK
EXIST FREMONT STREET OFF RAMP
ESSEX STREET
HARRISON STREET
"FMT1" STA 11+49.29
"FMT1" STA 15+13.25
EB STA 15+42.63
DRAFT 06-10-11
ALTERNATIVE B
SHEET 1 OF 4
PLAN
SCALE: 1"=50'
Fremont Off Ramp Bridge #34-0127S
Not a Historic Resource
Graphic Courtesy of Arup
Project Area indicated in pink

Description of Former Historic Resource

The project area includes a now-demolished, historic resource: the Transbay Terminal Bus Ramp. The structure was designed to carry interurban trains between the lower deck of the San Francisco-Oakland Bay Bridge and the Transbay Terminal and was subsequently adapted for use by buses in the midcentury period.

The property was a contributing element of the San Francisco-Oakland Bay Bridge National Register Property, which was listed on the National Register on August 13, 2001 (NRIS # 00000525). In its entirety, the Bay Bridge property included 15 contributing components: eight distinct bridge/ramp elements, the Yerba Buena Tunnel, four rail substations, the Transbay Transit Terminal Building, and a firehouse (see **Appendix A**). The property was listed under Criteria A and C in the area of engineering and transportation, for its influence on transportation development in California and the Bay Area, and for its engineering and design.

As designed in 1936, the Transbay Terminal Bus Ramp was 3,439 feet long and consisted of multiple concrete T-Beam spans with steel plate girder spans at local street overcrossings. The portion of the bus ramp in the project area is depicted below with a red arrow in **Photograph 1**.

Photograph 1: Overview of Transbay Terminal Bus Ramp, 1985
San Francisco-Oakland Bay Bridge HAER

Originally, the structure followed a generally circular loop to and from the Transbay Terminal Building on Mission Street; however, this original ramp has been demolished in recent years. Areas of the ramp were demolished in 2004 as part of the West Approach Seismic Retrofit Project and subsequent portions, including the portion of the ramp that passed through the project area, have recently been demolished under the ongoing Transbay Transit Center Program. **Photograph 2** indicates the location where the ramp passed through the project area with a red arrow. The 2008 Fremont Street exit ramp, in the foreground of the photograph, is not an historic property. Footings associated with the original Fremont Off-Ramp may remain beneath the new ramp, but they are remnants of a former contributing element to the Bay Bridge Property.

Photograph 2: Portion of the former Transbay Terminal Bus Ramp that passed through the Project Area prior it its demolition. Fremont Street exit ram in foreground remains and is not historic. Camera facing southwest, JRP April 2011.

Summary of Section 106 and CEQA Status

As discussed in the previous sections, the project area for the proposed Fremont Ramp Modifications Project contained a historic property, the previously existing Transbay Terminal Bus Ramp, which was a resource under Section 106 and CEQA and was a contributor to the National Register of Historic Properties (NRHP)-listed Bay Bridge. A March 2004 Environmental Impact Statement/ Environmental Impact Report (EIS/EIR) for the Transbay Transit Center Program previously identified the property, as well as others, as historic properties/historic resources that would be adversely affected/impacted by the Transbay Transit

Center Project. After this identification was made, the property was subject to Section 106 analysis that culminated in the signing of a Memorandum of Agreement (MOA) for the project in June 2004 (**Appendix B**).[2] This MOA, *Memorandum of Agreement between the Federal Transit Administration, and the California State Historic Preservation Officer Regarding the Transbay Terminal/Caltrain Downtown Extension/Redevelopment Project in San Francisco County, California*, identifies the project's adverse effects on historic resources and details stipulations that govern the compliance responsibilities of all project activities.

Stipulation II of the MOA details mitigation responsibilities related to all affected contributing elements of the Bay Bridge, including the Transbay Terminal Ramp. The sole responsibility relating to this contributing component of the bridge was documentation, as detailed below:

> Prior to the start of any work that would have an adverse effect on components of the Bay Bridge that are historic properties, TJPA [Transbay Joint Powers Authority] will request SHPO [State Historic Preservation Officer] to determine whether these components, including the Transbay Terminal 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 projects that have occurred since 1993, adequately document the Transbay Terminal and ramps then no further documentation will be necessary…Upon a written determination by SHPO that all documentation prescribed hereunder is satisfactory, TJPA will provide copies of this documentation to SHPO and the Department Headquarters Library, with xerographic copies 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…If SHPO does not respond within 45 days of receipt of each submittal of documentation prescribed herein, TJPA may assume that SHPO has determined that said documentation is adequate and may proceed with that aspect of the Undertaking that will adversely affect the historic properties documented hereunder.

TJPA submitted the specified documentation to SHPO on October 10, 2008 (**Appendix C**). SHPO did not respond within 45 days of the submittal, and therefore under the MOA, TJPA could assume SHPO concurrence that the submitted documentation was adequate. Signed concurrence was also received on June 2, 2009, by Deputy State Historic Preservation Officer Stephen D. Mikesell. Following SHPO concurrence, TJPA provided copies of the documentation to the repositories specified in the MOA. According to the TJPA's Mitigation Monitoring and

[2] *Transbay Terminal/Caltrain Downtown Extension/Redevelopment Project in the City and County of San Francisco Final Environmental Impact Statement/Environmental Impact Report and Section 4(f) Evaluation* , by the U.S. Department of Transportation, Federal Transit Administration (FTA), City and County of San Francisco, Peninsula Corridor Joint Powers Board, and San Francisco Redevelopment Agency, March 2004.

Reporting Program, the submittal of this documentation occurred during the preliminary engineering and final design phase of the project (**Appendix D**).[3]

As such, pre-construction compliance responsibilities regarding the proposed Transbay Terminal Ramp, including any extant footings associated with the ramp, appear to have been completed by the Transbay Transit Center Program. While pre-construction compliance responsibilities have been met, the TJPA Mitigation Monitoring and Reporting Program also includes post-construction compliance – specifically, that within 180 days of completion of the Transit Center Project, TJPA, in consultation with FTA and SHPO, will re-evaluate the Bay Bridge for NRHP eligibility (see **Appendix D**).

Conclusions

The purpose of this memo was to address the developmental history and historic status of the former Transbay Transit Terminal Bus Ramp and the Transbay Transit Center Program's Fremont Ramp Modifications Project. The memo concludes that the former bus ramp, including any remaining subsurface footings associated with the ramp, was a historic property/historic resource, because it was a contributor to the NRHP-listed Bay Bridge. It appears that this property has been satisfactorily mitigated by the Transbay Transit Center Program under both Section 106 and CEQA thus far. As a component of the Transbay Transit Center Program, the Fremont Ramp Modifications Project does not appear to hold further compliance responsibilities in relation to the resource under Section 106 or CEQA. Please refer to the appendices referenced in this document for more supporting detail.

Enclosures:

Appendix A: *San Francisco-Oakland Bay Bridge National Register Nomination*

Appendix B: *Memorandum of Agreement between the Federal Transit Administration, and the California State Historic Preservation Officer Regarding the Transbay Terminal/Caltrain Downtown Extension/Redevelopment Project in San Francisco County, California*

Appendix C: TJPA Transbay Transit Terminal Historic Resource Recordation Submission

Appendix D: Excerpt of TJPA Mitigation Monitoring and Reporting Program

[3] *Transbay Terminal/Caltrain Downtown Extension/Redevelopment Project FEIS/FEIR Mitigation Monitoring and Reporting Program*, May 2010.

Appendix A

San Francisco-Oakland Bay Bridge National Register Nomination

Paul Hensley CR files

STATE OF CALIFORNIA – THE RESOURCES AGENCY GRAY DAVIS, Governor

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
BOX 942896
RAMENTO, CA 94296-0001
(916) 653-6624 Fax: (916) 653-9824
calshpo@ohp.parks.ca.gov

December 5, 2001

HARRY TAHATA
CALIFORNIA DEPARTMENT OF TRANSPORTATION
POST OFFICE BOX 23660
OAKLAND, CA 94623-0660

RE: SAN FRANCISCO—OAKLAND BAY BRIDGE
OAKLAND, ALAMEDA COUNTY, CALIFORNIA
SAN FRANCISCO, SAN FRANCISCO COUNTY, CALIFORNIA

On August 13, 2001, the property listed above was placed on the National Register of Historic Places. On that date, this property was also placed on the California Register of Historical Resources, pursuant to Section 5024.1(d) of the Public Resources Code.

Placement on the National Register affords a property the honor of inclusion in the nation's official list of cultural resources worthy of preservation and provides a degree of protection from adverse effects resulting from federally funded or licensed projects. Registration provides a number of incentives for preservation of historic properties, including special building codes to facilitate the restoration of historic structures, and certain tax advantages.

There are no restrictions placed upon a private property owner with regard to normal use, maintenance, or sale of a property listed in the National Register. However, a project that may cause substantial adverse changes in the significance of a registered property may require compliance with local ordinances or the California Environmental Quality Act. In addition, registered properties damaged due to a natural disaster may be subject to the provisions of Section 5028 of the Public Resources Code regarding demolition or significant alterations, if imminent threat to life safety does not exist.

If you have questions or require further information, please contact the Registration Unit at (916) 653-6624.

Sincerely,

/Knox Mellon

Dr. Knox Mellon
State Historic Preservation Officer

Nr.notice.listing

NPS Form 10-900
(Rev. 10-90)

OMB No. 1024-0018

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES
REGISTRATION FORM

==========

1. Name of Property

==========

historic name San Francisco-Oakland Bay Bridge

other names/site number Bay Bridge

==========

2. Location

==========

street & number I-80 not for publication ____
city or town San Francisco and Oakland
vicinity X
state California code CA county See Continuation Sheet
zip code ___

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3. State/Federal Agency Certification

==========

As the designated authority under the National Historic Preservation Act of1986, as amended, I hereby certify that this ___ nomination ____ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property ___ meets ____ does not meet the National Register Criteria. I recommend that this property be considered significant ___ nationally ___statewide ___ locally. (___ See continuation sheet.)

_____
Signature of certifying official Date

California Office of Historic Preservation
State or Federal agency and bureau

In my opinion, the property ____ meets ____ does not meet the National Register
criteria. (___ See continuation sheet for additional comments.)

_____ _____
Signature of commenting or other official Date

_____
State or Federal agency and bureau

4. National Park Service Certification

I, hereby certify that this property is:

____ entered in the National Register _____ _____
___ See continuation sheet.
____ determined eligible for the _____ _____
National Register
___ See continuation sheet.
____ determined not eligible for the _____ _____
National Register
____ removed from the National Register _____ _____

____ other (explain): _____

_____ _____ _____
Signature of Keeper Date of Action

5. Classification

Ownership of Property (Check as many boxes as apply)

___ private
___ public-local
_X_ public-State
___ public-Federal

Category of Property (Check only one box)

___ building(s)
___ district
___ site
_X_ structure
___ object

Number of Resources within Property

Contributing	Noncontributing	
6	1	buildings
		sites
9		structures
		objects
15	1	Total

Number of contributing resources previously listed in the National Register N/A

Name of related multiple property listing (Enter "N/A" if property is not part
of a multiple property listing.)

