

this concept was eliminated. A three-level configuration was also proposed with the southbound tunnel under the northbound tunnel and with the underground parking level on top. However, there is insufficient space for the required tunnel approaches to meet existing ground at the eastern end without disrupting the Golden Gate Bridge Toll Plaza operations and at the western end without precluding future Tennessee Hollow restoration or extending well beyond the Presidio and into adjacent neighborhoods.

Because the Merchant Road Ramps located within the Golden Gate Bridge Toll Plaza area and the Richardson Slip Ramp are currently the only access point to the Presidio from Doyle Drive, the project team examined different access options at the east portion of the project corridor. A variety of configurations were considered for access to the Presidio and Marina Boulevard. They included separate access via direct left- or right-exit connectors to Marina Boulevard, a single southbound off-ramp to the Main Post, a Presidio intersection, a combined grade-separated Marina Boulevard/Presidio access with a roundabout, and a Single Point Urban Interchange (SPUI). A scheme to reverse circulation on Gorgas Avenue to avoid diverting traffic on Birmingham Road was also investigated. Except for the direct right exit connector and the diamond interchange, all of the access option refinements were eliminated from further consideration because they could not be constructed to current design standards without additional impacts to important historic resources, or they would result in traffic safety concerns, or they would not provide efficient traffic operations.

2.4 Alternatives for Further Study

Typically in an environmental analysis, two types of alternatives are analyzed – build alternatives (can range from one alternative to many alternatives) and a No-Build Alternative which means the project would not be built and the facility would remain as is. Bi-annual inspections, regular maintenance and interim repairs would occur. A No-Build Alternative represents the baseline. All other alternatives are compared to the No-Build. For this document, alternatives moved forward for further study included the No-Build Alternative and two Build Alternatives. Detailed drawings showing the plan and profile of each Build Alternative can be found in **Appendix B**. Alternatives were selected based on the purpose and need for this project – mainly to increase safety along Doyle Drive, with input from the scoping process and considering the principles of context sensitive design. As such, a discussion of capacity is not included in this discussion. Traffic volumes, level of service, and projections are presented in the Traffic and Transportation Section of this document (Chapter 3).

