Presidio Parkway Transportation Management Plan (TMP)

South Access to the Golden Gate Bridge:
Doyle Drive Replacement Project

DISCLAIMER: The content of this document is a working draft, and subject to revision based upon feedback from participating agencies.

Prepared for Use by:

Presidio Parkway TMP Working Group

San Francisco County
SR-101, PM 8.0-9.8
SR-1, PM 6.8-7.1

June 1, 2010 Version

This page is deliberately left blank.

Table of Contents

1.0 Introduction – Organization of TMP 1-1
1.1 Description of the Presidio Parkway Project 1-2
1.1.1 Current Roadway Description 1-3
1.1.2 Current Transit Service 1-4
1.1.3 Current Bicycle and Pedestrian Facilities 1-6
1.1.4 History of the Project Development 1-6
1.1.5 Project to be Constructed 1-7
1.2 Phasing Plan for Project 1-11
1.2.1 Major Phase 1: Late 2009 to Late 2011 1-12
1.2.2 First Full Weekend Closure 1-14
1.2.3 Major Phase 2: Late 2011 to Late 2013 1-16
1.2.4 Second First Full Weekend Closure and Project Completion 1-18
1.3 Identification of Other Nearby Projects that Affect the TMP Management 1-21
1.4 Document Approach 1-22
2.0 TMP Management Process 2-1
2.1 Management Responsibilities of TMP 2-1
2.2 Procedures for On-Going TMP Implementation Monitoring and Reporting 2-3
2.3 Process for Implementing Special Events Management 2-3
2.4 Process for Implementing Full Weekend Closures 2-4
2.5 General Preparation Requirements for Unforeseen Events 2-5
2.5.1 Emergency Access 2-5
2.5.2 Traffic Contingency Plan 2-5
2.5.3 Transit Contingency Plan 2-6
3.0 Impact, Mitigation and Contingencies by Location 3-1
3.1 Street Segments Within or Nearby Active Construction 3-1
3.1.1 Mainline Doyle Drive (US-101) – Southbound: Golden Gate Bridge Toll Plaza to SR-1 3-3
3.1.2 Mainline Doyle Drive (US-101) – Southbound: SR-1 to Marina Boulevard 3-6
3.1.3 Mainline Richardson Avenue (US-101) – Southbound: Marina Boulevard to Gorgas Avenue/Lyon Street Intersection 3-9

3.1.4 Mainline Richardson Avenue (US-101) – Northbound: Gorgas Avenue/Lyon Street Intersection to Marina Boulevard 3-12
3.1.5 Mainline Doyle Drive (US-101) – Northbound: Marina Boulevard to SR-1 3-15
3.1.6 Mainline Doyle Drive – Northbound: SR-1 to Golden Gate Bridge Toll Plaza 3-18
3.1.7 Northbound SR-1 to Southbound Doyle Drive (US-101) Ramp 3-21
3.1.8 Northbound Doyle Drive (US-101) to Southbound SR 1 Ramp 3-26
3.1.9 Southbound SR-1 3-31
3.1.10 Northbound SR 1 3-35
3.1.11 Gorgas Avenue Northbound Slip Ramp 3-38
3.1.12 Lincoln Boulevard (McDowell Avenue to Sheridan Avenue) and Crissy Field Avenue (McDowell Avenue to Lincoln Boulevard) 3-40
3.1.13 Lincoln Boulevard (McDowell Avenue to Crissy Field Avenue) 3-43
3.1.14 Lincoln Boulevard / McDowell Avenue Intersection 3-45
3.1.15 Storey Avenue - Ruckman Road (at SR-1 Overcrossing) 3-47
3.1.16 Cowles Avenue 3-49
3.1.17 McDowell Avenue 3-50
3.1.18 Mason Street 3-52
3.1.19 Halleck Street 3-54
3.1.20 Marina Boulevard 3-56
3.2 Other Potentially Affected Areas Not in the Construction Zone 3-58
3.2.1 Toll Plaza Area (east Side) 3-59
3.2.2 Lincoln Boulevard/Toll Plaza Road Intersection (east Side) 3-62
3.2.3 Lincoln Boulevard/Merchant Road (west Side of Toll Plaza) 3-65
3.2.4 Toll Plaza Operations (Southbound) 3-67
3.2.5 Golden Gate Bridge 3-69
3.2.6 Richardson Avenue/Lombard Street (US 101) Corridor 3-71
3.2.7 Lombard Gate Corridor 3-74
3.2.8 Lyon Street/Gorgas Avenue/Richardson Avenue Intersection 3-76
3.2.9 Presidio Gate and Presidio Boulevard/Presidio Avenue Corridor 3-79
3.2.10 Arguello Gate and Arguello Boulevard Corridor 3-82
3.2.11 North-South Streets in Pacific Heights 3-85
3.2.12 East-West Streets in Inner Richmond 3-88

3.2.13 Lincoln Boulevard and 25th Avenue Corridor 3-91
3.3 Transit Routes Affected by Active Construction 3-94
3.3.1 Golden Gate Transit Commuter Buses (all buses but Route 92) 3-95
3.3.2 Golden Gate Transit Route 92 3-100
3.3.3 Muni Route 91 3-104
3.3.4 Richmond Express Routes 3-106
3.3.5 Muni Route 28 3-108
3.3.6 Muni Route 43 3-112
3.3.7 PresidiGo Around-The-Park Shuttle 3-114
3.3.8 PresidiGo Downtown Shuttle 3-117
3.4 Key Bicycle and Pedestrian Facilities 3-119
3.4.1 Presidio Promenade 3-120
3.4.2 Golden Gate Promenade 3-122
4.0 Transportation Management Plan Strategies 4-1
4.1 Construction Activity Traffic 4-1
4.1.1 Incentives for Minimal Disruption of Traffic 4-1
4.1.2 Traffic Control Strategies 4-1
4.1.3 Construction Worker Traffic Strategies 4-2
4.1.4 Construction Truck Traffic 4-2
4.2 Information Strategies 4-6
4.2.1 Public Information Management 4-7
4.2.2 General Notification Process for Closures 4-7
4.2.3 Full Weekend Closure Notification Process 4-9
4.2.4 Bicycle and Pedestrian Awareness and Safety Program 4-10
4.2.5 Highway Advisory Radio (HAR) 4-10
4.2.6 Long-Term Detour Signage Erection, Monitoring and Refinement 4-11
4.2.7 Permanent Changeable Message Signage 4-11
4.2.8 Portable Changeable Message Signage 4-11
4.3 Active Corridor Management Strategies 4-12
4.3.1 Continued Operation of Lane Guidance 4-12
4.3.2 Short-Term Closure Guidelines 4-12

4.3.3 Emergency Response Management 4-14
4.3.4 Service Patrol Provisions 4-14
4.3.5 Construction Zone Enhanced Enforcement Program (COZEEP) 4-15
4.3.6 Traffic Control Officers 4-15
5.0 Attachments 5-1
5.1 Technical Analysis of Potential Impacts during Project 5-1
5.1.1 Sources of Available Data and Methods 5-1
5.1.2 Assumptions to Estimate Traffic Impacts 5-1
5.1.3 Summary of Analysis Techniques 5-1
5.2 Lane Closure Charts (Spreadsheets) 5-2
5.3 TMP Cost Data Sheet Analysis 5-2
5.4 Detour Maps and Descriptions 5-2
5.5 Alternate Routes -- PCMS/CMS TABLE and MAP 5-2
5.6 Construction Traffic Routes 5-2
5.7 Penalties for Late Reopening of Closures 5-2
5.8 Memoranda of Understanding 5-2

1.0 Introduction – Organization of TMP

The Presidio Parkway Project (Doyle Drive Replacement Project) is a joint effort by Caltrans and the San Francisco County Transportation Authority. Caltrans will be in responsible charge for execution of the contracts for the project and for the day-to-day management of the construction. Caltrans and the San Francisco County Transportation Authority are partners in the project and are responsible for managing the execution of the construction documents and the performance of the contractor. Caltrans will execute eight contracts over the course of the Presidio Parkway Project (also known as the Doyle Drive Replacement project). Each contract will have a separate Resident Engineer who will be responsible to the Presidio Parkway Project Construction Manager. The Construction Manager is responsible to the management team of Caltrans and the San Francisco County Transportation Authority.

This Transportation Management Plan (TMP) focuses on identifying the methods for minimizing construction-activity-related traffic congestion and accidents by the effective application of traditional traffic handling practices and an innovative combination of public and motorist information, traffic demand management, incident management, system management, construction strategies, alternate routes and other strategies.

The report is structured as follows:

Section 1 is a description of the document, the project, the existing conditions, and the staging/phasing of the construction which will span several years.

Section 2 is a description of the management methodology, responsibilities, and preparation for unforeseen events.

Section 3 describes the anticipated impacts by location. This section also identifies the mitigations, the responsibility for monitoring of the effectiveness of the mitigation measures, and contingencies if more aggressive mitigation actions are necessary. This section also discusses impacts to transit and impacts to pedestrians and bicycle routes.

Section 4 covers the area wide transportation management plan strategies such as: construction traffic activity, public information distribution and notification, traveler information, on-going corridor management, and other related topics.

Section 5 has attachments that provide more detail on the technical aspects of the project, including the traffic analysis, the Lane Closure Charts, TMP cost data sheet, detour maps and descriptions, Alternate route signage, construction traffic routes, late closure pickup penalty documents, and related MOU's. Ultimately, an additional attachment will be the Full-Weekend Closure planning activities that should commence well in advance of this major event.

1.1 Description of the Presidio Parkway Project

The existing south access road to the Golden Gate Bridge, known as Doyle Drive or US-101, is structurally and seismically vulnerable and must be replaced. Originally built in 1936, Doyle Drive has reached the end of its useful life. Figure 1-1 shows the project location.

Figure 1-1 – Doyle Drive Location

The Presidio Parkway design was unanimously identified as the Preferred Alternative for the Doyle Drive (US-101) replacement by the San Francisco Board of Supervisors and the California Transportation Commission. The Presidio Parkway is a world-class design to replace the existing roadway that, when constructed, will improve the seismic, structural and traffic safety of Doyle Drive. The project team has strived to create a roadway that reduces impacts to biological, cultural and natural resources; respects the project setting within a national park, the National Historic Landmark District and surrounding neighborhoods; meets community needs; and provides a better designed roadway for today's needs.

1.1.1 Current Roadway Description

Doyle Drive (US-101) is located in the Presidio area of San Francisco and extends from the south end of the Golden Gate Bridge Toll Plaza to Broderick Street on the east, including Richardson Avenue. Today, on the southerly side of the project, access to Doyle Drive (US-101) is also provided via Marina Boulevard. On the northerly side, the corridor access is also provided at Veteran's Boulevard (Park Presidio or SR-1) and at Lincoln Boulevard via Merchant Road near the Toll Plaza.

Except for the access at the southern end, the current roadway directional traffic is separated by pylon markers. Doyle Drive (US-101) lane configuration consists of thirteen lanes at the toll plaza, and narrows down to nine lanes in the vicinity of the last San Francisco exit at Lincoln Boulevard / Merchant Road. Then, it narrows to seven lanes by a series of lane drops and merging lanes and eventually to five through lanes in the vicinity of Doyle Drive (US-101 and SR-1 interchange (I/C) off and on ramps. Doyle Drive (US-101) then continues east with a six-lane configuration which includes an auxiliary lane introduced as part of the Route 1-southbound Doyle Drive (US-101) on ramp. At the southern end, it splits to five lanes separated by pylons towards Marina Boulevard and two lanes to and from Richardson Avenue at the end of the parkway segment.

The directional lane configuration in the six-lane and five-lane segment of Doyle Drive (US-101) is varied during the day based upon traffic demand. The Golden Gate Bridge Highway and Transportation District (GGBHTD) performs daily lane demarcation movement services on a general schedule over the day, corresponding to traffic flows. Generally three lanes are provided in the peak directional flow, with some periods where four lanes are provided.

Access to or from Doyle Drive (US-101) occurs as follows:

For southbound vehicles, there are southbound on- and off-ramps serving Lincoln Boulevard traffic south of the Golden Gate Toll Plaza.

Continuing on Doyle Drive (US-101) southbound, there is a full interchange that serves as a freeway-to-expressway connector between Doyle Drive (US-101) and SR-1. There is a Doyle Drive (US-101) southbound lane drop along the bridge overcrossing of SR-1. The lane is returned with the merger of the northbound SR-1 to southbound Doyle Drive (US-101). The southbound Doyle Drive (US-101) to southbound SR-1 ramp is a single lane ramp. Likewise the Northbound 1 to Doyle Drive (US-101) southbound is a one lane ramp. Northbound SR-1 to northbound Doyle Drive (US-101) is the only two lane ramp connector. The northbound Doyle Drive (US-101) to southbound SR-1 is a single lane ramp.

Near the Halleck Street overcrossing, Doyle Drive (US-101) splits with two lanes heading towards Marina Boulevard and three lanes heading towards Richardson/Lombard Streets.

Northbound there is one single lane off-ramp that exits the parkway.

Doyle Drive, or US-101, serves as the south access to the Golden Gate Bridge. Winding 1.5 miles along the northern edge of San Francisco, the roadway is the primary highway and transit linkage through San Francisco, between counties to the south (San Mateo and Santa Clara) and to the north (Marin and Sonoma).

Average daily traffic on Doyle Drive (US-101) is approximately 115,000 vehicles at the northernmost portion south of the Golden Gate Bridge toll plaza.. The mainline section of Doyle Drive that uses the viaducts is approximately 78,000 vehicles per day. The daily traffic that uses Richardson Boulevard is approximately 57,000 vehicles per day, with approximately 21,000 vehicles accessing Doyle Drive from Marina Boulevard.

The Average Daily Traffic on the aerial section of SR-1 in the Presidio is approximately 64,000 vehicles.

1.1.2 Current Transit Service

Transit service is operated by three public bus transit providers in the area – the Golden Gate Bridge, Highway and Transportation District (Golden Gate Transit); The City of San Francisco (San Francisco Municipal Railway, MTA or Muni); and the Presidio Trust (PresidiGo Shuttle).

Each operator has scheduled fixed-route service that uses a portion of Doyle Drive. A list of each service, and what roads they use in the study area (in parenthesis) are as follows:

Golden Gate Transit

- Route 2: Marin City - Sausalito - Downtown San Francisco (US-101 -- Doyle Drive/Richardson Avenue)
- Route 4: Mill Valley - Tam Junction - Manzanita Park/Ride - Downtown San Francisco (US-101 -- Doyle Drive/Richardson Avenue)
- Route 8: Tiburon - Belvedere - Strawberry - Downtown San Francisco (US-101 -- Doyle Drive/Richardson Avenue)
- Route 10: Strawberry - Mill Valley - Tam Junction - Manzanita Park/Ride - Marin City - Sausalito - Downtown San Francisco (US-101 – Golden Gate Bridge/SR-1 – Veteran's Boulevard/Park Presidio)
- Route 18: Larkspur - Corte Madera - Downtown San Francisco (US-101 -- Doyle Drive/Richardson Avenue)
- Route 24: Fairfax- San Anselmo - Ross - Kentfield - College of Marin - Greenbrae - Downtown San Francisco (US-101 -- Doyle Drive/Richardson Avenue)
- Route 26: Sleepy Hollow - San Anselmo - San Rafael - Downtown San Francisco (US-101 -- Doyle Drive/Richardson Avenue)
- Route 27: San Anselmo - San Rafael - Downtown San Francisco (US-101 -- Doyle Drive/Richardson Avenue)

- Route 38: Terra - Downtown San Francisco (US-101 -- Doyle Drive/Richardson Avenue)
- Route 44: Marinwood - Lucas Valley - San Rafael Transit Center - Downtown San Francisco (US-101 -- Doyle Drive/Richardson Avenue)
- Route 54: San Marin - Novato - Downtown San Francisco (US-101 -- Doyle Drive/Richardson Avenue)
- Route 56: San Marin - Rowland Blvd Park/Ride - Downtown San Francisco (US-101 -- Doyle Drive/Richardson Avenue)
- Route 58: Ignacio - San Rafael - Downtown San Francisco (US-101 -- Doyle Drive/Richardson Avenue)
- Route 70: Novato - San Rafael - Marin City – San Francisco Civic Center/Downtown San Francisco (US-101 -- Doyle Drive/Richardson Avenue)
- Route 72: Santa Rosa - Rohnert Park - Cotati - Downtown San Francisco (US-101 -- Doyle Drive/Richardson Avenue)
- Route 72F: Santa Rosa - Rohnert Park - Cotati - Downtown San Francisco (US-101 -- Doyle Drive/Richardson Avenue)
- Route 72X: Santa Rosa - Rohnert Park - Downtown San Francisco (US-101 -- Doyle Drive/Richardson Avenue)
- Route 73: Santa Rosa - Rohnert Park - Petaluma - San Francisco Civic Center - Downtown San Francisco (US-101 -- Doyle Drive/Richardson Avenue)
- Route 74: Petaluma - San Francisco Financial District (US-101 -- Doyle Drive/Richardson Avenue)
- Route 76: East Petaluma - Downtown San Francisco (US-101 -- Doyle Drive/Richardson Avenue)
- Route 80: Santa Rosa - Rohnert Park - Cotati - Petaluma - Novato - San Rafael - Marin City – San Francisco Civic Center/Downtown San Francisco (US-101 -- Doyle Drive/Richardson Avenue)
- Route 92: Marin City - Downtown San Francisco (US-101 -- Doyle Drive/Richardson Avenue)
- Route 93: Golden Gate Bridge Toll Plaza- Van Ness Avenue - San Francisco Civic Center (US-101 -- Doyle Drive/Richardson Avenue)
- Route 97: Larkspur Ferry Terminal - Tiburon Wye Bus Pad - Downtown San Francisco (US-101 -- Doyle Drive/Richardson Avenue)
- Route 101: Santa Rosa – Rohnert Park – Cotati – Petaluma – Novato – San Rafael – San Francisco Civic Center/Downtown San Francisco.

Muni

- Route 28 -- 19th Avenue: Daly City BART to the Marina (US-101 -- Doyle Drive/Richardson Avenue; Merchant Road around the Golden Gate Bridge toll plaza; SR-1 – Veteran's Boulevard; Park Presidio)
- Route 91 – Owl: West Portal to SFSU via Bayview, Downtown, Chinatown, the Marina, and the Sunset (US-101 -- Doyle Drive/Richardson Avenue; SR-1 – Veteran's Boulevard; Park Presidio)

- Route 76 – Marin Headlands: Downtown to Marin Headlands (Sunday only) (US-101 – Golden Gate Bridge/Doyle Drive/Richardson Avenue)

There are two other tangentially affected routes that operate near the project:

• Route 43 -- Masonic: Excelsior to the Marina (Lombard Street/Lombard Gate; Presidio Avenue/Presidio Gate)

In addition, Muni uses Doyle Drive for out-of-service buses to and from the Richmond District, such as Routes 21, AX, 1X, 31, AX, 31BX, 38AX and 31 BX.

PresidiGo Transit

This service includes routes that operate in the vicinity of the project.

- PresidiGo: Around The Park Shuttle
- PresidiGo Downtown: Express Service to BART

1.1.3 Current Bicycle and Pedestrian Facilities

The current Doyle Drive roadway has a narrow sidewalk along the northern edge, constructed with the original roadway. This sidewalk is generally inaccessible and has several staircases along it.

As the Presidio has developed as a National Recreational Area, many parallel bicycle and pedestrian facilities have been added, which provide full corridor access for recreational and commute purposes. There are two multi-use trails or "promenades" – the Golden Gate Promenade and the Presidio Promenade. There are bicycle-only lanes along Mason Street and portions of Lincoln Boulevard. There are sidewalks along many streets in the project area.

1.1.4 History of the Project Development

Approval of the Presidio Parkway as the Preferred Alternative to replace Doyle Drive comes after many years of collaborative work. As early as 1955, the State of California recommended the reconstruction of Doyle Drive to handle increasing congestion. The proposal called for an eight-lane highway; however, due to public objection, not only was it dropped, but the California legislature passed a bill prohibiting the widening of Doyle Drive to more than six lanes.

In 1991, the San Francisco Board of Supervisors revisited the reconstruction of Doyle Drive and established the Doyle Drive Task Force. The Task Force considered design options and made recommendations that were approved by the Board of Supervisors in 1993. In 1994, the National Park Service released the Final General Management Plan Amendment (GMPA) identifying the

main objectives for Doyle Drive improvements which focus on maintaining the historic value of the surrounding areas, minimizing noise and pollution impacts and enhancing the Presidio entrance and the circulation features.

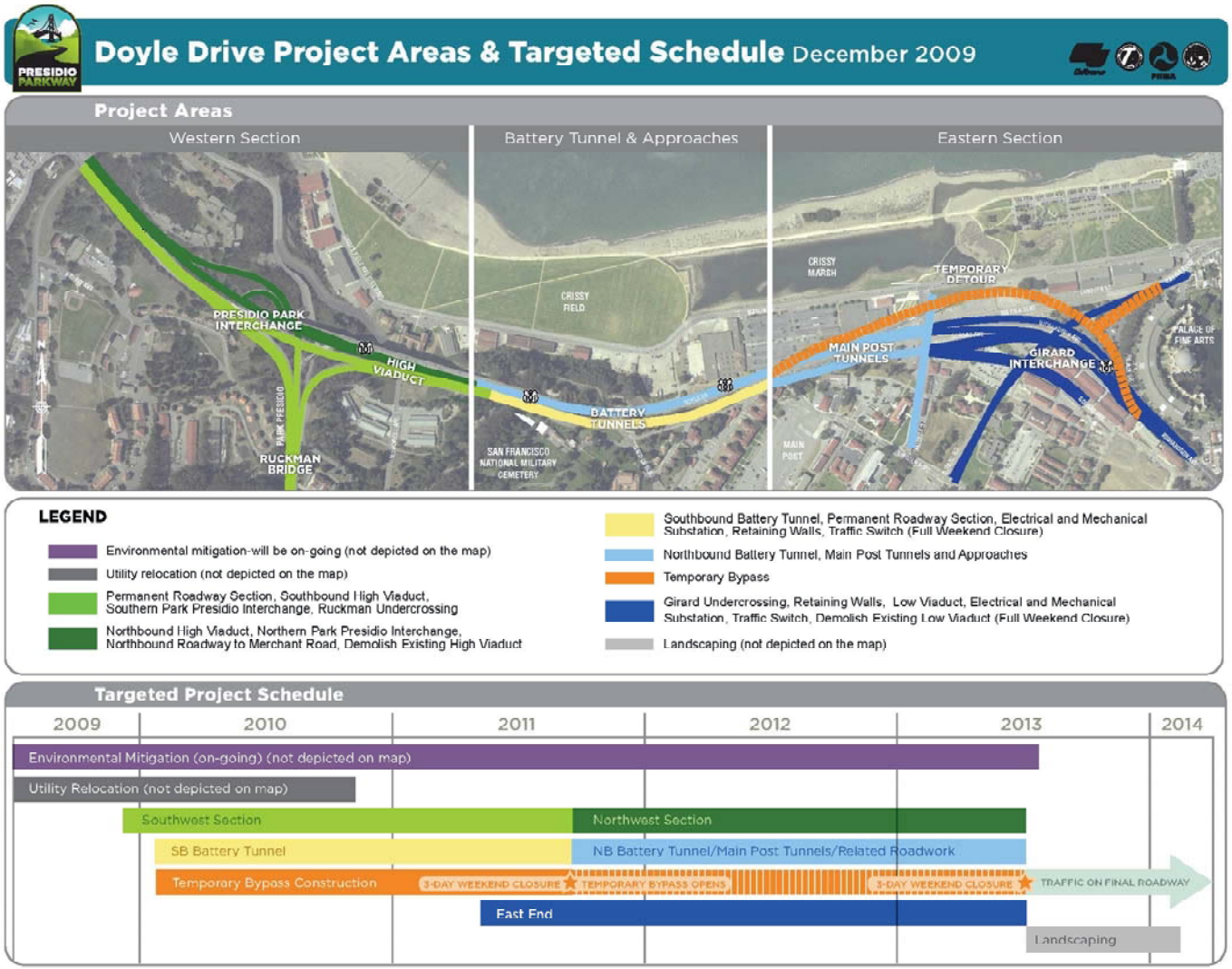
The San Francisco County Transportation Authority (Authority) developed the Doyle Drive Intermodal Study in 1996, which supports the Doyle Drive Task Force and the GMPA recommendation to make multi-modal and direct vehicular access into and out of the Presidio a central feature of the design.

Preparation of the environmental assessment began in 2000 and the Draft Environmental Impact Statement/Report (DEIS/R) was released in 2005. On September 26, 2006, the Authority's Board of Commissioners unanimously selected the Presidio Parkway as the Preferred Alternative. The input received during the comment period, as well as refinements to the Preferred Alternative, is reflected in the Final EIS/R that was circulated in October 2008 and certified on December 16, 2008.

1.1.5 Project to be Constructed

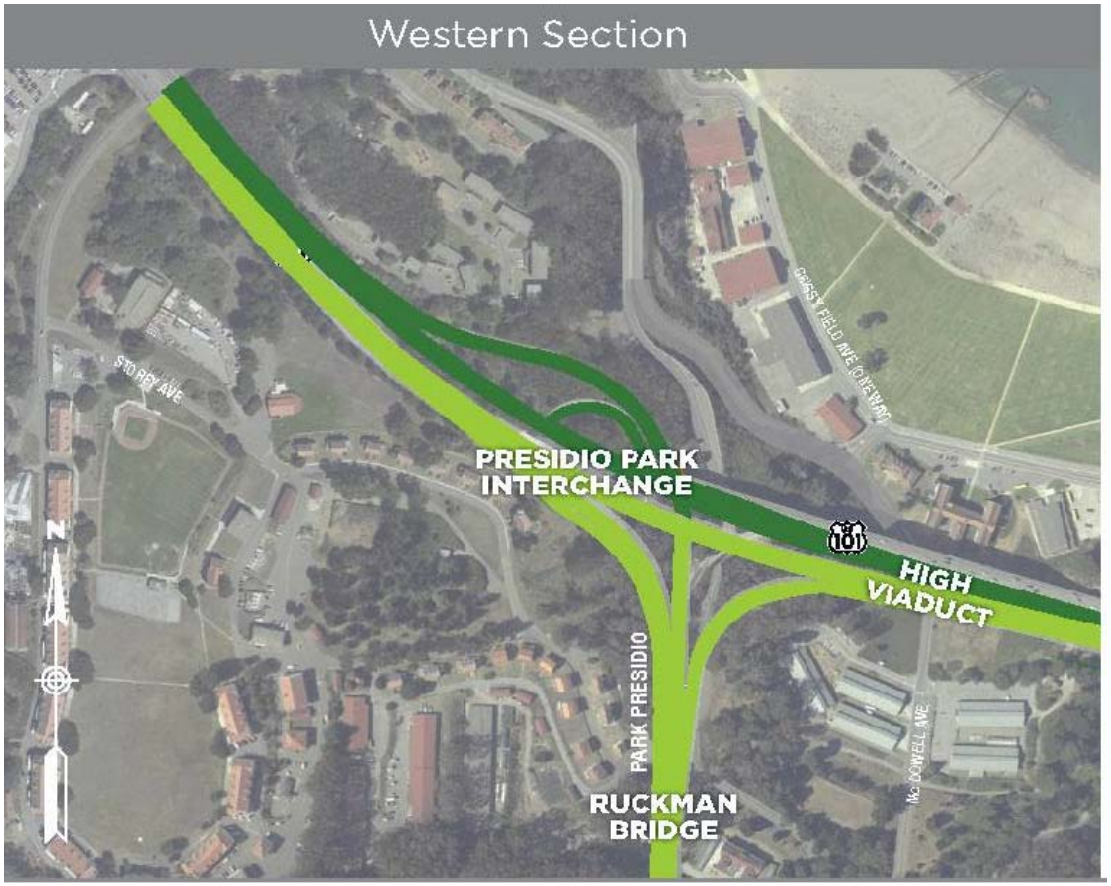
The Presidio Parkway Project consists of reconstruction of the existing Doyle Drive (US-101) from the Golden Gate Bridge Toll Plaza to Richardson Avenue. Figure 1-2 shows the overall project layout and targeted construction schedule. The new facility will consist of a context-sensitive parkway with improved seismic, structural and traffic safety. The new roadway will improve traffic safety with wider lanes, continuous shoulders and medians. The northbound and southbound roadways will be separated by a wide landscaped median. The design includes two pairs of short tunnels, a wide landscaped median and connections to city streets. The project tunnels will permit new direct access to the public for the Presidio. The Presidio Parkway has been carefully designed to withstand the maximum credible earthquake for this region. Seismic safety will be achieved in 2011 when traffic is transferred onto the temporary bypass adjacent to the existing facility.

Figure 1-2 – Doyle Drive Project Areas and Targeted Construction Schedule



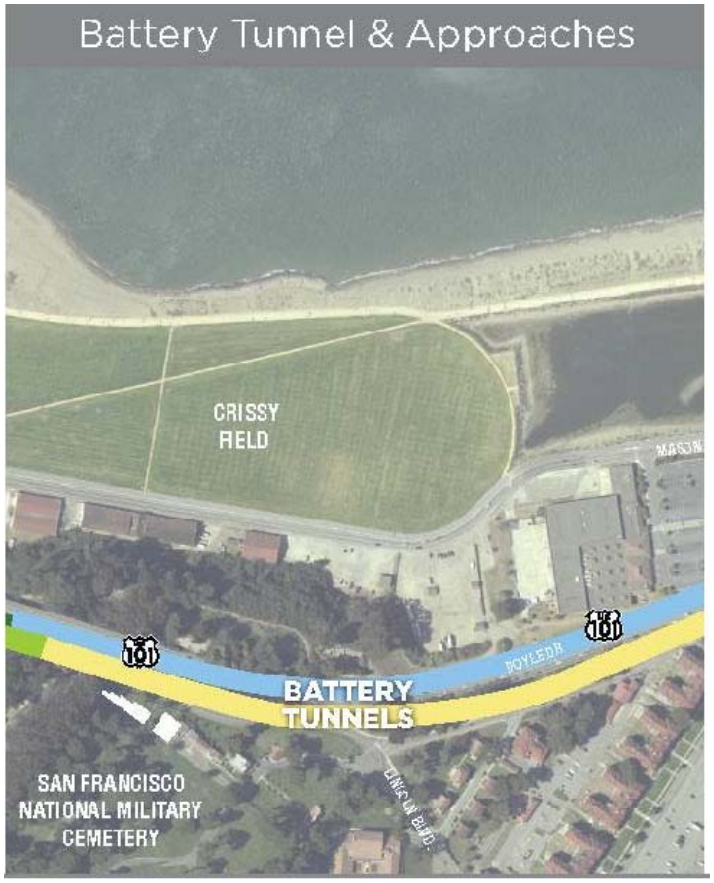
From the Toll Plaza to the interchange between Doyle Drive (US-101) and Veteran's Boulevard (SR-1) the facility will consist of an at-grade roadway. The interchange ("Presidio Park Interchange") and the elevated section of Veteran's Boulevard ("Ruckman Overcrossing") will be fully reconstructed. The interchange ramp work will span Lincoln Boulevard. The off-ramp from Doyle Drive (US-101) southbound to Veteran's Boulevard (SR-1) will be widened from one lane to two. East of the interchange the facility will continue as an aerial viaduct ('High Viaduct"). Figure 1-3 shows the Presidio Park Interchange and High Viaduct locations.

Figure 1-3 – Presidio Park Interchange and High Viaduct Locations



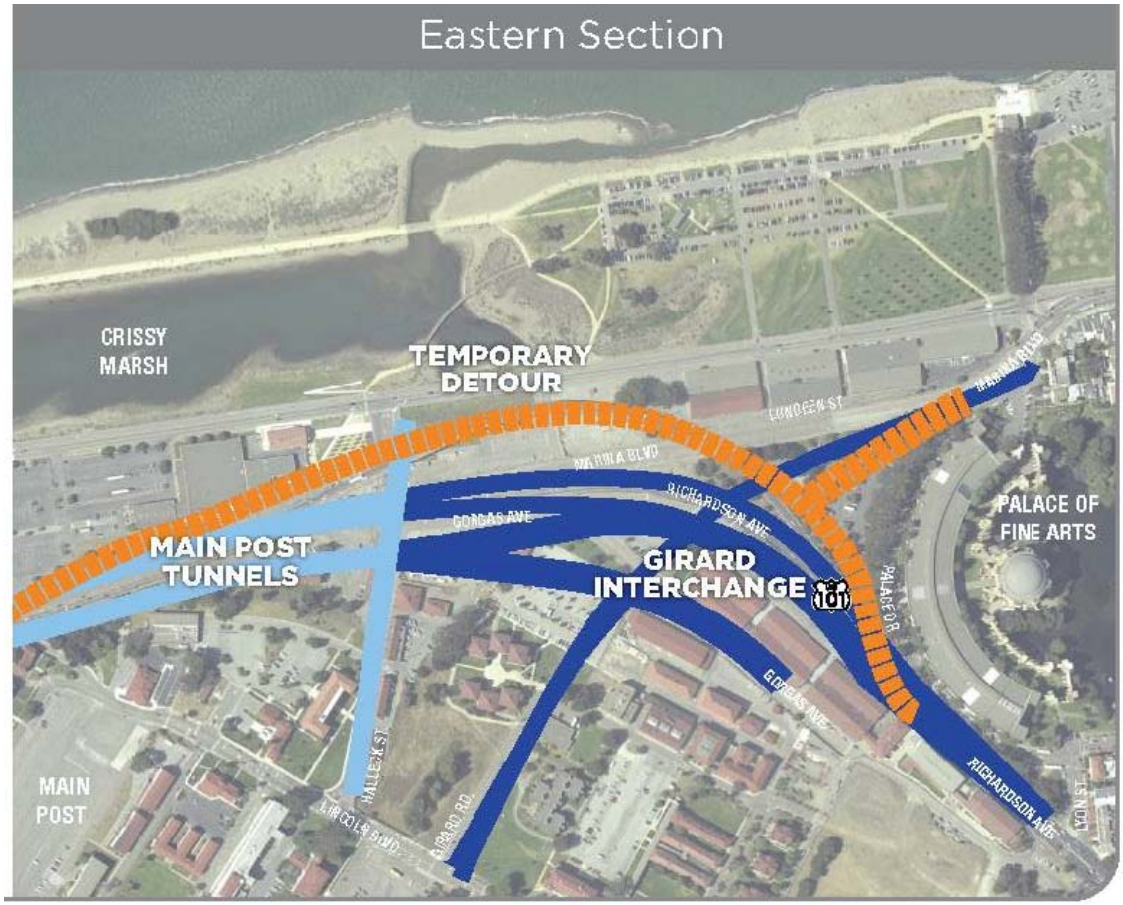
East of the High Viaduct the facility will enter the first tunnel ("Battery Tunnel"). The Battery Tunnel will actually consist of a pair of parallel cut-and-cover tunnels - one for each direction of the parkway. East of the Battery Tunnel the facility will consist of an at-grade roadway with watercourse under-crossings. Figure 1-4 identifies the locations of the two Battery Tunnels and the approaches.

Figure 1-4 – Battery Tunnel and Approach Location



Near the Presidio Main Post the facility will enter the second pair of cut-and-cover tunnels ("Main Post Tunnel"). East of the Main Post tunnel the facility will consist of a low causeway connecting to a new interchange with Marina Boulevard and Girard Road ("Girard Interchange"). The new interchange will replace both the existing Letterman off-ramp and the Marina Boulevard connections and allow for improved connections to the Main Post area of the Presidio and to the Marina District. The Presidio Parkway will then continue and the divided lanes merge to meet Richardson Avenue at the end of the project at Lyon Street. Figure 1-5 shows the location and layout of the Main Post Tunnels and Girard Interchange.

Figure 1-5 –Eastern Section Main Post Tunnels and Girard Interchange



The Presidio Parkway design also provides for improved bicycle, pedestrian and transit connections within the project area through providing more places to cross the roadway. The new roadway design will allow pedestrians and bicyclists to cross over or under Doyle Drive at numerous locations in accordance with the Presidio Trails and Bikeways Master Plan. There will also be new connections to Battery Blaney, Main Post and Crissy Field.

1.2 Phasing Plan for Project

A detailed phasing plan has been developed to permit the construction of the Presidio Parkway Project while minimizing the impacts on the public. For the most part, the project will be constructed outside of active travel lanes and existing roadway capacity will be retained. Given the scale of the project, however, some modifications are unavoidable, including some temporary ramp and roadway closures.

This section provides an overview of the project construction phasing. From the traffic management perspective, there will be two primary construction phases. During Phase 1, traffic remains on the existing Doyle Drive while construction occurs adjacent to the roadway. Construction efforts in Phase 1 include both permanent works and a temporary detour roadway. At the end of Phase 1, traffic will be shifted onto the temporary bypass alignment. During Phase 2, traffic will operate on the detour with the remainder of the permanent Presidio Parkway is completed. At the end of Phase 1, traffic will be shifted to the final Presidio Parkway configuration and the temporary facilities will be removed. Additional detail on site-specific impacts is provided in Section 3.

1.2.1 Major Phase 1: Late 2009 to Late 2011

During Major Phase 1, the majority of the construction will be performed off line while traffic remains in operation on the existing Doyle Drive. Figure 1-6 shows the areas for construction relative to traffic flows for Major Phase 1. Major construction activities during Phase 1 include:

- Reconstruction of the Park Presidio Interchange
- Reconstruction of the Ruckman Overcrossing
- Construction of the first (southbound) High Viaduct
- Construction of the first (southbound) Battery Tunnel
- Construction of the temporary detour roadway

Major implications for the project area include:

- Long-term closure of the ramp from northbound SR-1 to southbound US-101
- Long-term closure of the ramp from northbound US-101 to southbound SR-1
- Long-term closure of Lincoln Boulevard (Sheridan Avenue to Montgomery Street)
- Temporary closure of Lincoln Boulevard (Cowles Street to Crissy Field Avenue) and Cowles Street (McDowell Avenue to Lincoln Boulevard)
- Permanent closure of Crissy Field Avenue (Lincoln Boulevard to McDowell Avenue)
- Temporary closure of Storey Avenue (Lincoln Boulevard to Rod Road)
- Permanent closure of the Letterman Ramp from northbound Richardson Avenue to Gorgas Avenue, occurring one month prior to the end of Phase 1
- Shifts in travel lanes on the Ruckman Overcrossing and southbound US-101 to southbound SR-1 ramp, including overnight closures to complete shifts
- Occasional lane closures on existing roadways during limited hours

Figure 1-6 –Traffic Flow during Major Phase 1: Late 2009-2011

1.2.2 First Full Weekend Closure

To enable the opening of the detour alignment, the existing Doyle Drive (US-101) will be closed for a three-day weekend at the end of Phase 1 (late 2011) to construct the final connections. This closure will occur between the SR-1 interchange and the first Marina Boulevard and Richardson Avenue intersections. This will allow for the detour constructed during Phase 1 to open, replacing the existing Doyle Drive alignment. The connection between SR-1 and the Golden Gate Bridge will remain open during the Doyle Drive Closure. Halleck Street (Gorgas Avenue to Mason Street) and Marshall Street (Gorgas Avenue to Mason Street) will also be closed during and after this event. The first Full Weekend Closure is diagrammed in Figure 1-7.

