SECTION III.D TRANSPORTATION AND CIRCULATION

III.D.1 Introduction

This section analyzes the potential Project-level and cumulative impacts on transportation and circulation resulting from implementation of the Project. Transportation-related issues of concern that are addressed include traffic on local and regional roadways, transit, bicycles, pedestrians, parking, freight loading, and construction-related activities. Transportation impacts are assessed for the land use development program for weekday AM and PM commute periods, and also for Sunday non-game day conditions. Impacts of the proposed stadium are assessed for 49ers game day conditions on a Sunday, and also for a secondary event conditions that would affect the weekday PM peak period. Impacts of events at the proposed arena were also examined separately for weekday PM peak period conditions. This section also identifies feasible mitigation measures that would reduce or avoid significant impacts.

This section is based on information contained in the Candlestick Point–Hunters Point Shipyard Phase II Development Plan Transportation Study, prepared by CHS Consulting, Fehr & Peers, and LCW Consulting. A copy of the Final Transportation Study is included as Appendix D (Transportation Study).

III.D.2 Setting

The transportation study area includes all aspects of the transportation network that may be measurably affected by the Project. The transportation study area is defined by travel corridors and by facilities such as bus stops/transit stations. It includes the freeway segments, freeway ramps, and existing and proposed street intersections that residents and visitors would use in traveling to and from the Project. Figure III.D-1 (Transportation Study Area) presents the transportation study area.

A total of 59 existing intersections (including five intersections within the City of Brisbane), 11 freeway on- and off-ramps, and five freeway segments within the study area were identified as key locations that would likely be impacted by the Project, and were selected for detailed study of the Project impacts. The study intersections include all major intersections along Third Street, Bayshore Boulevard, and access routes to and from US-101 (including the off-ramp and local street junctions). Intersections further away were not analyzed as part of the study, as Project traffic remaining on local streets would be dispersed such that the Project traffic would not meet the significance thresholds identified in this section. Figure III.D-2 (Traffic Analysis Locations) presents the traffic analysis locations.

The transit analysis included an assessment of the Muni transit lines within the transportation study area that would serve the Project site, and/or be affected by vehicular traffic generated by the Project.

The parking analysis focused on three subareas where the stadium game day parking would occur including the on-site and off-site lots, as well as residential streets adjacent in Little Hollywood, India Basin and Bayview/Candlestick Point.

SOURCE: Fehr & Peers, 2009.

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FIGURE III.D-1 Candlestick Point — Hunters Point Shipyard Phase II EIR

TRANSPORTATION STUDY AREA

SOURCE: Fehr & Peers, 2009.

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FIGURE III.D-2

Candlestick Point — Hunters Point Shipyard Phase II EIR

TRAFFIC ANALYSIS LOCATIONS

Roadway Network

Regional Access

Travel to and from the Project vicinity involves the use of regional transportation facilities, highways, and transit services that link San Francisco with other parts of the Bay Area and Northern California. Candlestick Point is accessible by local streets with connections to and from regional freeways and highways in the state system.

The Project site is served by US-101, with freeway interchanges at Harney Way and Alana Way, Bayshore Boulevard/Third Street and Cesar Chavez Street. These interchanges provide full directional access, except at Bayshore/Third there is no northbound on-ramp, and at Cesar Chavez Street there is no southbound on-ramp. US-101 has a southbound off-ramp at Paul/San Bruno; southbound and northbound on-ramps at Industrial Avenue; and southbound on- and off-ramps and a northbound off-ramp at Silver Avenue.

US-101 and I-280 merge approximately two miles north of Candlestick Point. North of the US-101/I-280 junction, US-101 merges with I-80 which leads to the Bay Bridge and the East Bay. Approximately two miles south of Candlestick Point, US-101 merges with I-380[106] near the San Francisco International Airport.

Local Access

The primary streets that serve the Project vicinity, listed in alphabetical order, include.

Alana Way is an approximately 1,500-foot two-way roadway segment that connects Beatty Avenue with Harney Way. It serves as the primary connection between Harney Way and US-101 southbound ramps at Alana/Beatty. Alana Way has one travel lane in the eastbound direction towards Harney Way, and two travel lanes in the westbound direction towards Beatty Avenue. On-street parking is not permitted at any time.

Arelious Walker Drive (previously named Fitch Street) is a north/south discontinuous roadway that is divided by Yosemite Slough and Hunters Point hill. Arelious Walker Drive runs between Gilman and Carroll Avenues, between Shafter and Palou Avenues, and between Innes and Galvez Avenues. Like other north/south streets in the vicinity, the Arelious Walker Drive alignment has a 64-foot-wide right-of-way with room for two 10-foot-wide sidewalks (presently un-paved). This street serves as an alternative way to access the northern unpaved privately owned parking lots used for stadium parking. Arelious Walker Drive between Gilman and Carroll Avenues is part of Bicycle Route #805, and is part of the unimproved on-street Bay Trail.

Bayshore Boulevard is a north/south arterial that generally parallels US-101. Bayshore Boulevard has three travel lanes in each direction, separated by a median. The General Plan designates Bayshore Boulevard as a Major Arterial, part of the MTS Network, and a Transit Preferential Street (other—secondary), and a Neighborhood Commercial Street. South of Arleta Avenue, Bayshore Boulevard is

[106] I-380 is a short 3.3-mile east/west highway that connects I-280 in San-Bruno with US-101 near the San Francisco International Airport.

designated as a Transit Preferential Street (other—secondary). Bayshore Boulevard is part of Bicycle Routes #25 and #5. The T-Third light rail line runs on Bayshore Boulevard between Hester Avenue and Sunnydale Avenue.

Beatty Avenue is a two-way east/west roadway between Tunnel Avenue and the US-101 southbound ramps at the intersection of Alana/Beatty. Beatty Avenue has one travel lane in each direction.

Blanken Avenue is a two-way east/west roadway that extends from Bayshore Boulevard through the Little Hollywood area west of Executive Park. The roadway has one lane in each direction with sidewalks and unrestricted parking on both sides of the street. Commercial vehicles weighing more than 6,000 pounds are prohibited from using this roadway as a through route. Blanken Avenue terminates at the intersection of Executive Park Boulevard and Candlestick Road.

Cargo Way is an east/west roadway that extends between Third and Jennings Streets, and serves as the primary access point for the Port of San Francisco Intermodal Container Terminals. Cargo Way generally contains two travel lanes in each direction. The General Plan identifies Cargo Way as a Secondary Arterial, and as a street with significant truck traffic. Cargo Way is part of the unimproved on-street Bay Trail.

Carroll Avenue is an east/west roadway between Third Street and Arelious Walker Drive. Carroll Avenue has one eastbound lane and two westbound lanes, with a right-of-way width of 80 feet. It has discontinuous sidewalks, and, due to the rail tracks, there is no sidewalk on the south side of Carroll Avenue between Jennings and Third Streets. Between Ingalls and Hawes Streets there are no sidewalks on the north side of the street, and between Hawes and Griffith Streets there are no sidewalks on either side of the street. Sidewalks to the east of Ingalls Street are generally discontinuous or frequently obstructed by parked vehicles. On-street parking is permitted west of Ingalls Street. The General Plan identifies Carroll Avenue as a street with significant truck traffic. Carroll Avenue is a part of Bicycle Route #805. Between Arelious Walker Drive and Ingalls Street, Carroll Avenue is currently part of the unimproved on-street Bay Trail.

Cesar Chavez Street is a major east/west arterial between Douglass Street to the west and the Port of San Francisco North Container Terminal, east of Third Street. In the vicinity of the Project, Cesar Chavez Street generally has two to three travel lanes in each direction, with a center median. West of Guerrero Street, Cesar Chavez Street has one lane in each direction. In the General Plan, Cesar Chavez Street is identified as a Major Arterial in the CMP Network from Guerrero Street to Third Street, a Secondary Arterial east of Third Street, and part of the MTS Network. It is identified as a Route with Significant Truck Traffic east of US-101. Cesar Chavez Street is part of the Bicycle Route #60.

Crisp Avenue[107] is an east/west roadway that extends from the intersection of Griffith/Palou to Spear Avenue within the Shipyard. Public vehicle access is currently not permitted, with the exception of emergency vehicles, and the roadway is currently gated (Crisp south gate) at the intersection of

[107] Background documents relevant to this Project variously use the term Crisp Road or Crisp Avenue; irrespective of the use of Road or Avenue, the text and/or graphics are referring to that section of road that travels from Revere Avenue to Spear Avenue.

Griffith/Palou. Crisp Avenue served as the primary truck and rail access into the Shipyard until 1971. Crisp Avenue would be reopened as part of the Project.

Evans Avenue is an east/west arterial, with two travel lanes in each direction. Evans Avenue extends between Cesar Chavez Street and Jennings Street (where it becomes Hunters Point Boulevard). The General Plan identifies Evans Avenue between Cesar Chavez Street and Third Street as a Major Arterial in the CMP Network, and part of the MTS Network. Evans Avenue between Third Street and Jennings Street is identified as a Secondary Arterial, and part of the MTS Network. The General Plan also identifies Evans Avenue as a street with significant truck traffic. Evans Avenue is part of Bicycle Route #68, and between Third and Jennings Streets a bicycle lane is provided in each direction.

Geneva Avenue is a major east/west roadway that connects Bayshore Boulevard in Brisbane and Daly City to State Route 1 and I-280 in San Francisco. Geneva Avenue generally has two travel lanes in each direction. The General Plan designates Geneva Avenue as a major arterial, and as a Transit Preferential Street. It is also part of the Congestion Management Program Network. Geneva Avenue is part of Bicycle Route #90. The Geneva Avenue Corridor is part of an ongoing Transit Preferential Street study by SFMTA to identify short- and mid-term improvements to increase transit reliability, performance, and service.

Gilman Avenue is an east/west street between Third Street and Giants Drive/Hunters Point Expressway. Gilman Avenue has one eastbound travel lane and two westbound lanes, and on-street parking is generally permitted. As with Jamestown and Ingerson Avenues, commercial vehicles weighing more than 6,000 pounds are prohibited from Gilman Avenue between Third and Fitch Streets, except for local service.

