



**National Trust for
Historic Preservation**
Save the past. Enrich the future.

August 4, 2015

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California Department of Transportation, District 7
100 South Main Street, MS-16
Los Angeles, CA 90012

**Re: SR 710 North Study - National Trust for Historic Preservation Comments on
Draft EIR/EIS and Draft Finding of No Adverse Effect Under Section 106**

Dear Mr. Damrath and Ms. Ewing-Toledo:

Thank you for the opportunity to comment on the Draft Environmental Impact Report/
Environmental Impact Statement (Draft EIR/EIS), and the Draft Finding Of No Adverse Effect
(Draft FONAE), for the SR 710 North Study (Study). The stated purpose of the Study is to
identify ways to effectively and efficiently accommodate regional and local north-south travel
demand in east/northeast Los Angeles and the western San Gabriel Valley.

As a major transportation project that will require federal funding, permits, and approvals, and
has the potential to impact historic and environmental resources, the 710 North project must
comply with the National Environmental Policy Act (NEPA), Section 4(f) of the Department of
Transportation Act, Section 106 of the National Historic Preservation Act (NHPA), and the
California Environmental Quality Act (CEQA). The Freeway Tunnel and Light Rail Transit
(LRT) Alternatives, in particular, have the potential to seriously impact scores of residential and
commercial properties in historic districts, and historic transportation corridors like old Route
66 and the Arroyo Seco Parkway (the oldest freeway in the United States and a National Scenic
Byway).

In general, the Draft EIR/ EIS fails to adequately evaluate the adverse impacts and risks of the
construction and operation of the proposed project. We are especially concerned about the
Freeway Tunnel Alternative and the LRT Alternative, both of which require the construction of
bored tunnels. The LRT Alternative would also result in considerable demolition of properties
for the construction of a new station, and would impact the community through loss of local
businesses, in addition to its adverse visual impacts.

Interests of the National Trust

The National Trust for Historic Preservation is a private, nonprofit organization chartered by
Congress in 1949 to facilitate public participation in the preservation of our nation's heritage,
and to further the historic preservation policy of the United States. 54 U.S.C. §§ 320101, 312102.
With the strong support of its members across the nation, the National Trust works to protect

significant historic sites and to advocate historic preservation as a fundamental value in programs and policies at all levels of government.

The National Trust has decades of experience working for better transportation solutions in Southern California. Beginning in 1989, the Trust named South Pasadena, Pasadena and El Sereno to its annual list of *America's 11 Most Endangered Historic Places*, for five consecutive years, shining a national spotlight on the devastating threat posed to historic communities within the corridor from the proposed 710 freeway extension. And in 1999, the National Trust was a co-plaintiff in the litigation that resulted in an injunction against the surface freeway proposed at the time, which would have demolished hundreds of historic homes and cultural sites. *City of South Pasadena, et al. v. Slater*, 56 F. Supp. 2d 1106 (C.D. Cal. 1999). Most recently, on May 28, 2015, the National Trust named the “Historic Communities of the 710” as a new National Treasure in light of the renewed threats to historic resources, neighborhoods, and communities from the projects proposed in the Study.

Further, as a consulting party in the Alaska Way Viaduct Replacement Project in Seattle, Washington, the National Trust has knowledge and expertise about the impacts to historic resources that can occur as a result of a major freeway tunneling project. There, the Washington State DOT (WSDOT) has been attempting to construct one of the world's largest tunnels beneath sensitive historic resources in the Pioneer Square Historic District. Even though only a very small portion of the project has been completed, damage to historic structures within the District has occurred as a result of settlement associated with the construction of a rescue pit for the damaged Tunnel Boring Machine (TBM). Damage to the TBM also has caused a multi-year delay in the project schedule. Notably, WSDOT has also been forced to amend its initially-agreed upon Area of Potential Effects because impacts to historic buildings from settlement have been more extensive than expected at the outset of consultation. This experience from Seattle offers a cautionary tale.

The National Trust is also a member of the Connected Cities and Communities (C3) coalition, which includes the Cities of Glendale, La Cañada Flintridge, Pasadena, Sierra Madre, and South Pasadena (also known as the Five Cities Alliance), along with the Natural Resources Defense Council and the National Trust. The C3 coalition is submitting a joint comment letter on the Draft EIR/EIS, in addition to the separate comment letters of the coalition members. The National Trust hereby adopts, endorses, and incorporates by reference the comments submitted by the C3 coalition, the Five Cities Alliance, the Cities of South Pasadena and Pasadena, the Natural Resources Defense Council, the No 710 Action Committee, Pasadena Heritage, the Los Angeles Conservancy, the West Pasadena Residents' Association, Westridge School, and Sequoyah School. Although many of these comments overlap, we have attempted to avoid undue repetitiveness by relying in part on incorporation by reference.

I. Caltrans Has Unlawfully Delegated Its Legal Responsibilities for Environmental Review to Metro.

As described in more detail in the comments submitted by the City of South Pasadena, the California Department of Transportation (Caltrans) has unlawfully abdicated its responsibilities as “lead agency” for purposes of environmental review under NEPA and CEQA, and instead has improperly allowed the Los Angeles Metropolitan Transit Authority (Metro) to assume

responsibility for making determinations and serving as the de facto “lead agency” for purposes of the environmental review process. We endorse the City of South Pasadena’s legal analysis regarding this fundamental violation.

One intriguing example of Metro’s improper role is reflected in the Draft Finding Of No Adverse Effect issued under Section 106 of the NHPA. Caltrans apparently (and understandably) does not agree with the proposed determination that this massive construction project would have no adverse effect on any historic properties, and the two empty signature lines for Caltrans at the beginning of the Draft FONAE document are dramatic. Yet the question remains as to why Caltrans has not yet exercised its authority to override or veto the proposed determinations by Metro.

II. The Draft EIS Fails to Comply With NEPA.

One of NEPA’s declared policies is to “preserve important historic, cultural, and natural aspects of our national heritage.” 42 U.S.C. § 4331(b)(4). Council on Environmental Quality (CEQ) regulations provide that federal agencies must consider “[t]he degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.” 40 C.F.R. § 1508.27(b)(8). There are multiple legal deficiencies associated with the treatment of alternatives under NEPA.

a. The Statement of Purpose and Need is Fundamentally Flawed.

As described in more detail in the comments submitted by the City of South Pasadena, the stated “purpose and need” for the project is improperly biased in favor of additional freeway capacity, rather than taking a holistic approach to transportation and mobility needs. As a result, the analysis is skewed in a way that makes it difficult for multi-modal alternatives to be evaluated objectively, even though they are much less environmentally harmful.

b. The Range of Alternatives is Inadequate.

The Draft EIR/EIS fails to include an adequate range of alternatives, as described in more detail in the comments submitted by the Five Cities Alliance, the C3 coalition, the City of South Pasadena, and others. The National Trust endorses the alternative developed by Nelson Nygaard and submitted by the C3 coalition, entitled *Beyond the 710: Moving Forward - New Initiative for Mobility and Community* (see [www.beyondthe710.org/better alternatives](http://www.beyondthe710.org/better_alternatives)). At the very least, a Supplemental Draft EIR/EIS should be prepared in order to thoroughly assess and refine this multi-modal alternative and its potential to address legitimate regional transportation and mobility needs with much less harm to environmental and historic resources.

The Draft EIR/EIS also fails to evaluate opportunities for redeveloping and reconnecting communities on the north and south freeway “stubs.” These areas could be converted into boulevards or developable new land, and have the effect of reducing traffic impacts while protecting neighborhoods and restoring the connections between communities. This would provide an opportunity to redress the physical, economic, cultural, and environmental damage

that was done to these areas when Caltrans constructed the freeway stubs more than 40 years ago.

The “*Beyond the 710*” Nelson Nygaard Alternative is in many ways analogous to the Multi-Mode Low Build (MMLB) Alternative developed by the City of South Pasadena back in 1993. The decision by Caltrans to dismiss that alternative as not meeting the purpose and need of the 710 freeway project was one of the key reasons for the decision by the federal court to enjoin the proposed 710 surface freeway extension. *City of South Pasadena, et al. v. Slater*, 56 F. Supp. 2d at 1127-28. We urge Caltrans not to make the same mistake in response to the new *Beyond the 710* Alternative.

c. The Draft EIR/EIS Mischaracterizes the Nature of Impacts to Historic Resources, and Fails to Adequately Assess Their Severity.

The Draft EIR/EIS contains an inadequate analysis of potential effects of the Freeway Tunnel and LRT Alternatives on historic resources. In particular, it fails to properly evaluate the potential harm that could occur from the tunnel boring and construction process for both of these alternatives. The potential harm to the scores of historic properties that lie above or near the proposed tunnel could be severe, due to excessive and continuing vibration, and the potential for subsidence during and after construction. These concerns are detailed in Attachment A, the National Trust’s comments on the Draft FONAE.

Rather than take a cautionary approach, which we believe is imperative for such a major project, the Draft EIR/EIS is largely dismissive of the potential that excavation-induced ground movements will cause harm. The Freeway Tunnel Alternative consists of an eight-lane, six-mile freeway tunnel (either single or double-bore) through some of the most intact historic communities in the Los Angeles Metro Area. The Draft EIR/EIS concludes that 73 properties are listed or eligible for the National Register of Historic Places in the Area of Potential Effects for all of the alternatives it analyzes. It considers 51 of these to be potentially affected by the Freeway Tunnel alternative, and 17 of these to be potentially affected by the LRT Alternative. (p. 3.7-9 to 3.7-10).

New information released subsequent to the Draft EIR/EIS reveals that Caltrans’ estimates for historic properties within the APE are incorrect. A recent draft survey of historic resources within the APE conducted by the City of South Pasadena, for instance, identified 36 additional historic properties that are eligible for listing at the federal, state, and/or local levels, but which have not been identified as such within the Draft EIR/EIS. Further research is required to determine which of these properties must be included in both the NEPA and CEQA analysis.

Pages 3.7-9 to 3.7-10 of the Draft EIR/EIS contain a very brief summary of these impacts, concluding that the non-tunnel segment of the freeway would result in “No Adverse Effect” on 9 historic properties and that the tunnel segment would have “No Adverse Effect” on the 42 properties that would lie above the tunnel (referring to Tables 3.7.4 and 3.7.5). In our view, virtually all of these proposed Findings of “No Adverse Effect” are erroneous. Among other things, the proposed Findings are unsubstantiated, and they forecast only the *best-case* scenario and discard the serious risks inherent in the tunnel alternative. We note that neither Caltrans nor SHPO has endorsed the Draft Findings of Effect yet, and Caltrans clearly has misgivings

about these proposed determinations of No Adverse Effect. The proposed determinations were not developed “in consultation with” the SHPO, as required by the Section 106 regulations, and they have not yet been submitted to the SHPO for the mandatory 30-day review and comment period. 36 C.F.R. §§ 800.5(a)-(c).

These proposed Findings need to be changed to recognize the serious potential for adverse effects to historic properties. We expect that many of these proposed Findings *will* be revised once Caltrans assumes the responsibility assigned to it under federal law to make its own independent determinations of these effects. Since the Draft EIR/EIS reflects the denials contained in the Draft Findings Of No Adverse Effect, its analysis of effects on historic properties is inherently inadequate as a matter of law. Furthermore, this document was not made available until more than two months after the Draft EIR/EIS was released, and even then, only at the request of specific consulting parties.

