

Table S-1: Summary of Impacts and Avoidance, Minimization, and/or Mitigation Measures

Affected Resource	Potential Impact: No Build Alternative	Potential Impact: Build Alternative	Avoidance, Minimization, and/or Mitigation Measures
<b>Existing and Future Land Use</b>	None.	None.	None.
<b>Consistency with State, Regional and Local Plans and Programs</b>	The No Build Alternative would be inconsistent with <i>Plan Bay Area 2040</i> because it would not contribute to the Regional Express Lanes Network. It would also be inconsistent with the 2014 Alameda County Transportation Expenditure Plan, San Ramon General Plan, and Pleasanton General Plan because it would not reduce traffic congestion.	The Build Alternative would be consistent with most applicable plans and policies. It would be somewhat consistent with the San Ramon General Plan because, although it would support a reduction in traffic congestion, it would not reduce vehicle miles traveled. The Build Alternative would also be somewhat consistent with the State Scenic Highway Program and Landscaped Freeway Program because it would remove vegetation along the freeway and add retaining walls and overhead signage.	<b>VIS-1, VIS-2, VIS-3, VIS-4</b> (see Visual/Aesthetics below) <b>BIO-4</b> (see Natural Communities below)
<b>Parks and Recreation Facilities</b>	None.	The Build Alternative would not acquire land from any publicly owned park or recreational facility. Construction activities would not require temporary construction easements from, or the closure, alteration, or other use of, any park facility. Recreationists on the Centennial Trail could be exposed to short-term, temporary noise and views of project construction, but construction is not expected to affect trail use.	None.
<b>Growth</b>	None.	The Build Alternative would increase the capacity of I-680 in the project area but would not change overall land use or provide access to previously undeveloped land. It would accommodate planned growth but would not affect land use decisions in a way that would encourage growth beyond reasonably foreseeable levels.	None.

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<b>Environmental Justice</b>	None.	<p>The Build Alternative would include work in two block groups that meet the criteria of an environmental justice community of concern. Project construction would not disproportionately affect these communities.</p> <p>Use of the HOV/express lanes is optional, and the project would maintain the existing number of general-purpose lanes. Express lane tolls would not cause a disproportionately high and adverse effect on environmental justice communities of concern.</p>	None.
<b>Utilities/Emergency Services</b>	None.	<p>The Build Alternative would require relocation of overhead electrical lines, underground gas and electrical lines, fiber optic conduit, and cable lines, which may result in short-term, temporary interruptions of service. It would not result in long-term effects on utilities or emergency services.</p>	None.
<b>Traffic and Transportation</b>	<p>With the No Build Alternative, long segments of the project area would operate at level of service (LOS) F during the AM and PM peak periods in 2025 and 2045, particularly in the southbound direction.</p> <p>In 2025 and 2045, the No Build Alternative would result in longer peak period vehicle hours of delay, slightly longer travel times, lower travel speeds, and longer individual delays than the Build Alternative.</p>	<p>The majority of I-680 in the project area would operate at LOS E or better during the AM and PM peak periods in 2025 and 2045. Considerably fewer areas would operate at LOS F than with the No Build Alternative. In 2025 and 2045, the Build Alternative would reduce vehicle hours of delay, travel times, travel speeds, and individual delays compared to No Build.</p> <p>Vehicle miles traveled would be 1 percent higher in 2025 and 3-5 percent higher in 2045 than with No Build, as the Build Alternative would reduce diversion to parallel arterials and the SR 84 corridor.</p> <p>Construction-related closures and detours could result in temporary, short-term disruption to motorists.</p>	None.

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<b>Visual/ Aesthetics</b>	None.	The Build Alternative would result in visual impacts ranging from moderate to moderate-high for highway users and highway neighbors due to new overhead signs and lighting, vegetation removal, the reconstruction of sound walls, and the addition of retaining walls.	<p><b>BIO-4</b> (see Natural Communities below)</p> <p><b>VIS-1.</b> Minimize the removal of groundcover, shrubs and mature trees to the maximum extent possible, utilizing open areas for contractor staging/storage areas. Protect existing vegetation outside the clearing and grubbing limits from the contractor's operations, equipment and materials storage. Place high visibility temporary fencing around vegetation to be protected before roadway work begins. Provide truck watering of vegetation when automated irrigation is interrupted by construction.</p> <p><b>VIS-2.</b> Replace removed shrubs and trees at a minimum 1:1 replacement ratio. Fund required planting through the parent roadway contract to be completed as a separate contract within 2 years of roadway completion. Plant vines along sound walls where feasible.</p> <p><b>VIS-3.</b> All disturbed areas shall receive hydroseeded treatment of erosion control grasses, and if appropriate, locally native grasses.</p> <p><b>VIS-4.</b> The design and color treatment for the new project features shall be similar to the existing adjacent structures and poles, so to be visually compatible and consistent with the existing installations along the corridor.</p> <p><i>See Section 2.1.8.4 for additional measures.</i></p>

