NEWELL ROAD BRIDGE REPLACEMENT PROJECT

VISUAL IMPACT ASSESSMENT

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California Department of Transportation

District 4, Santa Clara County, California and City of Palo Alto BRLS 5100(017)

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Statement of Compliance: Produced in compliance with National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) requirements, as appropriate, to meet the level of analysis and documentation that has been determined necessary for this project.

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Acronyms and Abbreviations

| ADA | Americans with Disabilities Act |
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| Caltrans | California Department of Transportation |
| CEQA | California Environmental Quality Act |
| cfs | cubic feet per second |
| creek | San Francisquito Creek |
| NEPA | National Environmental Policy Act |
| NES | Natural Environment Study |
| Project | Newell Road Bridge Replacement Project |
| ROW | right-of-way |
| VIA | visual impact assessment |

Purpose of Study

The purpose of this visual impact assessment (VIA) is to evaluate potential visual impacts caused by the Newell Road Bridge Replacement Project (Project) and propose measures to lessen any detrimental impacts that are identified. Visual impacts are demonstrated by identifying visual resources in the Project area, measuring the amount of change that would occur as a result of the Project, and predicting how the affected public would respond to or perceive those changes. This VIA follows the guidance outlined in the publication *Visual Impact Assessment for Highway Projects* published by the Federal Highway Administration in March 1988 (Federal Highway Administration 1988).

Project Description

The Project is located in the Cities of Palo Alto (Santa Clara County) and East Palo Alto (San Mateo County) (Figure 1). The bridge site is located approximately 930 feet south of the W. Bayshore Road/Newell Road intersection and approximately 4,162 feet (0.79 mile) from the Embarcadero Road/Newell Road intersection. Newell Road Bridge is the primary public access across San Francisquito Creek (creek) for the surrounding residences in the adjacent communities.

Purpose and Need

The purpose of the Project is to maintain connections for vehicular, bicycle, and pedestrian transportation across San Francisquito Creek at Newell Road while avoiding the diversion of a significant number of vehicles to adjacent streets; a significant increase in the number of vehicles using Newell Road; and an increase in average vehicle speed on Newell Road. The Project would also provide a pedestrian sidewalk and improve bicycle access across San Francisquito Creek at Newell Road and improve safety for all modes of transportation across San Francisquito Creek at Newell Road. Lastly, the purpose of the Project is to design a bridge that accommodates increased flows related to San Francisquito Creek improvements to address anticipated flooding risk. This would be achieved by upgrading the channel width beneath the bridge to allow 7,500 cubic feet per second (cfs) conveyance.

The Project is needed because the existing bridge is classified as being functionally obsolete because it does not safely accommodate two-way vehicular traffic and it does not provide safe access for pedestrians or bicyclists. The bridge is also hydraulically deficient because the abutments are within the San Francisquito Creek channel, reducing the flows that pass under the bridge. Lastly, the bridge provides poor drivability for vehicular traffic due to substandard sight distances and vertical profile.

The overall length of the existing bridge is 42 feet, 40 feet of which is clear span. The bridge consists of a reinforced concrete rigid frame through girder structure, with an 18-foot-wide curb-to-curb width and overall bridge width of 22 feet. The existing abutments are located within the creek bed and channel slopes, causing a flow constriction in the channel that will not accommodate the natural creek capacity of 7,500 cfs.



Figure 1. Project Location Map

Build Alternatives

Taking agency and public input into account, the City of Palo Alto and Caltrans, as Lead Agencies for the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA), are evaluating four build alternatives:

- Build Alternative 1: A one-lane bridge with two-way traffic (under signal control) on the existing alignment of Newell Road.
- Build Alternative 2: A two-lane bridge on the existing alignment of Newell Road.
- Build Alternative 3: A two-lane bridge on a partial realignment of Newell Road.
- Build Alternative 4: A two-lane bridge on a full realignment of Newell Road.

Project plans for each alternative can be seen in Figures 2 and 3. The design features of these Build Alternatives could include removal of the existing bridge; construction of new approaches, either a onelane bridge (Build Alternative 1) or a two standard lanes bridge (Build Alternatives 2-4), and accommodation for bicycle and pedestrian travel (including sidewalk and potential road widening for sharrow); potential addition and reconfiguration of utilities including street lighting; modification to street signage or new traffic signals; addition of retaining walls; and bank stabilization measures in the portion of San Francisquito Creek disturbed by the construction. The Project would adhere to the American Association of State Highway and Transportation Officials standards to the degree feasible. As required by CEQA and NEPA, the effect of not implementing the proposed Project has also been included as the No-Build (No Action) Alternative.

The following improvements would be included in all Build Alternatives (1–4):

- **Roadway Improvements:** The proposed roadway improvements would accommodate either a twoway single lane bridge or two 14-foot-wide shared lanes (vehicles and bicycles) bridge. The roadway profile at the new bridge would be raised approximately 1.6 feet higher than the existing bridge in order to minimize flood hazards for the adjacent communities, and would provide sufficient structure depth beneath the bridge needed to span the creek. Additional vertical and horizontal work would be required at each end of the bridge in order to transition from the new bridge profile and geometry to the existing roadway.
- **Bicycle and Pedestrian Facilities:** The proposed bridge would accommodate either a two-way single lane bridge or two 14-foot-wide shared lanes (vehicles and bicycles). Five-foot wide sidewalks on either side of the bridge would also be constructed to enhance pedestrian access and safety.
- Utility Relocations
 - Sanitary Sewer: No impacts are expected on the sanitary sewer on the East Palo Alto side of the bridge. On the Palo Alto side of the bridge an existing sewer manhole may need to be replaced on Newell Road to match the grade of the new roadway profile.
 - Domestic Water: On the East Palo Alto side an existing water main runs along Woodland Avenue and a fire hydrant is located on the corner of Woodland and Newell Road. This line will remain in place and valves boxes within the street will be raised to grade to match the new roadway profile. The fire hydrant would be adjusted to match the new roadway profile. On the Palo Alto side a 6-inch PVC water main runs along Newell Road and terminates at a fire hydrant on the west side of the road near the existing bridge. The water main will remain but the fire hydrant assembly,

lateral, and valves will be removed and replaced to accommodate the new roadway profile and sidewalk modifications.

- Overhead Electrical: No overhead electrical utilities exist on the Palo Alto side. On the East Palo Alto side overhead electrical poles and lines run along the south edge of Woodland Avenue within the Project limits. At least two utility poles are expected to require relocation to accommodate the proposed bridge and roadway improvements. Under Build Alternatives 2, 3 and 4, additional pole relocations may be required in order to accommodate clearances between the new bridge profile and the lowest power lines. This will be determined during final design based on coordination with PG&E.
- Street Lights: One street light on the Palo Alto side along Newell Road would be impacted by the proposed roadway improvements and would need to be removed and replaced to meet the new grades. On the East Palo Alto side street lights are integral with the overhead electrical poles; therefore, relocation will correspond with the overhead electrical pole impacts.
- Water Quality Sampling Station: The boxes and monitoring equipment located on the upstream side of the creek is associated with a water quality sampling station. The equipment inside the station would be removed by City staff prior to construction; however the contractor shall remove anything that remains and let City staff know when it is available for pick-up. A new water sampling station would not be installed with the Project. However, the power and fiber that serve the water sampling station would be maintained.
- Existing Steel Electrical Conduit: The 2-inch electrical conduit attached to the downstream edge of the existing bridge would be temporarily relocated prior to bridge removal and would be run within the sidewalk on the new bridge.
- Non-Utility Relocation of Eruv: The existing eruv¹ is supported on steel poles crossing the south side of Newell Road. Construction activities may require the temporary removal and relocation of the existing poles supporting the eruv over Newell Road. Coordination with the religious group associated with its original installation would be required before a relocation process could be established.
- Survey Monuments: Two Survey Monuments on Woodland Avenue would need to be adjusted.
 Existing monument number 2433 located on the south west corner of the bridge would be removed. A new survey monument would be added on the bridge.
- Other Utilities: Fiber and power for camera and flow sensors would need to be provided.
- **Retaining Walls:** Retaining walls are needed adjacent to the creek, near the roadway approaches and where the proposed roadway elevation is higher than the existing conform grades. The maximum height of retaining walls would be approximately 4.5 feet in select locations; retaining walls would be designed to be as low as possible. The profile of the retaining walls would mimic that of the roadway approaches on both sides of the bridge. Railing would be required along the top of the retaining wall in order to provide pedestrian safety in areas where the vertical differential between the top of wall and adjacent ground is greater than 30 inches or greater.