Table 3.7.4 – Effects of the Non-Tunnel Segments of the Freeway Tunnel Alternative on Historic Properties in the Area of Potential Effects

A review of the proposed determinations in Table 3.7.4 provides numerous illustrations and examples of effect determinations that simply cannot be sustained consistent with the Section 106 regulations, 36 C.F.R. § 800.5.

Markham Place Historic District.¹ The conclusions contained in Table 3.7.4 for the Markham Place Historic District are unclear and contradictory. The text states, for instance, that the effect of the non-tunnel segment “may result in minor **physical damage**, and may introduce visual and audible elements that may **diminish the integrity** of [its] significant historic features” (p. 3.7-78, emphasis added). Moreover, the tunneling excavation itself “may result in minor **physical damage** to the Historic District as a result of ground-borne **vibration that may diminish the integrity** of [its] significant historic features . . . and **could affect its overall eligibility.**” (*Id.*, emphasis added). Yet, without further explanation, the Draft EIR/EIS simply concludes that the Freeway Tunnel Alternative would have “No Adverse Effect” on the Historic District, and that the “District will retain the aspects of integrity” after all. This conclusion is in error as there is no basis to assume that the properties in the Historic District will actually be protected from all of the potential adverse effects.

Ambassador West Cultural Landscape Historic District. Table 3.7.4 finds that the Freeway Tunnel Alternative “may introduce visual or audible elements that **may diminish the integrity of the significant historic features** of this Historic District.” (p. 2.7-79, emphasis added). Indeed, the noise levels at this educational institution would more than

¹ The Study includes a bizarre and egregious error regarding the number of contributing properties within this historic district. Table 3.7.4 states that the Markham Place Historic District “includes 69 mostly residential parcels, 26 of which are contributing elements , , , ,” (p. 3.7-78). This would represent a finding that only 38 percent of the properties within the historic district are contributing. In fact, as pointed out in comments submitted by Pasadena Heritage, the Markham Place Historic District includes 80 parcels, of which 72 (i.e., 90 percent) are contributing, a conclusion that was reaffirmed by the Keeper of the National Register just two years ago.

double—increasing by 11 dB, from 61 dB up to 72 dB. This substantially exceeds acceptable noise levels (which are supposed to be limited to 67 dBA for school properties), and especially for the Harvest Rock Church auditorium, which should be treated as a noise-sensitive location. Notwithstanding the potential for these severe noise impacts to interfere with educational activities within the Historic District and the campus, the document summarily concludes that the project would have “no adverse effect” after all on the historic district.

Norton Simon Museum. Table 3.7.4 concludes, among other things, that the proposed installation of a highway sign would not have an adverse visual effect on the Norton Simon Museum, because the existing sign is obscured from the Museum by a dense stand of trees in the shoulder of the road. (p. 2.7-80.) However, there is no assurance or proposed condition that the dense stand of trees will remain. In the absence of such a condition, the no adverse effect outcome cannot be ensured. In addition, there is no explanation of the improvements that are proposed in the vicinity of the Norton Simon Museum. There are other historic properties near this building and the improvement areas shown on p. 2-61 that could be affected by the project, including the West Colorado Street Historic Auto Row Historic District, and the John S. Hartwell House at 423 Lincoln Avenue.

Old Pasadena Historic District. The Draft EIR/EIS fails to substantiate its finding that the Freeway Tunnel Alternative would have “no adverse effect” on the Old Pasadena Historic District. It correctly concludes that this alternative “may result in direct and indirect effects to [the] character-defining features of this District that support its National Register eligibility.” (p. 3.7-85.) However, the Draft EIR/EIS then concludes that those effects would not be adverse. (p. 3.7-86.) This conclusion is faulty for two reasons. First, it relies on an analysis that tries to bootstrap early freeway construction into a significant character-defining part of the historic district’s setting. This distorted reasoning would suggest that any adverse effect that occurred during the mid-century portion of the historic district’s period of significance could be used to pave the way for additional adverse effects, a result that in our view is highly inappropriate. More importantly, the Draft EIR/EIS fails to take into account the potential adverse visual impact of six proposed 50-foot-high ventilation towers along Colorado Blvd., west of Pasadena Avenue, and the potential adverse impacts of a proposed new 50-foot-high maintenance facility at the north end of the tunnel. For both of these reasons, we believe the Freeway Tunnel Alternative would adversely affect the Old Pasadena Historic District.

Table 3.7.5 – Effects of the Non-Tunnel Segments of the Freeway Tunnel Alternative (Tunnel Segments) on Historic Properties in the Area of Potential Effects.

Next, the Draft EIR/EIS improperly concludes that the potential effects of the Freeway Tunnel Alternative “would be the same for each [historic] resource” that lies above the tunnel. (p. 3.7-93.) As a justification for this conclusion, it merely states that the “tunnel alignment(s) would be at depths ranging from of 120 to 250 feet below the . . . properties.” These include the following resources:

3927-3947 Lowell Ave.; Short Line Villa Tract Historic District; Historic Route 66; Arroyo Seco Parkway Historic District; Pasadena Avenue Historic District; Sequoyah School/Neighborhood Church (3 buildings: Children’s Chapel Nursery School, and Religious Education Building, 535 So. Pasadena Ave. in Pasadena); Caroline Walkley House and small apartment (595 So.

Pasadena Ave. and 190 W. California Blvd. in Pasadena); Caroline Walkley-Alice and Robert Wood House (696 So. St. John Ave.); Driscoll House (679 So. Pasadena Ave.); Miss Markham House (763 So. Pasadena Ave.); Page House (765 So. Pasadena Ave.); Tomkins House (779 So. Pasadena Ave.); 801 So. Pasadena Ave.; Rev. Hiram Hill/Alonzo Beal House (866 So. Pasadena Ave.); Hurlburt St. Fire Station No. 5 (900 So. Pasadena Ave.); J. Durand Kennett House (1000 So. Pasadena Ave.); F.J. Kennet House (1030 So. Pasadena Ave.); Mrs. D. Hagan House (1041 So. Pasadena Ave.); James and Fanny Hale House (1051 So. Pasadena Ave.); W.W. Phelps House (1112 So. Pasadena Ave.); A.G. Simons/John McWilliams Jr. House (1199 So. Pasadena Ave.); Mary Werner House (1200 So. Pasadena Ave.); Ralph B. Hubbard Residence (1207 So. Pasadena Ave.); 206 to 216 W. California Blvd.; R. Sturgis Cook House (180 W. State St., a/k/a 1170 S. Pasadena Ave.); Hartshorn House No. 1 (224 W. State St.); Hartshorn House No. 2 (224 W. State St.); Otake-Nambu House (857 Bank St.); East Wynyate (909 Lyndon St.); J.G. Pierce House (911 Monterey Rd.); Kenneth M. Joy House (921 Monterey Rd.); 920 Lyndon St.; Blanche Home (1030 Buena Vista St.); 318 Fairview Ave.; Augusta Raab Home (1109 Buena Vista St.); El Cerrito Circle Historic District (8 properties); North of Mission Historic District; South of Mission Historic District; South Pasadena Historic Business District; Library Neighborhood Historic District; 904 Monterey Rd.

The Draft EIR/EIS fails to account for the potential harmful impacts that could occur to these properties, especially given the risks inherent in using new technologies.

The conclusion that there are no foreseeable impacts to historic properties is inconsistent with those made in a similar project recently approved in Seattle, Washington. There, the Washington State Department of Transportation acknowledged that the subsidence of historic structures was possible for 11 historic buildings lying above where a new freeway tunnel would be built. WSDOT acknowledged these impacts, retrieved baseline data for the conditions of the buildings, and set up a claims and repairs process. (See Viaduct FEIS Appendix I, p.121 at <http://data.wsdot.wa.gov/publications/viaduct/AWVFEIS-AppendixI.pdf>).

However, trouble with the tunnel boring machine proved that even this analysis had been inadequate. When the tunnel boring machine broke down 50 feet below ground, less than 1000 feet into the project, WSDOT was forced to construct a temporary access pit to reach the boring machine for repairs. The supplemental shaft project caused additional subsidence for historic properties that had not been identified in the original area of potential effects. The project is now years behind schedule, and WSDOT has had to reopen Section 106 consultation as a result of the new impacts. The Freeway Tunnel Alternative proposed here is larger than the Seattle project—indeed, if built, it would be the largest TBM tunnel undertaken to date, so the downside risks need to be considered accordingly, given the lack of successful precedents.

LRT Alternative

Table 3.7.3 – Effects of the LRT Alternative on Historic Properties in the Area of Potential Effects

A review of the proposed determinations in Table 3.7.3 provides numerous illustrations and examples of effect determinations that simply cannot be sustained consistent with the Section 106 regulations, 36 C.F.R. § 800.5.

100 North Fremont Ave., Alhambra. According to the Draft EIR/EIS, “[i]t is anticipated that associated operational ground borne noise levels would range between 46 dBA to 49 dBA near this location” (p. 3.7-61). This exceeds the FTA criteria of 35 dBA by more than 10 dBA (which represents a perceived doubling of noise levels). Therefore, the LRT Alternative “may have an adverse indirect effect” on this historic property “as a result of an anticipated high level of operational groundborne noise and vibration from the LRT trains operating under North Fremont Avenue.” (p. 3.7-62). Nonetheless, the Draft EIR/EIS concludes that this potential adverse effect would disappear through the use of “Project Conditions LRT-1 and LRT-2 from the [FONAE].” *Id.* Nothing in the Draft FONAE explains what LRT-1 or LRT-2 consist of. They are defined in Volume II of the Draft EIR/EIS. (p. 3-230 to 3-236). But they only address vibration impacts, not noise, which is what is needed here. (LRT-1 addresses construction vibration, and LRT-2 addresses operational vibration). The Draft FONAE states, “Section 5.5.3.1, measures to reduce ground-borne noise are available to reduce operational effects to levels below FTA criteria for this property type (CH2M HILL 2014a:5-17). Implementation of the appropriate noise-suppression measures will reduce operational ground-borne noise and vibration to levels below FTA criteria.” FONAE at 6-48. However, the cross-referenced section of the FONAE (Section 5.5.3.1) addresses only noise impacts from construction, not from operation. *See* Draft FONAE at 5-198 to -199. Nothing in the CH2M Hill report defines LRT-1 or LRT-2, and nowhere is there a commitment to implement such measures in any event. (For example, Table 3.7.3 indicates “No Adverse Effect **Without** Standard Conditions.” (p. 3.7-61) (emphasis added).

Raymond Florist Historic District, Pasadena. The Draft EIR/EIS states that construction of the Fillmore LRT station, using jackhammers and other heavy equipment, within ten feet of the historic district (FONAE at p. 5-200), “may result in minor **physical damage** to the Historic District, and introduce visual, atmospheric, or audible elements that may **diminish the integrity** of the significant historic features,” (p. 3.7-64) (emphasis added). The report from Wilson, Ihrig & Associates confirms that one contributing commercial building within this historic district, at 62 E. California Blvd., would suffer vibration levels that significantly exceed the threshold for damage (0.293 inches/second vs. the recommended limit of 0.12 inches/second). (Wilson, Ihrig at p.12.) Yet again, it is assumed without discussion that these adverse impacts would disappear through the use of Conditions LRT-1 and LRT-2. *Id.* In any event, there is no commitment to actually implement the conditions, since Table 3.7.3 again indicates that this historic district would suffer “No Adverse Effect **Without** Standard Conditions.” *Id.* (emphasis added).