Griffith Street is a north/south discontinuous roadway that is divided by Yosemite Slough. On the south side of the slough, Griffith Street runs between Gilman Avenue and Cameron Way. North of the Slough, Griffith Street extends from Navy Road south to Thomas Avenue. Between Thomas Avenue and the slough, Griffith Street is an unimproved dirt road. The General Plan identifies Griffith Street between Thomas Avenue and Crisp Avenue as a street with significant truck traffic.

Harney Way is the primary southern access road to Candlestick Point. Harney Way provides a direct connection between US-101 and Jamestown Avenue. Vehicles destined to and from US-101 northbound use the Harney Way ramps, while vehicles destined to and from US-101 southbound use the Alana/Beatty ramp on the west side of US-101 (via Alana Way). Between Alana Way and Jamestown Avenue, Harney Way has two travel lanes in each direction. On-street parking is not permitted at any time, and a sidewalk is provided only on the north side. Harney Way is part of Bicycle Route #805.

Hunters Point Boulevard is an arterial that connects Evans Avenue at Jennings Street with Innes Avenue. Hunters Point Boulevard and Innes Avenue serve as the primary access road to the Shipyard. Hunters Point Boulevard has two travel lanes in each direction. The General Plan identifies Hunters Point Boulevard as a Secondary Arterial, and part of the MTS Network. It also identifies Hunters Point Boulevard as a street with significant truck traffic. Hunters Point Boulevard is part of Bicycle Route #68, and contains a bicycle lane in each direction.

Hunters Point Expressway (and the road south of the Harney Way/Jamestown Avenue intersection, called Jamestown Avenue Extension) circles the existing stadium and parking lot, and connects the east end of Jamestown Avenue with the east end of Gilman Avenue. Hunters Point Expressway provides access to the Candlestick Point State Recreation Area. The number of travel lanes on Hunters Point Expressway varies. In general, there are two continuous travel lanes in each direction, with additional lanes providing access between Jamestown and Gilman Avenues and the gates to the on-site parking. On-street parking is not permitted at any time. However, along parts of Jamestown Avenue Extension, on-street parking is permitted but restricted on event days. Hunters Point Expressway is part of Bicycle Route #805.

Illinois Street is a two-way, north/south roadway that generally parallels Third Street, extending from 16th Street over the Islais Creek Channel and merges into Cargo Way at the Amador Street intersection. The roadway primarily has one lane in each direction with sidewalks and on-street parking on both sides of the street

Indiana Street is a north/south roadway between Mariposa and Tulare Streets. Between Cesar Chavez and 25th Streets, Indiana Street operates one-way northbound and provides access to the I-280 northbound on-ramps at 25th Street. Indiana Street generally has on-street parking, both perpendicular and parallel, on both sides of the street. Indiana Street is part of Bicycle Route #907.

Ingalls Street is a north/south roadway between Jamestown Avenue and Innes/Middle Point. Ingalls Street has one travel lane in each direction, and on-street parking and sidewalks on both sides of the street. Ingalls Street has narrow sidewalks and very wide travel lanes between Yosemite Avenue and Thomas Avenue. Prior to the closure of the Hunters Point Shipyard, Ingalls Street was part of the designated truck route between Carroll Avenue and the currently inactive south (Crisp) gate at Palou Avenue. The General Plan identifies Ingalls Street between Carroll and Thomas Avenues as a street with significant truck traffic. Ingalls Street between Carroll and Yosemite Avenues is currently part of the unimproved on-street Bay Trail.

Ingerson Avenue is an east/west street between Third Street and Giants Drive. Ingerson Avenue has one travel lane in each direction and on-street parking is permitted. Commercial vehicles weighing more than 6,000 pounds are prohibited from traveling on Ingerson Avenue between Third and Arelious Walker Drive, except for local service.

Innes Avenue is an east/west arterial that provides direct access to Hunter Point Shipyard's Innes (north) gate. It contains two travel lanes in each direction. The General Plan identifies Innes Avenue as a Secondary Arterial and part of the MTS Network. It also identifies Innes Avenue as a street with significant truck traffic. Innes Avenue is part of Bicycle Route #68.

Jamestown Avenue is an east/west street between Third Street and Hunters Point Expressway. West of Redondo Street, Jamestown Avenue has one travel lane in each direction. East of Redondo Street to Giants Drive, there is a substantial change in lane width as Jamestown Avenue increases to one lane in the eastbound direction and two lanes in the westbound direction. Commercial vehicles weighing more than 6,000 pounds are prohibited from using Jamestown as a through route. On-street parking is generally permitted on Jamestown Avenue. Jamestown Avenue provides access to Bayview Park and the Candlestick Point Recreation area, and is identified in the General Plan as a Recreational Street.

Oakdale Avenue is an east/west arterial between Bayshore Boulevard and Third Street. East of Third Street, Oakdale Avenue is discontinuous and is generally a residential street. The General Plan identifies Oakdale Avenue between Bayshore Boulevard and Third Street as a Secondary Arterial. Oakdale Avenue between Bayshore Boulevard and Phelps Street is part of Bicycle Route #170, and bicycle lanes are provided on both sides of the street between Selby and Phelps Streets.

Palou Avenue is an east/west roadway between Barneveld Avenue and Griffith Street. It generally has one travel lane in each direction, and parking on both sides of the street. Palou Avenue has truck restrictions (vehicles in excess of 6,000 pounds prohibited) between Selby Street and Griffith Street. Between Phelps and Griffith Streets, Palou Avenue is part of Bicycle Routes #7 and #70.

Pennsylvania Avenue is a two-way north/south roadway between 17th and Cesar Chavez Streets. Pennsylvania Avenue generally has on-street parking on both sides of the street. Pennsylvania Avenue provides on- and off-ramp access to southbound I-280 at Mariposa, 18th, 25th and Cesar Chavez Streets.

Sunnydale Avenue is a two-way east/west roadway that extends west of Bayshore Boulevard to Persia/Mansell. To the east of Bayshore Boulevard, Sunnydale Avenue is an unpaved dead-end roadway. West of Bayshore Boulevard, the roadway has one lane in each direction with sidewalks and on-street parking on both sides.

Third Street is the principal north/south arterial in the southeast part of San Francisco, extending from its interchange with US-101 and Bayshore Boulevard to Market Street in downtown. It is the main commercial street in the Bayview Hunters Point neighborhood and also serves as a through street and an access way to the industrial areas north and east of US-101. In the Project vicinity, Third Street has two travel lanes in each direction. On-street parking is generally permitted on one side of the street. The T-Third light rail operates in an exclusive median right-of-way, with the exception of the segment between Kirkwood and Thomas Avenues, where the light rail shares the travel lane with vehicles. In the General Plan, Third Street is designated as a Major arterial, as a Transit Preferential Street (TPS) in the General Plan, and as a route with significant truck traffic (between the segment between Jerrold Avenue and Fourth Street).

Thomas Avenue is an east/west roadway between Third and Griffith Streets. West of Ingalls Street, Thomas Avenue is a residential street, while east of Ingalls Street, there is a mix of land uses, including residential and light industrial uses. The General Plan identifies Thomas Avenue between Ingalls and Griffith Streets as a street with significant truck traffic.

Tunnel Avenue is a two-way north/south roadway that extends south of Bayshore Boulevard and merges into Bayshore Boulevard at Old County Road. The roadway has one lane in each direction with sidewalks and unrestricted on-street parking on both sides of the street. Tunnel Avenue provides access to Bayshore Caltrain Station and to the US-101 ramps at Alana/Betty. Tunnel Avenue is part of Bicycle Route #905.

Underwood Avenue is an east/west roadway between Third Street and Hawes Street. Underwood Avenue is primarily a residential street between Third and Jennings Streets, and between Jennings and Ingalls Streets there is a mix of residential and light industrial land uses. Between Ingalls Street and

Hawes Streets, Underwood Avenue is an unimproved street without paving or gutters, with light/medium industrial land uses.

25th Street is a two-way east/west roadway two blocks north of Cesar Chavez Street between Michigan Street to the east and Grand View Avenue, near Market Street, to the west. It is discontinuous across US-101. 25th Street has one travel lane in each direction, with parking on both sides of the street.

Intersection Operations

Existing conditions on regional facilities and at local intersections were analyzed for the weekday AM (8:00 to 9:00 A.M.) and PM (5:00 to 6:00 P.M.) peak hours, and for Sunday (no football game) PM peak hour (4:00 to 5:00 P.M.) conditions. The weekday AM and PM peak hours consider the current morning and evening commute periods. The Sunday PM peak hour coincides with the time that afternoon football games typically end, and the majority of the spectators depart the stadium. Figure III.D-2 presents the study intersections.

Traffic conditions at the study intersections were evaluated using level of service (LOS). Level of Service is a qualitative description of operating conditions ranging from LOS A, or free-flow conditions with little or no delay, to LOS F, or jammed conditions with excessive delays. Table III.D-1 (LOS Definitions for Signalized and Unsignalized Intersections) defines each of the levels of service and shows the correlation between average control delay and level of service.

Table III.D-1 LOS Definitions for Signalized and Unsignalized Intersections

Control/ LOS	*Description of Operations*	*Average Control Delay (seconds per vehicle)*
Signalized		
A	Insignificant Delays: No approach phase is fully used and no vehicle waits longer than one red indication.	≤ 10
B	Minimal Delays: An occasional approach phase is fully used. Drivers begin to feel restricted	> 10.0 and ≤ 20.0
C	Acceptable Delays: Major approach phase may become fully used. Most drivers feel somewhat restricted	> 20.0 and ≤ 35.0
D	Tolerable Delays: Drivers may wait through no more than one red indication. Queues may develop but dissipate rapidly without excessive delays	> 35.0 and ≤ 55.0
E	Significant Delays: Volumes approaching capacity. Vehicles may wait through several signal cycles and long queues form upstream	> 55 and ≤ 80
F	Excessive Delays: Represents conditions at capacity, with extremely long delays. Queues may block upstream intersections	> 80.0
Unsignalized		
A	No delay for STOP-controlled approach	≤ 10.0
B	Operations with minor delays	> 10.0 and ≤ 15.0
C	Operations with moderate delays	> 15 and ≤ 25.0
D	Operations with some delays	> 25.0 and ≤ 35.0
E	Operations with high delays and long queues	> 35.0 and ≤ 50.0
F	Operations with extreme congestion, with very high delays and long queues unacceptable to most drivers	> 50.0

SOURCE: Highway Capacity Manual (HCM 2000), Transportation Research Board, 2000.