N/A

6. Function or Use

Historic Functions (Enter categories from instructions)
Cat: Transportation: rail-related
Transportation: road-related

Current Functions (Enter categories from instructions)

Cat: Transportation: road-related

7. Description

Architectural Classification (Enter categories from instructions)
Other: Combination cantilever-truss/suspension-truss spans and tunnel

Materials (Enter categories from instructions
foundation
roof
walls
other concrete and steel, timber piles

Narrative Description (Describe the historic and current condition of the property on one or more continuation sheets.) See continuation sheets.

8. Statement of Significance

Applicable National Register Criteria (Mark "x" in one or more boxes for the
criteria qualifying the property for National Register listing)

__X__ A Property is associated with events that have made a significant contribution to the broad patterns of our history.

____ B Property is associated with the lives of persons significant in our past.

__X__ C Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.

____ D Property has yielded, or is likely to yield information important in prehistory or history.

Criteria Considerations (Mark "X" in all the boxes that apply.)

____ a owned by a religious institution or used for religious purposes.
____ b removed from its original location.
____ c a birthplace or a grave.
____ d a cemetery.
____ e a reconstructed building, object, or structure.
____ f a commemorative property.
____ g less than 50 years of age or achieved significance within the past 50 years.

Areas of Significance (Enter categories from instructions)
Engineering
Transportation

Period of Significance 1936
Significant Dates: 1936
Significant Person:
(Complete if Criterion B is marked above)
Cultural Affiliation N/A

Architect/Builder Purcell, Charles H.
Andrew, Charles E.
Woodruff, Glenn B

Narrative Statement of Significance (Explain the significance of the property on one or more continuation sheets.) See continuation sheet.

9. Major Bibliographical References

(Cite the books, articles, and other sources used in preparing this form on one
or more continuation sheets.)

Previous documentation on file (NPS)

___ preliminary determination of individual listing (36 CFR 67) has been requested.
___ previously listed in the National Register
___ previously determined eligible by the National Register
___ designated a National Historic Landmark
___ recorded by Historic American Buildings Survey # _____

_x_ recorded by Historic American Engineering Record # CA-32

Primary Location of Additional Data

___ State Historic Preservation
_X_ Other State agency
___ Federal agency
_X_ Local government
___ University
___ Other

Name of repository: See Continuation Sheet

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10. Geographical Data

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Acreage of Property Approximately 30 acres

UTM References (Place additional UTM references on a continuation sheet)

	Zone	Easting	Northing	Zone	Easting	Northing
1						
2						

_X_ See continuation sheet.

Verbal Boundary Description (Describe the boundaries of the property on a continuation sheet.)

Boundary Justification (Explain why the boundaries were selected on a continuation sheet.)

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11. Form Prepared By

==========

name/title John J. Mascitelli (revised by Karen Origel and Sean Riley, OHP, August,1999)
organization _____ date March 1, 1999
street & number P.O. Box 46 telephone (510)724-0940
city or town Pinole state CA zip code 94564

==========

Property Owner

==========

(Complete this item at the request of the SHPO or FPO.)
name Caltrans (California Dept. of Transportation
street & number 111 Grand Ave., P.O. Box 23660 telephone (510) 286-4444
city or town Oakland state CA zip code 94623

San Francisco Oakland Bay Bridge
San Francisco and Alameda Counties, CA

Location

San Francisco County, code 075, zip code 94107
Alameda County, code 001, zip code 94607

Description

The San Francisco-Oakland Bay Bridge, or simply the Bay Bridge, is one of the most impressive engineering structures in the United States. Approximately five miles in total length, the Bay Bridge carries two levels of traffic over the San Francisco Bay, connecting the cities of San Francisco and Oakland, California. The Bay Bridge serves both as the terminus of an interstate highway and as the linchpin for the transportation network of the San Francisco Bay Area, one of the nation's largest metropolitan regions. The Bay Bridge is also among the world's most complex bridges in that it incorporates a variety of different bridge types connected to form a single structure. The West Bay Crossing, or West Span, consists of two back-to-back suspension spans, one anchored at Yerba Buena Island, one in San Francisco, and each is anchored to a massive center pier, Pier W-4. The East Bay Crossing, or East Span, is comprised of a series of trusses and girder spans. The Yerba Buena Island Tunnel links the west spans and the east spans. The bridge then connects to an existing roadway system at each end. The Bay Bridge has undergone extensive alteration since its construction in 1936, but still retains much of its historic and structural integrity.[1]

The Bay Bridge was the longest bridge in the world when it was built in 1936. The bridges, viaducts, and tunnel total about 5 miles, of which approximately 4 miles are over water. In 1936, the State of California claimed the bridge was 8 1/4 miles long, a figure that included a mass transit elevated loop in San Francisco and long approaches on the East Bay. The distance from the San Francisco Viaduct to the anchorage is 3,707 feet. The distance from the San Francisco anchorage to the Yerba Buena Island anchorage is 9,528 feet, or 1.8 miles. The distance on the island is 1,663 feet, which includes a tunnel and viaducts. The distance from the

[1] Stephen Mikesell, John Nelson, Dan Peterson, and Mark Ketchum. Historic American Engineering Record, San Francisco-Oakland Bay Bridge (Oakland-San Francisco Bay Bridge), Addendum to: Oakland-San Francisco Bay Bridge. May 1, 1999. 7, 13.

island to the Oakland Toll Plaza is 20,942 feet, about 4 miles, some of which is on fill.[2]

As originally designed, the double-decked bridge carried two-way automobile traffic on the top deck and truck and interurban trolleys on the lower level. There were six lanes on the top deck, three in each direction. The lower deck carried two trolley tracks in addition to truck lanes. The complex mix of truck, trolley, and automobile traffic required a large number of different on-and off-ramps on both approaches. In the late 1950s and early 1960s, the bridge and approaches were modified to carry mixed car/truck traffic on each deck and remove the electric railway system. The upper deck was designed to carry westbound traffic and the lower deck east bound traffic. This required strengthening the upper deck to accommodate the weight of trucks. The lower deck required new concrete slabs where the rails were removed, as well as the removal of a series of center columns at Yerba Buena Island. A lower roadway deck was added to the San Francisco viaducts to connect to the freeway system.[3]

The San Francisco Bay and Yerba Buena Island define the physical and cultural setting for the Bay Bridge. When it was built, the bridge began and ended in major harbor areas- the bustling San Francisco harbor and the Port of Oakland, which was then just emerging as a major harbor facility. Each setting has changed dramatically since completion of the bridge in 1936. In San Francisco, the waterfront near the anchorage for the bridge was a busy harbor facility at the time the bridge was built. Since 1936, however, commercial tonnage in the port area of San Francisco has declined dramatically and the waterfront has been reused for a variety of commercial and residential purposes. Conversely, the Port of Oakland has grown into the third largest port facility on the West Coast, specializing in handling containerized cargo. The waterfront south of the bridge is lined with massive cranes and other harbor structures as well as major rail and highway connections, many of which have been built and rebuilt since the 1950s. Situated midway between San Francisco and Oakland is Yerba Buena Island. A natural island, Yerba Buena was used as a station for the U.S. Navy beginning in 1900. While the Bay Bridge was under construction, the Army Corps of Engineers was creating a new island, called Treasure Island, on shoals north of Yerba Buena Island to serve as a site for the 1939 World's Fair. In 1940, Treasure Island was also taken over by the Navy, and both Treasure Island and Yerba Buena Island were used together as the Treasure

[2] Mikesell, et al., 13.
[3] Mikesell, et al., 13-14.

Island Naval Station between 1940 and the closure of the station in 1998. Today, Yerba Buena Island includes relatively few buildings and has a park-like feel, particularly since the Navy has vacated the island.[4]

All permanent structures of the bridge were built of steel and/or reinforced concrete. Reinforced concrete was used for foundations, short-span structures in the San Francisco Approach and the Island Crossing, and for roadway slabs of the long-span steel structures. Steel was used for all main superstructure components of the West Bay Crossing and East Bay Crossing. Five types of steel were used: carbon steel, nickel steel and silicon steel for major structural components, as well as special heat-treated eyebars for special application in the East Bay Crossing trusses, and cold-drawn wire for the cables of the West Bay Crossing. All connections of structural plate steel were made with rivets and bolts. Rivets were the norm-bolts used only at special locations where the riveting was not feasible. The upper deck was designed for automobile traffic, with six ton vehicles in six lanes (9'-8" wide each), plus a ten ton truck in any one lane. The lower deck was designed for three lanes (10'-4" wide each) of 30 ton trucks, and two lines (27' wide space) for 70-ton Interurban electric rail cars. Wind loads were taken at 30 pound per square foot, typical for bridges of that era. Earthquakes were considered by designing for a load of 10 percent of the weight of the bridge, acting laterally.[5]

The individual components of the Bay Bridge have been previously determined eligible for the National Register of Historic Places. The individual elements that collectively comprise the Bay Bridge are as follows:

1. Bridge # 34-118R, the San Francisco Approaches or Lower Deck On-Ramp is comprised of continuous concrete box girders, simple span composite rolled steel stringers, and haunched concrete girders with transverse floor beams, all carried on concrete bents on spread pile footings. It originally served two-way truck traffic on the lower deck. It now serves eastbound traffic on the lower deck. It was functionally revised in 1958 following removal of interurban railroad tracks from the bridge's lower deck and conversion of the lower deck to eastbound-only traffic flow. Only a portion of bridge 34-118R is part of the original Bay Bridge construction. The original portion extends from Rincon Hill (in the area bounded by First, Second, Harrison, and Bryant Streets) to the San Francisco cable

[4] Mikesell, et al., 12-13.
[5] Mikesell, et al., 14.

anchorage. The lower deck structure southwest of Rincon Hill was constructed in the 1950s to connect the bridge to the new freeway.[6]

2. Bridge #34-118L, the Upper Deck San Francisco Approaches or Center Ramps are comprised of continuous spans with suspension span in between, rigid frame connection between superstructure and bents. The superstructure is haunched concrete T-beams with transverse floor beams, and cellular structure at cable anchorage and abutment, carried on a substructure of reinforced concrete bents on pile and spread footings. Its 56 spans total 3,850 feet long.[7] It originally served two-way automobile traffic on the upper deck. It now serves westbound traffic on the upper deck.

3. Bridge #34-117S, the Upper Deck San Francisco Approaches or South Off-Ramp, is comprised of spans of two T-beam longitudinal girders with transverse floor beams on one-and two-column bents and open end diaphragm abutment, all on spread footings. Its 23 spans total 1035.2 feet long.[8] It was originally an upper deck on-ramp for eastbound automobile traffic. It is now an off-ramp for upper deck westbound traffic.

4. Bridge #34-116F, the Upper Deck San Francisco Approaches or North Connector (Westbound 80/Northbound 480), are comprised of a superstructure of T-girder and composite steel girder spans, carried on a substructure of reinforced concrete wall piers, two-column bents, reinforced concrete abutment with reinforced concrete wingwalls, reinforced concrete retaining walls, all on spread footings. Its 40 spans total 1843.2 feet long.[9] It was originally a westbound off-ramp from the upper deck, and continues to serve this purpose.