Hospital Veterinary, Pasadena. The Draft EIR/EIS states that ground-borne vibration from excavation of the LRT tunnels “may result in minor **physical damage** to the Hospital building . . . that may **diminish the integrity** of the significant historic features of this property.” (p. 3.7-64) (emphasis added). Again, Conditions LRT-1 and LRT-2 are assumed to eliminate the potential adverse effects (p. 3.7-65), even without a commitment to implement them, since the determination is “No Adverse Effect **Without** Standard Conditions.” *Id.* (emphasis added).

Fair Hope Building, South Pasadena. Construction of the South Pasadena LRT station would come within 20 feet of the Fair Hope Building (Wilson, Ihrig at p.12), and ground-borne

vibration from the use of jackhammers, excavators and other heavy equipment “may result in minor **physical cosmetic damage**” to this historic property, which “may **diminish the integrity** of the significant historic features.” (p. 3.7-65) (emphasis added). Again, Conditions LRT-1 and LRT-2 are assumed to eliminate the potential adverse effects (p. 3.7-65), even without a commitment to implement them, since the determination is “No Adverse Effect **Without** Standard Conditions.” *Id.* (emphasis added).

Segment of Route 66, South Pasadena. The Draft EIR/EIS states that the LRT Alternative “would result in the **demolition and removal** of two segments of former Route 66 at the foot of Fair Oaks Ave. and at the Mission St./Fair Oaks Ave. intersection, in order to accommodate cut and cover excavations for the South Pasadena and Huntington LRT stations. (p. 3.7-67) (emphasis added). However, the adverse effect is assumed to be eliminated because the road would be “rebuilt” after construction is completed.

Oaklawn Waiting Station, and War Memorial Building, South Pasadena. For both of these historic properties, the Draft EIR/EIS states, “[i]t is **conceivable** that TBM-generated vibration . . . would fall well below the threshold for minor, cosmetic damage It is, therefore, **conceivable** that this historic property would **not** experience an adverse direct effect from tunneling activity.” (p. 3.7-69) (emphasis added). Yet no conditions are included to ensure that these contingent adverse effects would in fact be avoided.

Community Facilities Planners Building, South Pasadena. The Draft EIR/EIS states that “operation impacts from groundborne noise and vibration are anticipated” in the area of this historic property, and operational groundborne noise levels would exceed FTA criteria by up to 2 dBA. (p. 3.7-71). However, it is assumed, without explanation, that these adverse effects would be eliminated by the conditions LRT-1 and LRT-2, *id.*, even though these conditions relate to vibration impacts, rather than noise impacts.

South Pasadena Middle School, Raymond Hill Waiting Station, and 2020 Fremont Ave., South Pasadena. For all three of these historic properties, the Draft EIR/EIS concludes that it is “**conceivable**” that vibration from tunnel excavation and construction would fall **below** the threshold for damage, and therefore, it is “**credible**” that the historic property would **not** suffer adverse effects. (p. 3.7-72 to 3.7-75) (emphasis added). This is simply not enough information to justify a finding of No Adverse Effect.

Arroyo Seco Parkway Historic District. The Draft EIR/EIS states that the LRT Alternative “may result in minor **physical damage**,” . . . which may **diminish the integrity** of the significant historic features” of the district. (p. 3.7-75) (emphasis added). Again, Conditions LRT-1 and LRT-2 are assumed to eliminate the potential adverse effects, even without a commitment to implement them. *Id.*

4777 East Cesar E. Chavez Ave., South Pasadena. The Draft EIR/EIS contains two directly contradictory determinations about the effects on this historic property. The first paragraph concludes, “The LRT Alternative improvements **will not have any direct effects** on the historic property.” (p. 3.7-76) (emphasis added). But the second paragraph concludes the opposite: “The LRT Alternative improvements may result in a **direct adverse effect** to this historic property.” *Id.* (emphasis added). These direct adverse effects are assumed to be

eliminated, however, by Conditions LRT-1 and LRT-2 (*id.* at p. 3.7-77), even though these conditions do not address noise impacts. The Draft EIR/EIS then goes on to conclude that the LRT Alternative will have no ***indirect adverse visual effects*** on the historic property, even though the aerial tramway at this location would be approximately 30 feet high and located just 40 feet east of the historic building.² The report acknowledges that the “scale and proportion” of the aerial tramway “would be a considerable change from historical patterns in the area,” but nonetheless dismisses the potential for adverse effect, without substantiation. *Id.* at p. 3.7-76.

III. The Draft EIR Fails to Comply With CEQA.

The California Environmental Quality Act (CEQA) bars state agencies from approving projects “if there are feasible alternatives or feasible mitigation measures available that would substantially lessen the environmental effects of such projects.” Public Resources Code §21002. Historic and cultural resources are part of the “environment,” as defined in CEQA, and a project that “may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment.” *Id.* §21084.1; Guidelines § 15064.5(b). Therefore the inquiry as to whether an effect to a historic resource will or will not be “substantial” and “adverse” is a fundamental first step in determining whether CEQA’s substantive mandate will apply. As discussed below, Caltrans has made improper conclusions regarding the impact of the Tunnel and LRT alternatives and the EIR is inadequate and misleading.

One of the most critical differences between an EIR under CEQA and an EIS under NEPA involves the extent to which it must disclose the significance of impacts. NEPA has a fairly low standard and does not require that a determination of significant impacts be stated in the documents. The importance of effects tends to be in the assessment of whether the project “as a whole” has the potential to have a major impact affecting the human environment. Information on environmental effects is “essential to a reasoned choice among alternatives” 40 C.F.R. § 1502.22(a). *See Sierra Club v. United States DOT*, 962 F. Supp. 1037, 1043 (N.D. Ill. 1997) (Final EIS failed to include crucial information on growth-inducing effect of proposed toll road and failed to indicate information was missing).

CEQA, however, requires state agencies to detail each significant effect on the environment and ways each effect can be mitigated. The Draft EIR fails in this respect, suffering from a lack of detail in its analysis as well as from several key errors in its analysis of the impacts of the freeway tunnel alternative on cultural resources (See DEIR Section 4.2.5).

² The proximity of the proposed elevated transportation infrastructure to the historic building is so close that it is comparable to distances that federal courts have deemed to have such severe impacts that they would constitute “constructive use” under Section 4(f) of the Department of Transportation Act. *See Citizen Advocates for Responsible Expansion, Inc. (I-CARE) v. Dole*, 770 F.2d 423, 441 (5th Cir. 1985) (widening of existing elevated highway to within 40 to 200 feet of historic buildings would substantially impair their historic values); *Coalition Against a Raised Expressway, Inc. (CARE) v. Dole*, 835 F.2d 803, 810 (11th Cir. 1988) (construction of new elevated freeway within 40 to 100 feet from historic buildings would substantially impair their historic values).

A. The DEIR's Analysis of the Project's Impacts is Inadequate.

Under CEQA, the threshold for determining whether an impact to the significance of a historic resource will be “substantial” and “adverse” is described in Guidelines § 15064.5(b)(1). It includes “physical demolition, destruction, relocation, or alteration of the resource *or its immediate surroundings* such that the significance of an historical resource would be materially impaired.” *Id.* (emphasis added). However, the Draft EIR improperly concludes that the impact of the Freeway Tunnel and LRT Alternatives on historic resources would be “[l]ess than significant with mitigation and Project Conditions” (4-12).

In making this conclusion, the Draft EIR relies entirely on the FONAE document and Section 3.7 NEPA analysis discussed *supra*. This scant review is inadequate and improper in light of CEQA's much higher standard for disclosing impacts. And, as noted in the National Trust's FONAE comment matrix in Attachment A, the EIR greatly mischaracterizes the nature of the impacts to historic resources, relying on unsupported data and assumptions, and completely disregards technical information that contradicts its assertions. Therefore the errors that we have pointed out with respect to NEPA and NHPA also apply to Caltrans and Metro's CEQA analysis.

As one example, the FONAE concludes on p. 5-38 that excavation-induced ground settlement on historic resources would be “negligible or less.” However, as we have pointed out, this conclusion directly contradicts a technical memo produced by Jacobs Associates on May 11, 2015. The Jacobs preliminary analysis indicated that historic properties affected by the tunnel would experience ground-induced settlement effects ranging from “very slight” to “moderate-severe” (Jacobs, p.3). This expert opinion constitutes substantial evidence that impacts to substantial and adverse effects to historic resources are probable, and Caltrans and Metro's failure to consider this information is improper.

B. The DEIR Contains an Inadequate Range of Alternatives.

Because CEQA requires agencies to adopt feasible alternatives to projects that cause environmental harm, a major function of the EIR “is to ensure that all *reasonable alternatives* to proposed projects are thoroughly assessed by the responsible official.” *Laurel Heights Improvement Ass'n vs. Regents of the University of California*, (1988) 47 Cal. 3d 376, 400. To fulfill this function, an EIR must consider a “reasonable range” of alternatives “that will foster informed decision-making and public participation.” Guidelines § 15126.6(a).

A reasonable alternative is one that would feasibly attain most of the Project's basic objectives while avoiding or substantially lessening the project's significant impacts. *Id.*; see *Citizens for Quality Growth v. City of Mount Shasta*, 198 Cal. App. 3d 433, 443-45 (1988).

The lead agencies for the Project failed to consider alternatives that would avoid significant impacts to historic resources. Most notably, the “Beyond the 710” alternative that was developed by Nelson Nygaard is an innovative, multi-modal alternative that strategically combines mass transit, expanded bus service, traffic demand management, bikeways, pedestrian paths, and new parks to address the regional mobility needs, without causing harm to the myriad historic resources in the project study area.

IV. The Cost-Benefit Analysis is Flawed Under Both NEPA and CEQA.

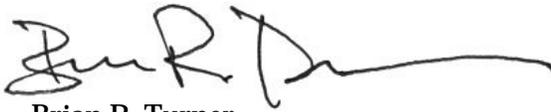
As explained in more detail in the comments submitted on behalf of the Connected Cities and Communities and the No 710 Action Coalition, the Cost and Benefit Analysis (CBA), prepared at the direction of Metro's Board of Directors and released on June 19, 2015, is deeply flawed, and is based on biased and misleading assumptions. As a result, it cannot be relied upon to support any findings under NEPA or any statement of overriding considerations under CEQA. To cite just two examples of the flawed methodology:

- The CBA calculates 100 years of residual *benefits* from the tunnel alternatives, but only 20 years of the *cost* of air pollution, greenhouse gas emissions, and traffic congestion;
- The CBA assigns a "value of time" that is 3½ times higher for freeway drivers than for transit riders (\$22.57 vs. \$6.35).

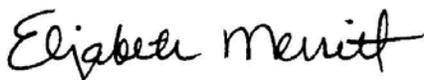
NEPA and CEQA both require the agencies to correct this biased Cost and Benefit Analysis prior to identifying a preferred alternative or adopting findings in support of any statement of overriding considerations.

Thank you for considering the comments of the National Trust for Historic Preservation. Please feel free to contact us if you have any questions.