During the weekday AM and PM, and Sunday PM peak hours, most study intersections currently operate at LOS D or better. During the weekday AM peak hour, the intersections of Cesar Chavez/Pennsylvania/I-280 and San Bruno/Silver operate at LOS E conditions. During the weekday PM peak hour, the intersection of Bayshore/Alemany/Industrial operates at LOS E conditions. The poor operating conditions at intersections operating at LOS E are generally related to high volumes of traffic destined to US-101 and I-280. During Sunday PM peak hour conditions (without a football game), none of the 59 study intersections currently operate at LOS E or LOS F conditions. Existing operating conditions for local intersections are provided in Table III.D-9 through Table III.D-11 in Section III.D.4 (Impacts).

Freeway Mainline Operations

The LOS for a freeway section, weaving section, and on-ramp junction with the freeway is based on vehicle density (passenger cars/lane/mile) and service volume (passenger cars/hour) using the relationships presented in Table III.D-2 (LOS Definitions for Freeway Mainline, Weaving, and Ramp Junction). Service volume is the primary measure of the overall weaving segment. The specific level of service, and thus service volume, is prescribed by the weaving movement predicated on the weaving volume, number of lanes, and length of weave relationship. The value of service volume is determined with the aid of nomographs published in *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, by J Leisch & Associates, September 1983.

Table III.D-2 LOS Definitions for Freeway Mainline, Weaving, and Ramp Junction

	Maximum Density (Passenger Cars per Mile per Lane)		*Service Volume (Passenger Cars per Hour)*		
			Freeway Weaving Sections (Lanes)		
LOS	*Basic Freeway Sections*	*Freeway Weaving Segments and Ramp Junctions*	*2*	*3*	*4*
A	< 11	< 10	< 750	< 800	< 850
B	> 11 to 18	> 11 to 20	>750 to 1,000	>800 to 1,100	>850 to 1,200
C	> 18 to 26	> 20 to 28	>1,000 to 1250	>1,100 to 1,350	>1200 to 1,450
D	> 26 to 35	> 28 to 35	>1,250 to 1550	>1,350 to 1,600	>1,450 to 1,650
E	> 35 to 45	> 35	>1,550 to 1,900	>1,600 to 1,900	>1,650 to 1,900
F	> 45	Demand exceeds capacity		> 1900	

SOURCE: Highway Capacity Manual (HCM), Chapter 23: Basic Freeway Sections and Chapter 25: Ramps and Ramp Junctions Methodology, Transportation Research Board, 2000, Completion of Procedures for Analysis and Design of Traffic Weaving Sections, Jack E. Leisch & Associates, September 1983.

Freeway mainline analysis was conducted at the following segments:

- US-101 northbound—between Cesar Chavez Street and Vermont Street
- US-101 northbound—between Harney Way and Third Street/Bayshore Boulevard
- US-101 northbound—between Sierra Point Parkway and Harney Way
- US-101 southbound—between the I-80 merge and Cesar Chavez Street
- US-101 southbound—between Third/Bayshore and Alana Way
- US-101 southbound—between Alana Way and Sierra Point Parkway
- I-280 northbound—between the Alemany off-ramp and Alemany on-ramp
- I-280 southbound—between the Alemany on-ramp and Alemany off-ramp

- I-280 northbound—between 25th Street and Mariposa Street
- I-280 southbound—between Mariposa Street and 25th Street

All analysis segments experience LOS E or LOS F conditions during the commute periods—either in the AM or PM peak hours, with the exception of the segment of US-101 southbound between the I-80 westbound merge and Cesar Chavez. The segment of US-101 southbound between Third/Bayshore and Sierra Point experiences LOS E conditions during both the AM and PM peak hours. Existing operating conditions at the freeway mainline segments are provided in Table III.D-12 in Section III.D.4.

Ramp Operations

A ramp junction analysis was conducted to determine the operating conditions for ramp volumes merging with the freeway mainline traffic flow. Freeway ramps were evaluated using the *Highway Capacity Manual 2000* methodology for ramp merge and diverge conditions. Service levels at the on- and off-ramps are determined based on density, as calculated using the freeway volumes and the ramp volumes at each study location. Similar to the freeway mainline, the operating characteristics of the ramps are described using the concept of LOS (see Table III.D-2).

Freeway ramp junction analysis was conducted at the on-ramp and off-ramps:

- US-101 northbound on-ramp from Sierra Point Parkway
- US-101 northbound on-ramp from Harney Way
- US-101 northbound on-ramp from Bayshore Boulevard
- US-101 northbound on-ramp from Alemany Street
- US-101 northbound on-ramp from Bayshore/Cesar Chavez
- US-101 southbound off-ramp to Bayshore/Cesar Chavez
- US-101 southbound on-ramp from Cesar Chavez/Potrero
- US-101 southbound on-ramp from Alemany/San Bruno
- US-101 southbound on-ramp from Third/Bayshore
- US-101 southbound on-ramp from Alana Way
- US-101 southbound on-ramp from Sierra Point/Lagoon
- I-280 northbound off-ramp to Cesar Chavez
- I-280 northbound on-ramp from Indiana/25th
- I-280 southbound off-ramp to Pennsylvania/25th
- I-280 southbound on-ramp from Pennsylvania/25th

During the weekday AM and PM peak hours, all of the ramps currently operate at LOS D or better, with the exception of the US-101 southbound on- and off-ramps at Cesar Chavez, and northbound on-ramps from Cesar Chavez Street and Alemany Street. Existing operating conditions at the freeway mainline segments are provided in Table III.D-13 in Section III.D.4.

Freeway Ramp Diverge Queue Storage

Within dense urban areas such as San Francisco, off-ramp operating conditions are largely controlled by the operations at the off-ramp terminus with the street network. For key off-ramps in the study area, the off-ramp queues during the red signal phase were compared to the storage capacity of the off-ramp. The storage capacity of the off-ramp was calculated by estimating the distance between the freeway diverge

gore point[108], and the stop bar for the off-ramp approach to the street intersection. Vehicle queue lengths on the off-ramp approaches to signalized intersections were estimated from intersection LOS calculations, by multiplying the 95th percentile vehicle queue of the constrained movement by 25 feet to account for average vehicle lengths and the space between queued vehicles.

The ramp queue storage analysis was conducted at the following off-ramps:

- US-101 northbound off to Harney Way
- US-101 northbound off to Bayshore/Cesar Chavez
- US-101 southbound off to San Bruno/Silliman
- US-101 southbound off to San Bruno/Mansell
- US-101 southbound off to Bayshore/Hester
- US-101 southbound off to Alana Way
- US-101 southbound off to Sierra Point/Lagoon
- I-280 northbound off to Cesar Chavez
- I-280 southbound off to Pennsylvania

Under existing conditions, the queues at the off-ramp approach to the signalized intersections are accommodated within the ramp storage capacity. Existing ramp storage conditions at the off-ramps are provided in Table III.D-14 in the Impact analysis.

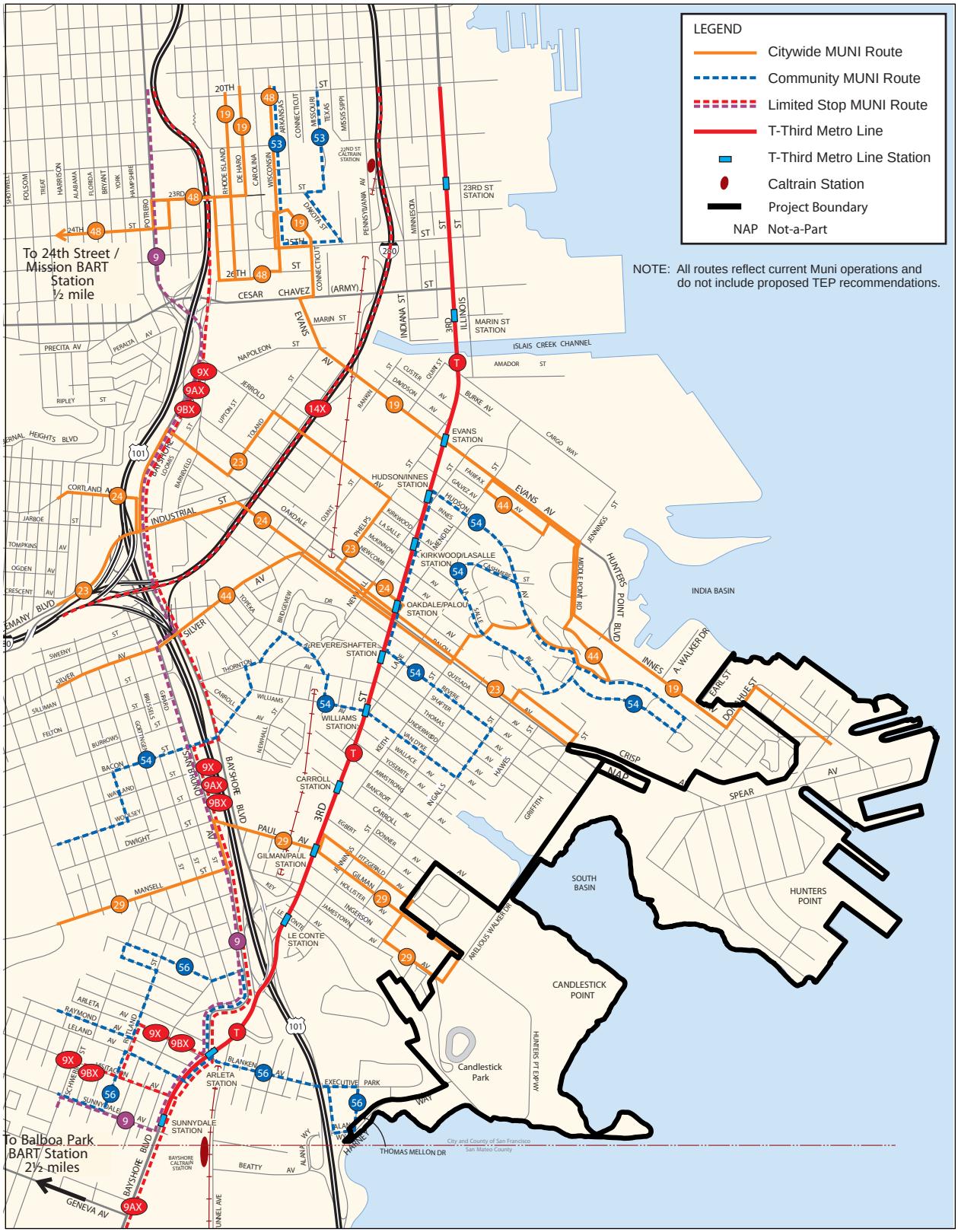
Transit

The study area is relatively well served by public transit, with routes providing crosstown, community, downtown, and regional service. Local service within the study area is provided by the San Francisco Municipal Railway (Muni) bus and light rail lines, which can be used to access regional transit operators. Service to and from the East Bay is provided by BART, AC Transit, and ferries; service to and from the North Bay is provided by Golden Gate Transit buses and ferries; and service to and from the Peninsula and South Bay is provided by Caltrain, SamTrans, and BART.