5. Bridge #34-03, West Bay Spans, is comprised of steel Warren truss approach spans carrying a double deck and supported by steel bents on concrete footings, and a double-deck suspension bridge consisting of twin bridges placed end-to-end with steel towers supported on concrete footings and caissons, and with a center concrete anchorage and two concrete end anchorages. Its 9 spans total 10,303 feet long.[10]

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[6] John W. Snyder, An Evaluation Of The San Francisco-Oakland Bay Bridge In Connection With 4-SF-I280 Transfer Concept, California Department of Transportation, Sacramento, 1983, 1.
[7] Ibid.
[8] Ibid.
[9] Ibid.
[10] Ibid.

6. Bridge #34-04, Yerba Buena Tunnel, consists of two double-deck, cast-in-place, reinforced concrete T-beam viaducts with continuous spans, on spread footings, separated by a double-deck concrete arch tunnel. It is 1,791 feet long.[11]

7. Bridge #33-25, East Bay Spans, consists of double-deck steel truss and cantilever truss spans, steel girder spans, and concrete T-beam spans, on steel and concrete piers, concrete footings, concrete caissons, and timber piles. Its 52 spans total 11,327 feet long.[12]

8. Bridge #34-119Y consists of multiple concrete T-beam spans, with steel plate girder spans at local street overcrossings. It is 3439 feet long. It originally carried interurban trains between the lower deck of the bridge and the Transbay Terminal. It now serves the same purpose for busses rather than trains.

9. Bridge #34-120Y is a concrete box girder span crossing over Harrison Street. Its single span is 165 feet long. It originally carried interurban trains over Harrison Street, heading to and from the Transbay Terminal. It now serves the same purpose for busses rather than trains.

10. The Transbay Transit Terminal Building is an 870-foot long flat slab with a 230-foot central pavilion. It is located at the San Francisco end of the bridge. The construction is reinforced concrete, faced with California granite. It is extremely simple in design and without ornament except for aluminum trim. Its most extravagant features are the seven handsome two-story windows which extend across the front of the building. In composition, the building is an enframed pavilion with end bays, wings, and a base. Inside, it consists of a basement garage, street level waiting room, a mezzanine, and originally tracks on a third level. The tracks were removed when the interurban trains were replaced with buses after 1958.[13]

11. Key System Electrical Substation-San Francisco. This building, at Second and Harrison Streets in San Francisco, is adjacent to the ramp that originally carried Key System trains from the Bay Bridge west approach ramps to the Transbay

[11] Snyder, 2.
[12] Ibid.
[13] John Snyder, Transbay Transit Terminal, Architectural Inventory/ Evaluation Form, California Department of Transportation, Sacramento, 1983.

Terminal. The one story building is a rectangular concrete box, approximately 87-feet long (east to west) by 41 feet wide and 26 feet high. It has doors on three sides but no windows, with small ventilation louvers comprising the only other fenestration. The exterior walls have two parallel indentations near the top, a subtle decorative feature that relates the building visually to the concrete columns of the adjacent Bay Bridge west approach. There is a smaller building of similar design on Yerba Buena Island, which also served as an electrical substation for the bridge railway. Both substations served to provide power for the Key System trains that ran on the bridge.[14]

12. Key System Electrical Substation-Yerba Buena Island. It is located east of the tunnel's east portal, between the Bay Bridge and the westbound on-ramp to the bridge. This one story building is a rectangular concrete box, approximately 50 feet long (east to west) by 36 feet wide. It has an entrance on the south side, but no fenestration on the other three walls. The exterior walls have an indentation near the top, forming a narrow ledge around the perimeter of the building. There is a second indentation where the roof slab meets the walls. This minor design feature relates the building visually to the concrete piers of the Bay Bridge, and was integral to the functioning of the bridge's trains.[15]

13. S.F.O.B.B. Firehouse (Caltrans Garage) – Yerba Buena Island. The Firehouse is east of the tunnel's east portal, between the east viaduct of the Bay Bridge and the westbound on-ramp to the Bay Bridge. This one story, concrete building has a flat roof and is approximately 63 feet long (east to west) by 31 feet wide. The east façade is entirely open to provide access to the two vehicle bays. The wooden doors that originally covered this opening have been removed. The windows are multi-pane metal sash and there are two exterior doors on the south elevation. The building was made approximately 13 feet longer in the mid-1960s, with an addition to the west end. This building once housed fire trucks that serviced the bridge; it also held a locker room and office.[16]

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[14] Andrew Hope, Sterling Street Substation, Primary Record, California Department of Transportation, Oakland, 1995.
[15] Andrew Hope, Y.B.I. Electrical Substation, Primary Record, California Department of Transportation, Oakland, 1995.
[16] Andrew Hope, Caltrans Garage, Primary Record, California Department of Transportation, Oakland, 1995.

14. Bay Bridge Substation (Caltrans substation) – Oakland. The substation is located at the end of the narrow peninsula that extends into San Francisco Bay from the Bay Bridge toll plaza. This building is approximately 90 feet long by 42 feet wide, with a small (22' x 10') extension at the left side of the south façade, giving the building an "L" shape. The concrete walls, which are 24 feet in height, have a slightly projecting base and pilasters, with a simple cornice of vaguely classical styling. These walls are not load bearing--the flat roof is supported by steel beams on interior steel columns. There is a metal roll-up door in the center of the east facade which is ten feet wide. This door was installed in the early 1960s, replacing the original paired, side-hinged doors. The smaller door on the east façade was also installed in a new opening at that time. There is a narrow passageway extending from the west wall, connecting this building to the older Key System Substation fifteen feet to the west. Originally constructed to provide power for the bridge's trains, the building is now used primarily for storage.[17]

15. Key Pier Substation – Oakland. The substation is located at the end of the narrow peninsula that extends into San Francisco Bay from the Bay Bridge toll plaza. This concrete building is approximately 42 feet wide by 32 feet deep, with a slightly projecting base and pilasters. It was constructed in 1926. The large doorway in the center of the south façade originally had paired, side-hinged doors, but now has a metal roll-up door. There are rows of small windows, each consisting of a six-pane fixed sash in a metal frame, at the top of the north and south facades. There are also narrow ventilation louvers at the tops of all four walls, just below the eaves. The hipped roof is clad in standing-seam sheet metal and is topped by a raised, central skylight which repeats the hipped roof form. The interior is a single, large room with an open mezzanine along the east and north walls. The roof is supported by steel trusses, which are supported in turn by concrete walls. A narrow passageway connects the east wall of this building to the larger electrical substation that was built fifteen feet to the east in the late 1930s. "This electrical substation was built as part of the Key System, which provided streetcar service throughout Oakland and other East Bay communities, with connecting ferry service to San Francisco. Originally named the San Francisco, Oakland & San Jose Railway, the system was organized in 1902 by Francis M. 'Borax' Smith, through the consolidation of existing streetcar lines. Smith built a long pier extending into the bay nearly to Yerba Buena Island, where streetcar passengers transferred to San Francisco-bound ferries. The

[17] Andrew Hope, Bay Bridge Oakland Substation, Primary Record, California Department of Transportation, Oakland, 1998.

railway was officially named the Key System after a reorganization in 1923, taking its name from the shape of the pier."[18]

The following element is considered to be non-contributing:

1. P. G. & E. Substation – Oakland. This building is approximately 42 feet by 26 feet, with a small (18' x 12') extension at the east end of the north wall, giving the building an "L" shape. The building closely resembles the larger Caltrans substation located just 70 feet to the east, with concrete walls having a slightly projecting base and pilasters, and a simple cornice of vaguely classical styling. A larger opening in the west wall is now filled in, and the building has no windows. There is a small fenced-in area on the south side of the building, containing electrical equipment.[19]

[18] Andrew Hope, Key Pier Substation, Primary Record, California Department of Transportation, Oakland, 1998.
[19] Andrew Hope, P. G. & E. Oakland Substation, Primary Record, California Department of Transportation, Oakland, 1998.

Statement of Significance

The San Francisco-Oakland Bay Bridge qualifies for placement on the National Register under Criterion A for its significant influence on transportation in California and directly in the Bay Area. The San Francisco-Oakland Bay Bridge's multi-modal design is a perfect example of the mindset many commuters had during the 1930s. While many Bay Area commuters enjoyed driving their automobile into the city, many still used public transportation. Though the Bay Bridge no longer directly accommodates public transit, in the form of interurban rail lines, Bay Area commuters still use automobiles and public transportation in nearly equal numbers. Today the San Francisco-Oakland Bay Bridge continues to play a significant role in transportation as it serves as a major freeway connector for many who travel to and from the Bay Area. Everyday, 274,000 automobiles utilize the bridge.[20]

The San Francisco-Oakland Bay Bridge also qualifies for placement on the National Register under Criterion C for its engineering design. The building of a 5-mile bridge over water in 1936 was a major feat in itself, but poor foundation conditions required the engineers to be creative in their plans. Because of the conditions of the underlying ground foundation and the ingenuity of the engineers, the bridge consists of three different bridges and a tunnel. This ingenuity allowed the engineers to not only design a safe structure but to also design a structure that would break world records. The suspension section of the bridge, with its six spans, is the country's longest suspension bridge. Its longest individual spans are 2310' which makes them the sixth longest in the U.S. The 1400' cantilever span was the longest in the U.S. at the time of its construction but has since been surpassed by the Commodore John Barry Bridge in Chester Pennsylvania (1644') and the Greater New Orleans Bridge (1576'). Its piers are the deepest in the world.

Narrative Statement of Significance

Criterion A: Transportation

The San Francisco-Oakland Bay Bridge stands today as one of the most important and widely used bridges in the United States and the world. Over 274,000

[20] Stephen Mikesell, John Nelson, Dan Peterson, and Mark Ketchum. Historic American Engineering Record, San Francisco-Oakland Bay Bridge (Oakland-San Francisco Bay Bridge), Addendum to: Oakland-San Francisco Bay Bridge. May 1, 1999. 238.

automobiles, trucks and buses use the Bay Bridge daily, a figure rarely matched or surpassed anywhere. The Bay Bridge connects two major population centers in one of the busiest metropolitan regions in the country. Further, the Bay Bridge serves as a major freeway connector for the region's massive transportation network, though this role has evolved over time and was not the bridge's original purpose.
The need for the Bay Bridge became apparent during the 1920s when the number of automobile registrations and population increased. California, in the 1920s, was the forerunner in the nation leading the way for automobile use.

> Its use is credited to contributing greatly to the economic prosperity of that decade and transformed virtually every aspect of transportation in California and the nation, and had profound impacts as well on settlement patterns, patterns of retail sales, and a host of other aspects of community development. Automobile sales increased nationally, automobile manufacturers regarded California as the "bottomless pit" market for their products.[21]

The Bay Area during the 1920s and the 1930s provides a perfect example of how automobiles transformed an urban environment. Population density in San Francisco had increased, with the search on for new places to live. The advantage to owning an automobile was that it granted people increased mobility. Now, Bay Area residents could move into suburban neighborhoods without the fear of losing their city-based jobs. Even though interurban rail lines remained the primary commuter mode in the Bay Area in 1930, those lines were rapidly losing their share of the market to automobiles, despite the long ferry rides and high tolls associated with transbay automobile commuting.