¹ A virtual wall or border surrounding an area allowing members of Observant and/or Orthodox Jewish communities to travel, carry, and push objects on the Sabbath.





Figure 2. Build Alternatives 1 and 2





Figure 3. Build Alternatives 3 and 4

- **Channel Stabilization:** Bank stabilization measures, such as rock slope protection or soil nail wall, would be required in the portion of San Francisquito Creek disturbed by construction. These measures would be implemented approximately 50 feet upstream and downstream of the bridge.
- **Construction Staging Areas:** Construction staging/laydown would be included in all Build Alternatives (1–4) and would likely occur on Newell Road between San Francisquito Creek, Edgewood Drive, and Woodland Avenue within the roadway right-of way (ROW). The final location of staging/laydown areas would be determined during the design phase.

No-Build Alternative

Under the No-Build (No-Action) Alternative, no changes would be made to the existing bridge and approaches. No construction activities would occur, and there would be no change in the operations of the existing facilities. Other planned and approved land use development and transportation improvements along local routes may be implemented by local agencies or under other projects. Under the No-Build Alternative, the flooding issue along the creek would also not be addressed. The existing bridge flow that can pass under is 6,600 cfs, which is not sufficient to handle the natural creek flow of 7,500 cfs. If upstream improvements are completed, flows exceeding 6,600 cfs would not be able to pass under the existing bridge, resulting in flooding upstream of the Newell Road Bridge.

Project Location and Setting

The Project location and setting provides the context for determining the type and severity of changes to the existing visual environment.

The Project is located in Santa Clara and San Mateo counties, within the San Francisco Bay Region of California. The Project site includes Newell Road Bridge that crosses San Francisquito Creek, which serves as the border between the City of Palo Alto and the City of East Palo Alto, and extends upstream and downstream of the bridge along Woodland Avenue (refer to Figure 1). The landscape in the vicinity is characterized by dense urban and suburban development on valley bottoms and along the San Francisco Bay shoreline, woodlands and grasslands covering the hills and mountains visible from many locations, and large expanses of open water of San Francisco Bay and the Pacific Ocean. The Santa Cruz Mountains form the background beyond the urban area and block views to the ocean and valleys beyond. The flat expanse of San Francisco Bay allows views across it and to the communities and mountains on the opposite side. These landscape views are strongly characteristic of the Silicon Valley and have contributed to the regional identity.

The Project corridor is defined as the area of land that is visible from, adjacent to, and outside the roadway ROW, and is determined by topography, vegetation, and viewing distance. The land use within the corridor is primarily suburban residential, with one story, single-family homes in Palo Alto and mostly two- to three-story, multi-family housing in East Palo Alto. The existing Newell Road Bridge consists of a narrow, one-lane bridge with solid concrete parapets. The portions of the parapets that cross the creek have four rectangular recesses on each side of the bridge that provide some architectural relief to the parapet. However, the parapets are aged; the surfaces varies from being exposed concrete to being painted with two different shades of gray; and they have signs of damage such as cracks, portions of missing concrete, and marks and scrapes from car strikes. The bridge deck is paved with asphalt and there is no roadway striping over the bridge.

The tree canopy dominates many views within the immediate vicinity of the Newell Road Bridge. The trees and landscaping also provide diversity and continuity in views throughout the area, and vary in form, dominance, and scale, depending on the location, distance, and angle of the viewer. Mature trees along the portion of Newell Road in Palo Alto provide good canopy cover that shade much of the street but younger gingko trees along the north side of the street create a break in the canopy cover resulting in sunny areas along this segment of roadway. The entire bridge is covered by the canopy of mature trees along the creek, resulting in shade and dappled sunlight on the bridge. The portion of Newell Road in East Palo Alto is not as densely vegetated as the Palo Alto side and the street trees are not as mature, resulting in more open, brighter conditions along this segment of roadway. Overall, however, the tree canopy provides a mostly enclosed, pedestrian-scale environment that is visually appealing. In addition to the mature tree canopy, residential landscaping associated with single- and multi-family residences contributes to an attractive project corridor. However, the multi-family housing and associated parking lots and driveway aprons along the project corridor exhibit less vegetative cover. Views provide seasonal interest such as in the winter and spring when vegetation is in active growth and most plants are in bloom versus the summer and fall when vegetation fades, turns color, or provides a display of fruit or seed. In addition, evergreen species provide greenery year-round. From the bridge itself, the creek extends upstream and downstream along Woodland Avenue and provides a natural visual character in contrast to the developed character of the surrounding residences. The creek is seasonally dry in the summer, exposing a dirt and graveled bed, with bank protection made of sacked concrete bags that are overgrown in many places with Himalayan blackberry and ivy. Sidewalks are present within the Project corridor except over the bridge, on the southern side of Woodland Avenue, and on the north side of Woodland Avenue near the Woodlands Newell Apartments Community Center and Clarke Avenue.

Other visible, built elements that contribute to the existing visual environment and character of the project corridor include parking lots and driveway aprons, as well as other human-made elements typically found in residential areas, such as paved roadways, sidewalks, curbs, gutters, signage, utility poles, and street lights. Sacrete retaining walls are located along the banks of the creek. These retaining walls are mostly visible to passing pedestrians because the bridge railing and vegetation along the top of bank limit most views to passing drivers. The retaining walls are weathered and overgrown with vines and moss, so they blend fairly well with the natural creek corridor. On the south side of the Project site, utility lines are underground and not visible. However, vertical utility poles and overhead utility lines are common visual elements found in the landscape within the City of East Palo Alto. Lighting in the project corridor is associated with interior and exterior residential lighting and vehicle headlights. Minimal street lighting is present and is directed downwards towards the roadbed and sidewalks. The project corridor is fairly well-lit, except for open space areas and within the creek.

Development densities and building heights differ on either side of the bridge, detracting slightly from the uniformity of views along the Project corridor; however, the dense, mature tree canopy; residential landscaping; and riparian corridor serve to create more uniformity and intactness and improve views associated with the Project corridor and contribute to a vividness, intactness, and unity that are moderate-high. The resulting existing visual quality is moderate-high.