Figure 1-7 –First Full Weekend Closure -- 2011

(Note that Doyle Drive closed between SR-1 and Marina Boulevard/Richardson Avenue to complete temporary detour connections)

1.2.3 Major Phase 2: Late 2011 to Late 2013

Following the Full-Weekend Closure, traffic will be shifted onto the new detour alignment, also known as Major Phase 2. This alignment uses the new southbound High Viaduct and road bed for the southbound Battery Tunnel, and a temporary bypass on the north side of the project in the Main Post area. The detour will require the closure of the Letterman off-ramp, as well as Halleck Street and Marshall Street. (Lincoln Boulevard will reopen before these streets are closed.)

During Major Phase 2, the construction will include the new Marina Boulevard/Girard Road connection (including viaducts), both Main Post Tunnels and the eventual northbound Battery Tunnel for northbound Doyle Drive (US-101), the eventual northbound High Viaduct, and the final construction of the northbound Doyle Drive (US-101) ramp to southbound SR-1.

Major Phase 2 is initiated following the First Full Weekend Closure. Traffic will be shifted onto the new detour alignment, with two-way traffic using the completed southbound High Viaduct, new roadbed for the southbound Battery Tunnel and the temporary bypass roadway north of the existing Doyle Drive in the Main Post Area. As in the existing condition, at least five lanes will be maintained on the temporary detour alignment between the SR-1 and the eastern end of the construction project. On the five lane section, a moveable barrier system under the control of Caltrans will replace the GGBHTD demarcation system. Additional detail on Phase 2 stage construction and traffic handling will be developed as the construction documents are produced.

Figure 1-8 shows the areas for construction relative to traffic flows for Major Phase 2.

Major construction activities during Phase 2 include:

- Demolition of the remaining components of the existing Doyle Drive
- Completion of the Park Presidio Interchange
- Construction of the northbound High Viaduct
- Construction of the northbound Battery Tunnel
- Construction of both Main Post Tunnels
- Construction of the Girard Interchange and the Marina Boulevard/Girard Road connection

Major implications for the project area include:

- Continued long-term closure of the ramp from northbound US-101 to southbound SR-1
- Permanent closure of Marshall Street (Gorgas Avenue to Mason Street)
- Long-term closure of Halleck Street (Gorgas Avenue to Mason Street)
- Operation of a moveable barrier system on five lane sections of the temporary detour alignment

Figure 1- 8 – Traffic Flow during Major Phase 2: 2011 - 2013

(Note: Traffic on temporary detour, demolition of existing Doyle Drive and construction of remaining Presidio Parkway components)

1.2.4 Second First Full Weekend Closure and Project Completion

Following the completion of Phase 2, a second three -day weekend closure (in 2013 or 2014) will be required to construct the connections and shift traffic. As with the first closure, the facility will be closed between the SR-1 interchange and the first Marina Boulevard and Richardson Avenue intersections, with the connection between Park Presidio (Veteran's Boulevard or SR-1) and the Golden Gate Bridge will remain open.

Once traffic has been shifted onto the final Presidio Parkway, the temporary bypass roadway will be removed and the final project components will be completed.

The second Full Weekend Closure is shown in Figure 1-9. The final roadway alignment for Doyle Drive is shown in Figure 1-10.

Figure 1-9 – Second Full Weekend Closure

(Note: Doyle Drive closed between SR-1 and Marina Boulevard/Richardson Avenue to complete Presidio Parkway connections)

Figure 1-10 – Doyle Drive Final Roadway Alignment: 2013

(Note: Traffic on final alignment, removal of temporary bypass roadway, project completion)

1.3 Other Nearby Projects that Affect the TMP Management

There are several projects that have been identified as potentially affecting the TMP management. These are presented below.

Golden Gate Bridge Retrofit. The third and final phase of the Golden Gate Bridge Seismic Retrofit Construction Project will be underway during the Presidio Parkway construction. A construction contract for the retrofit of the north anchorage housing and pylon was awarded in April 2008. Construction will take 3.5 years to complete, finishing at the end of 2011. A second contract for the retrofit of the main suspension span, main towers, south tower pier and fender will begin in 2010 and take 3.5 years to complete, finishing in 2013. The seismic retrofit measures for these phases consist of strengthening foundations, installation of micropiles and rock bolts, construction of reinforced concrete shear walls, replacement of the housing roof/roadway deck with a pre-cast concrete slab-on-steel stringer deck system involving nighttime lane closures, and other structural modifications. Most of the work will be done outside of the existing travel lanes; the capacity of the bridge should not be affected except for the occasional nighttime lane closures. The project is not expected to result in a major closure of the bridge in either direction.

I-580 Westbound Connector. A contract has been awarded for the I-580 westbound connector to US-101 and the project is to begin in early 2010. The construction will require that the current two lanes on the westbound connector US-101 northbound be reduced to only one. When completed, the work will restore the second lane. The work on the freeway should be completed in the fall of 2010 -- before the first Full Weekend Closure for the Doyle Drive Replacement Project.

Van Ness Avenue Bus Rapid Transit. The City of San Francisco is planning to implement a bus rapid transit service on Van Ness Avenue. No locally preferred alternative has been selected, but many of the options involve the removal of a traffic lane. Certification of the environmental impacts are planned is expected early in 2011. Following this acceptance, final design and construction can begin. The project may commence construction as early as sometime in 2012 but will likely occur in later years.

Geary Boulevard Bus Rapid Transit. The City of San Francisco is planning to implement a bus rapid transit service on Geary Boulevard. No locally preferred alternative has been selected, but many of the options involve the removal of a traffic lane. Certification of the environmental impacts are planned is expected early in 2011. Following this acceptance, final design and construction can begin. The project may commence construction as early as sometime in 2013.

San Francisco-Oakland Bay Bridge Weekend Closure. In 2013, when the San Francisco-Oakland Bay Bridge is completed, a final closure will occur so that traffic lanes can be shifted. The detailed closure description has not been developed at this time, but is expected to involve a closure over a weekend. When this occurs, greater traffic volumes are expected on Doyle Drive (US-101).

Localized Presidio Projects. The Presidio Trust continues to sponsor and implement localized traffic-related project such as geometric modifications, new accommodation of pedestrians and/or cyclists, and miscellaneous development and redevelopment projects.

1.4 Document Approach

The Presidio Parkway Project (Doyle Drive Replacement Project) is a complex project. There will be many construction contracts for the delivery of this project taking place simultaneously. In addition, the project traverses multiple jurisdictions and the impacts associated with the traffic handling plans and the detouring that is necessary to construct the project will have impacts on many different stakeholders.

This document has been prepared to fulfill the following objectives:

- To identify the probable, the potential and the not likely impacts to traffic, to transit, and to the public.
- To document the traffic impacts anticipated.
- To identify the safeguards taken with the contractors, with the public and with the stakeholders who have responsibility to deliver services in the construction area.

This document is intended to be a living document and will change as the project progresses. It will be the foundation for the project activities associated with the maintenance and protection of traffic as well as provision of safe access in and around the construction. The TMP Working Group will continue to meet as needed during the project construction period. Refinements to the TMP will occur relating to the Full-Weekend Closure. The continuation of the working group meeting will also allow the group to hear and discuss the effectiveness of the construction management plan implementation.

The document will identify the responsibilities of the key personnel assigned to manage the construction, monitor the traffic and to keep the public informed as the project evolves and when there are major changes in traffic patterns. This document is also meant to inform the readers of the array of tools that the management team has at its disposal to minimize disruption, to enforce the contractor to maintain his schedule and to inform the public.

The TMP has been organized to be a useful tool for the management team as well as the stakeholders and the public, so that the reader can quickly comprehend the organization of the document, can understand the reasoning behind the strategies, and can locate specific items of interest related to: traffic congestion, traffic safety, transit, bicycles and pedestrians. The document clearly identifies the responsibilities of the key TMP leaders, the Resident Engineer and the TMP Field Supervisor, who will be controlling, monitoring and implementing the transportation management tools that are described in the document.

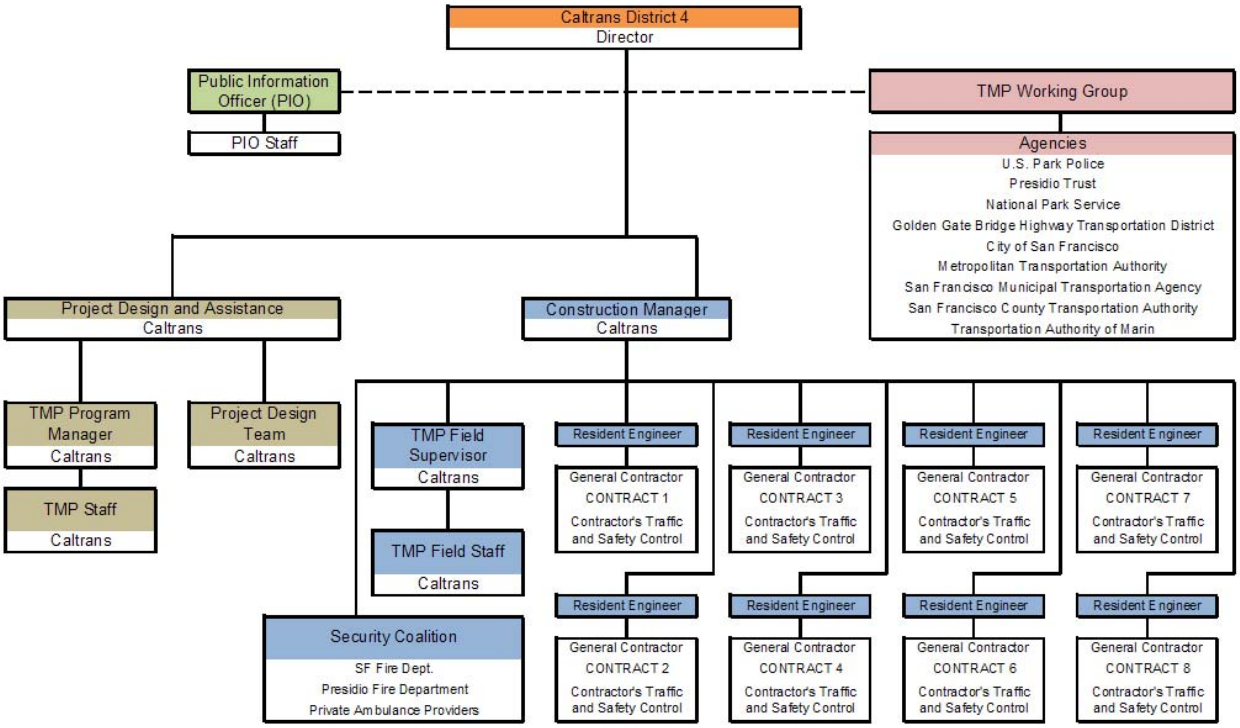
2.0 TMP Management Process

The Presidio Parkway project is a complex project that requires the coordination of several agencies that have traffic management responsibilities and operate transit vehicles in the project vicinity. This chapter provides an explanation of the relationships between the contractors Caltrans and other participating agencies during the project.

2.1 Management Responsibilities of TMP

This section provides a description the various tiers of the management team including management of the construction and interplay with the stakeholders and the public. The TMP requires that designated key personnel be placed in a number of responsible positions for implementing the various elements of the TMP. Key personnel include the Construction Manager, Resident Engineers, the TMP Field Supervisor, the Manager of the TMP Office, and the Manager of the Public Information Office. The following organizational chart depicts the general management for the delivery of the project during construction.

Figure 2-1: On-going Management Responsibilities



Project Design and Assistance: The contract design documents have been generally developed by the Caltrans Design Team. The team is responsible for preparing all documentation associated with the bid documents for each contract. Through this process, the Design Team works with

other Caltrans departments, and is responsible for making changes to the final design documents developed for bid.

One of those key documents is the Transportation Management Plan (TMP). This plan is typically developed by the Transportation Management Plan Section of Caltrans. This Transportation Management Plan section is led by a TMP Program Manager, who is designated to complete all advanced preparations that are included in the TMP. This person is assisted by TMP staff.

Public Information and Outreach: The process of informing the public is undertaken by a Public Information Office. The office, led by a Public Information Officer (PIO) provides overall support in both coordinate the design issues as well as those that arise during construction.

TMP Working Group: The TMP Working Group is an ad hoc, multi-agency assembly of groups that represent the various agencies involved in the project. The TMP Working Group reviews technical studies associated with the potential issues with the project, and is available through the study to address emerging transportation management issues that may arise. The key participating agencies include Caltrans, the San Francisco Transportation Authority; the Golden Gate Bridge, Highway and Transit District; the National Park Service; the Presidio Trust; the San Francisco MTA/Department of Parking and Traffic, the San Francisco MTA/Muni, the US Park Police and the Transportation Authority of Marin.

Construction Management: The overall construction effort is supervised by a Construction Manager. The Construction Manager is responsible for representing Caltrans concerns with the various Resident Engineers for the different assignments on the project (contracts), as well as coordinating with the PIO, the TMP Working Group, the TMP Section and others

The TMP Field Supervisor is responsible for monitoring the day-to-day traffic operations, to assure that the contractor is adhering to his/her responsibilities for traffic control as stipulated in the contract documents. The TMP Field Supervisor is also responsible for communicating to the Public Information Office substantive information regarding upcoming changes in lane control and detours. The TMP Field Supervisor will also interface with the TMP Working Group, which will consist of the stakeholders including the emergency response units that rely on Doyle Drive (US-101) and the local streets for access to locations requiring their aid. The TMP Supervisor will also be based in an office near the project site.

For each contract, Caltrans will assign a Resident Engineer. Each Resident Engineer reports to the Construction Manager. Caltrans may assign one of the Resident Engineers to coordinate activity related to TMP issues, referred to as the TMP Resident Engineer; this will be the key person who will also direct the contractor and notify the TMP Field Supervisor of the developments of the construction that are pertinent to maintaining traffic flow consistent with the TMP. The Resident Engineers will be based in an office near the project site. In addition, each contractor will have a designated person for traffic management as part of their Safety and Control officer.

2.2 Procedures for On-Going TMP Implementation Monitoring and Reporting

Caltrans's TMP Resident Engineer and the TMP Field Supervisor will be in responsible charge of monitoring the implementation of the ground-mounted motorists' information devices, which include traffic control signage, and Changeable Message Signage (CMS) – both portable and permanent. The procurement, placement, relocation and removal of traffic control devices; which includes ground-mounted fixed signage and the portable CMS; are the responsibility of the contractor. In the event that supplemental signage that deviates from the terms of the contract is required, the Resident Engineer will provide a change order to the contractor with specific direction. The Resident Engineer will be given discretion to adjust location of the portable CMS should there be a need.

Outside of the temporary construction easement area, the TMP Resident Engineer is responsible for obtaining permission for any deviations from the contract documents that pertain to changes in design or traffic management elements. The process would include submittal of the modification to the agency that has jurisdiction of the area where the change is being made.

In addition, Caltrans TMP Field Supervisor will be monitoring the success of the TMP and the contractor's efforts. If the results are not successful, the TMP office in conjunction with the Resident Engineer will take appropriate steps to mitigate the impacts. This could mean supplemental traffic control officers, change orders to the contractor for alternative work hours, increasing the workforce and or supplemental traffic control measures to mitigate the impacts. The agencies that have been identified to provide traffic control officers are the San Francisco Police Department and the National Park Police. Memoranda of Understanding are to be developed between Caltrans and agencies that provide traffic control for this service.

2.3 Process for Implementing Special Events Management

The project area has traditionally been a focal point for sponsored activities that occur throughout the year. The Presidio Trust, the National Park Service, and the GGBHTD receive many requests for events to which the public will be invited. There will be activities that will require coordination and cooperation between the event planner, the agency granting permission, Caltrans and the Contractor. This is necessary to ensure that any event in close proximity to the construction area has the appropriate safeguards to protect the public in arriving, departing and participating in the activity.

A partial listing of the major events is included in the TMP. The TMP Field Supervisor will be responsible for communicating with the National Park Service, the Presidio Trust and GGBHTD representatives and request advance notice of upcoming events where significant public activity is anticipated. The TMP Field Supervisor will be responsible for keeping the National Park Service (NPS), Presidio Trust and GGBHTD representatives informed of the traffic control activities that will be in place during the day that the event is to occur. This is especially important if planned

construction activities are to occur simultaneously with the special event. Special way-finding or detour signage shall be implemented if the anticipated path of travel of the public deviates from the standard local roads due to a long-term closure. For major events, the TMP Field Supervisor may be required to monitor the arrival and departure activities to assure that the public has safe access. Communication protocol for events will continue to be maintained between the event security and the police and event sponsoring agencies as is current practice. The US Park Police will also have communication accessibility with the Caltrans TMP Field Supervisor.

2.4 Process for Implementing Full Weekend Closures

Two weekend closures, required for the full segment of Doyle Drive (US-101) south of SR-1, are proposed for the project. One will occur at the end of Major Phase 1 to complete the connections between the Interim Detour Road (Presidio Parkway) and the existing roadways of at the limits of the Major Phase 1 construction. The second full weekend closure will occur at the end of the second phase of work to make the permanent connections to the fully improved Presidio Parkway.

An overall, coordinated strategy will be established to monitor and adjust corridor conditions during the closures. Full use of both permanent and portable changeable message signs will be implemented in advance of the actual events. The public will be informed by the Public Information Office through various media. A specific chain of command will be established for these events. A contingency plan will also be developed. A decision tree with clearly defined lines of communication and authority will be provided in the contingency plan. The names, telephone numbers and pager numbers of the key staff responsible for executing a successful closure.

The detailed planning for the full weekend closures will commence approximately one year in advance of an event. A traffic assessment will continue to be refined to confirm that the use of a full weekend closure is feasible. The planning will utilize the TMP working group to assist with the efforts. The proposed objectives of a full weekend closure plan include:

1. Discouragement of peak-period discretionary corridor trip making through advanced public information
2. Shift of corridor trips to transit modes through public information (such as ferries)
3. Traffic handling at key diversion routes
4. Mitigation of travel time and capacity impacts anticipated for transit
5. Consideration for event management around the full weekend closure

During a full weekend closure, there will be an on-site Command Post. The Command Post will provide system-wide traffic management functions, such as traffic monitoring, information dissemination and Highway Advisory Radio and Changeable Message Sign activation. The Caltrans Traffic Management Center is often designated as a Command Post for major projects that require significant closures, but the Command Post may be established near the construction site in a strategic location. Supplemental command posts may be established at locations to monitor real-

time traffic activity at critical junctions where major diversions may be possible, should the need arise.

The overall strategies will be identified at least six months prior to the anticipated Full weekend closures. The Command Post will be lead by the Resident Engineer. The TMP Office will be responsible for assuring that the planning of the elements for the Full weekend closure are in place and that the public has been notified of the Full weekend closure event as well as alternatives and route changes that may be adopted well in advance of the date for the weekend closure. Any Command Post that is establish for the implementation of the TMP operation will be managed and operated by the TMP Construction Manager and will be supported by Caltrans's Public Information, Operations, Construction, and Maintenance Divisions; CHP and others as appropriate. Memoranda of Understanding will be developed between Caltrans and cooperating agencies for services during a full weekend closure.

2.5 General Preparation Requirements for Unforeseen Events

Even though this TMP is intended to be comprehensive, it is generally unable to anticipate every related event which may occur during the duration of the project. This section summarizes the general preparation requirements for unforeseen events.

2.5.1 Emergency Access

Emergency access must be coordinated between the construction team and the emergency response providers. Each contractor will provide an Emergency Access Plan that will outline actions the contractor will undertake in the event of an emergency. Specifically, this document will address the routes of access for emergency vehicles into and out of construction areas in the most expeditious manner. The Emergency Access Plan will be reviewed by the Caltrans's oversight staff person that is responsible for reviewing submittals. Once the Emergency Access Plan is approved, the Resident Engineer will monitor it and enforce it. The TMP Field Supervisor will be responsible for providing copies of the Emergency Access Plan and communicating its details to the Security Coalition, a group of emergency responders that serve the Presidio and immediate surrounding area.

2.5.2 Traffic Contingency Plan

The contractor will be required to submit a Traffic Control Contingency Plan to Caltrans at least twenty-one working days prior to full weekend closure and seven days prior to any standard lane or minor roadway closure. The Traffic Control Contingency Plan will contain detailed methods of construction and proposed added workforce to ensure opening of the roadway or lane by the designated time. When the plan involves coordination with another stakeholder, Caltrans shall provide advance notification of the anticipated actions and conditions so that the stakeholder can respond appropriately. During construction, the contractor will be required to provide appropriate personnel to monitor activities and make decisions regarding activation of contingency elements. The Resident Engineer is responsible for monitoring the activity and

assuring that the contractor is compliant with the contract terms regarding lane and ramp closures. As soon as it becomes evident during any construction activity that it will not be possible to complete that activity and remove the closure at the designated time, that activity will be halted and postponed until a later date. The contractor will be financially penalized for opening the travel way later than agreed to.

The Traffic Control Contingency Plan will identify key operational decision points with a timeline listing the expected completion time of each critical-path activity. Clearly defined trigger points will be identified with each critical-path activity to establish when the Traffic Control Contingency Plan will be activated. The plan will list and describe any and all standby equipment and secondary material suppliers that are to be available to complete the operations in the event of equipment failure or unexpected uselessness of material.

2.5.3 Transit Contingency Plan

As part of the Traffic Control Contingency Plan, the needs of the transit operators should also be addressed. This supplemental strategy should include mechanisms to provide replacement and possibly additional transit service in the event of unanticipated delays associated with possible failure to restore traffic flow on transit corridors in a timely manner.

3.0 Impact, Mitigation and Contingencies by Location

This section presents the anticipated impacts by location. The locations are generally transportation network segments or corridors. For each location, there are unique impacts and issues that must be addressed. The following are provided for each location:

- Discussion of existing physical and operating conditions;
- Summary of the construction activities that may affect the location;
- Discussion and analysis (where appropriate) of potential impacts;
- Identification of monitoring and mitigation strategies (where feasible); and
- Identification of contingency measures.

The materials are organized by street locations that are within the construction area and outside of the construction area separately. The various types of issues and systems required to mitigate them during construction vary significantly depending on the specific location. Bus routes are presented differently as these traverse several locations, and the cumulative impact of the bus operations through the area is the element that is primary for their operation. Finally, bicycle and pedestrian activity in the construction area is high; areas which have related issues require special focus.

3.1 Street Segments Within or Nearby Active Construction

A number of street or highway segments will be directly modified by the construction activities associated with the Presidio Parkway project. Each of these are discussed in separate sections in this section:

- Mainline Doyle Drive (US-101) – Southbound: Golden Gate Bridge Toll Plaza to SR-1
- Mainline Doyle Drive (US-101) – Southbound: SR-1 to Marina Boulevard
- Mainline Richardson Avenue (US-101) – Southbound: Marina Boulevard to Gorgas Avenue/Lyon Street Intersection
- Mainline Richardson Avenue (US-101) – Northbound: Gorgas Avenue/Lyon Street Intersection to Marina Boulevard
- Mainline Doyle Drive – (US-101) Northbound: Marina Boulevard to SR-1
- Mainline Doyle Drive – (US-101) Northbound: SR-1 to Golden Gate Bridge Toll Plaza
- Northbound SR-1 to Southbound Doyle Drive (US-101) Ramp
- Northbound Doyle Drive (US-101) to Southbound SR-1 Ramp
- Southbound SR-1: US-101 (Doyle Drive) to Lake Street

- Northbound SR-1: Lake Street to US-101 (Doyle Drive)
- Gorgas Avenue Northbound Slip Ramp
- Lincoln Boulevard (McDowell Avenue to Sheridan Avenue) and Crissy Field Avenue (McDowell Avenue east to Lincoln Boulevard)
- Lincoln Boulevard (McDowell Avenue to Crissy Field Avenue)
- Lincoln Boulevard / McDowell Avenue Intersection
- Storey Avenue – Ruckman Road (at SR-1 Overcrossing)
- Cowles Avenue
- McDowell Avenue
- Mason Street
- Halleck Street
- Marina Boulevard

3.1.1 Mainline Doyle Drive (US-101) – Southbound: Golden Gate Bridge Toll Plaza to SR-1

Existing Conditions.

- This segment of Doyle Drive (US-101), from the northern limits of the project to the SR-1 interchange, carries traffic to and from the Golden Gate Bridge and the Merchant Road interchange. This segment has a variable number of lanes depending on time of day, with four southbound mainline lanes at the maximum time (AM peak period) with one additional auxiliary lane for exiting traffic to SR-1 southbound. The lane directionality is changed on a regular basis.
- This segment of Doyle Drive has nonstandard design elements, including travel lanes from 2.9 to 3.0 meters (9.5 to 10.0 feet) in width, no shoulders and exit ramps that have tight turning radii. The lane configuration the on Golden Gate Bridge and on Doyle Drive is changed in response to traffic demands through the use of plastic pylons. Plastic pylons are manually moved to provide a median lane as well as to reverse the direction of traffic flow of several lanes.
- Where Doyle Drive (US-101) crosses over the northbound SR-1 on-ramp, the facility has only three travel lanes in the peak direction during the peak time period.
- Current traffic volumes on this facility in this direction are approximately highest in the AM peak hour. At the busiest segment, north of the SR-1 off-ramp, these volumes are approximately 5,800 in the AM peak hour, and 4,400 in the PM peak hour.
- Typical weekday traffic volumes are approximately 70,000 vehicles.
- The highest weekend peak hour is approximately 4,400 on a Saturday afternoon, with lower volumes during winter months.
- This segment of roadway is used by many public and private

transit services including the Muni Route 28 and all Golden Gate Transit transbay routes. There are also many privately-operated tour and shuttle buses that use this segment of roadway. • There is an existing southbound weaving section which is approximately 1,840 ft long between the on-ramp at Merchant Road and the off-ramp to SR-1. This weaving section has an existing LOS C in the AM Peak Hour and LOS C in the PM Peak Hour.
Construction-Related Traffic Management Activity. • This segment is along the designated construction vehicle exit route for vehicles leaving the work area via either southbound SR-1 or southbound US-101. • **Major Phase 1:** During this phase, the location and the layout of the southbound off ramp to SR-1 changes as the new ramp is constructed. The exit ramp will be widened to two lanes at the outset of the project, to provide additional capacity for the maneuver to SR-1. • In order to allow for the Doyle Drive (US-101) construction, a slight shift will occur in the alignment for both northbound and southbound traffic near the SR-1 undercrossing. This will allow for the current plastic pylons to be fully used to demark 3 full travel lanes down Doyle Drive (US-101) in the peak direction. • During late 2010 or early 2011, the ramp diverge point will move from the current location to an earlier point, creating a shorter weaving section between the Merchant Road on-ramp and the SR-1 off-ramp; this will exist for several weeks. A capacity analysis of this weave segment (including additional traffic using the SR-1 off-ramp) indicates that this change will not significantly change the weaving level of service. • **Major Phase 2:** During phase 2, the southern end of this segment will be shifted to the south to use the new

southbound high viaduct. This new detour will have five full travel lanes, separated by a moveable median barrier.
Selected Management Strategies. • **Major Phase 1:** The change to the off-ramp diverge point and the shorter weave distance that will be required in late 2010 or 2011 at the southbound SR-1 off-ramp may result in traffic disturbances as drivers adjust to the new configuration. The TMP Field Supervisor will make sure that portable CMS to alert drivers to any traffic shift is installed.
Identification of Additional Issues. • The downstream lane reductions could influence traffic flows in this area, but this is not anticipated. Shifting traffic patterns, and geometric changes from lane reductions and ramp diverge point shifts are not expected to result in a significant difference from existing operating conditions. • This roadway segment will be signed as part of the "last chance" detour for the closed ramps between SR-1 and Doyle Drive (US-101).
Remedy for Additional Issues. • The TMP Field Supervisor will monitor the operation of traffic on this segment of Doyle Drive. The supervisor will pay particular attention to the weaving traffic between the Merchant Road on-ramp and the SR-1 off-ramp.
Contingency for Additional Issues. • Increase media activity via HAR; newspapers; TV and internet news. More PCMS and CMS units placed at more locations throughout affected routes and corridors. • Implement temporary ramp metering for the southbound Merchant Road on-ramp.

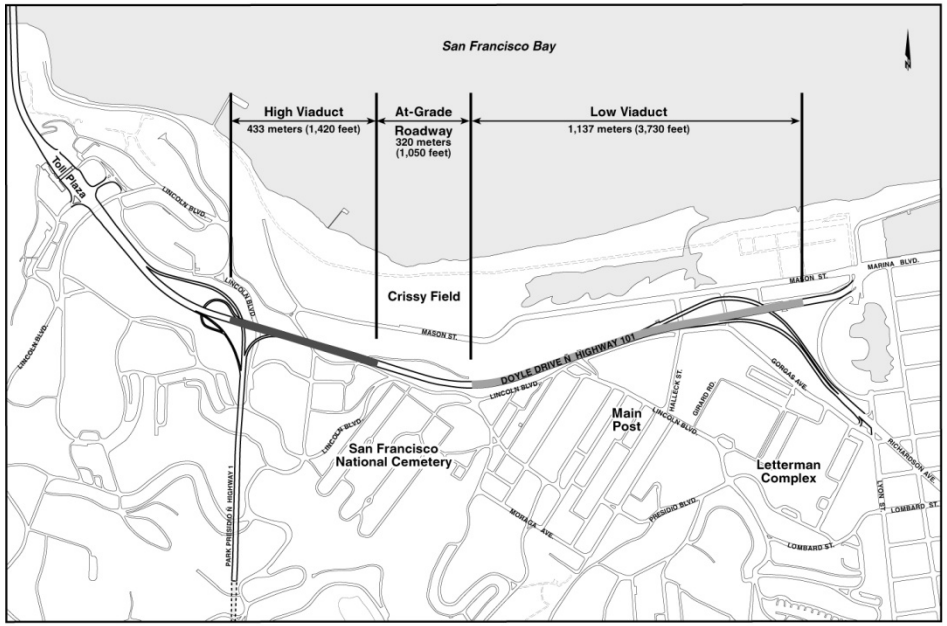
3.1.2 Mainline Doyle Drive (US-101) – Southbound: SR-1 to Marina Boulevard

Existing Conditions.

- This segment of Doyle Drive (US-101), from the SR-1 interchange to the Marina off-ramp has a total of six lanes for both directions.
- This segment of Doyle Drive has nonstandard design elements, including travel lanes from 2.9 to 3.0 meters (9.5 to 10.0 feet) in width with no shoulders. The lane configuration on the Golden Gate Bridge and on Doyle Drive is changed in response to traffic demands through the use of plastic pylons. Plastic pylons are manually moved to provide a median lane as well as to reverse the direction of traffic flow of several lanes.
- Four of these lanes are open during the AM peak hour (the fourth lane as a new lane coming from northbound SR-1), with two lanes open at other times during weekdays. During weekends, there are often three lanes open in this direction. The lane directionality is changed on a regular basis.
- Current traffic volumes on this facility in this direction are typically highest in the AM peak hour. At the busiest segment, south of the SR-1 on-ramp, these volumes are approximately 4,000 in the AM peak hour, and 3,100 in the PM peak hour. Typical weekday traffic volumes are approximately 41,000 vehicles.
- The highest weekend peak hour is approximately 4,000 on a Saturday afternoon, with lower volumes during winter months.
- This segment of roadway is used by many public and private transit services including the Muni Route 28 and all Golden Gate Transit transbay routes except Route 92. There are also many privately- operated tour and shuttle buses that use this segment of roadway.

Construction-Related Traffic Management Activity.

- This segment is along the designated construction vehicle exit route for vehicles leaving the work area and heading toward southbound US-101.
- **Major Phase 1:** The northbound SR-1 to southbound Doyle Drive (US-101) ramp closure is expected to result in decreased traffic volumes for this segment of Doyle Drive during the peak hours of between 300 to 500 vehicles.
- To construct the southbound Battery Tunnel, the "fourth lane" will need to be closed. This lane currently is the added lane from the northbound SR-1 to southbound Doyle Drive (US-101) ramp, so that there will not be a lane drop that occurs.
- **Major Phase 2:** Traffic during this phase will be shifted to the south for the high viaduct portion of the segment, then to the north onto the temporary bypass. This 5-lane temporary bypass will have a moveable median barrier. This will be configured with three lanes in the peak direction and two lanes in the off-peak direction. This detour will have wider lanes than the existing Doyle Drive.
- The northbound SR-1 to southbound Doyle Drive (US-101) ramp will reopen, adding traffic that will need to merge into the rightmost lane (as opposed to today where this becomes a fourth lane).
- A new at-grade intersection will be created to connect the temporary bypass roadway to Marina Boulevard. The signal will be a two-phase signal alternating between northbound Richardson Avenue traffic, and southbound left-turning traffic heading towards Marina Boulevard from the Doyle Drive detour (US-101).



Selected Management Strategies.

- To prevent a potential slowdown in traffic (and a related reduction in the capacity of the segment), "gawk screens" will be installed. This will help to prevent drivers from

slowing down to observe the construction. • **Major Phase 2:** Caltrans design engineers will work with operations staff and San Francisco MTA to refine the signal timing at the Gorgas Avenue/Lyon Street intersection with Richardson Avenue, as well as other downstream signals to prevent operational problems during this Phase.
Identification of Additional Issues. • The potential slowing of traffic to observe construction may result in slowing traffic, creating the potential for regular drivers to seek other routes. While this is not anticipated according to project forecasts, it remains a concern. • Drivers may be initially confused by the realigned roadway which may result in traffic disturbances. This is expected to be a short term concern as drivers will eventually adjust to the new configuration. • There may be a reduction in speeds associated with the curvatures required to travel through the corridor.
Remedy for Additional Issues. • The Resident Engineer will routinely observe traffic speeds and identify if there are problems. • If unreasonable congestion occurs along this particular facility, the TMP field Supervision will discuss the problem with the agency responsible for operating the facility to determine if additional signage, traffic control officers, temporary re- design, operations changes or other actions will be taken.
Contingency for Additional Issues. • Increase media activity via HAR; newspapers; TV and internet news. More PCMS and CMS units placed at more locations throughout affected routes and corridors. • Provide additional Freeway Service Patrol and California Highway Patrol presence. • Adjust transit schedules

3.1.3 Mainline Richardson Avenue (US-101) – Southbound: Marina Boulevard to Gorgas Avenue/Lyon Street Intersection

Existing Conditions.

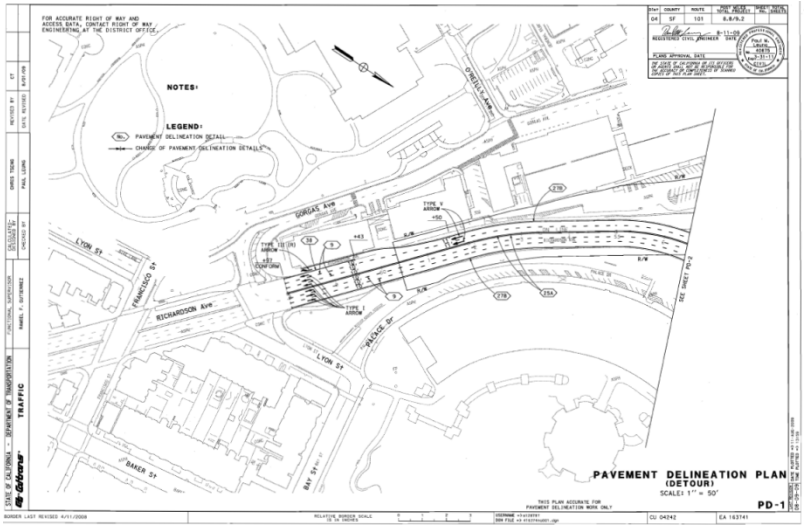
- Richardson Avenue (US-101) begins at the off-ramp from southbound Doyle Drive (US-101). The mainline traffic continues on the viaduct to become Marina Boulevard.
- Two lanes diverge from Doyle drive (one exit-only lane and one optional lane. Immediately past the ramp diverge point a third lanes is added. This segment of roadway continues as three lanes to the Richardson Avenue intersection with Gorgas Avenue/Lyon Street. At this intersection one additional exclusive right-turn lane is developed, which is approximately 200 feet long.
- Existing traffic volumes on this facility are approximately 2,690 in the AM peak hour and 1,730 in the PM peak hour, with approximately 29,000 vehicles daily. The weekend peak hour volumes are 2,020 vehicles (observed on Saturday evenings).
- This segment of roadway is used by many public and private transit services including the Muni Route 28 and all Golden Gate Transit transbay routes. There are also many privately-operated tour and shuttle buses that use this segment of roadway.
- The weekday AM peak hour is the busiest hour for this segment. A major bottleneck during the AM peak hour is located at the signalized intersection at Gorgas Avenue/Lyon Street. This intersection is the first signalized location for vehicles entering the City along the corridor, and often queues will extend several hundred feet back from the signal. This signalized intersection currently operates at an LOS D (38.6 seconds per vehicle) in the AM peak hour and LOS A (9.9 seconds per vehicle) in the PM peak hour.

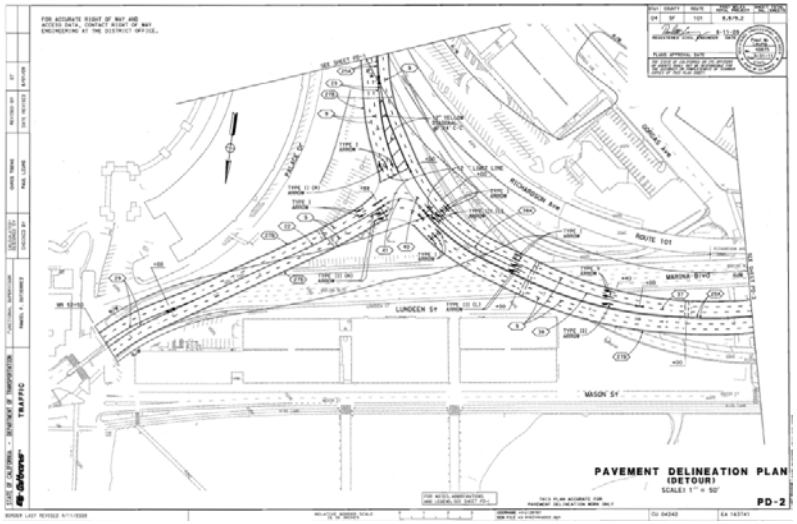
Construction-Related Traffic Management Activity.

- This segment is along the designated construction vehicle exit route for vehicles leaving the work area via southbound US-101.
- **Major Phase 1:** During this phase, there will be no major construction occurring on this roadway segment. Also, as a result of the upstream ramp closure from northbound SR-1 to southbound Doyle Drive (US-101), less traffic is forecasted to be on this facility.
- **Major Phase 2:** During this phase, this segment will have only two southbound through lanes. This condition will have less storage capacity than what exists today.
- Also in this Phase, the northbound SR-1 to southbound Doyle Drive (US-101) ramp is planned to reopen, with traffic volumes expected to increase back to a level similar to the existing condition.
- According to initial traffic simulations, there are two significant concerns which could result in increased delays and longer queues for southbound traffic entering San Francisco in the AM peak hour.
    - The storage capacity of the roadway in the southbound direction approaching Gorgos Avenue/ Lyon Street is reduced from three to two through lanes. This results in a longer queues and increased delays, particularly for the AM peak hour.
    - The left turn lanes from Doyle Drive to Marina Boulevard may have insufficient storage to accommodate the demand of vehicles making the left turn from US-101 onto Marina Boulevard. The resulting overflow of vehicles would block the southbound US-101 through lanes.

Selected Management Strategies.