As Bay Area transportation patterns evolved during the 1920s, the region's transportation network had to change to meet new demands. Traffic congestion was not an uncommon phenomenon to the people of the Bay Area. State and local transportation agencies attempted to relieve this congestion by constructing new and improved highways linking both East Bay cities with Oakland and Peninsula cities with San Francisco. However, the

[21] "The crucial place of California in this regard is highlighted in James L. Flick, The Car Culture. Cambridge: MIT Press, 1975. Flick credits automobile sales for the prosperity of the 1920s and points to declining sales during the late 1920s for contributing to the depth of the Great Depression." As cited in Mikesell, et al., 239.

Bay Bridge became necessary as a link between San Francisco and Oakland, as ferries could no longer accommodate the increased traffic on the waterways. The San Francisco-Oakland Bay Bridge was in many ways like the other bridges being proposed at the time, in that seventy-five percent of its lane capacity would be designated for automobile use. However, what made the San Francisco-Oakland Bay Bridge unique among other bridge designs was that it also included lanes for mass transit use. The multi-modal design was vital to the engineers because they wanted everyone to be able to use this bridge. Further, the multi-modal design accurately reflected how Bay Area residents relied equally on automobiles and public mass transit for their commuting needs.[22]

The proposal for the San Francisco-Oakland Bay Bridge received almost universal support from both citizens and civic leaders. Most everyone recognized the importance and the necessity of having a bridge connecting these two city centers. It was no surprise then that the bridge proposal was passed and the loan of $70 million from the federal government was granted.[23]

The San Francisco-Oakland Bay Bridge was completed in three years and just a little bit ahead of schedule. Several factors led to the bridge's relatively swift construction. First, many politicians pushed for a timely completion date in order to satisfy certain political commitments that had been made. One of these commitments included the employment of thousands of people hit hard by the Great Depression. Secondly, the bridge's engineers wanted to finish early to prevent accumulation of interest onto the principal of their loan. When the San Francisco-Oakland Bay Bridge finally opened it served double and then triple the anticipated traffic. No one could have foreseen the success the San Francisco-Oakland Bay Bridge experienced.[24]

Speculations as to what sparked the success of the San Francisco-Oakland Bay Bridge are numerous. The first reason attributed to the success of the San Francisco-Oakland Bay Bridge became evident when the region hosted the World's Fair on Treasure Island in 1939-1940. Although one could access Treasure Island by water transportation, the San Francisco-Oakland

[22] Mikesell, et al., 239.
[23] Mikesell, et al., 10.
[24] Mikesell, et al., 8-9.

Bay Bridge proved to be a much more convenient and efficient method of getting to the island and the fair. Another reason for the success of the bridge was the entry of the United States into World War II in 1941. The United States' participation in the war transformed the Bay Area into a key contributor to the war effort. The San Francisco-Oakland Bay Bridge facilitated the movement of personnel and supplies from port to port. Finally, the Bay Bridge succeeded due to the significant increase in the population of the Bay Area during the post-war years.[25] The San Francisco-Oakland Bay Bridge once again served as a highly effective connector between these two metropolitan areas. One can only wonder what the Bay Area would look like if it did not have the San Francisco-Oakland Bay Bridge to accommodate the wartime and post-war growth of the area.

By 1963, the Bay Bridge had also evolved into a vital freeway connector for the Bay Area. This was not the original purpose of the Bay Bridge, as its designers assumed that most people would be traversing the bridge on interurban rail lines or buses. However, the failure of the interurban rail lines and the increased popularity of automobiles eventually led to the Bay Bridge becoming exclusively an automobile-truck bridge in 1963. Once again, the Bay Bridge reflected the changing reality of the Bay Area transportation network.

Criterion C: Engineering

In 1955 the American Society of Civil Engineers chose the San Francisco-Oakland Bay Bridge as one of the Seven Wonders in the United States. It was the only highway-related structure in the group.[26] The San Francisco-Oakland Bay Bridge broke many records when it was built, though this was not the original intention of the engineers. Nevertheless, the San Francisco-Oakland Bay Bridge excelled in its length, the depth of its piers, the total length of the suspension span, the length of its cantilever span, and in the great amounts of concrete, steel, wood, and other materials used in its construction. These remarkable feats only add to the bridge's importance.[27]

[25] Mikesell, et al., 9.
[26] Mikesell, et al., 242.
[27] Ibid.

The particular goal the engineers wanted to accomplish was to construct a double-deck, multi-modal structure between Oakland and San Francisco. They were able to accomplish this goal within a short amount of time and below their estimated budget. One aspect that contributes to the significance of the San Francisco-Oakland Bay Bridge is that "it was designed in a period of two years and built within three years."[28] One reason for the great haste in building the bridge was the desire to satisfy the promises the engineers and architects made to the governor, the legislature, and political leaders in the Bay Area. When campaigning for support of the San Francisco-Oakland Bay Bridge, C.H. Purcell, chief engineer of the bridge made promises to those who could further his cause. No doubt he wanted to make good on his promises. Another reason for the swiftness in constructing the San Francisco-Oakland Bay Bridge was to commence bringing in revenue from the tolls to cut down on the interest payments of the loan. Still another reason cited for the speed in which the San Francisco-Oakland Bay Bridge was built was the need to provide jobs. One of the promises made to politicians for their support in the bridge proposal was to provide jobs for those who were experiencing difficult times because of the Great Depression. The urgency of the approval for the plans of the bridge was in part to employ the Depression-ravaged citizens of California.[29]

The impressive length of the San Francisco-Oakland Bay Bridge also demonstrates significance in engineering. By today's standards, the San Francisco-Oakland Bay Bridge demonstrates a certain level of ingenuity from the perspective of the engineers. To fully appreciate this ingenuity, one must look at the design of the bridge through the eyes of the engineers who overcame difficulties, such as poor foundation conditions, without the benefit of modern day technology. The use of a double-suspension span would not have been necessary except for the length the bridge had to cross from Yerba Buena Island to San Francisco.[30] This double-suspension type of bridge was considered so unusual at that time that it could be considered as the first of its kind.[31]

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[28] Ibid.
[29] Mikesell, et al., 242-243.
[30] Mikesell, et al., 243.
[31] "United States Steel, "San Francisco Oakland Bay Bridge," 1936, illustrates the only known predecessor to the double-suspension bridge design, an 1841 bridge in Prague, Czechoslovakia across the River Moldau; 19." As cited in Mikesell, et al., 244.

As previously noted, the engineers were not trying to build an impressive bridge; they were designing a means to cross the four-mile bay between San Francisco and Oakland. However, this is not to say that there was no desire to accomplish something daring. Some engineers advocated the use of a single-suspension span for the San Francisco-Oakland Bay Bridge for two reasons. "The first being that it would provide the best possible water way for shipping and second, it would undoubtedly create a bridge which architecturally and spectacularly would appeal to the civic pride in both cities."[32] The eventual design for the bridge was the double-suspension span because the engineers did not want to stray too far from known technologies.[33]

Why did the engineers then break world records if that was not their intention? The main reason for having to utilize the technology that they did was the poor foundation conditions of the ground that the bridge was to be built on. The depth of the piers is not attributed to the great length of the San Francisco-Oakland Bay Bridge, but actually to the seabed conditions. The length did have something to do with the piers, but only in the factors that some of them would have to be built on a poor foundation. "The deepest East Bay and West Bay piers are roughly the same depth but for different reasons. On the West Bay, the depth was defined as the depth to bedrock. The East Bay piers were sunk to a level where the hardest clay could be found. Pier E-3 reached the greatest depth by accident; the caisson continued to sink uncontrollably and gained an extra 10 feet on that basis.

"The use of multiple bridge types and the fact that the East Bay Crossing is different from the West Bay, also came from the result of the poor foundation conditions. The West Bay crossing was designed as a suspension bridge to minimize the number of piers it would have to use. When the engineers realized that the piers on the East Bay could not be taken to bedrock, they eliminated the idea of suspension bridge from that side of the island. The decision of using multiple bridge types would minimize the weight of both the substructure and superstructure.

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[32] "Daniel Moran and Proctor to Woodruff, November 9, 1931, Board of Consulting Engineers, Moran and Proctor, 200.5, California State Archives." As cited in Mikesell, et al., 244.
[33] Mikesell, et al., 244.

"In the final analysis the Bay Bridge is a very complex structure because it was also a very bold undertaking. All of the important elements of it, from the deep piers to the multiple bridge types to double-suspension bridge to the great length, were solutions to the problems posed by this daring crossing. These elements were compromises that the state engineers and consulting engineers developed as they worked to solve the problem. That the solution worked well is a testament to the talent of the people involved in that process."[34]

[34] Mikesell, et al., 245.

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Name of Repository

San Francisco Public Library
Main Library

San Francisco History Center
100 Larkin Street
San Francisco, California 94102

Western Railway Museum
5848 State Highway 12
Suisun City, California 94585

U. S. G. S.
345 Middlefield Road
M. S. 532
Menlo Park, California 94025

Caltrans District 4
Map Room
111 Grand Avenue
Oakland, California 94612

Caltrans District 4
Photography Department
111 Grand Avenue
Oakland, California 94612

Andrew Hope
Caltrans District 4
111 Grand Avenue
Oakland, California 94612

UTM references

Bay Bridge
1. Zone: 10, Easting: 552009, Northing 4181200
2. Zone: 10, Easting: 555000, Northing: 4183000
3. Zone: 10, Easting: 556003, Northing: 4185200
4. Zone: 10, Easting: 557009, Northing: 4185800
5. Zone: 10, Easting: 559400, Northing: 4186080

Boundary Description

The boundaries of the Bay Bridge consist of the named structures listed in the nomination beginning at 5th Street in San Francisco and ending just beyond where the bridge touches down on the Oakland side and becomes a roadway on grade. That easternmost point is 1100 feet from the shoreline. At various places the boundary expands to embrace the footprint of the buildings listed in the nomination, including the Transbay Terminal and the Key System Electrical Substation in San Francisco, the Key System Electrical Substation and S.F.O.B.B. Firehouse on Yerba Buena Island, and the Bay Bridge Substation, Key Pier Substation, and P.G. & E. Substation in Oakland. The UTM references for these buildings are as follows:

Transbay Transit Terminal – San Francisco
Zone 10, Easting: 553260, Northing: 4182450

Key System Electrical Substation – San Francisco
Zone 10, Easting: 553490, Northing: 4181890

Key System Electrical Substation – Yerba Buena Island
Zone 10, Easting: 556050, Northing: 4185840

S.F.O.B.B. Firehouse (Caltrans Garage) – Yerba Buena Island
Zone 10, Easting: 556070, Northing: 4185860