There are no scenic routes designated in federal or state plans as scenic roadways or corridors worthy of protection for maintaining and enhancing scenic viewsheds (California Department of Transportation 2017a). University Avenue, just east of the Project corridor, is a Palo Alto-designated scenic roadway (City of Palo Alto 2007: L-44). There are no city-designated scenic routes in East Palo Alto (City of East Palo Alto 2017). In addition, there are no scenic vistas because terrain, surrounding development, sound walls, and mature trees and shrubs limit views to the immediate foreground and prevent expansive views out and over the landscape.

Visual Resources and Resource Change

Visual resources of the Project setting are defined and identified below by assessing *visual character* and *visual quality* in the Project corridor. *Resource change* is assessed by evaluating the visual character and the visual quality of the visual resources within the Project corridor before and after the construction of the proposed Project. Trees along the creek corridor, street trees, and residential landscaping form a dense tree canopy within the Project corridor which is captured in the key views selected for the proposed Project and depicted in Key View 1 and Key View 2 under *Visual Impacts*.

The visual character of the proposed Project would be somewhat compatible with the existing visual character of the corridor. The proposed bridge would be made of the same materials as the existing bridge and would have concrete bridge railings and a paved deck; once these new materials weather, the proposed bridge would have a similar color to the existing bridge. Rectangular openings in the bridge railing would be reminiscent of the rectangular recesses in the existing parapet. The one-lane bridge under Build Alternative 1 would be slightly wider in total width than the existing bridge (28-feet versus 22-feet) even though the travel way on the bridge would be narrower (16-feet versus 18-feet), but Build Alternatives 2 through 4 would be nearly twice as wide to accommodate a two-lane bridge (28-feet-wide travel way and 40-feet-wide structure width). The alignment for Build Alternatives 1 and 2 would remain the same as the existing bridge. The alignment would shift approximately 30 degrees so that the northern abutment would shift westward approximately 30-feet for Build Alternative 3 and be most pronounced and notable, shifting the northern abutment 90-feet to the west from its current location under Build Alternative 4. The sacrete retaining walls along the creek would be removed and replaced with rock slope protection or soil nail walls. This would likely be more visible to passersby due to vegetation removal opening up views toward the creek. The proposed retaining walls along Newell Road North that are needed to accommodate the higher roadway surface of the bridge would create a taller wall surface that hinders views to opposite sides of the road and would be more visually intrusive under Build Alternative 4 than under Build Alternatives 1-3, which propose shorter retaining walls. The new rock slope protection and retaining walls also would increase the amount of hardscape seen along the project corridor.

The texture of the Project corridor would be altered under Build Alternatives 1-3 because all three alternatives would affect the same 23 trees through removals and trimming². The tree canopy would be slightly reduced where trimming occurs but the remainder of the canopy would not be affected. However, tree removal would completely remove the canopy, remove the shading that canopy provides, remove the aesthetic qualities provided by the impacted trees, make views more open and bright, and slightly increase glare, when seen from both Palo Alto and East Palo Alto. As many as 10 trees could be removed under Build Alternative 1, 12 trees could be removed under Build Alternative 2, and 14 trees could be removed under Build Alternative 3, which would create a more open view corridor from Newell Road in Palo Alto toward the portion of the Woodlands Newell Apartments along Woodland Avenue in East Palo Alto. However, trees and vegetation associated with the Woodlands Newell Apartments facing Newell Road would remain, continuing to provide some amount of tree canopy. The view corridor from East Palo Alto would also become more open due to vegetation removal, but trees beyond the area of impact along the creek would be visible, in addition to trees associated with residential landscaping on the Palo Alto side. Residential structures on the Palo Alto side would not be readily visible from East Palo Alto, though, because the raised bridge would obscure most views of the structures. Tree and vegetation removal would also act to increase the prominence of development and roadway infrastructure because the

² The total number of trees affected may be slightly more or less than the numbers presented in this analysis based on the final project design.

dense, enclosed tree canopy would no longer be present to reduce their apparent scale through vegetative screening, canopy cover, and shading so that structures recede more into views. Build Alternative 4 would only affect 2 additional trees. However, a total of 18 trees would be removed and the additional tree removal, coupled with the shifted alignment, would create a more open corridor than Build Alternatives 1-3 because it would allow for additional views from Newell Road in Palo Alto toward portions of the Woodlands Newell Apartments along both Woodland Avenue and Newell Road in East Palo Alto. Build Alternative 4 would reduce shading and increase glare that is present along the Project corridor to a greater degree than Build Alternatives 1-3. The proposed Project would be consistent with the applicable rules, regulations, standards, and policies relating to visual elements and aesthetic quality within the Project area, such as the City of East Palo Alto General Plan and the Palo Alto Comprehensive Plan—Land Use and Community Design. However, as described above, all build alternatives would require tree removal. Therefore, the Project would be required to comply with the City of Palo Alto and City of East Palo Alto tree ordinances. The Palo Alto tree ordinance refers to the City's Tree Technical *Manual* guidance on when tree replacement is required. Tree replacement numbers are specified by the Director or the Director's designee when protected or designated trees are removed and by the terms of the permit for street trees (City of Palo Alto 2001). Section 18.28.40 of the East Palo Alto Development Code identifies that trees removed will need to be replaced by tree(s) of equivalent value or an in-lieu fee will need to be paid (City of East Palo Alto 2017). In addition, Avoidance and Minimization Measure 4 would ensure that street trees and trees and shrubs along the tops of the creek's banks are replaced to minimize the visual effects of the project.

Changes to the visual character of Project corridor, described above, associated with each build alternative would result in changes to the existing visual quality, which is moderate-high and would be altered to varying degrees by the proposed Project. Views and the visual quality associated with the Project corridor would be somewhat degraded under Build Alternative 1, represented by Key View 1 and Key View 2 (Figures 5 and 6), but are somewhat harmonious because the narrower bridge is visually similar to and in keeping with the existing bridge. Vegetation removal and trimming would affect the tree canopy and open up views down across the bridge and down the roadway corridors under Build Alternative 1. Build Alternative 1 would also require signalization that would introduce traffic lights and vertical utilities into views associated with Palo Alto and East Palo Alto. Views and the visual quality associated with the Project corridor under Build Alternatives 2 and 3 are similar, represented by Key View 1 and Key View 2 (Figures 7 through 10) for each of the build alternatives. Like Build Alternative 1, Build Alternatives 2 and 3 would also be slightly degraded because the two-lane bridges would open up views from Palo Alto to East Palo Alto due to vegetation removal and views to the bridge would be more apparent from East Palo Alto. While there would be slightly more vegetation removal under Build Alternative 3 than under Build Alternative 2, the difference is not visually notable and both build alternatives would have the same degree of visual effect. While views would be slightly more exposed under Build Alternatives 2 and 3 than under Build Alternative 1, Build Alternatives 2 and 3 would not require traffic lights, reducing visual intrusions associated with Build Alternative 1. Therefore, the degree of change to visual quality is relatively the same under Build Alternatives 1-3. Although the unity would remain much the same, the vividness and intactness would be reduced from moderate-high to moderate, and the resulting visual quality for these build alternatives would also be reduced from moderate-high to moderate. Views and the overall visual quality would be altered the most by Build Alternative 4, represented by Key View 1 and Key View 2 (Figures 11 and 12). The shifted two-lane bridge would require the greatest modification to the roadway alignment and the greatest amount of vegetation removal. This would create a much more open and bright corridor than Build Alternatives 1-3 and would expose views of the Woodlands Newell Apartments along both Woodland Avenue and Newell Road in East Palo Alto. In addition, views toward the bridge and Palo Alto would be more open and bright when seen from East Palo Alto. Therefore, the vividness, intactness, and unity would be reduced from

moderate-high to moderate and the overall visual quality would be reduced from moderate-high to moderate-low under Build Alternative 4.