- **Major Phase 1:** No significant management strategies are needed during this phase.





• **Major Phase 2:** Caltrans design engineers will work with operations staff and San Francisco to refine the signal timing at the Gorgas Avenue/Lyon Street intersection with Richardson Avenue, as well as other downstream signals to prevent operational problems during this Phase.
Identification of Additional Issues. • The potential slowing of traffic to observe construction may result in slowing traffic, creating the potential for regular drivers to seek other routes. While this is not anticipated according to the forecasts made for the project, it remains a concern. • Drivers may be initially confused by the realigned roadway which may result in traffic disturbances. This is expected to be a short-term concern as drivers will eventually adjust to the new configuration.
Remedy for Additional Issues. • The Resident Engineer will routinely observe traffic speeds and identify if there are problems. • If unreasonable congestion occurs along this particular facility, the TMP Field Supervisor will discuss the problem with the agency responsible for operating the facility to determine if additional signage, traffic control officers, temporary re- design, operations changes or other actions will be taken.
Contingency for Additional Issues. • Increase media activity via HAR; newspapers; TV and internet news. More PCMS and CMS units placed at more locations throughout affected routes and corridors. • Provide additional Freeway Service Patrol and California Highway Patrol presence. • Adjust transit schedules

3.1.4 Mainline Richardson Avenue (US-101) – Northbound: Gorgas Avenue/Lyon Street Intersection to Marina Boulevard

Existing Conditions.

- This segment Richardson Avenue (US-101) begins at the signalized intersection of Gorgas Avenue and Lyon Street, and continues until the merge onto mainline Doyle Drive (US-101).
- This segment of roadway begins as three lanes northbound at the Gorgas Avenue - Lyon Street intersection. Immediately north of the intersection it reduces to two lanes until it reaches Doyle Drive (US-101).
- Current traffic volumes on this facility are approximately 1,880 in the AM peak hour and 2,990 in the PM peak hour, approximately 33,500 vehicles daily. The weekend peak hour volumes are 2,420 vehicles (Saturday afternoons approximately at 2 PM).
- This segment of roadway is used by many public and private transit services including the Muni Route 28 and all Golden Gate Transit transbay routes except Route 92. There are also many privately- operated tour and shuttle buses that use this segment of roadway.

Construction-Related Traffic Management Activity.

- This segment is along the designated construction vehicle entrance route for vehicles arriving at the work area via northbound US-101.
- **Major Phase 1:** During this phase, there will be no major construction occurring on this roadway segment. Also, as a result of the downstream ramp closure from northbound Doyle Drive (US-101) to southbound SR-1, less traffic is forecasted to be on this facility.
- **Major Phase 2:** During this Phase, this segment will have a new, temporary signalized intersection with Marina

Boulevard. This two-phase intersection will operate in coordination with the Gorgas Avenue/Lyon Street and Marina Boulevard/Lyon Street signals to prevent queuing. • Also in this phase, the northbound Doyle Drive (US-101) to southbound SR-1 ramp will remain closed, so that traffic volumes are forecast to be lower than they are in the existing condition. • According to initial traffic simulations, there is one significant concern, which could result in increased delays and longer queues for northbound traffic San Francisco in the PM peak hour. The volume of traffic flowing through the new temporary intersection is projected to be heavy. The ability of this intersection to service the flows from Richardson Avenue and Marina Boulevard will require coordination with upstream signals as well as regular monitoring to ensure this traffic flows through the intersection without significant spillback.
Identification of Additional Issues. • The potential slowing of traffic to observe construction may result in slowing traffic, creating the potential for regular drivers to seek other routes. While this is not anticipated according to the forecasts made for the project, it remains a concern.
Remedy for Additional Issues. • The Resident Engineer will routinely observe traffic speeds and identify if there are problems. • If unreasonable congestion occurs along this particular facility, the TMP Field Supervisor will discuss the problem with the agency responsible for operating the facility to determine if additional signage, traffic control officers, temporary re- design, operations changes or other actions will be taken.

Contingency for Additional Issues.

- Increase media activity via HAR; newspapers; TV and internet news. More PCMS and CMS units placed at more locations throughout affected routes and corridors.
- Provide additional Freeway Service Patrol and California Highway Patrol presence.
- Adjust transit schedules

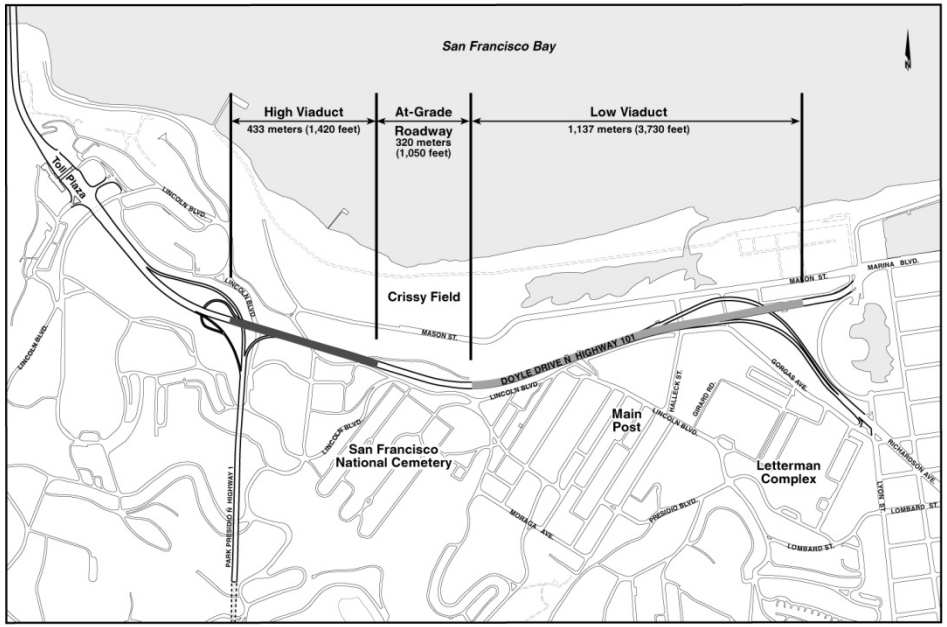
3.1.5 Mainline Doyle Drive (US-101) – Northbound: Marina Boulevard to SR-1

Existing Conditions.

- This segment of Doyle Drive (US-101), from the Marina Boulevard and Richardson Avenue merge to the SR-1 interchange, has a total of six lanes for both directions.
- This segment of Doyle Drive has nonstandard design elements, including travel lanes from 2.9 to 3.0 meters (9.5 to 10.0 feet) in width with no shoulders. The lane configuration the Golden Gate Bridge and on Doyle Drive is changed in response to traffic demands through the use of plastic pylons. Plastic pylons are manually moved to provide a median lane as well as to reverse the direction of traffic flow of several lanes. Three of these lanes are open during the maximum flow time of the PM peak hour, with two open at other times during weekdays. During weekends, there are often three lanes open in this direction. The lane directionality is changed on a regular basis based upon anticipated daily and seasonal traffic flows, as well as special events.
- Current traffic volumes on this facility in this direction are typically highest in the PM peak hour. At the busiest segment, north of the northbound SR-1 on-ramp, these volumes are approximately 2,400 in the AM peak hour, and 4,000 in the PM peak hour. Typical weekday traffic volumes are approximately 50,000 vehicles.
- The highest weekend peak hour is approximately 4,000 on a Saturday afternoon, with lower volumes during winter months.
- This segment of roadway is used by many public and private transit services including the Muni Route 28 and all Golden Gate Transit transbay routes except Route 92. There are also many privately- operated tour and shuttle buses that use this segment of roadway.

Anticipated Construction-Related Traffic Management Activity.

- This segment is along the designated construction vehicle entrance route for vehicles entering the work area via northbound US-101.
- **Major Phase 1:** The northbound Doyle Drive (US-101) to southbound SR-1 ramp closure is expected to result in decreased traffic volumes for this segment of Doyle Drive during the peak hours of between 300 to 500 vehicles.
- **Major Phase 2:** Traffic during this phase will be shifted to the temporary detour for the eastern portion of this segment, and shifted south to the high viaduct portion of the segment. This 5-lane temporary detour will have a moveable median barrier. This will be configured with three lanes in the peak direction and two lanes in the off-peak direction. This detour will have wider lanes than the existing Doyle Drive.
- The northbound Doyle Drive (US-101) to southbound SR-1 ramp will remain closed.
- Traffic leaving the new intersection of Richardson Avenue/Marina Boulevard will see a lane drop from three lanes to two during time when the moveable median barrier is shifted to provide more southbound traffic lanes. This has a similar effect to the current lane drop that occurs on Richardson Avenue (US-101) today.



Selected Management Strategies.

- To prevent a potential slowdown in traffic (and a related reduction in the capacity of the segment), "gawk screens" will be installed. This will help to prevent drivers from slowing down to observe the construction.

Identification of Additional Issues.

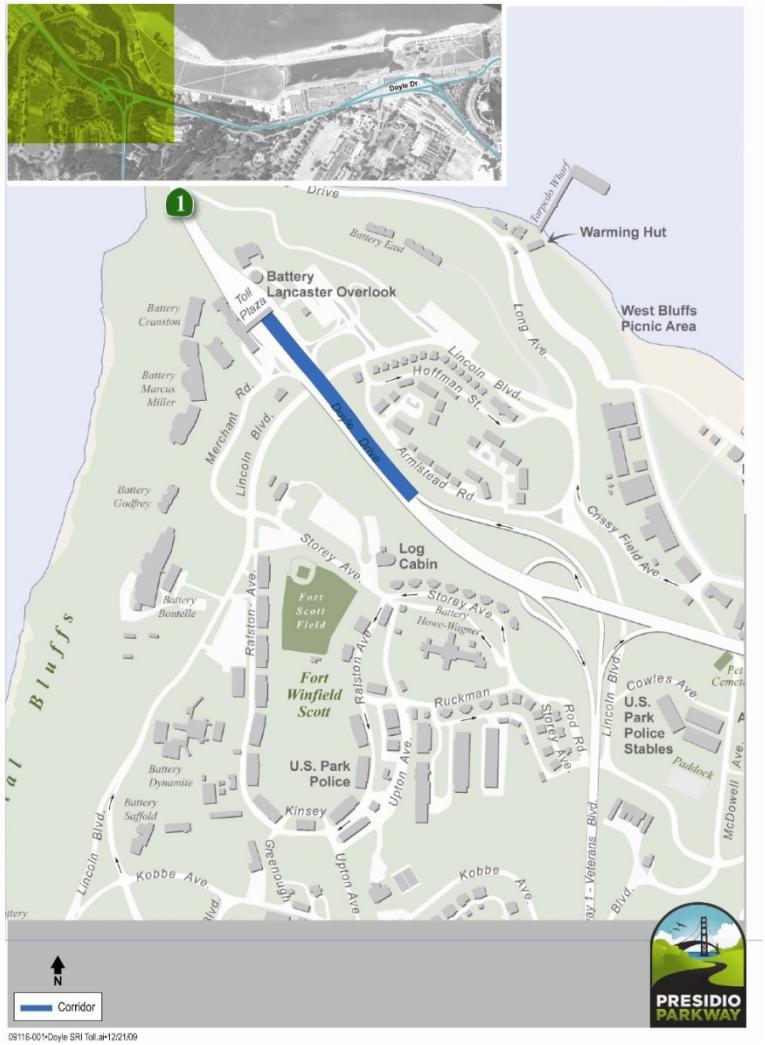
- The potential slowing of traffic to observe construction may result in slowing traffic, creating the potential for regular drivers to seek other routes. While this is not anticipated

according to the forecasts made for the project, it remains a concern. • Drivers may be initially confused by the realigned roadway which may result in traffic disturbances. This is expected to be a short-term concern as drivers will eventually adjust to the new configuration. • There may be a slow-down of traffic as a result of roadway curvature in the detour alignment.
Remedy for Additional Issues. • The Resident Engineer will routinely observe traffic speeds and identify if there are problems. • If unreasonable congestion occurs along this particular facility, the TMP Field Supervisor will discuss the problem with the agency responsible for operating the facility to determine if additional signage, traffic control officers, temporary re-design, operations changes or other actions will be taken.
Contingency for Additional Issues. • Increase media activity via HAR; newspapers; TV and internet news. More PCMS and CMS units placed at more locations throughout affected routes and corridors. • Provide additional Freeway Service Patrol and California Highway Patrol presence. • Adjust transit schedules.

3.1.6 Mainline Doyle Drive – Northbound: SR-1 to Golden Gate Bridge Toll Plaza

Existing Conditions.

- This segment of Doyle Drive (US-101), from SR-1 interchange to the northern limits of the project, carries traffic to the Golden Gate Bridge and the Merchant Road interchange. This segment has a variable number of lanes depending on time of day, with there being four main lanes at the maximum time (PM peak period). The lane directionality is changed on a regular basis.
- This segment of Doyle Drive (US-101) has nonstandard design elements, including travel lanes from 2.9 to 3.0 meters (9.5 to 10.0 feet) in width, no shoulders and exit ramps that have tight turning radii. The lane configuration the Golden Gate Bridge and on Doyle Drive is changed in response to traffic demands through the use of plastic pylons. Plastic pylons are manually moved to provide a median lane as well as to reverse the direction of traffic flow of several lanes.
- Current traffic volumes on this facility in this direction are typically highest in the PM peak hour. At the busiest segment, north of the northbound SR-1 on-ramp, these volumes are approximately 3,600 in the AM peak hour, and 5,400 in the PM peak hour. Typical weekday traffic volumes are approximately 70,000 vehicles.
- The highest weekend peak hour is approximately 4,400 on a Saturday afternoon, with lower volumes during winter months.
- The weaving section between the SR-1 on-ramp and the Merchant Road off-ramp is short (1,600 ft) and weaving delays occur at times. This weaving section has an existing LOS D in the AM Peak Hour and LOS E in the PM Peak Hour.
- There is a lane drop north of this segment as traffic travels through the toll plaza and onto the Golden Gate Bridge. This sometimes results in momentary traffic congestion on this segment.



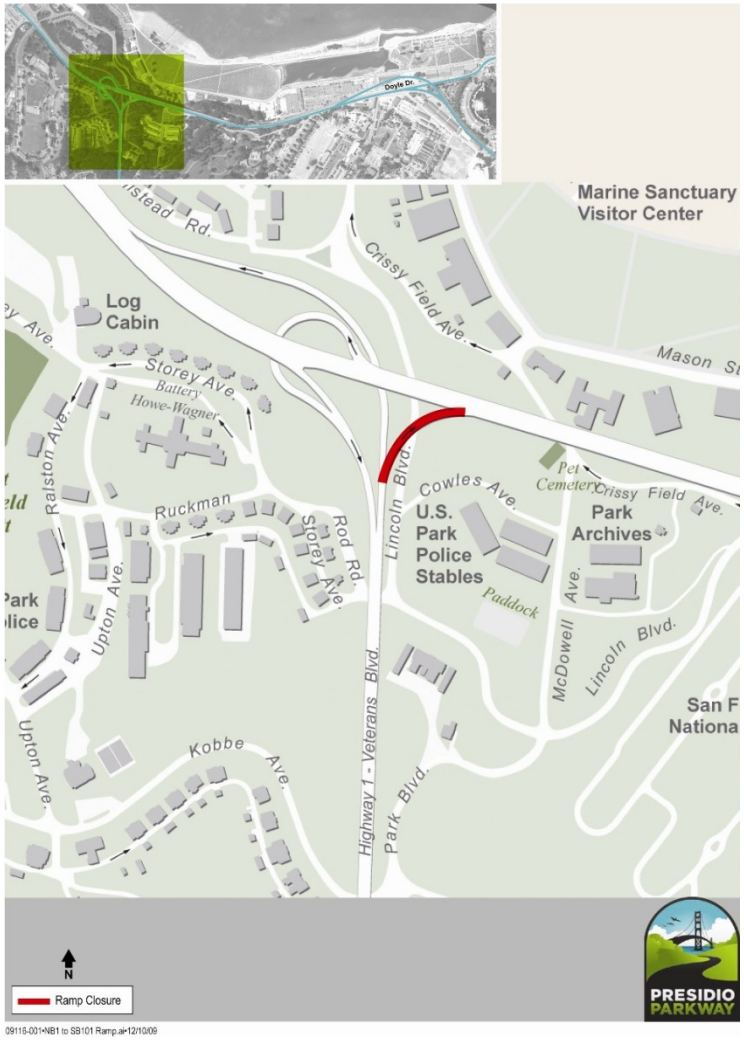
• This segment of roadway is used by many public and private transit services including the Muni Route 28 and all Golden Gate Transit transbay routes. There are also many privately operated tour and shuttle buses that use this segment of roadway.
Construction-Related Traffic Management Activity. • This roadway segment will be signed as part of the "last chance" detour for the closed ramps between SR-1 and Doyle Drive (US-101). • This segment is along the designated construction vehicle entrance route for vehicles entering the work area via either northbound SR-1 or northbound US-101. • **Major Phase 1:** During this Phase, no major operational changes will occur. • In order to allow for the Doyle Drive (US-101) construction, a slight shift will occur in the alignment for both northbound and southbound traffic near the SR-1 undercrossing. This will allow for the project plastic pylons to be fully used to demark full travel lanes down Doyle Drive (US-101). • **Major Phase 2:** During this Phase, the southern end of this segment will be shifted to the south to use the new southbound high viaduct. This new detour will have five full travel lanes, separated by a moveable median barrier.
Selected Management Strategies. • **Major Phase 1:** As the roadway is not decreasing the number of lanes, no significant noticing requirements exist.
Identification of Additional Issues. • The ramp closures could create a small amount of additional traffic, that would then increase the occurrence of weaving at the deficient ramp location.

Remedy for Additional Issues. • The Resident Engineer will monitor the operation of traffic on this segment of Doyle Drive. The supervisor will pay particular attention to potential slowdowns because of weaving traffic between the SR-1 on-ramp and the Merchant Road off-ramp.
Contingency for Additional Issues. • Increase media activity via HAR; newspapers; TV and internet news. More PCMS and CMS units placed at more locations throughout affected routes and corridors.

3.1.7 Northbound SR-1 to Southbound Doyle Drive (US-101) Ramp

Existing Conditions.

- Currently, this is a single lane connector ramp from northbound SR-1 to southbound US-101. This ramp is maintained by Caltrans. This ramp is on an entirely elevated structure that spans over Lincoln Boulevard and attaches to the existing Doyle Drive high viaduct. The ramp leads directly into a southbound auxiliary lane on Doyle Drive (US-101), becoming an additional lane; no merge is currently required. The northbound SR-1 ramp merges onto southbound US-101 and then becomes the fourth southbound lane on US-101. Vehicles using this ramp do not need to merge with vehicles on southbound US-101.
- This ramp primarily carries vehicles from the Richmond and Sunset neighborhoods of San Francisco to the Marina and Cow Hollow neighborhoods. Current traffic volumes on this ramp are approximately peak hour volumes of 660 in the AM and 540 in the PM, with typical weekday traffic volumes of 7,800. The weekend peak hour has 540 vehicles (Saturday afternoon at 2 PM).
- The ramp has active Muni Route 91, which is an overnight or "owl" route (1 AM to 5 AM) that operates on it. It is also used by out-of-service buses during the PM peak period from several routes in the Richmond neighborhood towards the storage area in North Beach.
- As a representative travel time, it takes 7.3 minutes in the AM peak hour and 6.6 minutes in the PM peak hour to travel between Park Presidio/Geary Boulevard and Richardson Avenue/Lombard Street.

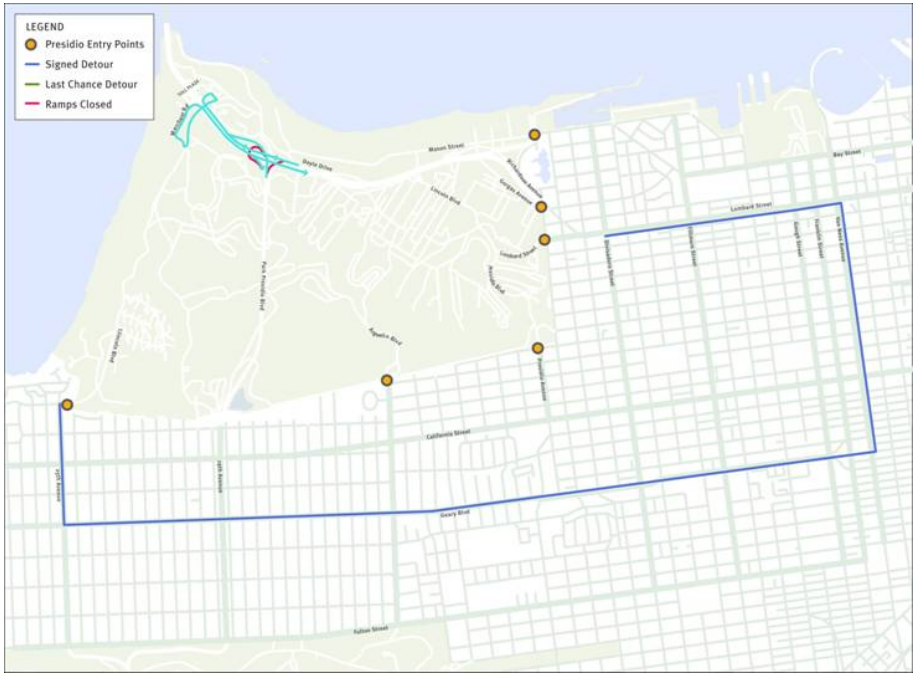


Construction-Related Traffic Management Activity.

- **Major Phase 1 Construction:** This ramp will be closed from early 2010 to late 2011. A new, replacement ramp will be built slightly south of the existing ramp during this period, which creates the need to close this structure.
- **Major Phase 2:** This replacement ramp will be ready to reopen following the full weekend closure as a new detour alignment (the ultimate southbound traffic segment re-opens). This rebuilt ramp will not include the fourth southbound lane for Doyle Drive (US-101). Instead a temporary short merging section of approximately 350 feet will be in place until the year 2013 when the fourth southbound lane is expected to be completed. For this reason, vehicles using this ramp will need to merge with other southbound vehicles along Doyle Drive (US-101) over a short distance of approximately 350 feet.

Selected Management Strategies.

- The primary, signed detour route uses Geary Boulevard east to Van Ness Avenue, north to Lombard St, west/north on Lombard Street towards the Golden Gate Bridge. (Because most of the local traffic is not expected to use this signed detour route, other potentially affected roadways are expected to receive detouring traffic.) The primary detour will feature a number of both static signs guiding traffic, and may have additional portable changeable message signs as needed.
- A secondary, "last chance" detour for drivers who do not realize the ramps are closed will also be provided. This route uses the northbound Merchant Road off-ramp, guiding traffic right towards Lincoln Boulevard. Traffic will then be guided westbound on Lincoln Boulevard to Merchant Road west of Doyle Drive (US-101). At that point, this detour traffic will be guided to turn right to use the Merchant Road on-ramp that will allow drivers to travel to Doyle Drive (US-101) where they

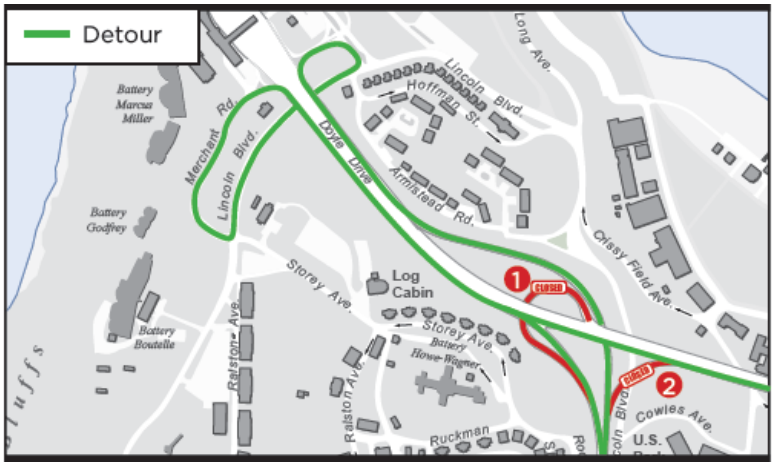


can continue on their original route. Use of this "last chance" detour will be discouraged as much as possible – it will not be widely announced on TV, Radio, print and internet media and HAR announcements.

Identification of Additional Issues.

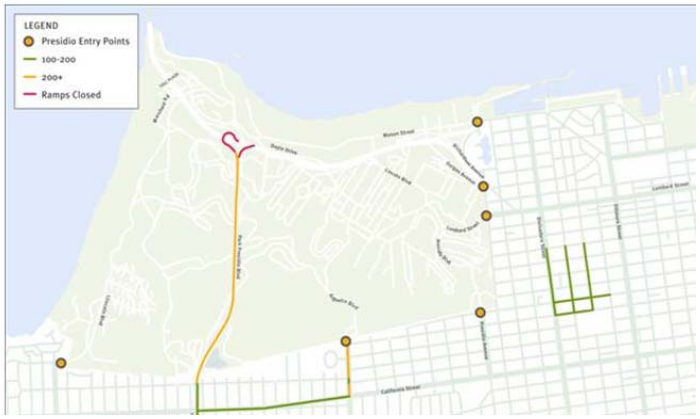
- Drivers between the Richmond and Marina Districts of San Francisco will need to use an alternate route. To estimate the travel time impacts, the SF-CHAMP model was used as a way to estimate these travel time impacts. Compared to the existing conditions, approximate travel time from the Richmond District to the Marina District using the signed detour route is projected to be 3-4 minutes longer in the AM peak hour and 4-5 minutes longer in the PM peak hour. These are shown on Chapter 2, Page 26
- Diverting traffic resulting from this ramp closure potentially affects the following areas:
  - Lincoln Boulevard;
  - Merchant Road;
  - Geary Boulevard;
  - Lombard Street;
  - Richardson Avenue;
  - Marina Boulevard;
  - California Street;
  - Park Presidio (SR-1);
  - Mason Street; and
  - Golden Gate Bridge Toll Plaza ramps.

  A detailed discussion of the impact of this and other closures at each of these locations is found in the following sections.
- The closed ramp will also require the rerouting of MUNI Route 91 and PM Peak hour out-of-service buses.
- Intersection level of service analysis at key intersections reveals degraded performance along anticipated detour routes for the duration of the ramp closure. These are presented in later sections



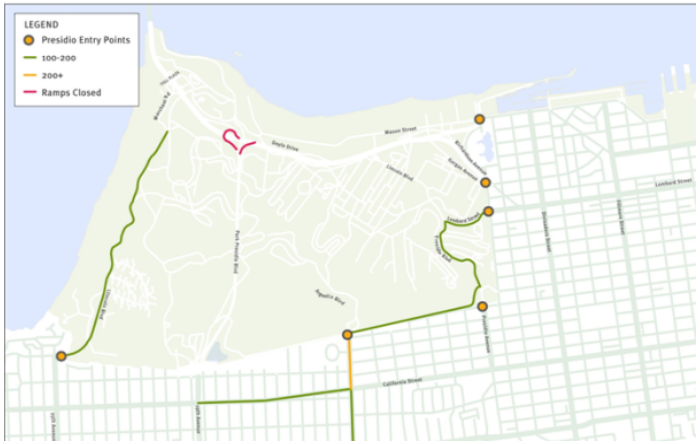
Remedy for Additional Issues. • The Public Information Office (PIO) will work with local TV; print; radio and internet media to inform the public of this closure and suggested detour routes. CMS; PCMS and static signage informing motorists of ramp closures will be placed at key locations across entire Bay Area region and at strategic locations locally directing drivers to the primary detour route along Lombard Street; Van Ness Avenue; and Geary Boulevard. Highway Advisory Radio (HAR) will transmit regular updates of roadway conditions. • TMP Field Supervisor will monitor changes in traffic flows at key locations and corridors throughout in the Richmond District, Presidio and Pacific Heights areas, as well as at the northbound US-101 Toll Plaza area. • If unreasonable congestion occurs along any particular facility, the TMP field supervisor will discuss the problem with the agency responsible for operating the facility to determine if additional signage, traffic control officers, temporary re-design, operations changes or other actions will be taken.
Contingency for Additional Issues. • Increase media activity via HAR; newspapers; TV and internet news. More PCMS and CMS units placed at more locations throughout affected routes and corridors. • Close the northbound US-101 off-ramp at the Toll Plaza to passenger car traffic during peak hours. Transit; construction vehicles and emergency vehicles will be allowed to use the northbound US-101 off-ramp. • If the toll plaza off ramp is closed, change signage along Park Presidio Boulevard; Marina Boulevard and Richardson Avenue about the Toll Plaza off-ramp closure to inform drivers that the “Last SF Exit” has changed and that if the drivers proceed without exiting; they will be forced to leave the City and cross the Golden Gate Bridge into Marin County. • Provide traffic control officers for weekday or weekend peak congestion times.

Traffic Volume Change AM



Ramp Closure Traffic Volume Change AM

Traffic Volume Change PM



Ramp Closure Traffic Volume Change PM

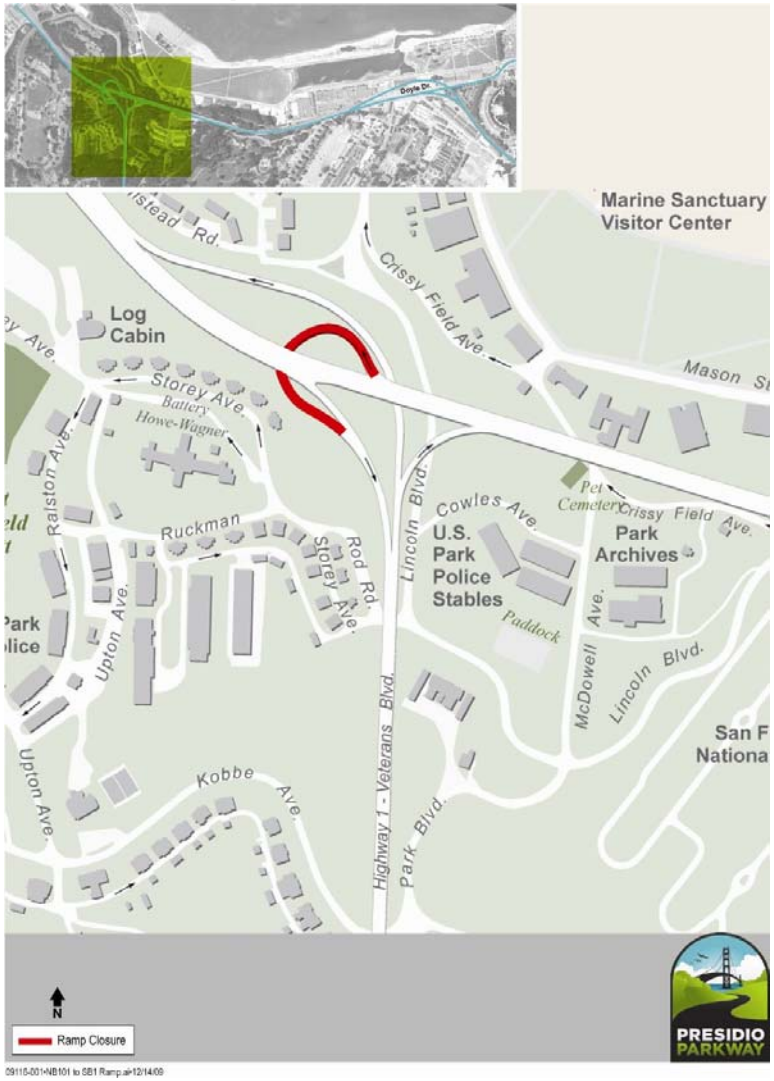
3.1.8 Northbound Doyle Drive (US-101) to Southbound SR 1 Ramp

Existing Conditions.

- Currently, this is a single-lane "hook ramp" from northbound Doyle Drive (US-101) to southbound SR-1. This ramp is maintained by Caltrans. This ramp is mostly at grade. It runs underneath Doyle Drive (US-101) in an underpass, and becomes the second, right-hand lane on southbound SR-1 at the merge point south of Doyle Drive (US-101); vehicles using this ramp do not need to merge with vehicles from southbound Doyle Drive (US-101).
- This ramp primarily carries vehicles from the Marina and Cow Hollow neighborhoods of San Francisco to the Richmond and Sunset neighborhoods of San Francisco. Current peak hour volumes on this ramp are approximately 300 in the AM and 500 in the PM, with average daily traffic volume of 7,800. The weekend peak hour has 500 vehicles (Saturday afternoon at 5 PM).
- The ramp has active Muni Route 91, which is an overnight or "owl" route (1 AM to 5 AM) that operates on it. It is also used by out-of-service buses heading to begin several different runs during the AM peak period, leaving storage area in North Beach towards the Richmond neighborhood.
- As a representative travel time, it takes 6.2 for the AM peak hour and 8.8 for the PM peak hour to travel between Richardson Avenue/Lombard Street and Park Presidio/Geary Boulevard.

Construction-Related Traffic Management Activity.

- This ramp will be closed from Early 2010 to Mid-2013. A long closure is needed as the two directions of Doyle Drive will be built in separate major Phases, and both Phases require that this ramp be closed.



Selected Management Strategies.

- The closure of the ramp requires that a detour be designated. The primary, signed detour route uses Lombard Street, Van Ness Avenue, and Geary Boulevard. As no left turns are permitted from Geary Boulevard to southbound SR-1, a detour for vehicles to turn right at 14th Avenue then to turn right at Clement Street and again at Park Presidio Boulevard (SR-1) will be needed. (Because most of the local traffic is not expected to use this signed detour route, the travel times for other potentially affected roadways are expected to receive detouring traffic.) The primary detour will feature a number of both permanent signs guiding traffic, and may have additional portable changeable message signs as needed.
- A secondary, "last chance" detour for drivers who do not realize the ramps are closed will also be provided. This route uses the northbound Merchant Road off-ramp, guiding traffic right towards, Lincoln Boulevard. Traffic will then be guided westbound on Lincoln Boulevard to Merchant Road west of Doyle Drive (US-101). At that point, this detour traffic will be guided to turn right to use the Merchant Road on-ramp that will allow drivers to travel to southbound US-101 where they can continue on their original route to southbound SR-1. Use of this "last chance" detour will be discouraged as much as possible – it will not be widely announced on TV, Radio, print and internet media and HAR announcements.

Identification of Additional Issues.

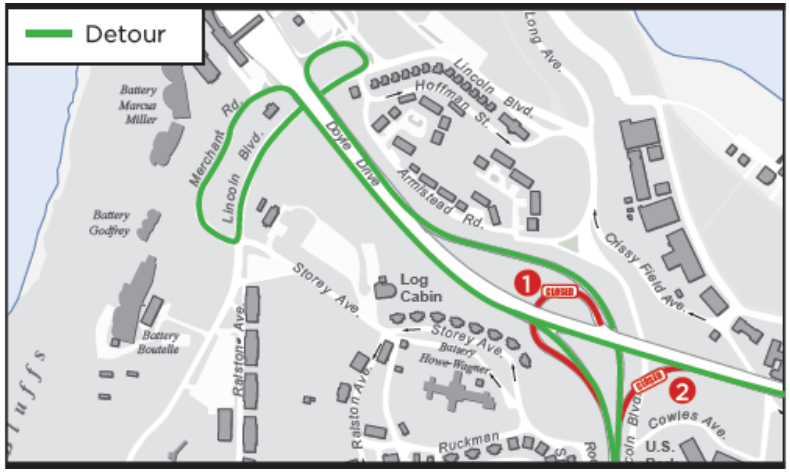
- Drivers between the Richmond and Marina Districts will need to use an alternate route. To estimate the travel time impacts, the SF-CHAMP model was used as a way to estimate these travel time impacts. Approximate travel time from the Marina District to the Richmond District (measured along the signed detour route) is projected to increase from 6.2 to 10.9 minutes in the AM peak hour and 8.8 to 11.3 minutes in the PM peak hour with the ramp closure in place.

- The closure is expect to result in increased traffic at the following locations:
    - Lincoln Boulevard;
    - Merchant Road;
    - Geary Boulevard;
    - Lombard Street;
    - Richardson Avenue;
    - Marina Boulevard;
    - California Street;
    - Park Presidio (SR-1);
    - Mason Street; and
    - Golden Gate Bridge Toll Plaza ramps.

  A detailed discussion of each of these and other closures at each of these locations is found in the following sections. Intersection level of service analysis at key intersections reveals degraded performance along anticipated detour routes for the duration of the ramp closure
- The closed ramp will also affect MUNI Route 91 and PM Peak hour out-of-service buses.

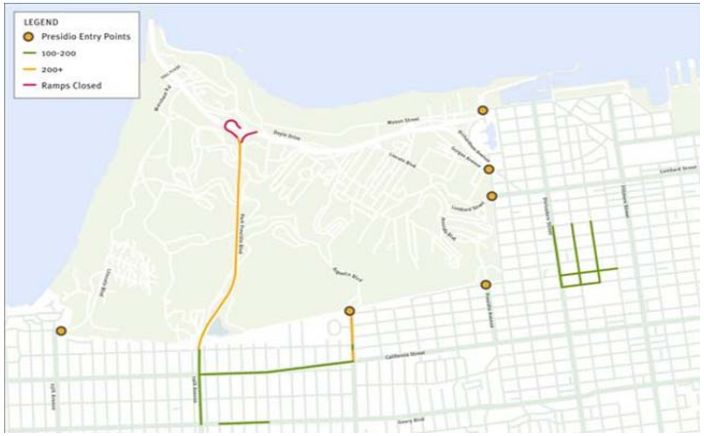
Remedy for Additional Issues.

- The Public Information Office (PIO) will work with local TV; print; radio and internet media to inform the public of this closure and suggested detour routes. CMS; PCMS and static signage informing motorists of ramp closures will be placed at key locations across entire Bay Area region and at strategic locations locally directing drivers to the primary detour route along Lombard Street; Van Ness Avenue; and Geary Boulevard. Highway Advisory Radio (HAR) will transmit regular updates of roadway conditions.
- TMP Field Supervisor will monitor changes in traffic flows at key corridors throughout in the Richmond, Presidio and Pacific Heights areas, as well as at the northbound Doyle Drive (US-101) Toll Plaza area with traffic counters and field observations. Particular attention will be given to those



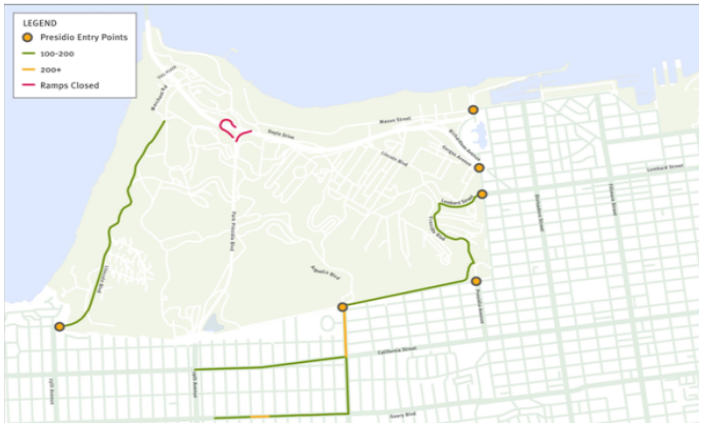
facilities previously identified as roadways which will expect some increase in traffic, which are listed above. • If unreasonable congestion occurs along any particular facility, the TMP Field Supervisor will discuss the problem with the agency responsible for operating the facility to determine if additional signage, traffic control officers, temporary re-design, operations changes or other actions will be taken.
Contingency for Additional Issues. • Increase media activity via HAR; newspapers; TV and internet news. More PCMS and CMS units placed at more locations throughout affected routes and corridors. • Close the northbound Doyle Drive (US-101) off-ramp at Merchant Road to passenger car traffic during peak hours. Transit; construction vehicles and emergency vehicles will still be allowed to use the northbound US-101 off-ramp. • Change signage along Park Presidio Boulevard; Marina Boulevard and Richardson Avenue about the Toll Plaza off-ramp closure to inform drivers that the “Last SF Exit” has changed and that if the drivers proceed without exiting; they will be forced to leave the City and cross the Golden Gate Bridge into Marin County. • Provide additional traffic control officers for weekday or weekend peak congestion times.