Key Pier Substation – Oakland
Zone 10, Easting: 559110, Northing: 4185970

P.G. & E. Substation – Oakland
Zone 10, Easting: 559090, Northing: 4185950

Bay Bridge Substation – Oakland
Zone 10, Easting: 559130, Northing: 4185980

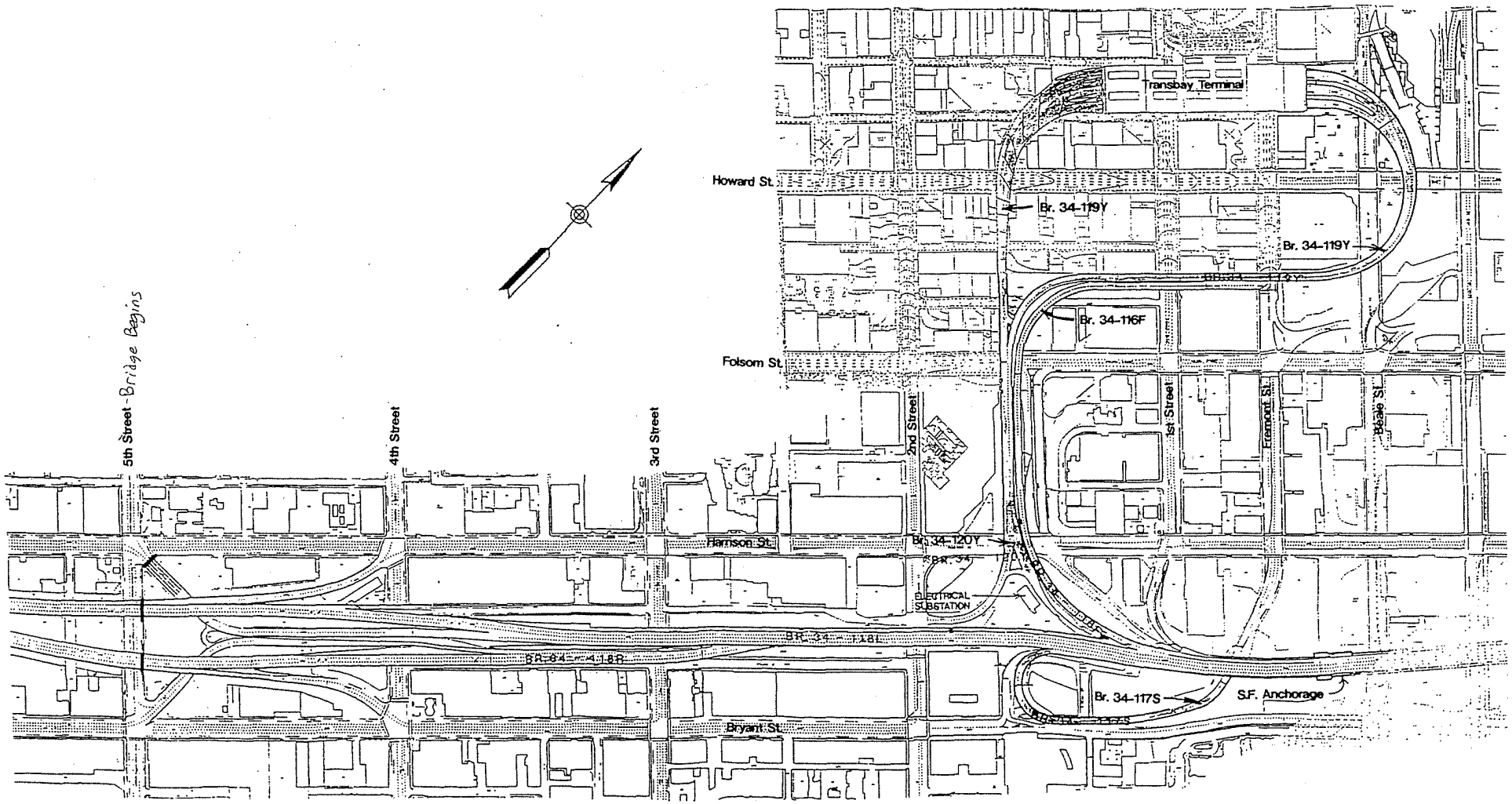
Boundary Justification

The boundaries encompass the historic bridge structures and appurtenant buildings. The boundaries at the eastern end of the bridge have been drawn to exclude the newer and heavily modified non-contributing buildings at and near the Oakland Toll Plaza.

Photographic Credits

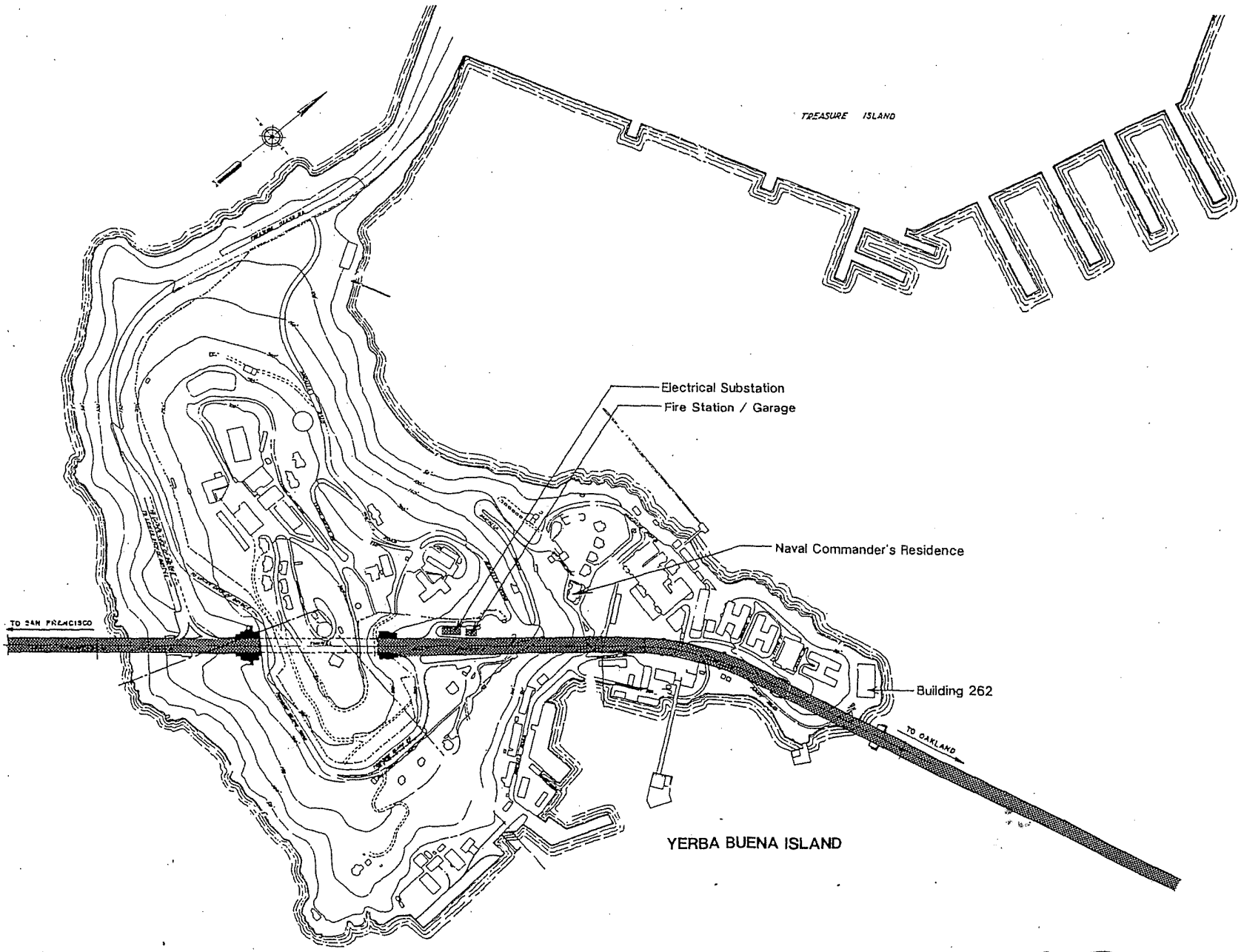
Black and white photographs, Bay Bridge, Caltrans collection, District 4

Black and white photographs, contributing components of the Bay Bridge and the Transbay Transit terminal, John J. Mascitelli.



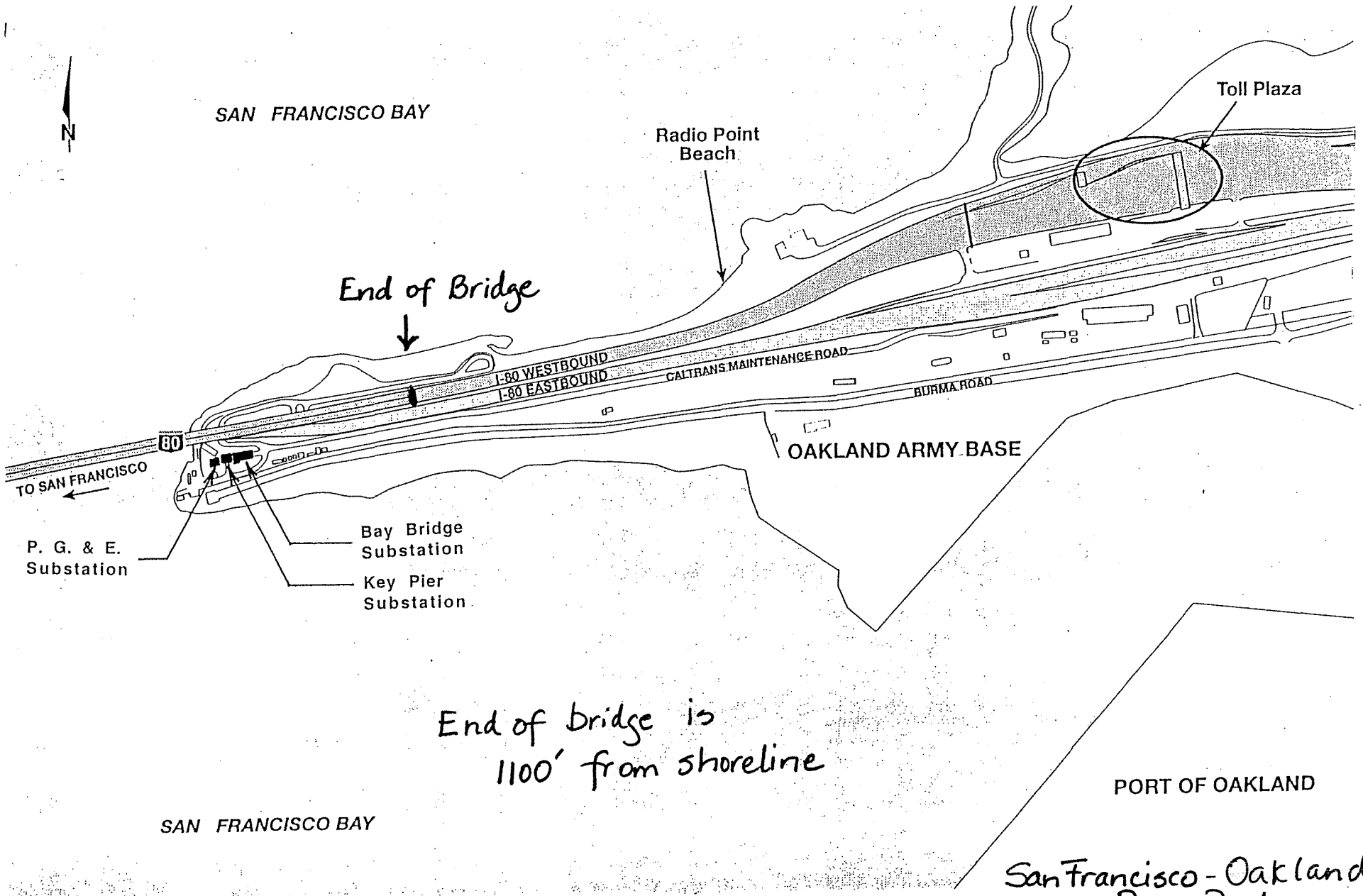
Map 1

San Francisco - Oakland Bay Bridge
San Francisco - Alameda Cos



Map 2

San Francisco - Oakland Bay Bridge
San Francisco - Alameda Cos.



