4.12 Historic Resources

The following sections summarize the evaluation of potential impacts to historic built environment resources for each alternative. Table 4.12-1 summarizes the results of the analysis.

Table 4.12-1. Summary of Potential Impacts to Historic Built Environment Resources

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Built Environment Conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Build</td>
<td>None</td>
</tr>
<tr>
<td>TSM</td>
<td>None</td>
</tr>
<tr>
<td>At-Grade Emphasis LRT</td>
<td>Effect not adverse after mitigation¹</td>
</tr>
<tr>
<td>Underground Emphasis LRT</td>
<td>Effect not adverse after mitigation¹</td>
</tr>
<tr>
<td>Locally Preferred Alternative</td>
<td>Effect not adverse after mitigation¹</td>
</tr>
</tbody>
</table>

¹The California State Historic Preservation Officer concurred with FTA’s determination of adverse effect on June 1, 2010. Proposed final mitigation measures for the LPA are in Section 4.12.1.5 herein below.

This section has been updated since publication of the Draft EIS/EIR to address comments received on the Draft EIS/EIR, discussion with the California State Historic Preservation Officer (SHPO), additional correspondence with the Advisory Council on Historic Preservation (ACHP), and based on refinements to the Locally Preferred Alternative (LPA). A vertical line in the margin is used to show where revisions have occurred to this section since publication of the Draft EIS/EIR. No changes to the NEPA impact findings or CEQA impact determinations after mitigation were identified as a result of refinements to the LPA, responses to comments, or other developments since publication of the Draft EIS/EIR. Additional noise and vibration analysis of the LPA alignment refinements was performed to support this conclusion, and the results are included in Appendix R-2, Updated Locally Preferred Alternative Noise and Vibration Analysis, of this Supplemental EA/Recirculated Draft EIR Sections, and summarized in this section where relevant to the impact analysis. Additional mitigation measures were also added to address impacts to the S. Kamada Restaurant, Atomic Café, Señor Fish, and Coast Imports building. Environmental effects of the LPA are discussed in Section 4.12.1.3.5 herein below for the built environment, Section 4.12.2.3.5 of the Draft EIS/EIR for archeological resources, and Section 4.12.3.3.5 of the Draft EIS/EIR for paleontological resources. In the Draft EIS/EIR, the LPA is referred to as the “Fully Underground LRT Alternative.” Only the built environment analysis is contained herein because no new significant information has been added for archeological and paleontological resources since publication of the Draft EIS/EIR.

Proposed final mitigation measures for the LPA are listed in Section 4.12.1.5 herein below for the built environment, and are proposed to be carried forward into the Final EIS/EIR and Mitigation Monitoring and Reporting Program (MMRP), and, where appropriate, included in a Memorandum of Agreement (MOA) with the California SHPO. A Draft MOA is included in Appendix R-3 of this Supplemental EA/Recirculated Draft EIS/EIR sections. Mitigation measures
for archeological resources are in Section 4.12.2.4 of the Draft EIS/EIR, and mitigation measures for paleontological resources are in Section 4.12.3.4 of the Draft EIS/EIR. Some of the built environment mitigation measures initially proposed for the LPA in the Draft EIS/EIR have been refined and adapted based on comments received on the Draft EIS/EIR, correspondence with SHPO and ACHP, and refinements to the LPA made since publication of the Draft EIS/EIR.

4.12.1 Built Environment

This section describes the Regional Connector Transit Corridor’s potential impacts on historic built environment resources. The information in this section is based on the updated Cultural Resources – Built Environment Technical Memorandum, Appendix X of the Draft EIS/EIR and further analysis of refinements made to the LPA since publication of the Draft EIS/EIR. Environmental effects of the LPA are discussed in Section 4.12.1.3.5 herein below and proposed final mitigation measures for the LPA are discussed in Section 4.12.1.5 herein below.

4.12.1.1 Regulatory Framework

NEPA requires that effects on historic properties be evaluated during the EIS process, in coordination with procedures established by Section 106 of the National Historic Preservation Act (NHPA). Federal agencies must evaluate potential direct and indirect effects on properties that are listed in or eligible for listing in the National Register of Historic Places (NRHP). An adverse effect would occur if the project would directly or indirectly diminish any of the characteristics that qualify a historic property for NRHP eligibility or listing.

The NRHP, created under the NHPA, is the federal list of historic, archaeological, and cultural resources worthy of preservation. Resources listed in the NRHP include districts, sites, buildings, structures, and objects that are significant in American history, prehistory, architecture, archaeology, engineering, and culture. The NRHP is maintained and expanded by the National Park Service (NPS) on behalf of the Secretary of the Interior. The California Office of Historic Preservation (in Sacramento) administers the state-wide NRHP program under the direction of SHPO. To guide the selection of properties included in the NRHP, the NPS has developed the NRHP Criteria for Evaluation. The criteria are standards by which every property that is nominated to the NRHP is judged. Significance in American history, architecture, archaeology, and culture is possible in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, material, workmanship, feeling and association, and meet one of the following Criteria (36 CFR 60.4):

- Criterion A: A property is associated with events that have made a significant contribution to the broad patterns of our history; or

- Criterion B: A property is associated with the lives of a person or persons significant in our past; or
Criterion C: A property embodies the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possesses high artistic values, or that represents a significant and distinguishable entity whose components may lack individual distinction; or

Criterion D: A property has yielded, or may be likely to yield, information important in prehistory or history.

Buildings less than 50 years old do not meet the NRHP criteria unless they are of exceptional importance under Criteria Consideration G, as described in the NPS’s Bulletin No. 22, “How to Evaluate and Nominate Potential National Register Properties That Have Achieved Significance Within the Last 50 Years.” Other NRHP criteria considerations are used for religious properties, moved properties, birthplaces or graves, cemeteries, reconstructed properties, and commemorative properties.

Following the procedures required under Section 106, FTA conducted an analysis of the potential adverse effects of the proposed Regional Connector Transit Corridor alternatives, including the LPA, to historic properties under NEPA and NHPA and potential significant impacts to historic resources under CEQA. This analysis incorporates the findings of other applicable technical studies as needed. As part of the Section 106 process, FTA consulted with SHPO to establish the area of potential effects (APE) for the project. FTA also consulted with Indian tribes and other interested parties. This consultation process is described in more detail in Appendix X, Cultural Resources - Built Environment, of the Draft EIS/EIR.

On June 1, 2010, SHPO concurred with FTA’s determination of eligibility and effects from the project and alternatives. Consultation is continuing to establish the mitigation measures for the adverse effects and to develop the MOA. A Draft MOA is included in Appendix R-3 of this Supplemental EA/Recirculated Draft EIS/EIR Sections. In addition to SHPO, consulting parties for this project include the Los Angeles Conservancy and the City of Los Angeles Office of Historic Resources. The ACHP was provided with copies of the Draft EIS/EIR and the Technical Memorandum on the Built Environment in April 2011. In a letter dated May 10, 2011, the ACHP informed FTA that the criteria for ACHP involvement in the project do not apply to this project. The ACHP noted that the final MOA and supporting documentation for the project, being developed in consultation with the California SHPO and other consulting parties, should be filed with the ACHP. The FTA/Metro also contacted a number of tribes with interests in the project. Although no federally recognized tribes requested consultation, FTA is continuing to consult with the Gabrielino/Tongva San Gabriel Band of Mission Indians and the Tongva Ancestral Territorial Tribal Nation.

CEQA requires that resources listed in or eligible for listing in the California Register of Historic Resources (CRHR) be studied. In addition to historic properties listed in or eligible for listing in the NRHP, the CRHR includes resources recently designated as California Historic Landmarks (CHL) and California Points of Historical Interest. SHPO review of the study is required before project-related changes to historic properties can proceed. CEQA also requires that mitigation measures to reduce or avoid impacts to historical resources be evaluated, and a range of
alternatives be considered that could substantially lessen significant impacts to historical resources.

At the local level, the City of Los Angeles designates local landmarks (Historic-Cultural Monuments) and historic districts. NEPA and CEQA guide lead agencies to incorporate local designations in the review and evaluation of project effects. City of Los Angeles Historic-Cultural Monuments and Historic Preservation Overlay Zones were considered in this built environment analysis. These resources have “presumptive significance” under CEQA, and mitigation measures are recommended to address any significant impacts to these resources.

4.12.1.2 Affected Environment
The project-specific APE was established through consultation between FTA, Metro, SHPO, and other consulting parties. The APE was drawn to ensure inclusion of historic properties and historical resources that may be directly or indirectly affected by the project. All properties in the APE that were constructed 50 or more years prior to the anticipated 2019 project construction date, along with other significant properties that were built more recently, were evaluated for historical significance and potential impacts. A map of the APE is shown in Figures 4.12-1 through 4.12-9. Figure 4.12-1 shows the entire APE, and Figures 4.12-2 through 4.12-9 show enlarged segments of the APE. These maps divide the project APE into a “direct APE” and an “indirect APE” to show the type of effect to different areas in the project vicinity. The direct APE is the area where resources would be physically impacted by construction activities, while the indirect APE includes the larger area where project effects might include changes to the setting or limitations on access during to congestion. Resources in both the direct and indirect APE may be adversely affected by the project. This differentiation is only for informational purposes.

A record search, a built environment survey, consultation with SHPO, Native American tribes with interests in the project area, local government, local historic groups, and other interested parties regarding cultural resources was conducted for this project. A summary of these contacts is contained in Appendix X, Cultural Resources - Built Environment, of the Draft EIS/EIR.

The records search and survey of the APE revealed that it contains 289 properties, 118 of which were constructed more than 50 years prior to the proposed project opening date of 2019. Twenty-nine of these properties were previously listed in the NRHP and/or the CRHR. More detailed studies of the other properties were undertaken to determine historical significance. Of the 55 eligible resources identified, 49 are historic properties that are either listed in or determined eligible for listing the NRHP and the CRHR. This includes the Walt Disney Concert Hall which was deemed eligible for the NRHP and the CRHR under the criterion for properties that have achieved significance in less than 50 years. SHPO has concurred with FTA’s determination of eligibility for those properties eligible for listing in the NRHP (a copy of the SHPO concurrence letter is located in Appendix X, Cultural Resources - Built Environment, of the Draft EIS/EIR).
Figure 4.12-1. Area of Potential Effects (APE) for Historic Resources – Sheet 1
Figure 4.12-2. Historic Resources APE - Sheet 2
Figure 4.12-3. Historic Resources APE – Sheet 3
Figure 4.12-4. Historic Resources APE – Sheet 4
Figure 4.12-5. Historic Resources APE – Sheet 5
Figure 4.12-6. Historic Resources APE – Sheet 6
Figure 4.12-7. Historic Resources APE – Sheet 7
Figure 4.12-8. Historic Resources APE – Sheet 8
Figure 4.12-9. Historic Resources APE – Sheet 9
Of the 55 resources mentioned above, six are historical resources listed in, determined eligible for listing in, or recommended as eligible for listing in only the CRHR and not the NRHP. A complete list of evaluated properties and the details of their analysis are provided in Appendix X, Cultural Resources - Built Environment, of the Draft EIS/EIR.