Traffic Volume Change AM



Ramp Closure Traffic Volume Change AM

Traffic Volume Change PM



Ramp Closure Traffic Volume Change PM

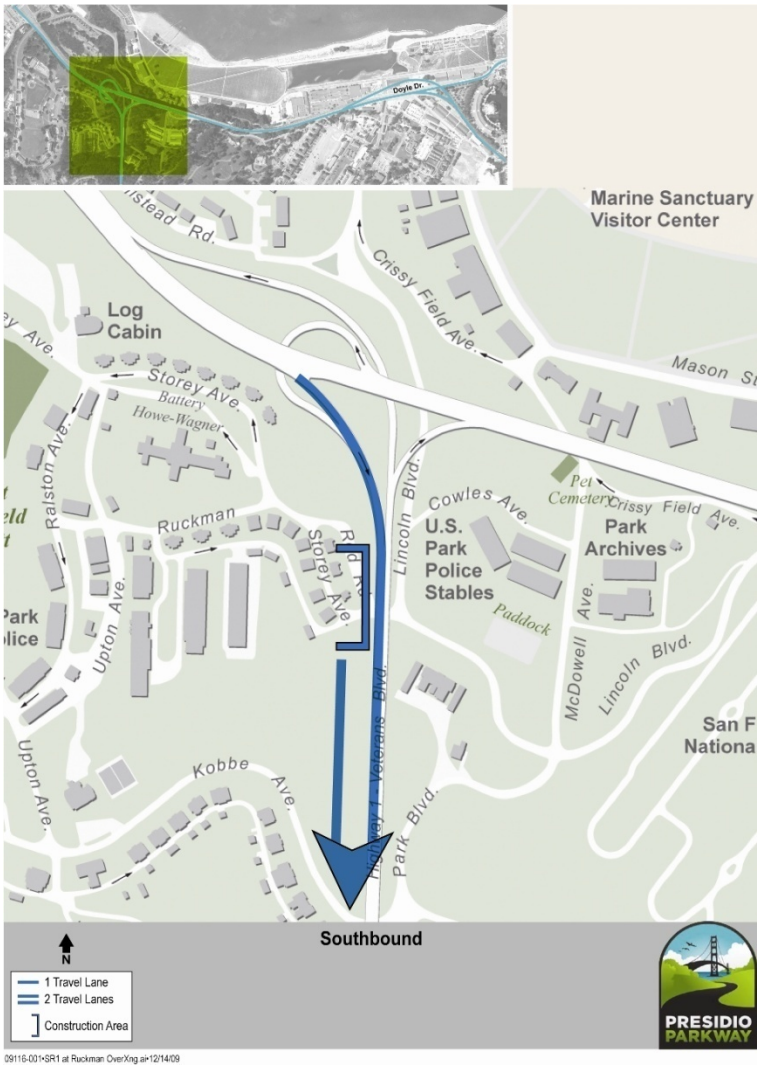
3.1.9 Southbound SR-1: US-101 (Doyle Drive) to Lake Street

Existing Conditions.

- Southbound SR-1 has two travel lanes with no roadside shoulders. This section of SR-1 is on an elevated structure that crosses over several streets including; Ruckman Avenue, Schofield Road, Kobbe Avenue and Hitchcock Street.
- Current peak hour traffic volumes on this facility (in the and southbound directions) are approximately 2,200 in the AM peak hour and 2,600 in the PM peak hour, with typical weekday traffic volumes of 2,700. The weekend peak hour has 4,500 vehicles (Saturday afternoon at 5 PM).
- Muni Routes 28 and 91 use this route, as well as Golden Gate Transit Route 92 This route is also used to carry out-of-service Muni buses during the AM peak period (Southbound) and the PM peak period (northbound).

Construction-Related Traffic Management Activity.

- **Major Phase 1 Construction:** SR-1 over Ruckman Avenue (Ruckman Overcrossing) will be reconstructed as part of the Doyle Drive Project. This reconstruction will require the building of temporary lanes, and a phased shifting of traffic between early 2010 and late 2011. Each shift will require an overnight closure (12 AM to 4 AM) in order to shift the concrete barriers and restripe the lanes. There are four instances anticipated during the project to make this shift.
- The closure of the northbound Doyle Drive (US-101) to southbound SR-1 ramps will result in less traffic on southbound SR-1, estimated at about 300 less vehicles during the AM and PM peak hours.
- **Special Major Phase 1 Event:** Beginning sometime in late 2010 or early 2011, Southbound SR-1 over the Ruckman Avenue will need to be narrowed to one lane of traffic for a distance of approximately 1,000 feet south of the ramp diverge at Doyle Drive, this reduction will be for about 1,000 feet, after which southbound SR-1 will return to two southbound lanes. This one lane condition will remain for approximately four to eight weeks until completion of the SR-1



bridge falsework over Ruckman Avenue. The estimated peak traffic volumes that would be on the ramp during this phase will range between 1,400 and 1,700 in the AM peak hour, potentially creating congestion (assuming that 1,600 vehicles is the construction area anticipated capacity); the potential for congestion is expected to result in a slight shifting of traffic onto other routes – most likely to Merchant Road and Lincoln Boulevard (less than 300 vehicles) will this area become too congested.

- **Major Phase 2:** The closure of the northbound Doyle Drive (US-101) to southbound SR-1 ramps will result in less traffic on SR-1 through this area, estimated at about 300 vehicles less during both the AM and PM peak hours.

Selected Management Strategies.

- As detailed in the construction plans, a second lane will be opened from the off ramp from southbound Doyle Drive (US-101) from the Golden Gate Bridge to SR-1. This ramp will provide additional capacity and assist the potential congestion that could occur here as a result of traffic shifts from the closed ramps.
- PCMS signs will be used to alert motorists during overnight closures beginning north of the Golden Gate Bridge. The officially recommended detour route will be to use Lombard Street and Van Ness Avenue during the closure.
- During the period when the southbound direction will be restricted to one lane, advance notice announcing the lane drop will be made in the media, and through the use of PCMS signs. When the one-lane reduction occurs, the TMP Field Supervisor will monitor the potential for delays at the point where two lanes drop to one.
- During the time that the traffic capacity of SR-1 at the overcrossing will be reduced from two lanes to one in the southbound direction, there is a potential for congestion. However, major congestion is not expected because the total volumes are expected to remain close to the 1,600 vph planning capacity if no diversion occurs. It is likely that some traffic will exit at Merchant Road and use Lincoln Boulevard, reducing the likelihood of a major bottleneck.

Identification of Additional Issues. • There is some concern that the shifting of the traffic patterns plus the potential gawking of motorists at the work zone will slow traffic down causing a queue backup that may interfere with the Southbound Doyle Drive traffic and potentially backup traffic through the toll booths of the Golden Gate Bridge. This is not anticipated, as there will not be any southbound traffic coming from northbound Doyle Drive (US-101), and there will be two continuous lanes from US-101 coming south from the Golden Gate Bridge (except for the short time when a one-lane roadway is in place). • Overnight closures of this roadway for shifting lanes will require detouring for an estimated four overnight periods during construction, as lane shifts are made. Public notification of these closures will be needed.
Remedy for Additional Issues. • The contractor will install "gawk screens" at the work zone to reduce the rubber necking potential of drivers passing by the construction work zone. • During the time that the traffic capacity of SR-1 at the overcrossing will be reduced from two lanes to one in the southbound direction, appropriate advance notice will be needed, as well as changeable message signs indicating the lane reduction. • The Resident Engineer will monitor potential congestion more closely during this period, especially in the AM peak hour, when volumes are the heaviest.
Contingency for Additional Issues. • Provide additional public information to encourage drivers to use other routes than southbound SR-1 during the period when the two lanes combine to form one, through the use of PCMS, CMS and media. • Adjust the lane transition of southbound SR-1 where the two lanes

combine to form one, to make the lane shifts more gradual will improve traffic flow; but potentially may slow down progress for the contractor and require more intermediate steps in lane transition adjustment. This step will be considered only if queuing extends to the mainline of Doyle Drive (US-101).

- Monitor for potential additional congestion on the west side of the Toll Plaza, and provide TCO's as needed to ease any localized traffic congestion at peak hours.
- Adjust transit schedules

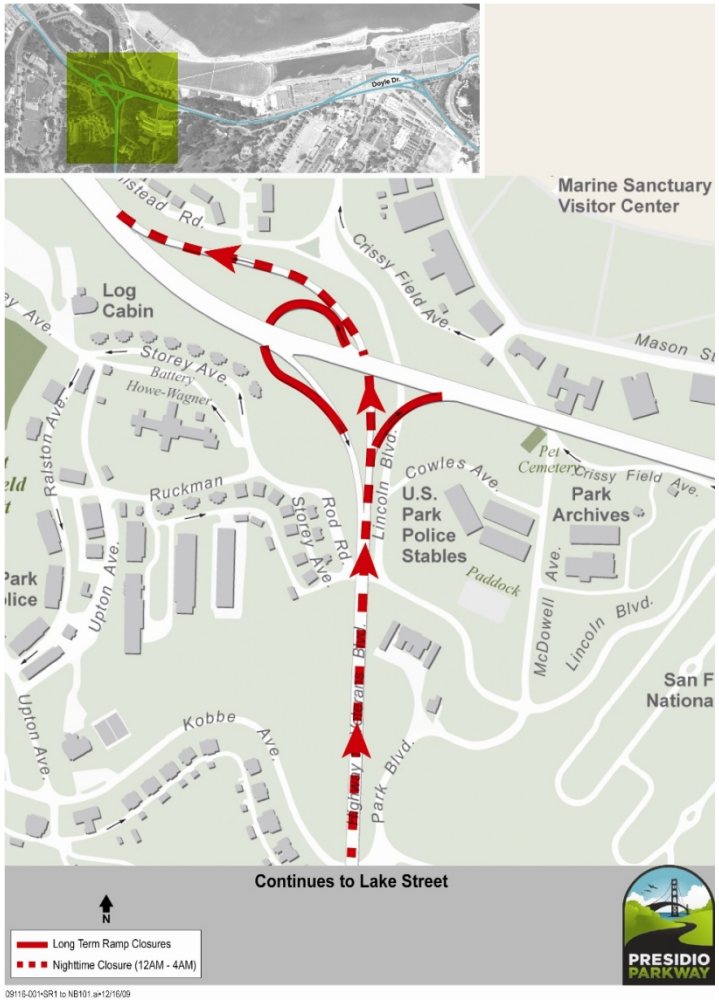
3.1.10 Northbound SR 1: Lake Street to US-101 (Doyle Drive)

Existing Conditions.

- Northbound SR-1 has two travel lanes with no roadside shoulders. This section of SR-1 is on an elevated structure that crosses over several streets including; Ruckman Avenue, Schofield Road, Kobbe Avenue and Hitchcock Street.
- Current peak hour traffic volumes on this facility (northbound direction) are approximately peak hour volumes of 2,600 in the AM peak hour and 2,400 in the PM peak hour, with typical weekday traffic volumes of 37,000. The weekend peak hour has 2,500 vehicles (Saturday afternoon at 5 PM).
- Muni Routes 28 and 91 use this route as well as Golden Gate Transit Route 92. This route is also used to carry out-of-service Muni buses during the AM peak period (southbound) and the PM peak period (northbound).

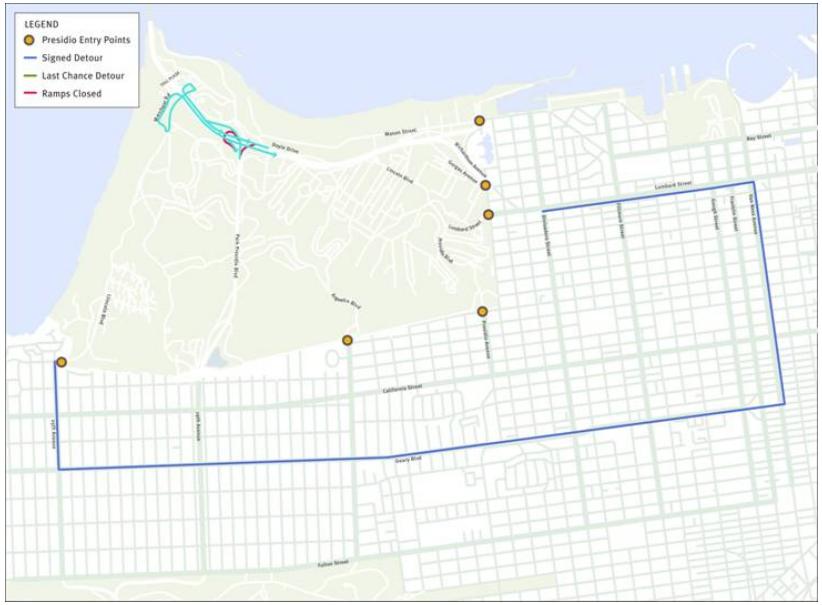
Construction-Related Traffic Management Activity.

- **Major Phase 1 Construction:** SR-1 over Ruckman Avenue (Ruckman Overcrossing) will be reconstructed as part of the Doyle Drive Project. This reconstruction will require the building of temporary lanes, and a phased shifting of traffic between early 2010 and late 2011. Each shift will require an overnight closure (12 AM to 4 AM) in order to shift the concrete barriers and restripe the lanes. There are four instances anticipated during the project to make this shift.
- The closure of the northbound SR-1 to southbound Doyle Drive (US-101) ramps will result in less traffic, estimated at about 300 less vehicles less during the AM and PM peak hours as a result of ramp closures.
- **Major Phase 2 Construction:** Once the detour is open in Major Phase 2, the Ruckman overcrossing will be completed, and no additional activity will occur.



Selected Management Strategies.

- **Major Phase 1:** PCMS signs will be used to alert motorists during overnight closures beginning north of the Golden Gate Bridge. The officially recommended detour route will be to use Lombard Street and Van Ness Avenue during the closure.
- SR-1 over Ruckman Avenue (Ruckman Overcrossing) will be reconstructed as part of the Doyle Drive Project. This reconstruction will require the building of temporary lanes, and a phased shifting of traffic between early 2010 and late 2011. Each shift will require an overnight closure (12 AM to 4 AM) in order to shift the concrete barriers and restripe the lanes. There are four instances anticipated during the project to make this shift.
- The closure of the northbound SR-1 to southbound Doyle Drive (US-101) ramps will result in less traffic, estimated at about 300 less vehicles during the AM and PM peak hours as a result of ramp closures.
- **Major Phase 2:** In this Phase, there will need to be periodic closures associated with the construction of the second Presidio Parkway (US-101) northbound viaduct that will occur above this roadway. This construction will require periodic short-term closures, likely to be overnight (12 AM to 4 AM). Design plans are yet to be finalized to identify the exact number and duration of these closures.



Identification of Additional Issues.

- Because this closure will coincide with the northbound SR-1 to southbound Doyle Drive (US-101) ramp closure, this leaves no outlet for all traffic using northbound SR-1 from Lake Street onward to the north. Therefore, northbound SR-1 at Lake Street will need to be fully blocked off to prevent any vehicles from mistakenly entering.
- The primary, signed detour route uses Geary Boulevard east to Van Ness Avenue, north to Lombard Street, west/north on Lombard Street towards the Golden Gate Bridge. (Because most of the local traffic is not expected to use this signed detour route,

the travel times for other potentially affected roadways are expected to receive detouring traffic.) The primary detour will feature a number of portable changeable message signs. • Short term overnight ramp and freeway closure. • Overnight traffic using northbound SR-1 will be diverted to an alternate route for approximately 6 nights from midnight to 4 am.
Remedy for Additional Issues. • The Public Information Office (PIO) will work with local TV; print; radio and internet media to inform the public of this closure and suggested detour routes. CMS; PCMS and static signage informing motorists of ramp closures will be placed at key locations locally directing drivers to the primary detour route along Lombard St; Van Ness Ave; and Geary Boulevard. Highway Advisory Radio (HAR) will transmit regular updates of roadway conditions.
Contingency for Additional Issues. • Increase media activity via HAR; newspapers; TV and internet news. More PCMS and CMS units placed at more locations throughout affected routes and corridors. • Provide traffic control officers during closure hours to be stationed at the Lake Street/SR-1 intersection. • Adjust transit schedules

3.1.11 Gorgas Avenue Northbound Slip Ramp

Existing Conditions.

- Currently, this is a single lane off-ramp from northbound US-101 to Gorgas Avenue. This ramp is maintained by Caltrans.
- This ramp is the most direct route for traffic from northbound Richardson Avenue to the Presidio Main Post or Mason Street and serves as an alternative entrance to the Presidio for traffic on Lombard Street.
- This ramp has volumes of approximately peak hour volumes of 86 vehicles in the AM peak hour and 82 vehicles in the PM peak hour. Average weekday traffic volumes are about 1,000 vehicles per day.

Construction-Related Traffic Management Activity.

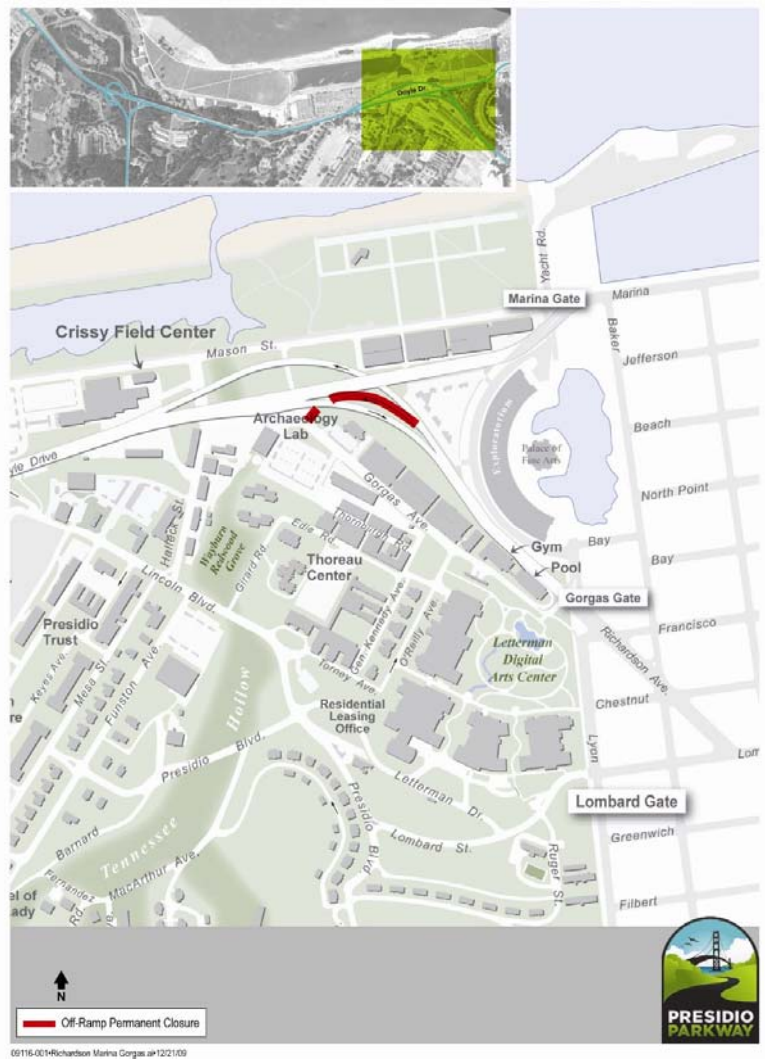
- **Major Phase 1 Activity:** This ramp will be closed beginning in late 2011, a few weeks before the first full weekend closure.
- **Major Phase 2 Activity:** The ramp will not exist during this Phase. The movements that were previously made on this ramp will be able to be made on a new ramp to be opened at the conclusion of the construction project.

Select Management Strategies.

- The primary detour for the traffic that was using this slip ramp will be to direct ramp users to enter the Presidio Main Post using Lombard Street and the Lombard Gate.

Identification of Additional Issues.

- Drivers who formerly used this slip ramp to access the Main Post will likely use the entrance at the Lombard Gate instead. The combination of the Gorgas Avenue slip ramp permanent closure well as the downstream ramp closures between Doyle Drive (US-101) and SR-1- will likely add additional traffic of less than 60 vehicles at peak hours, through the Lombard Gate.



• These diverted trips may result in significant queuing for the left turn movement at the Lombard Street/ Richardson Avenue intersection, and also affect overall westbound Lombard Street (Northbound US-101) through traffic.
Remedy for Additional Issues. • The traffic that was using this facility is now expected to use other routes to enter the Presidio. Key entry points include the Lombard Gate, and remedies are discussed in detail in that section.
Contingency for Additional Issues. • See the Lombard Gate discussion for contingencies needed when this ramp closes.

3.1.12 Lincoln Boulevard (McDowell Avenue to Sheridan Avenue) and Crissy Field Avenue (McDowell Avenue east to Lincoln Boulevard)

Existing Conditions.

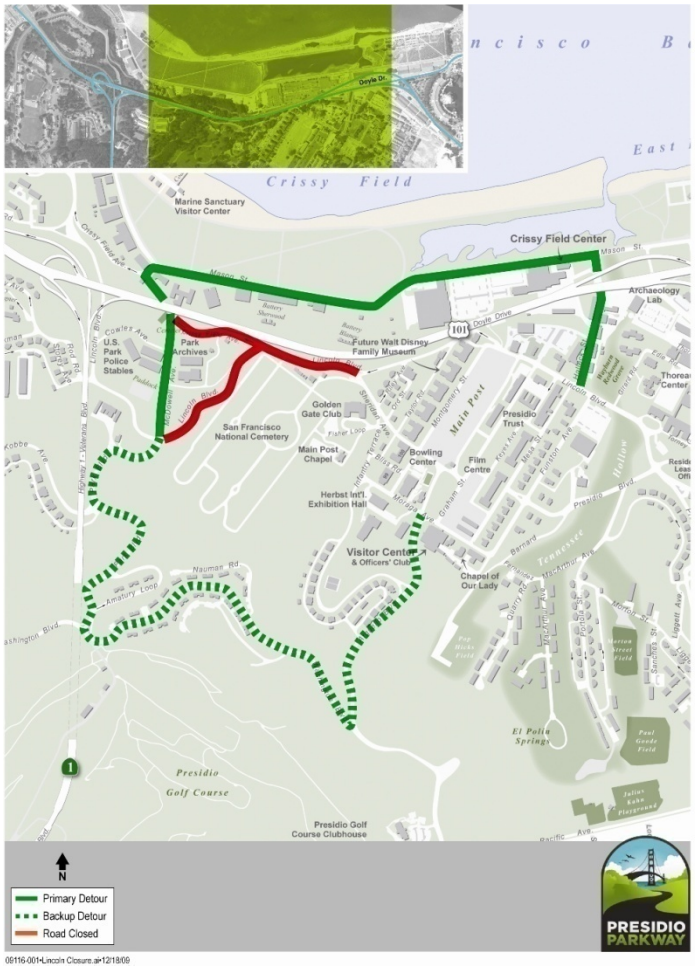
- Lincoln Boulevard is a two-lane road that is maintained by the Presidio Trust. It has one lane in each direction. This roadway segment is on the primary route between the Main Post and the western half of the Presidio. There is a sidewalk on the north side of the street. This road is also used as a recreational pathway with many joggers; walkers and bicyclists using the roadway shoulders. Two-way peak hour traffic volumes are 500 during the AM peak hour and 500 during the PM peak hour. Average weekday traffic volumes are approximately 6,500 vehicles.

Construction-Related Traffic Management Activity.

- **Major Phase 1:** During this Phase, this portion of Lincoln Boulevard will be closed to all traffic, bicycles and pedestrians. This segment will be closed from early 2010 until late 2011 to allow for the construction of the Southbound Battery Tunnel. The segment will reopen following the full weekend closure.
- This portion of Crissy Field Avenue will be permanently closed.
- **Major Phase 2:** Lincoln Boulevard will reopen, and serve as part of a detour for traffic between Crissy Field and the Main Post areas of the Presidio when Halleck Street is closed.

Selected Management Strategies.

- **Major Phase 1:** Vehicle, bicycle and pedestrian traffic will be diverted to an alternate route in the Presidio. The detour follows Halleck Street; Mason Street and McDowell Avenue. This affects internal traffic (Motorist; Pedestrians and Bicyclists) circulation of the Presidio only.
- The contractor will erect detour and guide signs at key intersections in the corridor directing drivers, pedestrians and bicyclists to alternate routes.



• At least one local alternate route will be available while this portion of Lincoln Boulevard is closed, except for very short-term closures lasting only a few hours.
Identification of Additional Impacts. • There is the potential for increasing additional traffic along Halleck Street, McDowell Avenue and Mason Street. The additional volumes are not expected to create the need for major changes in traffic control at most intersections. • Bicyclists and pedestrians will have to travel long distances to find the primary detour routes. These long routes are undesirable for pedestrians and bicyclists and create the need to look at alternative ways of providing some bicycle and pedestrian access. • One intersection which may experience some delay is at Halleck Street and Lincoln Boulevard. The traffic operations there may increase to a point where traffic on Halleck Street may have longer queues.
Remedy for Additional Impacts. • Because this is a heavily-used recreational roadway, the Resident Engineer will actively coordinate with Presidio Trust and National Park Service Staff to plan appropriate actions to better accommodate bicycle activity and pedestrians. • The TMP Field Supervisor will periodically observe peak hour traffic conditions at Halleck Street and Lincoln Boulevard. • The TMP Field Supervisor will periodically observe traffic flows along Mason Street and Halleck Street, and adjust detour signage as needed to accommodate any further changes in traffic flows. • The public information officer will reach out to recreation and tourist groups to discourage Lincoln Boulevard as a destination route while it is closed.
Contingency for Additional Issues. • If congestion at Halleck Street and Lincoln Boulevard significantly increases, the Resident Engineer will consider temporary

conversion of this location to an all-way stop.

- If congestion becomes a problem on Mason Street, TMP supervisor will consider adjusting signage to alter drivers of a second option at the route of Arguello Boulevard-Washington Boulevard-Park Boulevard.
- The Presidio trust may implement an alternative access route south of National Cemetery.

3.1.13 Lincoln Boulevard (McDowell Avenue to Crissy Field Avenue)

Existing Conditions.

- This roadway is a two-lane, two-direction road, with an adjacent paved bicycle and pedestrian path.
- This road has peak hour volumes of approximately 500 vehicles during the AM and PM peak hours, and an average weekday traffic volume of 6500 vehicles. This roadway segment is along the primary route between the Presidio Main Post and the Toll Plaza area.
- The adjacent recreational pathway is heavily used by joggers; walkers and bicyclists on the roadway shoulders.
- The PresidiGo Shuttle has two stops along this segment.

Construction-Related Traffic Management Activity.

- This segment of Lincoln Boulevard is expected to be closed approximately 12 times during overnight hours; these nighttime closures will be from 11PM to 5:30 AM. There will also be at least two daytime full closures. In addition to these full closures, construction will require periodic one-direction closures between 7 AM and 7 PM.
- Nighttime traffic in the northbound direction will be diverted to McDowell Avenue and Crissy Field Avenue at the Lincoln Boulevard intersection in the northbound direction; nighttime traffic in the southbound direction will be diverted to Kobbe Avenue to return to Lincoln Boulevard at Park Boulevard.
- This segment of Lincoln Boulevard is part of the designated access route to construction staging areas for the project, located off of McDowell Avenue and Mason Street. Additional traffic from construction workers commuting to and from the site will occur. In addition, there will be construction vehicles in each direction, expected to be less than 15 vehicles during peak hours.

Selected Management Strategies. • PCMS will be erected to notify users of Lincoln Boulevard of any overnight or daytime full and partial closures. • The contractor will provide one-way traffic control with flags at times when one direction is closed. This could occur anytime between 7 AM and 7 PM. • Resident Engineers will inform Emergency Response and affected agency staff and affected nearby residents of any planned full and partial road closures.
Identification of Additional Impacts. • Closures on this facility will increase traffic volumes on other local streets in the Presidio. These local streets have ample capacity, but there may be concerns related to residential or recreational activity on other streets.
Remedies for Additional Impacts. • A Resident Engineer will monitor traffic flows along Crissy Field Avenue and Park Boulevard, and adjust detour signage as needed to accommodate any changes in traffic flows.
Contingency for Additional Issues. • Route traffic to Lincoln Boulevard, 25th Avenue, Lake Street and Arguello Boulevard.

3.1.14 Lincoln Boulevard / McDowell Avenue Intersection

Existing Conditions.

- The intersection is side street stop controlled with stop signs on the McDowell Avenue approaches. Each approach consists of one lane. There are left turn lanes from Lincoln Boulevard to McDowell Avenue or Park Boulevard.
- This intersection currently operates with an average delay of 9.6 seconds per vehicle in the AM Peak (LOS A) and 7.9 seconds per vehicle delay in the PM Peak (LOS A).

Construction-Related Traffic Management Activity.

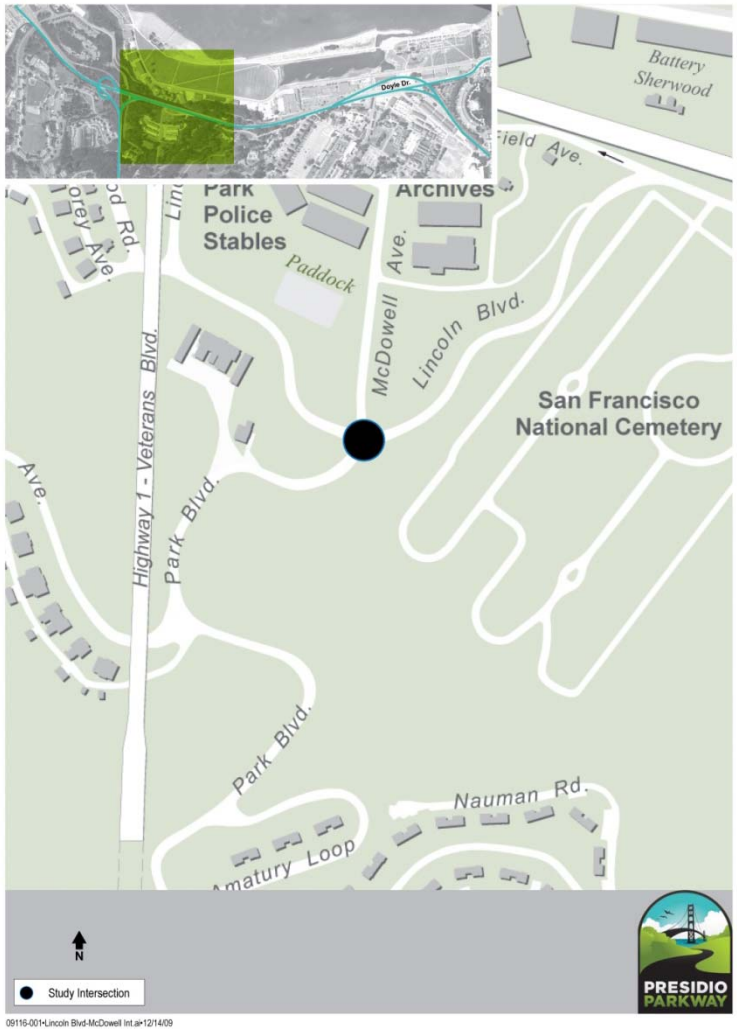
- This intersection is part of the designated access route to construction staging areas for the project, located off of McDowell Avenue and Mason Street. Additional traffic from construction workers commuting to and from the site will occur. In addition, construction vehicles will be using this intersection along Lincoln Boulevard and McDowell Avenue, potentially as frequent as 10 to 15 trucks per hour during the peak hour. These large wheelbase vehicles will need to make turns at this narrow intersection.

Selected Management Strategies.

- Large wheelbase truck deliveries are anticipated and may require the aid of flagmen to guide vehicles safely through this narrow intersection.

Identification of Additional Issues.

- The additional traffic from local traffic that was using a closed road, in combination with construction activity will add traffic demand at this intersection. While this demand is not expected to approach the capacity of the intersection, some periodic delays could result.



Remedy for Additional Issues. • The contractor will provide flaggers when larger trucks travel through the intersection.
Contingency for Additional Issues. • Review geometry of intersection and restripe or add temporary roadway widening as needed to accommodate large wheelbase trucks and enhance safety during construction. • Add additional signage warning of traffic issues such as maneuvering construction vehicles. • Identify Crissy Field Avenue as a truck route for westbound leaving traffic. This will reduce potential truck-to-truck conflicts at this intersection.

3.1.15 Storey Avenue - Ruckman Road (at SR-1 Overcrossing)

Existing Conditions.

- This roadway is currently a local a two-lane street that crosses underneath SR-1. Storey Avenue is a low-volume roadway with less than 200 vehicles peak hour on it. There is a pedestrian sidewalk along the northern edge.

Construction-Related Traffic Management Activity.

- **Major Phase 1:** This roadway is expected to be closed for approximately 12 nights for the installation of falsework at SR-1. The nighttime closures will typically last from 11 PM to 5:30 AM in conjunction with one way traffic control between 7 AM and 7 PM. Nighttime traffic will be rerouted to Lincoln Boulevard.
- Also, this roadway is expected to be closed for two days for the installation of falsework at SR-1. During this time, traffic will also be rerouted to the detour along Lincoln Boulevard.
- **Major Phase 2:** This roadway will not be affected in this Phase.

Selected Management Strategy.

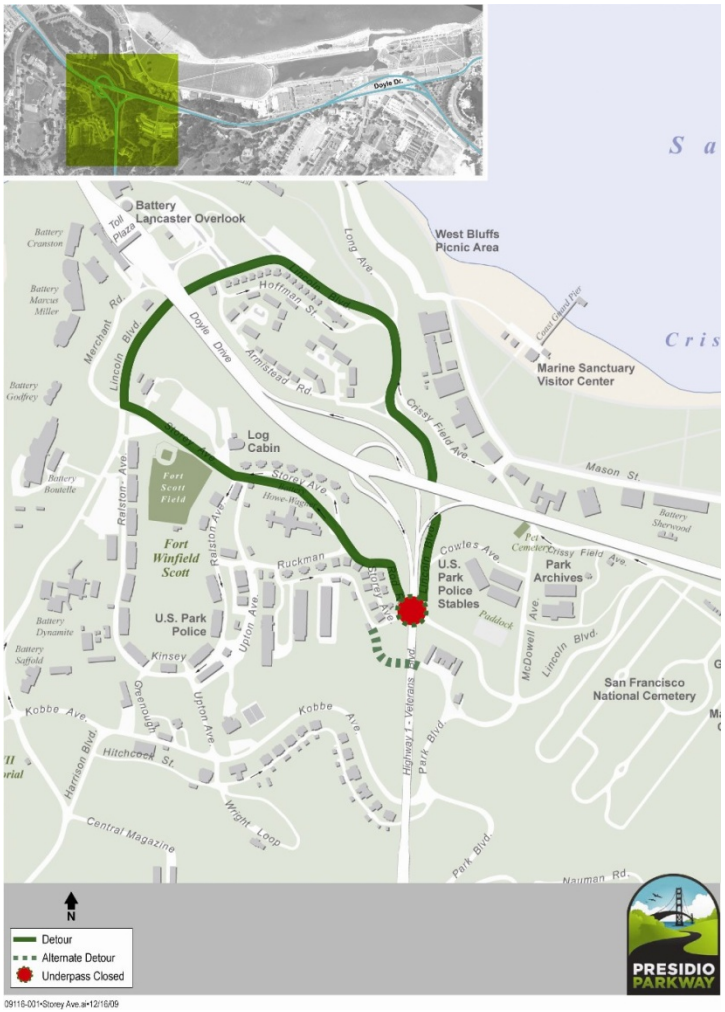
- Because this is historically a low-volume roadway used for local access, the number of detoured vehicles is anticipated to be a small number. The contractor will indicate that the roadway is closed and provide staff who can redirect a lost motorist if needed.
- Resident Engineer will alert emergency response staff of any scheduled closures.

Identification of Additional Impacts.

- Because this is a street for local traffic, no additional impacts are anticipated.

Remedy for Additional Issues.

- The signed detour route uses Lincoln Boulevard. The primary detour will feature signs guiding traffic.



• The Public Information Office (PIO) will inform local residents and tenants of the closure. • Emergency Vehicles will be directed to Schofield Road during the closures.
Contingency for Additional Issues. • No need for contingencies are anticipated.

3.1.16 Cowles Avenue

Existing Conditions.

- This is a two-lane, narrow local access road between Lincoln Boulevard and McDowell Avenue which serves the US Park Police Stables and surrounding buildings.
- Cowles Avenue is a low volume roadway (under 50 vehicles at peak hour) with few daily trips and is an often used "short-cut" path for motorists, pedestrians and bicyclists.

Construction-Related Traffic Management Activity.

- **Major Phases 1 and 2:** This roadway will be closed from early 2010 until 2013. Traffic will be detoured to alternate routes of McDowell Avenue and Lincoln Boulevard.
- The road is planned to be restored at the end of the project.

Selected Management Strategy.

- The contractor will simply erect "road closed" signs, as this is only local street. The closure will have a very small impact on the traffic volumes on other nearby streets.
- Pedestrians and bicyclists will be encouraged to use Presidio Promenade or Crissy Field Avenue.

Identification of Additional Issues.

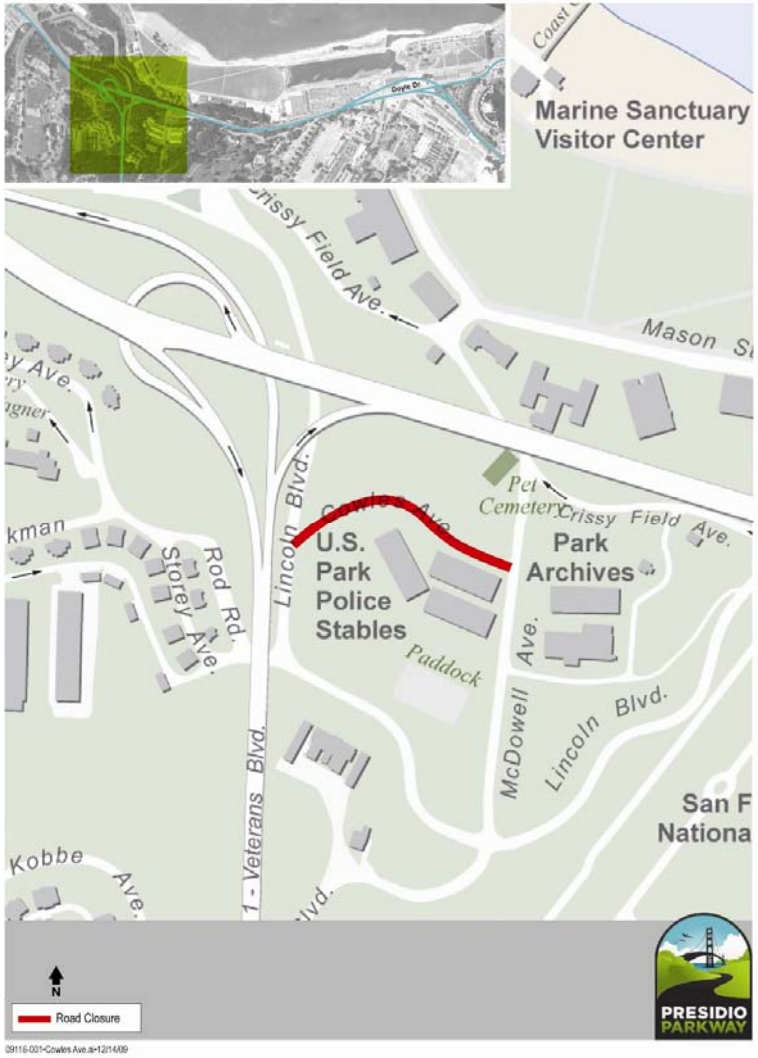
- No additional issues are anticipated.