Map -

San Francisco - Oakland Bay Bridge

San Francisco - Alameda

Appendix B

Memorandum of Agreement between the Federal Transit Administration, and the California State Historic Preservation Officer Regarding the Transbay Terminal/Caltrain Downtown Extension/Redevelopment Project in San Francisco County, California

STATE OF CALIFORNIA – THE RESOURCES AGENCY ARNOLD SCHWARZENEGGER, *Governor*

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
P.O. BOX 942896
SACRAMENTO, CA 94296-0001
(916) 653-6624 Fax: (916) 653-9824
calshpo@ohp.parks.ca.gov
www.ohp.parks.ca.gov

June 21, 2004

Reply To: FTA011108A

Ms. Marie Pang
Peninsula Corridor Joint Powers Board
1250 San Carlos Avenue
San Carlos, CA 94070

Re: Section 106 Memorandum of Agreement for the Transbay Terminal/Caltrain Extension Redevelopment Project, City and County of San Francisco

Dear Ms. Pang:

Enclosed herewith is the fully executed Section 106 Memorandum of Agreement for the subject FTA undertaking. I appreciate the cooperation of all parties in bringing this consultation to a successful conclusion. I look forward to the inauguration of the consultation prescribed by stipulation IV. of the agreement.

Please direct any questions about this matter to Hans Kreutzberg of my staff.

Sincerely,

Stephen D. Mikesell
Acting State Historic Preservation Officer

Enclosure

Memorandum of Agreement

Between the

Federal Transit Administration, and the California State Historic Preservation Officer

Regarding the

Transbay Terminal/Caltrain Downtown Extension/Redevelopment Project in San Francisco County, California

WHEREAS, the Federal Transit Administration (FTA) may assist the Transbay Joint Powers Authority (TJPA), the City and County of San Francisco (CCSF), the Peninsula Corridor Joint Powers Board (JPB), and the San Francisco Redevelopment Agency (SFRA) with construction of a new multi-modal Terminal (Terminal) on the site of the present Transbay Transit Terminal (TTT), extension of the Peninsula Corridor Service (Caltrain) from its current San Francisco terminus at Fourth and Townsend Streets to a new underground terminus beneath the new Terminal, and establishment of a Redevelopment Area Plan with related development projects, including transit-oriented development on publicly-owned land in the vicinity of the new multi-modal Terminal (Undertaking); and

WHEREAS, on March 28, 2003, TJPA selected a Locally Preferred Alternative (LPA) for the Undertaking that includes the West Ramp Transbay Terminal Alternative, Full Build Redevelopment Alternative, and Second-to-Main Tunneling Alternative; and

WHEREAS, TJPA, as a Responsible Agency, intends to become the project sponsor, a grantee for federal grant receipt purposes, and the recipient of any FTA assistance for the Undertaking; and

WHEREAS, the California Department of Transportation (Department) has indicated that it will transfer to TJPA title to the historic property known as the TTT, which is a component of the San Francisco – Oakland Bay Bridge (Bay Bridge), a multi-component structure that is listed on the National Register of Historic Places (NRHP), and that such transfer of title will occur after the Department has received satisfactory proof that FTA has issued a Record of Decision pursuant to NEPA for construction of the Undertaking; and

WHEREAS, FTA, in consultation with the California State Historic Preservation Officer (SHPO), has determined that the Undertaking will adversely affect properties listed or eligible for listing in the NRHP (historic properties), including components of the Bay Bridge and the Second and Howard Streets Historic District, and may affect archaeological properties that have not yet been identified; and

WHEREAS, the Bay Bridge East Span Seismic Safety Project in San Francisco and Alameda counties is a separate undertaking from the subject Undertaking; and

WHEREAS, FTA has consulted with SHPO in accordance with 36 CFR Part 800, regulations implementing Section 106 of the National Historic Preservation Act (16 U.S.C. 470f), and has notified the Advisory Council on Historic Preservation (ACHP) of the adverse effect finding pursuant to 36 CFR §800.6 (a) (1); and

WHEREAS, FTA, TJPA, CCSF, JPB, SFRA have consulted with the Department; the City of Oakland, the San Francisco Architectural Heritage; the San Francisco Planning & Urban Research Association (SPUR); the National Park Service (Western Regional Office); the National Trust for Historic

Preservation; the American Institute of Architects Preservation Committee; San Francisco Beautiful; Transbay Citizens' Advisory Committee; the Oakland Heritage Alliance; the San Francisco Landmarks Preservation Advisory Board; and San Francisco Tomorrow, regarding the Undertaking and its effects on historic properties, and have taken all comments received from these parties into account;

NOW, THEREFORE, FTA and SHPO agree that if the Undertaking proceeds with FTA assistance, the Undertaking shall be implemented in accordance with the following stipulations in order to take into account the effects of the Undertaking on historic properties, and further agree that these stipulations shall govern the Undertaking and all of its parts until this Memorandum of Agreement (MOA) expires or is terminated.

STIPULATIONS

If FTA provides funding assistance or a loan guarantee for the Undertaking, FTA will ensure that the following stipulations, which are applicable to the Locally Preferred Alternative (LPA), are implemented:

I. Professional Standards

A. Professional Qualifications

All activities regarding history, historic preservation, historic architecture, architectural history, historic and prehistoric archaeology, that are carried out pursuant to this MOA will be 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. However, nothing in this stipulation may be interpreted to preclude any signatory or any agent or contractor thereof from using the properly supervised services of persons who do not meet the PQS.

B. Historic Preservation Standards

All activities regarding history, historic preservation, historic architecture, architectural history, historic and prehistoric archaeology that are carried out pursuant to this MOA shall 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.

C. Curation and Curation Standards.

FTA and TJPA shall ensure that, to the extent permitted under §§ 5097.98 and 5097.991. 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.

II. Mitigation of Effects on Components of the San Francisco-Oakland Bay Bridge (Bay Bridge)

A. Salvage

TJPA, in consultation with the Department, will identify 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. Interested parties must accept these elements at least 90 days prior to demolition of the TTT. TJPA will remove any elements selected in a manner that minimizes damage and will deliver them 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 under this MOA.

B. Permanent Interpretive Exhibit at the Terminal

TJPA will direct the design and engineering team for the Undertaking to integrate into the design of the new Terminal a dedicated space for an 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 TTT, ramps, or Key System, or other interpretive material.

TJPA will consult with the Department regarding the availability of historical documentary materials for the creation of the permanent interpretive display of the history of the original TTT and its association with the San Francisco-Oakland Bay Bridge.

The Department will assist TJPA in planning the scope and content of the proposed interpretive exhibit. In addition, TJPA will invite the Oakland Heritage Alliance, San Francisco Architectural Heritage, the California State Railroad Museum, and the Western Railway Museum to participate. TJPA, while retaining responsibility for the development of the exhibit, will consider, jointly with the Department, the participating invitees' recommendations when finalizing the exhibit design. TJPA will produce, install, and maintain the exhibit.

TJPA will also 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 Terminal, TJPA will provide and deliver exhibit materials to a venue that is mutually satisfactory to TJPA and the City of Oakland.

C. Oakland Museum of California Exhibit

TJPA will consult with the Department and the Oakland Museum about contributing to the 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. In addition, TJPA will 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 an extent that is mutually satisfactory to TJPA, the Department, and the Oakland Museum. A separate agreement will outline the negotiated financial contributions.

TJPA will 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.

D. Documentation

Prior to the start of any work that would have an adverse effect on components of the Bay Bridge that are historic properties, TJPA will request SHPO to 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 projects that have occurred since 1993, adequately document the TTT and ramps, then no further documentation will be necessary. In addition, TJPA, assisted by the Department, will seek to obtain the original drawings of the TTT by architect T. Pflueger. If SHPO determines that existing documentation is adequate, then TJPA will 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 does not constitute adequate recordation of the Bay Bridge components addressed hereunder, then TJPA and SHPO will consult further and SHPO will determine what level and type of additional documentation is necessary. Upon a written determination by SHPO that all documentation prescribed hereunder is satisfactory, TJPA will provide copies of this documentation to SHPO and the Department Headquarters Library, with xerographic copies 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 Undertaking 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, TJPA may assume that SHPO has determined that said documentation is adequate and may proceed with that aspect of the Undertaking that will adversely affect the historic properties documented hereunder.

III. Mitigation of Effects on Second and Howard Streets Historic District and Protective Measures for Rincon Point/South Beach Historic Warehouse Industrial District

A. Protective Measures

TJPA, in consultation with the owners of historic properties immediately adjoining the construction sites. will develop and implement measures 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 Undertaking. Such measures will include, but are not necessarily limited to, those identified in Appendix A to this MOA. The protective measures herein stipulated will be developed and implemented by TJPA prior to the commencement of any aspect of the Undertaking 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] 1888[2]*	*Cut-and cover Construction nearby. Need construction easement*
640 Second Street / 3788-002	*2S2*	Rincon Point/South Beach District & South End District.	*1926*	Tunnel under or near property
650 Second Street / 3788-049 *through 3788-073*	*2S2*		1922	
670-680 Second Street / 3788-043, 3788-044	*2S2 (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 consensus of the SHPO and a federal agency.
1D Listed on 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.

B. Documentation

TJPA will take the effect of the Undertaking on the three historic properties listed below into account by recording these properties in accordance with the terms herein set forth. These properties 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, TJPA will 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, TJPA will 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, TJPA may proceed with that aspect of the Undertaking that will adversely affect the historic properties documented hereunder.

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

C. Repair of Inadvertent Damage

TJPA will ensure that 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 Undertaking will be repaired by TJPA in accordance with the Secretary of the Interior's Standards for Rehabilitation. The condition of the contributing elements will be photographed by TJPA prior to the start of the Undertaking to establish the baseline condition for assessing any damage. To document these existing conditions, TJPA will consult with property owner(s) about the appropriate level of photographic documentation of building interiors and exteriors. A copy of this photographic documentation will be provided to the property owner(s), and will be retained on file by TJPA. If repair of inadvertent damage resulting from the Undertaking is necessary, TJPA will submit repair plans and specifications to SHPO for review and comment to ensure that the work conforms to the Secretary of the Interior's Standards for Rehabilitation. TJPA and SHPO will consult 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.