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<b>Cultural Resources</b>	None.	One previously recorded resource has been identified in the APE. This area will be designated as an Environmentally Sensitive Area (ESA) and excluded from project activities.	<p><b>CUL-1.</b> If cultural materials are discovered during construction, all earth-moving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find.</p> <p><b>CUL-2.</b> If human remains are discovered, California Health and Safety Code Section 7050.5 states that further disturbances and activities shall stop in any area or nearby area suspected to overlie remains, the Caltrans Branch Chief of Archaeology shall be notified, and then the County Coroner contacted. If the remains are thought by the coroner to be Native American, the coroner will notify the Native American Heritage Commission (NAHC), who, pursuant to California Public Resources Code (PRC) Section 5097.98, will then notify the Most Likely Descendent (MLD). At this time, the person who discovered the remains will contact the Branch Chief of Cultural Resources, Archaeology so that they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable.</p> <p><b>CUL-3.</b> To ensure avoidance of the previously determined eligible site, the site will be designated as an ESA for the duration of the project in accordance with the requirements set forth in the Environmentally Sensitive Area Action Plan. The requirements include delineating the ESA on all project plans, conducting a preconstruction meeting with construction personnel to ensure that the ESA is properly understood, and coordinating/monitoring ESA installation by the contractor. In addition, an archaeologist will conduct field reviews of the ESA to ensure that it remains intact and is not compromised.</p>
<b>Hydrology and Floodplain</b>	None.	The Build Alternative would add less than 5 acres of impervious area to floodplains within the project limits, and no longitudinal encroachment would occur.	None.

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<b>Water Quality and Storm Water Runoff</b>	None.	The Build Alternative would result in 46.34 acres of new and reworked impervious area with the potential to increase pollutant concentrations; increase velocity, volume, and temperature of downstream flows; result in hydromodification; and reduce groundwater recharge.	<p><b>WQ-1.</b> Implement temporary erosion control and water quality measures as required by the Construction General Permit.</p> <p><b>WQ-2.</b> During the PS&amp;E phase, the PDT will consider biofiltration swales/strips, detention devices, and gross solid removal devices to promote infiltration and dispersion of runoff.</p> <p><b>WQ-3.</b> During the PS&amp;E phase, design drainage that includes the use of culvert end devices such as flared end sections, tees, and rock slope protection to dissipate and disperse the energy of runoff as it flows out of the culverts onto open land, existing ditches, or treatment BMPs.</p> <p><b>WQ-4.</b> During the PS&amp;E phase, design hydromodification management measures sized per the Alameda Countywide Clean Water Program's C.3 Technical Guidance (2016).</p>
<b>Paleontology</b>	None.	Construction of the Build Alternative would encounter geologic units that are known to contain paleontological resources.	<p><b>PAL-1.</b> Implementation of the following measures would avoid potential impacts to sensitive paleontological resources, if present. Update and finalize the Paleontological Mitigation Plan once project design is nearly complete. The final plan will be implemented during construction.</p> <p>Include a specification in the construction contract stating that paleontological monitoring will occur in accordance with the Paleontological Mitigation Plan.</p>
<b>Hazardous Waste/ Materials</b>	None.	Construction and maintenance of the Build Alternative would involve the routine transport, use, and disposal of hazardous materials (e.g., fuels, paints, and lubricants), and could result in the potential disturbance of hazardous materials in soil, groundwater, and building materials. Lead and pesticide contamination in soil, undocumented contamination from rail and pipeline operations, contaminated groundwater, and hazardous building materials containing lead, asbestos, and hydrocarbons and metals could be encountered during construction.	<p><b>HAZ-1.</b> During the final project design phase, a Preliminary Site Investigation (PSI) will be performed in accordance with current Caltrans guidance to investigate hazardous materials concerns related to soil, groundwater, and building materials within the project limits and include required measures for managing hazardous materials encountered during project construction to protect human health and the environment. These measures shall be incorporated in the final project design.</p>
<b>Air Quality</b>	None.	Construction of the Build Alternative would generate emissions of criteria air pollutants and precursors that could potentially affect air quality.	None.