Figure III.D-3 (Existing Transit Network) presents the Muni lines serving the study area. Table III.D-3 (Muni Lines Serving Project Study Area) summarizes the frequency of service for the Muni bus and light rail lines serving the study area. Peak period service on most lines is at 8- to 10-minute headways between buses. The 54-Felton has headways between buses of 20 minutes, and the 56-Rutland has headways of 30 minutes. The 44-O-Shaughnessey runs most frequently, with 6-minute headways between buses.

BART operates regional rail transit service connecting San Francisco with the East Bay and northern San Mateo County. BART provides service along Market and Mission Streets and near the western I-280 corridor in San Francisco. Transit connections can be made to the following BART stations from the Project site: Balboa Park Station via the 29-Sunset from Candlestick Point, Glen Park Station via the 23-Monterey and the 44-O'Shaughnessy, and the Embarcadero station via the T-Third light rail route. BART operates at service frequencies of three minutes in the peak periods for intra-San Francisco travel.

[108] A gore point is the triangular area of land where freeways split or merge.



SOURCE: Fehr & Peers, 2009.

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FIGURE III.D-3

Candlestick Point — Hunters Point Shipyard Phase II EIR

EXISTING TRANSIT NETWORK

Table III.D-3 Muni Lines Serving Project Study Area

Route	Frequency of Service (average time in minutes) AM Peak Period (7:00 to 9:00 A.M.)	Midday Period (9:00 A.M. to 4:00 P.M.)	PM Peak Period (4:00 to 6:00 P.M.)
9-San Bruno	7.5	10	7.5
9X-Bayshore Express	10	12	10
9AX-Bayshore "A" Express	10	--	10
9BX-Bayshore "B" Express	15	--	10
19-Polk	10	24	10
23-Monterey	15	20	14
24-Divisadero	8.5	10	10
28L-19th Avenue	10	—	10
29-Sunset	10	15	10
44-O-Shaughnessey	6	15	7.5
48-Quintara-24th Street	12	20	12
54-Felton	20	20	20
56-Rutland	30	30	30
T-Third	8.5	10	8.5

SOURCE: SFMTA

Caltrain provides rail passenger service on the Peninsula and the Santa Clara Valley between Gilroy and San Francisco. The Peninsula Corridor Joint Powers Board (JPB), a joint powers agency consisting of San Francisco, San Mateo, and Santa Clara Counties, operates the service. Caltrain currently operates 86 trains each weekday, with a combination of Baby Bullet, express, and local services. Headways during the peak periods are approximately ten to thirty minutes. The San Francisco Caltrain terminal is at Fourth Street between King and Townsend Streets to the north of the study area.

The closest active Caltrain station to the study area is the Bayshore station in Brisbane at the San Mateo/San Francisco border. The station is on Tunnel Avenue, just southeast of Bayshore Boulevard. Not all trains stop at the Bayshore Station. During the peak commute periods, one train per hour in each direction stops at the Bayshore Station. There are no direct connections with other transit services. However, Muni and SamTrans can be accessed by walking two to three blocks to bus stops along Bayshore Boulevard.

SamTrans, operated by the San Mateo County Transit District, provides bus service between San Mateo County and San Francisco. SamTrans operates 12 bus lines that serve San Francisco, including nine routes into the downtown area. However, only two routes—the 292 and 397—serve the Bayview neighborhood along Bayshore Boulevard; and only route 292 operates during peak hours. Headways during the peak commute periods are approximately 15 minutes per line. There are no direct SamTrans

services to Candlestick Point, except during football game days.[109] Route 7B operates along Bayshore Boulevard and stops near the Bayshore Caltrain station on game days.

AC Transit is the primary bus operator for the East Bay, including Alameda and western Contra Costa Counties. AC Transit operates 37 routes between the East Bay and San Francisco, all of which terminate at the Transbay Transit Terminal, located on Mission Street, between First and Fremont Streets. Most Transbay service is peak-hour and peak-direction (to San Francisco during the AM peak period and from San Francisco during the p.m. peak period), with headways of 15 to 30 minutes per route. To access Candlestick Point, AC Transit riders must transfer at the Transbay Terminal to the T-Third line, and then to the 29-Sunset at Paul Avenue.

The Golden Gate Bridge, Highway, and Transportation District (GGBHTD) provides bus service between the North Bay (Marin and Sonoma Counties) and San Francisco. Golden Gate Transit operates 18 commuter bus routes and two basic routes with service between cities in the North Bay and San Francisco. Most routes serve either the Civic Center (via Van Ness Avenue and Mission Streets) or the Financial District (via Battery and Sansome Streets). Basic bus routes operate at 15 to 90 minute headways, depending on the time and day of the week. Commute and ferry feeder bus routes operate at more frequent intervals in the mornings and evenings. Golden Gate Transit does not provide local service within San Francisco Golden Gate Transit can be accessed from the study area via the T-Third line, with a transfer near the Transbay Terminal.

The GGBHTD also provides ferry service between the North Bay and San Francisco. During the AM and PM peak periods, ferries operate between Larkspur and San Francisco and between Sausalito and San Francisco. The San Francisco terminal is at the Ferry Building, on The Embarcadero at Market Street. Access to the Ferry Building would generally require travel on the T-Third LRT line to the Embarcadero Station.

Bicycles

Existing bicycle facilities in the study area include routes that are part of the San Francisco Bicycle Network, and regional routes, part of the San Francisco Bay Trail system. Bikeways are typically classified as Class I, Class II, or Class III facilities.[110] Class I bikeways are bike paths with exclusive right-of-way for use by bicyclists or pedestrians. Class II bikeways are bike lanes striped with the paved areas of roadways and established for the preferential use of bicycles; Class III bikeways are signed bike routes that allow bicycles to share travel lanes with vehicles. Figure III.D-4 (Existing San Francisco Bicycle Route Network) presents the bicycle routes within the study area, as identified in the Official San Francisco Bike Route System; Figure III.D-5 (Existing San Francisco Bay Trail Plan Route) presents the existing Bay Trail facilities.

[109] In 2008 SamTrans service to the stadium was taken over by Silverado Stages. In 2009, Golden Gate Transit service was taken over by California Wine Tours and Santa Clara VTA service was taken over by Silverado Stages.
[110] Bicycle facilities are defined by the State of California in the *California Streets and Highway Code* Section, 890.4.

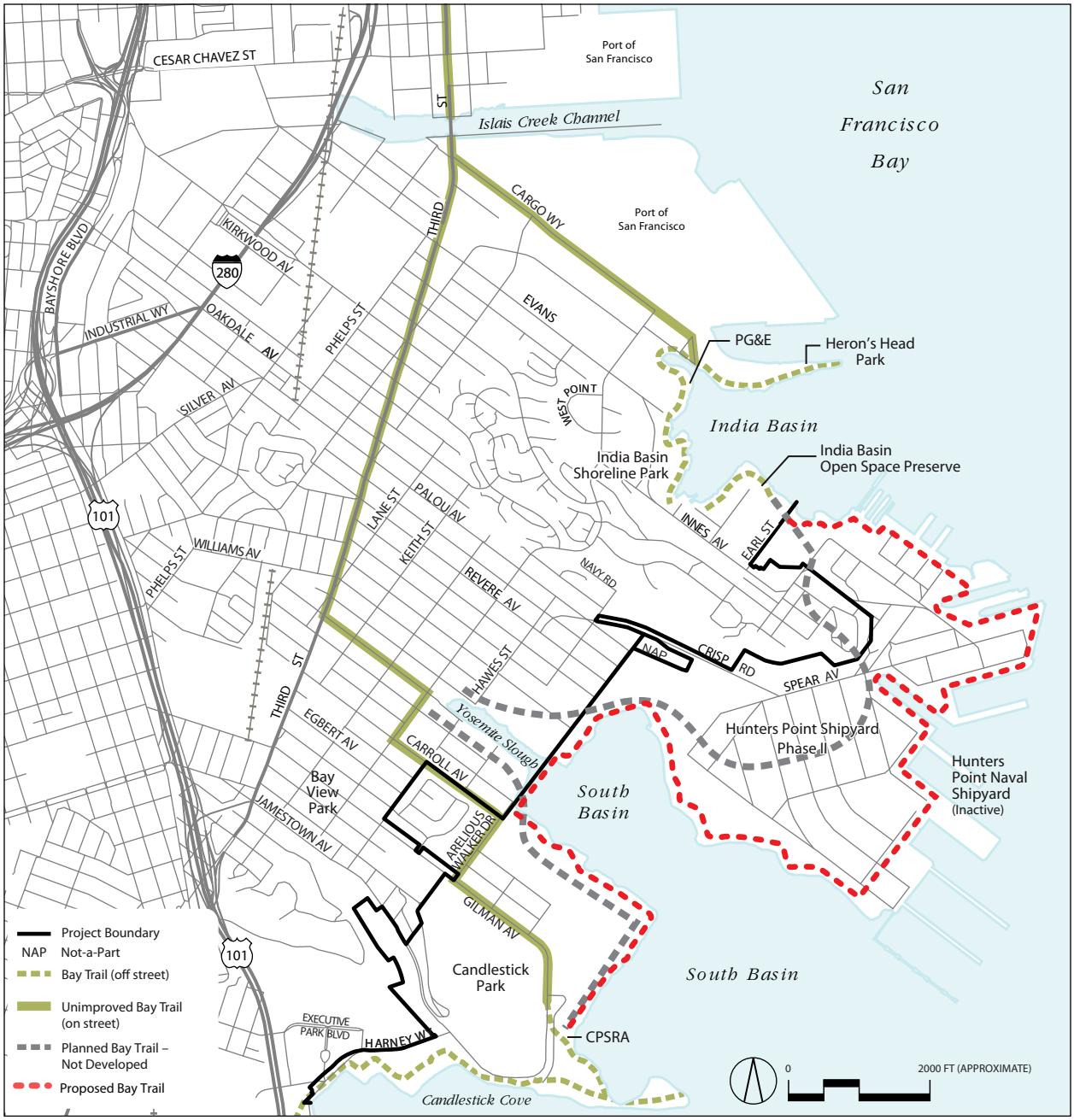
SOURCE: Fehr & Peers, 2009.