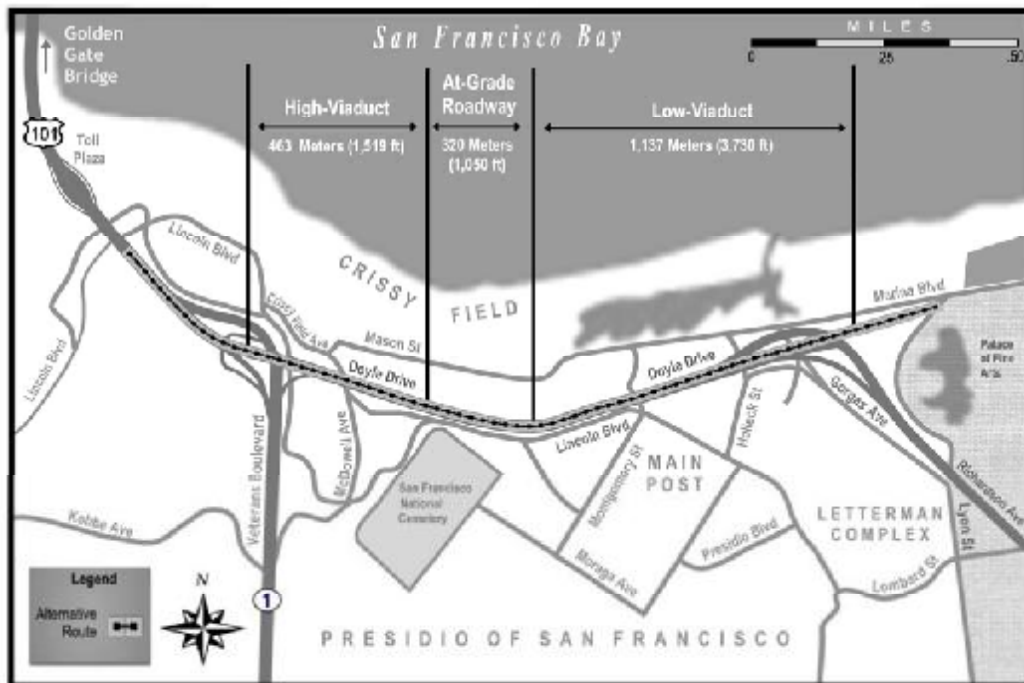
2.4.1 Alternative 1: No-Build

The No-Build Alternative (**Exhibits 2-22 through 2-24** on the following pages) represents the future year conditions if no other actions are taken in the study area beyond what is already programmed by the year 2020. It is the baseline condition against which all other alternatives are compared. Doyle Drive would remain in its current configuration (i.e., “No-Build”): 2.4 kilometers (1.5 miles) long with six traffic lanes ranging in width from 2.9 to 3 meters (9.5 to 10 feet) wide. There are no fixed median barriers or shoulders currently existing on Doyle Drive. The roadway passes through the Presidio on one high steel truss and one low elevated concrete viaduct with lengths of 463 meters (1,519 feet) and 1,137 meters (3,730 feet), respectively. This alternative considers those operational and safety improvements that have been planned and programmed to be implemented by the year 2020.

This alternative is required of all federal and state planning guidelines. The No-Build Alternative does not improve the seismic, structural, and traffic safety of the roadway.

The seismic retrofit of the high-viaduct that was completed in 1997 was performed presuming Doyle Drive would be replaced within ten years and did not address the issue of the deteriorated bridge decks that have reached the end of their useful life. Under the No-Build Alternative interim repairs would be required to maintain operations on the high-viaduct. The high-viaduct is

Exhibit 2-22
Alternative 1: No-Build



currently undergoing a rehabilitation that includes removal of existing paint, removal and replacement of in-kind various steel elements and connection rivets, replacement of deck joint seals, and repainting. These interim repairs are expected to maintain the current level of safety and do not constitute a retrofit or a full rehabilitation. This interim rehabilitation which was programmed for Fiscal Year (FY) 2005/6, started in September 2006 and is anticipated to be completed in November 2009. It is expected that ongoing maintenance would then be required to maintain the service load carrying capacity and safety of the facility to prevent it from being designated with a weight restriction. If the high-viaduct is designated with a weight restriction, buses and trucks will have to take alternate routes. However, it should be noted that the rehabilitation can only be considered a short-term solution merely delaying the eventual need for replacement of the entire high-viaduct structure.

The low-viaduct is unique in that the latest seismic retrofit completed in 1997 was installed with the condition that the bridge would be replaced within five to ten years because the seismic capacity of the bridge is limited. Limitations on capacity were imposed by the make-up of the structure, namely its type, materials, and its current state of deterioration. According to the State's risk analysis performed in 1998 (*Risk Assessment of Marina Viaduct*, Caltrans 1998), the latest seismic retrofit provides seismic capacity for an earthquake that has a five percent chance of being exceeded between the years of 1998 and 2008 and a 2.5 percent chance of being exceeded between the years of 1998 and 2003. It is expected that like the high-viaduct, interim repairs are likely to be made when recommended, at a minimum, by the biennial maintenance inspections.