Sincerely,



Brian R. Turner
Senior Field Officer and Attorney



Elizabeth S. Merritt
Deputy General Counsel

Attachment A: FONAE Comment Matrix

cc: Chris Wilson, Charlene Vaughn, and Reid Nelson,
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Damon Nagami, Natural Resources Defense Council
Sarah Gavit, West Pasadena Residents Association
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Section	Sub Section & Page	Comments
1. Introduction	p. 1-1	<p>Project description - The ability of the consulting parties to accurately analyze the alternatives or their impacts is compromised by an inadequate project description, which:</p> <ul style="list-style-type: none"> • lacks detail regarding project construction; • implies that there is no preferred alternative; • does not identify the process or standards that Caltrans and Metro will apply when selecting an alternative; and • does not provide adequate detail regarding potential funding sources, especially federal sources.
	p.1-1	<p>Preferred Alternative - Introductory paragraphs state that “[a]t present, no Preferred Alternative has been identified,” but the FONAE, the Draft EIR/EIS, and the “Analysis of Costs and Benefits” all contain statements that suggest the Freeway Alternatives are preferred by Caltrans and Metro. The CEQ regulations for implementing NEPA require the alternatives section of an EIS to “identify the agency's preferred alternative if one or more exists, in the draft statement” 40 C.F.R. § 1502.14(e). Therefore, if the agency has a preferred alternative at the Draft EIS stage, that alternative must be labeled or identified as such in the draft. By failing to do so, the document misleads the consulting parties and the public, and obscures the fact that an institutional decision may have already been made that preferences one alternative over others.</p>
	p.1-1	<p>Lead Agency and Funding Sources - “The project could rely on federal funding and/or require a federal authorization and meets the definition of an ‘undertaking’ according to 36 [C.F.R. §] 800.16(y).” According to the FONAE, Caltrans is acting as the lead agency and is providing oversight on this undertaking in accordance with the 2014 First Amended Programmatic Agreement. But the Draft EIR/EIS, v. 1, states that the lead agency will vary depending on the alternative selected. The information provide in the Draft EIR/EIS regarding potential funding sources for each alternative is inconsistent and unclear, with references to the use of federal funds for the TDM,TSM, BRT, and Freeway Tunnel alternatives, but not the LRT alternative. This means the responsible agency, the use of federal funding, or the need for federal permits or approvals will not be disclosed until after a preferred alternative is selected.</p>
	p. 1-2	<p>Definition of the APE – A recent survey conducted by Historic Resources Group (HRG) of properties in South Pasadena within and near the APE examines the eligibility of properties for the National Register of Historic Places (NR), state and local designation. [See “City of South Pasadena: Historic Resources Survey Phase 1: SR 710 Area of Potential Effects,” (June 2015).] In light of this survey data</p>

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		<p>and recommendations, the APE should be re-evaluated. In the case of both the El Cerrito Circle Historic District and the Library Neighborhood Historic District, the APE appears to be drawn rather arbitrarily through these districts to exclude the majority of contributing and individually NR-eligible properties. In the El Cerrito District, 6 of the 10 contributing properties and 2 individually eligible properties are arbitrarily excluded from the APE (HRG, p.21 & Fig. 3). For the Library District, only 13 of the 94 properties in the potential NR district were included in the APE, and none of the 12 individually NR eligible properties are included in the APE (HRG, p.25 & Fig 5).</p> <p>The June HRG report also identifies the Altos de Monterey as a potential historic district. While the entire large post-WWII development does not appear to be eligible for designation as a historic district, “additional fieldwork and research is required to make a final determination.” (HRG, p. 33 & Fig. 9) This fieldwork should be completed to determine which properties are individually eligible and where potentially eligible historic districts might exist within the entire Altos de Monterey boundary.</p>
	p. 1-2, -1-3	<p>Number of historic properties – The document counts historic districts as a single property and omits information about how many contributing properties make up each district. Neither Tables 8.1-8.5, nor Tables F.1 and F.2 in Appendix F provided a breakdown of total properties or contributing properties within the historic districts. With the exception of the El Cerrito District in South Pasadena, the description is limited to a rough geographic boundary with no indication of total property numbers or numbers of contributing sites. This information should be provided.</p> <ul style="list-style-type: none"> • This information conflicts with the information provided in the Jacobs Associates, May 11, 2015 Technical Memo, “Potential Settlement Effects on Historic Properties,” which states on page 1, “approximately 150 historic properties are in the APE for the dual-bore [tunnel] variation.”
	p. 1-3	<p>Properties studied for vibration analysis – “According to a vibration impact analysis prepared for the project (Wilson, Ihrig & Associates 2015), of the 48 properties above the tunnel alignment(s), 36 would be 110 to 230 feet (ft) above the centerline(s) of the proposed tunnel alignment(s). The Vibration Impact Analysis calculated surface vibration levels from tunnel excavation on all 35 historic properties (including contributing elements to historic districts),”</p> <ul style="list-style-type: none"> • Is the number of properties studies for the Vibration Impact Analysis 35 or 36?
	p. 1-3	<p>There is no description in the introduction of the assessment of potential effects from ground settlement, based on the May 2015 Jacobs Associates technical memorandum. Why is that information, and a description of the properties studied and affected, omitted from the introduction?</p>

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	p. 1-3	<p>“The Vibration Impact Analysis calculated surface vibration levels from tunnel excavation on all 35 historic properties (including contributing elements to historic districts), and the vibration levels are predicted to be substantially below the threshold for potential cosmetic damage to older buildings. Therefore, the expected vibration effects of constructing the Freeway Tunnel Alternative on those historic properties would be uniform and would not affect the character-defining features of these historic properties that qualify them for inclusion in the National Register. As a result, a finding of no detectable risk of adverse effect (i.e., minor, cosmetic damage) to any of the historic properties would occur as a result of constructing the Freeway Tunnel Alternative. Therefore, individual effects analyses for these properties were not prepared.”</p> <ul style="list-style-type: none"> • There is still only limited information available regarding soil types and building foundations and other structural details. Therefore, this determination was based on only general information or best guesses, rather than detailed assessments of specific historic properties and their conditions. • In any event, the statement that predicted vibration levels for all historic properties would be “substantially below the threshold for potential cosmetic damage” is inaccurate. The assessment by Wilson, Ihrig & Associates concludes that the projected vibration level for the commercial building in the Raymond Florist Historic District in Pasadena (62 E. California Blvd.) would exceed the criterion for cosmetic damage, and the projected vibration levels for the Fair Hope Building in South Pasadena would be barely below the criterion. • The FONAE improperly downplays the significance of vibration impacts. There is no basis for concluding that the vibration impacts from the tunnel boring machines would be less than significant. See DEIR/S at 4-75. Because the conclusion of insignificance is premised on unsupported assumptions and bald conclusions, it falls far short of complying with the law.
	p. 1-3	<p>“The remaining 13 historic properties are analyzed in Section 5.7 for effects due to excavation depths of 100 ft or less and a corresponding risk of excavation-induced ground settlement or for effects from construction and operational effects at the surface.”</p> <ul style="list-style-type: none"> • There is no Section 5.7 in the FONAE. The document fails to provide any information or analysis regarding a collection of historic properties that are the most likely to be affected by vibration and ground settlement due to the shallow depth of tunneling activities. <p>“The Vibration Impact Analysis (Wilson, Ihrig & Associates 2015) also concluded that vibration levels from the excavation for the Freeway Tunnel Alternative are predicted to be substantially below the threshold for potential cosmetic damage to older buildings.”</p> <ul style="list-style-type: none"> • Since there is no Section 5.7, it is unclear if this statement is

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		<p>intended to apply specifically to the properties in the “100 ft or less” excavation depth, or to all properties located over the proposed freeway tunnel routes.</p> <ul style="list-style-type: none"> As discussed above, this statement is contradicted by the Wilson, Ihrig analysis itself, which states that predicted vibration levels for at least two historic properties will <i>not</i> be substantially below the threshold.
	p. 1-3	<p>“In applying the Criteria of Adverse Effect, Caltrans proposes that a Finding of No Adverse Effect is appropriate for this undertaking and is seeking SHPO concurrence in the finding, pursuant to 36 CFR 800.5(c) and the First Amended Section 106 PA Stipulation X.B.2.”</p> <ul style="list-style-type: none"> The National Trust strongly disagrees, pursuant to 36 C.F.R. § 800.5(c)(2), based on the information presented in the record. Caltrans has not even been willing to endorse the proposed findings itself by signing the document.
Table 1.1.	p. 1-6	Augusta Raab Home, City of South Pasadena – The Table omits any indication of which project will affect this historic property.
2. Description of Undertaking	2.1.5 Freeway Alternative, p. 2-8	<p>Ventilation Systems - “Both tunnel design variations would include the following tunnel support systems: emergency evacuation for pedestrians and vehicles; air scrubbers; a ventilation system consisting of exhaust fans at each portal, an exhaust duct along the entire length of the tunnel, and jet fans within the traffic area of the tunnel; fire detection and suppression systems, communications and surveillance systems, and 24-hour monitoring.”</p> <ul style="list-style-type: none"> No information is provided in the FONAE regarding the location, size, appearance, or materials of the ventilation system. In the Draft EIR/EIS, the Freeway Alternatives propose six 50-foot-tall ventilation structures on the Colorado Street Bridge over the SR710. These are depicted as three stacks on either side of Colorado Blvd. in a contemporary style and painted a range of bright colors. Details for these proposed large-scale and highly-visible facilities must be provided so their impacts on the character and visual quality of the surrounding historic properties can be accurately assessed. In Pasadena, the proposed towers are in the vicinity of three historic districts—the Old Pasadena Historic District (NR), the West Colorado Street Historic Auto Row Historic District at the northwest corner of Colorado and St. John (NR-eligible), and the Ambassador West Cultural Landscape Historic District at the southwest corner of Green John (NR-eligible). The proposed ventilation structures have the potential to significantly impact these historic districts due to changes in their setting, character, context, and integrity. For example, the stacks as depicted in the Draft EIR/EIS are out of context with the setting and feeling of the Old Pasadena Historic District in terms of use, mass, scale, height, style, and

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		<p>materials. The stacks also conflict with the rhythm, feel and experience of Old Pasadena.</p> <ul style="list-style-type: none"> • The potential visual, noise, air quality and other environmental impacts of the ventilation system on the annual Tournament of Roses Parade in Pasadena have not been assessed.
	2.1.5 Freeway Alternative, p. 2-8	<p>“Operations and maintenance buildings would be constructed at the northern and southern ends of the tunnel.”</p> <ul style="list-style-type: none"> • The tunnel alternatives include portal buildings with operations and maintenance centers (OMC) at each end of the tunnel, including at the Del Mar Blvd. portal in Pasadena. No details whatsoever are provided for these proposed facilities. From the limited information provided, it is not possible to discern the location, layout, height, elevation, mass, bulk, color, or materials of the structure or of any outdoor equipment yards or other facilities. Without such details, it is not possible to consider the centers’ impacts on noise, traffic, air quality, aesthetics, or other environmental conditions. • The potential noise, vibration, air quality and other impacts of these proposed new facilities on historic properties are not assessed, nor are the impacts on views and visual character. • The potential visual, noise, air quality and other environmental impacts of the proposed new facilities on the annual Tournament of Roses Parade in Pasadena have not been assessed.
	2.1.5 Freeway Alternative, p. 2-8 -2.9	<p>Construction Staging Areas - No details are provided regarding the excavation and processing of earth. How many cubic yards of earth would be excavated and hauled offsite? Where would temporary stockpiles be located? Would any crushing or processing of earth materials occur that could create air quality, vibration, and noise impacts on historic properties and sensitive receptors?</p>
	2.1.5 Freeway Alternative, p. 2-8	<p>Tunnel Boring - “Similar to the LRT tunnels, the bored freeway tunnel(s) would be expected to be excavated using pressurized-face TBMs, which provide immediate support of the ground and have been successfully used locally (specifically in Los Angeles for the Los Angeles Metro Gold Line Eastside Extension) and internationally to control ground movements. The use and operation of the TBM and monitoring and control for vibration and ground movement for the tunnel boring for the Freeway Tunnel Alternative would be the same as described earlier for the LRT Alternative.”</p> <ul style="list-style-type: none"> • Given that the TBM for the Freeway Tunnel(s) would be almost 60 feet in diameter (compared to the 20-foot diameter of the LRT tunnel) it seems inappropriate and inadequate to reference the LRT project and other Metro projects as the standard for the Freeway Tunnel alternative construction impacts. • For the same reason, it also seems inappropriate and inadequate to use the same monitoring and control for vibration and ground movement.