Resource change (changes to visual resources as measured by changes in visual character and visual quality) would be moderate for Build Alternatives 1-3 during the short-term until replacement plantings, specified in Avoidance and Mitigation Measure 4, can mature. As the replacement planting matures and the canopy is replaced, the visual character would regain some of its existing qualities associated with shading and creating an enclosed, intimate streetscape that would result in long-term resource change that is moderate-low. Build Alternative 4 would result in a resource change that is moderate for the short- and long-term because, even with mitigation, the tree canopy would not provide the sense of enclosure because view corridors would remain open and more development would be visible due to the bridge and roadway intersection realignment in East Palo Alto. Primary visual resource changes associated with the proposed Project would be dependent on the Build Alternative selected and would be attributed to the introduction of new vertical utilities and lighting under Build Alternative 1 and vegetation removal and the new replacement bridge (including its revised profile, adjustments to its alignment, overall geometrics, and associated roadway/sidewalk improvements associated with each Build Alternative) under all build alternatives. Other visual changes include the proposed improvements along the Palo Alto and East Palo Alto sides of Newell Road (approximately 500 feet total) and along Woodland Avenue (approximately 350 feet), which would include the construction of retaining walls, potential roadway realignments, sidewalk improvements, roadway striping, and the adjustment/relocation of existing street lights and power poles. These changes, as depicted in the visual simulations, can be accomplished without substantial visual impacts throughout the Project corridor. Thus, Build Alternatives 1-3 would somewhat alter the visual character or quality of views when compared to existing visual conditions and Build Alternative 4 would have a greater affect. Since the visual character of the bridge would be in keeping with the existing visual character of residential areas in Palo Alto and in East Palo Alto that surround the Project corridor, Project activities would not be great enough to constitute a major visual resource change over the long-term for most viewers once mitigation plantings mature even though visual changes would be noticeable.

Viewers and Viewer Response

Neighbors (people with views *to* the Project area) and *roadway users* (people with views *from* the Project area) will be affected by the proposed Project. For the purposes of this VIA, *neighbors* include the residents of single and multi-family homes in Palo Alto and East Palo Alto on either side of the Newell Road Bridge within viewing distance of the proposed Project. This includes residents of single and multi-family homes, condominium or apartment dwellers, and others who occupy permanent shelter. They can be owners or renters and tend to be permanent rather than transitory and are anticipated to have high visual sensitivity because of their familiarity with and proximity to the project site. Neighbors' views of the Project vary based on location within the landscape and distance from the Project site. Most roadway neighbors do not have immediate and direct views of the Project site (views are limited by development, vegetation, topography, etc.) except for those that are directly adjacent to the affected area. Roadway neighbors have a cumulative moderate degree of exposure. Immediately adjacent residents have high exposure in low numbers, while surrounding residents have moderate exposure in moderate numbers.

Roadway Users include local commuters traveling to and from work, recreational travelers, pedestrians, cyclists, motorists, and other roadway users that utilize various modes of transportation for commuting, touring, and the shipment and delivery of mail and goods to local residences. Pedestrians use only their feet (or a wheelchair or other device), most often on a sidewalk or trail. Cyclists use bicycles at greater

speeds than pedestrian travel, and may use trails, traffic lanes, and sidewalks. Motorists use vehicles with engines (e.g., cars, trucks, buses, motorcycles, mopeds, or any other technology that is not self-propelled, regardless of fuel source). Motorists move at higher speeds than other groups. Depending on speeds, drivers and other roadway travelers are able to take in brief to longer views of the scenery around them. By necessity, the driver of a motor vehicle focuses less on the view outside the vehicle. Although drivers are focused on driving and safety and use trees and familiar landmarks (development, utilities, signage, and built elements) as resources for wayfinding, they are likely to enjoy the quality of views provided by the well-kept residential area and the mature tree canopy. Pedestrians are focused on commuting or their associated recreational activity, but tend to take in and enjoy their surroundings. Cyclists pass through the area more quickly, but also enjoy their surroundings. Because most users are intimately familiar with the area, they are considered to have high sensitivity to visual change. It is anticipated that the average response of all viewer groups would be moderate-high, however, due to a lower number of viewers.

Visual Impacts

Visual impacts are determined by assessing changes to the visual resources and predicting viewer response to those changes. This VIA considers the impacts of the four Build Alternatives and also the potential impacts of a No-Build Alternative. Key views, shown in Figure 4, have been chosen for their representation of views associated with Palo Alto and East Palo Alto and those viewers affected.

Build Alternatives

Construction

All Build Alternatives

Construction of the proposed Project would last approximately 12 months total, with a full road closure of Newell Road Bridge between Edgewood Drive and Woodland Avenue during this time. Therefore, roadway users would be removed from this portion of the Project corridor during construction, but roadway neighbors would still be able to see construction activities. The residence located at 475 Newell Road, which has driveway access to Newell Road in Palo Alto, would continue to have access to their driveway during construction. Roadway neighbors located on the detour route would not see construction activities but would see a temporary increase in local traffic along the detour route. Visual barriers associated with Avoidance and Minimization Measure 1 would not be installed along detour routes because the visual changes associated with minor traffic increases are not likely to be very noticeable and the introduction of visual barriers would create a negative visual effect along detour routes. Because the proposed Project would take less than 2 years to construct, visual presence of construction activities and detour traffic is considered temporary. Nighttime construction would not occur; therefore, high-intensity lighting for illuminating construction activities would not be needed.

Equipment that would be used for construction includes graders, excavators, backhoes, pavers, compactors, and various types of construction vehicles/trucks. Under all Build Alternatives, general construction activities, construction staging/stockpiling, the storage of building materials, the presence of construction equipment, and temporary traffic barricades would result in temporary visual impacts by altering the composition of the viewsheds throughout the Project corridor. However, construction



Figure 4. Key View Locations

activities would be temporary in duration and would be governed by city, state, and federal regulations and standards designed to minimize their potential to affect adjacent sensitive uses in significantly adverse ways. Construction activities would comply with the applicable regulations, standards, and policies outlined in guidance documents such as the City of East Palo Alto General Plan and the *Land Use and Community Design Element* of the Palo Alto Comprehensive Plan. Construction staging and laydown areas occurring on Newell Road between Woodland Avenue and Edgewood Drive would be located within the roadway ROW. The residence in the City of Palo Alto that is west of Newell Road is separated from the area that may be used as staging by privacy fencing and dense landscaping, so would not likely be affected by construction staging. However, views seen by the residence in the City of Palo Alto that is east of Newell Road and roadway users and recreationists passing by the intersection of Newell Road and Edgewood Drive would be disrupted by construction staging at this location. In East Palo Alto, residents located in the apartments along Newell Road that are closest to Woodland Avenue and roadway users and recreationists passing areas if they are located along this portion of the roadway corridor. Avoidance and Minimization Measure 1 would ensure that staging areas are screened, minimizing the amount of visual disruption caused by construction staging.