The APE contains portions of one NRHP/National Historic Landmark (NHL)-listed historic district (Little Tokyo Historic District) and one district that is eligible for inclusion in the CRHR (Los Angeles Civic Center Historic District). These districts each contain multiple historic resources that are individually eligible or as contributing resources for both the NRHP and CRHR. The effects from the project for all eligible resources within the APE were considered regardless of whether they were individually eligible or contributing resources to a NRHP/CRHR historic district.

### 4.12.1.3 Environmental Impacts/Environmental Consequences

The impact analysis examines likely adverse effects of the proposed Regional Connector Transit Corridor alternatives, including the LPA, to historic properties under NEPA and the NHPA and potential significant impacts to historic resources under CEQA. This analysis incorporates the findings of other applicable technical studies as needed. APE Map Resource numbers provided in this section correspond to the APE Map Resources shown in Figures 4.12-1 through 4.12-9. Impact conclusions for all of the alternatives are based on the thresholds identified herein above in Section 4.12.1.1.

Section 110(f) of the NHPA of 1966, as codified in 36 CFR 800.10, requires federal agencies to undertake planning and actions to minimize harm to designated NHL properties. If a proposed project is found to have the potential for an adverse effect on a NHL, the Secretary of the Interior (typically represented by a representative of the NPS) is invited to participate under Section 110(f) of the NHPA. For this project, the Little Tokyo Historic District NHL and its associated contributing resources are situated within the APE and would not be adversely affected by any of the alternatives, including the LPA. If project planning necessitates changes, and potential adverse effects to the NHL arise, consultation with the National Park Service will be conducted.

CEQA also requires that proposed public projects be evaluated for their probability to cause significant impacts on “historical resources.” CEQA equates a “substantial adverse change” in the significance of a historic property with a significant impact on the environment (Public Resources Code (PRC) Section 21084.1). Thresholds of substantial adverse change are established in PRC Section 5020.1, and include demolition, destruction, relocation, or “alteration activities that would impair the significance of the historic resource.”

### 4.12.1.3.1 No Build Alternative

The No Build Alternative would not result in any new construction or transit operations as part of the Regional Connector project. Impacts on historic resources would not occur under this alternative; however, existing impacts resulting from growing levels of vehicular traffic and lack of improved public transit options would persist.
4.12.1.3.1 NEPA/NHPA Finding (Section 106 Determination)
The No Build Alternative would not include capital improvements. Thus, the No Build Alternative would not have adverse construction or implementation-related effects on historic properties in the project APE.

4.12.1.3.2 CEQA Determination
The No Build Alternative would have no effect on historical resources in the project APE. The No Build Alternative would not be expected to result in cumulative impacts to historical resources, other than potential impacts on resources through continued high and escalated levels of vehicular traffic, unabated by additional mass transit options. The No Build Alternative would not contribute to a cumulative impact on these resources.

4.12.1.3.2 TSM Alternative
The TSM Alternative would include two new shuttle buses linking 7th Street/Metro Center Station and Union Station. The new transit infrastructure (two new bus routes and associated stops and structures) would use the existing street and sidewalk networks and would not require the displacement or relocation of properties, residents, or employees. Improvements under this alternative would entail minor physical modifications, such as the installation of bus stops along existing city streets and rebuilding some curbs, sidewalks, and street surfaces to accommodate increased bus weights and traffic frequency. These activities would not have any adverse effects on historical resources, alter significant characteristics of historic properties, or cause adverse noise or vibration impacts.

4.12.1.3.2.1 NEPA/NHPA Finding (Section 106 Determination)
The TSM Alternative would not have direct or indirect adverse effects to historic properties from either construction or operation.

4.12.1.3.2.2 CEQA Determination
The TSM Alternative would not have direct or indirect significant impacts on historical resources from either construction or operation.

4.12.1.3.3 At-Grade Emphasis LRT Alternative
The At-Grade Emphasis LRT Alternative would add transit options that would be consistent with the historic use of streetcars within the APE. Additionally, the LRT improvement could benefit historic properties and historical resources in the APE by increasing pedestrian access and use of the area. Metro would install double-track light-rail guideways in the existing street system, rebuild street surfaces and underground utilities, rebuild curbs and sidewalks, construct underground right-of-way, and install at-grade and underground stations, all within the APE.

Underground segments of the alternative would use parts of the existing 2nd Street Tunnel (APE Map Resource #4-3) and would require new cut and cover excavation on Flower Street between 7th and 4th Streets, north of the existing 7th Street/Metro Center Station.
Construction activities may cause noise, dirt, congestion, and limitations on access to the project area. These activities would be short-term and would not have adverse effects on historic properties or significant impacts to historical resources. In addition, Metro would employ best management practices (BMPs) to ensure that these effects are minimized.

4.12.1.3.3.1 Demolition, Partial Takes, or Alteration of a Property

To construct the At-Grade Emphasis LRT Alternative, there would also be partial takes of several historic properties and historical resources. Portions of properties occupied by the Los Angeles Police Facilities Building (APE Map Resource #6-6), Motor Transport Division Building (APE Map Resource #6-7), and City Health Building (City Hall South) (APE Map Resource #6-4), three contributing resources to the Los Angeles Civic Center Historic District, would be acquired to accommodate new stations. Only a portion of these properties would be acquired and converted to new uses, and the change would not affect the physical buildings, the historic district that they are a part of, or the characteristics that make them eligible for the NRHP. The new uses would include converting landscaped areas adjacent to the buildings to sidewalks and placing at-grade light rail transit stations along the curb. Landscape and urban design features that complement the historic resources would be included in the station facilities. These changes would be consistent with the existing urban setting of the resources.

NEPA/Section 106 Effects Analysis for Historic Properties

In applying the criteria of adverse effect for historic properties (36 CFR 800.5(a)(1)), there are no adverse effects to historic properties from the partial takes of three NRHP/CRHR eligible properties. The project would not diminish the integrity of their location, design, setting, materials, workmanship, feeling, or association and therefore, there would not be adverse effects.

CEQA Impact Analysis for Historical Resources

The partial property acquisitions would not constitute a substantial adverse change that would impair the significance of the historical resource. The characteristics that make the historical resources eligible for the CRHR and NRHP would remain to convey their significance. This alternative, therefore, would not have a significant impact upon historical resources.

4.12.1.3.3.2 Tunnels

The NRHP-eligible 2nd Street Tunnel (APE Map Resource #4-3) would be altered under this alternative. The walls of the tunnel would be partially demolished along its southwest interior to construct a new entrance and exit for the new tunnel in which the light rail transit would run. New elements that would be added to the tunnel include double tracks, catenary wires, and a walkway. The cut and cover trench along Flower Street would also require demolition of a portion of the CRHR-eligible Belmont Tunnel (APE Map Resource #3-4). The Belmont Tunnel is not eligible for the NRHP.

NEPA/Section 106 Effects Analysis for Historic Properties

In applying the criteria of adverse effect for historic properties (36 CFR 800.5(a)(1)) potentially affected by the construction near 2nd Street, an adverse effect would occur due to the demolition
of a portion of the NRHP-eligible 2nd Street Tunnel and the subsequent change in use. The changes would directly alter a characteristic of the historic property in a manner that would diminish the integrity of the property’s location, design, setting, materials, workmanship, feeling, or association. SHPO concurred with FTA’s determination of an adverse effect on June 1, 2010 (a copy of the SHPO concurrence letter is located in Appendix X, Cultural Resources - Built Environment, of the Draft EIS/EIR). Documentation of the property in accordance with the mitigation measure described in Section 4.12.1.4.1 of the Draft EIS/EIR is proposed to resolve the potential adverse effect.

**CEQA Impact Analysis for Historical Resources**

Potential changes to the 2nd Street Tunnel would constitute a substantial adverse change that would impair the significance of the historical resource. However, the majority of the resource’s features would remain to convey its significance. Additionally, implementation of the mitigation measure described in Section 4.12.1.4.1 of the Draft EIS/EIR would reduce the impact to a less than significant level. Implementation of the documentation mitigation measure (Section 4.12.1.4.1 of the Draft EIS/EIR) would reduce any impact to the CRHR-eligible Belmont Tunnel to a less than significant level.

**4.12.1.3.3 Differential Settlement**

Based on the activities described in the Description of Construction (Appendix K of the Draft EIS/EIR), some of the buildings situated near cut and cover excavation would be susceptible to differential settlement. Differential settlement is defined as “unequal settling of material; gradual downward movement of foundations due to compression of soil which can lead to damage if settlement is uneven” (Allaby 1999).

Differential settlement occurs when a building or feature’s shape is twisted or is raised and lowered, sometimes imperceptibly, in different places. Differential settlement can cause foundations to settle and crack, floors to buckle and go out of level, walls to shift out of plumb and plane, and roofs to twist and deform. The resulting changes in structural systems and cladding or finish materials, including wood and masonry, floor tiles, wood flooring, concrete floors, plaster, marble, and other decorative wall and ceiling treatments, and adobe, stucco, and wood-framed walls can be cracks, fractures, and other noticeable (as well as long-term, not immediately visible) deformations and damage. Since historically significant buildings often have archaic construction and finish attachment systems, including unreinforced masonry, those building types are usually more susceptible to the effects of differential settlement than more recently constructed buildings.

Based on the activities described in the Description of Construction (Appendix K of the Draft EIS/EIR), four NRHP and/or CRHR eligible properties could be potentially affected by differential settlement due to cut and cover construction associated with the At-Grade Emphasis LRT Alternative:

- Superior Oil Company Building (APE Map Resource #2-13)
- The California Club (APE Map Resource #3-1)
**NEPA/Section 106 Effects Analysis for Historic Properties**

Implementation of mitigation measures would protect and stabilize the ground near historic properties (as noted in Sections 4.12.1.4.2, 4.12.1.4.3 and 4.12.1.4.5 of the Draft EIS/EIR) and would avoid adverse effects to all properties. If these measures are properly implemented, short-term construction activities would not directly alter any characteristics of the historic property in a manner that would diminish the integrity of the property’s location, design, setting, materials, workmanship, feeling, or association.