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		<ul style="list-style-type: none"> While TBM has been used “successfully,” some TBM projects have been unsuccessful, such as the Alaska Way Viaduct Replacement project in Seattle, where the machine failed in the very early stages of boring. Therefore it is inappropriate and misleading to suggest that the TBM technology is always successful.
	2.1.5 Freeway Alternative, p. 2-9	<p>Distance below grade - “Each bored tunnel would have an outside diameter of approximately 60 ft and would be located approximately 100 ft to 340 ft below the ground surface.”</p> <ul style="list-style-type: none"> Is this distance below the ground measured to the crown or the centerline of the tunnel? There is a 30-foot difference between those measurements.
	2.1.5 Freeway Alternative, p. 2-9	<p>Single v. Dual Bore Tunnels – There is no explanation of the difference between the two options in terms of location of the second tunnel of the dual bore option. How far apart are the two tunnels? In the single bore alternative, would it be the northbound or southbound lane of the dual bore alternative?</p>
	2.2 Construction Effects, p. 2-10	<p>“Site Preparation: This phase will include removing the existing paving, clearing, and grubbing sites to remove vegetation. Traffic detours and dedicated truck haul routes would be required. To minimize traffic disruptions and reduce (temporary) audible effects to historic properties in areas of proposed improvements, traffic management and control plans would be developed with involvement from and coordination with the various jurisdictions within the APE before construction begins.”</p> <ul style="list-style-type: none"> It is misleading to refer to traffic disruptions, noise, and other effects on historic properties from construction as “temporary.” The tunnel alternatives are estimated to take at least five years for construction, which is a conservative estimate. The properties near the tunnel portals will be subjected to multiple years of effects from construction and staging, which far longer than the usual construction period.
	2.2 Construction Effects, p. 2-11	<p>“Excavation: Excavation will require the use of a large number of trucks carrying spoils away from excavation areas. Noise sources include the excavation equipment used and the trucks used to haul away debris. Equipment typically used for excavation activities will include, but not be limited to, bulldozers, front loaders, bobcats, trucks, excavators/backhoes, generators/compressors, and water trucks for dust control.”</p> <ul style="list-style-type: none"> What are the impacts of the excavation and machinery on the historic properties at and around the portals? There is no recognition in Sections 2 or 5 of the potential effects of the increased noise, vibration and air pollution/diesel particulates that will result from many years of excavation and construction on adjacent historic properties.
	2.2 Construction	Due to their construction methods and age of materials, older buildings, structures, and objects are usually more susceptible to the

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	Effects, p. 2-11	effects of excavation-induced settlement than contemporary buildings.
3. Public Participation	3.2 Historical Organization Consultation, p. 3-2 and 3-7 and Attachment B	<p>The description of the efforts at “consultation” with a large list of organizations are misleading. They were in fact minimal and conducted poorly. They “consisted of mailing and/or emailing a letter and map regarding the project to a wide variety of groups, organizations, individuals, and public agencies.”</p> <ul style="list-style-type: none"> • A review of the information in Attachment B reveals that the majority of the contacts were a generic email inbox or PO box. The consultants rarely made an attempt to identify or contact a specific individual associated with the organization, with the result that many of the letters and emails were not received. • The content of the letter/email was vague and did not provide a clear description of the undertaking, the role that the organization could play in the consultation, or the kinds of information that they could or should supply. • Because “[f]ollow-up was conducted only when a response was received or when specific information was sought,” no further effort was made (except for Indian tribes) to contact organizations where emails or letters were returned or not delivered to PO boxes.
4. Description of Historic Resources	p. 4-1	APE – The introduction provides a description of the APE, but does not define how the boundaries of the APE were determined.
	Attachment F, p. F-1	<p>“For the purposes of this Finding of Effect (FOE), the only segment of Route 66 in the APE that is analyzed for effects corresponds to the segment of the Arroyo Seco Parkway Historic District (State Route 110 [SR 110]) in the APE, which served as Route 66 from 1940 to 1964 when the California portion of Route 66 was decommissioned.”</p> <ul style="list-style-type: none"> • What is the justification for this?
	p. 4-1	<p>Availability of Historic Property Maps –</p> <ul style="list-style-type: none"> • The FONAE contains no maps to indicate the location of historic properties or the boundaries of historic districts. These should be provided. • Section 4 references an “APE Map” for each property. Where is this map? Why has it not been made accessible as an integral part of the FONAE?
	General	The language of this section intermixes the terms “resource,” “parcel,” “property,” and “building,” without defining them or explaining the difference between them. The language throughout the document regarding historic properties should be clear, consistent, and well-defined.
	4.1.3.3 Short Line Villa Tract Historic	“[T]he District consists of 92 properties. Of the 93 properties, 67 resources (4 of which are individually eligible) contribute to the District and 25 resources do not. There are 18 parcels associated

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	District, p. 4-5	<p>with the District that are located in the APE. The following 10 properties are contributors to the District.”</p> <ul style="list-style-type: none"> • Are there 92 or 93 properties in the district? • Without maps it is impossible to understand where the APE boundary lies in relationship to this historic district and its properties, or why only 18 of the 92/93 properties/parcels are considered to be located within the APE.
	4.1.5.6. Ambassador West Cultural Landscape District p. 4-18-4-21	<p>The FONAE inaccurately describes the contributing features of the district.</p> <ul style="list-style-type: none"> • The district was identified as part of a study of Historic Designed Gardens and comprises seven historic gardens, all of which collectively exemplify the Non-Residential Modern Garden Property Type identified in the study. None of the landscape elements are acknowledged as contributing to the district. • The Ambassador Auditorium and Hall of Administration buildings were separately evaluated in an EIR for the Ambassador West Project in 2006 with status codes of 3S and 6L, respectively. • The Student Center Building was evaluated in 2014 in a Mitigated Negative Declaration for amendments to the Maranatha High School Master Plan with a status code of 5S2.
	4.1.5.7 Markham Place Historic District p. 4-21-4-22	<p>“There are 32 parcels associated with the District that are within the APE. Of those 32 parcels, 28 are owned by Caltrans, are contributors to the Historic District, and, as such, are also listed in the Master List of Historical Resources.”</p> <ul style="list-style-type: none"> • There is no explanation of the total number of properties in this district, no description of or map of where the APE boundary is located, no indication of how many of the total properties and contributing properties in the district fall within the APE boundary, and no explanation of how that determination was made.
	4.1.5.9 Raymond-Summit Historic District, p. 4-43	<p>“The District includes 49 properties with 22 contributing properties and 27 non-contributing properties. There is one parcel (APE Map Ref #444- 3A) in the District that is located within the APE and is a contributor to the District.”</p> <ul style="list-style-type: none"> • Without access to maps it is impossible to understand where the APE boundary lies in relationship to this District and its properties, or why only 1 of the 49 properties/parcels are considered to be located within the APE.
	4.1.5.11 Pasadena Avenue Historic District, p. 4-45	<p>“There are 69 parcels in the APE (the two Hartshorn Houses are on one parcel) and Caltrans owns 62 of these parcels. Of the 69 parcels in the APE, 64 are in the City of Pasadena, and 5 are in the City of South Pasadena. In addition, 47 of the 69 parcels in the APE are contributors to the District.”</p> <ul style="list-style-type: none"> • Without access to maps it is impossible to understand where the APE boundary lies in relationship to this District and its properties, or why only 47 of the 69 properties/parcels are

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		considered to be located within the APE.
	p. 4-50	233 Columbia Street – This property has a number of early features for its period and its eligibility for individual listing should be re-evaluated.
	4.1.5.12 Old Pasadena Historic District, p. 4-75	<p>“This District includes approximately 180 parcels. There are 12 parcels associated with the District that are located within the APE, 9 of which are contributors to the District.”</p> <ul style="list-style-type: none"> • This district is exceedingly well documented. Why is it described as “approximately 180 parcels”? This figure is known and should be provided. • Without access to maps it is impossible to understand where the APE boundary lies in relationship to this District and its properties, or why only 12 of the “approximately” 180 properties/parcels are considered to be located within the APE.
	p. 4-76	26 S. Pasadena Ave, Figure 4-124 – The resource description is inaccurate and does not reflect the National Register nomination.
	p. 4-78	161 West Colorado Blvd – The information provided does not reflect the National Register District listing.
	p. 4-79	169 West Colorado Blvd – The property’s contributor status is incorrect.
	4.1.6.14 Arroyo Seco Parkway Historic District , p. 4-95-4-96	<p>“Today there are 60 components (grade separations, tunnels, bridges, overcrossings, pedestrian overpasses, pedestrian and equestrian undercrossings, the roadway itself, the Four Level Interchange, Arroyo Channel, and two buildings at the Arroyo Seco Maintenance Station), 45 of which are considered contributors to the Arroyo Seco Parkway Historic District. However, the Fair Oaks Avenue overcrossing and a small segment of SR 110 between the Fair Oaks Avenue Overcrossing and the District’s northern boundary at East Glenarm Street are the only resources associated with this District that are located within the APE.”</p> <ul style="list-style-type: none"> • Without access to maps it is impossible to understand where the APE boundary lies in relationship to this District and its properties, or why only 2 of the 60 structures within the district are considered to be located within the APE.
	4.1.6.15 North of Mission District, p. 4-97	<p>“There are 22 contributing and 7 noncontributing properties in the District...There are 15 parcels associated with the District that are located within the APE, 14 of which are contributors to the District.”</p> <ul style="list-style-type: none"> • Without access to maps it is impossible to understand where the APE boundary lies in relationship to this District and its properties, or why only 15 of the 29 properties are considered to be located within the APE.
	4.1.6.17 South of Mission District, p. 4-107	<p>“Approximately 11 acres in size, the District contains 48 properties, 42 of which are contributing resources and 6 are noncontributing resources...There are 31 parcels associated with this District located within the APE. Of those 31 parcels, 26 are contributors to the District.”</p>