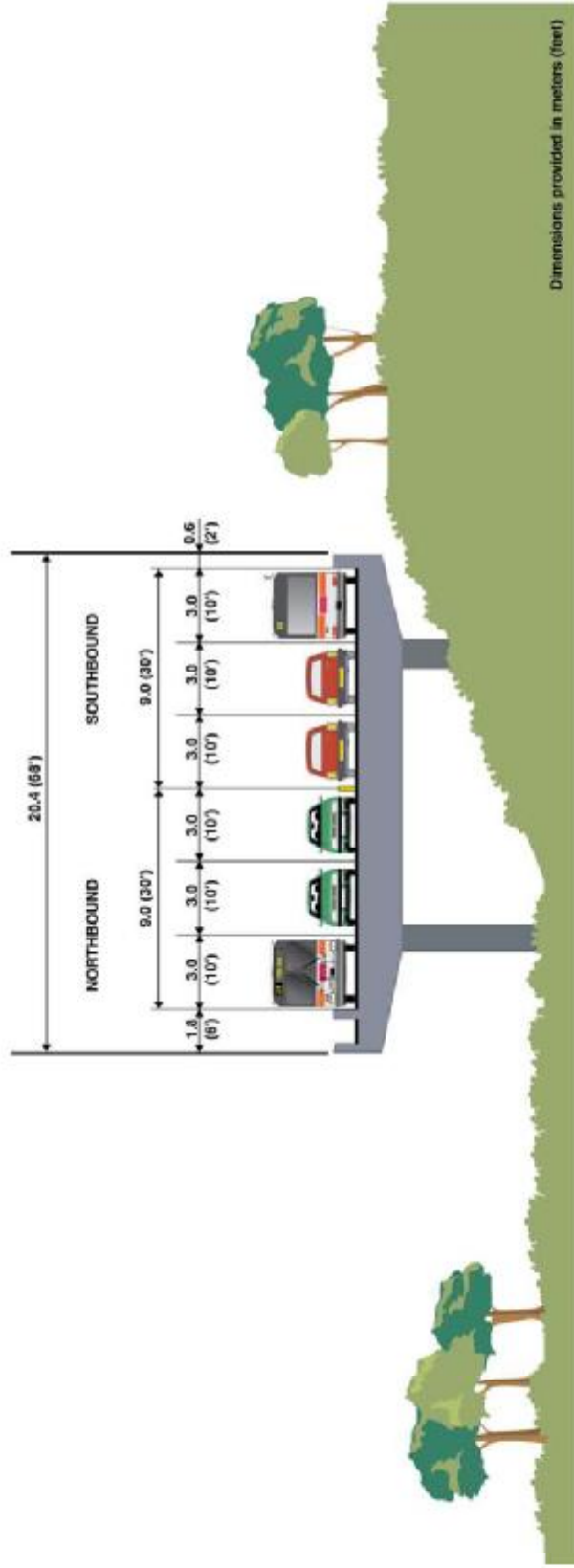
Vehicular access to the Presidio is available from Doyle Drive via the on- and off-ramps to Merchant Road at the Golden Gate Bridge Toll Plaza. This area is at the far western end of the Presidio, away from the developed area of the park. At the eastern end of Doyle Drive, Presidio access is provided for southbound traffic via a right turn from Richardson Avenue to Gorgas Avenue. Presidio access for northbound traffic is provided by the slip ramp from northbound Richardson Avenue to Gorgas Avenue.

Alternative 1 also includes programmed projects which are identified in the Metropolitan Transportation Commission's *Regional Transportation Plan*, 2005.

Exhibit 2-23
Alternative 1, No-Build: Plan



Exhibit 2-24
Alternative 1, No-Build: Typical Cross Section



2.4.2 Alternative 2: Replace and Widen

The Replace and Widen Alternative, **Exhibits 2-25** through **2-27** (on the following pages), would replace the 463-meter (1,519-foot) long high-viaduct and the 1,137-meter (3,730-foot) long low-viaduct with new structures that meet the most current seismic and structural design standards. The height of the high-viaduct would vary (due to topography) from 20 to 35 meters (66 to 115 feet) above the ground surface.

The low-viaduct would have an average height of approximately ten meters (33 feet) for the No-Detour Option and approximately eight meters (26 feet) for the Detour Option. The new facility would be replaced on the existing alignment and widened to incorporate improvements for increased traffic safety.