PBS&J 10.30.09 08068 | JCS | 09

FIGURE III.D-4

Candlestick Point — Hunters Point Shipyard Phase II EIR

EXISTING SAN FRANCISCO BICYCLE ROUTE NETWORK



SOURCE: San Francisco Bay Trail Plan; PBS&J, 2009.

PBS&J 10.31.09 08068 | JCS | 09

Candlestick Point — Hunters Point Shipyard Phase II EIR

EXISTING SAN FRANCISCO BAY TRAIL PLAN ROUTE

FIGURE III.D-5

In June 2009, the San Francisco Bicycle Plan was approved by the SFMTA Board. Near-term improvement projects on the existing bicycle network in the study area are noted below, and both near-term and long-term improvements are described in additional detail in the "Analytic Method" section in Section III.D.4.

Route #5: Route #5 is the easternmost north/south bicycle route, runs between Visitacion Valley and North Beach, primarily as a Class III facility along Third Street and Illinois Street, and as a Class II facility along Bayshore Boulevard (south of US-101), The Embarcadero, and much of San Bruno Avenue. Since southbound Third Street does not cross over US-101 to connect with Bayshore Boulevard, southbound Bicycle Route #5 is routed onto Paul Avenue (via Connector Route #705) and San Bruno Avenue (also Bicycle Route #25). This split in the route is required, since the US-101 undercrossing between southbound Third Street and southbound Bayshore Boulevard that would require bicyclists to weave across high-speed traffic. Bicycle Route #5 connects with a regional bicycle route in Brisbane. San Francisco Bicycle Plan Project 4-3: Illinois Street Bicycle Lanes will provide Class II bicycle lanes in both directions on Illinois Street between 16th Street and Cargo Way.

Route #7: Route #7 is a Class III bike route between Mariposa Street and Carroll Avenue, via Indiana Street, Third Street, Phelps Street, Palou Avenue, and Keith Street. Route #7's southern terminus is at Keith Street and Carroll Avenue at the Bayview Playground. It is a Class III facility; however, wider travel lanes that allow bicyclists to ride outside of the path of vehicle travel are provided on sections of Indiana and Phelps Streets, and on Keith Street.

Route #25: Route #25 runs between the southeastern part of San Francisco and the Marina District. Route #25 runs along San Bruno Avenue, Bayshore Boulevard, and Oakdale Avenue in the Bayview Hunters Point area. Within the study area, Route #25 is a Class III facility. North of the study area, Route #25 runs as both a Class II facility (e.g., along Potrero Avenue, Harrison Street, and 11th Street), and as a Class III facility (e.g., 10th Street, Polk Street). San Francisco Bicycle Plan Project 5-4: Bayshore Boulevard Bicycle Lanes will involve the installation of Class II bicycle lanes in both directions of travel on Bayshore Boulevard between Cesar Chavez Street and Silver Avenue.

Route #60: Route #60 runs between the Great Highway/Vicente and Cesar Chavez Street/Illinois Street. In the study area, it is a Class III facility along Cesar Chavez Street between Bayshore Boulevard and Mississippi Street, and a Class II facility between Mississippi and Illinois Streets. San Francisco Bicycle Plan Project 5-5: Cesar Chavez Bicycle Lanes will involve the installation of Class II bicycle lanes in both directions on Cesar Chavez Street between Kansas Street (near US-101) and Mississippi Street (near I-280).

Route #68: Route #68 runs from the Innes gate at Hunters Point Shipyard north along Innes Avenue, Hunters Point Boulevard, and Evans Avenue to Cesar Chavez. This route has dedicated bike lanes (Class II) on both sides of Evans Avenue, and Hunters Point Boulevard between Innes Avenue and Third Street. San Francisco Bicycle Plan Project 4-4: Innes Avenue Bicycle Lanes will involve the installation of Class II or III bicycle facilities in both directions of Innes Avenue between Donahue Street and Hunters Point Boulevard.

East-West Route #70 runs along Palou Avenue, Silver Avenue, and Monterey Boulevard between the Bayview Hunters Point area and West Portal as a Class III facility. The eastern terminus of this route is currently the Crisp south gate to Hunters Point Shipyard at Griffith Street and Palou Avenue.

Route #170: Connector Route #170 runs along Oakdale Avenue between Third Street and Bayshore Boulevard. Between Third Street and Bayshore Boulevard, this route has Class II bicycle lanes on both sides of the street.

Route #805: Connector Route #805 is a Class III facility that connects between Beatty Avenue and Tunnel Avenue (near the Bayshore Caltrain Station) in Brisbane and Third Street and Carroll Avenue. This route passes Candlestick Park stadium and the Candlestick Point State Recreation Area via Harney Way, Hunters Point Expressway, Gilman Avenue, Arelious Walker Drive, and Carroll Avenue.

Route #905: Route #905 is a short Class III route that runs along Tunnel Avenue south, east of Bayshore Boulevard. Bicycle Route #905 connects with regional bicycle routes to the south in Brisbane and South San Francisco.

Route #907: Route #907 is a short Class II route that runs along Indiana Street between César Chávez Street and the embankment at Islais Creek, where it dead-ends.

Route #925: Route #925 is a short Class III route that runs along Blanken Avenue between Tunnel Avenue and Bayshore Boulevard, connecting Route #5 and Route #905.

The San Francisco Bay Trail is designed to create recreational pathway links to the various commercial, industrial, and residential neighborhoods that surround the San Francisco Bay. In addition, the trail connects points of historic, natural, and cultural interest; recreational areas such as beaches, marinas, fishing piers, boat launches, and over 130 parks and wildlife preserves totaling 57,000 acres of open space. At various locations, the Bay Trail consists of paved multi-use paths, dirt trails, bike lanes, sidewalks, or city streets signed as bike routes. Within the study area, the Bay Trail has two discontinuous segments of existing, off-street pathways, one in the area of Candlestick Point and Harney Way, and another segment which partially surrounds India Basin. The Bay Trail currently bridges the gap between Islais Creek and Candlestick Point with an inland route that shares portions of Gilman Avenue, Arelious Walker Drive, Carroll Avenue, Ingalls Street, Yosemite Avenue, and Third Street. An improved trail exists in the southern part of the Candlestick Point State Recreation Area where public access improvements have been made, but the northern section is unimproved within the Project site. The trail starts northeast of the US-101 northbound Harney Way ramps. Parking is available off of Harney Way, west of Jamestown Avenue (approximately 30 parking spaces are currently provided), and parking, restrooms, and boat ramp facilities are provided off of Hunters Point Expressway near Gilman Avenue. Portions of the Bay Trail are also improved to the northeast of the Shipyard within the India Basin Open Space and Shoreline Parks.

The majority of the study area is flat, with limited changes in grades, facilitating bicycling within and through the area. East of Third Street, there are active and inactive rail tracks within the roadways that could impede bicycle travel. While the Bayview Hill and the Hunters Point hill pose challenges for bicyclists, the majority of the study area is relatively flat.

Bicycle activity in the study area is generally low. Weekday AM and PM peak period and Saturday midday period bicycle volume counts were conducted on Third Street, Oakdale Avenue, and Evans Avenue. Hourly bicycle volumes ranged between 1 and 30 bicyclists per hour, with the greatest number on bicyclists on Third Street and on Oakdale Avenue. More bicyclists were observed on weekdays than weekends.

Pedestrians

Pedestrian facilities within the study area vary, between the areas on the east side of Third Street and the industrial land uses surrounding the Caltrain rail corridor on the west side of Third Street. On the west side of Third Street, many of the commercial facilities surrounding the railroad mainline have partial or no sidewalks. Several of the streets in this area have active and inactive railroad tracks and many of the former industrial and storage buildings in the area retain large raised freight loading/unloading platforms abutting the street.

On Third Street and on the residential streets immediately surrounding Third Street, the sidewalk network is adequate and relatively complete. In the light manufacturing areas surrounding Yosemite Slough the sidewalk network is less complete and frequently obstructed by illegally parked vehicles and or vehicles loading. The extent, condition, and usability of the sidewalks generally decrease closer to Yosemite Slough (within the Project vicinity). There are also gaps in the sidewalk network on Innes Avenue approaching Hunters Point Shipyard.

The Candlestick Point State Recreation Area has a network of existing multi-use trails that extend from the County line to a point just southeast of the intersection of Gilman Avenue and Donahue Street (an undeveloped 'paper' street).[111] Most of these paths are within the park and do not intersect the local roadways, although some connect to, or are part of, the Bay Trail.

There are several dedicated pedestrian overcrossings in the vicinity of Candlestick Park. These structures are designed to reduce pedestrian-vehicle conflicts associated with Candlestick Park events and adjacent schools. These include the stadium-related overcrossing of Jamestown Avenue just north of Harney Way and overcrossing of Harney Way, just west of Jamestown Avenue, and the overcrossing of Gilman Avenue at Griffith Street adjacent to the Bret Harte School.

Pedestrian activity in the immediate vicinity of the Project site is light throughout the day during non-game days. During game days, pedestrians flood the area traveling between the on-site and off-site parking facilities and the stadium.