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		<ul style="list-style-type: none"> Without access to maps it is impossible to understand where the APE boundary lies in relationship to this District and its properties, or why only 31 of the 48 properties are considered to be located within the APE.
	4.1.6.18 South Pasadena Historic Business District, p. 4-121-4-122	<p>“the District includes 17 contributing properties (PCR Services Corporation 2002:28)...There are 12 parcels associated with the District that are located within the APE. Of those 12 parcels, 10 are contributors to the District.”</p> <ul style="list-style-type: none"> Without maps it is impossible to understand where the APE boundary lies in relationship to this District and its properties, or why only 12 of the 17 properties are considered to be located within the APE.
	4.1.6.19 Library Neighborhood District, p. 4.127-4-128	<p>“The District is adjacent to the South Pasadena Public Library and includes approximately 80 single-family residences, 60 of which are Craftsman bungalows built between 1900 and 1920 There are 13 properties within the project APE and this District.”</p> <ul style="list-style-type: none"> There is no indication of how many of these 80 properties are contributing to the district. A recent survey conducted by Historic Resources Group for the City of South Pasadena identified this district as containing 94 properties, of which 65 are contributors. The district should be reassessed in light of the new survey data. Without access to maps it is impossible to understand where the APE boundary lies in relationship to this District and its properties, or why only 13 properties are considered to be located within the APE.
	4.1.6.20 El Cerrito Circle Historic District, p. 4-132-4-133	<p>“[T]his District appears eligible for listing in the National Register under Criterion C. It has a period of significance of 1927–1931. There are four properties in the District that are also within the project APE, and all are District contributors.”</p> <ul style="list-style-type: none"> There is no indication of how many of these 10 properties are contributing to the district. A recent survey conducted by HRG for the City of South Pasadena identified this district as containing 10 properties, all of which are considered contributors. This historic district should be reassessed in light of the new survey data. Without access to maps it is impossible to understand where the APE boundary lies in relationship to this District and its properties, or why only 4 of the 10 properties are considered to be located within the APE
	General – South Pasadena	<p>Redrawing boundaries of APE in South Pasadena in light of new survey data -</p> <ul style="list-style-type: none"> See comment above under p.1-2.
		<p>Additional South Pasadena Properties to be Assessed -</p> <ul style="list-style-type: none"> See comment above under p. 1-2.
5.	p. 5-2	“The Criteria of Adverse Effect were applied to each historic

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<p>Application of Criteria of Adverse Effect</p>		<p>property in the APE to identify project-related activities that would generate effects. Many historic properties in the APE are at a sufficient distance from project-related activities (e.g., tunnel excavation) that no adverse effect would occur.”</p> <ul style="list-style-type: none"> • We disagree with the conclusion that no historic properties will be adversely affected, which is unsubstantiated.
	<p>5.2 LRT Alternative, p. 5-27</p>	<p>“For this project, the recommended maximum level settlement of 0.25 inch or maximum settlement trough slope greater than 0.039 inch/23.6 inch (1 millimeter [mm]/600 mm) is the limit for negligible or greater damage (Jacobs Associates/CH2M HILL 2014c:15, 2015). Ground settlement can be managed within tight tolerances that feasibly allow for tunnel excavation in proximity to existing buildings such as those in urban environments. Planning and investigation are necessary to determine the conditions and account for the various factors that cause settlement. Some of the key steps necessary to ascertain conditions before excavation can include, but are not limited to:</p> <ul style="list-style-type: none"> • Research and map underlying soil, groundwater conditions, presence of any abandoned oil or gas wells along the proposed tunnel alignment; • Obtain coring samples from areas along the proposed alignment to ascertain soil profile type and changes at various depth; • Position tunnel alignment in areas with uniform ground conditions as practicable; • Specify and select appropriate excavation and ground support methods; • When excavating, ensure the ground at the cutting face is properly conditioned and maintain positive face pressure at all times (in other words, pressurize the soil at the cutting face to prevent loose soil from settling into gaps or voids caused by excavation); • As the excavation proceeds through the ground, uniformly inject a grout/slurry into the narrow areas between the machine and the excavated soil above to limit ground movement; and • Hire qualified contractors and machine operators.” <p>Comment: By their own admission, these steps are necessary at a minimum to “ascertain conditions before excavation.” To what extent has research, coring, and specifications been done to fully understand the specific soil and building conditions, and the potential effects associated with those? According to the May 2015, technical memo by Jacobs Associates prepared for CH2MHill, p.3, “the following measures would be employed as part of the design and construction methodology to aid in building protection and to reduce ground movements:</p> <ul style="list-style-type: none"> • A comprehensive geotechnical investigation would be

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		<p>performed to better understand the geology along the entire alignment so proper construction methodologies and protection measures can be chosen for the historic properties.</p> <ul style="list-style-type: none">• Contract documents would be prepared to ensure that the bored tunnels for both the Freeway and LRT Tunnel Alternatives are excavated with pressurized-face tunnel boring machines (TBMs), which provide immediate support of the ground. These systems allow excavated volumes to be controlled, reducing the risk of ground losses from over-excavation, which could result in settlement at the ground surface.• Requirements would be specified in the bidding documents for mandating the selection of a pre-qualified contractor with experience mining with pressurized-face TBMs in similar ground conditions.• Pre-construction surveys of buildings located above and adjacent to proposed tunnel alignments would be performed prior to excavation to gain better understanding of their condition; it is common industry practice to conduct pre-construction inspections of existing buildings/structures. The pre-construction survey would also be used to establish a baseline condition for the purposes of construction monitoring.• During TBM excavation, machine performance and ground loss would be monitored in real time to ensure that specified, acceptable ground control is being achieved prior to passing below structures.” <p>The consistent use of the term “would be” in the language of the Jacobs Associates 2015 memo suggests that none of these steps have yet been taken to identify or understand the specific geotechnical conditions, historic property conditions, or construction methods that have a high likelihood of negatively affecting historic properties in the path of the freeway tunnel(s). Deferring this analysis is not appropriate as it does not allow consulting parties to understand the potential negative effects and the necessary mitigation or avoidance measures. This is particularly important given that the Jacobs Associates very preliminary two-stage analysis of only 18 of the “approximately 150 identified ” resources along the bored tunnel route shows that 16 of those assessed for the purposes of that technical memo will experience ground-induced settlement effects ranging from “very slight” to “moderate-severe.” (Jacobs, 3)</p> <p>Jacobs (p. 4) also notes that the recommended mitigation measures are at this point, largely theoretical, stating that “the applicability of the above protection measures will need to be evaluated once site-specific geotechnical information, as-built drawings, and structure condition surveys are performed to determine what is</p>
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		<p>appropriate for the specific project conditions. This would be performed in design phases of this project when a selected alternative is identified.” The implication being quite clear that this level of survey, research and assessment has not been done to date and will not be done until the freeway tunnel or LRT alternative is selected. As a result, both the lead agency and the consulting parties are uninformed about potential settlement impacts at this stage.</p> <p>Jacobs expands on the limitations of their two stage assessment on p. 5, noting that they had no access to information on the individual buildings they studies for their technical memo: “information regarding the structures’ condition, type, and foundation is unknown. Structure as-builts, foundation plans, or parcel maps were not available at the time of this analysis. In-person building inspections were not performed for any of the structures to confirm assumptions made.” They even call into question the accuracy of their own finding given the limited quantity of data available, calling for a repeat of their study once this specific property information is collected: “Typically, this information is available when a second stage assessment is performed. The analyses performed in this study should be performed again in a future design phase of the project when additional information becomes available...”</p> <p>They also acknowledge that their analysis was by no means complete, since “[n]ot every historic structure within the APE was analyzed as part of this analysis ...[,] [t]he analysis was limited to existing historic buildings [and] other features on historic properties or in historic districts were not evaluated.”</p> <p>In short, excavation-based ground settlement is a real and potentially significant threat for historic properties located above and near the freeway tunnel alternative. These impacts have not yet been even close to fully identified because the necessary geotechnical studies have not been conducted to understand soil conditions, the necessary individual historic property data has not been surveyed to know important construction methods and details, and the tunnel construction methods have not been specified to be able to determine their adequacy and impact.</p>
	<p>5.2 LRT Alternative, p. 5-28</p>	<p>“ TBM was used in a tunneling project in Dublin, Ireland, where the tunnel was excavated though layers of clay, limestone, and other bedrock. Monitoring of that excavation resulted in maximum TBM vibration readings of 1.5 millimeters per second (mm/sec) (0.059 in/sec PPV)”</p> <ul style="list-style-type: none"> • How is this relevant to the LRT Alternative? There is no information about the conditions of the Dublin project and how it informs the LRT Alternative.

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	<p>5.2 LRT Alternative, p. 5-28</p>	<p>“To manage surface settlement during LRT Station excavation, several steps are involved in understanding the conditions involved and the appropriate approaches for controlling settlement. Important factors in understanding the appropriate method can include, but are not limited to:</p> <ul style="list-style-type: none"> • Performing a detailed exploration program so that ground conditions at station locations are properly understood; • Selecting a sufficiently stiff excavation support system to limit ground movement; • Installing a ground support system that minimizes soil disturbance; • Using watertight support systems in areas with high water tables (e.g., slurry walls or secant pile walls); • If dewatering is needed, planning a dewatering method to prevent ground settlement that would destabilize nearby building foundations; • Implementing a monitoring program similar to the tunneling program discussed above to monitor potential movements in real time; and • Designing the excavation as shallow as possible.” <p><u>Comment</u> As with the tunneling, to what extent have these steps been completed in order to define the most appropriate method that would minimize or eliminate potential effects from station excavation?</p>
	<p>Table 5.3 Light Rail Alternative</p>	<p>The effects column completely ignores effects from ground settlement, which has been shown to be a real and potentially significant threat to historic properties. Settlement effects are only listed under the “notes” column, as if the document is attempting to deny or hide the true effects of settlement on historic properties. All excavation-induced ground settlement effects should be identified and listed in the “effects” column.</p> <p>The May 2015 technical memo by Jacobs Associates analyzed 11 buildings (out of a total of the 16 identified) along the LRT Alternative. The results of their preliminary analysis indicated that “two buildings fall into the “negligible” damage level and one building [the Raymond Florist Historic District in Pasadena] falls into the “moderate” damage level.” (Jacobs, p. 3) “Moderate” damage is defined by Jacobs as “[c]racks may require cutting out and patching. Recurrent cracks can be masked by suitable linings. Tuck-pointing and possibly replacement of a small amount of exterior brickwork may be required. Doors and windows sticking. Utility service may be interrupted. Weather tightness often impaired.” (Jacobs, p 9)</p>

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	<p>5.3 Freeway Tunnel Alternative, p. 5-38</p>	<p>“Under either the single-bore or dual-bore design variation of the Freeway Tunnel Alternative, the proposed centerline of the tunnel alignment(s) would range in depth from 78-230 ft below 48 historic properties in the APE.”</p> <ul style="list-style-type: none"> • Use of a tunnel centerline measurement is deceptive. If measured from the crown of the 60 ft diameter tunnel, the depth below grade would be 48-200 ft. This is a more accurate measure for assessing potential effects from tunnel construction and operations. • The identification of “48” historic properties in the APE is questionable, and conflicts with the information in the May 2015 technical memo by Jacobs Associates, which claims “approximately 150 historic properties are in the APE for the dual-bore variation,” going on to say that “structures that have been evaluated as part of this study are ... those provided by LSA as being on historic properties or situated within historic districts.” (Jacobs, p. 1, 5) This disparity regarding the number of historic properties in the APE must be clarified and corrected. • The total number of properties in the APE also may change depending on the re-evaluation properties and the APE as discussed in the multiple comments on historic districts and the APE boundary in Section 4.
	<p>5.3 Freeway Tunnel Alternative, p. 5-38</p>	<p>“According to a 2015 vibration impact analysis prepared for the project, of these 48 properties, 37 would range from 110-230 ft above the centerline(s) of the proposed tunnel alignment(s).”</p> <ul style="list-style-type: none"> • Distance from the tunnel crown is 90-200 ft below grade.
	<p>5.3 Freeway Tunnel Alternative, p. 5-38</p>	<p>“A supplemental report prepared in 2015 analyzed the potential for excavation-induced ground settlement in the area of historic properties in the APE. The report concluded that these 37 properties would be subjected to negligible or less levels of excavation-induced ground settlement (Jacobs Associates/CH2M HILL2015),” and “[t]he risk of damage from excavation-induced ground settlement is less-than-negligible.”</p> <ul style="list-style-type: none"> • This finding is directly contradicted by the May 11, 2015 Jacobs Associates technical memo. Their very preliminary two-stage analysis of only 18 of the “approximately 150 identified” resources along the bored tunnel route shows that 16 of those assessed for the purposes of that technical memo will experience ground-induced settlement effects ranging from “very slight” to “moderate-severe.” (Jacobs, p.3) • Jacobs (p. 4) also notes that the recommended mitigation measures are at this point, largely theoretical, stating that “the applicability of the above protection measures will need to be evaluated once site-specific geotechnical information, as-built drawings, and structure condition surveys are performed to determine what is appropriate for the specific project conditions. This would be performed in design phases of this