**CEQA Impact Analysis for Historical Resources**

The potential for differential settlement could constitute a substantial adverse change that would impair the significance of four properties listed below:

- The Superior Oil Company Building (APE Map Resource #2-13)
- The California Club (APE Map Resource #3-1)
- 2nd Street Tunnel (APE Map Resource #4-3)
- Walt Disney Concert Hall (APE Map Resource #4-4)

Implementation of mitigation measures described in Sections 4.12.1.4.2 and 4.12.1.4.3 of the Draft EIS/EIR would reduce the potential impacts to these historical resources to a less than significant level.

**4.12.1.3.3.4 Vibration**

According to the Noise and Vibration Technical Memorandum (Appendix S of the Draft EIS/EIR), construction activities with the most potential for impacts under the At-Grade Emphasis LRT Alternative include the cut and cover tunnel along Flower Street, the proposed cut and cover stations at Flower/6th/5th Streets and 2nd/Hope Street, and the Temple and Alameda junction, which includes lowering Alameda Street into an underpass configuration.

Ground-borne vibration (GBV) from these construction activities could affect historic structures. For the At-Grade Emphasis LRT Alternative, pre-augering would eliminate the need for impact pile driving of soldier piles at the cut and cover sections. This would leave large bulldozers and drill rigs as the main sources of construction vibration that could have the potential to cause vibration damage (Section 4.7 herein above). If these large pieces of equipment are not used within 21 feet of a historic property or historical resource, it is reasonably foreseeable that adverse effects or significant impacts could not occur to historic properties and historical resources from GBV.
Buildings near potential construction activities include:

- Barker Brothers (APE Map Resource #2-1)
- Roosevelt Building (APE Map Resource #2-7)
- General Petroleum-Mobil Oil Building (APE Map Resource #2-12)
- Superior Oil Company Building (APE Map Resource #2-13)
- The California Club (APE Map Resource #3-1)
- Los Angeles Central Library (APE Map Resource #3-2)
- 2nd Street Tunnel (APE Map Resource #4-3)
- Los Angeles Times Mirror Building (APE Map Resource #8-3)
- Higgins Building (APE Map Resource #8-11, CRHR-eligible only)
- Cathedral of Saint Vibiana (APE Map Resource #8-12)
- Cathedral of Saint Vibiana Rectory (APE Map Resource #8-13)

**NEPA/Section 106 Effects Analysis for Historic Properties**

Adverse effects would not occur if mitigation measures described in Sections 4.12.1.4.2, 4.12.1.4.3, and 4.12.1.4.5 of the Draft EIS/EIR are implemented within the project area. If these measures are properly implemented, potential effects of the At-Grade Emphasis LRT Alternative would not directly alter any characteristics of the historic property in a manner that would diminish the integrity of the historic properties' location, design, setting, materials, workmanship, feeling, or association.

**CEQA Impact Analysis for Historical Resources**

Under the At-Grade Emphasis LRT Alternative, construction-induced vibration could potentially cause a substantial adverse change that would impair the significance of any or all of the historical resources noted in this section. Implementation of mitigation measures described in Sections 4.12.1.4.2, and 4.12.1.4.3 of the Draft EIS/EIR would reduce potential impacts to a less than significant level.

**4.12.1.3.3.5 NEPA/NHPA Finding (Section 106 Determination)**

Construction of the At-Grade Emphasis LRT Alternative would be expected to result in one direct adverse effect. On June 1, 2010, SHPO concurred with FTA's finding of an adverse effect from the At-Grade Emphasis LRT Alternative on the 2nd Street Tunnel (a copy of the SHPO concurrence letter is located in Appendix X, Cultural Resources - Built Environment, of the Draft EIS/EIR). Alteration of the 2nd Street Tunnel (APE Map Resource #4-3) during construction to accommodate the LRT facility would require implementation of mitigation measures described
in Sections 4.12.1.4.1 and 4.12.1.4.5 of the Draft EIS/EIR. Consistent with 36 CFR 800, additional consultation with SHPO and other consulting parties would need to be completed before beginning project construction. A summary of this information is presented in Table 4.12.1-1.

4.12.1.3.3 CEQA Determination
Construction of the At-Grade Emphasis LRT Alternative would potentially result in two direct significant impacts (Belmont Tunnel (APE Map Resource #3-4)) and 2nd Street Tunnel (APE Map Resource #4-3) and 11 indirect significant impacts. All of these potential impacts could result in a substantial adverse change to a historical resource. Implementation of mitigation measures described in Sections 4.12.1.4.1 through 4.12.1.4.5 of the Draft EIS/EIR would reduce these potential impacts to a less than significant level. Project operation is not expected to cause direct or indirect impacts. Refer to Table 4.12.1-1 for additional information.

4.12.1.3.4 Underground Emphasis LRT Alternative
The Underground Emphasis LRT Alternative would add an underground double-track right-of-way and three new underground stations to the project area, all within the APE. The alignment would surface on the block bounded by 1st Street, Alameda Street, 2nd Street, and Central Avenue to connect at-grade to the existing Metro Gold Line tracks. The proposed new transit infrastructure would be consistent with the historic use of streetcars within the APE. Additionally, the LRT could benefit historic properties and historical resources in the APE by increasing pedestrian use of the area. Construction activities may cause noise, dirt, congestion, and limitations on access to the project area. These activities would be short-term and would not cause adverse effects to historic properties or significant impacts to historical resources.

4.12.1.3.4.1 Demolition, Partial Takes, or Alteration of a Property
To construct the Underground Emphasis LRT Alternative, one parcel would be acquired that contains a historical resource. The S. Kamada Restaurant, Atomic Café, Señor Fish, and Coast Imports (APE Map Resource #7-30) is a CRHR-eligible (not NRHP-eligible) commercial building built in 1913 that is anticipated to be acquired and would serve as the underground egress/ingress portal. SHPO did not comment on properties identified solely for CRHR determination in the June 1, 2010 letter (a copy of the SHPO concurrence letter is located in Appendix X, Cultural Resources - Built Environment, of the Draft EIS/EIR).

NEPA/Section 106 Effects Analysis for Historic Properties
The S. Kamada Restaurant, Atomic Café, Señor Fish, and Coast Imports building is not NRHP-eligible, and no adverse effects would occur under NEPA/Section 106 as a result of its acquisition and demolition.
## Table 4.12.1-1. At-Grade Emphasis LRT Alternative Historic Resources Impacts
NEPA/NHPA Findings (Section 106 Determinations) and CEQA Determinations

<table>
<thead>
<tr>
<th>APE Map Resource No.</th>
<th>Name</th>
<th>NRHP Eligibility</th>
<th>CRHR Eligibility</th>
<th>Potential Impact</th>
<th>Section 106 Determination</th>
<th>CEQA Determination</th>
<th>Can be Mitigated Below Level of Significance?</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-1</td>
<td>Barker Brothers</td>
<td>Eligible</td>
<td>Listed</td>
<td>Vibration</td>
<td>Effect Not Adverse</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
<tr>
<td>2-7</td>
<td>Roosevelt Building</td>
<td>Listed</td>
<td>Listed</td>
<td>Vibration</td>
<td>Effect Not Adverse</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
<tr>
<td>2-12</td>
<td>General Petroleum-Mobil Oil Building</td>
<td>Listed</td>
<td>Listed</td>
<td>Vibration</td>
<td>Effect Not Adverse</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
<tr>
<td>2-13</td>
<td>Superior Oil Company Building</td>
<td>Listed</td>
<td>Listed</td>
<td>Vibration Settlement</td>
<td>Effect Not Adverse</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
<tr>
<td>3-1</td>
<td>The California Club</td>
<td>Eligible</td>
<td>Listed</td>
<td>Vibration Settlement</td>
<td>Effect Not Adverse</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
<tr>
<td>3-2</td>
<td>Los Angeles Central Library</td>
<td>Listed</td>
<td>Listed</td>
<td>Vibration</td>
<td>Effect Not Adverse</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
<tr>
<td>3-4</td>
<td>Belmont Tunnel, Hollywood-Glendale-Burbank-San Fernando Valley Tunnel</td>
<td>Not Eligible</td>
<td>Eligible</td>
<td>Partial Removal</td>
<td>No Historic Property Affected</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
<tr>
<td>4-3</td>
<td>2nd Street Tunnel, Bridge (tunnel) #53C 1318</td>
<td>Eligible</td>
<td>Eligible</td>
<td>Demolition</td>
<td>Adverse Effect</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
</tbody>
</table>
### Table 4.12.1. At-Grade Emphasis LRT Alternative Historic Resources Impacts

**NEPA/NHPA Findings (Section 106 Determinations) and CEQA Determinations (continued)**

<table>
<thead>
<tr>
<th>APE Map Resource No.</th>
<th>Name</th>
<th>NRHP Eligibility</th>
<th>CRHR Eligibility</th>
<th>Potential Impact</th>
<th>Section 106 Determination</th>
<th>CEQA Determination</th>
<th>Can be Mitigated Below Level of Significance?</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-4</td>
<td>Walt Disney Concert Hall</td>
<td>Eligible</td>
<td>Eligible</td>
<td>Vibration Settlement</td>
<td>Effect Not Adverse</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
<tr>
<td>5-1 Thru 5-13, 6-1 thru 6-7, 6-12</td>
<td>Los Angeles Civic Center Historic District</td>
<td>Eligible</td>
<td>Eligible</td>
<td>Partial Take</td>
<td>Effect Not Adverse</td>
<td>Less than Significant Impact</td>
<td>N/A</td>
</tr>
<tr>
<td>6-4</td>
<td>City Health Building, City Hall South</td>
<td>Eligible (as a contributor to Los Angeles Civic Center Historic District)</td>
<td>Eligible</td>
<td>Partial Take</td>
<td>Effect Not Adverse</td>
<td>Less than Significant Impact</td>
<td>N/A</td>
</tr>
<tr>
<td>6-6 6-7</td>
<td>Police Facilities Building, Parker Center, Motor Transport Building</td>
<td>Eligible (as a contributor to Los Angeles Civic Center Historic District)</td>
<td>Eligible</td>
<td>Partial Take</td>
<td>Effect Not Adverse</td>
<td>Less than Significant Impact</td>
<td>N/A</td>
</tr>
<tr>
<td>8-3</td>
<td>Los Angeles Times Mirror Building</td>
<td>Eligible</td>
<td>Eligible</td>
<td>Vibration</td>
<td>Effect Not Adverse</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Table 4.12.1-1. At-Grade Emphasis LRT Alternative Historic Resources Impacts
NEPA/NHPA Findings (Section 106 Determinations) and CEQA Determinations (continued)