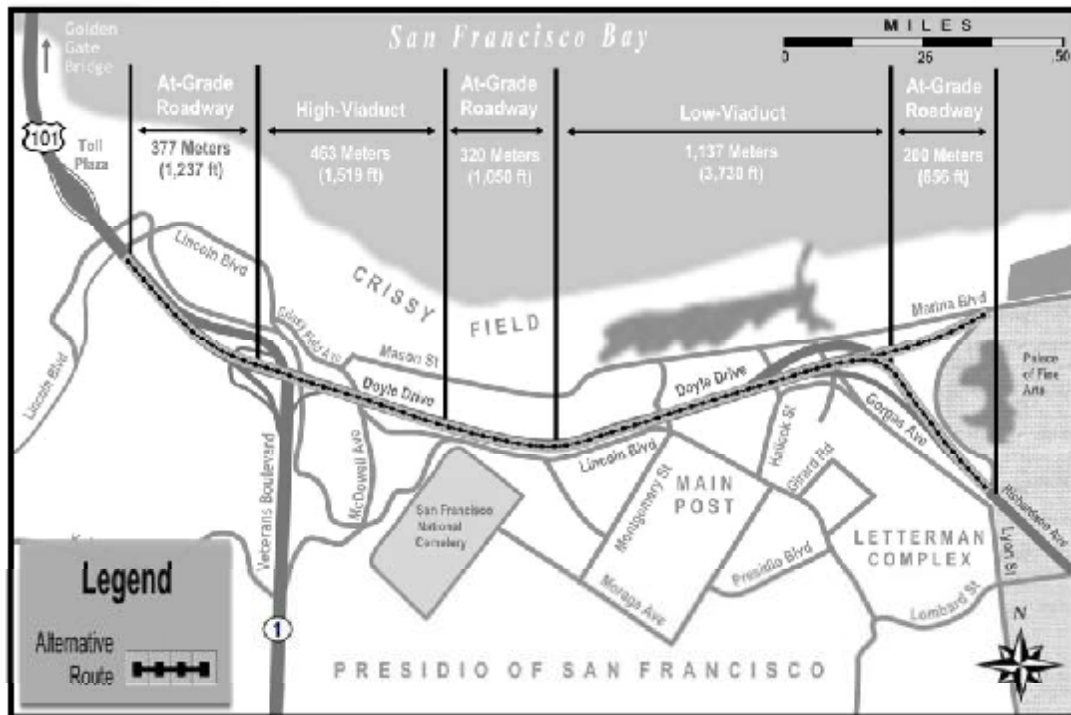
This alternative would include three 3.6-meter (12-foot) lanes in each direction with three-meter (ten-foot) outside and inside shoulders. In addition, the facility would include a 3.6-meter (12-foot) auxiliary lane in the southbound direction from the Park Presidio Interchange to the Richardson Avenue ramp. The new facility would have an overall width of 37.8 meters (124 feet). The new facility would require a localized northbound lane width reduction to 3.3 meters (11 feet) and inside shoulder reduction to 0.6 meters (two feet) to avoid impacts to the historic batteries which are remnants of the original Presidio coastal gun emplacements and Lincoln Boulevard, reducing the facility width to 32.4 meters (106 feet). This alternative would not preclude the Golden Gate Bridge Highway Transportation District's (GGBHTD) parking of the moveable median barrier machine in the median of Doyle Drive south of the Toll Plaza.

At the Park Presidio Interchange, the two ramps connecting southbound Doyle Drive to northbound Veterans Boulevard and the ramp connecting northbound Doyle Drive to southbound Veterans Boulevard would be reconfigured to improve traffic safety and accommodate the new facility. The Replace and Widen Alternative would operate similar to the existing facility except that there would be a median barrier and inside and outside shoulders to accommodate disabled vehicles. The Replace and Widen Alternative includes two options for the construction staging:

- **No-Detour Option** – The widened portion of the new facility would be constructed on both sides and above the existing low-viaduct and would maintain traffic on the existing structure. Traffic would be incrementally shifted to the new facility as it is widened over the top of the existing structure. Once all traffic is on the new structure, the existing structure would be demolished and the new portions of the facility would be connected. To allow for the construction staging using the existing facility, the new low-viaduct would be constructed two meters (seven feet) higher than the existing low-viaduct structure.

- **With Detour Option** - A 20.4-meter (67 foot) wide temporary detour facility would be constructed to the north of existing Doyle Drive to maintain traffic through the construction period. Access to Marina Boulevard during construction would be maintained on an elevated temporary structure south of Mason Street. On- and off-ramps for the mainline detour facility would connect to the existing Marina Boulevard/Lyon Street intersection.