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		<p>project when a selected alternative is identified.” The implication being quite clear that this level of survey, research and assessment has not been done to date and will not be done until the freeway tunnel or LRT alternative is selected. As a result, both the lead agency and the consulting parties are uninformed about potential settlement impacts at this stage.</p> <ul style="list-style-type: none"> • Jacobs expands on the limitations of their two-stage assessment on p. 5, noting that they had no access to information on the individual buildings they studied for their technical memo: “[I]nformation regarding the structures’ condition, type, and foundation is unknown. Structure as-builts, foundation plans, or parcel maps were not available at the time of this analysis. In-person building inspections were not performed for any of the structures to confirm assumptions made.” • Jacobs even calls into question the accuracy of their own finding given the extremely limited quantity of data available calling for a repeat of their study once this specific property information is collected: “[t]ypically, this information is available when a second stage assessment is performed. The analyses performed in this study should be performed again in a future design phase of the project when additional information becomes available...” • Jacobs also acknowledge that their analysis was by no means complete, since “[n]ot every historic structure within the APE was analyzed as part of this analysis [t]he analysis was limited to existing historic buildings [and] other features on historic properties or in historic districts were not evaluated.” <p>In short, excavation-based ground settlement is a real and potentially significant threat for historic properties located above and near the freeway tunnel alternative. These impacts have not yet been even close to fully identified because the necessary geotechnical studies have not been conducted to understand soil conditions, the necessary individual historic property data has not been surveyed to know important construction methods and details, and the construction methods have not been specified to be able to determine their adequacy and impact.</p>
	<p>5.3 Freeway Tunnel Alternative, p. 5-38</p>	<p>“Proposed tunnel excavation approach will utilize pressurized face TBMs that, as described previously in Section 5.2, are designed for tunnel excavation in densely urbanized areas and are designed to inherently lessen ground movements. If necessary, additional conditions can be employed to lessen or eliminate ground movement effects.”</p> <p>It is striking and deeply disconcerting that the FONAE offers even less specificity for the Freeway Tunnel than it does for the LRT Tunnel, even though the proposed Freeway Tunnel is three times as large as the LRT Tunnel and, if constructed, would be the largest</p>

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		<p>bored tunnel diameter project in the world. The LRT alternative offered the following minimum requirements regarding excavation-induced ground settlement (below and FONAE, p. 5.-27). Why is none of this addressed in Section 5.3 is it was for the LRT alternative in Section 5.2? The freeway tunnel analysis also should adopt these as a minimum standard for understanding and mitigating or preventing ground settlement:</p> <p>“For this project, the recommended maximum level settlement of 0.25 inch or maximum settlement trough slope greater than 0.039 inch/23.6 inch (1 millimeter [mm]/600 mm) is the limit for negligible or greater damage (Jacobs Associates/CH2M HILL 2014c:15, 2015). Ground settlement can be managed within tight tolerances that feasibly allow for tunnel excavation in proximity to existing buildings such as those in urban environments. Planning and investigation are necessary to determine the conditions and account for the various factors that cause settlement. Some of the key steps necessary to ascertain conditions before excavation can include, but are not limited to:</p> <ul style="list-style-type: none">• Research and map underlying soil, groundwater conditions, presence of any abandoned oil or gas wells along the proposed tunnel alignment;• Obtain coring samples from areas along the proposed alignment to ascertain soil profile type and changes at various depth;• Position tunnel alignment in areas with uniform ground conditions as practicable;• Specify and select appropriate excavation and ground support methods;• When excavating, ensure the ground at the cutting face is properly conditioned and maintain positive face pressure at all times (in other words, pressurize the soil at the cutting face to prevent loose soil from settling into gaps or voids caused by excavation);• As the excavation proceeds through the ground, uniformly inject a grout/slurry into the narrow areas between the machine and the excavated soil above to limit ground movement; and• Hire qualified contractors and machine operators.” <p>Comment: The FONAE admits these steps are necessary to “ascertain conditions before excavation.” To what extent has research, coring, and specifications been done to fully understand the specific soil and building conditions, and the potential effects associated with those? According to the May 11, 2015, technical memo by Jacobs Associates prepared for CH2MHill, p. 3, “the following measures would be employed as part of the design and construction methodology to aid in building protection and to reduce ground movements:</p>
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		<ul style="list-style-type: none"> • A comprehensive geotechnical investigation would be performed to better understand the geology along the entire alignment so proper construction methodologies and protection measures can be chosen for the historic properties. • Contract documents would be prepared to ensure that the bored tunnels for both the Freeway and LRT Tunnel Alternatives are excavated with pressurized-face tunnel boring machines (TBMs), which provide immediate support of the ground. These systems allow excavated volumes to be controlled, reducing the risk of ground losses from over-excavation, which could result in settlement at the ground surface. • Requirements would be specified in the bidding documents for mandating the selection of a pre-qualified contractor with experience mining with pressurized-face TBMs in similar ground conditions. • Pre-construction surveys of buildings located above and adjacent to proposed tunnel alignments would be performed prior to excavation to gain better understanding of their condition; it is common industry practice to conduct pre-construction inspections of existing buildings/structures. The pre-construction survey would also be used to establish a baseline condition for the purposes of construction monitoring. • During TBM excavation, machine performance and ground loss would be monitored in real time to ensure that specified, acceptable ground control is being achieved prior to passing below structures.” <p>The consistent use of the term “would be” in the language of Jacobs Associates May 11, 2015, memo suggests that none of these steps have yet been taken to identify or understand the specific geotechnical conditions, historic property conditions, or construction methods for the freeway tunnel alternative that have a high likelihood of negatively affecting historic properties in the path of the freeway tunnel(s). Deferring this analysis is not appropriate as it does not allow consulting parties to understand the potential negative effects and the necessary mitigation or avoidance measures. This is particularly important given that the Jacobs Associates preliminary two-stage analysis of only 18 of the “approximately 150 identified” resources along the bored tunnel route shows that 16 of those assessed for the purposes of that technical memo will experience ground-induced settlement effects ranging from “very slight” to “moderate-severe.” (Jacobs, 3)</p>
	<p>5.3 Freeway Tunnel Alternative, p. 5-38</p>	<p>“Based on these factors, a finding of no detectable risk for an adverse effect (i.e., damage) to 37 historic properties in the Freeway Tunnel APE is applicable, and individual analyses were not prepared (Kurze 2011; Parsons Brinckerhoff 2011; CH2M HILL 2014d; Choueiry et al. 2007).”</p>

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		<ul style="list-style-type: none"> • We unequivocally disagree with these conclusions, which appear to be largely or entirely unsubstantiated with actual facts, detailed geotechnical studies, building surveys to gather detailed construction data on historic properties, or the development of detailed specification for tunnel construction method and building protection measures. • Even more problematic is the fact that <i>none of the 37 properties were actually assessed in the preparation of the FONAE</i>, which is negligent and unacceptable. • The conclusion of no adverse effect is blatantly contradicted by the Jacobs Associates May 2015 technical memo on excavation-induced ground settlement effects. The majority of the historic properties assessed for that memo show clear indications of experiencing slight to severe settlement impacts for the small handful of properties (18) that were evaluated. And these 18 are only a small sampling of the 150 historic properties in the APE identified by consultant LSA. • Nowhere in the FONAE is there any consideration of the potential negative effects that would be associated with a TBM malfunction or breakdown, which must be treated as a real possibility, in light of the multi-year delays of the Alaskan Way Viaduct replacement tunnel in Seattle. Given the location of the tunnel route and the high concentration of historic properties and districts along that route, a TBM rescue and repair on the scale of the Seattle project would have devastating results on the overlying properties. The potential for a breakdown in various locations along the route must be assessed as part of the finding of effect, along with a range of building protection measure that could prevent or mitigate damage to historic properties.
	<p>Table 5.4 Freeway Tunnel Alternative</p>	<ul style="list-style-type: none"> • The table calculates distance of the tunnel below the historic properties to the tunnel centerline rather than the tunnel crown, which is deceptive given that there is a 30 ft disparity between the two and the crown of the tunnel (and the excavation and operational effects) would be located 30 ft closer to the properties. • The effects column completely ignores effects from ground settlement, which has been shown to be a real and potentially significant threat to historic properties. Settlement effects are only listed under the “notes” column, as if the document is attempting to deny or hide the true effects of settlement on historic properties. All excavation-induced ground settlement effects should be identified and listed in the “effects” column. • The 2015 technical memo by Jacobs Associates analyzed the bored tunnels of the Freeway Tunnel Alternative (dual-bore variation) 18 buildings (of approximately 150 identified) along the LRT Alternative. The results of their two-stage analysis

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		<p>indicated that “11 buildings fall into the “negligible” damage level; 1 building “very slight;” 1 building “slight;” 2 buildings “moderate;” and 3 buildings “moderate-severe.”</p> <ul style="list-style-type: none"> • Because some buildings analyzed represent groups or buildings within historic districts, the predicted damage classification applies to the other structures in their respective groups. The “very slight” classification represents 8 buildings; the “slight” classification represents 3 buildings; the “moderate” classification represents 2 buildings; and the “moderate- severe” classification represents 3 buildings.” (Jacobs p. 3) • “Severe” damage is defined by Jacobs as “Extensive repair involving removal and replacement of sections of walls, especially over doors and windows required. Windows and door frames distorted, floor slopes noticeably. Walls lean or bulge noticeably, some loss of bearing in beams. Utility service disrupted.” (Jacobs, p 9)
	<p>5.5.3.1 LRT Alternative Effects, p. 5-200-5-201</p>	<p>Ground Movement – This section is repeatedly referenced throughout the LRT and Freeway Tunnel Alternative Effects Sections in the Criteria for Adverse Effect to explain away potential excavation-induced ground settlement effects by referring to a series of “proactive actions to avoid effects due to settlement.” The examples of “reducing effects” they reference include:</p> <ul style="list-style-type: none"> • Select prequalified contractors who are experienced in excavating in urban areas. • Utilize the appropriate excavation equipment. • Complete pre-construction surveys to determine structural conditions and inform a conditions baseline for appropriate level of monitoring before, during, and after construction. It is a common industry practice to conduct pre-construction inspections regardless of the status of cultural resources. • Develop a monitoring plan to ensure that appropriate measures are described, roles assigned, and procedures are in place to address movements that exceed warning thresholds. The plan will use real-time monitoring of building and ground movements using appropriate geotechnical equipment to accurately measure movement. If warning thresholds are expected to exceed guidelines, the following measures are typically used to further protect the built environment: <ul style="list-style-type: none"> ○ Ground improvement via permeation or compaction grouting to firm up soils at the TBM cutting face; ○ Compensation grouting that uses a stiff grout mix injected above the tunnel and below a building to compensate for ground settlement; ○ Structural underpinning; ○ Installation of protective slurry or soil-cement walls (these walls would serve to limit lateral movement from the excavation area, such as at LRT Stations);