<table>
<thead>
<tr>
<th>APE Map Resource No.</th>
<th>Name</th>
<th>NRHP Eligibility</th>
<th>CRHR Eligibility</th>
<th>Potential Impact</th>
<th>Section 106 Determination</th>
<th>CEQA Determination</th>
<th>Can be Mitigated Below Level of Significance?</th>
</tr>
</thead>
<tbody>
<tr>
<td>8-11</td>
<td>Higgins Building, General Petroleum Building, (Los Angeles) County Engineers Building</td>
<td>Not Eligible</td>
<td>Eligible</td>
<td>Vibration</td>
<td>No Historic Property Affected</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
<tr>
<td>8-12</td>
<td>Cathedral of Saint Vibiana</td>
<td>Eligible</td>
<td>Eligible</td>
<td>Vibration</td>
<td>Effect Not Adverse</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
<tr>
<td>8-13</td>
<td>Cathedral of Saint Vibiana, Rectory</td>
<td>Eligible</td>
<td>Eligible</td>
<td>Vibration</td>
<td>Effect Not Adverse</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*No Historic Property Affected indicates that no properties eligible for the NRHP would be affected. Effect Not Adverse indicates that proposed candidate mitigation measures would reduce impacts to the point where no adverse effects would occur under Section 106 of NHPA.*
**CEQA Impact Analysis for Historical Resources**

The property acquisition and subsequent demolition of the S. Kamada Restaurant, Atomic Café, Señor Fish, and Coast Imports building would constitute a substantial adverse change that would impair the significance of the historical resource. However, implementation of the mitigation measure described in Section 4.12.1.4.1 of the Draft EIS/EIR, along with the additional mitigation measures developed specifically for this building under the LPA in Section 4.12.1.5 herein below, would reduce potential impacts to a less than significant level.

### 4.12.1.3.4.2 Station Construction

For the Underground Emphasis LRT Alternative, a new station would be constructed beneath Flower Street between 5th and 4th Streets. This would require demolition of a portion of the CRHR-eligible Belmont Tunnel (APE Map Resource #3-4). The Belmont Tunnel is not eligible for the NRHP.

This alternative also evaluates two possible locations for the proposed 2nd Street station:

- Between Broadway and Spring Street. The Broadway Option would have entrances facing the NRHP-eligible Los Angeles Times Mirror Building (APE Map Resource #8-3).
- Between Main and Los Angeles Streets. The Los Angeles Street Option has proposed entrances opposite and next to the NRHP-eligible St. Vibiana Rectory (APE Map Resource #8-13).

**NEPA/Section 106 Effects Analysis for Historic Properties**

Both of the 2nd Street station options would have an effect on historic properties, but that effect would not be adverse. The change in setting would not directly alter any characteristic of the historic property in a manner that would diminish the integrity of the historic properties' location, design, setting, materials, workmanship, feeling, or association.

**CEQA Impact Analysis for Historical Resources**

Construction of proposed stations would not constitute a substantial adverse change that would impair the significance of the historical resources.

The change in setting created by the station would not diminish the integrity of the properties' significant historic features. The Underground Emphasis LRT Alternative station construction would therefore have a less than significant impact on historical resources.

Implementation of the mitigation measure described in Section 4.12.1.4.1 of the Draft EIS/EIR would reduce any impact to the CRHR-eligible Belmont Tunnel to a less than significant level.

### 4.12.1.3.4.3 Vibration

According to the Noise and Vibration Technical Memorandum (Appendix S of the Draft EIS/EIR), construction activities with the most potential for impacts include the cut and cover tunnel under Flower Street, proposed underground cut and cover station at Flower/5th/4th...
Streets, cut and cover construction of the approach to the proposed 2nd/Hope Street station and the station itself, construction of either of the proposed 2nd Street station locations (Los Angeles Street or Broadway Options), and the junction at 1st and Alameda Streets, which includes lowering Alameda Street into an underpass configuration.

GBV from these construction activities could affect historic structures. For the Underground Emphasis LRT Alternative, pre-augering of soldier piles at cut and cover sections would eliminate the need for impact pile driving. This would leave large bulldozers and drill rigs as the main sources of construction vibration that could have the potential to cause vibration damage. If these large pieces of equipment are not used within 21 feet of a historic property or historical resource, there would not be adverse effects to historic properties and significant impacts would not occur to historical resources from GBV. Properties that are close to the cut and cover construction activities and which may be affected by construction-related vibration include:

- Barker Brothers (APE Map Resource #2-1)
- Roosevelt Building (APE Map Resource #2-7)
- General Petroleum-Mobil Oil Building (APE Map Resource #2-12)
- Superior Oil Company Building (APE Map Resource #2-13)
- The California Club (APE Map Resource #3-1)
- Los Angeles Central Library (APE Map Resource #3-2)
- 2nd Street Tunnel (APE Map Resource #4-3)
- Los Angeles Times Mirror Building (APE Map Resource #8-3)
- Higgins Building (APE Map Resource #8-11)
- Cathedral of Saint Vibiana (APE Map Resource #8-12)
- Cathedral of Saint Vibiana Rectory (APE Map Resource #8-13)

The TBM(s) would not cause vibratory effects or impacts to historic properties or historical resources because TBM(s) performs a slow moving drilling process that generates very little vibration to the surrounding areas. Studies have measured TBM vibration to be in the range of 0.0024 to 0.0394 inches per second peak particle velocity (PPV) at a distance of 33 feet. The proposed TBM tunnels on 2nd Street would vary in depth due to the existing topography and vertical curves in the alignment. The tunnel would range from about 140 feet below the surface (distance from street level to the top of the tunnel) to about 40 feet below the surface. The vibratory potential of TBM(s) is minimal and would be well below the FTA threshold for Category IV buildings (buildings extremely susceptible to vibration damage) of 0.12 inches per second PPV.
NEPA/Section 106 Effects Analysis for Historic Properties

Effects would occur during construction at the following locations from vibration-induced damage, but would not be adverse, especially if mitigation measures described in Sections 4.12.1.4.2, 4.12.1.4.3, and 4.12.1.4.5 of the Draft EIS/EIR are implemented. The potentially affected buildings would be:

- Barker Brothers (APE Map Resource #2-1)
- Roosevelt Building (APE Map Resource #2-7)
- General Petroleum-Mobil Oil Building (APE Map Resource #2-12)
- Superior Oil Company Building (APE Map Resource #2-13)
- The California Club (APE Map Resource #3-1)
- Los Angeles Central Library (APE Map Resource #3-2)
- 2nd Street Tunnel (APE Map Resource #4-3)
- Los Angeles Times Mirror Building (APE Map Resource #8-3)
- Cathedral of Saint Vibiana (APE Map Resource #8-12)
- Cathedral of Saint Vibiana Rectory (APE Map Resource #8-13)

If these mitigation measures are properly implemented, construction of this alternative would not directly alter any characteristics of these historic properties in a manner that would diminish the integrity of the historic properties’ location, design, setting, materials, workmanship, feeling, or association.

CEQA Impact Analysis for Historical Resources

The potential for construction-related vibration could cause a substantial significant impact that would impair the following locations:

- Barker Brothers (APE Map Resource #2-1)
- Roosevelt Building (APE Map Resource #2-7)
- General Petroleum-Mobil Oil Building (APE Map Resource #2-12)
- Superior Oil Company Building (APE Map Resource #2-13)
- The California Club (APE Map Resource #3-1)
- Los Angeles Central Library (APE Map Resource #3-2)
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- 2nd Street Tunnel (APE Map Resource #4-3)
- Los Angeles Times Mirror Building (APE Map Resource #8-3)
- Higgins Building (APE Map Resource #8-11)
- Cathedral of Saint Vibiana (APE Map Resource #8-12)
- Cathedral of Saint Vibiana Rectory (APE Map Resource #8-13)

Implementation of mitigation measures described in Sections 4.12.1.4.2 and 4.12.1.4.3 of the Draft EIS/EIR would reduce the potential impacts to a less than significant level.

4.12.1.3.4.4 Differential Settlement

Based on the activities described in the Description of Construction (Appendix K of the Draft EIS/EIR), eight NRHP- and/or CRHR-eligible properties could be potentially affected by tunneling (TBM operation) and cut and cover construction:

- Superior Oil Company Building (APE Map Resource #2-13)
- The California Club (APE Map Resource #3-1)
- 2nd Street Tunnel (APE Map Resource #4-3)
- Walt Disney Concert Hall (APE Map Resource #4-4)
- Former Nishi Hongwanji Buddhist Temple (APE Map Resource #7-19)
- Los Angeles Times Building (APE Map Resource #8-2)
- Higgins Building (APE Map Resource #8-11)
- Cathedral of Saint Vibiana (APE Map Resource #8-12)

Implementation of mitigation measures described in Sections 4.12.1.4.2, 4.12.1.4.3, and 4.12.1.4.4 (when applicable) of the Draft EIS/EIR would avoid potential adverse effects to historic properties and reduce potential impacts to historical resources to a less than significant level.

NEPA/Section 106 Effects Analysis for Historic Properties

Implementation of mitigation measures (as described in Sections 4.12.1.4.2, 4.12.1.4.3, and 4.12.1.4.5 of the Draft EIS/EIR) to protect and stabilize the ground near the following locations would avoid adverse effects to all properties under this alternative:
If these mitigation measures are properly implemented, differential settlement would not directly alter characteristics of historic properties in a manner that would diminish the integrity of each property's location, design, setting, materials, workmanship, feeling, or association.

**CEQA Impact Analysis for Historical Resources**

The potential for differential settlement could constitute a substantial adverse change that would impair the significance of any or all of the historical resources noted in this section.

Implementation of mitigation measures described in Sections 4.12.1.4.2 and 4.12.1.4.3 of the Draft EIS/EIR would reduce potential impacts to a less than significant level.

**4.12.1.3.4.5 NEPA/NHPA Finding (Section 106 Determination)**

Construction and operation of the Underground Emphasis LRT Alternative would not be expected to result in any direct or indirect adverse effects to historic properties. On June 1, 2010, SHPO concurred with FTA's finding of no adverse effect from the Underground Emphasis LRT Alternative (a copy of the SHPO concurrence letter is located in Appendix X, Cultural Resources - Built Environment, of the Draft EIS/EIR).