Third Street is the primary pedestrian corridor in the study area, with the central commercial core located roughly between Thomas Avenue and Kirkwood Streets (south of Evans Avenue). Counts of pedestrian volumes at crosswalks at three intersections on Third Street were conducted in September 2007 during the weekday AM and PM peak periods. Peak hour pedestrian volume at the crosswalks ranged between 25 and 400 pedestrians per hour, with the greatest number of pedestrians at the intersection of Third/Palou.

[111] A paper street is a road or street that appears on maps but does not exist in reality.

Parking

In general, on-street parking in the study area is generally unrestricted (other than weekly street cleaning), and is typically permitted on both sides of the street. On the wider avenues in the study area (generally with an 80-foot-wide right-of-way width) with light industrial land uses, roadways, such as Donner Avenue and Bancroft Avenue between Jennings and Hawes Streets, accommodate 90-degree perpendicular parking. Along Third Street on-street parking is metered, and has been removed in the vicinity of the light rail stations. There are no Residential Permit Parking (RPP) areas within the study area.

Surveys of on-street parking were conducted for three subareas:

- Candlestick Point/Bayview—Within the mostly residential and partial industrial area bounded by Third Street to the west, Carroll Avenue to the north, Arelious Walker Drive to the east, and Jamestown Avenue to the south
- Little Hollywood—Within the mostly residential area bounded by Bayshore Boulevard to the west and north, US-101 to the north and east, and the San Francisco/San Mateo County line to the south
- India Basin—Within the mostly industrial area bounded by Jennings Street to the west, Hunters Point Boulevard/Innes Avenue to the south, Donahue Street to the east, and India Basin to the north

During the daytime, on-street parking utilization is greatest in the Candlestick Point/Bayview subarea, and ranges between 66 percent during the midday period (accommodating employee parking demand associated with the industrial uses) and 57 percent during the evening. Parking demand within the Little Hollywood residential neighborhood is greatest during the evening period, with parking occupancy at about 60 percent. Within the India Basin parking study area, weekday midday and evening parking utilization is low, between 17 and 28 percent, reflecting the limited residential and industrial uses in the area.

There are no City-owned off-street parking facilities in the study area. There is limited number of privately owned parking facilities in this subarea and most drivers rely on on-street parking in the area. The available privately owned off-street parking facilities serve the employees and visitors to the businesses adjacent to them and are not available for general public parking.

Existing Game Day Operations

The additional traffic added to the transportation network following a football game at Candlestick Park results in substantial congestion on local streets between parking facilities and the freeway, and on the freeways, particularly where game day traffic merges with other traffic already on the freeway. This section discusses the existing transportation conditions on days when football games are played at Candlestick Park.

Football Game Frequencies

Candlestick Park currently serves as the home of the San Francisco 49ers. The existing Candlestick Park stadium typically hosts up to 12 games per year, including eight regular season games, typically two pre-

season games, and for teams that qualify for playoffs, typically two post-season games. Professional football games on the west coast are typically scheduled for 1:00 P.M. (Pacific Time) on Sundays, from September through early December. The post-season runs into January and games can be played on either Saturday or Sunday. At the conclusion of the college football season in late November, a few NFL games are played on Saturdays, as are some pre-season games. Successful teams typically play at least one Monday night (6:00 P.M.) game, and the 49ers have had at least one such home game in each of the past several seasons. Occasionally (no more than once per year), Sunday games are held at 5:00 P.M. The typical duration of a football game is approximately three hours.

Pre-Game and Post-Game Conditions

Ingress and Egress Routes

Vehicles access Candlestick Park by several routes, depending on the level of congestion and the vehicles' point of origin. Most vehicles arriving from the south (San Mateo and Santa Clara Counties, as well as traffic from Alameda County using the San Mateo or Dumbarton Bridges) use northbound US-101 and enter the site via the Harney Way exit. Vehicles from the north coming from either I-280 or US-101 use the Silver Avenue, Paul Avenue, Bayshore Boulevard/Third or the Alana/Beatty exits to reach the north access routes (Carroll, Gilman, and Jamestown) to the stadium. In order to accommodate peak inbound and outbound traffic volumes generated by the largest special events at Candlestick Park, traffic lanes on Harney Way and on the roadway surrounding the Candlestick Park parking lot (Jamestown Avenue Extension, Hunters Point Expressway and part of Gilman Avenue) are reversed on event days. Overhead Lane Use Control Signals are used to designate the direction of each lane.

On event days, each lane has either a green downward-pointing arrow or a red arrow above it to indicate to drivers in each direction whether they may drive in that lane. The portion of Harney Way between Alana Way near US-101 and Jamestown Avenue operates one-way eastbound (toward Candlestick Park) for several hours before events. Jamestown Avenue Extension and Hunters Point Expressway operate one-way counterclockwise before events. The portion of Gilman Avenue west of Candlestick Park Parking Lot Gate 4 is two-way before events to provide access to Gate F from the west. Once the pre-event traffic dies down, these roadways are converted back to two-way operation. In the last 30–60 minutes before the end of the event, the reversible roadways are converted to one-way operation away from the parking lot exits. Gilman Avenue operates one way westbound, while Hunters Point Expressway, Jamestown Avenue Extension and Harney Way operate one-way clockwise and westbound, respectively. During the post-game period, the Candlestick Park exit from northbound US-101 is closed to all traffic, in order to prevent off-ramp traffic from conflicting with the one-way westbound post-event traffic on Harney Way. Additionally, all traffic using the Candlestick Park exit from southbound US-101 is forced to proceed westbound on Beatty Avenue in order to prevent this traffic from having to make a U-turn if it were to proceed eastbound on Alana Way. Once the post-event traffic dies down, the roadways revert to the normal two-way operation.

Traffic Operations

Pre-Game Conditions: For a typical Sunday football game starting at 1:00 PM, vehicle arrival is spread over about six hours with approximately 40 percent of the vehicles arriving between one and two hours prior to the game start time, and 60 percent within the other five hours prior to the game. Since the

arrival is spread out over a period of time, the game-related traffic does not substantially affect traffic flow on the study area freeways. During a recent Sunday football game, some localized congestion was observed at US-101 northbound upstream of the Harney Way exit, as vehicles queued up from Harney Way and on US-101 southbound upstream of the Alana/Beatty exit. The vehicles accessing the stadium from Third Street contribute to congestion and queues on the local residential streets, including Third Street, Gilman Avenue, Carroll Avenue and Jamestown Avenue. In September 2009, a pedestrian bridge was installed on Hunters Point Expressway at the location of the pedestrian crossing to the State Park parking lots. Since installation of the pedestrian bridge, pre-game traffic conditions improved.

During pre-game conditions, San Francisco Police Department (SFPD) officers, Parking Control Officers (PCOs), and California Highway Patrol (CHP) officers are posted on roadways leading to the stadium, in particular Harney Way, Hunters Point Expressway, Ingerson Avenue, and Gilman Avenue. Officer tasks include ensuring smooth traffic flow on the one-way inbound Harney Way, directing vehicles to proceed to downstream gates and off-site parking lots, and towing vehicles that obstruct traffic movement. In addition, they are responsible for providing priority to transit vehicles, ensuring pedestrian safety, and orderly queuing at the gates to the internal parking lot. Approximately 60 officers are posted during a football game.

Post-Game Conditions: Immediately following the end of the game, most spectators attempt to leave the stadium parking facilities, although depending on the game outcome, some patrons leave early to avoid congestion and a portion remain for tailgate parties. Players, press, administrative staff, and employees generally remain on site longer than spectators. Typical clearance times for each of the egress routes following a sell-out football game vary; however, congestion and queues in the vicinity of the stadium generally clear up approximately one and a half to two hours following the end of the game.

During post-game conditions, Harney Way is converted to one-way outbound operation, with two lanes merging to one onto the northbound on-ramp and two lanes continuing onto Alana Way to access the southbound on-ramp and Beatty Avenue. To facilitate flow onto the on-ramps, the US-101 northbound off-ramp is closed at Harney Way, and the allowable movements at the southbound off-ramp are restricted to westbound through onto Beatty Avenue. During post-game conditions, the southbound on-ramp is metered via a ramp-metering signal to ensure stable traffic conditions on freeway mainline. Travel lanes on the mainline are also closed to increase the capacity of the on-ramp during post-game conditions. Field observations during recent games indicated that there is some localized congestion on US-101 southbound upstream of and at the ramp merge influence area. Caltrans uses Variable Message Signs (VMS) on southbound US-101 and southbound I-280 upstream of the on-ramp to direct through traffic to southbound I-280 instead of southbound US-101 during post-game conditions.

On US-101 northbound, stadium traffic generally does not have difficulty merging with the freeway mainline traffic, as northbound US-101 traffic volumes approaching Harney Way are generally lower than the southbound volumes. However, as stadium traffic merges with I-80 eastbound traffic leaving downtown San Francisco, congestion and queues extend upstream from the Bay Bridge to the US-101/I-280 merge. This congestion persists long after all congestion and queues dissipate in the vicinity of Candlestick Point.

The surge of vehicles exiting the parking facilities results in queues on the internal roadways and at access roads to Third Street and the on-ramps to US-101. The queues on Jamestown Avenue, Gilman Avenue, and Carroll Avenue are mainly constrained by the capacity of the intersections of the respective street at Third Street. The traffic signals on Third Street are timed to prioritize transit movements along Third Street, including the T-Third light rail, which results in limited capacity for cross-traffic.

During post-game conditions, the San Francisco Police Department officers, PCOs and CHP officers ensure that traffic exits the stadium parking facilities in an orderly fashion and that vehicles access the regional routes as quickly as possible. Responsibilities of the officers include waving vehicles through STOP signs and ensuring that Ingerson Avenue is used by buses, taxis, and emergency vehicles. A CHP officer is posted at the intersection of Alana/Beatty to wave vehicles through the STOP sign and onto the US-101 southbound on-ramp. However, many vehicles come to a full stop prior to processing through the intersection.

Transit Services

Muni and Tri-Delta Transit and numerous private charter bus operators provide game day special services to Candlestick Park. BART, AC Transit, and Caltrain do not provide any special game day services. The San Mateo County Transit District (SamTrans), Golden Gate Transit, and the Santa Clara Valley Transportation Authority (VTA) have historically provided transit service to Candlestick Park; however, they have recently stopped providing this service, which will instead be provided by private charter companies.