IV. Consideration of Potential Effects on and Prospective Development and Implementation of a Treatment Plan for Archaeological Properties

A. Consultation

Within 45 days following execution of this MOA by FTA and SHPO, FTA, SHPO, TJPA, JPB and CCSF will consult to initiate the process of determining how archaeological properties that may be affected by the Undertaking will be identified, whether and how the NRHP eligibility of such properties may be addressed, and whether and how the Undertaking'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 shall invite Caltrans to participate in this consultation. The time frame for this consultation shall be determined by the consulting parties through consensus. The consultation herein prescribed will at a 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)."

B. Treatment Plan

If the consulting parties agree that a plan for treatment of archaeological properties (Treatment Plan) should be prepared, then TJPA will prepare a Treatment Plan that provides for the identification, evaluation and treatment of archaeological properties that may be affected by the Undertaking. The Treatment Plan shall conform to the requirements of item 1., above, of this stipulation, take into account the information contained in items 2. and 3., above, of this stipulation, 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, then with respect to consideration of historic archaeological properties, TJPA shall 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 archaeologists, to:

1. Identify any 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, 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, rather than speculatively, 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.

Upon completion, TJPA, on behalf of FTA, will submit the draft Treatment Plan to the other consulting parties for review and comment. The consulting parties shall 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 will 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, FTA and TJPA may finalize the draft Treatment Plan as they deem appropriate, and proceed to implement the final Treatment Plan. If FTA and TJPA propose to modify the final Treatment Plan, TJPA, on behalf of FTA, 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, FTA and TJPA may modify the final Treatment Plan as they deem appropriate, and proceed to implement the modified final Treatment Plan.

C. Treatment Plan Reporting Requirements

1. If pursuant to section B., above, of this stipulation, a Treatment Plan has been implemented, then within two years after FTA, in consultation with TJPA, has determined that all fieldwork required by the Treatment Plan has been completed, FTA will ensure that TJPA prepares 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 to the draft technical report as FTA and TJPA may deem appropriate. FTA will provide the reviewing parties with written documentation indicating whether and how the draft technical report will be modified 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, FTA and TJPA may modify the draft technical report as they may deem appropriate. Thereafter, FTA and TJPA may issue the technical report in final form and distribute this document in accordance with paragraph C.2 of this stipulation.

2. Copies of the final technical report documenting the results of Treatment Plan implementation will be distributed by TJPA 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.

3. FTA will ensure that TJPA prepares a written draft document that communicates in lay terms the results of Treatment Plan implementation to members of the interested public. TJPA will 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 such publication shall upon completion be distributed by TJPA 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 may deem appropriate, subject to the terms of Stipulation IV.E.

4. TJPA will prepare a written annual report describing the status of its efforts to comply with the terms of stipulations II. – IV., inclusive, of this MOA. The annual report will be prepared following the end of each fiscal year (July 1 to June 30) that this MOA is in effect

and will be distributed by TJPA 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.

D. Treatment Plan Not Developed -- Addressing Discoveries

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 Undertaking will be addressed by TJPA pursuant to 36 CFR § 800.13(b)(3).

E. Confidentiality

The signatories to this MOA acknowledge that historic properties covered by this MOA are subject to the provisions of § 304 of the National Historic Preservation Act of 1966, as amended, and § 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 MOA are consistent with § 304 of the National Historic Preservation Act of 1966, as amended, and § 6254.10 of the California Government Code.

F. Treatment of Human Remains of Native American Origin

The parties to this MOA agree that Native American burials and related items discovered during implementation of the terms of the MOA and of the Undertaking will be treated in accordance with the requirements of § 7050.5(b) of the California Health and Safety Code. If, pursuant to § 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 § 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.

V. Resolving Objections

A. Should any party to this MOA object at any time to the manner in which the terms of this MOA are implemented, or to any action carried out or proposed with respect to implementation of the MOA (other than the Undertaking itself) or to any documentation prepared in accordance with and subject to the terms of this MOA, FTA shall immediately notify the other parties to this MOA of the objection and consult with the objecting party and the other parties to the MOA for no more than 21 days to resolve the objection. FTA shall reasonably determine when this consultation will commence. If the objection is resolved through such consultation, the action in dispute may proceed in accordance with the terms of that resolution. If, after initiating such consultation, FTA determines that the objection cannot be resolved through consultation, then FTA shall forward all documentation relevant to the objection to the ACHP, including FTA's proposed response to the objection, with the expectation that the ACHP will, within thirty (30) days after receipt of such documentation:

1. Advise FTA that the ACHP concurs in FTA's proposed response to the objection, whereupon FTA will respond to the objection accordingly; or

2. Provide FTA with recommendations, which FTA will take into account in reaching a final decision regarding its response to the objection; or

3. Notify FTA that the objection will be referred for comment pursuant to 36 CFR § 800.7(a)(4), and proceed to refer the objection and comment. FTA shall take the resulting comments into account in accordance with 36 CFR 800.7(c)(4) and Section 110(1) of the National Historic Preservation Act.

B. Should the ACHP not exercise one of the foregoing options within 30 days after receipt of all pertinent documentation, FTA may assume the ACHP's concurrence in its proposed response to the objection.

C. FTA shall take into account any ACHP recommendation or comment provided in accordance with this stipulation with reference only to the subject of the objection. FTA's responsibility to carry out all other actions under this MOA that are not the subject of the objection will remain unchanged.

D. FTA shall provide all other parties to this MOA, any consulting Native American Tribe, and the ACHP when the ACHP has issued comments hereunder, with a copy of its final written decision regarding any objection addressed pursuant to this stipulation.

E. FTA may authorize any action subject to objection under this stipulation to proceed after the objection has been resolved in accordance with the terms of this stipulation.

F. At any time during implementation of the measures stipulated in this MOA, should an objection pertaining to such implementation be raised by a member of the public, FTA shall notify the parties to the MOA, and any Native American Tribe, in writing of the objection and take the objection into consideration. FTA shall consult with the objecting party and, if the objecting party so requests, with any of the other MOA signatories and any consulting Native American Tribe, for no more than 30 days. Within 10 days following closure of this consultation period, FTA will render a decision regarding the objection and notify all consulting parties of its decision in writing. In reaching its decision, FTA will take into account any comments from the consulting parties regarding the objection, including the objecting party. FTA's decision regarding the resolution of the objection will be final. FTA may authorize any action subject to objection under this paragraph to proceed after the objection has been resolved in accordance with the terms of this paragraph.

G. Disputes pertaining to the National Register eligibility of properties covered by this MOA will be addressed by FTA in accordance with 36 CFR § 800.4(c)(2).

VI. Amendments

Any party to this MOA, or any consulting Native American Tribe, may propose that this MOA be amended, whereupon the parties to this MOA and, as applicable, any consulting Native American Tribe, will consult to consider such amendment. The amendment process shall comply with 36 CFR §§ 800.6(c)(1) and 800.6(c)(7). The time frame for such consultation shall be determined by FTA, in consultation with SHPO and TJPA. This MOA may be amended only upon the written agreement of the signatory parties. If it is not amended, this MOA may be terminated by either signatory party in accordance with Stipulation VII.

VII. Termination

A. If this MOA is not amended as provided for in Stipulation VI., or if either signatory party proposes termination of this MOA for other reasons, the signatory party proposing termination shall in writing, notify the other parties to this MOA and any consulting Native American Tribe,

explain the reasons for proposing termination, and consult with the other parties and any consulting Native American Tribe to seek alternatives to termination. The time frame for such consultation shall be determined by FTA, in consultation with SHPO and TJPA. Such consultation shall not be required if FTA proposes termination because the Undertaking no longer meets the definition set forth in 36 CFR § 800.16(y).

B. Should such consultation result in an agreement on an alternative to termination, then the parties and any consulting Native American Tribe shall proceed in accordance with the terms of that agreement.

C. Should such consultation fail, the signatory party proposing termination may terminate this MOA by promptly notifying the other parties to this MOA and any consulting Native American Tribe in writing. Termination hereunder shall render this MOA without further force or effect.

D. If this MOA is terminated hereunder, and if FTA determines that the Undertaking will nonetheless proceed, then FTA shall proceed in accordance with 36 CFR § 800.6 to develop a new MOA.

VIII. Duration of the MOA

A. Unless terminated pursuant to Stipulation VII., or unless it is superseded by an amended MOA, this MOA will be in effect following execution by SHPO until FTA, in consultation with the other parties and any consulting Native American Tribe, determines that all of its stipulations have been satisfactorily fulfilled. This MOA will terminate and have no further force or effect on the day that FTA notifies the other parties and any consulting Native American Tribe in writing of its determination that all stipulations of this MOA have been satisfactorily fulfilled.

B. The terms of this MOA shall be satisfactorily fulfilled within 12 years following the date of execution by SHPO. If FTA determines that this requirement cannot be met, the parties to this MOA and any consulting Native American Tribe will consult to reconsider its terms. Reconsideration may include continuation of the MOA as originally executed, amendment or termination. In the event of termination, FTA will comply with Stipulation VII.D. if it determines that the Undertaking will proceed notwithstanding termination of this MOA.

C. If the Undertaking has not been implemented within 12 years following execution of this MOA by the SHPO, this MOA shall automatically terminate and have no further force or effect. In such event, FTA shall notify the other parties and any consulting Native American Tribe in writing and, if it chooses to continue with the Undertaking, shall reinitiate review of the Undertaking in accordance with 36 CFR Part 800.

IX. EFFECTIVE DATE

This MOA will take effect on the date that it has been executed by SHPO.

Execution of this MOA by FTA and SHPO, its transmittal by FTA to the ACHP in accordance with 36 CFR § 800.6(b)(1)(iv), and subsequent implementation of its terms, shall evidence, pursuant to 36 CFR § 800.6(c), that this MOA is an agreement with the ACHP for purposes of Section 110(1) of the National Historic Preservation Act, and shall further evidence that FTA has afforded the ACHP an opportunity to comment on the Undertaking and its effects on historic properties, and that FTA has taken into account the effects of the Undertaking on historic properties.

SIGNATORY PARTIES:

Federal Transit Administration

By: _____ Date: 6/21/04
Title: REGIONAL ADMINISTRATOR

California State Historic Preservation Officer

By: _____ Date: 6/23/04
Title: Deputy SHPO

Concurring Signatories:

Transbay Joint Powers Authority

By: _____ Date: 6/4/04
Title: Executive Director

City and County of San Francisco

By: _____ Date: 6/4/04
Title: Environmental Review Officer

Peninsula Corridor Joint Powers Board

By: _____ Date: 6/3/04
Title: CHIEF DEVELOPMENT OFFICER

California Department of Transportation

By: _____ Date: 6/7/04
Title: Deputy District 4 Director

Appendix A: Protective Measures:

Following are mitigation measures to be implemented to protect properties eligible for on in the National Register of Historic Places. The measures described would be implemented by a combination of construction contract specifications, drawings, and provisions, as well as public affairs programs. TJPA and JPB staff would be assigned to work directly with the public to provide project information and to resolve construction-related problems. The TJPA and JPB will work with community residents, elected officials, local businesses, and community organizations to tailor the mitigation program to best meet community needs. Contractors will be monitored to assure that mitigation measures are met.