Remedy for Additional Issues.

- No additional remedies are anticipated.

Contingency for Additional Issues.

- No needs for contingencies are anticipated.



3.1.17 McDowell Avenue

Existing Conditions.

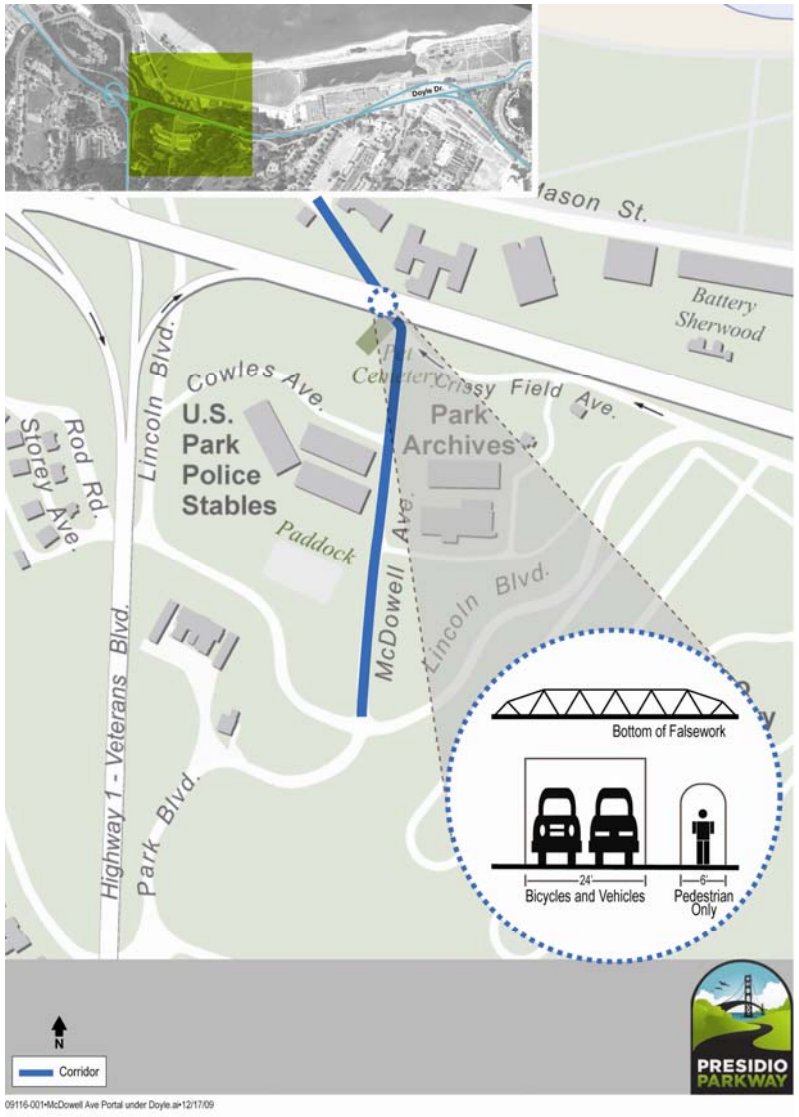
- This roadway is a two-lane, two direction roadway. The roadway contains 18 feet of pavement at the narrowest point, and is heavily used by bicyclists as a recreational corridor
- Peak hour volumes are fewer than 200 vehicles during both the AM and PM peak hours. The average weekday traffic volumes are approximately 2,500 vehicles.
- The PresidiGo shuttle operates southbound on this street.

Construction-Related Traffic Management Activity.

- **Major Phase 1:** McDowell Avenue is part of the designated access route to construction staging areas for the project, located off of McDowell Avenue and Mason Street. Additional traffic from construction workers commuting to and from the site will occur. In addition, there will be large wheelbase construction vehicles in each direction, potentially as frequent as 10 to 15 during an hour; these vehicles will need to make turns along this narrow roadway.
- McDowell Avenue is the access street to a major staging area, between Crissy Field Avenue and Cowles Avenue.
- There will be occasional nighttime closures from 11 PM to 5:30 AM to construct falsework above the street. In addition, there will be occasional daytime closures in one or both directions, between 7 AM and 7 PM.

Selected Management Strategies.

- During times when larger construction vehicles are using McDowell Avenue, the contractor will use flaggers or staff to direct the safe operation of traffic.
- During times when one-lane is closed, the contractor will use flaggers to direct traffic through the closed segment.
- A full closure will require detouring when it happens during nighttime hours. Although the traffic volumes are low, this



closure will require routing traffic to the one-way portion of Crissy Field Avenue, and having flaggers on signs to direct traffic. • If needed, the PresidiGo shuttle can be diverted to Crissy Field Avenue (segment north of the construction zone) any time full closures occur. Caltrans will provide notice to the Presidio Trust if the shuttle cannot stop on Lincoln Boulevard. • Pedestrians and bicyclists will be accommodated to prevent conflicts with construction and other traffic. This includes monitoring of recreational activity, making staff available to guide vehicles, and modifying the construction zone to temporarily accommodate pedestrians and/or bicyclists. • Because McDowell is a detour and construction traffic route for Lincoln Boulevard, the closure of this street will be kept open for traffic whenever possible.
Identification of Additional Issues. • The potential conflicts between pedestrians, bicyclists and vehicles are expected to be possible on this roadway. The Resident Engineer will monitor these conditions.
Remedy for Additional Issues. • The contractor will consider sight distance and need for adequate pedestrian paths when erecting fencing. The staging area fencing will be set back from edge of pavement on the east; and a fencing setback from the edge of payment on the west to allow for adequate sight distance and pedestrian pathways. • Flaggers or other contractor staff will assist all trucks that have sight distance challenges, especially at the entrance to the staging area.
Contingency for Additional Issues. • Increase number of staff at the staging area entrance during times when the contractor is working. • Construct an alternative paths of travel on the east side McDowell Avenue for pedestrians.

3.1.18 Mason Street

Existing Conditions.

- This is a two-lane, two direction roadway. The roadway generally contains 30 feet of pavement, and has bicycle lanes on it. The roadway is heavily used by bicyclists as a recreational corridor.
- The intersection of Mason Street and Crissy Field Avenue is not a standard intersection design, and features wide turning radii and unusual approach angles.
- The daily traffic volumes on Mason Street are estimated at 4,000 vehicles per day. Peak hour volumes are 160 vehicles westbound and 200 vehicles eastbound during the AM peak hour, and 270 westbound and 220 eastbound during the PM peak hour.
- The PresidiGo shuttle operates westbound on this street between Halleck Street and Crissy Field Avenue.

Construction-Related Traffic Management Activity.

- **Major Phase 1:** Mason Street is part of the designated access route to construction staging areas for the project, located south of the street. Only the portions west of the eastmost construction staging area entrance are to be used to truck access (Additional traffic from construction workers commuting to and from the site will occur. In addition, there will be large wheelbase construction vehicles in each direction, potentially as frequent as 10 to 15 during the peak hours; these vehicles will need to make turns along this narrow roadway.)
- Mason Street is part of the detour route that will be used when Lincoln Boulevard is closed between McDowell Street and Sheridan Street. The closure will add additional traffic. The closed segment carries 230 vehicles eastbound and 80 westbound in the AM peak hour, and 150 eastbound and 210 westbound in the PM peak hour. This may result in additional delays at the intersections at Halleck Street.

• There will be periodic closures to relocate utilities. These are generally daytime closures in one or both directions, between 7 AM and 7 PM. A full closure will not be allowed when Lincoln Boulevard between McDowell Street and Sheridan Street is closed. • **Major Phase 2:** Mason Street is part of the detour route that will be used when Halleck Street is closed between Mason Street and Lincoln Boulevard.
Selected Management Strategies. • During times when larger construction vehicles are using Mason Street, the contractor will use flaggers or staff to direct the safe operation of traffic. Flaggers may be particularly needed at the intersection of Mason Street and Crissy Field Avenue. • During times when one-lane is closed, the contractor will use flaggers to direction traffic through the closed segment. • Any full closure will require detouring when it happens. Although the traffic volumes are low, this closure will require routing traffic to Halleck Street, Lincoln Boulevard and McDowell Avenue. Partial closures will require flaggers to direct traffic in either direction. • If needed, the PresidiGo shuttle can be rerouted to use Lincoln Avenue as access if there is a full closure of Mason Street. PresidiGo stops along Mason Street would be signed as closed.
Identification of Additional Issues. • The potential conflicts between pedestrians, bicyclists and vehicles are expected to be possible on this roadway. The Resident Engineer will monitor these conditions.
Remedy for Additional Issues. • Flaggers or other contractor staff will assist all trucks that have sight distance challenges, especially at the entrance to the staging area.
Contingency for Additional Issues. Increase number of staff at the staging area entrance during times when the contractor is working.

3.1.19 Halleck Street

Existing Conditions.

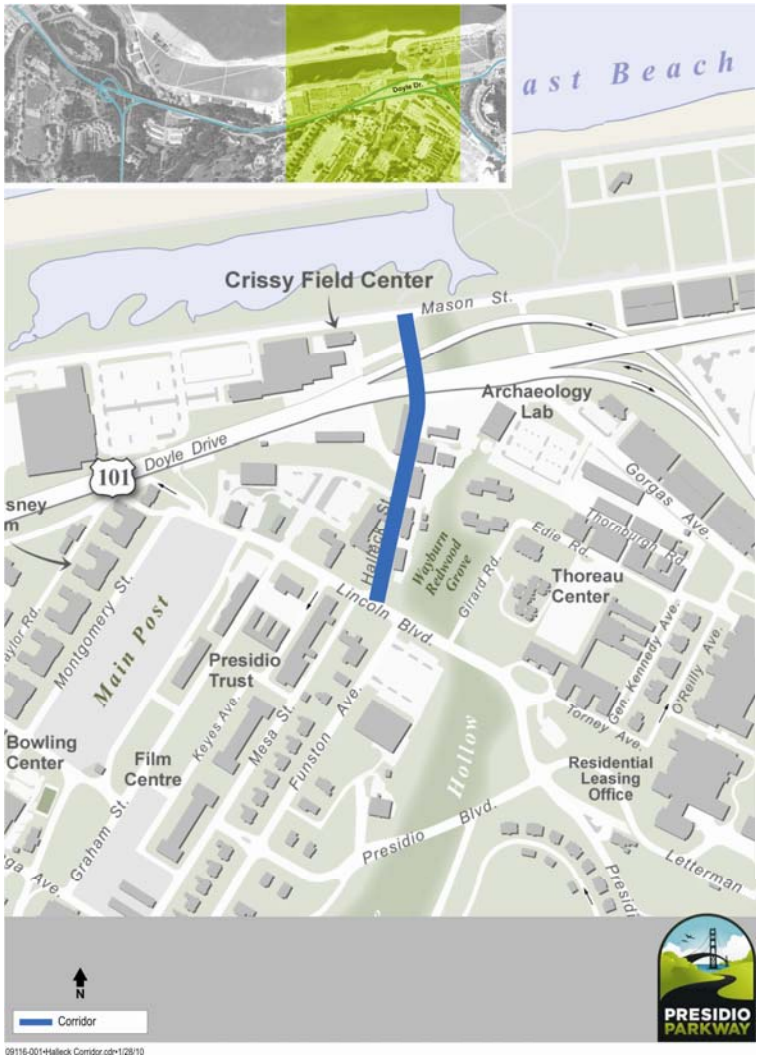
- This roadway is a two-lane, two direction roadway. The roadway generally contains 30 feet of pavement. The roadway is heavily used by bicyclists as a recreational corridor
- The daily traffic volumes on this roadway are estimated at 3,000 vehicles per day. Peak hour volumes are 140 vehicles southbound and 120 vehicles eastbound during the AM peak hour, and 160 southbound and 200 northbound during the PM peak hour.
- The PresidiGo shuttle operates northbound on this street between the Presidio Transit Center and Mason Street.

Construction-Related Traffic Management Activity.

- **Major Phase 1:** Halleck Street is part of the detour route that will be used when Lincoln Boulevard is closed between McDowell Street and Sheridan Street.
- There will be periodic closures to relocate utilities. These are generally daytime closures in one or both directions, between 7 AM and 7 PM. A full closure will not be allowed when Lincoln Boulevard between McDowell Street and Sheridan Street is closed.
- **Major Phase 2:** Halleck Street will be completely closed during this phase.

Selected Management Strategies.

- During times when larger construction vehicles are using Mason Street, the contractor will use flaggers or staff to direct the safe operation of traffic.
- During times when one-lane is closed, the contractor will use flaggers to direction traffic through the closed segment.
- Any full closure will require detouring when it happens. Although the traffic volumes are low, this closure will require routing traffic to Lincoln Boulevard, Mason Street, and McDowell

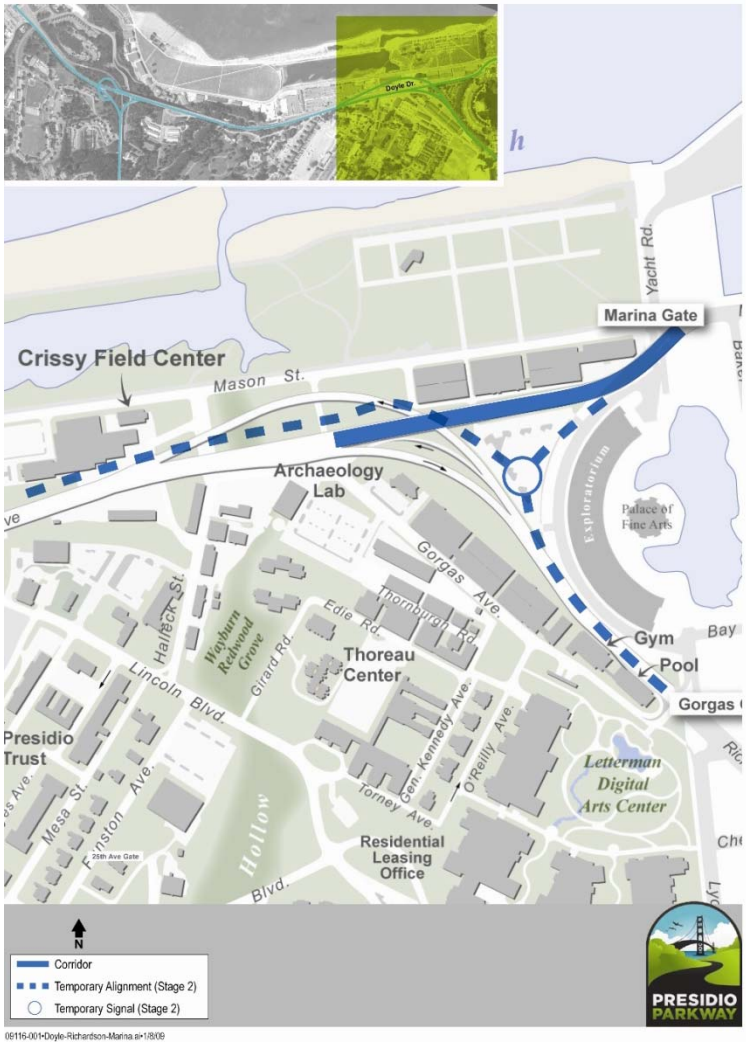


Avenue. Partial closures will require flaggers to direct traffic in either direction. • The PresidiGo shuttle can be rerouted to use Lincoln Avenue as access when there is a full closure of Halleck Street.
Identification of Additional Issues. • The closure of Lincoln Boulevard in Major Phase 1 will add additional traffic. The closed segment carries 230 vehicles eastbound and 80 westbound in the AM peak hour, and 150 eastbound and 210 westbound in the PM peak hour. This may result in additional delays at the intersections of Lincoln Boulevard or Mason Street. Lincoln Boulevard traffic does not currently stop at Halleck Street. • The closure of Halleck Street in Major Phase 2 will increase traffic volumes on Mason Street, MacDowell Avenue and Lincoln Boulevard.
Remedy for Additional Issues. • Flaggers or other contractor staff will assist all trucks that have sight distance challenges, especially at the entrance to the staging area. • Monitoring of approach delays on southbound approach to Lincoln Boulevard will be done. All-way stop control will be implemented if traffic delays emerge.
Contingency for Additional Issues. • Increase number of staff at the staging area entrance during times when the contractor is working. • Convert the operation of Halleck Street and Lincoln Boulevard to an all-way stop.

3.1.20 Marina Boulevard

Existing Conditions.

- Marina Boulevard is the continuation of the low-viaduct portion of Doyle Drive. It has three lanes in each direction; these are typically buffered. It tapers to two lanes in each direction near the intersection with Lyon Street and Mason Street.
- Eastbound Marina Boulevard carries 1,300 vehicles during the AM peak hour and 780 vehicles during the PM peak hour peak hour. Westbound Marina Boulevard carries 660 vehicles during the AM peak hour and 1640 vehicles during the PM peak hour peak hour.
- Typical weekday traffic volumes are approximately 66,200 vehicles. (32,000 westbound and 34,200 eastbound).
- There are typically 2,270 (westbound) and 2,830 (eastbound) vehicles on Marina Boulevard during an average weekend peak hour.
- Typical weekday traffic volumes are approximately 23,000 vehicles. (11,600 westbound and 11,400 eastbound).
- This intersection is signalized with one pedestrian crosswalk spanning Marina Boulevard. This is a key crosswalk providing connectivity with the Marina District residential area and the parks along the waterfront.
- This intersection operates with an average delay per vehicle of 7.1 in the AM (LOS A) and 9.6 in the PM (LOS A) peak hours.



Construction-Related Traffic Management Activity.

- Decreased traffic is expected along Marina Boulevard because of the closure of the ramps between Doyle Drive (US-101) and SR-1.
- **Major Phase 1:** There will not be any direct construction on this roadway in this Phase.

• **Major Phase 2:** The roadway will be replaced with a detour road to the south of the existing facility. The detour facility will contain four lanes – two lanes in each direction – similar to the configuration of Marina Boulevard at the intersection with Lyon Street and Mason Street.
Selected Management Strategies. • The Resident Engineer will monitor the unsignalized intersection at Mason Street/Lyon Street (5 Corners Intersection) and assign a traffic control officer here during peak periods as needed. • No other management strategies are likely needed for this roadway. The roadway is mostly unaffected during Major Phase 1, and the detour is designed to have the same number of lanes in Major Phase 2.
Identification of Additional Issues. • No additional issues are anticipated.
Remedy for Additional Issues. • The Resident Engineer will periodically observe traffic volumes and queues on this facility to see if changes in traffic demands results in unreasonable additional congestion.
Contingency for Additional Issues. • Adjust signal timing as needed at the Marina Boulevard/Lyon Street/Mason Street intersection.

3.2 Other Potentially Affected Areas Not in the Construction Zone

A number of other street or highway segments will be directly affected the construction activities associated with the Presidio Parkway project, even though they are not in the construction zone. The effects are likely to be related to additional traffic created by construction activity combined with local ramp and street closures. Each of these are discussed in separate sections in this chapter:

- Toll Plaza Area (east side)
- Lincoln Boulevard/Toll Plaza Road Intersection (east side)
- Lincoln Boulevard/Merchant Road (west Side of Toll Plaza)
- Toll Plaza Operations (Southbound)
- Golden Gate Bridge
- Richardson Avenue / Lombard Street (US-101) Corridor
- Lombard Gate Corridor
- Lyon Street/Gorgas Avenue/Richardson Avenue Intersection
- Presidio Gate and Presidio Boulevard/Presidio Avenue Corridor
- Arguello Gate and Arguello Boulevard Corridor
- North-South Streets in Pacific Heights
- East-West Streets in Inner Richmond
- Lincoln Boulevard and 25th Avenue Corridor
- SR-1 Park Presidio from Lake to Fulton Street
- Geary Boulevard/Geary Street/O'Farrell Street from SR-1 (Park Presidio) to Van Ness Avenue

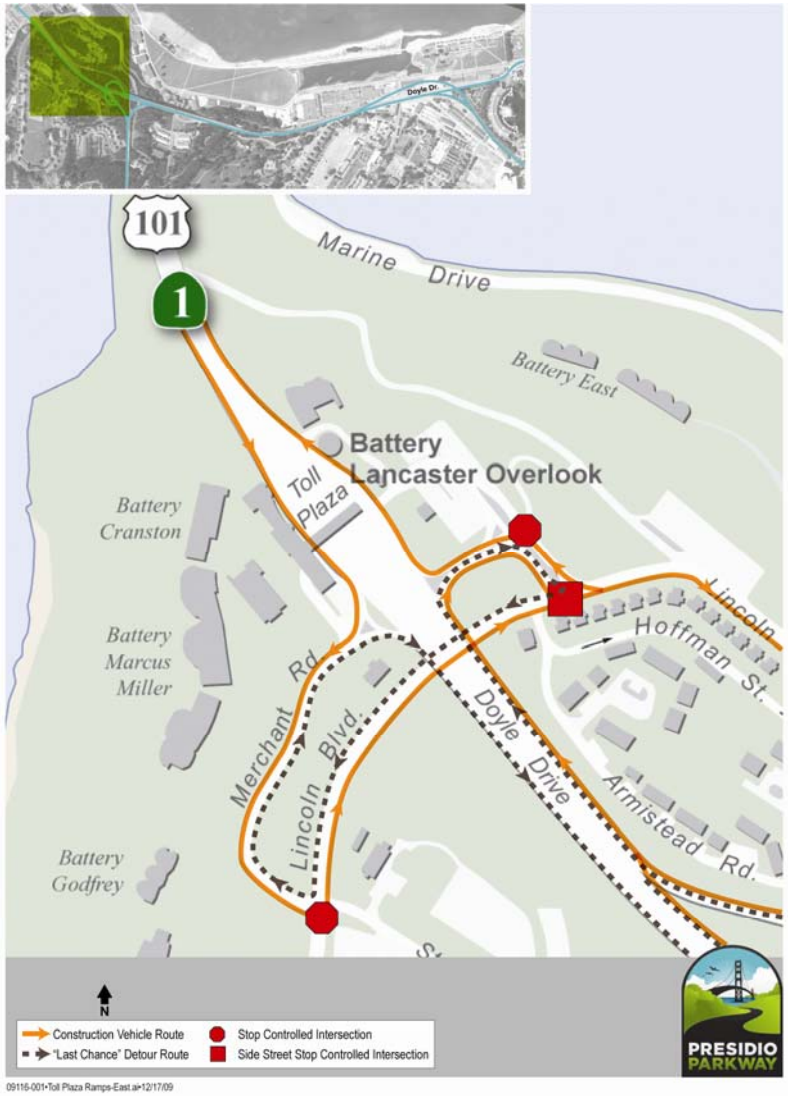
3.2.1 Toll Plaza Area (east Side)

Existing Conditions.

- The area on the east side of the Golden Gate Bridge Toll Plaza features several elements. There are two ramps entering and exiting northbound US-101, loading onto Merchant Road just south of the Toll Plaza. There is an all-way stop where these ramps intersect the local road. At this intersection, there is a "free" right-turn movement at the off-ramp. The turning movement geometries are limited in this area, especially for larger vehicles. Roadways in the area are the responsibility of the GGBHTD.
- There is also a portion of Merchant Road in the area, referred to as the Toll Plaza Road to prevent confusion with Merchant Road on the west side of the Toll Plaza. The local access road is located within a narrow tunnel that runs underneath the Toll Plaza, extends through the visitor parking (with stop signs for pedestrian crossing), connects to the all-way stop for the northbound US-101 ramps, and terminates at Lincoln Boulevard. There is a height and width limitation that particularly applies to the tunnel underneath the Toll Plaza.
- This roadway is also used by Muni Route 28 and by the PresidiGo shuttle. Both travel in one direction – east to west – on the Toll Plaza Road.
- The area is heavily used by pedestrians and bicyclists seeking to reach the Golden Gate Bridge and nearby overlook. There are many tour buses that travel through this area, as well as visitors in private automobiles. During peak visitor conditions, parking is not available, and traffic can be significantly delayed while drivers are waiting for parking spaces; this delay may result in traffic queues extending all the way back onto Doyle Drive.

Construction-Related Traffic Management Activity.

- **Major Phases 1 and 2:** This off-ramp will be the "last chance"



exit for northbound Doyle Drive (US-101) before reaching the GGB Toll Plaza. Traffic demands here are expected to increase from the construction activity as well as the vehicles using the "last chance" detour through this area. • These ramps and the portion of Toll Plaza Road to Lincoln Boulevard are also part of the designated route for construction traffic in Major Stage 1, as well as a primary route for commuting construction workers. The additional traffic volumes from construction vehicles will vary during the day with peak hour weekday volumes expected to be less than15 vehicles.
Selected Management Strategies. • **Major Phases 1 and 2:** The contractor will sign the "last chance" detour, focusing on encouraging all right turns off of this area, to Lincoln Boulevard heading westbound. • The contractor will advise construction workers and construction vehicles on the route geometry limitations in this area. In particular, the contractor will advise drivers to not use the tunnel roadway underneath the Toll Plaza, and to prepare for tight maneuvering geometries in this area. • The contractor will be required to have the ability to designate flaggers to guide construction vehicles safely through this area, as needed. • The Resident Engineer will periodically observe traffic at this intersection to determine if delays at this intersection are unreasonably long.
Identification of Additional Issues. • **Major Phases 1 and 2:** Some drivers may wish to drive through the Toll Plaza tunnel, even though it is not part of the designated "last chance" detour. • Additional delay will be expected at the Toll Plaza Road approach to the Lincoln Boulevard intersection as this

intersection will contain additional traffic related to the construction site. The additional delay is projected to be as high as two or three minutes in the AM peak period during periods of high construction and/or high visitor activity, according to an intersection level of service analysis (outlined in Chapter 5).
Remedy for Additional Issues. • The Resident Engineer will periodically observe traffic through this area to determine if additional congestion is routinely occurring. If so, then the contractor will contact the GGBHTD and the Presidio Trust to determine the appropriate remedy. • One potential remedy is the creation of an all-way stop at the intersection of the Toll Plaza Road with Lincoln Boulevard. This improvement will be designed so that it can be implemented quickly, if it is determined as necessary. The Resident Engineer should periodically observe truck maneuvering to determine if any additional traffic management or physical modifications to the intersection could be needed.
Contingency for Additional Issues. • Close the northbound US-101 off-ramp at the Toll Plaza to passenger car traffic during peak hours. Transit; construction vehicles and emergency vehicles will be allowed to use the northbound Doyle Drive (US-101) off-ramp at all times.

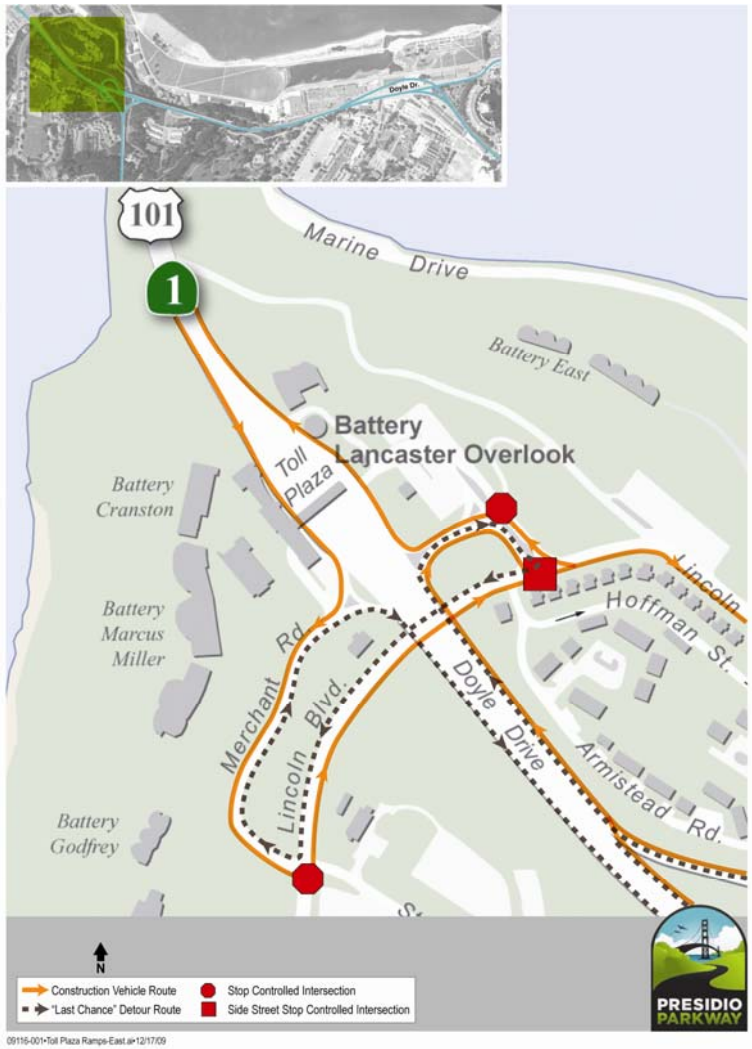
3.2.2 Lincoln Boulevard/Toll Plaza Road Intersection (east Side)

Existing Conditions.

- This intersection is located where Lincoln Boulevard meets Merchant Road on the east side of the Toll Plaza (referred to as the Toll Plaza Road to prevent confusion with Merchant Road on the west side of the Toll Plaza). Lincoln Boulevard is a two-lane roadway with no turning bays here. The Toll Plaza Road is also a two-lane, two-direction roadway separate right-turn lane at the southbound approach to this intersection.
- This intersection contains a side street stop control for the Toll Plaza Road southbound traffic. There is only 150 ft of storage between the Lincoln Boulevard/Toll Plaza Road intersection and US-101 Ramps/Toll Plaza Road intersection. Lincoln Boulevard traffic does not stop.
- Traveling through this intersection are normally 890 and 760 vehicles in the weekday AM and PM peak hours, respectively.

Construction-Related Traffic Management Activity.

- **Major Phases 1 and 2:** These ramps and the portion of Toll Plaza Road to Lincoln Boulevard are part of the designated route for construction traffic in Major Stage 1, as well as a primary route for commuting construction workers. The additional traffic volumes from construction vehicles will vary during the day with peak hour weekday volumes expected to be less than15 vehicles.
- Estimates of traffic delay for the southbound approach will be worse during the AM peak hour. Delays for this approach are expected to worsen from approximately 28 to 56 seconds per vehicle at this intersection during the long term ramp closures. The additional vehicles from construction activity as well as detoured vehicles from the long term closures are expected to



contribute to the increased delays at this intersection.
Selected Management Strategies. • **Major Phases 1 and 2:** The contractor will sign the "last chance" detour, focusing on encouraging all right turns off of this area, to Lincoln Boulevard heading westbound. • The contractor will advise construction workers and construction vehicles on the route geometry limitations in this area. In particular, the contractor will advise drivers to not use the tunnel roadway underneath the Toll Plaza, and to prepare for tight maneuvering geometries in this area. • The contractor will be required to have the ability to designate flaggers to guide construction vehicles safely through this intersection, as needed. • The Resident Engineer will periodically observe traffic at this intersection to determine if delays on the Toll Plaza Road approach to the intersection are unreasonably long. • The Resident Engineer should periodically observe truck maneuvering to determine if any additional traffic management or physical modifications to the intersection could be needed.
Identification of Additional Issues. • This facility may exceed its capacity if many vehicles use it as their detour route in addition to its use by construction traffic. If this occurs; the resulting backup may extend onto northbound US-101.
Remedy for Additional Issues. • The Resident Engineer should closely monitor this location and assign traffic control officers to ease critical queues during peak periods as needed. • The agencies overseeing this intersection (GGBHTD and Presidio Trust) could jointly modify the stop control at this

intersection to be an all-way stop. Doing this may improve the average delay for the southbound approach by up to 43 seconds per vehicle during the most congested time, which is projected to be in the AM peak hour.
Contingency for Additional Issues. • Disallow left turns from southbound Toll Plaza Road to all vehicles except buses; emergency first responders and construction vehicles during peak hours.

3.2.3 Lincoln Boulevard/Merchant Road (west Side of Toll Plaza)

Existing Conditions.

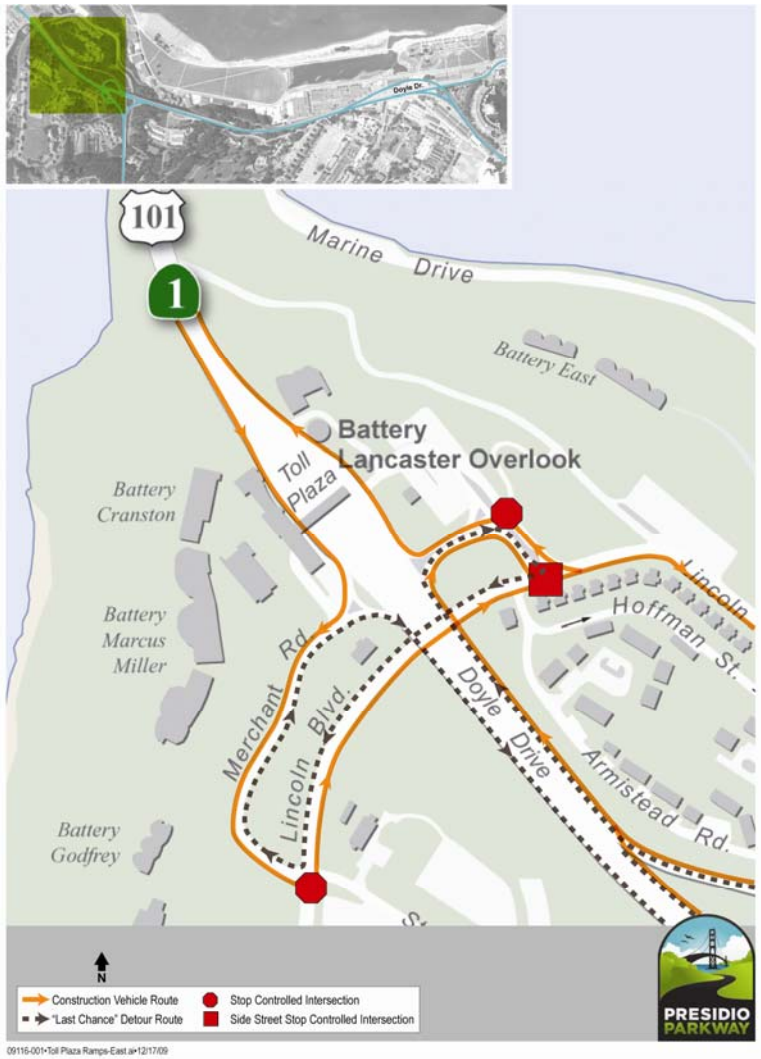
- This is an all-way stop controlled intersection between two-lane roadways. Because the roadways are single-lanes in each direction, the turning radii at the intersection may be somewhat restrictive for turning, oversized vehicles.
- There are an estimated 970 vehicles at the typical weekday AM peak hour through this intersection, and 810 vehicles during the weekday PM peak hour.

Construction-Related Traffic Management Activity.

- **Major Phases 1 and 2:** This intersection will be part of the "last chance" detour for northbound US-101 before reaching the GGB Toll Plaza. Traffic demands here are expected to increase from the drivers traveling on alternate paths around the closed northbound Doyle Drive (US-101) to southbound SR 1 or northbound SR 1 to southbound Doyle Drive (US-101) ramp closures.
- This intersection is also part of the designated route for construction traffic in Major Phase 1, as well as a primary route for commuting construction workers. The additional traffic volumes from construction vehicles will vary during the day, with peak hour weekday volumes expected to be less than15 vehicles.
- Large construction vehicles at this intersection may have difficulty negotiating the tight turning radii here.

Selected Management Strategies.

- **Major Phase 1 and 2:** The contractor will sign the "last chance" detour, including clear signage to direct drivers to Lincoln Boulevard heading westbound.
- The contractor will advise construction workers and construction vehicles on the route geometry limitations in this area. In particular, the contractor will advise construction



delivery drivers and construction workers to not use the tunnel roadway underneath the Toll Plaza, and to prepare for tight maneuvering geometries in this area. • The contractor will be required to have the ability to designate flaggers to guide construction vehicles safely through this intersection, as needed. • The Resident Engineer will periodically observe traffic at this intersection to determine if delays at this intersection are unreasonably long.
Identification of Additional Issues. • **Major Phase 1 and 2:** While not projected, additional detouring traffic from the closed ramps in addition to the construction traffic could result in peak period queuing at the intersection.
Remedy for Additional Issues. • The Resident Engineer will periodically monitor potential excessive congestion here, and assign traffic control officers to clear traffic if needed. • The Resident Engineer should periodically observe truck maneuvering to determine if any additional traffic management or physical modifications to the intersection could be needed.
Contingency for Additional Issues. • Closely monitor this location for truck maneuvering and assign flaggers to accompany construction vehicles as needed. • Reroute construction-related traffic to not approach the site from the north (Golden Gate Bridge) or exit to the south.

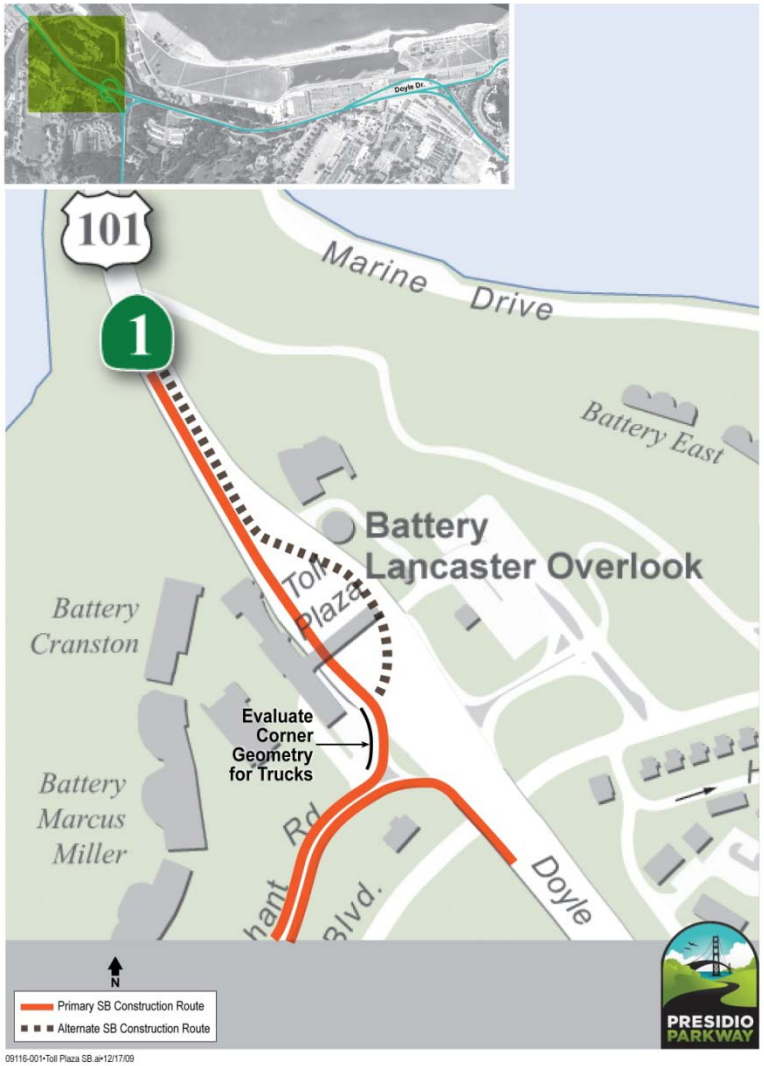
3.2.4 Toll Plaza Operations (Southbound)

Existing Conditions.