Muni: On game days, Muni offers express services 75X, 77X, 78X, and 79X to and from the stadium. Line 75X provides express, non-stop shuttle service between Candlestick Park and the Balboa Park BART Station (via Geneva Avenue and Bayshore Boulevard). Line 77X provides express service from the Van Ness corridor, with service between the intersection of California/Van Ness and Candlestick Park (via Van Ness Avenue, South Van Ness Avenue, Mission Street and US-101). Line 78X provides express service along the Park Presidio/19th corridor, from the Funston/California intersection (via Park Presidio, 19th Avenue, Junipero Serra Boulevard, Ocean Avenue, Geneva Avenue, and Bayshore Boulevard). Line 79X provides express service from downtown, with service between Candlestick Park and the Sutter/Montgomery intersection (via Stockton Street, Fourth Street, Folsom Street, and U.S 101). The service starts about three hours prior to the beginning of the football game, and operates at headways of approximately 7 to 10 minutes.

Muni also operates special shuttle services from the Bacon/San Bruno intersection (86-Stadium Shuttle) and from the Gilman/Paul T-Third station (87-Stadium Shuttle). The shuttle service begins about four hours before the game and operates at approximately 5 to 10 minute headways. Approximately 6,500 spectators currently use the special Muni bus services to the stadium.

Tri-Delta Transit: Tri-Delta Transit provides one special game day bus to Candlestick Park from eastern Contra Costa County, with stops in Brentwood, Antioch, and Pittsburg. Tickets may be purchased in advance, or on the bus on the day of the games.

Neither AC Transit nor BART provide special game day service. AC Transit riders can take AC Transit to the San Francisco Transbay Terminal, walk to the intersection of Sutter/Montgomery intersection and

transfer to the Muni 9X-Bayshore Express to the stadium. BART riders from East Bay need to take BART to the Montgomery Station and transfer to the Muni 79X-Bayshore Express to the stadium. BART riders from San Mateo County need to take BART to the Balboa Park station and transfer to Muni Line 78X-Candlestick Express at Geneva Avenue.

Charter Buses: A substantial number of spectators using transit come by private charter buses. Various groups charter buses from private companies including Frontier Tour Charter Bus, Evans, Pro Trav Charter, and Sierra Pacific Tours. According to the San Francisco 49ers, approximately 3,000 spectators currently arrive and leave by private charter bus. In addition, private charter service from Santa Clara, San Mateo, Marin, and Sonoma counties will be initiated this season, replacing service previously provided by the VTA, SamTrans, and Golden Gate Transit, respectively. Routes and service are expected to be similar to that previously provided by those operators.

Bus Access and Parking: Buses from the north generally access the stadium by way of Ingerson or Jamestown Avenue, using the Third Street or Paul Avenue exits from US-101 southbound. Buses from the south access the stadium using the Third Street exit. Ingerson Avenue between Third Street and Giants Drive is exclusively used by buses, taxis, and emergency vehicles during pre- and post-game periods.

Southbound buses leaving the stadium generally use westbound Ingerson Avenue to southbound Third Street and take the southbound US-101 on-ramp at Bayshore/Third. Northbound buses use northbound US-101 via the on-ramp at Bayshore/Third. The special Muni shuttle to San Bruno/Bacon turns from Ingerson Avenue onto Third Street northbound, and left at Gilman/Paul. In general, buses operate inbound on Jamestown Avenue during the pre-game period and outbound on Ingerson Avenue during the post-game period.

Muni buses load and unload passengers along the drop-off roadway (Giants Drive) north of Jamestown Avenue. Other buses (including charters) load and unload in the main parking lot. Muni buses park free along the drop-off roadway (Giants Drive) parallel to Jamestown Avenue. All other buses park in the main parking lot. The buses in the main lot are parked end-to-end. As a result, some fully loaded buses after the game are delayed until the bus parked in front of them leaves.

Pedestrian Circulation

The number of pedestrians in the vicinity of the stadium is highest during post-game conditions with spectators exiting the stadium at once. The primary pedestrian flows are towards the internal and off-site parking areas east of the stadium, and towards the parking areas along Harney Way and Little Hollywood/Tunnel Avenue, and to the off-site lot along Jamestown Avenue and T-Third line on Third Street.

The two pedestrian overcrossings, one crossing Jamestown at Harney Way, and one crossing the drop-off loop (connecting with Jamestown Avenue approximately 350 feet north of Harney Way), are too narrow to accommodate the surge of pedestrians leaving the stadium. Queues form at the approaches to the pedestrian overcrossings, particularly at Jamestown/Harney. This crossing has fences on either side of the sidewalk to channelize pedestrians and to prevent pedestrians from crossing Jamestown Avenue or Harney Way at-grade.

East of the stadium, pedestrian flows generally spread out throughout the internal lot, and cross Hunters Point Expressway at-grade along the roadway. These uncontrolled crossings often result in conflicts between pedestrians and vehicles, and police occasionally control these crossings. In September 2009, a pedestrian bridge was installed on Hunters Point Expressway at the location of the at-grade pedestrian crossing to the State Park parking lots.

Parking Conditions

Game day parking demand for 49er games at the existing stadium is accommodated within off-street surface parking lots and on-street parking adjacent to the neighborhood and to the west in the Little Hollywood neighborhood. Game day parking demand varies depending on attendance levels, and maximum demand occurs during sell-out games.

Parking for 49er games is provided within stadium parking lots, on state park land, and in satellite parking lots. A total of 18,880 off-street parking spaces are provided for a typical 49ers game, generally at a fee of $30 per auto. Approximately 48 percent of the off-street parking spaces are in the stadium parking lot (9,110 spaces for autos, buses, recreational vehicles, limousines, press and players), 23 percent are located in state park land lots (5,470 spaces), and 29 percent are located in satellite parking lots (4,300 spaces). In addition to the satellite parking lots, there are a number of parking spaces in private lots that are generally restricted for use by residents, customers, employees of private businesses, or public agencies; however, some of the spaces are made available to the public on football game days. The 49ers estimate that up to 3,000 spaces are available on private land for game day parking.

In addition to the off-street parking, nearby on-street parking is heavily used by football fans, particularly in the Little Hollywood neighborhood across from the stadium. During game day parking surveys, within the area bounded by US-101, Bayshore Boulevard and the County line, all on-street parking spaces were occupied (compared with 60 percent on a non-football Sunday), resulting in an inconvenience for residents. In the area northwest of the stadium, bounded by Third Street, Jamestown Avenue, Giants Drive/Arelious Walker Drive, and Carroll Avenue, on-street parking is about 86 percent occupied, compared to about 70 percent on a non-game Sunday; the increased occupancy rate is primarily due to reduced parking supply caused by game day parking prohibitions.

In general, many football spectators arrive up to five hours before kickoff to prepare and eat food and drink beverages near their vehicles in the parking lots. These "tailgate" parties take place in the car and RV parking lots. Based on previously collected information on stadium parking accumulation, on a typical game day, up to 40 percent of vehicles arrive between one and two hours prior to kickoff.

During game days, parking restrictions are implemented to increase traffic capacity in and out of the facility and to reduce congestion. On game days parking is prohibited between 10:00 A.M. and 6:00 P.M. on one or both sides of the following streets: Carroll Avenue, Gilman Avenue, Ingerson Avenue, Jamestown Avenue, Paul Avenue, and Third Street.

III.D.3 Regulatory Framework

This section provides a summary of the plans and policies of the City and County of San Francisco, and regional, state, and federal agencies that have policy and regulatory control over the Project site. These

plans and policies include the San Francisco General Plan, the Better Streets Plan, the San Francisco Bicycle Plan, the San Francisco Bay Trail Plan, and the Transit First Policy.

Federal

There are no federal transportation regulations applicable to the Project.

State

There are no state transportation regulations applicable to the Project.

Regional

There are no regional transportation regulations applicable to the Project.

Local

San Francisco General Plan

The Transportation Element of the San Francisco General Plan is composed of objectives and policies that relate to the nine aspects of the citywide transportation system: General Regional Transportation, Congestion Management, Vehicle Circulation, Transit, Pedestrian, Bicycles, Citywide Parking, and Goods Management. The Transportation Element contains the following objectives and policies that are directly pertinent to consideration of the Project:

- Use the transportation system as a means for guiding development and improving the environment. (Transportation Element Objective 2)
- Use rapid transit and other transportation improvements in the city and region as the catalyst for desirable development, and coordinate new facilities with public and private development. (Transportation Element Objective 2, Policy 2.1)
- Organize the transportation system to reinforce community identity, improve linkages among interrelated activities, and provide focus for community activities. (Transportation Element Objective 2, Policy 2.4)
- Improve bicycle access to San Francisco from all outlying corridors. (Transportation Element Objective 9)
- Where Bicycles are prohibited on roadway segments, provide parallel routes accessible to bicycles or shuttle services that transport bicycles. (Transportation Element Objective 9, Policy 9.2)
- Establish public transit as the primary mode of transportation in San Francisco and as a means through which to guide future development and improve regional mobility and air quality. (Transportation Objective 11)
- Develop and implement a plan for operational changes and land use policies that will maintain mobility and safety, despite a rise in travel demand that could otherwise result in system capacity deficiencies. (Transportation Element Objective 14)
- Ensure that traffic signals are timed and phased to emphasize transit, pedestrian, and bicycle traffic as part of a balanced multimodal transportation system. (Transportation Element Objective, 14, Policy 14.2)