Active construction areas would primarily occur within street ROWs and would have construction signs and barricades to delineate the work zone and partially screen construction activities available to nearby viewers that have unobstructed lines of sight to the Project area. Visual changes due to construction signaling, signage, and surface glare may occur, though they are not considered to be adverse due to their temporary nature. Avoidance and Minimization Measure 1 would ensure that staging areas are maintained in a clean and orderly manner throughout the construction period. Due to residential/neighboring viewers' familiarity with the existing bridge and thru-traffic, negative visual effects are expected to occur, but because of the temporary nature of construction these effects would be temporary.

Visual changes resulting from the proposed Project are depicted in simulations prepared for the Project, discussed below by build alternative, and shown in Figures 5 through 12. The proposed Project would remove the existing bridge; construct new approaches, and accommodate bicycle and pedestrian travel (including sidewalk and potential road widening for sharrow); add and reconfigure utilities including street lighting; modify street signage; add retaining walls; and stabilize creek bank disturbed by the construction. Construction would also require the removal of trees to accommodate grading to stabilize the creek banks and the widened bridge structure and roadway approaches. This would create a project corridor that is more open and bright. The Project would be required to comply with the City of Palo Alto and City of East Palo Alto tree ordinances, which would specify tree replacement as a condition of the permits. In addition, Avoidance and Minimization Measure 4 would ensure that street trees and trees and shrubs along the tops of the creek's banks are replaced to minimize the visual effects of the project. Although visual changes resulting from the Project would not be minimized over the short-term, onsite mitigation would ensure that long-term visual changes are minimized as the replacement vegetation matures to largely replace the canopy that would be lost during construction. The sacrete retaining walls along the creek would be removed and replaced with rock slope protection or soil nail walls. This would likely be more visible to passersby due to vegetation removal opening up views toward the creek. Even though this would not be readily visible to many viewers, the proposed bank protection would increase the amount of hardscape seen along the project corridor to those that do see it. Instead of a weathered sacrete wall that is partially covered in moss and vines, a hardscaped surface that is devoid of vegetation would be present. This would change the visual character of the affected segment of creek by creating a more engineered looking creek channel, as opposed to a more naturalized creek channel. Once the proposed bank protection weathers and vegetation colonizes interstices in the bank protection, it would not appear as stark.

The roadway profile of the new bridge would be raised approximately 1.6 feet higher than the existing bridge in order to provide a higher bridge clearance over the creek and improve flood hazard for the adjacent communities. Roadway approach work would be required at each end of the bridge in order to transition from the new bridge profile and geometry to the existing roadway. On the Palo Alto side of the bridge, the residence along the east side of Newell Road that is closest to the bridge, 475 Newell Road, would have a portion of its driveway demolished and reconstructed as a result of the Project. In addition,

the sidewalk would be relocated closer to this residence's fence line, requiring the removal of shrubbery lining their fence and planted in between the existing roadway and sidewalk. The fence would not be affected, but removal of the shrubbery would negatively affect this residence and passersby. In addition, formal landscaping planted between the sidewalk and curb and also between the sidewalk and the residential fence line along the west side of Newell Road, which is associated with 1499 Edgewood Drive, would also be affected by construction, slightly reducing the quality of views along this segment of roadway for all viewer groups. Avoidance and Minimization Measure 2 would relocate or replace affected landscaping, fencing, and other landscape features to the degree possible, reducing visual impacts. The presence of vertical and horizontal hardscape features would also increase due to the railings needed to provide safety barriers at the top of retaining walls, inclusion of sidewalks across the bridge, and taller bridge railings. The railings create the appearance of fencing and the increased presence of the railings would impact existing views by replacing vegetation with fencing and increasing the dominance of fencing in the area. However, the proposed fencing would be largely in keeping with the existing residential fencing and it would have gaps that would allow for vegetation to be seen beyond the proposed fencing, minimizing effects. Bridge surfaces would also slightly increase glare levels along the Project corridor. Avoidance and Minimization Measure 3 would apply aesthetic treatments to bridge, wall surfaces, and fences, improving Project aesthetics and reducing visual impacts and the potential for glare. Lastly, the plantable area between the roadway and sidewalks would be enlarged on the Palo Alto side, creating geometrically shaped islands of grass that taper down to meet the existing planter strips, per Avoidance and Minimization Measure 4. Avoidance and Minimization Measure 4 would improve visual quality by introducing this Project streetscaping and landscaping within roadside planter strips. It would also ensure the plantable areas are properly maintained, avoiding a degraded visual appearance.

On the East Palo Alto side of the bridge, Woodland Avenue would also be raised to meet the higher bridge profile and would require approximately 300 feet to conform to the existing roadway to the east and west of the bridge. The bridge sides would appear more prominent than existing conditions. Safety railing that creates the appearance of fencing would also be needed on the East Palo Alto side of the bridge and increase the prominence of railings on this side of the bridge. In addition, approximately 125 feet of improvements (ramps to apartments, curb and gutter modifications, intersection signalization in Build Alternative 1, etc.) and retaining walls would be required on the east and west sides of Newell Road to limit the ROW needs for the Project. These retaining walls would range from approximately 1-foot to just over 2-feet tall in exposed height and would be taller near Woodland Avenue, decreasing in height as the wall meets existing grade along Newell Road. Residents living in Building 1 of the Woodlands Newell Apartments (1761 Woodland Avenue) and Woodland Park Apartments building at 5 Newell Road would see the short walls, but the walls would not be tall enough to enclose or block existing views.

In addition, the construction of the retaining walls in front of Building 1 of the Woodlands Newell Apartments would require that landscaping be removed in front of the apartments, degrading visual resources at this location. Two entry walks – one leading to a shared entrance patio for two apartments and one leading to a single apartment entrance – associated with the Building 1 apartments would need to be reconstructed to build ramps to provide Americans with Disabilities Act (ADA)-compliant access to the building. Construction of the ramp would require that some of the mulched area on either side of the existing walkway would be converted to a ramp. Plantings are sparse and widely spaced in the mulched bed. However, a small number of individual plants may need to be removed to accommodate the ramp. Retaining walls would also be needed along the north side of Woodland Avenue to support the raised roadway. The tallest portions of this retaining wall segment would be roughly as high as the existing wooden fence that lines the sidewalk in front of the community center, along Woodland Avenue. Raising the grade at this location would elevate the roadway surface so that vehicles on the road would be roughly at eye level, when seen from the community center, making traffic more visible. However, there are no public use spaces (seating or gathering areas) in front of the community center, so the portion of the community center facing Woodland Avenue primarily receives intermittent viewers entering and exiting the community center building through that entrance. The elevated roadway surface would also be visible from the four windows on the southern wall surface of Building 1. Therefore, it is anticipated that only a small number of people would see views from these windows and it is not anticipated that views from these windows serve as primary focal points from within residences. Therefore, it is likely that changes to views from these windows would not be greatly affected by the changes in roadway elevation and the addition of a retaining wall at this location. The paved driveway and entry walk of the Woodlands Newell Apartments Community Center would also need to be reconstructed to build a ramp to provide ADA-compliant access. Avoidance and Minimization Measure 2 would relocate or replace affected landscaping, fencing, and other landscape features to the degree possible, reducing visual impacts. In addition, Avoidance and Minimization Measure 3 would apply aesthetic treatments to bridge, wall surfaces, and fencing, improving Project aesthetics and reducing visual impacts and the potential for glare. Avoidance and Minimization Measure 4 would improve Project aesthetic by improving the visual quality of planter strips along Newell Road through landscaping.