- The Golden Gate Bridge Toll Plaza has eleven toll booth lanes; these lanes are routed underneath a canopy, and each lane is separated by a toll booth station. There are two additional non-toll northbound lanes at the Golden Gate Bridge Toll Plaza.
- During the AM peak hour is when the most toll booths are open; the GGBHTD operates ten toll booths for the southbound direction; the remaining lanes/booths are allocated for the non-toll use northbound direction.
- The two rightmost lanes are designated for "Trucks/RVs/ Buses" and are slightly wider. These wider toll booths will fit oversized vehicles with a maximum height and width of the space underneath the canopy. The dimensions of the wider lanes are 11 feet 10 inches in width and 14 feet 6 inches in height.
- Any vehicle sized greater than these dimensions cannot safely pass by the toll booths underneath the canopy without significant disruption and special guidance. Special arrangements must be made with the GGBHTD to stop traffic in both directions to maneuver oversized vehicles around the Toll Plaza. This requires advance planning and coordination with the GGBHTD, and there is a fee associated with this.

Construction-Related Traffic Management Activity.

- **Major Phases 1 and 2:** Oversized trucks carrying parts and supplies will be entering the project site from the north and crossing the Golden Gate Bridge and through the Toll Plaza area. Some of these oversized trucks may be too large to fit through the toll booths in the southbound direction. When this occurs, special arrangements must be made, as noted in the existing condition.



Selected Management Strategies. • The contractor should determine if and when oversized trucks will arrive or leave the project staging areas. If a vehicle will not fit through the Toll Plaza and underneath its canopy, the contractor should reroute that vehicle onto other approach routes if possible. If not, the contractor should coordinate with the GGBHTD to make arrangements to bring this vehicle to the construction area.
Identification of Additional Issues. • The interruption of traffic at the Toll Plaza may create short-term congestion in both directions in the Toll Plaza area on US-101.
Remedy for Additional Issues. • The resident engineer and contractor should jointly work to restrict oversized truck deliveries over the Golden Gate Bridge to non-peak (overnight) hours if these vehicles must enter the project site. They should work with the GGBHTD to assign staff to guide these southbound trucks around the Toll Plaza structure. Staff from the CHP or GGBHTD would also need to stop traffic in both directions for a short period until the oversized truck clears the toll plaza area and is safely off of US-101 (onto Merchant Road).
Contingency for Additional Issues. • Remove, relocate or modify one or more of the existing toll booths to provide the room needed for oversized trucks.

3.2.5 Golden Gate Bridge

Existing Conditions.

- The Golden Gate Bridge has traffic in both northbound and southbound directions with six total travel lanes. The northbound and southbound lanes are separated by moveable delineators that are maintained by the GGBHTD operations department. These delineators are moved for the AM and PM peak periods with four lanes allocated for the southbound direction during the AM peak period (two lanes in the northbound direction, and either three four lanes allocated for the peak northbound direction during the PM peak period (varying during special event activities).
- For the southbound direction; there are approximately 59,000 vehicles during a peak weekday, with 5,900 vehicles during the AM peak hour, and 4,500 during in the PM peak hour. For the northbound direction; there are approximately 62,000 vehicles during a peak weekday, with 2,700 vehicles during the AM peak hour, and 5,500 during the PM peak hour.
- Directional weekend traffic volumes have been found to be as high as 4,600 vehicles in either direction at the peak weekend hour.
- The GGBHTD is slated to begin seismic retrofit in 2010. This will restrict the weight of oversized vehicles (including construction vehicles) to 80,000 pounds.

Construction-Related Traffic Management Activity.

- **Major Phases 1 and 2:** The major activity associated with the bridge is the use of the facility to transport items to the construction site. These items will need to meet the weight restrictions set by the GGBHTD.
- Construction debris falling off of construction vehicles and striking and damaging either the GGB or other vehicles on the bridge.

Selected Management Strategies.

- The contractor should determine if and when overweight trucks will

arrive or leave the project staging areas. If a vehicle exceeds the weight restriction on the bridge, the contractor should reroute that vehicle onto other approach routes if possible. If not, the contractor should coordinate with the GGBHTD to discuss other strategies to bring this vehicle or its equipment into the construction area.
Identification of Additional Issues. • No additional issues are identified here.
Remedy for **Additional Issues.** • No additional remedies are needed.
Contingency for Additional Issues. • No additional contingencies are needed.

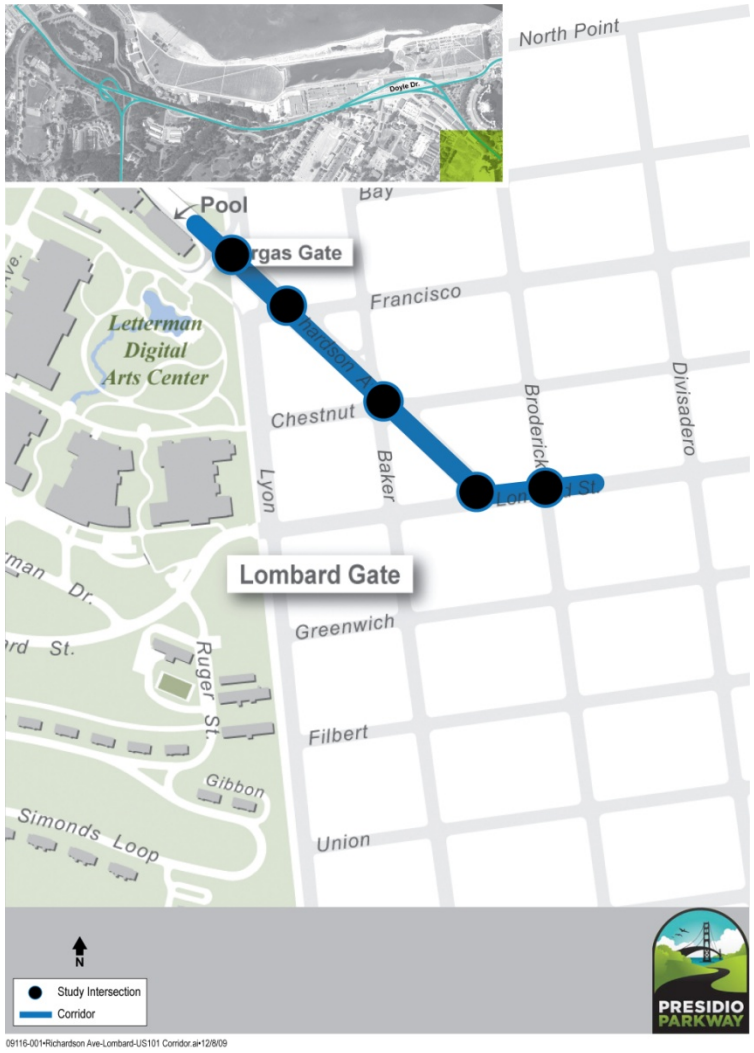
3.2.6 Richardson Avenue/Lombard Street (US-101) Corridor

Existing Conditions.

- This corridor, which is US-101, is the primary thoroughfare that feeds Doyle Drive (US-101). The corridor is a six-lane roadway with three lanes in each direction, separated by a raised median.
- Five closely spaced signalized intersections through this corridor were examined, including Gorgas Avenue; Francisco Street; Chestnut Street; Lombard Street and Broderick Street. The signal timings of these intersections are coordinated.
- Eastbound left turns are prohibited at approaches on Richardson Avenue and Lombard Street with the exception of a left-turn allowed at the Lombard Street/ Richardson Avenue intersection.
- There are approximately 31,000 vehicles in each direction on an average weekday, with considerable variability during the day. The highest peak hour volumes are approximately 3,100 vehicles in the southbound (eastbound) direction in the AM peak hour, and 3,000 vehicles in the northbound (westbound) direction in the PM peak hour.
- This segment of roadway is used by many public and private transit services including the Muni Route 28 and all Golden Gate Transit transbay routes. There are also many privately- operated tour and shuttle buses that use this segment of roadway.

Construction-Related Traffic Management Activity.

- **Major Phase 1:** Congestion along this corridor is generally expected to slightly improve during construction because of the lower traffic volumes using this gateway during the ramp closures between Doyle Drive (US-101) and SR 1. These trips are anticipated to be using alternate routes



elsewhere in the City away from this corridor. However; vehicle movements to/from the Lombard Street Gate should increase as vehicles divert to alternate paths through the Lombard Gate. • These diverted trips may result in longer queuing for the left-turn movement from Lombard Street (continuing on Lombard Street) at the Richardson Avenue intersection. • **Major Phase 2:** The combination of the Gorgas Avenue Slip Ramp closure (beginning in late 2011) as well as the continued northbound Doyle Drive (US-101) to southbound SR 1 ramp closure will likely result in drivers that will use Lombard Gate and this corridor. The storage capacity of the left turn lane from Lombard Street (continuing on Lombard Street) may be inadequate to accommodate the combined, added demand from detours and the slip ramp closure. A preliminary analysis shows that this queue may exceed available storage. Additional delay is also possible at the Lombard Gate (Lyon Street) intersection and at the Presidio Boulevard intersection in the Presidio.
Selected Management Strategies. • This corridor is part of the designated detour route for traffic that is diverted from the Doyle Drive (US-101) and SR 1 ramps that will be closed. • The Resident Engineer should closely monitor traffic congestion in this portion of the study area. While mainline demand will slightly fall, a demand increase is expected for the left-turn movement at the Lombard Street/Richardson Avenue intersection for vehicles that will continue on Lombard Street.
Identification of Additional Issues. • The additional traffic may create neighborhood traffic

intrusion as drivers seek alternative routes to travel between the Marina and Richmond Districts of San Francisco.
Remedy for Additional Issues. • The Resident Engineer will monitor the changes in traffic flows and work with San Francisco MTA staff to adjust signal timing along Richardson Avenue or Lombard Street as needed. • The Resident Engineer should employ the use of traffic control officers at peak hours if congestion occurs. These officers should be used unless a more suitable solution can be found. • The Public Information Office (PIO) will work with local TV; print; radio and internet media to inform the public of the traffic delays where they occur, and to advise the public to choose alternate routes elsewhere if possible.
Contingency for Additional Issues. • Temporarily extend median along Lombard Street and block the North/South Broderick Street access. This converts the intersection at Broderick Street into a Right-in/Right-out access only. Extend length of left turn lane to Lombard Street. Prohibit parking along westbound Lombard Street for approximately 100 ft and shift westbound lanes toward the sidewalk. • Increase media activity via HAR; newspapers; TV and internet news to encourage the public to use alternate routes. • Adjust transit schedules as needed.

3.2.7 Lombard Gate Corridor

Existing Conditions.

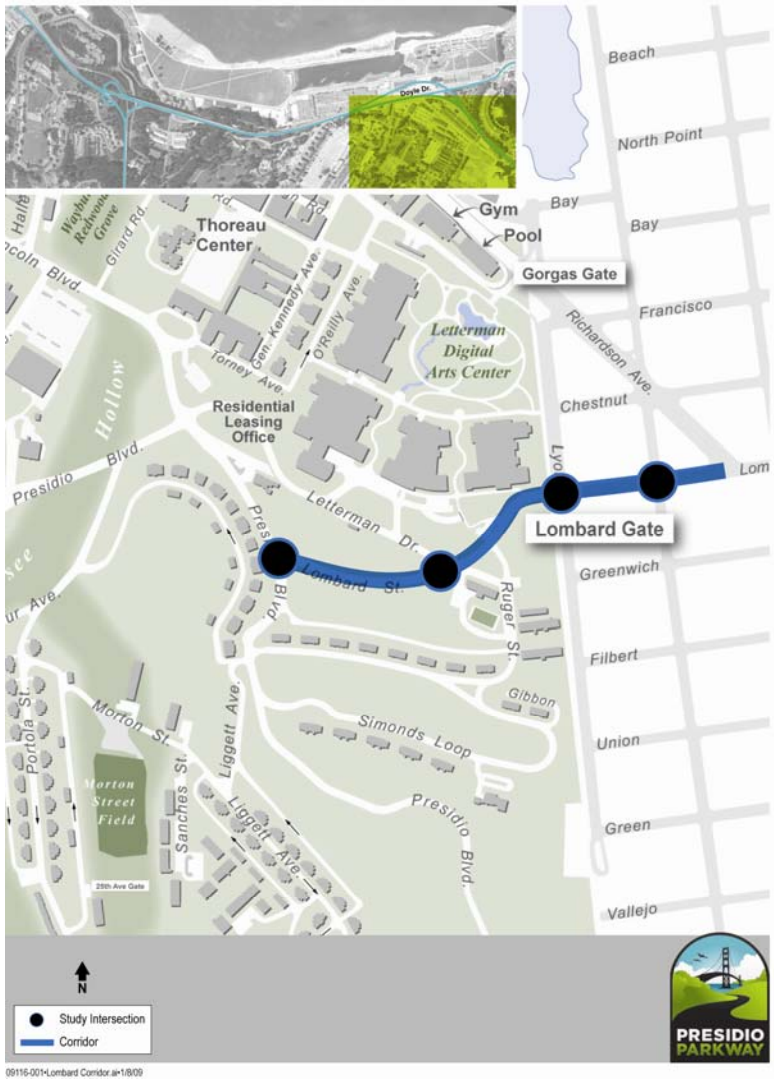
- This segment of Lombard Street has one lane in each direction, with all-way stops at two cross street intersections. There is on-street parking on both sides east of Lyon Street.
- There are currently a combined 1,100 and 1,170 vehicles entering/exiting through the Lombard Gate during the AM and PM peak hours, respectively.
- This segment of Lombard Street is also used by Muni Route 43 in both directions.

Construction-Related Traffic Management Activity.

- The combination of the Gorgas Avenue Slip Ramp closure (beginning in late 2011) well as the ramp closures between Doyle Drive (US-101) and SR 1 are expected to result higher traffic volumes on this segment of Lombard Street. There is concern that the additional traffic, particularly at the Lombard Gate intersection, will overload the existing all-way stop controlled intersections and result in lengthy queues and long delays at these intersections.

Selected Management Strategies.

- The Resident Engineer will closely observe the traffic conditions at the Lombard Street approaches to these intersections.
- When and where significant delays occur (over 60 seconds) on this roadway segment, the Resident Engineer will arrange for traffic control officers to direct traffic more quickly though congested intersections.
- In necessary, the Resident Engineer will work with San Francisco MTA and the Presidio Trust to determine what additional long-term strategies may ease the delay to the



point where the traffic control officers would not be needed.
Identification of Additional Issues. • The delay may result in additional localized traffic congestion, as drivers seek other ways to negotiate the corridor. • The additional delays may create on-time performance problems for Muni Route 43.
Remedy for Additional Issues. • The Public Information Office (PIO) will work with San Francisco MTA, the Presidio Trust, SFCTA and local residents to determine suitable alternatives and solutions to localized traffic congestion beyond traffic control officers. Possible remedies include turning movement restrictions, removal of some on-street parking to allow for turn bays to be temporarily striped., removal of some all-way stops, increased signage, and temporarily designating some streets as one-way.
Contingency for Additional Issues. • Install temporary traffic signals at congested intersections • Restrict certain turn movements (such as left turns) to improve an intersection's flow.

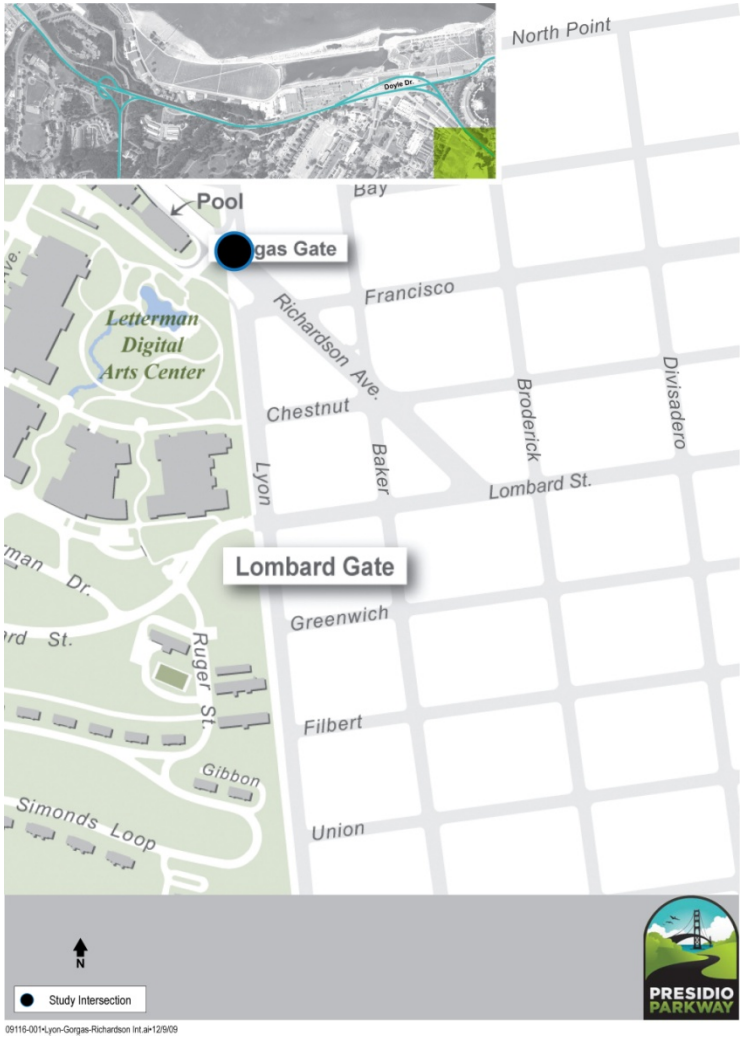
3.2.8 Lyon Street/Gorgas Avenue/Richardson Avenue Intersection

Existing Conditions.

- The intersection of Richardson Avenue with Gorgas Avenue/Lyon Street is the last at-grade intersection before the access controlled segment of Doyle Drive. At this location, Richardson Avenue has three through lanes in each direction. No left-turning movements are allowed at this intersection.
- The intersection is controlled by a multiple-phase traffic signal. Most green time is allocated to Richardson Avenue traffic, with actuated phases for Gorgas Avenue, Lyon Street and pedestrians crossing Richardson Avenue.
- The pedestrian crosswalk across Richardson Avenue provides an important pedestrian connection between the Marina Neighborhood and the Presidio. The crosswalk also provides access between the Presidio and the northbound bus stop for Muni Route 28 and Golden Gate Transit routes.
- At this intersection in the peak direction, Richardson Avenue carries 3,100 vehicles during the AM peak hour and 3,000 vehicles during the PM peak hour. The typical weekend traffic volume thru the project area can be as high as 2,300 vehicles.

Construction-Related Traffic Management Activity.

- **Major Phase 1:** The design of this intersection will not change in Major Phase 1. This intersection will experience less traffic as a result of the closed ramps between Doyle Drive (US-101) and SR 1. Thus, congestion along this corridor is generally expected to improve because of the reduction of traffic.



• **Major Phase 2:** In this stage, the southbound approach on Doyle Drive will shift in alignment. Also, the storage length of the third southbound lane will be shorter. Also, any temporary reduction in southbound traffic resulting from the upstream closure of the ramp from northbound SR 1 to southbound Doyle Drive (US-101) will no longer occur after the ramp reopens.
Selected Management Strategy. • The Resident Engineer will monitor traffic at this intersection during Major Stage 1. • In preparation for Major Stage 2, Caltrans design and operations staff as well as San Francisco MTA will continue to examine ways to optimize flow at this intersection, agreeing to a revised timing and layout strategy three months before the first full weekend closure. Once Major Stage 2 occurs, the Resident Engineer will continue to monitor traffic at this intersection to determine if additional refinements are needed in its operation.
Identification of Additional Issues. • Southbound queue during the AM peak hour at this intersection in Major Stage 2 may result in upstream traffic queues that extend past the temporary intersection with Marina Boulevard. The long upstream traffic queue may need to be further announced to drivers in this corridor.
Remedy for Additional Issues. • The Resident Engineer will explore the ability to put in advanced notification of traffic congestion at this intersection.

Contingency for Additional Issues.

- Adjust traffic signal timing further by restricting the frequency of actuated events.
- Adjust transit schedules as needed.

3.2.9 Presidio Gate and Presidio Boulevard/Presidio Avenue Corridor

Existing Conditions.

- This segment of Presidio Boulevard from Lombard Street to the Presidio Gate is a narrow, two-lane roadway with sharp curves.
- South of the Presidio Gate to Clay Street, Presidio Avenue is a two-lane residential street with parking and sidewalks. There are all-way stop controlled intersections at Pacific Avenue and Jackson Street.
- This roadway is a popular route for recreational bicycles and pedestrians, although it has narrow shoulders and no sidewalks.
- This roadway carries Muni Route 43.
- At the Presidio Gate, there are approximately 11,000 vehicles on an average weekday. The peak volumes are 530 vehicles in the northbound direction during the AM peak hour and 590 vehicles in the southbound direction during the PM peak hour. Studies by the Presidio Trust show that 40 to 50 percent of these vehicles are driving through the Presidio to other destinations.

Construction-Related Traffic Management Activity.

- **Major Phase 1:** This corridor is expected to experience an increase in vehicle traffic of over 100 vehicles at a peak hour as a result of the closure of the ramps between Doyle Drive (US-101) and SR 1. Many of the users of these ramps are persons travelling between the Richmond and Marina Districts, and they will be seeking alternative local routes. The increased traffic flows during construction may result in an increase in travel time delays by up to 51 seconds (AM peak hour) at the intersection of Lombard Street and by up to 25 seconds (PM peak hour) at the intersection of Jackson Street.

• Some additional traffic may also use this roadway during the few weeks before the first major weekend closure, when the northbound Richardson Avenue **off-**ramp to Gorgas Avenue is closed. • **Major Phase 2:** This corridor is expected to continue experience an increase in vehicle traffic as a result of the continued closure of the ramp from northbound Doyle Drive (US-101) to southbound SR 1 (in additional to the closure of this northbound Richardson Avenue off-ramp to Gorgas Avenue), although the increase will be lessened once the northbound SR 1 to southbound Doyle Drive (US-101) ramp is reopened at the beginning of this phase.
Selected Management Strategies. • **Major Stage 1:** Resident Engineer will monitor changes in traffic flows along the corridor and work with Presidio Trust and San Francisco staff to devise strategies to mitigate increased traffic delays. Generally, when delays reach longer than 60 seconds by a floating car sample, traffic control officers should be used to improve traffic flow for Presidio Avenue.
Identification of Additional Issues. • Excessive delays on this street may result in additional neighborhood traffic intrusion in Presidio Heights, as drivers seek other routes. • Because this is a residential area, there is some concern that drivers seeking short-cuts will not drive at safe speeds for a residential area.
Remedy for Additional Issues. • The Resident Engineer will monitor changes in traffic volumes and overall intersection delay along the corridor. If problem are identified, the Resident Engineer will

coordinate with Presidio Trust and San Francisco MTA staff to devise strategies to discourage additional congestion on side streets. Possible strategies include restricting some left-turn movements off of Presidio Avenue. • The Resident Engineer will coordinate with the US Park Police and the San Francisco Police Department to monitor traffic speeds in this area, and increase traffic speed enforcement if needed. • The Public Information Office (PIO) will work with local TV; print; radio and internet media to inform the public of the traffic delays along the Presidio Gate and to advise the public to choose alternate routes elsewhere if possible.
Contingency for Additional Issues. • Use traffic control officers during weekday and weekend peak periods at key intersections during peak hours. • Develop techniques to discourage traffic driving through the Presidio. Possible techniques include physical traffic calming measures, warning signs and enhanced enforcement. • Possible techniques include physical traffic calming measures, warning signs and enhanced enforcement. • Use traffic calming techniques on Presidio Avenue and on side streets to reduce the occurrence of occasional speeding vehicles. • The Resident Engineer will work with Presidio staff to consider temporary conversion of side street stop controlled intersections to all-way stop controlled intersections if there is chronic backup at side streets along this corridor.

3.2.10 Arguello Gate and Arguello Boulevard Corridor

Existing Conditions.

- Arguello Boulevard is a key access route from the Richmond to the Main Post area of the Presidio. The roadway is a narrow, two-lane roadway with sharp curves within the Presidio, north of the Presidio Gate. This roadway segment has narrow shoulders for bicycles and a sidewalk on one side for pedestrians near the Infantry Terrace neighborhood.
- South of the Arguello Gate, the roadway is a two-lane residential street with several all-way stop-controlled intersections. The key ones are located at Jackson Street, and Washington Street.
- At the Arguello Gate, there are 743 vehicles driving through during a typical AM weekday peak hour, with 892 driving through at a typical PM weekday peak hour.

Construction-Related Traffic Management Activity.

- **Major Phase 1:** This corridor is expected to experience an increase in vehicle traffic as a result of the closure of the ramps between Doyle Drive (US-101) and SR 1. Many of the users of these ramps are persons travelling between the Richmond and Marina Districts, and they will be seeking alternative local routes. The increased traffic flows during construction may result in an increase in travel time delays along this corridor.
- **Major Phase 2:** This corridor is expected to continue experience an increase in vehicle traffic as a result of the continued closure of the ramps from northbound Doyle Drive (US-101) to southbound SR 1, although the increase will be lessened once the northbound SR 1 to southbound Doyle Drive (US-101) ramp is reopened.

Selected Management Strategies. • Resident Engineer will monitor changes in traffic flows along the corridor and work with Presidio Trust and San Francisco staff to devise strategies to mitigate increased traffic delays. Generally, when delays reach longer than 60 seconds, traffic control officers should be used to improve traffic flow for Arguello Boulevard.
Identification of Additional Issues. • Excessive delays on this street may result in additional neighborhood traffic intrusion in Presidio Heights, as drivers seek other routes. • Because this is a residential area, there is some concern that drivers seeking short-cuts will not drive at safe speeds for a residential area.
Remedy for Additional Issues. • The Resident Engineer will monitor changes in traffic volumes and overall intersection delay along the corridor. If problem are identified, the Resident Engineer will coordinate with Presidio Trust and San Francisco MTA staff to devise strategies to discourage additional congestion on side streets. Possible strategies include restricting some left-turn movements off of Arguello Avenue, • The Resident Engineer will coordinate with the US Park Police and the San Francisco Police Department to monitor traffic speeds in this area, and increase traffic speed enforcement if needed. • The Public Information Office (PIO) will work with local TV; print; radio and internet media to inform the public of the traffic delays along this corridor and to advise the public to choose alternate routes elsewhere if possible.

Contingency for Additional Issues.

- Use traffic control officers during weekday and weekend peak periods at key intersections during peak hours.
- Develop techniques to discourage traffic driving through the Presidio. Possible techniques include physical traffic calming measures, warning signs and enhanced enforcement.
- Use traffic calming techniques on Arguello Boulevard and on side streets to reduce the occurrence of occasional speeding vehicles.
- The Resident Engineer will work with Presidio staff to consider temporary conversion of side street stop controlled intersections to all-way stop controlled intersections if there is chronic backup at side streets along this corridor.

3.2.11 North-South Streets in Pacific Heights

Existing Conditions.

- As part of the San Francisco street grid, there are several streets that connect the Marina District with more southerly portions of San Francisco. These streets – including Divisadero Street, Scott Street, Pierce Street, and Fillmore Street – are steep streets that run through residential neighborhoods.

Construction-Related Traffic Management Activity.

- **Major Phase 1:** These streets are expected to experience a small increase in vehicle traffic as a result of the closure of the ramps between Doyle Drive (US-101) and SR 1. Many of the users of these ramps are persons travelling between the Richmond and Marina Districts, and they will be seeking alternative local routes. The increased traffic flows during construction may result in an increase in travel time delays along these corridors. The most significant delay would be anticipated at Arguello Boulevard and Washington Street, with a potential increased travel time of 71 seconds during the AM peak hour, and 35 seconds during the PM peak hour.
- **Major Phase 2:** These streets are expected to continue experience an increase in vehicle traffic as a result of the continued closure of the ramps from northbound Doyle Drive (US-101) to southbound SR 1, although the increase will be lessened once the northbound SR 1 to southbound Doyle Drive (US-101) ramp is reopened.

Selected Management Strategies. • The Resident Engineer will monitor changes in traffic flows and potential delays along these streets. If problems are identified, the Resident Engineer will work with San Francisco MTA staff to devise strategies to mitigate increased traffic delays. Generally, when delays reach longer than 60 seconds at any intersection, traffic control officers should be used to improve traffic flow.
Identification of Additional Issues. • Excessive delays on these streets If drivers find intersection approach delays on this street to be unacceptable, they may choose to seek other routes through Pacific Heights, resulting in neighborhood traffic intrusion. • Because this is a residential area, there is some concern that drivers seeking short-cuts will not drive at safe speeds for a residential area.
Remedy for Additional Issues. • The Resident Engineer will monitor changes in traffic volumes and overall intersection delay along the corridor. If problem are identified, the Resident Engineer will coordinate with San Francisco MTA staff to devise strategies to discourage additional congestion on side streets. Possible strategies include restricting some left-turn movements off of Arguello Avenue, • The Resident Engineer will coordinate with San Francisco Police Department to monitor traffic speeds in this area, and increase traffic speed enforcement if needed. • The Public Information Office (PIO) will work with local TV; print; radio and internet media to inform the public of the traffic delays and to advise the public to choose alternate routes elsewhere if possible.

Contingency for Additional Issues.

- Use traffic control officers during weekday and weekend peak periods at congested intersections during peak hours.
- Use traffic calming techniques on the streets that have additional traffic as well on side streets to reduce the occurrence of occasional speeding vehicles.
- Increased presence of San Francisco Police Department to discourage speeding.

3.2.12 East-West Streets in Inner Richmond

Existing Conditions.

- As part of the San Francisco street grid, there are several streets that provide access in the Richmond District. These streets – Lake Street, Clement Street, California Street and Geary Boulevard – are important thoroughfares within San Francisco.
- A number of bus routes operate on this street. These include Muni Routes 2, 38, 38L, 38AX, 38BX, and 44 as well as Golden Gate Transit Route 92.

Construction-Related Traffic Management Activity.

- **Major Stage 1:** These streets are expected to experience a small increase in vehicle traffic as a result of the closure of the ramps between Doyle Drive (US-101) and SR 1. Many of the users of these ramps are persons travelling between the Richmond and Marina Districts, and they will be seeking alternative local routes. The increased traffic flows during construction may result in an increase in travel time delays along this corridor.
- **Major Stage 2:** These streets are expected to continue to experience an increase in vehicle traffic as a result of the continued closure of the ramps from northbound Doyle Drive (US-101) to southbound SR 1, although the increase will be lessened once the northbound SR 1 to southbound Doyle Drive (US-101) ramp is reopened.

Selected Management Strategies.

- The Resident Engineer will monitor changes in traffic flows and potential delays along these streets. If problems are identified,, the Resident Engineer will work with San Francisco MTA staff to devise strategies to mitigate increased traffic delays.

• Generally, when delays reach longer than 60 seconds at any unsignalized intersection, traffic control officers should be used to improve traffic flow. • If delays become longer than 60 seconds at a signalized intersection, the Resident Engineer should discuss the issue with the San Francisco MTA.
Identification of Additional Issues. • Excessive delays on these streets may result in additional neighborhood traffic intrusion in the Inner Richmond, as drivers seek other routes. • Because several streets are residential, there is some concern that drivers seeking short-cuts will not drive at safe speeds for a residential area.
Remedy for Additional Issues. • The Resident Engineer will monitor changes in traffic volumes and overall intersection delay along the corridor. If problem are identified, the Resident Engineer will coordinate with San Francisco MTA staff to devise strategies to discourage additional congestion on side streets. Possible unsignalized intersection strategies include restricting some left-turn movements. Possible signalized intersection strategies include a retiming of signals to allow longer green phases for east-west traffic. • The Resident Engineer will coordinate with San Francisco Police Department to monitor traffic speeds in this area, and increase traffic speed enforcement if needed. • The Public Information Office (PIO) will work with local TV; print; radio and internet media to inform the public of the traffic delays and to advise the public to choose alternate routes elsewhere if possible.

Contingency for Additional Issues.

- Use traffic control officers during weekday and weekend peak periods at congested intersections during peak hours.
- Use traffic calming techniques on the streets that have additional traffic as well on side streets to reduce the occurrence of occasional speeding vehicles.
- Increased presence of San Francisco Police Department to discourage speeding.
- Adjust transit schedules as needed.

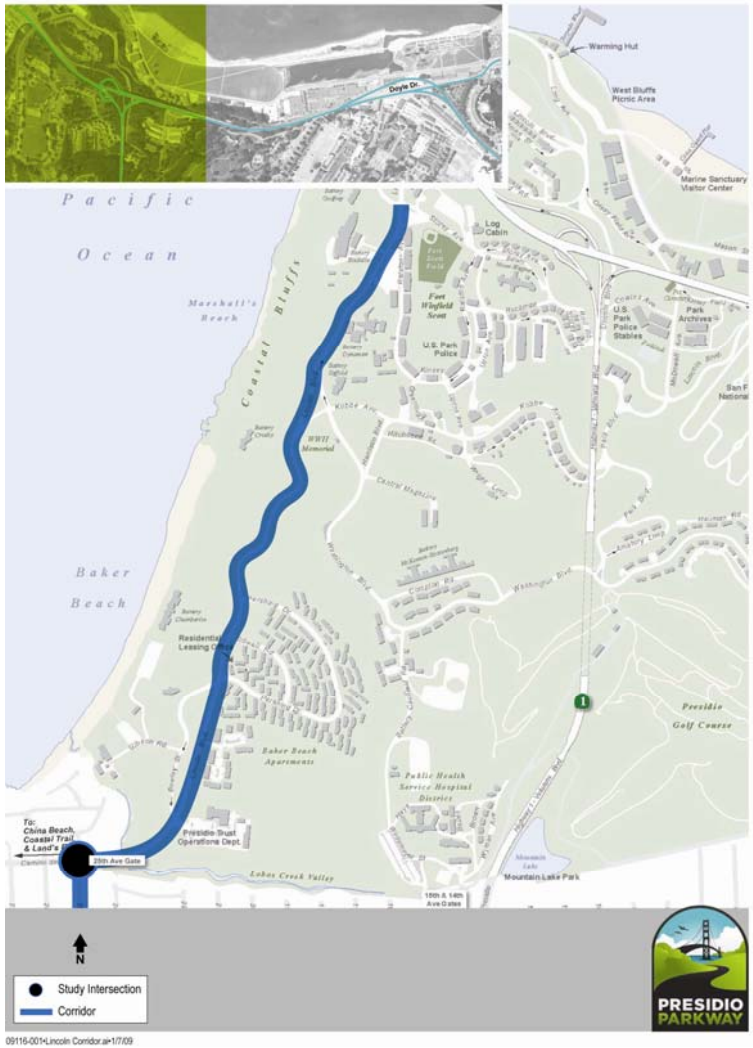
3.2.13 Lincoln Boulevard and 25th Avenue Corridor

Existing Conditions.

- Lincoln Boulevard is a key access route from the Outer Richmond to the western portion of the Presidio and the Golden Gate Bridge. Within the Presidio, the facility consists of a two-lane roadway with no sidewalks. Bicycle lanes are provided between Pershing Drive and the 25th Avenue Gate. This roadway is popular with tourists, recreational users and is a cut through route for commuters.
- South of the Lincoln Gate, Camino del Mar is a two-lane residential street with curbside parking and a bicycle lane. There is an all-way stop at 25th Avenue.
- 25th Avenue is a north-south collector road that runs through the Richmond District, with one lane in each direction, left-turn pockets and bicycle lanes.
- At the Lincoln Gate, there are approximately 10,000 vehicles per day. The peak direction traffic is 580 vehicles in the northbound direction during the typical AM weekday peak hour, with 360 vehicles northbound driving through at a typical PM weekday peak hour.

Construction-Related Traffic Management Activity.

- **Major Phase 1:** This corridor is expected to experience an increase in vehicle traffic as a result of the closure of the ramps between Doyle Drive (US-101) and SR 1. Many of the users of these ramps are persons travelling between the Richmond and Marina Districts, and they will be seeking alternative local routes. The increased traffic flows during construction may result in an increase in travel time delays along this corridor.
- During overnight periods when overall access is restricted on SR 1, this corridor is likely to also experience additional traffic.
- **Major Phase 2:** This corridor is expected to continue experience an increase in vehicle traffic as a result of the



continued closure of the ramps from northbound Doyle Drive (US-101) to southbound SR 1, although the increase will be lessened once the northbound SR 1 to southbound Doyle Drive (US-101) ramp is reopened.
Selected Management Strategies. • The TMP Field Supervisor will monitor changes in traffic flows along the corridor and work with Presidio Trust and San Francisco MTA staff to devise strategies to mitigate increased traffic delays. • Generally, when delays reach longer than 60 seconds, traffic control officers should be used to improve traffic flow for the unsignalized intersections. • For signalized intersections on 25th Avenue, the Resident Engineer should coordinate with San Francisco MTA staff to determine if additional time can be granted for north-south traffic. • During overnight closures of SR 1, the Resident Engineer should provide adequate advance notice through the Public Information Office for local residents and drivers through the corridor. This includes use of portable CMS signs announcing the closure. • During overnight closures of SR 1, the Resident Engineer should arrange for traffic control officers to be available at unsignalized intersections to prevent excessive congestion or increased speeding during those hours.
Identification of Additional Issues. • Excessive delays if drivers find intersection approach delays on this street to be unacceptable, they may choose to seek other routes through the Richmond and Sea Cliff areas, resulting in neighborhood traffic intrusion. • Because this is a residential area, there is concern about the speeds of drivers seeking short-cuts

Remedy for Additional Issues. • The Resident Engineer will monitor changes in traffic volumes and overall intersection delay along the corridor. If problem are identified, the Resident Engineer will coordinate with Presidio Trust and San Francisco MTA staff to devise strategies to discourage additional congestion on side streets. • The Resident Engineer will coordinate with the US Park Police and the San Francisco Police Department to monitor traffic speeds in this area, and increase traffic speed enforcement if needed. • The Public Information Office (PIO) will work with local TV; print; radio and internet media to inform the public of the traffic delays along this corridor and to advise the public to choose alternate routes elsewhere if possible.
Contingency for Additional Issues. • Use traffic control officers during weekday and weekend peak periods at key intersections during peak hours. • Introduce temporary changes to stop controlled intersections if delays on various streets are excessive. This may include adding all-way stop control to ease side street congestion. • Develop techniques to discourage traffic driving through the Presidio. Possible techniques include physical traffic calming measures, warning signs and enhanced enforcement. • The Resident Engineer will work with Presidio and San Francisco MTA staff to consider temporary conversion of side street stop controlled intersections to all-way stop controlled intersections if there is chronic backup at side streets along this corridor.