I. Preconstruction Activities

- **Undertake building data survey.** A pre-construction structural survey would be completed to determine the integrity of existing buildings adjacent to and over the proposed extension. This survey would be used to finalize detailed construction techniques along the alignment and as the baseline for monitoring construction impacts during and following construction. During construction, the TJPA and JPB would monitor adjacent buildings for movement and, if movement is detected, take immediate action to control the movement.

- **Complete detailed geotechnical investigation.** During final design, additional sampling (drilling and core samples) and analyses of subsurface soil/rock conditions would be used to detail and finalize the excavation and its support system to be used in the retained cut, cut-and-cover and tunnel portions of the extension. Current data, including subsurface sampling conducted in 1995 and 1996 for the 1997 Caltrain DEIS/DEIR have been used to identify the proposed construction techniques presented in the following sections, which form the basis for the impact analysis that follows in Section 5.21.

II. General Construction Measures

- **Provide signage.** The TJPA and JPB would work with establishments affected by construction activities. Appropriate signage would be developed and displayed to direct both pedestrian and vehicular traffic to businesses via alternate routes.

- **Install level deck.** Decking at the under-street cut-and-cover sections would be installed flush with the existing street or sidewalk levels.

- **Provide for efficient sidewalk design and maintenance.** Wherever feasible, sidewalks would be maintained at the existing width during construction. Where a sidewalk must be temporarily narrowed during construction (e.g., deck installation), it would be restored to its original width during the majority of construction period. In some places this may require placing the temporary sidewalk actually on the deck. Each sidewalk design should be of good quality and approved by the Resident Engineer prior to construction. Handicapped access would be maintained during construction where feasible.

III. Soils/Geology

- **Underpin existing buildings, where deemed necessary, to protect existing structures from potential damage that could result from excessive ground movements during construction.** The design of the tunneling and the excavation procedures (and construction sequence), and the design of the temporary support system will be developed 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 may be implemented such as: (1) underpinning, (2) ground improvement, and/or (3) strengthening of existing structures to mitigate the risks.

The cut-and-cover alignment passes near settlement-sensitive structures in the vicinity of the intersection of Second and Townsend streets, including buildings in the Rincon Point / South Beach Historic Warehouse – Industrial District (i.e., 166-178, 180, , and 350-360 Townsend Street).

The tunnel alignment passes under a number of old and settlement-sensitive structures in the vicinity of the intersection of Second and Townsend streets, including buildings in the Rincon Point / South Beach Historic Warehouse – Industrial District (i.e., 130, 136, 144-146, 148-154, and 162-164 "Townsend Street; 634, 640, 650, and 670-680 Second Street; and 301-321 Brannan Street).

Even though the tunnel will be excavated using the stacked drift method, and even though the tunnel will be excavated in the Franciscan Rock formation, the risk of potential adverse impacts of tunneling on the existing buildings must be assessed, because the rock cover over the tunnel is rather shallow.

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 the existing foundations with deep foundations that are embedded outside the zone of influence of tunneling.

Other alternatives, in lieu of underpinning, involve strengthening of 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 to make the rock mass over the tunnel act as a rigid beam, which would allow construction of the tunnels with no adverse effects on the buildings that are 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 should be effective for the Caltrain Downtown Extension Project as well.

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

IV. Air Emissions

- 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).

V. Vibration

- **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.

- **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.

- Require vibration monitoring during vibration intensive activities.

- Restrict the hours of vibration intensive activities such as pile driving to weekdays during daytime hours.

- Investigate alternative construction methods and practices to reduce the impacts in coordination with the construction contractor if resident annoyance from vibration becomes a problem.

- Include specific limits, practices and monitoring and reporting procedures for the use of controlled detonation. Controlled detonation may be required during tunnel construction through rock for both the cut-and-cover and stacked-drift construction methods, subject to additional geotechnical investigations and other considerations that would be determined during the final design and construction phases of the project. Any use of controlled detonation would be closely controlled and monitored to avoid damage to existing structures. Specific limits, practices, and monitoring and reporting procedures would be included within the contract documents to ensure that such construction methods, if used, would not exceed safety criteria.

- **Use high-resilience track fasteners or a resiliently supported tie system** for the Caltrain downtown extension for areas projected to exceed vibration criteria.

Appendix C

TJPA Transbay Transit Terminal Historic Resource Recordation Submission

TJPA
TRANSBAY JOINT POWERS AUTHORITY
Maria Ayerdi • Executive Director

October 10, 2008

Mr. Stephen D. Mikesell
Deputy State Historic Preservation Officer
Office of Historic Preservation
P.O. Box 942896
Sacramento, CA 95296-0001

Subject: Transbay Transit Terminal Historic Resource Recordation Submission

Dear Mr. Mikesell:

Enclosed is documentation on the Transbay Transit Terminal, as required by the June 2004 Memorandum of Agreement (MOA) for the Transbay Terminal/Caltrain Downtown Extension/Redevelopment Project in San Francisco, California, which was signed between the California State Historic Preservation Officer (SHPO), the Federal Transit Administration, and concurring signatories of the Transbay Joint Powers Authority (TJPA), the City and County of San Francisco, the Peninsula Corridor Joint Powers Board, and the California Department of Transportation (Caltrans).

This submittal fulfills MOA Stipulation II.D, Documentation, which requires the TJPA to collect past documentation of the Transbay Terminal to determine if the building has been adequately recorded prior to undertaking any work that will have an adverse effect on this historic property. The documentation in the accompanying submittal was compiled consistent with Historic American Buildings Survey/Historic American Engineering Record (HABS/HAER) Level 1 standards to demonstrate that the Transbay Terminal has been adequately recorded. The historic and contemporary documents included represent the original conditions and subsequent changes since the Terminal was constructed in 1939. The overview includes a summary of the drawings, photographs and written materials. Detailed lists of the drawings and photographs are also included for easy reference to the contents in this package.

In accordance with the MOA, the TJPA is to provide your office with a 45-day review period and requests your written comments, if any, by **Wednesday, November 26, 2008**. If SHPO determines that this submittal is adequate, or SHPO does not respond within 45 days, the TJPA may proceed with the demolition of the Transbay Terminal and ramps and provide copies of this documentation to the repositories identified in the MOA. If SHPO determines that this submittal does not constitute adequate recordation of the Terminal, then the TJPA and SHPO will consult further about what level and type of additional documentation is necessary.

This submission is concerned with the Transbay Terminal building only. Documentation for the following bridge elements listed in the MOA were submitted in 1999 to the SHPO by Caltrans as part of the Historic American Engineering Record (HAER project CA-32) for the San Francisco-Oakland Bay Bridge: the Transbay Terminal Loop ramp (Caltrans Bridge #34-119Y), the North Connector (Caltrans Bridge #34-116F), the Center Ramps (Caltrans Bridge #34-118L), the Lower Deck On-Ramp (Caltrans Bridge #34-118R), and the Harrison Street Over-crossing (Caltrans Bridge #34-120Y).

Separately, the TJPA is drafting an amendment to the MOA that acknowledges modifications to the schedule for the Transbay Transit Center Program that have occurred since execution of the MOA in 2004 and will share a draft of the proposed amendment with your office shortly.

We appreciate your consideration of this matter. If this submittal is determined by SHPO to be adequate recordation of the Transbay Terminal, please sign below and return this letter.

Sincerely,

Robert Beck
Senior Program Manager
Transbay Joint Powers Authority

cc: M. Ayerdi-Kaplan, TJPA Executive Director
J. Oishi, Program Coordinator, PMPC
A. Lau, Transit Center Project Manager, PMPC
S. Stratton, State Historic Preservation Office (pdf on CD)
L. Rogers, FTA Regional Administrator (pdf on CD)
B. Wycko, Environmental Review Officer, City and County of San Francisco (pdf on CD)
I. McAvoy, Chief Development Officer, Peninsula Corridor Joint Powers Board (pdf on CD)
J. Richards, Deputy District Director, Office of Environmental Planning & Engineering, Caltrans (pdf on CD)

Enclosure: - *Historic Resource Recordation Documentation for the Transbay Transit Terminal, 425 Mission Street, San Francisco, CA* prepared by the Transbay Joint Powers Authority, *October 10, 2008* (hardcopy and CD)
- *Historic American Engineering Record, San Francisco Oakland Bay Bridge HAER No. CA-32* submitted by Caltrans in 1999 to SHPO (pdf on CD)

The State Historic Preservation Officer finds that the submittal provided by the Transbay Joint Powers Authority dated October 10, 2008, is adequate recordation of the Transbay Terminal and, in combination with HAER project CA-32 submitted by Caltrans in 1999, adequately fulfills the requirements of MOA Stipulation II.D.

Stephen D. Mikesell 6/2/09

Signature *Date*

Stephen D. Mikesell

Printed Name
Authorized Representative of the Office of Historic Preservation

Appendix D

Excerpt of TJPA Mitigation Monitoring and Reporting Program

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

Appendix 2

William Self Associates Memorandum
Sterling Street Substation, Bus Ramps and Constructive Use

WSA

ARCHAEOLOGY AND HISTORIC PRESERVATION

MEMORANDUM

TO: Joyce Oishi **DATE: October 7, 2010**

FROM: Jim Allan

SUBJECT: Sterling Street Substation, Bus Ramps and Constructive Use

The Sterling Street Substation was constructed as an electrical substation for the Key System trains that originally crossed the San Francisco Oakland-Bay Bridge from Oakland to the Transbay Terminal in San Francisco and was a vital component of the Bay Bridge. Although trains no longer run on the bridge, the building retains its original use as an electrical substation and its association with the historic bridge. The building possesses a high degree of integrity and is eligible for listing on the National Register of Historic Places (NRHP) as a contributing element of the Bay Bridge (HAER No. CA-228).

The Bay Bridge itself is listed on the National Register under criteria A (it is associated with events that have made a significant contribution to the broad patterns of our history) and C (it embodies the distinctive characteristics of a type, period or method of construction . . .). While the substation is a contributing component of the Bay Bridge and as such is eligible for listing, its eligibility is based on its functional relationship and spatial proximity to the bridge (rather than its architectural significance, environmental setting, etc.), neither of which would be affected by the construction of the proposed bus ramps.

A constructive use occurs when a project's proximity impacts are such that the features or attributes that qualify a resource for listing on the NRHP are substantially diminished (Caltrans SER Vol. 1, Chpt. 20). FHWA has also determined that a constructive use may occur when the proximity of a proposed project substantially impairs aesthetic features or attributes of an eligible resource, where such features or attributes are considered important contributing elements to the value of the resource (Caltrans SER Vol. 1, Chpt. 20). FHWA has also specifically determined that a constructive use does not occur when the combined proximity impacts do not substantially impair the characteristics that qualify the property for [listing in the NRHP] (Caltrans SER Vol. 1, Chpt. 20.).

Since the substation is included in the NRHP as a contributing element to the Bay Bridge, rather than on its specific history, aesthetic or architectural characteristics, or its setting, it does not possess important contributing elements to its eligibility that would be diminished by construction of the bus ramps, and therefore a constructive use would not occur.

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