Exhibit 2-25
Alternative 2: Replace and Widen

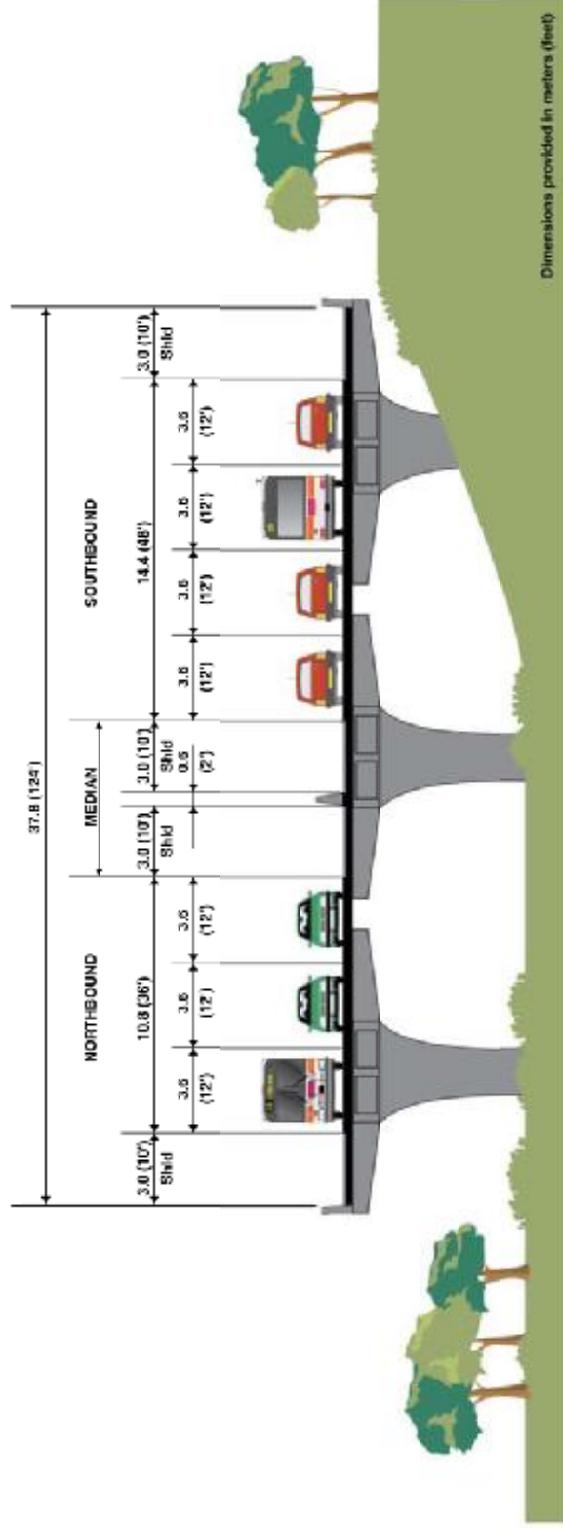


Vehicular access to the Presidio would be available from Doyle Drive via the on- and off-ramps to Merchant Road at the Golden Gate Bridge Toll Plaza. Access to Lincoln Boulevard and the Presidio from Merchant Road is via roads that service GGBHTD facilities such as its maintenance and administration buildings and visitor areas. Presidio access at the east end of the project would be provided for southbound traffic via a right turn from Richardson Avenue to Gorgas Avenue. The current Presidio access for northbound traffic at the east end of Doyle Drive cannot be accommodated due to geometric constraints and concerns for traffic safety.

Exhibit 2-26
Alternative 2, Replace and Widen: Plan



Exhibit 2-27
Alternative 2, Replace and Widen: Cross Section



Note: Landscaping shown for illustrative purposes only.