**4.12.1.3.4.6 CEQA Determination**

Construction of the Underground Emphasis LRT Alternative would result in two direct significant impacts (Belmont Tunnel (APE Map Resource #3-4) and S. Kamada Restaurant, Atomic Café, Señor Fish, and Coast Imports building (APE Map Resource #7-30)) and 14 indirect significant impacts to historical resources. Implementation of mitigation measures described in Sections 4.12.1.4.1 through 4.12.1.4.4 of the Draft EIS/EIR would reduce these potential impacts to a less than significant level. Project operation would not be expected to cause direct or indirect impacts. Refer to Table 4.12.1-2 for additional information.
### Table 4.12.1-2. Underground Emphasis LRT Alternative Historic Resources Impacts
NEPA/NHPA Findings (Section 106 Determinations) and CEQA Determinations

<table>
<thead>
<tr>
<th>APE Map Resource No.</th>
<th>Name</th>
<th>NRHP Eligibility</th>
<th>CRHR Eligibility</th>
<th>Potential Impact</th>
<th>Section 106 Determination</th>
<th>CEQA Determination</th>
<th>Can be Mitigated Below Level of Significance?</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-1</td>
<td>Barker Brothers</td>
<td>Eligible</td>
<td>Listed</td>
<td>Vibration</td>
<td>Effect Not Adverse</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
<tr>
<td>2-7</td>
<td>Roosevelt Building</td>
<td>Listed</td>
<td>Listed</td>
<td>Vibration</td>
<td>Effect Not Adverse</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
<tr>
<td>2-12</td>
<td>General Petroleum-Mobil Oil Building</td>
<td>Listed</td>
<td>Listed</td>
<td>Vibration</td>
<td>Effect Not Adverse</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
<tr>
<td>2-13</td>
<td>Superior Oil Company Building</td>
<td>Listed</td>
<td>Listed</td>
<td>Vibration Settlement</td>
<td>Effect Not Adverse</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
<tr>
<td>3-1</td>
<td>The California Club</td>
<td>Eligible</td>
<td>Listed</td>
<td>Vibration Settlement</td>
<td>Effect Not Adverse</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
<tr>
<td>3-2</td>
<td>Los Angeles Central Library</td>
<td>Listed</td>
<td>Listed</td>
<td>Vibration</td>
<td>Effect Not Adverse</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
<tr>
<td>3-4</td>
<td>Belmont Tunnel, Hollywood-Glendale-Burbank-San Fernando Valley Tunnel</td>
<td>Not Eligible</td>
<td>Eligible</td>
<td>Partial Removal due to Station Construction</td>
<td>No Historic Property Affected</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
<tr>
<td>4-3</td>
<td>2nd Street Tunnel, Bridge (tunnel) #53C 1318</td>
<td>Eligible</td>
<td>Eligible</td>
<td>Vibration Settlement</td>
<td>Effect Not Adverse</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
<tr>
<td>4-4</td>
<td>Walt Disney Concert Hall</td>
<td>Eligible</td>
<td>Eligible</td>
<td>Vibration Settlement</td>
<td>Effect Not Adverse</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
<tr>
<td>APE Map Resource No.</td>
<td>Name</td>
<td>NRHP Eligibility</td>
<td>CRHR Eligibility</td>
<td>Potential Impact</td>
<td>Section 106 Determination</td>
<td>CEQA Determination</td>
<td>Can be Mitigated Below Level of Significance?</td>
</tr>
<tr>
<td>---------------------</td>
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<td>---------------------------</td>
<td>--------------------------</td>
<td>-------------------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>7-19</td>
<td>Former Nishi Hongwanji Buddhist Temple</td>
<td>Listed (NHL)</td>
<td>Listed</td>
<td>Vibration Settlement</td>
<td>Effect Not Adverse</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>(A contributor to Little Tokyo Historic District)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7-30</td>
<td>S. Kamada Restaurant, Atomic Café, Señor Fish, and Coast Imports</td>
<td>Not Eligible</td>
<td>Eligible</td>
<td>Demolition</td>
<td>No Historic Property</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Affected</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8-2</td>
<td>Los Angeles Times Building</td>
<td>Eligible</td>
<td>Listed</td>
<td>Vibration Settlement</td>
<td>Effect Not Adverse</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
<tr>
<td>8-3</td>
<td>Los Angeles Times Mirror Building</td>
<td>Eligible</td>
<td>Eligible</td>
<td>Station Construction/</td>
<td>Effect Not Adverse</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Vibration</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8-11</td>
<td>Higgins Building, General Petroleum Building, (Los Angeles) County</td>
<td>Not Eligible</td>
<td>Eligible</td>
<td>Vibration Settlement</td>
<td>No Historic Property</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Engineers Building</td>
<td></td>
<td></td>
<td></td>
<td>Affected</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8-12</td>
<td>Cathedral of Saint Vibiana</td>
<td>Eligible</td>
<td>Eligible</td>
<td>Vibration Settlement</td>
<td>Effect Not Adverse</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
<tr>
<td>8-13</td>
<td>Cathedral of Saint Vibiana, Rectory</td>
<td>Eligible</td>
<td>Eligible</td>
<td>Station Construction/</td>
<td>Effect Not Adverse</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Vibration</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*No Historic Property Affected indicates that no properties eligible for the NRHP would be affected. Effect Not Adverse indicates that proposed candidate mitigation measures would reduce impacts to the point where no adverse effects would occur under Section 106 of NHPA.*
4.12.1.3.5 Locally Preferred Alternative
The alignment for the LPA would extend underground from the 7th Street/Metro Center Station under Flower Street to 2nd Street. Tracks would then proceed east underneath the 2nd Street Tunnel and 2nd Street to midblock between San Pedro Street and Central Avenue. At that point, the tracks would continue underground curving northeast under the Japanese Village Plaza (JVP) toward 1st and Alameda Streets. Two new portals would be constructed to connect to the existing at-grade Metro Gold Line tracks:

- In the median of 1st Street between Alameda and Garey Streets
- Just northeast of Temple and Alameda Streets

Construction activities for the LPA may cause noise, dirt, congestion, and limitations on access to the project area. These activities would be short-term and not cause adverse effects to historic properties or significant impacts to historical resources. Other effects to historic properties and impacts to historical resources are described in more detail in the following sections.

4.12.1.3.5.1 Demolition, Partial Takes, or Alteration of a Property
To construct the LPA, one parcel would be acquired that contains a historical resource. The S. Kamada Restaurant, Atomic Café, Señor Fish, and Coast Imports (APE Map Resource #7-30) is a CRHR-eligible (not NRHP-eligible) commercial building built in 1913 that is anticipated to be acquired for station construction. SHPO did not comment on properties identified solely for CRHR determination in the June 1, 2010 letter (a copy of the SHPO concurrence letter is located in Appendix X, Cultural Resources - Built Environment, of the Draft EIS/EIR).

NEPA/Section 106 Effects Analysis for Historic Properties
The S. Kamada Restaurant, Atomic Café, Señor Fish, and Coast Imports building is not NRHP-eligible, and no adverse effects would occur under NEPA/Section 106 as a result of its acquisition and demolition. SHPO has concurred with these findings for the LPA, as discussed in Section 4.12.1.3.5.6 herein below.

CEQA Impact Analysis for Historical Resources
The property acquisition and subsequent demolition of the S. Kamada Restaurant, Atomic Café, Señor Fish, and Coast Imports building would constitute a substantial adverse change that would impair the significance of the historical resource. However, implementation of the following mitigation measures described in Section 4.12.1.5 herein below would reduce potential impacts to a less than significant level.

- Historic properties/historical resources documentation
- Relocation of S. Kamada Restaurant, Atomic Café, Señor Fish, and Coast Imports building
- Interpretive programs for S. Kamada Restaurant, Atomic Café, Señor Fish, and Coast Imports building
4.12.1.3.5.2 Station Construction

For the LPA, a station is proposed to be constructed underground southwest of the intersection of 2nd and Hope Streets at a shallower depth than the similar station proposed for the Underground Emphasis LRT Alternative. The NRHP-eligible Walt Disney Concert Hall (APE Map Resource #4-4) is located on the hill adjacent to the proposed station and tunnels. The preliminary conceptual designs would be compatible with the contemporary forms, materials, and massing of this historical resource. However, noise and vibration from the construction of the tunnels would affect the use of the historic property as a concert hall and recording facility. The station is also near the NRHP-eligible 2nd Street Tunnel (APE Map Resource #4-3), and the LRT tunnels would be constructed directly below the 2nd Street Tunnel using TBM(s).

There would also be a station on 2nd Street between Broadway and Spring Street. Entrances would be located in the property currently used as a surface parking lot on the south side of 1st Street between Broadway and Spring Streets. A portion of the property located on the northwest corner of 2nd and Broadway would be used for access and other ancillary facilities. The construction of the station and other facilities would be in the vicinity of the Los Angeles Times Mirror Building (APE #8-3). The addition of these facilities would represent a slight alteration to the setting of the building, in that the parking lot across the street would be converted to a station plaza. This would remain consistent with the urban setting of the building, and urban design features would complement the building’s historic qualities.

Another station would be constructed southeast of the intersection of 1st Street and Central Avenue. The station would be located under Central Avenue, Alameda Street and privately held properties on the south side of 1st Street between Central Avenue and Alameda Street. This station may include a small building at ground level on the southwest corner of 1st and Alameda Streets to house ventilation fans. This shallow station may potentially be built without a roof, leaving parts of the below-grade platform level exposed. The property currently contains the CRHR-eligible S. Kamada Restaurant, Atomic Café, Señor Fish, and Coast Imports building (APE Map Resource #7-30). This building would be removed as part of construction for the LPA.

NEPA/Section 106 Effects Analysis for Historic Properties

Construction of proposed tunnels would create effects on the Walt Disney Concert Hall (APE Map Resource #4-4), and the proposed station at 2nd Street between Broadway and Spring Street would create effects, including slight alterations to the setting, of the Los Angeles Times Mirror Building (APE Map Resource #8-3). However, the effects on these historic properties would not be considered adverse because the potential changes would not diminish the integrity of the properties’ location, design, setting, materials, workmanship, feeling, or association. SHPO has concurred with these findings for the LPA, as discussed in Section 4.12.1.3.5.6 herein below.

CEQA Impact Analysis for Historical Resources

Construction of proposed stations and tunnels would not constitute a substantial adverse change that would impair the significance of the Walt Disney Concert Hall (APE Map Resource #4-4) or Los Angeles Times Mirror Building (APE Map Resource #8-3). Implementation of the historic properties/historical resources documentation mitigation measure in Section 4.12.1.5 herein below would reduce any potential impact to the CRHR-eligible Belmont Tunnel to a less
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than significant level. Potential changes in setting created by stations would not diminish the integrity of the resources’ significant historic features. The LPA therefore, would have a less than significant impact upon these historical resources.