The proposed Project also includes several minor utility relocations, including street light and power poles, and retaining wall improvements. One street light on the Palo Alto side along Newell Road would be impacted by the proposed roadway improvements and would need to be removed and replaced at the same location to meet the new grades. On the East Palo Alto side, street lights are integral with the overhead electrical poles. Therefore, relocation would correspond with the overhead electrical pole work. Overhead street lighting could negatively affect sensitive receptors if the replaced lighting is modified to include light-emitting diode (LED) lighting that is not properly designed. In particular, LED lighting can negatively affect humans by increasing nuisance light and glare, in addition to increasing ambient light glow, if proper shielding is not provided and blue-rich white light lamps (BRWL) are used (American Medical Association 2016; International Dark-Sky Association 2010a, 2010b, 2015). Studies have found that a 4000 Kelvin (K) white LED light causes approximately 2.5 times more pollution than high pressure sodium lighting with the same lumen output, which would affect sensitive receptors, and more than double the perceived brightness of the affected night sky (Aubé et al. 2013; Falchi et al. 2011, 2016). This would result in a substantial source of nighttime light and glare that would adversely affect nighttime views in the area if lighting is not properly designed and shielding is not employed. These improvements, and associated visual changes, are common to all of the Build Alternatives considered in this VIA and would not substantially degrade visual resources associated with the Project corridor when factored with the applied Avoidance and Minimization Measure 5 that would offset negative visual changes associated with modified street lighting resulting from the proposed Project.

The proposed Project elements constructed under all build alternatives would not impede sightlines to the tree canopy, trees, neighboring vegetation in the Project area, or any other visual resources within the Project corridor, such as the creek (if/where visible). Upon completion of Project construction, the visual character and quality of the existing Project corridor and surrounding residential areas in both Palo Alto and East Palo Alto would be reduced to a degree. However, the proposed avoidance and minimization measures would ensure the Project impacts are reduced, improving Project aesthetics.

Visual changes resulting from construction that are unique to each build alternative are discussed below. The avoidance and minimization measures proposed above would be applied to all build alternatives to ensure the Project impacts are reduced, improving Project aesthetics.

Build Alternative 1

Visual changes resulting from Build Alternative 1 are depicted in the simulations for Key View 1 and Key View 2 (Figures 5 and 6). Up to 10 trees would be removed under Build Alternative 1 to accommodate construction. The roadway profile of the new bridge would be raised and the roadway approaches would be modified to transition from the new bridge profile and geometry to the existing roadway. The driveway that would be demolished and reconstructed, sidewalk relocation, and landscaping changes at 475 Newell Road are visible in Key View 1 in Figure 5. As shown in the simulation of Key View 2 in Figure 6, the bridge sides on the East Palo Alto side of the bridge would be fully visible and appear more prominent than existing conditions. As shown in Figures 5 and 6, vegetation removal would completely remove the canopy and shading that street trees and trees and shrubs along the creek corridor provide. This would remove the aesthetic qualities provided by the impacted trees, affecting the intimate nature of views and making views more open and bright, slightly increasing glare, when seen from both Palo Alto and East Palo Alto. Retaining walls on the east and west sides of Newell Road would range from approximately 1-foot to just over 2-feet tall in exposed height and would be taller near Woodland Avenue, decreasing in height as the wall meets existing grade along Newell Road, which would be seen by residents living in Building 1 of the Woodlands Newell Apartments (1761 Woodland Avenue), Woodland Park Apartments building at 5 Newell Road, and by recreationists and roadway users passing by on Newell Road. However, as seen in Figure 5 for Key View 1, the walls would appear to look more like small ramps up and would not be tall enough to enclose or block existing views. Retaining walls along the north side of Woodland Avenue would range from just over just over 4-feet tall, just east of the corner Woodland Avenue intersection with Newell Road, to just over 1.5-feet tall east of the Woodlands Newell Apartments Community Center under Build Alternative 1. As shown in Figure 6 for Key View 2, these walls would not be very prominent when seen from the raised roadway corridor. They would be more prominent when seen from areas near the apartment entrances.

Additionally, Build Alternative 1 would require the signalization of the southern end of the bridge in Palo Alto to control the direction of travel on the bridge, as shown in simulation in Figure 5 for Key View 1. One additional indicator signal would be provided for the sole residential driveway on the Palo Alto side of the bridge to identify the direction of traffic on Newell Road at all times. As shown in Figure 6 for Key View 2, Build Alternative 1 would also require the complete signalization of the intersections of Newell Road with Woodland Avenue in order to control the direction of travel on the bridge and adjacent roadways. Therefore, these signals could result in an increase in lighting and that could potentially degrade visual resources associated with the Project corridor if not properly screened. Avoidance and Minimization Measure 5 would reduce negative visual changes associated with the traffic signalization resulting from Build Alternative 1.

The proposed Project elements constructed under Build Alternative 1 would not impede sightlines to the tree canopy, trees, neighboring vegetation in the Project area, or any other visual resources within the Project corridor, such as the creek (if/where visible). Changes to visual character and quality would be moderate, and, as mentioned, would be consistent with applicable regulations, standards, and policies outlined in guidance documents. The resource change associated with Build Alternative 1 would be moderate and the average response of all viewer groups would be moderate-high, resulting in a moderate-high visual impact for this alternative during the short-term. The avoidance and minimization measures proposed under *All Build Alternatives* would ensure the Project impacts are reduced, improving Project aesthetics and resulting in impacts that are moderate over the long-term.

Figure 5. Key View 1, Existing View and Build Alternative 1 Simulated Conditions—from Newell Road in Palo Alto looking toward East Palo Alto.

Figure 6. Key View 2, Existing View and Build Alternative 1 Simulated Conditions—from Newell Road in East Palo Alto looking toward Palo Alto.

Build Alternative 2

Visual changes resulting from Build Alternative 2, which would accommodate two-way traffic with a twolane bridge, are depicted in the simulations for Key View 1 and Key View 2 (Figures 7 and 8). Retaining walls would be the same heights as under Build Alternative 1 along Woodland Avenue, Newell Road North, and Newell Road South. Therefore, under Build Alternative 2, construction impacts would be similar to those described for Build Alternative 1. However, the wider bridge structure would impact additional trees directly adjacent to the existing bridge. Up to two more trees could be removed under Build Alternative 2 compared to Build Alternative 1 and create slightly more open and direct views of the Woodlands Newell Apartments facing Woodland Avenue, making the apartments a more pronounced focal point in Key View 1. Views from East Palo Alto would be similar to Build Alternative 1. However, as shown for Key View 2 in Figure 8, utilities would be slightly reduced under this build alternative because traffic signals would not be present. In addition, even though the bridge would be two lanes, it would not appear much wider from Key View 2 due to the angle of the bridge in relation to the view. From Key View 2, the additional vegetation removal under Build Alternative 2 is not distinguishable compared to Build Alternative 1. Like Build Alternative 1, tree and vegetation removal would also reduce the amount of shading that is present along the Project corridor, making the corridor more open and bright and slightly increasing glare.

The traffic signalization would not be necessary under this alternative, avoiding the visual intrusion of utilities required for Build Alternative 1, as seen in the simulations for Build Alternative 2. Overall, visual impacts under Build Alternative 2 would be very similar to those under Build Alternative 1 and, upon completion of Project construction, the visual character and quality of the existing Project corridor and surrounding residential areas in both Palo Alto and East Palo Alto would be reduced to a degree under Build Alternative 2. The resource change associated with Build Alternative 2 would be moderate and the average response of all viewer groups would be moderate-high, resulting in a moderate-high visual impact for this alternative during the short-term. The avoidance and minimization measures proposed under *All Build Alternatives* would ensure the Project impacts are reduced, improving Project aesthetics and resulting in impacts that are moderate over the long-term.