3.3 Transit Routes Affected by Active Construction

This section describes each public transit route by operator, how they will be affected and the mitigation strategies for them. The section includes diagrams of the routes as they operate now. The identified routes include:

- Golden Gate Transit Transbay Buses (all buses on Richardson Avenue)
- Golden Gate Transit Route 92
- Muni Route 91
- Richmond Express Routes
- Muni Route 28
- Muni Route 43
- PresidiGo Around-The-Park Shuttle
- PresidiGo Downtown Shuttle

3.3.1 Golden Gate Transit Transbay Buses (all buses but Route 92)

Existing Conditions.

- Golden Gate Transit operates several trunk routes as well as many commute-period express routes between the North Bay and San Francisco. These routes travel on US-101 through the project study area; this includes the Golden Gate Bridge, Doyle Drive, Richardson Avenue, and Lombard Street. The buses stop at the Golden Gate Bridge Toll Plaza (both directions) and at a stop on Richardson Avenue between the Gorgas Avenue/Lyon Street intersection.
- There are a total of 228 in-service buses on an average day. At the AM peak hour, there are 54 in-service buses heading southbound, which is the peak direction. There are 49 in-service buses heading northbound peak direction in the PM peak hour.
- The stops located at the Golden Gate Bridge are an important transfer point to Muni Buses, Golden Gate Transit Route 92, and the Presidio Shuttle.
- The stops on Richardson Avenue are important transfer points to nearby Muni Routes, such as the 43 and 30.
- All buses are subject to periodic traffic congestion that occurs on the corridor. This includes southbound delays associated with the Gorgas Avenue/Lyon Street/Richardson Avenue intersection in the AM peak hour, and with the merging traffic and associated lane drops of northbound traffic at the Golden Gate Bridge in the PM peak hour.

Construction Related Traffic Management Activity.

- **Major Stage 1:** As noted in earlier sections, there are several activities which will occur on the route that may impact bus travel times. The southbound activities include:
  - The addition of a second-lane off ramp to SR-1 from Southbound US-101.

- Additional traffic from higher on-ramp southbound volumes at Merchant Road, resulting from shifts in San Francisco travel demand associated with Doyle Drive (US-101)/SR-1 ramp closures.
- The reduction in traffic from the additional auxiliary lane that is added from the northbound SR-1 to southbound Doyle Drive (US-101) ramp.

The northbound activities that may impact bus travel times include:

- The removal of the additional auxiliary lane between the on-ramp from northbound SR-1 to north (west) of the Halleck Street crossing.
- Additional traffic from higher off-ramp northbound volumes at Merchant Road (Toll Plaza area), resulting from shifts in San Francisco travel demand association with the Doyle Drive (US-101)/SR-1 ramp closures.

- **Major Stage 2:** As noted in earlier sections, the roadway will be on a different alignment at this point. The southbound activities that may impact bus travel times include:
  - The addition of a second-lane off ramp to SR-1 from SB US-101.
  - Additional traffic from higher on-ramp southbound volumes at Merchant Road, resulting from shifts in San Francisco travel demand associated with Doyle Drive (US-101)/SR-1 ramp closures.
  - The reintroduction of traffic from the reopened northbound SR-1 to southbound Doyle Drive (US-101) ramp, which will need to merge into traffic.
  - The introduction of a new intersection at Marina Boulevard, which will require that all traffic bound for Marina Boulevard to make a left turn at a new temporary signal (two left turn lanes will be provided).

- The slight shortening of the southbound Richardson Boulevard (US-101) storage at the Gorgas Avenue/Lyon Street/Richardson Boulevard intersection, potentially increasing existing queuing at this intersection,

The northbound activities that may impact bus travel times include:

- The addition of a temporary signal on northbound Richardson Avenue at Marina Boulevard.
- Additional traffic from higher off-ramp northbound volumes at Merchant Road (Toll Plaza area), resulting from shifts in San Francisco travel demand association with the Doyle Drive (US-101)/SR-1 ramp closures.

Selected Management Strategies.

- **Major Stage 1:** The Resident Engineer should monitor the overall congestion patterns during this stage along the corridor where these buses travel. The delays during this stage are not anticipated to significantly impact the speeds of these routes. Travel time estimates from the SF-CHAMP model suggest that the average additional travel time will be less than a minute. This occurs partly because there will be less traffic on Doyle Drive (US-101) as a result of the ramp closures.
- **Major Stage 2:** The Resident Engineer should monitor the overall congestion patterns during this stage along the corridor where these buses travel, and discuss solutions with Golden Gate Transit staff for any long-term problems that occur. The delays during this stage are tentative and are expected to induce some additional delay at the intersection of Marina Boulevard and Richardson Avenue. Operational studies of this intersection show that it could have significant queuing for both the southbound left-turning movements onto Marina Boulevard (affecting the route if the intersection

results in significant queuing onto Doyle Drive) as well as northbound through movements. It is noted that the continued closure of the ramp from Doyle Drive (US-101) to SR-1 will continue to divert some traffic from these roadways, although the reopened ramp from northbound SR-1 to southbound Doyle Drive (US-101) will reintroduce traffic.
Identification of Additional Issues. • **Major Stages 1 and 2:** If bus operations are affected, some remedy to the situation should be granted. The Resident Engineer will periodically observe traffic through this area to determine if additional congestion is routinely occurring. If the delay becomes significant enough for a remedy when on-time bus arrivals cannot be kept. In general, this additional delay would need to be over 4 minutes – creating an on-time performance issue for the bus operations. If so, then the contractor will contact the GGBHTD or the Presidio Trust to determine the appropriate remedy, in accordance with the MOU between Caltrans and the GGBHTD.
Remedy for Additional Issues. • **Major Stages 1 and 2:** Where significant additional delay results, traffic engineering remedies to keep the buses on schedule should be considered. Possible remedies include: o A retiming of the Richardson Avenue approaches to any intersections (including the new temporary intersection) with considerable delay to allow for more buses and cars to flow through a particular cycle. o Providing compensation to Golden Gate Transit to cover the cost of the additional delays in operations in accordance with the MOU.
Contingency for Additional Issues.

- Reduce the traffic volumes on the northbound SR-1 to Doyle Drive (US-101) ramp by closing the ramp for another several months, or closing or metering this ramp during AM peak commute hours. The lower traffic would reduce volumes and delay on the Richardson Avenue intersections.
- Provide a bus-only approach lane at the Toll Plaza to spread bus operations.
- Implement a strategy to shift bus riders to ferries and discontinue some bus services. If ferry passenger or parking capacity is not sufficient enough to accommodate more riders, then additional parking or ferry service can be provided if feasible..

3.3.2 Golden Gate Transit Route 92

Existing Conditions.

- Golden Gate Transit operates Route 92 from southern Marin County to the Richmond District of San Francisco, continuing onto the Financial District. This route operates only as a peak hour commuter route. The route operates on the Golden Gate Bridge and a short segment of US-101, but continues on SR-1 in both directions. The buses stop at the Golden Gate Bridge Toll Plaza (both directions).
- There are 16 in-service buses (8 in each direction) on an average day. At the AM peak hour, there are 4 in-service buses heading southbound, which is the peak direction. There are 4 in-service buses heading northbound peak direction in the PM peak hour.
- The stops located at the Golden Gate Bridge are an important transfer point to Muni Buses and to other Golden Gate Transit Routes.

Construction Related Traffic Management Activity.

- **Major Stage 1**: As noted in earlier sections, there are several activities which will occur on the route that may impact bus travel times. The southbound activities include:
  - The addition of a second-lane off-ramp to SR-1 from southbound US-101.
  - Additional traffic from higher on-ramp southbound volumes at Merchant Road, resulting from shifts in San Francisco travel demand associated with Doyle Drive (US-101)/SR-1 ramp closures.
  - The reduction in traffic from the closed ramp originating from northbound Doyle Drive (US-101) to SR-1.
  - The potential delay associated with some of geometric constraints along the route that will be

introduced, such as a shorter weaving distance between the southbound Merchant Road on-ramp and the southbound SR-1 off-ramp, as well as the reduction in traffic on SR-1 from two lanes to one at the Ruckman overcrossing for several weeks.

The northbound activities that may impact bus travel times include:

Additional traffic from higher northbound off-ramp volumes at Merchant Road, resulting from shifts in San Francisco travel demand associated with Doyle Drive (US-101)/SR-1 ramp closures.

- The reduction in traffic from the closed ramp originating from northbound SR-1 to southbound Doyle Drive (US-101).

- **Major Stage 2:** As noted in earlier sections, the roadway will be on a different alignment but less activity will occur along this route. The southbound activities that may impact bus travel times include:
  - The addition of a second-lane off ramp to SR-1 from southbound US-101.
  - Additional traffic from higher on-ramp southbound volumes at Merchant Road, resulting from shifts in San Francisco travel demand associated with continued northbound Doyle Drive (US-101) to southbound SR-1 ramp closure.
  - The reduction in traffic from the closed ramp originating from northbound Doyle Drive (US-101) to southbound SR-1.

  The northbound activities that may impact bus travel times include:
  - Additional traffic from higher northbound off-ramp volumes at Merchant Road, resulting from shifts in San Francisco travel demand associated with continued northbound Doyle Drive (US-101) to southbound SR-1 ramp closure.

o The reduction in traffic from the closed ramp originating from northbound Doyle Drive (US-101) to southbound SR-1. The northbound activities that may impact bus travel times include: o Additional traffic from higher northbound off-ramp volumes at Merchant Road, resulting from shifts in San Francisco travel demand associated with continued northbound Doyle Drive (US-101) to southbound SR-1 ramp closure.
Selected Management Strategies. • **Major Stage 1:** The Resident Engineer should monitor the overall congestion patterns during this stage along the corridor where these buses travel. The delays during this stage are not anticipated to significantly impact the speeds of these routes. Travel time estimates from the SF-CHAMP model suggest that the average additional travel time will be less than a minute. • **Major Stage 2:** The Resident Engineer should monitor the overall congestion patterns during this stage along the corridor where these buses travel, and discuss solutions with Golden Gate Transit staff for any long-term problems that occur. The delays during this stage are also not expected to induce some additional delay.
Identification of Additional Issues. • **Major Stages 1 and 2:** If bus operations are affected, some remedy to the situation should be granted. The Resident Engineer will periodically observe traffic through this area to determine if additional congestion is routinely occurring. If the delay becomes significant enough for a remedy when on-time bus arrivals cannot be kept. In general, this additional delay would need to be over 4 minutes – creating an on-time performance issue for the bus operations. If so, then the

contractor will contact the GGBHTD or the Presidio Trust to determine the appropriate remedy in accordance with the MOU.

Remedy for Additional Issues.
• **Major Stages 1 and 2:** Where significant additional delay results, traffic engineering remedies to keep the buses on schedule should be considered. Possible remedies include:
  o A retiming of the Richardson Avenue approaches to any intersections (including the new temporary intersection) with considerable delay to allow for more buses and cars to flow through a particular cycle.
  o Providing compensation to Golden Gate Transit to cover the cost of the additional delays in operations in accordance with the MOU.

Contingency for Additional Issues. • Reduce the traffic volumes on the northbound SR-1 to Doyle Drive (US-101) ramp by closing the ramp for another several months, or closing or metering this ramp it during AM peak commute hours. The lower traffic would reduce volumes and delay on the Richardson Avenue intersections. • Provide a bus-only approach lane at the Toll Plaza to spread bus operations..

3.3.3 Muni Route 91

Existing Conditions.

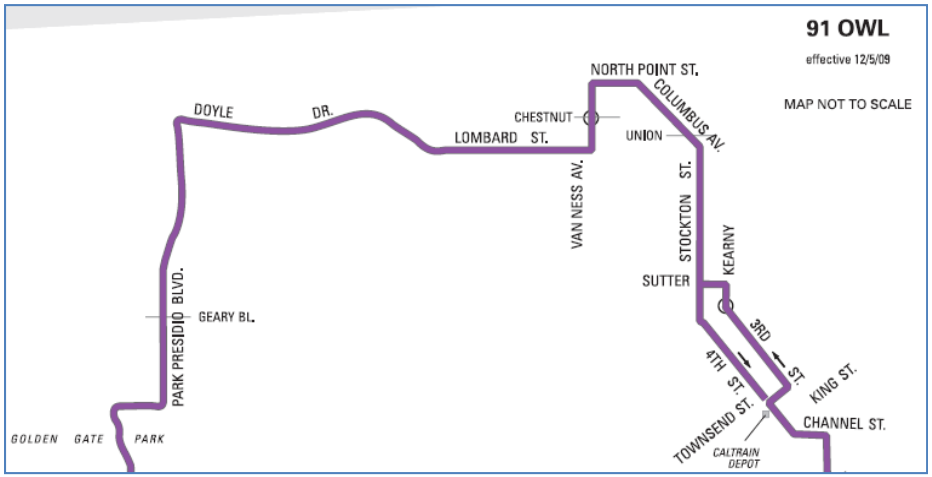
- Muni operates Route 91 as an alternative bus route between 1 AM to 5 AM, connecting the Richmond and Sunset Districts of San Francisco with the Marina District. The route uses SR-1, Doyle Drive (US-101) and Richardson Avenue (US-101). This includes use of the ramps that are to be closed between SR-1 and Doyle Drive (US-101) during the project.
- There are 16 in-service buses (8 in each direction) on an average night.

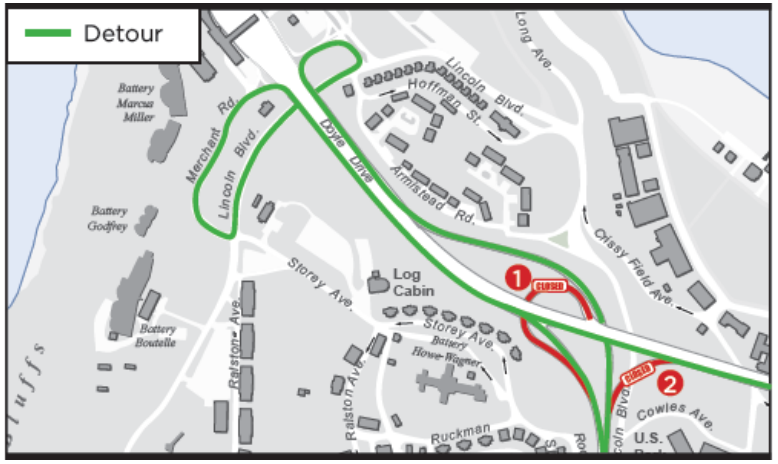
Construction Related Traffic Management Activity.

- **Major Stage 1:** The closed ramps will require that buses be rerouted in both directions through the Golden Gate Bridge toll plaza area. Because this is during periods when traffic is low, no significant delays are anticipated.
- **Major Stage 2:** The remaining closed ramp between northbound Doyle Drive (US-101) and southbound SR-1 will require that buses be rerouted in the outbound direction through the Golden Gate Bridge toll plaza area. Because this is during periods when traffic is low, no significant delays are anticipated.

Selected Management Strategies.

- **Major Stages 1 and 2:** The Resident Engineer should work with Muni to monitor the travel times of this route. Travel time estimates from the SF-CHAMP model suggest that the average additional travel time will be less than three minutes. The delay shall be considered significant, if the travel time for buses becomes increases by four or more minutes in any direction.





Identification of Additional Issues. • **Major Stage 1 and 2:** While not projected, additional delays from the longer route could result in timed-transfers from not being met.

Remedy for Additional Issues.
• **Major Stages 1 and 2:** Where significant additional delay results, traffic engineering remedies to keep the buses on schedule should be considered. Possible remedies include:
  o A retiming of the signals on SR-1 (Park Presidio), Richardson Avenue and/or Lombard Street to recover time lost by having to take a longer route during the overnight hours.
  o Providing compensation to Muni to cover the cost of the additional delays in operations.

Contingency for Additional Issues. • Revise the overall timed-transfer point configuration of the system.

3.3.4 Richmond Express Routes

Existing Conditions.

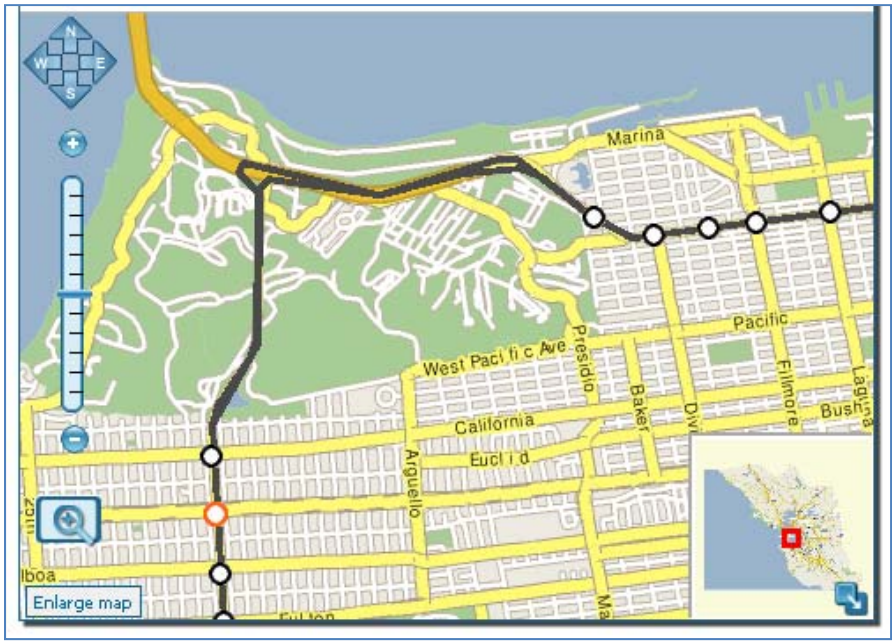
- Muni uses portions of the project area to run out-of-service buses to and from the storage facility. These bus routes are commuter-oriented routes that run in one direction; the routes begin service in the Richmond District and run to the Financial District in the AM peak period, and return in the PM peak period. These buses generally run on northbound Richardson Avenue (US-101), Doyle Drive (US-101), and southbound SR-1 in the AM peak period, and return in the opposite direction in the PM peak period.
- There are 30 buses that follow this route in the AM peak period, and 27 in the PM peak period during a weekday.

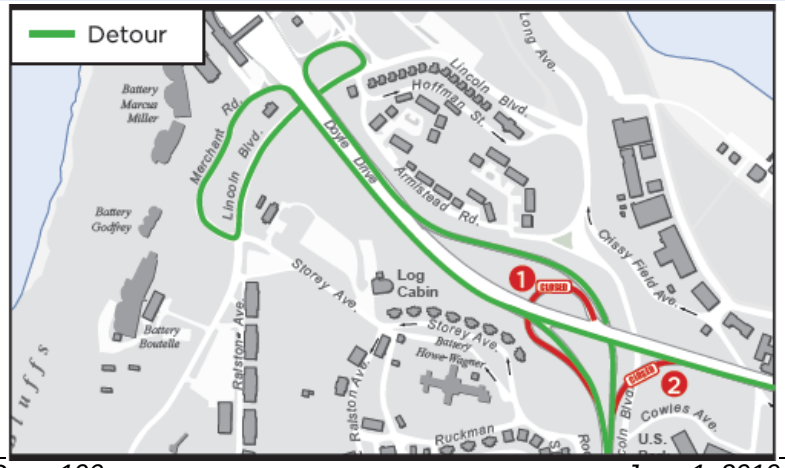
Construction Related Traffic Management Activity.

- **Major Stage 1:** The closed ramps will require that buses be rerouted in both directions through the Golden Gate Bridge Toll Plaza area. Because this is during periods when the peak direction of traffic is lower, no significant delays are anticipated.
- **Major Stage 2:** The remaining closed ramp between northbound Doyle Drive (US-101) and southbound SR-1 will require that buses be rerouted in the outbound direction through the Golden Gate Bridge Toll Plaza area. Because this is during periods when the peak direction of traffic is lower, no significant delays are anticipated.

Selected Management Strategies.

- **Major Stages 1 and 2:** The Resident Engineer should work with Muni to monitor the travel times of these routes. Travel time estimates from the SF-CHAMP model suggest that the average additional travel time will be less than three minutes. The delay shall be considered significant, if the travel time for buses becomes increases by four or more minutes in any direction.





Identification of Additional Issues. • **Major Stage 1 and 2:** While not projected, additional delays from the longer travel times could result in bus start times from not being met.

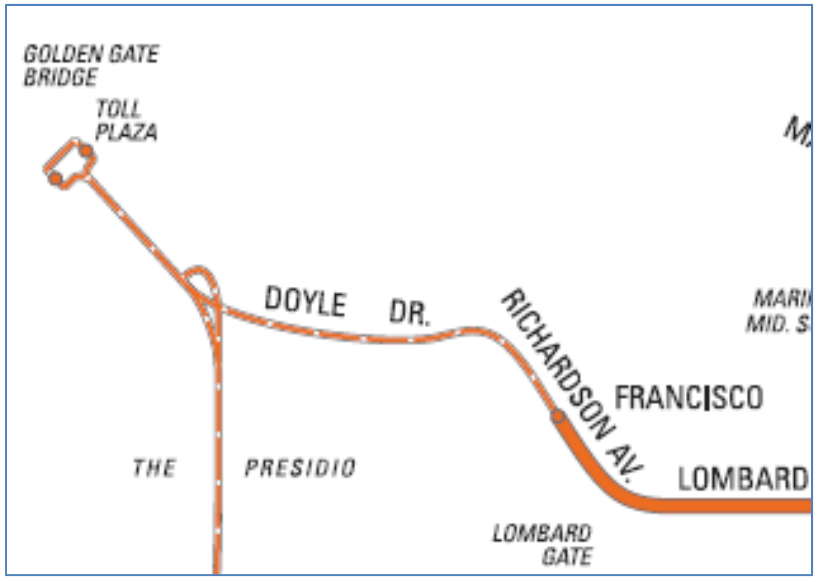
Remedy for Additional Issues.
• **Major Stages 1 and 2:** Where significant additional delay results, traffic engineering remedies to keep the buses on schedule should be considered. Possible remedies include:
  o A retiming of the signals on SR-1 (Park Presidio), Richardson Avenue and/or Lombard Street to recover time lost by having to take a longer route during the overnight hours.
  o Providing compensation to Muni to cover the cost of the additional delays in operations.

Contingency for Additional Issues. • Revise the schedules of the express buses, or the pull-out/pull-in times at the storage facility.

3.3.5 Muni Route 28

Existing Conditions.

- Muni Route 28 travels on Richardson Avenue (US-101), Doyle Drive (US-101), around the Merchant Road/Toll Plaza area, and onto SR-1. The buses stop at the Golden Gate Bridge Toll Plaza (both directions) and at a stop on Richardson Avenue between the Gorgas Avenue/Lyon Street intersection.
- There are 189 in-service buses on an average day. At the AM peak hour, there are 7 in-service buses heading southbound on US-101, which is the peak direction. There are 5 in-service buses heading northbound on US-101 in the PM peak hour.
- The stops located at the Golden Gate Bridge Toll Plaza are an important transfer point to Golden Gate Transit routes and the PresidiGo shuttle.
- The stops on Richardson Avenue are important transfer points to nearby Muni Routes, such as the 43 and 30 and Golden Gate Transit routes.
- All buses are subject to periodic traffic congestion that occurs on the corridor. This includes southbound delays associated with the Gorgas Avenue/Lyon Street/Richardson Avenue intersection in the AM peak hour, and with the merging traffic and associated lane drops of northbound traffic at the Golden Gate Bridge in the PM peak hour.



Construction Related Traffic Management Activity.

- **Major Stage 1:** As noted in earlier sections, there are several activities which will occur on the route that may impact bus travel times. The southbound activities include:
  - The addition of a second-lane off ramp to SR-1 from SB US-101.
  - Additional traffic from higher on-ramp southbound volumes at Merchant Road, resulting from shifts in San Francisco travel demand associated with Doyle Drive (US-101)/SR-1 ramp closures.
  - The reduction in traffic from the additional auxiliary lane

that is added from the northbound SR-1 to southbound Doyle Drive (US-101) ramp.

The northbound activities that may impact bus travel times include:

- The removal of the additional auxiliary lane between the on-ramp from northbound SR-1 to north (west) of the Halleck Street crossing.
- Additional traffic from higher off-ramp northbound volumes at Merchant Road (Toll Plaza area), resulting from shifts in San Francisco travel demand association with the Doyle Drive (US-101)/SR-1 ramp closures.

- **Major Stage 2:** As noted in earlier sections, the Doyle Drive (US-101) roadway will be on a different alignment at this point. The southbound activities that may impact bus travel times include:
  - The addition of a second-lane off ramp to SR-1 from southbound US-101.
  - Additional traffic from higher on-ramp southbound volumes at Merchant Road, resulting from shifts in San Francisco travel demand associated with Doyle Drive (US-101)/SR-1 ramp closures.
  - The reintroduction in traffic from the reopened northbound SR-1 to southbound Doyle Drive (US-101) ramp, which will need to merge into southbound traffic.
  - The introduction of a new intersection at Marina Boulevard, which will require that all traffic bound for Marina Boulevard to make a left turn at a new temporary signal (two left turn lanes will be provided).
  - The slight shortening of the southbound Richardson Boulevard (US-101) storage at the Gorgas Avenue/Lyon Street/Richardson Boulevard intersection, potentially increasing existing queuing at this intersection,

  The northbound activities that may impact bus travel times include:
  - The addition of a temporary signal on northbound Richardson Avenue at Marina Boulevard.
  - Additional traffic from higher off-ramp northbound volumes at Merchant Road (Toll Plaza area), resulting from shifts in

San Francisco travel demand association with the Doyle Drive (US-101)/SR-1 ramp closures.
Selected Management Strategies. • **Major Stage 1:** The Resident Engineer should coordinate with Muni staff to monitor the overall congestion patterns during this stage along the corridor where these buses travel. The delays during this stage are not anticipated to significantly impact the speeds of these routes. Travel time estimates from the SF-CHAMP model suggest that the average additional travel time will be less than a minute. This occurs partly because there will be less traffic on Doyle Drive (US-101) as a result of the ramp closures. • **Major Stage 2:** The Resident Engineer should coordinate with Muni staff to monitor the overall congestion patterns during this stage along the corridor where these buses travel. The delays during this stage are tentatively expected to induce some additional delay at the intersection of Marina Boulevard and Richardson Avenue. Operational studies of this intersection show that it could have significant queuing for both the southbound left-turning movements onto Marina Boulevard (affecting the route if the intersection results in significant queuing onto Doyle Drive) as well as northbound through movements. It is noted that the continued closure of the ramp from Doyle Drive (US-101) to SR-1 will continue to divert some traffic from these roadways, although the reopened ramp from northbound SR-1 to southbound Doyle Drive (US-101) will reintroduce traffic.
Identification of Additional Issues. • **Major Stages 1 and 2:** If bus operations are delayed by five or more minutes, some remedy to the situation should be granted. The Resident Engineer will periodically discuss on-time transit operations issues with Muni staff, and observe traffic through this area to determine if additional delays are routinely occurring. If so, then the contractor will contact Muni or an agency responsible for the roadways on which the buses travel. The delay becomes significant

enough for a remedy when on-time bus arrivals cannot be kept. In general, this additional delay would need to be over 4 minutes – creating an on-time performance issue for the bus operations.

Remedy for Additional Issues.
• **Major Stages 1 and 2:** Where significant additional delay results, traffic engineering remedies to keep the buses on schedule should be considered. Possible remedies include:
  o A retiming of the Richardson Avenue approaches to any intersections (including the new temporary intersection) with considerable delay to allow for more buses and cars to flow through a particular cycle.
  o Providing compensation to Muni to cover the cost of the additional delays in operations.

Contingency for Additional Issues. • **Major Stage 2:** Reduce the traffic volumes on the northbound SR-1 to Doyle Drive (US-101) ramp by closing the ramp for another several months, or closing or metering this ramp during AM peak commute hours. The lower traffic would reduce volumes and delay on the Richardson Avenue intersections.

3.3.6 Muni Route 43

- Muni Route 28 travels on Lombard Street (US-101), Doyle Drive (US-101) on
- Presidio Avenue near the project study area.
- There are 189 in-service buses on an average day. At the AM peak hour, there are 7 in-service buses heading inbound, which is the peak direction. There are 6 in-service buses heading outbound peak direction in the PM peak hour.
- All buses are subject to periodic traffic congestion that occurs on Lombard Street at either the intersection with Richardson Avenue or, Lyon Street (Lombard Gate) or at Presidio Avenue.

Construction Related Traffic Management Activity.

- No construction activity occurs along the path of this route.

Selected Management Strategies.

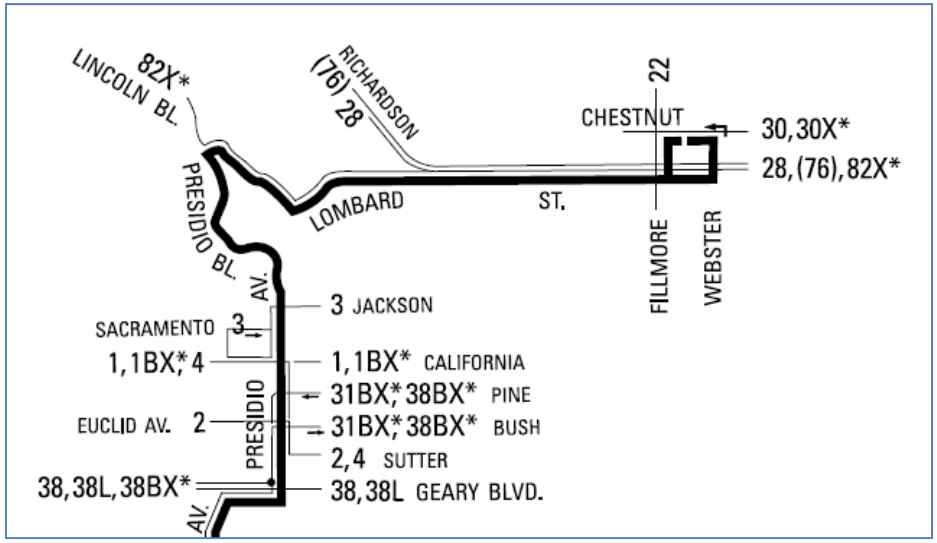
- There are currently no management strategies established for this route, as it is away from the project area.

Identification of Additional Issues.

- **Major Stages 1 and 2:** Addition traffic congestion and longer travel times are projected to occur on at either the intersection with Richardson Avenue or, Lyon Street (Lombard Gate) or at Presidio Avenue.

Remedy for Additional Issues.

- **Major Stages 1 and 2:** Where significant additional delay results, traffic engineering remedies to keep the buses on schedule should be considered. Possible remedies include:



o A reengineering of the corridor to improve Route 43 travel time or reliability. This may include retiming intersections on Lombard Street, or modifying the unsignalized intersection operations on Lombard Street or Presidio Avenue to improve bus travel times. o Providing compensation to Muni to cover the cost of the additional delays in operations.
Contingency for Additional Issues. • Extend median along Lombard Street and block North/South Broderick Street access. This converts the intersection at Broderick Street into a Right-in/Right-out access only. Extend length of left turn to Lombard Street. Prohibit parking along westbound Lombard St for 100 ft and shift westbound lanes toward the sidewalk. • Temporarily reroute outbound Route 43 to the Gorgas Avenue off-ramp and Halleck Street if delays on Lombard Street become significant.

3.3.7 PresidiGo Around-The-Park Shuttle

Existing Conditions.

- The PresidiGo Around-The-Park shuttle travels a counter-clockwise circular path around the Presidio. The route begins at the Presidio Transit Center, and travels northbound on Halleck Street, westbound on Mason Street, southbound on Crissy Field Avenue and McDowell Avenue, westbound on Lincoln Boulevard, westbound through the Toll Plaza area (Merchant Road), westbound again on Lincoln Boulevard to Howard Road, eastbound on Lincoln Boulevard, eastbound on Pershing Drive, northbound on Battery Caulfield Road, eastbound on Washington Boulevard, and northbound on Arguello Boulevard and Graham Street.
- The shuttle operates every half hour on weekdays from 6:30 AM to 7:30 PM. On weekends it runs hourly from 11 AM to 6 PM.

Construction Related Traffic Management Activity.

- **Major Stage 1:** During this stage, the PresidiGo Around-The-Park Shuttle will operate on roadways that have construction. These roadways include Halleck Street, Mason Street, Crissy Field Avenue, McDowell Avenue and Lincoln Boulevard associated with various projects for utility relocation and overall roadway construction of Doyle Drive above these streets. In most cases, this will involve delays associated with one-way traffic control. In some cases, a short-duration closure may occur.
- The shuttle will operate along sections of Mason Street, Crissy Field Avenue, McDowell Avenue, Lincoln Boulevard and Merchant Road (Toll Plaza Area) where construction vehicles will be traveling.

• **Major Stage 2:** During this stage, the PresidiGo Around-The-Park Shuttle will not be able to operate on Halleck Street. A change to the routing of the shuttle will be required.
Selected Management Strategies. • **Major Stage 1:** In cases with one-way traffic control, the contractor will instruct the flagger to minimize delays when a PresidiGo Around-The-Park shuttle is waiting to travel through the roadway section. • In cases where a short-duration closure may occur, the contractor will notify the PresidiGo supervising operations staff that a rerouting and/or possible bus stop closure may be needed, and will discuss and implement the appropriate remedies (such as signage) with the PresidiGo supervising staff. • The TMP Field Supervisor will generally monitor construction traffic operations to determine if it is disruptive to overall traffic flow on segments where the shuttle operates. • **Major Stage 2:** The construction manager will work with the PresidiGo supervising operations staff to determine the most effective way to continue to provide service to the Crissy Field area when Halleck Street closes.
Identification of Additional Issues. • The overall operations of the shuttle may be affected by additional traffic that could occur as a result of major ramp closures between Doyle Drive (US-101) and SR-1, as well as a portion of Lincoln Avenue during Major Stage 1. This could potentially increase delay at unsignalized intersections. Generally, an additional delay of over four minutes will be considered to be significant to the operation.

Remedy for Additional Issues. • The Resident Engineer will periodically discuss the shuttle's on-time performance to determine if additional remedies are needed.
Contingency for Additional Issues. • Reroute the shuttle to use Crissy Field Avenue to reduce round-trip travel times (bypassing the segments that use McDowell Avenue and Lincoln Boulevard to Crissy Field Avenue) . • Consider other route changes when Halleck Street is closed. • Coordinate additional shuttle service to provide better on-time performance during peak traffic congestion times.

3.3.8 PresidiGo Downtown Shuttle

Existing Conditions.

- The PresidiGo Downtown Shuttle travels between the Presidio Transit Center and downtown San Francisco. The route begins at the Presidio Transit Center and travels along Lincoln Boulevard, Letterman Drive and Lombard Street.
- There are approximately 4 in-service buses during the AM and PM Peak hours. A total of 32 round trips are offered on a typical weekday.
- The shuttle operates on weekdays from 5:45 AM to 8:00 PM. There is no service offered on weekends or holidays.

Construction Related Traffic Management Activity.

- No construction activity occurs along the path of this route.

Selected Management Strategies.

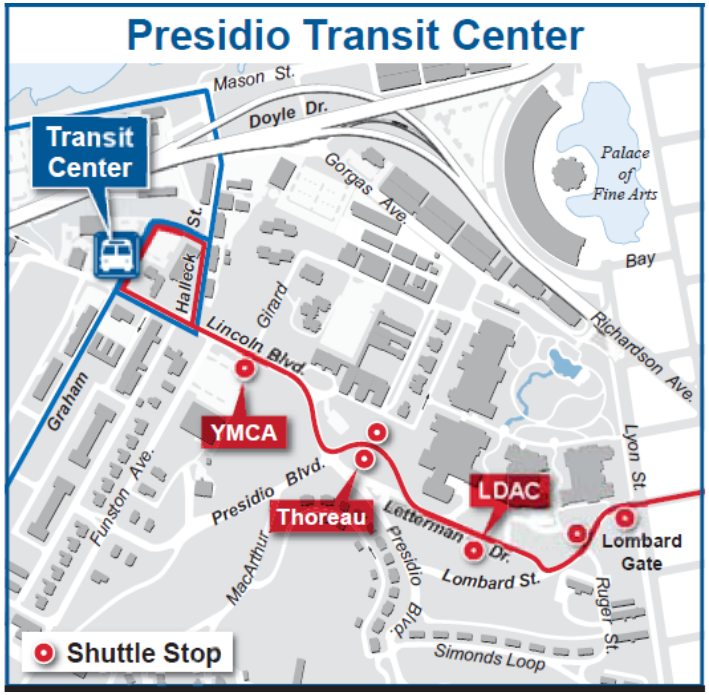
- There are currently no management strategies established for this route, as it is away from the project area.

Identification of Additional Issues.

- **Major Stages 1 and 2:** Addition traffic congestion and longer travel times are projected to occur on at either the intersection with Richardson Avenue or, Lyon Street (Lombard Gate) or at Presidio Avenue. This may affect this downtown shuttle service.

Remedy for Additional Issues.

- **Major Stages 1 and 2:** Where significant additional delay results, traffic engineering remedies to keep the buses on schedule should be considered. Possible remedies include:
  - A reengineering of the corridor to improve shuttle travel time or reliability. This may include retiming intersections on Lombard Street, or



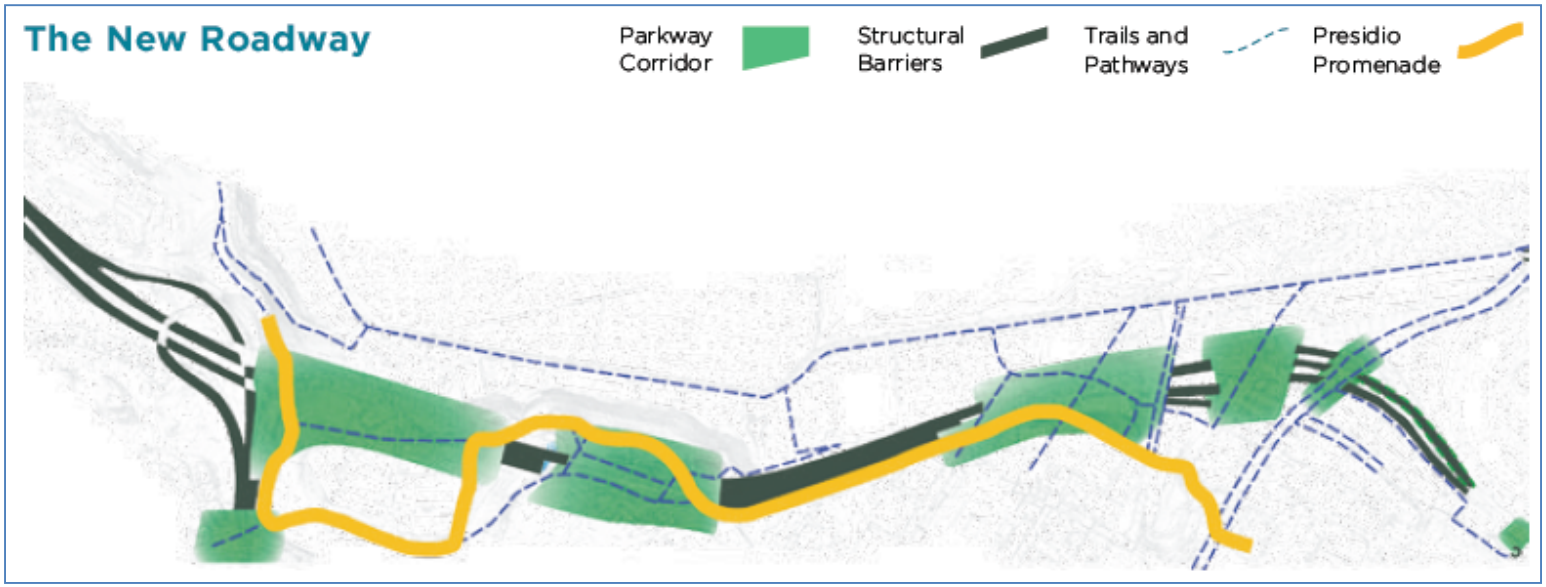
modifying the unsignalized intersection operations on Lombard Street or Presidio Boulevard to improve bus travel times. o Providing compensation to the PresidiGo operation to cover the cost of the additional delays in operations.
Contingency for Additional Issues. • Extend median along Lombard Street and block North/South Broderick Street access. This converts the intersection at Broderick Street into a Right-in/Right-out access only. Extend length of left turn to Lombard Street. Prohibit parking along westbound Lombard St for 100 ft and shift westbound lanes toward the sidewalk. • Coordinate additional shuttle service to provide better on-time performance during peak traffic congestion times.