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<p><b>Noise and Vibration</b></p>	<p>Projected noise levels for the 2045 design year are expected to increase 0 to 1 dBA compared to the existing condition. Several locations would approach or exceed the Noise Abatement Criteria (NAC).</p>	<p>The Build Alternative is anticipated to increase future (2045) noise levels by 0 to 3 dBA over existing conditions and by 0 to 2 dBA over No Build. Projected noise levels for the 2045 design year are expected to approach or exceed the NAC at several locations. Abatement measures were evaluated because a traffic noise impact would occur. Caltrans intends to incorporate noise abatement in the form of Barriers 11, 13–Relocated, and 14A–Relocated.</p> <p>Construction noise for all receptors would be short-term and intermittent, except in the area between Amador Valley Boulevard and Alcosta Boulevard, where this Alternative would remove and reconstruct existing sound walls. Noise levels would increase by up to 6 dBA while the sound walls are absent.</p> <p>If conducted at night, pile driving would generate substantially higher hourly noise levels than existing nighttime levels.</p> <p>In addition, construction has the potential to temporarily increase noise levels at Dublin Elementary School.</p> <p>Vibratory roller use could affect vibration-sensitive equipment at nearby technology buildings in the business park on Arlington Drive.</p>	<p><b>NOI-1.</b> Standard Caltrans measures that are used for all projects include that construction noise shall not exceed a maximum sound level of 86 dBA at 50 feet from job site activities between the hours of 9:00 PM to 6:00 AM. Measures listed in Section 2.2.6.4 will also be implemented to minimize or reduce the potential for noise impacts from project construction.</p>

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<b>Natural Communities</b>	None.	<p>The Build Alternative would result in temporary or permanent impacts to grasslands, forest and woodland, scrubland, wetland, and riverine communities.</p> <p>The project would have direct and indirect permanent impacts to trees through the removal of woodland habitat due to ground disturbance during construction or heavy pruning.</p> <p>The Build Alternative would not affect wildlife movement between the west and east sides of I-680.</p> <p>No impacts to fish passage would occur.</p>	<p><b>BIO-1.</b> Several measures, which are detailed in Section 2.3.1.3, would be implemented as part of construction to minimize and/or avoid impacts to sensitive vegetation communities, species, and habitat as well as to common biological resources.</p> <p><b>BIO-2.</b> Compensatory mitigation for temporary impacts to vegetation communities or Natural Communities of Concern under CEQA, including valley oak woodland, will be provided through the restoration of habitat by planting native species that are typical to that habitat. If enough space is not available for on-site mitigation, off-site like-habitat providing these species habitat requirements will be preserved through the purchase of mitigation bank credits.</p> <p><b>BIO-3.</b> Post-construction measures will include revegetation of temporarily impacted areas by the planting of trees where appropriate, selecting sites based on existing topography, hydrology, and surrounding habitat. Additional details are provided in Section 2.3.1.3.</p> <p><b>BIO-4.</b> Tree replanting and mitigation ratios will be determined in consultation with CDFW. The need for some off-site tree planting may be required. Replanted areas will be monitored for success for up to 10 years. Additional details are provided in Section 2.3.1.3.</p> <p><b>BIO-5.</b> Culverts in serviceable condition would be extended to address the proposed widening and to maintain existing drainage patterns, while undersized culverts would be replaced with larger sizes (i.e., any culvert under 16 inches in diameter will be enlarged to at least 16 inches, and to over 24 inches where space allows). This will maintain connectivity from the east and west sides of I-680.</p>