Figure 7. Key View 1, Existing View and Build Alternative 2 Simulated Conditions—from Newell Road in Palo Alto looking toward East Palo Alto.

Figure 8. Key View 2, Existing View and Build Alternative 2 Simulated Conditions—from Newell Road in East Palo Alto looking toward Palo Alto.

Build Alternative 3

Visual changes resulting from Build Alternative 3, which would also accommodate two-way traffic with a two-lane bridge, are depicted in the simulations for Key View 1 and Key View 2 (Figures 9 and 10). The retaining walls would mostly be the same heights under Build Alternative 3, as Build Alternatives 1 and 2 along Newell Road South. However, the retaining walls would be several inches shorter along Woodland Avenue and Newell Road North, due to the realignment, which would not be visually discernable compared to Build Alternatives 1 and 2. However, as shown in the Figures 9 and 10, Build Alternative 3 would partially realign the northern end of the Newell Road Bridge by approximately 30 feet to reduce the Newell Road intersection offsets with Woodland Avenue, compared to the existing condition. Up to two more trees could be removed under Build Alternative 3 compared to Build Alternative 2, and four more trees could be removed compared to Build Alternative 1. However, views associated with the Project corridor under Build Alternatives 2 and 3 are similar, represented by Key View 1 and Key View 2 for each of the build alternatives (Figures 7 through 10). Therefore, visual alterations along Newell Road in Palo Alto and East Palo Alto would generally be the same as described for Build Alternative 2 because the realigned, wider bridge structure would also impact trees that are directly adjacent to the existing bridge and the Woodlands Newell Apartments, and like Build Alternative 2, would be more visible than Build Alternative 1 and more of a focal point in Key View 1, as seen in Figure 9. Tree and vegetation removal would also reduce the amount of shading that is present along the Project corridor, making the corridor more open and bright and slightly increasing glare.

Signalization proposed under Build Alternative 1 would not be necessary under Build Alternative 3. This would avoid the visual intrusion of utilities required for Build Alternative 1. Overall, visual impacts under Build Alternative 3 would be similar to those under Build Alternative 2 and, upon completion of Project construction, the visual character and quality of the existing Project corridor and surrounding residential areas in both Palo Alto and East Palo Alto would be decreased to a higher degree under Build Alternative 3 would be moderate to Build Alternatives 1 and 2. The resource change associated with Build Alternative 3 would be moderate and the average response of all viewer groups would be moderate-high, resulting in a moderate-high visual impact for this alternative during the short-term. The avoidance and minimization measures proposed under *All Build Alternatives* would ensure the Project impacts are reduced, improving Project aesthetics and resulting in impacts that are moderate over the long-term.

Figure 9. Key View 1, Existing View and Build Alternative 3 Simulated Conditions—from Newell Road in Palo Alto looking toward East Palo Alto.

Figure 10. Key View 2, Existing View and Build Alternative 3 Simulated Conditions—from Newell Road in East Palo Alto looking toward Palo Alto.

Build Alternative 4

Visual changes resulting from Build Alternative 4, which would also accommodate two-way traffic, are depicted in the simulations for Key View 1 and Key View 2 (Figures 11 and 12). The retaining walls would mostly be the same heights under Build Alternative 4, as Build Alternatives 1-3 along Newell Road South. However, the retaining walls would be a little over a foot taller at the northeastern corner of the Newell Road and Woodland Avenue intersection and west of the crosswalk at the northwestern corner. The remaining segments of the wall along Woodland Avenue would be the same or several inches shorter than Build Alternatives 1-3, due to the realignment. The most notable difference would be along Newell Road North, where the retaining walls would be approximately 1.5 to 2.3 feet taller than the retaining walls for Build Alternatives 1-3 along the eastern side of Newell Road and approximately 9 inches to just over one foot taller than the retaining walls for Build Alternatives 1-3 along the western side of Newell Road. In addition, the sidewalks would be a slightly steeper grade under Build Alternative 4 than the other build alternatives, and the entrance ramp to the Woodland Park Apartments building at 5 Newell Road would need to be increased to meet the new grades along Woodland Avenue. The increased heights along Newell Road North would create a taller wall surface that would serve to hinder views from both sides of the roadway to the opposite side of the road and would be more visually intrusive than the other build alternatives.

In addition, up to four more trees could be removed under Build Alternative 4 compared to Build Alternative 3, six more trees could be removed compared to Build Alternative 2, and eight more trees could be removed compared to Build Alternative 1 and, as shown in Figures 11 and 12, Build Alternative 4 would result in a more substantial realignment of the Newell Road bridge (shifting the northern abutment approximately 90 feet west). This would reduce the Newell Road intersection offsets with Woodland Avenue, compared to the existing condition. Visual alterations along Newell Road in Palo Alto and East Palo Alto would generally be the same as described for Build Alternative 3 because the realigned, wider bridge structure would also impact trees that are directly adjacent to the existing bridge or along the creek. However, the realignment and associated vegetation removal would be greater under Build Alternative 4 and would further increase the availability of views toward development on the opposite side of the bridge, as seen in Figure 11. Build Alternative 4 would reduce shading and increase glare that is present along the project corridor to a greater degree than in Build Alternatives 1-3. Also, as seen in the Simulation for Key View 1, the Woodlands Newell Apartments would be highly visible and much more visible than Build Alternatives 1-3 because portions of the apartments along both Woodland Avenue and Newell Road would be visible, whereas only portions of the apartments along Woodland Avenue are visible under Build Alternatives 1-3. This would make development a more prominent feature in views. Build Alternative 4 would create a much more open view corridor down the Newell Road alignment and a direct visual linkage between the Palo Alto and East Palo Alto sides of the bridge.

Signalization would not be necessary under Build Alternative 4, avoiding the visual intrusion of utilities required for Build Alternative 1. Overall, visual impacts under Build Alternative 4 would be similar to those under Build Alternative 3, but upon completion of Project construction, the visual character and quality of the existing Project corridor and surrounding residential areas in both Palo Alto and East Palo Alto would be decreased to a higher degree under Build Alternative 4 compared to Build Alternatives 1, 2, and 3. The resource change associated with Build Alternative 4 would be moderate and the average response of all viewer groups would be moderate-high, resulting in a moderate-high visual impact for this alternative for both the short- and long-term. The avoidance and minimization measures proposed under *All Build Alternatives* would ensure the Project impacts are reduced, improving Project aesthetics.

Figure 11. Key View 1, Existing View and Build Alternative 4 Simulated Conditions—from Newell Road in Palo Alto looking toward East Palo Alto.

Figure 12. Key View 2, Existing View and Build Alternative 4 Simulated Conditions—from Newell Road in East Palo Alto looking toward Palo Alto.

Operation

There are no scenic vista views or scenic roadways in or near the Project area, so there would be no affect to such resources during operation. Once in operation, the primary visual changes associated with all build alternatives would be regular roadway maintenance activities that pre-exist and are a common visual element. Traffic may increase slightly over time, causing slight traffic backups on the roadway, increasing the visible presence of traffic congestion due to singular, timed bridge crossings associated with the installation of traffic signals under Build Alternative 1. Operational impacts associated with Build Alternatives 2 through 4 would be similar to Build Alternative 1. However, the visible presence of traffic congestion would be reduced under Build Alternatives 2 through 4 because a traffic signal would not be needed because the bridge would be two lanes and would accommodate multi-directional traffic at the same time. Light and glare during operation would be the same as discussed under *Construction* for all build alternatives.