The property acquisition and subsequent demolition of the S. Kamada Restaurant, Atomic Café, Señor Fish, and Coast Imports building would constitute a substantial adverse change that would impair the significance of the historical resource. However, implementation of the following mitigation measures in Section 4.12.1.5 herein below would reduce impacts to a less than significant level.

- Historic properties/historical resources documentation
- Relocation of S. Kamada Restaurant, Atomic Café, Señor Fish, and Coast Imports building
- Interpretive programs for S. Kamada Restaurant, Atomic Café, Señor Fish, and Coast Imports building

4.12.1.3.5 Portal Construction

Two portals would be constructed for this alternative. One would be located just north of Temple and Alameda Streets and the existing at-grade Little Tokyo/Arts District Station. There are no historic properties or historical resources within the vicinity of the portal.

The second portal would be located within 1st Street between Alameda and Garey Streets. Tracks would rise to the east within this second portal and connect at-grade to the existing Metro Gold Line tracks toward the Eastside. 1st Street would be widened to the north to accommodate this second portal and maintain the existing number of through lanes. This portal would be within the viewshed of two historic properties: the Little Tokyo Historic District and the NRHP-eligible John A. Roebling Sons Co. Building (APE Map Resource #7-35). However, the portal is not encompassed within the boundary of a historic property, historical resource, or a contributing element to the significance of either property.

NEPA/Section 106 Effects Analysis for Historic Properties

No adverse effect would occur to the Little Tokyo Historic District or the John A. Roebling Sons Co. Building from the construction of the portal. Potential effects would not alter the setting of historic properties in a manner that would diminish the integrity of the historic district. SHPO has concurred with these findings for the LPA, as discussed in Section 4.12.1.3.5.6 herein below.

CEQA Impact Analysis for Historical Resources

Construction of the portal would not constitute a substantial adverse change that would impair the significance of historical resources. The change in setting created by the portal would not diminish the integrity of the resources’ significant historic features. Construction of the portal, therefore, would have a less than significant impact upon historical resources.

4.12.1.3.5.4 Vibration

According to the Updated Locally Preferred Alternative Noise and Vibration Analysis, Appendix R-2 of this Supplemental EA/Recirculated Draft EIR Sections, construction activities with the
most potential for noise and vibration impacts include the cut and cover tunnel under Flower Street, TBM excavation beneath 2nd Street, the TBM insertion site northeast of 1st and Alameda Streets, proposed underground cut and cover station at 2nd/Hope Street, proposed underground cut and cover station at 2nd/Broadway, proposed underground cut and cover station at 1st/Central Avenue, and the underground junction at 1st and Alameda Streets.

GBV from these construction activities could affect historic structures. Pre-augering of soldier piles at cut and cover sections would eliminate the need for impact pile driving. This would leave large bulldozers and drill rigs as the main sources of construction vibration that could have the potential to cause vibration damage. If these large pieces of equipment are not used within 21 feet of a historic property or historical resource, there would not be adverse effects to historic properties and significant impacts would not occur to historical resources from GBV. Properties that are close to the cut and cover construction activities and which may be affected by construction-related vibration include:

- Barker Brothers (APE Map Resource #2-1)
- Roosevelt Building (APE Map Resource #2-7)
- General Petroleum-Mobil Oil Building (APE Map Resource #2-12)
- Superior Oil Building (APE Map Resource #2-13)
- The California Club (APE Map Resource #3-1)
- Los Angeles Central Library (APE Map Resource #3-2)
- 2nd Street Tunnel (APE Map Resource #4-3)
- Walt Disney Concert Hall (APE Map Resource #4-4)
- Mirror Building (APE Map Resource #8-3)
- Higgins Building (APE Map Resource #8-11)
- Cathedral of Saint Vibiana (APE Map Resource #8-12)
- Cathedral of Saint Vibiana Rectory (APE Map Resource #8-13)

The TBM(s) associated with tunneling activities would not cause vibratory effects or impacts to historic properties or historical resources because TBM(s) perform a slow moving drilling process that generates very little vibration to the surrounding areas. Studies have measured TBM vibration to be in the range of 0.0024 to 0.0394 inches per second PPV at a distance at 33 feet. The proposed TBM tunnels on 2nd Street would vary in depth due to the existing topography and vertical curves in the alignment. The tunnel would range from about 140 feet below the surface (distance from street level to the top of the tunnel) to about 40 feet below the surface. The vibratory potential of TBM(s) is minimal and would be well below the FTA
threshold for Category IV buildings (buildings extremely susceptible to vibration damage) of 0.12 inches per second PPV.

According to the Updated Locally Preferred Alternative Noise and Vibration Analysis, Appendix R-2 of this Supplemental EA/Recirculated Draft EIR Sections, that outlines how project refinements affect historic properties and historical resources and verified (Wilson Ihrig & Associates 2011; See also Section 4.7 herein above), the Walt Disney Concert Hall (APE Map Resource #4-4) has the potential to be affected by GBV and GBN during project construction that exceeds FTA annoyance criteria. This effect has the potential to alter the building’s use and diminish its historical integrity if not mitigated.

The Walt Disney Concert Hall houses a variety of uses that range from Category 1 to Category 3 land uses. Taking into account building isolation and losses through the parking structure, the temporary and short-term GBV generated from TBM(s) would range from approximately 53 VdB experienced at the most sensitive areas (Category 1) to 68 VdB experienced at the less sensitive areas (Category 2 and 3). These levels would not exceed the FTA GBV criteria of 65 VdB for Category 1 uses and 78 to 80 VdB for Category 2 and 3 land uses. The temporary and short-term GBN potentially generated from TBM(s) at the Walt Disney Concert Hall would range from approximately 18 to 48 dBA, respectively, which would exceed the FTA GBN criteria of 25 to 35 dBA for the Walt Disney Concert Hall. The temporary and short-term GBV and GBN potentially generated from TBM(s) at the REDCAT (a theater at Walt Disney Concert Hall) would be approximately 53 VdB and up to 33 dBA, respectively. These levels would not exceed the FTA criteria of 80 VdB and 43 dBA for the REDCAT. It should be noted that operation of TBM(s) would be temporary and it would not operate for the entire duration of construction. The TBM(s) would be underground in the vicinity of the Walt Disney Concert Hall and the REDCAT for approximately ten days assuming 35 feet per day.

GBN and GBV would also be generated by delivery trains in the tunnel during construction. It is estimated that the vibration generated by the delivery trains would be approximately 0 to 5dB greater than that generated by the LRT vehicles. Thus, at the Walt Disney Concert Hall, this would result in GBV of 50 VdB experienced at the most sensitive areas (Category 1) to 65 VdB experienced at the less sensitive areas (Category 2 and 3). These levels would not exceed the FTA GBV criteria of 65 VdB for Category 1 uses and 78 to 80 VdB for Category 2 and 3 land uses. GBN experienced at the Walt Disney Concert Hall would be 28 to 42 dBA at the most sensitive and less noise-sensitive land uses, respectively. Based on the FTA criteria for the Walt Disney Concert Hall indicated above, the delivery trains would potentially cause a short-term GBN impact at the Walt Disney Concert Hall. It is anticipated that the delivery trains would generate GBV of 44 VdB and GBN of approximately 26 dBA at the REDCAT, and impacts would be less than significant.

Overall during construction, operation of TBM(s) and delivery trains would result in a potentially significant GBN impact to the Walt Disney Concert Hall. Operation of TBM(s) and delivery trains would not result in a significant GBV or GBN impact to the REDCAT. With implementation of mitigation identified in Section 4.12.1.5 herein below, GBN generated by TBM(s) and delivery trains would not impact the sensitive activity occurring at the Walt Disney Concert Hall.
Due to the refinements to the LPA, operation of the LPA could result in GBN impacts at the following sensitive receptors: the Walt Disney Concert Hall. One LRT vehicle pass-by associated with the LPA, which is considered a frequent event under FTA criteria, would potentially generate GBN up to 37 dBA at the Walt Disney Concert Hall. This GBN level would potentially exceed the FTA annoyance criterion for frequent events of 25 dBA for the Walt Disney Concert Hall. Thus, potentially significant GBN impacts from LRT vehicle pass-bys are predicted. Project operation would result in GBV levels of 41 to 60 VdB, which would not exceed the FTA criteria for the most sensitive use at the Walt Disney Concert Hall.

Under a two LRT vehicle pass-by scenario, which would be considered an occasional/infrequent event under FTA criteria, the LPA would potentially generate GBN between 26 and 40 dBA at the Walt Disney Concert Hall, which would potentially exceed the FTA annoyance criterion for occasional/infrequent events of 25 dBA for sensitive uses and 38 to 43 dBA for less sensitive uses for the Walt Disney Concert Hall. Thus, potentially significant GBN impacts from two LRT vehicle pass-bys are predicted at the Walt Disney Concert Hall. It should be noted that a two LRT vehicle pass-by would be infrequent. Under a two LRT vehicle pass-by scenario, GBV levels would range from 42 to 63 VdB, which would not exceed the FTA criteria for the most sensitive use at the Walt Disney Concert Hall.

**NEPA/Section 106 Effects Analysis for Historic Properties**

An effect, but not adverse in nature, would occur during construction at the following locations from vibration-induced damage.

- Barker Brothers (APE Map Resource #2-1)
- Roosevelt Building (APE Map Resource #2-7)
- General Petroleum Mobil Oil Building (APE Map Resource #2-12)
- Superior Oil Building (APE Map Resource #2-13)
- The California Club (APE Map Resource #3-1)
- Los Angeles Central Library (APE Map Resource #3-2)
- 2nd Street Tunnel (APE Map Resource #4-3)
- Walt Disney Concert Hall (APE Map Resource #4-4)
- Mirror Building (APE Map Resource #8-3)
- Cathedral of Saint Vibiana (APE Map Resource #8-12)
- Cathedral of Saint Vibiana Rectory (APE Map Resource #8-13)

The effect would not be adverse especially if the following mitigation measures described in Section 4.12.1.5 herein below are implemented within the project area:
Pre-construction baseline survey and geotechnical investigations

Building protection measures, geotechnical and vibration monitoring, and post-construction survey

For the Walt Disney Concert Hall (APE Map Resource #4-4), an effect from GBN could occur during construction and operation. No adverse effect from GBV or GBN generated during construction or operation would occur at the REDCAT (APE Map Resource #4-4). The effect would not be adverse in nature, especially if mitigation measures are implemented. These measures include performing pre-construction surveys and geotechnical investigation as well as geotechnical and vibration monitoring, and post-construction surveys. These investigations would protect and stabilize the ground near these resources and identify impacts before they become adverse. The use of earth pressure balance or slurry shield TBM(s) would further reduce the potential vibration impacts. Implementation of the MOA would specify the specific requirements for pre- and post-construction surveys, geotechnical investigations, building protection measures, and TBM specifications. Mitigation measures for noise and vibration during operation and construction would further reduce potential effects to historic properties so they fall below FTA impact threshold criteria for noise and vibration. These mitigation measures are described further in Section 4.12.1.5 herein below.