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<b>Wetlands and Other Waters of the United States</b>	None.	<p>The Build Alternative has the potential to temporarily impact less than 0.01 acre of potentially jurisdictional other waters of the United States.</p> <p>The project has the potential to permanently impact 0.04 acre and temporarily impact 0.09 acre of potentially jurisdictional culverted waters of the United States as a result of culvert upgrades and repairs.</p> <p>Project activities have the potential to result in a total of 215 linear feet of permanent and 6,272 linear feet of temporary impacts to nonjurisdictional stormwater features.</p>	<p><b>BIO-6.</b> Standard Caltrans measures that are used for all projects include that a storm water pollution prevention plan (SWPPP) and erosion control BMPs will be developed and implemented to minimize any wind or water-related material discharges, in compliance with the requirements of the Regional Water Quality Control Board (RWQCB) as well as the 2018 Caltrans Standard Specifications, Section 13. The SWPPP must also comply with the goals and restrictions identified in the RWQCB’s Basin Plan. Any additional measures included in the Water Quality Certification will be implemented. The contractor will also comply with the standards/objectives noted in Section 2.3.2.4.</p> <p><b>BIO-7.</b> Under Federal and State guidance and rules, adverse, unavoidable impacts to wetlands and other aquatic resources require compensatory mitigation to offset the loss of the functions and values of the feature. Temporary impacts will be mitigated at a minimum 1:1 ratio. A 3:1 ratio is standard for permanent impacts to wetlands and other aquatic resources based on a project’s risk of failure to compensate for impacts to wetlands (mitigation project), and the temporal loss, or reduction of functions, during the time it takes a mitigation project to achieve the targeted level of performance for all of its functions. Impacted culverts will be replaced in kind on site. No other mitigation is required.</p>
<b>Plant Species</b>	None.	<p>Congdon’s tarplant, stinkbells, Diablo helianthella, and bristly leptosiphon have a low potential to occur. The project would have permanent impacts to 0.13 acre of California annual grassland, 7.01 acres of ruderal grassland, and 0.45 acre of woodland that could provide potential habitat for the species, if present.</p>	<p><b>BIO-1 and BIO-6</b> (see above)</p> <p><b>BIO-8.</b> Before the commencement of construction activities, a qualified biologist shall conduct appropriately timed surveys for the listed plant species. To correspond with these species’ blooming periods, the surveys shall include botanical inventories between March and June (to coincide with the blooming period of stinkbells, Diablo helianthella, and bristly leptosiphon) and May through October (the blooming period of Congdon’s tarplant). If listed plant species are discovered within the construction area, protective measures will be established as described in Section 2.3.3.4.</p>

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<p><b>Animal Species</b></p>	<p>None.</p>	<p>The Build Alternative has the potential to affect habitat for western pond turtle, western burrowing owl, San Francisco dusky-footed woodrat, American badger, nesting raptors, migratory birds, and special-status and “high priority” bats through the disturbance of nests, foraging habitat, or roosting sites.</p> <p>Nighttime work is expected to temporarily impact diurnal wildlife activities.</p>	<p><b>BIO-1</b> and <b>BIO-6</b> (see above)</p> <p><i>Western Pond Turtles: BIO-9.</i> Before any construction activities begin, an approved biologist(s) shall conduct a training session for all construction personnel. In addition, an approved biologist(s) shall survey the work site no more than 48 hours before the onset of activities for signs of western pond turtles and/or western pond turtle nesting activity or nest depredation. Section 2.3.4.4 provides additional details.</p> <p><i>Nesting Raptors and Migratory Birds: BIO-1</i> (see above) and Migratory Bird Special Contract Provisions will be adhered to.</p> <p><b>BIO-10.</b> Preconstruction surveys for raptors will be conducted within 500 feet of the construction area, and surveys for other special-status birds and appropriate nesting habitat will be conducted within 50 feet of the construction area, no more than three days prior to ground disturbing activities. Section 2.3.4.4 provides additional details.</p> <p><i>Western Burrowing Owl: BIO-1</i> (see above) and Migratory Bird Special Contract Provisions will be adhered to.</p> <p><b>BIO-11.</b> Appropriate avoidance, minimization, or protection measures shall be determined in consultation with the CDFW in the event an active burrow is located in an area subject to disturbance, or within the typical setback (i.e., occupied burrows or nests within 150 feet of an area subject to disturbance during the nonbreeding season, or within 250 feet of an area subject to disturbance during the breeding season).</p> <p><i>San Francisco Dusky-Footed Woodrat: BIO-12.</i> Focused species surveys will be conducted to determine the presence of San Francisco Dusky-Footed Woodrat in the project area, prior to the start of construction. A woodrat trapping and relocation plan will be developed and implemented prior to project construction. Specific methods for trapping are described in Section 2.3.4.4.</p>

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			<p><i>American Badger: BIO-13.</i> Preconstruction surveys will be conducted within the project footprint in areas of suitable habitat to identify dens or signs of American badger. If an American badger is detected on site at any time during these surveys, CDFW will be contacted to discuss ways to proceed with the project and to avoid take to the maximum extent practicable.</p> <p><i>Special-Status and "High Priority" Bats: BIO-14.</i> Focused preconstruction surveys will be conducted for all areas that provide suitable bat roosting habitat. Sensitive habitat areas and roost sites will be avoided to the maximum extent practicable as described in Section 2.3.4.4.</p> <p><i>General Measure: BIO-15.</i> Potential light, glare, and construction noise and vibration impacts on wildlife will be addressed through use of lighting in areas only where necessary for safety and signage; downcast lighting to minimize illumination of natural areas, particularly in riparian areas and adjacent to drainages; and limiting operation of vibration-causing equipment to daylight hours when working in areas adjacent to open space. A biological monitor shall be present to observe activities of wildlife during nighttime construction adjacent to open spaces.</p>