No Build (No-Action) Alternative

Under the No Build (No-Action) Alternative, no new construction, roadway widening, and/or interchange improvements would take place within the Project corridor, aside from projects that are currently under construction or funded and approved for construction and operation. As a result, no new visual elements would be introduced and no resource change would occur under this alternative. There would be no visual impacts on the existing visual character, visual quality, or affected viewer groups. The traffic and hydraulic deficiencies of the existing bridge would persist and the project purpose and need would not be met.

Avoidance, Minimization, and/or Mitigation Measures

Avoidance, minimization, and/or mitigation measures have been identified and can lessen visual impacts caused by the Project. Also, the inclusion of aesthetic features in the Project design can help generate public acceptance of a project. This section describes additional avoidance and/or minimization measures to address specific visual impacts. These will be designed and implemented with concurrence of the District Landscape Architect.

The following measures to avoid or minimize visual impacts will be incorporated into the Project:

1. Install Visual Barriers between Construction Work Areas and Sensitive Receptors. The contractor shall install visual barriers to obstruct undesirable views of construction activities and staging areas from sensitive receptors, namely residents and viewers on neighborhood sidewalks and streets, which are located adjacent to the construction site. The visual barrier may be chain link fencing with privacy slats, fencing with windscreen material, wood, or other similar barrier. The visual barrier shall be a minimum of six (6) feet high to help to maintain the privacy of residents and block long-term ground-level views toward construction activities. While this visual barrier would introduce a visual intrusion, it would greatly reduce the visual effects associated with visible construction activities and screening construction activities and protecting privacy is deemed desirable by residents. The contractor shall also provide daily visual inspections to ensure the immediate surroundings of construction staging areas are free from construction-related clutter and to maintain the areas in a clean and orderly manner throughout the construction period.

- 2. **Replace or Relocate Site Features and Landscaping Affected by the Project.** Where appropriate and to the degree possible, landscaping and related appurtenances, such as fencing, driveway gates, and similar features that would be removed from private properties as a result of construction will be relocated, replaced, or restored in place and in-kind to mitigate for visual impacts and to maintain the quality of views from neighborhood roadways and sidewalks. If the site cannot accommodate this relocation or replacement, then the Project proponent will compensate parcel owners for site features (e.g., fencing, mailboxes, driveway gates) and landscaping that would be removed or damaged as a result of the Project. Replacement of site features and landscaping would be of value at least equal to that of existing features.
- 3. **Implement Project Design Aesthetics.** The Project will implement an aesthetic design treatment with a consistent motif for new structures such as retaining walls, bridge sides, fencing, and wing walls. Choosing earth-toned colors for the surfaces would be less distracting to viewers than light or brightly colored surfaces. The shade of the wall will also be carefully considered to complement the project setting. However, studies have shown that structures two (2) to three (3) degrees darker than the color of the general surrounding area have the ability to complement the surrounding vegetation and create less of a visual impact than matching or lighter hues (U.S. Bureau of Land Management 2008). . Safety barriers and fencing will be plastic, powder, or vinyl coated with colors selected using the U.S. Bureau of Land Management selection techniques to make fences to appear more seethrough than non-treated, light grey fencing that acts as a visual barrier to a degree.
- 4. Implement Project Streetscaping and Plantings along Top of Creek Bank. Streetscaping and planting native vegetation at the tops of the creek's banks will improve the visual quality of the roadway corridor by improving corridor aesthetics. Street tree species will be selected from the Cities' approved list of street trees or will be selected to match existing street trees in close proximity to the Project corridor and in compliance with the Palo Alto Tree Technical Manual³ and East Palo Alto's Development Code. Replacement street trees shall have attributes that are at least equivalent to the trees that are removed or that provide a higher degree of aesthetic benefit such as better fall color, interesting bark, or less tree litter. Tree and shrub plantings along the tops of the creek's banks will be installed where space allows and will utilize native plant species that are indigenous to the riparian corridor. Low-lying evergreen and deciduous shrubs and groundcovers, such as *Ceanothus* spp., and an herbaceous understory will also be planted. Plant variety will increase the effectiveness of the streetscape by providing multiple layers, seasonality, and reduced susceptibility to disease. Special attention should be paid to plant choices to prevent driving hazards by obscuring sight distances. Vegetation shall be planted within the first six (6) months following Project completion. An irrigation and maintenance program will be implemented during the plant establishment period and carried on, as needed, to ensure plant survival. However, design of the landscaping plan will try to maximize the use of planting zones that are water efficient. The design may also incorporate aesthetic features, such as a cobbling swales or shallow detention areas, which can reduce or eliminate the need for irrigation in certain areas.
- 5. **Apply Minimum Lighting Standards.** All artificial outdoor lighting will be limited to safety and security requirements, designed using Illuminating Engineering Society's design guidelines, and in compliance with International Dark-Sky Association approved fixtures. All lighting is designed to have minimum impact on the surrounding environment and will use downcast, cut-off type fixtures that are shielded and direct the light only towards objects requiring illumination. Therefore, lights will be installed at the lowest allowable height and cast low-angle illumination while minimizing

³ Available: <u>http://www.cityofpaloalto.org/civicax/filebank/documents/6436</u>

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incidental light spill onto adjacent properties, the creek corridor, or backscatter into the nighttime sky. Shielding will also be employed for traffic signals. Light fixtures will have non-glare finishes that will not cause reflective daytime glare. Lighting will be designed for energy efficiency and have daylight sensors or be timed with an on/off program.

LED lighting will avoid the use of blue-rich white light lamps and use a correlated color temperature that is no higher than 3,000 Kelvin, consistent with the International Dark-Sky Associations Fixture Seal of Approval program (International Dark-Sky Association 2010a, 2010b, 2015). In addition, LED lights will use shielding to ensure nuisance glare and that light spill does not affect sensitive residential viewers.

Technologies to reduce light pollution evolve over time and design measures that are currently available may help but may not be the most effective means of controlling light pollution once the project is designed. Therefore, all design measures used to reduce light pollution will employ the technologies available at the time of project design to allow for the highest potential reduction in light pollution.

Conclusions

The proposed Project would not have a negative effect on a scenic vista, damage scenic resources (trees, rock outcroppings, and/or historic buildings within a state scenic highway), or degrade the visual character or quality of the site and its surroundings over the long-term. Similarly, street light adjustments and/or removals would not change ambient illumination levels. Therefore, the proposed Project would not create a new source of substantial light or glare that would negatively affect daytime or nighttime views in the area with mitigation. Under all of the proposed Build Alternatives, the proposed Project would result in a moderate-low resource change for Build Alternatives 1-3 and moderate resource change for Build Alternative 4 (under construction and operation), and the average response of all viewer groups would be moderate-high for all build alternatives. This would result in a moderate visual impact for Build Alternatives 1-3 and a moderate-high visual impact for Build Alternative 4 over the short-term. The avoidance and minimization measures proposed under *All Build Alternatives* would ensure the Project impacts are reduced, improving Project aesthetics and resulting in impacts that are moderate over the long-term for Build Alternatives 1-3. However, impacts under Build Alternative 4 would remain moderate-high over the long-term, as well. Avoidance or minimization measures have been identified to help lessen visual impacts.

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