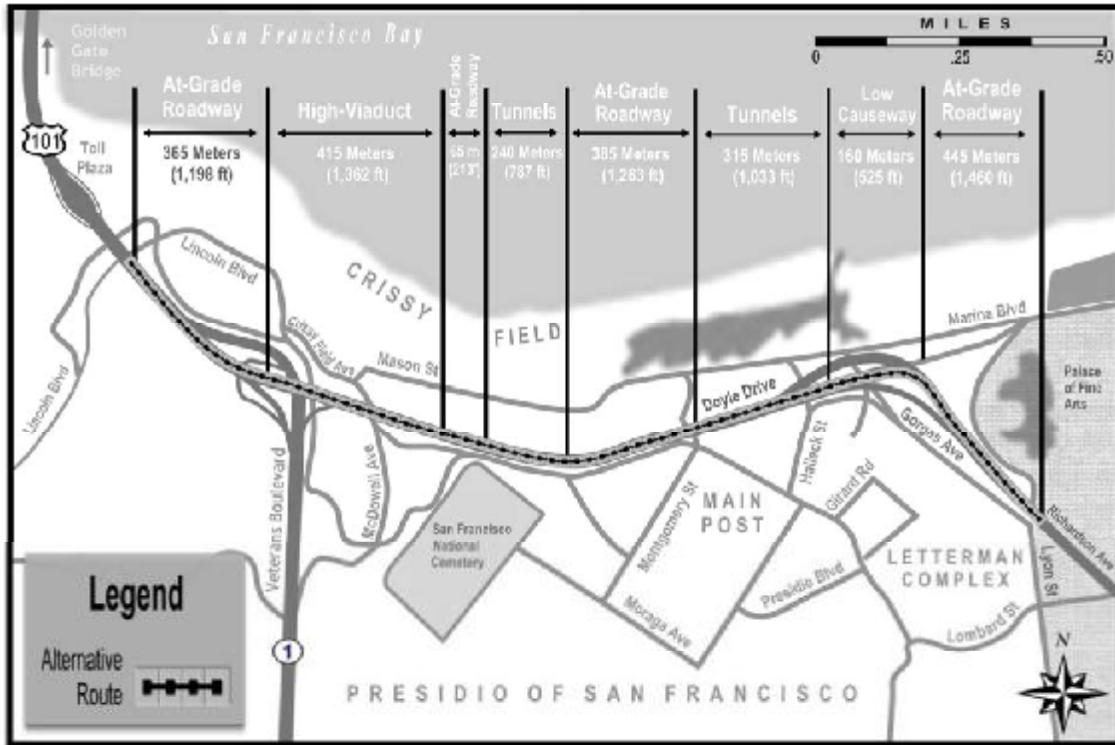
Retaining walls would be required at the Park Presidio Interchange to accommodate the ramp realignments. A retaining wall would also be constructed on the south side of the facility along the constrained section between the National Cemetery and the historic batteries.

2.4.3 Alternative 5: Presidio Parkway

The Presidio Parkway Alternative, shown in **Exhibits 2-28** through **2-30** (on the following pages) would replace the existing facility with a new six-lane facility and a southbound auxiliary lane, between the Park Presidio Interchange and the new Presidio access at Girard Road. The new facility would consist of two 3.3-meter (11-foot) lanes and one 3.6-meter (12-foot) outside lane in each direction with three-meter (10-foot) outside shoulders and 1.2-meter (4-foot) inside shoulders. In addition, a 3.3-meter (11-foot) auxiliary lane runs along southbound Doyle Drive from the Park Presidio Interchange to the Girard Road exit ramp. The total roadway width would be 32.1 meters (105.3 feet) and the overall facility width, including the median, would vary from 37.1 to 44.6 meters (121.7 to 146.3 feet). The width of the proposed landscaped median varies from five meters (16 feet) to 12.5 meters (41 feet). To minimize impacts to the park, the footprint of the new facility would include a large portion of the existing facility's footprint east of the Park Presidio Interchange. In some areas along the roadway, full restoration of mature natural species may take between 10 and 20 years.

A 415-meter (1,362-foot) long high-viaduct would be constructed between the Park Presidio Interchange and the San Francisco National Cemetery. The height of the high-viaduct would vary from 20 to 35 meters (66 to 115 feet) above the ground surface. Shallow cut-and-cover tunnels would extend 240 meters (787 feet) past the cemetery to east of Battery Blaney. The facility would then continue towards the Main Post in an open depressed roadway with a wide heavily landscaped median. This alternative would not preclude GGBHTD's parking of the moveable median barrier machine in the median of Doyle Drive south of the Toll Plaza.