If these mitigation measures are properly implemented, construction of this alternative would not directly alter a characteristic of these historic properties in a manner that would diminish the integrity of the historic properties' location, design, setting, materials, workmanship, feeling, or association. SHPO has concurred with these findings for the LPA, as discussed in Section 4.12.1.3.5.6 herein below.

**CEQA Impact Analysis for Historical Resources**

The potential for construction-related vibration could cause a substantial significant impact that would impair the following locations:

- Barker Brothers (APE Map Resource #2-1)
- Roosevelt Building (APE Map Resource #2-7)
- General Petroleum Mobil Oil Building (APE Map Resource #2-12)
- Superior Oil Building (APE Map Resource #2-13)
- The California Club (APE Map Resource #3-1)
- Los Angeles Central Library (APE Map Resource #3-2)
- 2nd Street Tunnel (APE Map Resource #4-3)
- Walt Disney Concert Hall (APE Map Resource #4-4)
- Mirror Building (APE Map Resource #8-3)
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- Higgins Building (APE Map Resource #8-11)
- Cathedral of Saint Vibiana (APE Map Resource #8-12)
- Cathedral of Saint Vibiana Rectory (APE Map Resource #8-13)

Implementation of the following mitigation measures described in Section 4.12.1.5 herein below would reduce the potential impacts to a less than significant level.

- Pre-construction baseline survey and geotechnical investigations
- Building protection measures, geotechnical and vibration monitoring, and post-construction survey
- Memorandum of Agreement

For the Walt Disney Concert Hall (APE Map Resource #4-4), a substantial adverse impact from GBN could occur during construction and operation. The effect would not be adverse in nature, especially if mitigation measures are employed. These measures include performing pre-construction surveys and geotechnical investigation as well as geotechnical and vibration monitoring, and post-construction surveys. These investigations would protect and stabilize the ground near these resources and identify impacts before they become adverse. The use of an earth pressure balance or slurry shield TBM(s) would further reduce the potential vibration impacts. Mitigation measures for noise and vibration during operation and construction, would further reduce potential effects to the Walt Disney Concert Hall (APE Map Resource # 4-4) so they fall below FTA impact threshold criteria for noise and vibration. These mitigation measures are described further in Section 4.12.1.5 herein below.

4.12.1.3.5.5 Differential Settlement

Differential settlement occurs when a building or feature’s shape is twisted or is raised and lowered, sometimes imperceptibly, in different places. Differential settlement can cause foundations to settle and crack, floors to buckle and go out of level, walls to shift out of plumb and plane, and roofs to twist and deform. The resulting changes in structural systems and cladding or finish materials, including wood and masonry, floor tiles, wood flooring, concrete floors, plaster, marble, and other decorative wall and ceiling treatments, and adobe, stucco, and wood-framed walls can be cracks, fractures, and other noticeable (as well as long-term, not immediately visible) deformations and damage. Since historically significant buildings often have archaic construction and finish attachment systems, including unreinforced masonry, those building types are usually more susceptible to the effects of differential settlement than more recently constructed buildings.

Based on the activities described in the Description of Construction in Section 4.18.2 herein below and Appendix K of the Draft EIS/EIR, eight NRHP and/or CRHR eligible properties could be potentially affected by tunneling (TBM operation) and cut and cover construction:
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- Superior Oil Company Building (APE Map Resource #2-13)
- The California Club (APE Map Resource #3-1)
- 2nd Street Tunnel (APE Map Resource #4-3)
- Walt Disney Concert Hall (APE Map Resource #4-4)
- Former Nishi Hongwanji Buddhist Temple (APE Map Resource #7-19)
- Los Angeles Times Building (APE Map Resource #8-2)
- Higgins Building (APE Map Resource #8-11)
- Cathedral of Saint Vibiana (APE Map Resource #8-12)

Implementation of the mitigation measures described in Section 4.12.1.5 (when applicable) herein below would avoid potential adverse effects to historic properties and reduce potential impacts to historical resources to a less than significant level.

- Pre-construction baseline survey and geotechnical investigations
- Building protection measures, geotechnical and vibration monitoring, and post-construction survey
- TBM specifications/requirements near historic properties and historical resources

*NEPA/Section 106 Effects Analysis for Historic Properties*

Implementation of mitigation measures described in Section 4.12.1.5 herein below to protect and stabilize the ground near the following locations would avoid adverse effects to all properties under this alternative:

- Superior Oil Company Building (APE Map Resource #2-13)
- The California Club (APE Map Resource #3-1)
- 2nd Street Tunnel (APE Map Resource #4-3)
- Walt Disney Concert Hall (APE Map Resource #4-4)
- Former Nishi Hongwanji Buddhist Temple (APE Map Resource #7-19)
- Los Angeles Times Building (APE Map Resource #8-2)
- Cathedral of Saint Vibiana (APE Map Resource #8-12)
If the following mitigation measures from Section 4.12.1.5 herein below are properly implemented, differential settlement would not directly alter characteristics of historic properties in a manner that would diminish the integrity of each property’s location, design, setting, materials, workmanship, feeling, or association.

- Pre-construction baseline survey and geotechnical investigations

- Building protection measures, geotechnical and vibration monitoring, and post-construction survey

- Memorandum of Agreement

SHPO has concurred with these findings for the LPA, as discussed in Section 4.12.1.3.5.6 herein below.

**CEQA Impact Analysis for Historical Resources**

The potential for differential settlement could constitute a substantial adverse change that would impair the significance of any or all of the historical resources noted in this section. Implementation of the following mitigation measures described in Section 4.12.1.5 herein below would reduce potential impacts to a less than significant level.

- Pre-construction baseline survey and geotechnical investigations

- Building protection measures, geotechnical and vibration monitoring, and post-construction survey

**4.12.1.3.5.6 NEPA/NHPA Finding (Section 106 Determination)**

Construction and operation of the LPA would not be expected to result in any direct or indirect adverse effects to historic properties. On June 1, 2010, SHPO concurred with FTA’s finding of no adverse effect from the Fully Underground Emphasis LRT Alternative (LPA) (a copy of the SHPO concurrence letter is located in Appendix X, Cultural Resources - Built Environment, of the Draft EIS/EIR).

**4.12.1.3.5.7 CEQA Determination**

Construction of the LPA would potentially result in two direct significant impacts (Belmont Tunnel (APE Map Resource #3-4) and S. Kamada Restaurant, Atomic Café, Señor Fish, and Coast Imports building (APE Map Resource #7-30)) and 15 indirect significant impacts to historical resources. Implementation of the following mitigation measures described in Section 4.12.1.5 herein below would reduce these potential impacts to a less than significant level.

- Historic properties/historical resources documentation

- Pre-construction baseline survey and geotechnical investigations

- Building protection measures, geotechnical and vibration monitoring, and post-construction survey
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- TBM specifications/requirements near historic properties and historical resources
- Memorandum of Agreement
- Project operation would result in one direct significant impact to a historical resource (Walt Disney Concert Hall (APE Map Resource #4-4)). Implementation of the following mitigation measures described in Section 4.12.1.5 herein below would reduce this potential impact to a less than significant level
- Pre-construction baseline survey and geotechnical investigations
- Building protection measures, geotechnical and vibration monitoring, and post-construction survey
- Memorandum of Agreement
- Mitigation for effects from noise and vibration during operation to the Walt Disney Concert Hall
- Mitigation for effects from Noise and Vibration during construction to the Walt Disney Concert Hall

Refer to Table 4.12.1-3 for additional information.

4.12.1.4 Candidate Mitigation Measures from the Draft EIS/EIR
Given that the No Build Alternative and the TSM Alternative would not result in any impacts to built environment resources, implementation of mitigation is not required for these alternatives. The Draft EIS/EIR included proposed candidate mitigation measures for all of the build alternatives. No changes have been made to the candidate mitigation sections since publication of the Draft EIS/EIR. Refer to Section 4.12.1.4 of the Draft EIS/EIR for a list of candidate mitigation measures for all of the build alternatives. Proposed final mitigation measures for the LPA are shown herein below in Section 4.12.1.5.

4.12.1.5 Proposed Final Mitigation Measures for the LPA
The mitigation measures in this section are proposed to be carried forward as final mitigation measures for the LPA in the Final EIS/EIR and Mitigation Monitoring and Reporting Program (MMRP). Where appropriate, some of the measures are also proposed for inclusion in the MOA between SHPO, Metro, and FTA. A Draft MOA is included as Appendix R-3 of this Supplemental EA/Recirculated Draft EIS/EIR Sections.
Table 4.12.1-3. Locally Preferred Alternative Historic Resources Impacts
NEPA/NHPA Findings (Section 106 Determinations) and CEQA Determinations

<table>
<thead>
<tr>
<th>APE Map Resource No.</th>
<th>Name</th>
<th>NRHP Eligibility</th>
<th>CRHR Eligibility</th>
<th>Potential Impact</th>
<th>Section 106 Determination</th>
<th>CEQA Determination</th>
<th>Can be Mitigated Below Level of Significance?</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-1</td>
<td>Barker Brothers</td>
<td>Eligible</td>
<td>Listed</td>
<td>Vibration</td>
<td>Effect Not Adverse</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
<tr>
<td>2-7</td>
<td>Roosevelt Building</td>
<td>Listed</td>
<td>Listed</td>
<td>Vibration</td>
<td>Effect Not Adverse</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
<tr>
<td>2-12</td>
<td>General Petroleum-Mobil Oil Building</td>
<td>Listed</td>
<td>Listed</td>
<td>Vibration</td>
<td>Effect Not Adverse</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
<tr>
<td>2-13</td>
<td>Superior Oil Company Building</td>
<td>Listed</td>
<td>Listed</td>
<td>Vibration Settlement</td>
<td>Effect Not Adverse</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
<tr>
<td>3-1</td>
<td>The California Club</td>
<td>Eligible</td>
<td>Listed</td>
<td>Vibration Settlement</td>
<td>Effect Not Adverse</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
<tr>
<td>3-2</td>
<td>Los Angeles Central Library</td>
<td>Listed</td>
<td>Listed</td>
<td>Vibration</td>
<td>Effect Not Adverse</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
<tr>
<td>3-4</td>
<td>Belmont Tunnel, Hollywood-Glendale-Burbank-San Fernando Valley Tunnel</td>
<td>Not Eligible</td>
<td>Eligible</td>
<td>Partial Removal</td>
<td>No Historic Property Affected</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
<tr>
<td>4-3</td>
<td>2nd Street Tunnel, Bridge (tunnel) #53C 1318</td>
<td>Eligible</td>
<td>Eligible</td>
<td>Station Construction/Vibration Settlement</td>
<td>Effect Not Adverse</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
<tr>
<td>4-4</td>
<td>Walt Disney Concert Hall</td>
<td>Eligible</td>
<td>Eligible</td>
<td>Station Construction/Vibration Settlement</td>
<td>Effect Not Adverse</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
</tbody>
</table>
### Table 4.12.1-3. Locally Preferred Alternative Historic Resources Impacts
NEPA/NHPA Findings (Section 106 Determinations) and CEQA Determinations (continued)