3.4 Key Bicycle and Pedestrian Facilities

This section includes as discussion of bicycle and pedestrian facilities that are away from a specific street or roadway segment. These include:

- Presidio Promenade
- Golden Gate Promenade

3.4.1 Presidio Promenade



Existing Conditions.

- The Presidio Promenade is a multi-use route (used by bicyclists and pedestrians) that connects the Main Post to almost the Golden Gate Bridge. It currently is a Class I and II facility between Storey Avenue and Long Avenue, and a Class I and III facility between Storey Avenue and Patten Road. In the project study area, this trail consists of a portion that is an on-street bicycle lane (known as a Class 2 facility) and adjacent sidewalk on Lincoln Boulevard between the Main Post and west of the National Cemetery. The facility is an off-road trail for bicyclists (known as a Class 1 facility) and pedestrians that runs between west of the National Cemetery and Lincoln Boulevard south of Doyle Drive then continues on the west side of Lincoln Boulevard to the Golden Gate Bridge.

Construction Related Traffic Management Activity.

- **Major Stage 1:** During this stage, the portion of the trail between the Main Post and McDowell Avenue will be closed. The users will need to follow an alternative route on McDowell Avenue, Mason Street and Halleck Street.
- The first Presidio Parkway viaduct and new northbound SR-1 to southbound Doyle Drive (US-101) ramp viaduct will be constructed over the trail, south of the current Doyle Drive viaduct.

• **Major Stage 2:** The second Presidio Parkway viaduct will be constructed over the trail.
Selected Management Strategy. • **Major Stage 1:** The contractor shall provide directional signage for the Presidio Promenade detours. • Caltrans will coordinate the appropriate detour for trail users in consultation with the Presidio Trust. • The Resident Engineer shall coordinate the preferred trail access strategy. The contractor shall direct flaggers and other staff on the preferred strategy. • **Major Stage 2:** The Resident Engineer shall coordinate the preferred trail access strategy. The contractor shall direct flaggers and other staff on the preferred strategy.
Identification of Additional Issues. • Users of the Promenade may create additional burdens on other trails during periods of high recreational activity.
Remedy for Additional Issues. • The Resident Engineer will periodically discuss the use of the trails in the area with the Presidio Trust and National Park Service to determine if a problem has arisen. If so, the Resident Engineer will work with the responsible agencies to increase signage or direct the contractor to make additional adjustments as needed.
Contingency for Additional Issues. • Increase signage or make routing adjustments.

3.4.2 Golden Gate Promenade

Existing Conditions. • The Golden Gate Promenade is a multi-use trail corridor that connects the Crissy Field area with the Golden Gate Bridge, north of Doyle Drive. The trail is designed for lower speed, recreational use.
Construction Related Traffic Management Activity. • The trail is north of the construction area; no activity will occur on it.
Selected Management Strategy. • No management strategy to address direct construction activity is required.
Identification of Additional Issues. • **Major Stage 1:** The corridor may experience additional use when the Presidio Promenade access is severed in the National Cemetery area as well as during periods when access on Mason Street is reduced. As a result, the activity on the corridor may impact visitors during times of increased recreational activity. This impact may partly be from higher-speed bicyclists using the Promenade, disrupting lower-speed users.
Remedy for Additional Issues. • The Resident Engineer shall coordinate the preferred trail access strategy. The contractor shall direct flaggers and other staff on the preferred strategy. • The Resident Engineer will periodically discuss the use of the trails in the area with the Presidio Trust and National Park Service to determine if a problem has arisen. If so, the TMP Field Supervisor will work with the responsible agencies to increase signage and/or direct the contractor to make additional adjustments as needed.

Contingency for Additional Issues.

- Increase signage or increase Park Police awareness and/or presence.

This page is deliberately left blank.

4.0 Transportation Management Plan Strategies

There are many strategies and actions that will be needed to provide for the completion of the Presidio Parkway Project while seeking to create the least amount of disruption. The construction activity traffic will need to be managed, the public will need to be informed, and the active corridor management will still need to occur. Each of these items is addressed within this section.

4.1 Construction Activity Traffic

The most obvious impacts to the project area are those that will result from construction-related vehicles getting to and from the construction sites. Uses of available strategies are outlined in this section.

4.1.1 Incentives for Minimal Disruption of Traffic

The contractor will be directed by the responsible Resident Engineer to conduct his/her workday activities in accordance with local requirements, as stipulated in the Special Provisions. The Special Provisions cover the available routes that the contractor may use for his/her equipment, and for his/her deliveries of materials to and from the project.

Specific routes for construction traffic during the first phase of the project have been identified. The contractor is responsible for directing construction traffic to use these routes. In addition, the contractor is responsible for adhering to his contract requirements regarding lane closures. All contract work is to be completed in compliance with the Lane Closure Charts provided in the attachments section of this report. Penalties will be imposed on the contractor for failure to comply.

To encourage contactors to complete work on schedule, delay penalties can be introduced into construction contracts. Caltrans typically uses this concept -- liquidated damages for the late reopening of lane closures -- to minimize construction related delays. These damages are based on motorists delay cost caused by the later opening of a lane closure. The delay cost calculations would determine the specific delay penalty in the event that a lane closure is not removed by the specified hours in the Lane Closure Charts.

In addition to assessing delay penalties for the late reopening of any mainline closure, the contractor may be awarded an incentive for early reopening of the longer-term ramp, lane or street closures, or during the full weekend closure. The Incentive amount is based on the net delay savings associated with the opening.

4.1.2 Traffic Control Strategies

The contractor will be responsible for placement of the traffic control strategies consistent with the Contractor's approved Traffic Control Plan. The implementation of the traffic control devices will be monitored by Caltrans TMP Field Supervisor and the Resident Engineer to assess in real

time the impacts to traffic. Caltrans TMP office staff is tasked to review the effectiveness of the contractor's traffic control plan before it is implemented. Caltrans Resident Engineers and the TMP Field Supervisor are responsible for monitoring the effectiveness of the provisions of traffic control as well as the timely placement and pickup of the traffic control devices. Most short term closures will be placed and taken down each work day. There may be supplemental activities that relate to short-term closures.

Although unlikely, short-term traffic signal modifications or traffic control modifications can be effective in minimizing construction-related traffic congestion. Changes to these must be authorized by the agency responsible for the maintenance and liability of the traffic signal and/or intersection control signing and striping. In some cases a short-term road closure on a minor street may be implemented to allow for construction vehicles or activity to proceed.

The contractor is responsible for developing a revised construction staging plan if it differs from the construction documents and if it achieves the goals that the contract documents provide. The Presidio Parkway Project has detailed construction staging incorporated in the construction documents to provide a seamless effort at allowing the construction to commence while maintaining sufficient roadway capacity to accommodate traffic activity.

If the construction activity or vehicle movement creates the delays are significant (in excess of 15 minutes) then the TMP Field Supervisor will communicate with the TMP Office and through the Public Information Office alert the public as quickly as possible.

4.1.3 Construction Worker Traffic Strategies

Workers coming to and leaving from the construction site, their paths of travel, the additional volume that they will impose on the existing roadways and their parking impacts. The contractor will be required to provide on-site parking for his working crews in the reserved construction yards within the construction area. Therefore impact to on street parking is not an issue. For the Presidio Parkway Project, Caltrans and the design team analyzed and projected the amount of traffic attributable to construction traffic from the workers. Details of the methodology and the analysis are in the attachments, and the impacts are discussed in Section 3 on a facility-by-facility basis.

Generally, the analysis show that there could be additional traffic created by workers during peak congestion as high as 100 vehicles arriving during the morning peak, and leaving during the evening peak, however most of these workers are not expected to commute during the peak hour because of the restrictions on hours in which construction would occur.

4.1.4 Construction Truck Traffic

During the course of the project, construction trucks will need to access the site to deliver materials and equipment, and to remove excess soil or concrete from the site. The points of

origin for the trucks will vary depending upon the source of the materials being delivered; the points of destination of the excess materials from the site will similarly vary.

The contractor will be directed by each Resident Engineer to conduct his/her work day activities in accordance with local requirements, as stipulated in the Special Provisions. The Special Provisions cover the available routes that the contractor may use for his/her equipment, and for his/her deliveries of materials to and from the project.

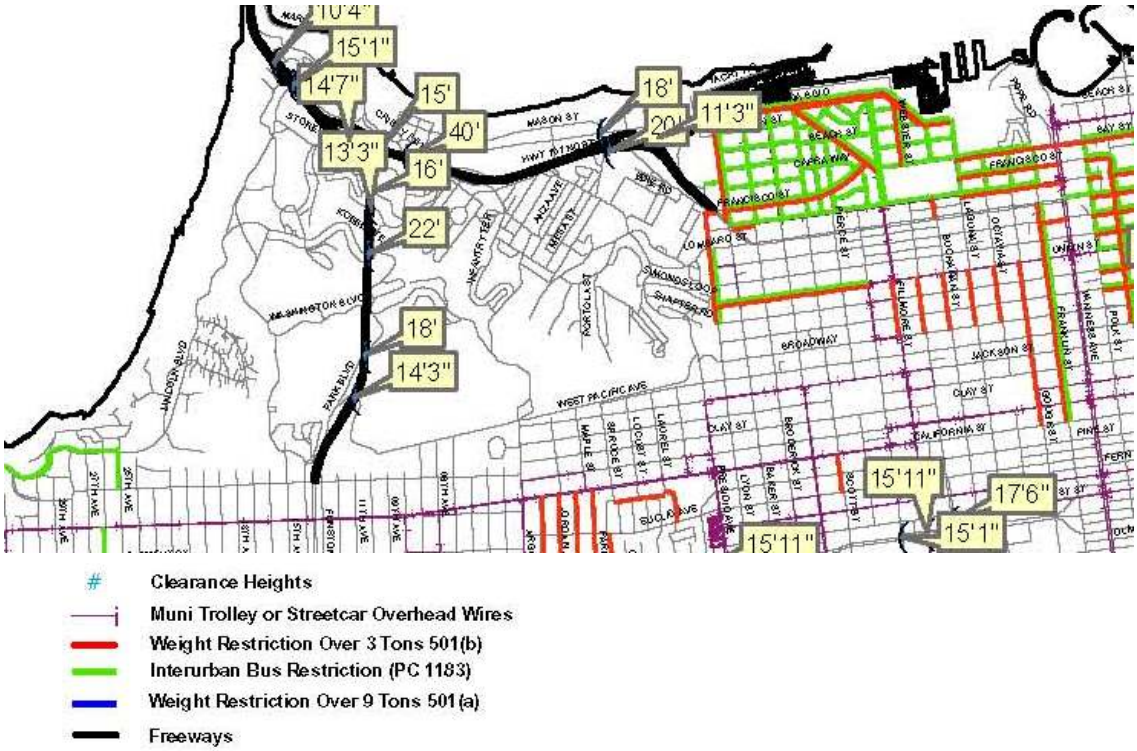
Each Resident Engineer and contractor can control the path of travel, time of travel and frequency of the truck movements to and from the construction site. The TMP Field Supervisor is responsible for monitoring the activity around the construction site. He can implement supplementary traffic control personnel when and where needed.

When approaching the construction staging areas, construction vehicles are to be restricted to specific haul routes. These are shown in Figure 4-1. The contractor will be required to instruct all construction truck activity to use these routes, and to not use other local streets. (It is noted that many local streets have truck restrictions that apply to them, as shown in Figure 4-2.)

While construction activity is limited to specific hours (7 AM to 7 PM on weekdays and 9 AM to 6 PM on Saturdays) with exceptions (such as major concrete pours), construction vehicles are permitted to arrive at other hours as a way to minimize disruption to more congested peak period traffic. Still, the contractor should inform the Resident Engineer about construction truck arrivals and departures during off-peak hours so that it can be determined if the disruption should be discussed with affected agencies and residents, so that it will not be an excessive, continuing nuisance to nearby residents.

Figure 4-1: Construction Haul Routes

Figure 4-1: San Francisco Truck-Restricted Streets



Construction vehicles may cause wear and tear to local streets or regional facilities. The contractor will be responsible for excessive damage to local streets on the haul route that are used to carry construction vehicles.

Construction vehicles will need adequate maneuverability in order to bring materials and equipment to and from the site. In cases where these vehicles are anticipated to be oversized and/or large wheelbase vehicles, the contractor should determine whether or not there is adequate maneuverability and make appropriate physical modifications with the concurrence of the Resident Engineer and the agency responsible for the roadway.

Construction vehicles may also need to have adequate safeguards to control the path of vehicles heading to the contractor site. There will be several types of construction related vehicles that will be approaching the construction: Standard over the road single unit trucks, large wheel base (STAA) equipment hauling trucks, and oversized vehicle trucks. The Resident Engineer and the contractor can control the path of travel, time of travel and frequency of the truck movements to and from the construction site if problems arise. The TMP Field Supervisor is responsible for

monitoring the activity around the construction site. He can implement supplementary traffic control personnel when and where needed if a problem is reported.

The arrival and departure of oversized and overweight vehicles across the Golden Gate Bridge is an important concern. Normally, truck operators obtain a special permit from Caltrans to operate oversized and overweight vehicles on Caltrans jurisdictional roadways. This process will be the required for the qualifying vehicles serving the Presidio Parkway Project. Golden Gate Bridge, Highway and Transportation District have an agreement with Caltrans to honor the permits and allow the special-permitted vehicles across the Golden Gate Bridge.

A physical limitation exists at the Golden Gate Bridge as the toll booths are limited in height and width. For oversized vehicles that cannot move through the toll booth area, the truck operator must make arrangements including payment of a fee with the Bridge District to obtain an assigned time. Typically, this assigned time is set in the morning after the peak period traffic has abated. GGBHTD staff would guide an oversized vehicle through the toll booth area around the toll booths.

Caltrans or the contractor may also consider alternative construction methods to eliminate need for oversized loads. This strategy would be used on a case-by-case basis when maneuverability, weights or size limitations are anticipated.

All Overweight trucks (i.e., trucks carrying a load greater than 80,000 pounds) must receive a permit from Caltrans. However, during the spring of 2010 and continuing for the duration of the first phase of work, there will be seismic retrofit work being done on the north tower of the Golden Gate Bridge; because of this, any overweight trucks will not be permitted on the bridge. Caltrans will need to coordinate a separate routing with the contractor any vehicles that do not adhere to the load limit for either arriving or departing vehicles. Each Resident Engineer will be responsible for monitoring the truck handling. Weight tags will be monitored for this effort.

One additional limitation along the construction vehicle path of travel is around the exit ramps at Merchant Road. The geometry of the existing ramps and streets may not be sufficient to accommodate some construction vehicles. This maneuver in the southbound direction may also impact the operation of the Fastrak toll booth lanes during the passing of the oversized truck through the toll booths. Therefore, Caltrans will coordinate with GGBHTD staff on potential interim minor modifications of the ramp radius and evaluating the potential for eliminating one toll booth in the multiple Fastrak lanes to provide additional width. Caltrans and the contractor are advised to also explore alternative construction methods to eliminate need for oversized loads.

4.2 Information Strategies

This section will provide details on how information on transportation management is to be communicated to the public. This includes all of the various ways that the public will be made aware of activities and how it might affect their travel during the course of the project.

4.2.1 Public Information Management

One of the main objectives of the TMP is to provide accurate and timely project information to commuters, local businesses and public agencies. To accomplish this, the Presidio Parkway Public Information Office has been established to continue the coordination to develop and distribute information to the public, media and corridor users. This office, which will be physically located adjacent to the site on Mason Street, will be the primarily office responsible for developing and maintaining an on-going public awareness campaign. The Caltrans Public Information Office is available to assist and advise on the campaign.

The objective of the campaign will inform motorists regarding major changes in roadway patterns, construction activities, street and ramp closures and the full weekend closure details. One key element is to warn motorists if and when they would experience traffic congestion in an effort to discourage exacerbating congestion problems. In addition, the office will provide information about affected transit routes and bicycle and pedestrian routes.

For the full weekend closure, the office will provide information on transit alternatives and other access strategies. Motorists will also be warned that they may experience excessive traffic congestion along detour routes and at parkway ramps/connectors during that closure.

The Presidio Parkway Public Information Office will provide information via newspapers articles, paid advertising in print, television and radio: project information kits and brochures. Posters and flyers may also be provided to nearby locations such as the Golden Gate Bridge viewing areas, Presidio information kiosks, nearby public libraries, post offices and other locations for display and distribution during the course of the project.

4.2.2 General Notification Process for Closures

Advanced notification of planned street, lane and ramp closures will allow local businesses, government agencies and transit operators to adjust transportation schedules and to notify customers of potential delays, to ensure that adequate time is provided to prepare and send notifications. The contractor must provide information regarding proposed dates for full Doyle Drive (US-101) closures to each Resident Engineer in advance, with the advance noticing dependent on the duration of the closure and the potential to induce traffic congestion or restrict access. The Resident Engineer will distribute the information to the TMP Office and the TMP office will distribute the information to the stakeholders and the Public Information Officer. This information would then be distributed to the various user groups and public through a wide array of media.

According to the "Maintaining Traffic" specifications *"The Contractor will include an activity on the Traffic Control Plan submittals that represents each potential ramp closure and each full closure of Doyle Drive. "*

Notification to Law Enforcement and Public Safety Agencies: Local law enforcement and other public safety officials need to know of closures in advance to plan appropriate emergency response access routes during any closures. The group will be notified of any major ramp, lane or street closure approximately two weeks advance through the Security Coalition.

Notification to Transit Operators: Transit operators need advance noticing so that they can modify routes, alter riders and assure that adequate transit service will be provided for any closure. Information regarding street, lane and ramp closures will be provided to transit providers, including Golden Gate Transit (bus and ferry), SF Muni, PresidiGo and tour bus operators when their routes are directly affected. Notification of these closures will be provided as early as possible so that transit agencies can adjust their transit services and inform riders as needed. Transit agencies also should be specifically reminded of long-term ramp, lane and street closures approximately two weeks in advance.

Transit operators may also be affected by periodic disruptions associated with construction activities and/or street, lane or ramp closures. These agencies should be routinely informed or reminded of these closures approximately one week in advance.

Electronic Notification Transportation-Related Companies and Other Interested Parties: A number of transportation-related companies and other interested parties rely on having access available and should have advance notification of ramp, lane and street closures. This notice will be provided by requesting that each affected party is included in a notification announcement list maintained by the Presidio Parkway Public Information Office.

Example transportation-related companies include but not limited to the following:

- Media companies (newspapers, television stations, radio stations, etc.);
- Courier companies (FedEx, USPS, etc.);
- Tour operators;
- Supermarkets (Trader Joes, Safeway, etc.):
- Airport shuttle providers;
- Taxi operators;
- Bicycle rental companies; and
- Travel organizations and routing (AAA, GPS companies, etc).

Other interested parties include:

- Nearby residents (especially in the Presidio, Marina, Cow Hollow, and Richmond Districts);
- Driving, transit and bicycling commuters (most likely from Marin County or San Francisco); and
- Presidio recreational users.

At a minimum, electronic notification would include: a description of closure (including map), hours and dates of closures, alternate travel routes and services (including map), and contacts for additional information.

Direct Mailing: Some parties may not have access to electronic communication, so that additional direct mailing will also be needed. To notify these parties of ramp, lane and street closures, a direct mailing will be sent to local residents if the mailing as requested. At a minimum, the mailers would include: a description of closure (including map), hours and dates of closures, alternate travel routes and services (including map), and contacts for additional information.

Public Meetings/Open Houses: Many interested persons prefer to obtain information about closures in a public forum where questions can be asked. Public meetings and open houses have been and will continue to be held in various locations in the San Francisco Bay area to provide an opportunity for providing more information. Public meetings are coordinated through Presidio Parkway Public Information Office. These meetings would be held to inform the public of the likely traffic impacts of construction, address local concerns and most importantly build a partnering and between the project sponsor and the stakeholders and general public.

Telephone Information: There will be a telephone hotline (415-263-5953), operated and routinely updated by the Presidio Parkway Public Information Office, throughout duration of the project. The hotline will provide real-time updates of any potential inconvenience to motorists. Given the extensive use of mobile phones within the Bay Area, up to date information via telephone hotlines will greatly enhance dissemination of real-time information.

At a minimum, hotline recordings will include a brief description of ongoing or future construction activities and their related hours of impact and detours. Telephone information hotline messages will be prepared announcing upcoming closures.

Additionally, the public can receive traffic updates via the Travel information telephone number (511). The telephone number is the same for area codes throughout the Bay Area. The 511 telephone service will have pre-recorded information about the project, such as a general project description, planned construction activities, schedule and duration of closures, and other sources for obtaining project information (e.g. Presidio Parkway website, 511.org).

4.2.3 Full Weekend Closure Notification Process

The three-day weekend closure of Doyle Drive (US 101)to further the project will require considerable advanced planning. The contractor must provide information regarding potential dates for the closure at least nine months before it occurs. The preferred dates are a holiday weekend, as there would be considerable disruption to having the facility closed during weekday commute hours. A proposed weekend will be identified six months prior to its occurrence, and a final weekend date will be announced two months prior to its occurrence.

All law enforcement and other public safety officials, transit operators, Doyle project sponsoring agencies, transportation-related companies, local media, travel agents and trip-planning organizations, nearby museums and others directly affected by the closure will receive the announcements of when the closure will occur and what alternate plans are in development to mitigate the congestion anticipated from the closure.

Each Resident Engineer will first distribute the information to the TMP Office and the TMP office will distribute the information to the stakeholders and the Public Information Officer. This information would then be distributed to the various stakeholder groups and public through a wide array of media.

Details of the full weekend closure will be developed over several months. This will be an additional attachment provided to this document as plans become more final on actions to be done during the full weekend closure.

4.2.4 Bicycle and Pedestrian Awareness and Safety Program

Although bicycle traffic is not permitted on Doyle Drive, the location of the project in a National Recreation Area means that it is important to provide awareness to bicyclists and pedestrians in the construction zone. Also, several of the local street closures and the routing of construction traffic on the local streets also will pose risks to bicyclists and pedestrians.

Caltrans TMP Field Supervisor will communicate with the Presidio Trust, the San Francisco Bicycle Coalition and the Marin Bicycle Coalition on the changing bike routes, plus the construction vehicle access. The contractor will be required to communicate with the Resident Engineer any bicycle lane, or path closures they intend to make, along with a proposed detour route for the bicyclists with enough advance notification to provide interagency coordination and public dissemination.

4.2.5 Highway Advisory Radio (HAR)

Highway Advisory Radio (HAR) is another motorist information system available for drivers in vehicles that are driving through the corridor. The system works as low power radio broadcast frequency that makes announcements about construction activity. The system has a range of approximately 2. 5 miles, and alerts drivers regarding the potential delays and detours. The awareness of the HAR is typically made with extinguishable message signs.

This additional awareness tool is proposed in this project. The radio announcements will be recorded by the Presidio Parkway Public Information Office. The TMC manager will responsible for implementing and overseeing the Highway Advisory Radio messages. The TMP Field Supervisor will maintain an updated list and status of HAR transmitters and extinguishable message sign used in the project.

4.2.6 Long-Term Detour Signage Erection, Monitoring and Refinement

When ramps and streets are closed for at least a month, permanent alternative detour signs will be needed to direct motorists on what alternative routes would be. These signs are specified in the design specifications and are the responsibility of the contractor to install and maintain.

It is possible that some signs may be in less effective locations or are not specific enough. It is also possible that some additional signage may be needed to better explain the closure or detour to others. If these items arise, they will be directed to the Resident Engineer to resolve with the TMP Field Supervisor.

4.2.7 Permanent Changeable Message Signage

Permanent changeable message signs (Permanent CMS) are generally available and employed for regionally significant issues. Usage of these signs in this project should be limited to real-time conditions such as upcoming ramp, lane and/or street closures as well as major events.

The Resident Engineer will coordinate with the TMP Field Supervisor to gain a list of the permanent TMP locations and states from the Caltrans Transportation Management Center (TMC) in Oakland. When these signs are used, the TMP Field Supervisor will coordinate with the TMC regarding message content and CMS deployment prior to and during closures. The person managing the TMC is responsible for messages utilized on permanent CMS. This section will discuss the potential locations where permanent changeable message signs can be used.

The Resident Engineer will be responsible for confirming that the signage is installed per contract. The TMP Field Supervisor will be responsible for monitoring the effectiveness of the system and will make recommendations for adjustments to the Resident Engineer as appropriate. In the event that supplemental signage is necessary, or elements of a contingency plan are needed, then the Resident Engineer will direct the contractor with a change order to augment the signage.

4.2.8 Portable Changeable Message Signage

Portable changeable message signs (Portable CMS) are effective tools to announce information about upcoming closures of varying durations. They are especially effective for short-term closure announcements. They are also effective as a method to warn drivers of likely traffic congestion at peak hours as a way to deter drivers from using a particular route.

Sign locations and information shall be determined by the TMP Field Supervisor. He will also oversee the installation of the signs. The TMP Field Supervisor is also responsible for obtaining approval to place the portable CMS's with the agency with the authority to allow the signs to be placed.

Monitoring of the traffic queues will be the responsibility of the TMP Field Supervisor dedicated to the Presidio Parkway project. The Resident Engineer and the TMP office will implement a contingency plan if the delay is excessive (i.e., more than 15 minutes and/or two-mile queue)

including having staff available to change the sign message or instructions in the field. These are expected to be used widely during the full weekend closure.

4.3 Active Corridor Management Strategies

This section details the ways in which the active corridor management will be handled during the course of the project. It discusses lane guidance, management of short-term closures, emergency response, service patrol provisions, and construction zone enhanced enforcement.

4.3.1 Continued Operation of Lane Guidance

Lane guidance (or the switching of lane directions during the day) will still need to occur during the project. Lane guidance will be needed on the existing Doyle Drive (US 101) roadway (with pylons being moved by crews) before the detour opens, as well as when the detour is opened after the first major weekend closure (with a moveable median barrier) . Some pylon holes will have to be installed where lane striping is changing during the few months of the project.

Caltrans will continue to be responsible for implementing lane guidance (such as contracting with the GGBHTD) during the project. This will require a modification of the existing agreement if GGBHTD staff is still designated to undertake this activity during the first major stage. Caltrans will also need to coordinate the installation and operation of the moveable median barrier after the first full weekend closure.

4.3.2 Short-Term Closure Guidelines

Short Term Closures are closures that result in short term inconvenience to traffic. These are typically lane closures that occur in conjunction with the ongoing construction. These closures are restricted by time of day in the Lane Closure Charts that are included in the attachments to this TMP.

Guidelines on how to implement these closures when they occur provide the various stakeholders an indication of advance notification that should be provided when short-term closures occur. The contractor will be responsible for communicating to the Resident Engineer which specific closures will be implemented in a given time for a specific construction task. Based upon the duration of the closure, there are several different steps that will be taken to communicate to the stakeholders, report to the general public and trigger monitoring of the activity. Figure 1 contains a guideline on the appropriate response, based upon the duration of the proposed traffic closure or disruption. The longer-term closures require more advanced warning so that the public is afforded options that may include detours.

Transit operators need significant advance warning to modify routes, alert patrons and assure that adequate transit service is being provided during short term closures. Caltrans will work with

Golden Gate Transit, Muni and PresidiGo to alert these stakeholders of upcoming closures associated with construction activities that may affect transit operations.

A summary of the proposed guidelines are shown in Figure 4-3.

Figure 4-3 Short-Term Notification Guidelines

Short-Term Notification Guidelines											
Type of Occurrence	**Notify Security Coalition**	**Secure Traffic Control Officers COZEEP**	**Notify CHP**	**Notify Stakeholders via E-mail**	**Notify Public on DoyleDrive.Org Web Site**	**Notify Transit Operators in Advance**	**Develop CMS Locations and Implement**	**Notify 511.org**	**Notify Ambulance Companies**	**Notify SF MTA and GGBHTD**	**Notify Presidio Trust or National Park Service**
Key Contact Individual	Caltrans TMP Field Manager	Caltrans TMP Field Manager	Caltrans Resident Engineer	Caltrans TMP Field Manager	Public Outreach Task Leader	Caltrans TMP Field Manager	Caltrans RE, Contractor, TMP Field Manager	Public Outreach Task Leader	Caltrans TMP Field Manager or Security Coalition Lead	Caltrans TMP Field Manager	Caltrans TMP Field Manager
Oversized Vehicle Access (multiple travel lanes needed)	1 week	1 week	24 hours		24 hours						
Large Truck Maneuvering (not involving toll plaza reroute)	1 week		24 hours								
Large Truck Maneuvering (involving toll plaza reroute)	1 week	1 week	24 hours		24 hours			24 hours			
Off Peak Hour Mainline Lane Closures (up to 15 minutes)	1 week	1 week	1 week			1 week					
Mainline Lane Closures (15 minutes to 1 hour)	1 week	1 week	1 week	1 week	1 week	2 weeks	2 weeks	1 week	1 week	1 week	1 week
Off Peak Hour Mainline Lane Closures (up to 6 hours)	1 week	1 week	1 week	1 week	1 week	4 weeks	2 weeks	1 week	1 week	1 week	1 week
Minor Street Closures (up to 15 minutes)	72 hours								24 hours	24 hours	24 hours
Minor Street Closures (15 minutes to 1 hour)	72 hours	72 hours				72 hours (if route)			24 hours	24 hours	1 week
Minor Lane Closures (1 to 12 hours) (1 lane/2-way traffic flagging)	1 week	1 week			72 hours						1 week
Minor Street Closures (1 to 12 hours) Daytime	1 week				1 week	2 weeks (if route)	1 week	24 hours	1 week	1 week	1 week
Minor Street Closures (1 to 12 hours) Evening or Nighttime	1 week				1 week	2 weeks (if route)	1 week	24 hours	1 week	1 week	1 week
Minor Street Closures (1 day to 10 days)	2 weeks				1 week	2 weeks (if route)	1 week	1 week	1 week	1 week	1 week
Mainline/Ramp Incident Notification Minor			Immediate								
Mainline/Ramp Incident Notification Major	Immediate		Immediate					Immediate	Immediate	Immediate	Immediate

4.3.3 Emergency Response Management

The contractor will be required to prepare an Emergency Response Plan that will be in place during the construction. The Resident Engineer will be responsible for insuring that the Emergency Response Plan relates to the construction work that is ongoing and that the day-to-day staff is aware of the steps to be taken during an emergency.

The emergency responders must be kept informed of how construction activities and related street, lane or ramp closures may affect emergency response time or routes. The group that will be the primary agency forum for discussing these items is the Security Coalition.

The Security Coalition is an ad hoc committee of emergency first responders that serve the northwest corner of the City of San Francisco. The Security Coalition's primary role is to maintain a cooperative spirit between public and private rescue and emergency service providers. The group was created to address the multiple layers of jurisdiction (local, quasi judicial and federal) that complicates the role and the interaction between the various emergency response service providers in the project area. The Security Coalition members include staff from the City of San Francisco, the Presidio Trust, the National Park Service, the Golden Gate Bridge Highway and Transit District and other stakeholders near the project.

The Security Coalition holds a meeting every other week to discuss events and construction lane closures that may impact response or which emergency response unit would be responsible to respond with lane or ramp closure in place. The Resident Engineer or a designated person (TMP Field Supervisor) will be responsible to attend the regularly scheduled Security Coalition meeting that occurs every other week when traffic changes or disruptions are being planned as well as when requested by a member of the Security Coalition. At the meeting the attendees will be asked to respond to construction activities, closures and other items in terms of how first responders are to proceed.

When appropriate, the TMP Field Supervisor or the Resident Engineer is directed to discuss an emergency service issue directly with a provider outside of a Security Coalition meeting when necessary.

4.3.4 Service Patrol Provisions

Incident detection and response system includes the Freeway Service Patrol (FSP) and Construction Zone Enhanced Enforcement Program (COZEEP). Currently, Caltrans has a Memorandum of Understanding with the Golden Gate Bridge Highway Transportation District who has responsibility for incident response. Supplemental funds should be provided for both of these services and they may be deployed at the discretion of the Construction Manager or the Resident Engineer. Location and enhancement of services will be determined at the construction phase when the construction activities and dates are finalized in agreement with the contractor. In the project area GGBHTD employs tow-trucks and Freeway Service Patrol (FSP) to mitigate stalls

and incidents and therefore minimize the related traffic congestion to restore normal operating conditions.

On portions of the construction zone with no shoulders, disabled vehicles can increase congestion and reduce roadway capacity. Once an incident is detected, a quick response is needed to remove them from the roadway. The FSP is used to patrol the construction zone and perform minor repairs and/or remove stalled vehicles from the parkway at no charge to the motorist. FSP service will be needed particularly during the full closure and may be used during contingency situations. Caltrans FSP Supervision (510-286-5917) and MTC Program Manager (510-817-3209) will be contacted to work out the logistics and exact costs at least six months before deployment of service. An aggressive incident management plan will be used for this project to reduce response time and clearance time for stalls and minor incidents. The expanded FSP program that covers weekday midday traffic will lower delays for the traveling public.

Caltrans should utilize webcams to monitor traffic conditions and determine if problems arise. These webcams would be observed from a traffic control center currently manned by Caltrans. If problems are observed, the control center can notify the appropriate field person (such as the TMP Field Supervisor or law enforcement agency) so that action can be taken.

4.3.5 Construction Zone Enhanced Enforcement Program (COZEEP)

Law enforcement assistance is an important element of highway construction projects in the efficient movement of traffic. For the Presidio Parkway Project, Caltrans has reserved funds for employing enforcement officers to be present. Each Resident Engineer is empowered to use law enforcement assistance when and where needed. The presence of police officers can have a positive effect on slowing traffic within the construction zone and can help implement the traffic control plan by providing enforcement, guidance, and emergency response support. Additionally, roving patrol cars in the construction area will encourage motorists to follow appropriate detour signs. This program includes California Highway Patrol (CHP) presence in the construction zone, providing enhanced enforcement, and faster incident response.

4.3.6 Traffic Control Officers

In some cases, there may be need for supplemental Traffic Control Officers to direct traffic at locations where excessive congestion may result. Caltrans should develop and monitor inter-agency agreements with the San Francisco MTA, the US Park Police and the GGBHTD to have a specific protocol for how to secure the services of traffic control officers when they are needed in a specific instance.

This page is deliberately left blank.

5.0 References

5.1 Technical Analysis of Potential Impacts during Project

5.1.1 Sources of Data and Methods

A. **Traffic Counts.** Traffic counts have been provided from a variety of sources, including Caltrans, the Presidio Trust, and the Golden Gate Bridge, Highway and Transportation District. The count data from these files is available as raw data from each agency upon request.

B. **SF-CHAMP Description.** The San Francisco Chained Activity Modeling Process (SF-CHAMP) is the official travel demand forecasting model used within San Francisco. This model was used to project traffic in this report. The detailed explanation of the SF-CHAMP model is available for review at the San Francisco County Transportation Authority offices.

C. **Meso-Scoping Simulation Model.** The San Francisco County Transportation Authority created a supplemental tool to simulate traffic bottlenecks. A description of this tool, a meso-scopic simulation model, is available from the San Francisco County Transportation Authority. This model operates with Dynameq software, distributed by INRO.

D. **CA4PRS Analysis.** The Construction Analysis for Pavement Rehabilitation Strategies (CA4PRS) analysis, is a decision-making tool used to analyze actions for roadway closures during construction. An detailed explanation of this process is provided on the Caltrans web site at: http://www.dot.ca.gov/newtech/roadway/ca4prs/index.htm

E. **Level of Service Analyses.** The Transportation Research Board produces the Highway Capacity Manual to provide a uniform description of traffic congestion across the United States. This manual is published by the Transportation Research Board, and is available for purchase from the organization at: http://www.trb.org/Publications/Public/Publications.aspx

5.1.2 Assumptions to Estimate Traffic Impacts

A. Traffic counts for existing AM and PM peak hours were redistributed City wide based on the anticipated road closures and traffic detours. Then an additional 15% of the total traffic was added to each count to provide for extra contingency in the event that traffic detour assumptions were not accurate.

5.1.3 Summary of Analysis Techniques

A. **Segment Operations**. The SF-CHAMP model was used to estimate peak hour traffic shifts due to road closures. The revised roadway segment Level of Service and delay calculations were then made based on these changes in peak hour traffic demands using the methodologies contained in the most recent version of the Highway Capacity Manual.

B. **Intersection Operations**. The SF-CHAMP model was used to estimate peak hour traffic shifts due to road closures. The revised intersection Level of Service and delay calculations were then made based on these changes in peak hour traffic demands using the methodologies contained in the most recent version of the Highway Capacity Manual.

C. **Merge/Diverge and Weaving**. The State of California uses the Leisch Method for calculating Merge/Diverge and Weaving Level of Service for freeway sections. This method is documented in the most recent version of the Caltrans Highway Design Manual.

5.2 Lane Closure Charts

The Lane Closure Charts are maintained by Caltrans, and are available within the current set of Construction Documents.

5.3 TMP Cost Data Sheet Analysis

The TMP Cost Data sheet Analysis is maintained by Caltrans, and are available within the current set of Construction Documents.

5.4 Detour Maps and Descriptions

The detour maps and descriptions are maintained by Caltrans, and are available within the current set of Construction Documents.

5.5 Alternate Routes -- PCMS/CMS TABLE and MAP

The detour tables and maps are maintained by Caltrans, and are available within the current set of Construction Documents.

5.6 Construction Traffic Routes

Additional construction traffic route maps are maintained by Caltrans, and are available within the current set of Construction Documents.

5.7 Penalties for Late Reopening of Closures

The penalty assessment for late reopening of any closure is governed by the Construction Documents. These have been developed separately, and are being currently negotiated with the project contractor. Once negotiated, these will be considered attached to this document.

5.8 Memoranda of Understanding

Memoranda of understanding for providing traffic control officers (several jurisdictions including requests for assistance procedures and compensation); augmented transit services during the weekend closure; highway service patrolling; and responsibilities when changing the direction of changeable lanes are considered attached once negotiated.