Exhibit 2-28
Alternative 5: Presidio Parkway

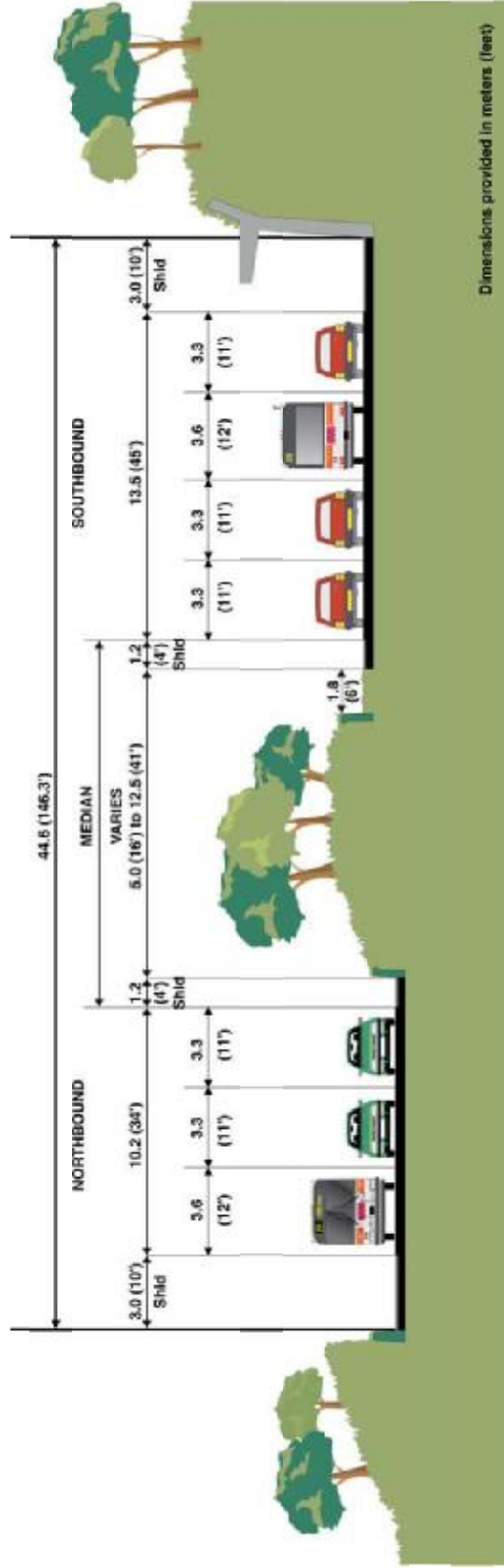


From Building 106 (Band Barracks) cut-and-cover tunnels up to 315 meters long (1,035 feet) would extend to east of Halleck Street. The amount of fill over the tunnels is being coordinated with the Presidio Trust based on requirements of the *Vegetation Management Plan*. The expected minimum depth is two meters (six feet). The facility would then rise slightly on a low causeway 160 meters (525 feet) long over the site of the proposed Tennessee Hollow restoration and a depressed Girard Road. The low causeway would rise to approximately four meters (13 feet) above the surrounding ground surface at its highest point. East of Girard Road the facility would return to existing grade north of the Gorgas warehouses and connect to Richardson Avenue. The proposed facility would provide a transition zone, starting from the Main Post tunnel, in order to reduce vehicle speeds prior to entering city streets. A motor control and switch gear room that would operate the tunnel life-safety equipment would be integrated with the Main Post tunnels.

Exhibit 2-29
Alternative 5, Presidio Parkway: Plan



Exhibit 2-30
Alternative 5, Presidio Parkway: Cross Section



Note: Landscaping shown for illustrative purposes only.

Dimensions provided in meters (feet)

The Presidio Parkway Alternative would include an underground single-parking facility up to four meters (13 feet) deep at the eastern end level of the alignment between the Mason Street warehouses and the Gorgas Street warehouses. The parking garage would supply approximately 500 spaces to maintain the existing parking supply in the area and provide pedestrian and vehicular access between the Presidio and the Palace of Fine Arts.