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<b>Threatened and Endangered Species</b>	None.	The Build Alternative may affect and is likely to adversely affect California tiger salamander, California red-legged frog, and Alameda whipsnake.	<p><b>BIO-1</b> and <b>BIO-6</b> (see above)</p> <p><i>California Tiger Salamander: BIO-16.</i> Work will occur during the dry season, where feasible. Pre-construction surveys will occur near suitable habitat. An approved biologist will clear the site of California tiger salamander 24 hours prior to ground-disturbing activities, and will be present during construction activities. Excavated trenches more than 1 foot deep with walls steeper than 30 degrees shall be covered or have an escape ramp and trenches will be inspected prior to filling. An erosion and sediment control plan will be implemented. If individuals are observed, the steps outlined in Section 2.3.5.4 will be followed.</p> <p><b>BIO-17.</b> On-site mitigation will include restoration of all temporarily impacted areas. Off-site mitigation under the California Endangered Species Act (CESA) will include purchase of habitat credits at a 3:1 ratio from an approved mitigation bank.</p> <p><i>California Red-Legged Frog: BIO-18.</i> Pre-Construction surveys will occur near suitable refuge habitats. Potentially occupied refugia will be fenced and avoided for the duration of activity at that location.</p> <p>The avoidance and minimization measures listed to avoid impacts to California tiger salamander and California red-legged frog are applicable to the Alameda whipsnake.</p>
<b>Invasive Species</b>	None.	Project construction activities have the potential to inadvertently spread noxious weed species.	<b>BIO-19.</b> The landscaping and erosion control included in the project will not use species listed as invasive. In areas of particular sensitivity, extra precautions will be taken if invasive species are found in or next to the construction areas. These include the inspection and cleaning of construction equipment and eradication strategies to be implemented should an invasion occur.
<b>Cumulative Impacts</b>	None.	<p>The Build Alternative would contribute incrementally to cumulative visual/aesthetic impacts. The proposed measures and adherence to Caltrans standard design requirements would reduce impacts. The net impact would not be cumulatively considerable.</p> <p>Impacts to oak woodlands and threatened and endangered species would be minimal.</p> <p>No cumulative effects are anticipated for the remaining resource areas.</p>	<p><i>Visual/Aesthetic: VIS-1, VIS-2, VIS-3, VIS-4</i> (see Visual/Aesthetics); <b>BIO-4</b> (see Natural Communities)</p> <p><i>Oak Woodlands: BIO-1, BIO-2, BIO-3, BIO-4</i> (see Natural Communities)</p> <p><i>Threatened and Endangered Species: BIO-1</i> (see Natural Communities), <b>BIO-6</b> (see Wetlands and Other Waters of the United States), <b>BIO-16, BIO-17, BIO-18</b> (see Threatened and Endangered Species)</p>

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<b>Wildfire</b>	None.	The Build Alternative would not impair implementation of an emergency response or emergency evacuation plan, exacerbate wildfire risks or expose project occupants to pollutants from a wildfire or the uncontrolled spread of a wildfire, increase wildland fire risk through installation or maintenance of associated infrastructure, or result in downslope or downstream flooding or landslides as a result of runoff, post-fire slope instability, or drainage changes.	<b>WQ-1, WQ-2, WQ-3, WQ-4</b> (see Water Quality and Storm Water Runoff)
<b>Climate Change</b>	None.	<p>The daily carbon dioxide emissions estimated for the Build Alternative would be lower in the opening year (2025), horizon year (2040), and design year (2045) compared to the existing year (2018). The estimated daily carbon dioxide emissions for the Build Alternative during the opening year, horizon year, and design year scenarios would be slightly higher (up to 0.3 percent) than the emissions for the No Build Alternative.</p> <p>Project construction would result in a temporary increase in greenhouse gas (GHG) emissions that would be offset by the long-term improvement in operational greenhouse gas emissions.</p> <p>The project area is not in area subject to sea-level rise. The Build Alternative is not anticipated to exacerbate the effects of climate change in terms of precipitation depth or wildfire.</p>	The proposed HOV/express lanes would encourage and support ridesharing, carpooling, and transit use, to reduce vehicle trips and their associated GHG emissions. In addition, the project would limit GHG emissions through the use of intelligent transportation system features for traffic management, Caltrans Standard Specifications requirements for construction contractors to comply with air pollution control measures, implementation of a Transportation Management Plan during construction to minimize traffic delays, and use of energy-efficient LED lighting fixtures.