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		<ul style="list-style-type: none"> ○ Post-construction surveys to identify the conditions of historic properties after construction; ○ Establishment of a long-term monitoring period following construction to ensure that historic properties are not subjected to gradual settlement. <p>This approach to mitigation is problematic on a number of grounds:</p> <ul style="list-style-type: none"> ● All of these measures, without exception, are intended to occur after a project has been selected and prior to the start of construction. They are designed to monitor and address settlement while construction is happening. None of these measures is intended to help assess the potential for negative settlement effects prior to the selection of an alternative by establishing clear criteria and thresholds for settlement impacts. ● These measures do not include any actions that could be useful in assessing the degree of damage that could be inflicted by the process of tunnel boring, such as detailed geotechnical studies that would reveal soil specific conditions along the tunnel route(s), or survey and analysis of the construction material and methods of individual historic properties that could be potentially affected by vibration or ground settlement. ● The deferral of assessing and addressing mitigation until the construction phase is an invalid mitigation. There is no reason not to establish acceptable vibration levels at this time. To be valid, such a mitigation measure must include: a specific action to be accomplished, performance standards to be met, and methods to meet the standards presented. For the mitigation measure to result in no adverse effect, the feasibility of meeting the performance standards in all anticipated conditions must be demonstrated. Otherwise the potential for an adverse effect must be acknowledged.
	5.7 (no page because is absent)	Page 1-3 of the FONAE states that “[t]he remaining 13 historic properties are analyzed in Section 5.7 for effects due to excavation depths of 100 ft or less and a corresponding risk of excavation-induced ground settlement or for effects from construction and operational effects at the surface.” But there is no Section 5.7 in the FONAE. This document has completely neglected to provide any information on or analysis of a collection of historic properties that are the most likely to be affected by vibration and ground settlement due to the shallow depth of tunneling activities.
		The FONAE does not clearly state the thresholds used to determine the significance of the noise and vibration impacts. The document must clearly state the thresholds used to determine the significance of impacts to determine if these thresholds are adequately assessed and to support the finding of no adverse effect. The document is confusing regarding the threshold it is applying to analyze ground-borne noise and vibration impacts from construction. Both Caltrans

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		and FTA provide guidance on acceptable levels of vibration that should be used to establish vibration and groundborne noise significance thresholds, yet the document makes no attempt to describe these acceptable vibration levels.
Section 5		Norton Simon Museum - There is no explanation of the improvements that are proposed in the vicinity of this building, other than signage. There are other historic resources near this building and the improvement areas shown on p. 2-61 that could be affected by the project, depending on the extent of improvements proposed, including the West Colorado Street Historic Auto Row Historic District (NR-eligible, but not listed) and the John S. Hartwell House at 423 Lincoln Avenue (NR-listed).
	5.5.4.13, p. 5-345	<p>Sequoyah School - application of the Criteria of Adverse Effect “Improvements proposed under the Freeway Tunnel Alternative would occur within the historic property boundary as depicted on Figures 5-61 and 5-62. The proposed tunnel excavations would be 78 ft underneath this historic property and may generate vibration and excavation-induced ground settlement effects. “</p> <ul style="list-style-type: none"> • This is misleading. Throughout the FONAE, measurements of tunnel distance below properties have been measured to the tunnel centerline. In this case, the top of the tunnel would be 48 feet below the Sequoyah structures. Does this result in greater potential effects from noise, vibration and settlement during and post-construction? • This analysis should consider impacts to all the historic structures on the Sequoyah Campus, not just the Religious Education building. Three properties are considered individually eligible for the National Register (Children’s Chapel and Nursery School), and the Sequoyah School is a contributing property to the Markham Place District (pp. 4-27 to 4-28). Yet none of these properties is mentioned as potentially affected. All of these properties must be assessed for effects from noise, vibration, air quality and other impacts associated with both tunnel construction and operations.
		<p>“According to a 2015 vibration impact analysis, excavation vibration levels at the Religious Education Building are predicted to be 0.0505 in/sec PPV, which is substantially below the threshold for potential cosmetic damage to older buildings (Wilson, Ihrig & Associates 2015). Therefore, vibrations from excavating the tunnel(s) would not result in an adverse effect to the Religious Education Building.” This conclusion is flawed.</p> <ul style="list-style-type: none"> • The report comments on the impacts of vibration in “rock like” soils, but does not appear to consider the impact of tunneling in alluvium soil, which is the soil type the report claims is present at the portal entrances. What is the impact from tunnel boring and months or years of constant construction activity on the Sequoyah properties that are located less than 50 feet above the

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		<p>tunnel crown in alluvium soils?</p> <ul style="list-style-type: none"> The report considers the potential effects on occupants “temporary.” While this may be a defensible assumption for other historic properties, it is not for the Sequoyah properties and other historic properties that are located on top of or near the north portal. Sequoyah in particular will be exposed to many months or years of daily construction activity, which has the potential to have significant noise and vibration impacts on the properties, their occupants, and their multiple public uses. None of this has been addressed in either the Wilson assessment or the FONAE, which represents a major oversight.
		<p>This document completely fails to acknowledge any impacts to the four Sequoyah School historic properties that will result from their location immediately adjacent to and on top of what will be a primary staging area for either single or dual bore tunnel construction. This will place the Sequoyah properties in very close proximity to years of heavy construction activity and the attendant increases in truck and construction machinery noise, diesel particulates levels, and vibration, all of which could have significant impacts on both the structures and the various public functions of the Sequoyah properties, which are a sensitive receptor. Sequoyah has outdoor play areas, outdoor performing arts facilities, and operations (plays, band concerts, ceremonies, etc).</p>
		<p>A supplemental report prepared in 2015 analyzed the potential for excavation-induced ground settlement in the area of historic properties in the APE. Using a two-stage effects analysis for a worst-case scenario, the report concluded that the Religious Education Building is predicted to sustain “moderate-severe” damage (Jacobs Associates/CH2M HILL 2015:3,8).</p>
Attachment D	p. 5-346	<p>“The report concluded that changes in visual and associated audible effects from a decrease in traffic delay times would result under the Freeway Tunnel Alternative; however, the Religious Education Building does not derive its National Register significance from being located in a quiet, rural setting. Changes in traffic that would result from the Freeway Tunnel Alternative would not introduce a new or discordant type of auditory aspect that was not otherwise present historically.”</p> <ul style="list-style-type: none"> This statement indicates that the Sequoyah properties, which are sensitive receptors, will experience increased traffic noise and vibration as a result of increased traffic volume and lower traffic travel times. But the report then dismisses those impacts as negligible because the NR nomination does not rely on the property being in a “quiet, rural setting.” The full range of potential environmental impacts on the historic properties must be assessed, including all impacts that will result from increases in vehicle traffic and the resulting noise, vibration, and air quality degradation.

Attachment A

**Comment Matrix on Draft Finding Of No Adverse Effect for SR 710 North Study, v. 1
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	<p>Draft Engineering Drawings</p>	<p>General comments –</p> <ul style="list-style-type: none"> • The information provided on the tunnel alternative design is extremely limited both in terms of quantity and quality of the information provided. • The engineering drawings provided only address a very small section of the tunnel construction at the end in Pasadena. The drawings only show the tunnel construction (both single and dual bore) in relationship to 5 historic properties in Pasadena. • The written descriptions of the project construction for the single and dual bore tunnel options are so minimal as to be essentially useless. If this represents the extent of the project design completed to date on the tunnel alternatives, this is wholly inadequate for the purposes of describing and evaluating this project for NHPA, NEPA or CEQA. • Drawings and details relating to the construction of the 5-story ventilation towers at either end of the tunnel(s) is a glaring omission. Due to their sheer scale, the ventilation towers will have adverse visual effects on the surrounding historic properties and historic districts. Detailed information on the precise number, location, size, materials, and construction of these towers must be provided and their impacts evaluated as a part of the Finding of Effect.
	<p>D.4, Sheets L-20 and P-8</p>	<p>Single Bore Tunnel and Markham Place District</p> <ul style="list-style-type: none"> • Sheet L-20 states that info is for Single Bore variation of the Freeway Tunnel Alternative within the Markham Place Historic District boundary, but description is for “[e]xcavation of two, approximately 60 ft diameter, 1,820 ft long tunnels underneath the district.” • “The excavated tunnel centerlines would be 121 ft below the southern boundary at Bellefontaine Street and gradually rise underneath the district to a depth of 78 ft at the northern district boundary line, which corresponds to the northern parcel line of APN 5713-037-902 at 535 South Pasadena Avenue (Sequoyah School/Neighborhood Church).” • The measurement to the tunnel centerline is misleading. With the diameter of tunnel at nearly 60 feet, this puts the top edge of the tunnel between 91 ft below the district and rising to a mere 48 ft below the Sequoyah structures. • Sequoyah School is described as “contain[ing] the former Parsonage Building, a contributing element to the district (Attachment A: Map 3A, Map Reference #373-CT-3A).” Sequoyah is a collection of 5 structures sited in a landscape. All elements of the site should be evaluated individually and as a district – Parsonage, Chapel, Nursery School, and Religious Education Building (one of the buildings is relatively new and would not be NR eligible yet).

Attachment A

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		<ul style="list-style-type: none"> • “Other improvements” described for Havendale Drive, South Saint John, Del Mar Blvd, California, and Palmetto Drive do not appear to be shown on Sheet L-20. The corresponding drawing should be provided.
	D.4, Sheet PL-2	<p>Drawing shows a 2-story “bell tower” or clock tower with something called “sky beam” on top of the tower. This structure is sited atop the tunnel entrance immediately adjacent to Sequoyah School and the Markham District.</p> <ul style="list-style-type: none"> • Much more detailed information is needed on this structure to determine if it appropriate for this location. • What is a “sky beam”? Is this some kind of light feature?
	D.4, Sheet L.25	<p>The Freeway Tunnel Alternative proposes to install a sound wall, approximately 84 ft long and 8 ft high along the northernmost corner of 166 West Colorado Boulevard (APN 5713-008-035) in the Old Pasadena Historic District. While the parcel on which the wall would be constructed contains a commercial building built in 1980 that is not a contributing element to the district, there has been no consideration of the visual impact of this noise wall on the District. As Pasadena Heritage noted in its July 7 comment letter, Pasadena has identified corridors in the city that serve as gateways, and the intersection of Colorado Blvd and Pasadena Avenue is one of these important gateways into the Old Pasadena Historic District. It is also an important segment of the nationally significant annual Tournament of Roses Parade, which draws a crowd of nearly 700,000 visitors to the district every year and is seen by over 75 million viewers worldwide. (Pasadena Tournament of Roses, “2014 Rose Parade Statistics.”) Construction of a sound wall 84 feet long and 8 feet high as part of the dual bore tunnel alternative would have an adverse impact on the setting and feeling of this sensitive and visible location.</p>
	4.1.6.14 Arroyo Seco Parkway Historic District	<p>Today there are 60 components (grade separations, tunnels, bridges, overcrossings, pedestrian overpasses, pedestrian and equestrian undercrossings, the roadway itself, the Four Level Interchange, Arroyo Channel, and two buildings at the Arroyo Seco Maintenance Station), 45 of which are considered contributors to the Arroyo Seco Parkway Historic District. However, the Fair Oaks Avenue overcrossing and a small segment of SR 110 between the Fair Oaks Avenue Overcrossing and the District’s northern boundary at East Glenarm Street are the only resources associated with this District that are located within the APE.</p>