At the intersection of Doyle Drive and Merchant Road, just east of the Toll Plaza, a design option has been developed for a Merchant Road Slip Ramp. This option would provide an additional new connection from northbound Doyle Drive to Merchant Road. This ramp would provide direct access to the Golden Gate Visitors' Center as well as the Presidio and alleviate the congested weaving section where northbound Veterans Boulevard merges into Doyle Drive.

Based on the realignment of Doyle Drive, the Park Presidio Interchange would be reconfigured. The exit ramp from southbound Doyle Drive to southbound Veterans Boulevard would be replaced with standard exit ramp geometry and widened to two lanes. The loop of the northbound Doyle Drive exit ramp to southbound Veterans Boulevard would be improved to provide standard exit ramp geometry. The northbound Veterans Boulevard connection to northbound Doyle Drive would be realigned to provide standard entrance ramp geometry. There are two options for the northbound Veterans Boulevard ramp to a southbound Doyle Drive connection:

- **Loop Ramp Option** - Replace the existing ramp with a loop ramp to the left to reduce construction close to the Cavalry Stables and provide standard entrance and exit ramp geometry.
- **Hook Ramp Option** - Rebuild the ramp with a similar configuration as the existing directional ramp with a curve to the right and improved exit and entrance geometry.

The Presidio Parkway Alternative includes two options for direct access to the Presidio and Marina Boulevard at the eastern end of the project:

- **Diamond Option** – Direct access to the Presidio and indirect access to Marina Boulevard in both directions is provided by the access ramps from Doyle Drive connecting to a grade-separated interchange at Girard Road. East of the new Letterman garage, Gorgas Avenue is a one-way street and connects to Richardson Avenue with access to Palace Drive via a signalized intersection at Lyon Street. Palace Drive would operate as a one-way road and would be separated from Lyon Street.
- **Circle Drive Option** – Direct access to the Presidio and indirect access to Marina Boulevard for southbound traffic by access ramps connecting to a grade-separated interchange of Girard Road. Northbound traffic from Richardson Avenue would access the Presidio through a jug handle intersection with Gorgas Avenue. Palace Drive would operate as a one-way road and would be separated from Lyon Street.

Included in both the Diamond and Circle Drive options are extended bus bays on both sides of Richardson Avenue which would accommodate up to four buses each. The extended bus bays would keep the buses out of the main flow of traffic during stops, provide safer merging capability for the buses and would facilitate transfers between Golden Gate Transit, Muni and PresidiGo vehicles. Improved crosswalks to provide safer and enhanced pedestrian circulation in the area would be provided.

Retaining walls would be required at the Park Presidio Interchange to accommodate the reconstruction of the ramps. A retaining wall up to eight meters (26 feet) would be constructed along the south side of the facility between the Battery and Main Post tunnels. Retaining walls would also be required in the eastern end of the alignment primarily along the extended Girard Road. Fences would be required along the edge of the at-grade portions of the roadway to restrict pedestrian access.

2.5 Preferred Alternative: Refined Presidio Parkway

Following release of the DEIS/R in December 2005, individuals and agency staff provided almost eight hundred comments regarding the environmental analysis and project alternatives. Based on these comments and agency/public workshops, it was determined that Alternative 5: Presidio Parkway, would best meet the purpose and need of this Doyle Drive Project, if certain modifications to the proposed design were made.

2.5.1 Development of the Preferred Alternative: Refined Presidio Parkway Alternative

In response to these comments, and to address the communities' and agencies' concerns regarding traffic circulation, tidal inundation, and parking issues, the following refinements were made to the Presidio Parkway Alternative:

Traffic Circulation

- By redesigning the Richardson connection as ramps connecting to an urban street, rather than mainline segments, the traffic balance between Richardson Avenue and Marina Boulevard is more closely matched to the existing traffic patterns and street network.
- In response to the plans by the San Francisco Department of Recreation and Parks (SFDRP) for the rehabilitation of the Palace of Fine Arts and surrounding grounds, the refined alternative maintains Palace Drive as a two-way road and accommodates the proposed modifications planned by SFDRP at north and south ends where Palace Drive connects to Lyon Street. Based on comments from the Lyon Street residents, the Refined Presidio Parkway Alternative will also maintain Lyon Street as a two-way street with a connection to Bay Street.