<table>
<thead>
<tr>
<th>APE Map Resource No.</th>
<th>Name</th>
<th>NRHP Eligibility</th>
<th>CRHR Eligibility</th>
<th>Potential Impact</th>
<th>Section 106 Determination</th>
<th>CEQA Determination</th>
<th>Can be Mitigated Below Level of Significance?</th>
</tr>
</thead>
<tbody>
<tr>
<td>7-19</td>
<td>Former Nishi Hongwanji Buddhist Temple</td>
<td>Listed (NHL)</td>
<td>Listed</td>
<td>Vibration Settlement</td>
<td>Effect Not Adverse</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>(A contributor to Little Tokyo Historic District)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7-30</td>
<td>S. Kamada Restaurant, Atomic Café, Señor Fish, and Coast Imports</td>
<td>Not Eligible</td>
<td>Eligible</td>
<td>Demolition</td>
<td>No Historic Property Affected</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
<tr>
<td>8-2</td>
<td>Los Angeles Times Building</td>
<td>Eligible</td>
<td>Listed</td>
<td>Vibration Settlement</td>
<td>Effect Not Adverse</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
<tr>
<td>8-3</td>
<td>Los Angeles Times Mirror Building</td>
<td>Eligible</td>
<td>Eligible</td>
<td>Station Construction/Vibration</td>
<td>Effect Not Adverse</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
<tr>
<td>8-11</td>
<td>Higgins Building, General Petroleum Building, (Los Angeles) County Engineers Building</td>
<td>Not Eligible</td>
<td>Eligible</td>
<td>Vibration Settlement</td>
<td>No Historic Property Affected</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
<tr>
<td>8-12</td>
<td>Cathedral of Saint Vibiana</td>
<td>Eligible</td>
<td>Eligible</td>
<td>Vibration Settlement</td>
<td>Effect Not Adverse</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
<tr>
<td>8-13</td>
<td>Cathedral of Saint Vibiana, Rectory</td>
<td>Eligible</td>
<td>Eligible</td>
<td>Vibration</td>
<td>Effect Not Adverse</td>
<td>Significant Impact</td>
<td>Yes</td>
</tr>
</tbody>
</table>

* No Historic Property Affected indicates that no properties eligible for the NRHP would be affected. Effect Not Adverse indicates that the MOA would reduce impacts to the point where no adverse effects would occur under Section 106 of NHPA.
4.12.1.5.1 Proposed Final Construction Mitigation Measures for the LPA

To offset construction-related direct and indirect adverse impacts, the following mitigation measures shall be applied as indicated in 4.12.1.3.5:

- Documentation of historic properties and historical resources adversely affected by the project shall consist of the development of individual HABS/HAER submissions. The appropriate level of recordation shall be established in consultation with the California SHPO and formalized as a part of a MOA as described in EIS/EIR Section 4.12.1.4.5 of the Draft EIS/EIR and included as a draft in Appendix R-3 of this Supplemental EA/Recirculated Draft EIS/EIR Sections. The HABS/HAER documents shall be prepared so that the original archival-quality documentation could be donated for inclusion in the Library of Congress if the National Park Service accepts these materials. Archival copies of the documentation shall also be offered for donation to local repositories, including the Los Angeles Central Library and the Los Angeles Conservancy.

- A survey of historic properties and/or historical resources within 21 feet of vibration producing construction activity shall be conducted to assess the building category and the potential for GBV to cause damage. The survey shall also be used to establish baseline, pre-construction conditions for historic properties and historical resources. During preliminary engineering and final design of the project, subsurface (geotechnical) investigations shall be undertaken to evaluate soil, groundwater, seismic, and environmental conditions along the alignment. The analysis shall assist in the development of appropriate support mechanisms for cut and cover construction areas and any sequential excavation method (mining) construction areas. The subsurface investigation would also identify areas that could experience differential settlement as a result of using TBM(s) in close proximity to historic properties and/or historical resources. An architectural historian or historical architect who meets the Secretary of Interior’s Professional Qualification Standards shall provide input and review of design contract documents prior to implementation of the mitigation measures.

- The historic property and historical resource protection measures as well as the geotechnical and vibration monitoring program shall be reviewed by an architectural historian or historian architect who meets the Secretary of Interior’s Professional Qualification Standards to ensure that the measures would adequately protect the properties/resources. A post-construction survey shall also be undertaken to ensure that adverse effects or significant impacts have not occurred to historic properties or historical resources.

- For those historic properties and historical resources where adverse impacts are anticipated, a MOA has been developed to resolve those adverse effects consistent with 36 CFR 800 (see Appendix R-3 of this Supplemental EA/Recirculated Draft EIS/EIR Sections). This agreement, developed by FTA and Metro in consultation with the California SHPO and other consulting parties shall resolve and/or avoid, minimize, or mitigate potential effects to historic properties and/or historical resources. The agreement includes stipulations that outline the specific requirements for consultation and decision-making between the lead federal agency and consulting parties, specify the level of HABS/HAER recordation, and outline specific requirements for pre- and post-construction surveys, geotechnical investigations, building protection measures, and TBM specifications.
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The S. Kamada Restaurant, Atomic Café, Señor Fish, and Coast Imports building (to be removed) shall be offered for a period of one year following certification of the Final EIS/EIR for the price of $1 to any party willing to move it off of the 1st/Central Avenue station site at their own expense. Should no parties come forward, Metro shall incorporate materials from the building into the project facilities. Metro shall explore keeping portions of the building intact for use in the 1st/Central Avenue station. Metro shall also offer to provide an exhibit commemorating the building at the Japanese American National Museum, the 1st/Central Avenue station site, or other suitable location. An individual HABS/HAER submission shall be developed.

Facades of historic buildings adjacent to the construction areas shall be protected from accumulation of excessive dirt or shall be cleaned in an appropriate manner periodically while construction activities are occurring nearby.

In order to mitigate potential ground movement associated with cut and cover construction and potential ground loss due to tunneling that could affect historic resources:

- Design criteria shall be established during final design that require the construction contractor to limit movement to less than an acceptable threshold value. Specific threshold values at locations along the alignment shall be verified using several factors including, but not limited to, the type of structure and its existing condition. Additional data and survey information would be gathered during preliminary engineering for each building to enable assessment of the tolerance of potentially affected structures. In addition, standard threshold criteria and guidelines published by agencies and for similar types of structures shall be reviewed. Additional geotechnical studies shall be performed to define the nature of the soils and to refine the means of achieving each performance specification.

- Ground improvement such as grouting or other methods shall be required to fill voids where appropriate and offset potential settlement when excess material has been removed during excavation. The criteria for implementing grouting or ground improvement measures shall be based on the analysis described in the preceding mitigation measure.

- The tunnel alignment shall be grouted in advance to provide adequate soil support and minimize settlement as geotechnical conditions require.

- Settlement along the project alignment shall be monitored using a series of measuring devices above the route of the alignment. Leveling surveys shall be conducted prior to tunneling to monitor for possible ground movements.

- Tunnel construction monitoring requirements shall be described and defined in design contract documents. Additional geotechnical provisions shall be included to the extent feasible, including use of an Earth Pressure Balance or Slurry Tunnel Boring Machine for tunnel construction to minimize ground loss. During tunnel construction, the soils encountered shall be monitored relative to anticipated soil conditions as described in a Geotechnical Baseline Report.
To offset the potentially significant GBN impacts that could occur during construction at Walt Disney Concert Hall:

**Tunnel Boring Machine**

- **Maintenance and Operation:** The construction contractor shall minimize vibration from jacking or pressing operations (if applicable, the action could be smoothed out to avoid a sharp push), and maintain machinery in good working order.

- **Coordination and Notification:** There would be times when the Main Auditorium is vacant or not used for a noise-sensitive activity, thereby eliminating any noise impact from TBM(s). Similarly, there would be times at the Los Angeles Philharmonic Association (LAPA) Conference Room (and offices) when activities are not particularly noise-sensitive. Metro shall coordinate closely with the Walt Disney Concert Hall to ensure that the noise-generating parts of TBM operations shall be conducted to avoid noise-sensitive periods.

**Delivery Train**

- **Speed:** Delivery train speed shall be limited to 5 MPH in the vicinity of the Walt Disney Concert Hall, which would reduce the GBN to the lower range, or 5 dBA from the maximum range.

- **Resilient Mat:** A resilient system to support and fasten the delivery train tracks shall be used during construction, which would reduce GBN levels by at least 4 dBA.

  - Such as system shall include a) resilient mat under the tracks and b) a resilient grommet or bushing under the heads of any track fasteners (assuming some kind of anchor or bolt system). The hardness of the resilient mat shall be in the 40 to 50 durometer range, and be about one to two inches thick, depending on how heavily loaded the cars would be. The contractor shall select the mat thickness so that the rail doesn't bottom out during a car pass-by.

- **Conveyor:** The tunnel train shall be replaced with a conveyor system to transport materials in the tunnel.

- **Coordination and Notification:** There would be times when the Main Auditorium and Choral Hall are vacant or not used for noise-sensitive activities, thereby eliminating any noise impact from the delivery train. Metro shall coordinate closely with the Walt Disney Concert Hall to ensure that the delivery train pass-bys would be conducted to avoid noise-sensitive periods.
4.12.1.5.2 Proposed Final Operational Mitigation Measures for the LPA

To offset the potentially significant GBN impacts that could occur during operations at Walt Disney Concert Hall:

- In the vicinity of the Walt Disney Concert Hall, Metro shall implement resiliently supported fasteners, isolated slab track, or other appropriate measures as needed to eliminate impacts and to reduce GBN below FTA annoyance criteria.