- Improve transit operation by implementing strategies that facilitate and prioritize transit vehicle movement and loading. (Transportation Element Objective 14, 14.3)
- Reduce congestion by encouraging alternatives to the single-occupancy auto through the reservation of right-of-way and enhancement of other facilities dedicated to multiple modes of transportation. (Transportation Element Objective 14, Policy 14.4)
- Encourage the use of transit and other alternative modes of travel to the private automobile through the positioning of building entrances and the convenient location of support facilities that prioritizes access from these modes. (Transportation Element Objective 14, Policy 14.7)
- Establish a street hierarchy system in which the function and design of each street are consistent with the character and use of the adjacent land. (Transportation Element Objective 18)
- Design streets for a level of traffic that serves, but will not cause a detrimental impact on, adjacent land uses or eliminate the efficient and safe movement of transit vehicles and bicycles. (Transportation Element Objective 18, Policy 18.2)
- Discourage high-speed through traffic on local streets in residential areas through traffic "calming" measures that are designated not to disrupt transit service or bicycle movement…" (Transportation Element Objective 18, Policy 18.4)
- Improve the city's pedestrian circulation system to provide for efficient, pleasant, and safe movement. (Transportation Element Objective 23)
- Widen sidewalks where intensive commercial, recreational, or institutional activity is present and where residential densities are high. (Transportation Element Objective 23, Policy 23.2)
- Maintain a strong presumption against reducing sidewalk widths, eliminating crosswalks, and forcing indirect crossings to accommodate automobile traffic. (Transportation Element Objective 23, Policy 23.3)
- Ensure convenient and safe pedestrian crossings by minimizing the distance pedestrians must walk to cross a street. (Transportation Element Objective 23, Policy 23.6)
- Improve the ambiance of the pedestrian environment. (Transportation Element Objective 24)
- Provide secure and convenient parking facilities for bicycles. (Transportation Element Objective 28)
- Provide secure bicycle parking in new governmental, commercial, and residential developments. (Transportation Element Objective 28.1)
- Provide parking facilities which are safe, secure, and convenient. (Transportation Element Objective 28, Policy 28.3)
- Relate the amount of parking in residential areas and neighborhood commercial districts to the capacity of the city's street system and land use patterns. (Transportation Element Objective 34)
- Regulate off-street parking in new housing so as to guarantee needed spaces without requiring excesses and to encourage low auto ownership in neighborhoods that are well served by transit and are convenient to neighborhood shopping. (Transportation Element Objective 34, Policy 34.1)
- Permit minimal or reduced off-street parking for new buildings in residential and commercial areas adjacent to transit centers and along transit preferential street. (Transportation Element Objective 34, 34.3)
- Meet short-term parking needs in neighborhood shopping districts consistent with preservation of a desirable environment for pedestrians and residents. (Transportation Element Objective 35)

- Provide convenient on-street parking specifically designed to meet the needs of shoppers dependent upon automobiles. (Transportation Element Objective 35, 35.1)
- Assure that new neighborhood shopping district parking facilities and other auto-oriented uses meet established guidelines. (Transportation Element Objective 35.2)
- Make freeway and major surface street improvements to accommodate and encourage truck/service vehicles in industrial areas away from residential neighborhoods. (Transportation Element Objective 39)

The Project site is relatively isolated from the rest of the City, and the surrounding topography of the hills and the Yosemite Slough create a context with limited connections to the broader transportation network. Existing pedestrian volumes and bicycle activity in the Project vicinity are low throughout the day. Consistent with the objectives and policies of the General Plan, key goals of the Project are to prioritize walking, bicycling and transit travel, making these attractive and practical transportation options. The land use program and transportation program developed for the Project consists of strategies to contain as many trips as possible within Candlestick Point and Hunters Point Shipyard, and to maximize the usefulness of walking and bicycling, a parking plan designed to discourage the overall usage of private automobiles, increased transit service, and a Transportation Demand Management Plan. The following illustrate a few features of the Project designed to promote pedestrian, bicycle, and transit travel.

- The development pattern is designed to facilitate walking and cycling for internal trips, and bus service for trips elsewhere.
- Streets are designed to support a variety of travel modes at moderate to low speeds, and are arranged in a pedestrian-oriented grid of small blocks.
- All of the homes within each community are within a 15-minute walk of a transit stop, where frequent service would be available.
- New and improved transit service would be provided to the Project site.

Better Streets Plan

The *Better Streets Plan* (draft June 2008) focuses on creating a positive pedestrian environment through measures such as careful streetscape design and traffic calming measures to increase pedestrian safety. The Project roadway cross-sections were designed to safely accommodate multi-modal transportation within the Project site, and include roadway and streetscape improvements on roadways outside of the Project site. Particular attention was paid to designing improvements that would support safe and smooth interaction between pedestrians, automobiles, and bicycles. The Project's street layout and roadway cross-sections are consistent with the *Better Streets Plan,* except in few locations where unique right-of-way constraints have placed severe constraints that limit wider sidewalks, such as along steep hillsides or the Bay shoreline.

San Francisco Bicycle Plan

The *San Francisco Bicycle Plan* describes a City program to provide the safe and attractive environment needed to promote bicycling as a transportation mode. The certification of the *San Francisco Bicycle Plan Final EIR* was affirmed by the Board of Supervisors in August 2009. The San Francisco Bicycle Plan identifies near-term improvements that could be implemented within the next five years, as well as policy

goals, objectives and actions to support these improvements. It also includes long-term improvements, and minor improvements that would be implemented to facilitate bicycling in San Francisco. When the injunction to stop implementation of the *San Francisco Bicycle Plan* improvements that was issued on June 2006 by the Superior Court of California is lifted, implementation of near-term improvements would be contracted. The *San Francisco Bicycle Plan* includes five near-term and five long-term projects within the study area. Project improvements on Innes Avenue would overlap with Bicycle Plan Project 4-4: Innes Avenue Bicycle Lanes, however, Project improvements would be consistent with the Bicycle Plan.

San Francisco Bay Trail Plan

Refer to Section III.B (Land Use and Plans) regarding a description of the San Francisco Bay Plan and its application to the Project. The following information about the San Francisco Bay Plan is related to the Transportation analysis.

The 2005 Gap Analysis Study prepared by ABAG, for the entire Bay Trail area, attempted to identify the remaining gaps in the Bay Trail system, classify the gaps by phase, county and benefit ranking, develop cost estimates for individual gap completion, identify strategies and actions to overcome gaps, and present an overall cost and timeframe for completion of the Bay Trail system. Within the Project site, the 2005 Gap Analysis Study proposes to connect existing Bay Trail segments that are located north and south of the Project site by extending the trail along the waterfront of the Candlestick Point Recreation Area and through the Project site along HPS. The proposed trail would then connect to the existing trail north of the Project site along the India Basin shoreline.

The Gap Analysis Study also proposes an alternate, inland connection that is partially within the Project site, with the proposed trail traveling east along Gilman Avenue with the Project site, continuing north along Third Street that would ultimately connect to the existing waterfront portion of the trail near the India Basin via Yosemite Avenue/Carroll Avenue and Cargo Way.[112]

The Project would include the construction of the Bay Trail throughout the Project site, and support the proposed waterfront trail connection route within the Gap Analysis Study area, whereby the existing trail south of the Project site would ultimately connect to the existing northern trail along the India Basin shoreline. The Bay Trail would be accessible for pedestrians and bicyclists with connections to the existing and new parks, from the western boundary of Candlestick Point near the Harney Way/US-101 interchange, through the CPSRA, Yosemite Slough, and HPS Phase II shoreline to India Basin. Refer to Figure III.B-3 (San Francisco Bay Trail Plan).

Transit First Policy

In 1998, the San Francisco voters amended the City Charter (section 16.102) to include a Transit-First Policy. The Transit-First Policy is a set of principles which underscore the City's commitment that travel by transit, bicycle, and one foot be given priority over the private automobile. These principles are embodied in the policies and objectives of the Transportation Element. All City boards, commissions, and departments are required, by law, to implement transit-first principles in concluding City affairs.

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[112] ABAG, *Gap Analysis Study: A Report on Closing the Gaps in the 500-mile Regional Trail System Encircling San Francisco Bay*, 2005. http://www.abag.ca.gov/bayarea/baytrail/gap-analysis.html (accessed online August 2, 2009).

The proposed Project has been formulated to implement the City's Transit-First Policy by encouraging development that promotes use of public transit. Specifically, the Project's Transit Plan includes significant improvements to transit service in the Hunters Point Shipyard, Candlestick Point, and Bayview Hunters Point neighborhoods. Improvements include route extensions, increased frequencies on existing lines, extensions of proposed BRT service into the site, and new downtown express bus service. Furthermore, the development program and street grid is designed to encourage and facilitate walking to nearby transit stops.

III.D.4 Impacts

Significance Criteria

The City and Agency have not formally adopted significance standards for impacts related to transportation, but generally consider that implementation of the Project would have significant impacts on these resources if it were to:

- D.a Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections)
- D.b Exceed, either individually or cumulatively, an LOS standard established by the county congestion management agency for designated roads or highways (unless it is practical to achieve the standard through increased use of alternative transportation modes)
- D.c Result in a change in air traffic patterns, including either an increase in traffic levels, obstructions to flight, or a change in location, that causes substantial safety risks
- D.d Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses
- D.e Result in inadequate parking capacity that could not be accommodated by alternative solutions
- D.f Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., conflict with policies promoting bus turnouts, bicycle racks, etc.), or cause a substantial increase in transit demand that cannot be accommodated by existing or proposed transit capacity or alternative travel modes

The transportation and circulation impact findings herein are also based on the following significance criteria used by the San Francisco Planning Department for the determination of impacts associated with a proposed project.[113]

- D.g Traffic—In San Francisco, the threshold for a significant adverse impact on traffic has been established as deterioration in the LOS at a signalized intersection from LOS D or better to LOS E or LOS F, or from LOS E to LOS F. The operational impacts on unsignalized intersections are considered potentially significant if project-related traffic causes the level of service at the worst approach to deteriorate from LOS D or better to LOS E or LOS F and Caltrans signal warrants would be met, or causes Caltrans signal warrants to be met when the worst approach is already at LOS E or LOS F.

[113] Five of the study intersections are in the City of Brisbane. The level of service standard for all arterial streets within the City of Brisbane is LOS D, except for the intersections on Bayshore Boulevard at Old County Road and San Bruno Avenue, which shall not be less than LOS C.

For an intersection that operates at LOS E or LOS F under existing conditions, there may be a significant adverse impact depending upon the magnitude of the project's contribution to the worsening of delay. In addition, a project would have a significant adverse effect if it would cause major traffic hazards, or would contribute considerably to the cumulative traffic increases that would cause the deterioration in LOS to unacceptable levels (i.e., to LOS E or LOS F).

The operational impacts on freeway mainline segments and freeway on-ramp merge and off-ramp diverge operations are considered significant when project-related traffic causes the level of service to deteriorate from LOS D or better to LOS E or LOS F, or from LOS E to LOS F. In addition, a project would have a significant effect on the environment if it would contribute substantially to congestion at unacceptable levels.

D.h Parking—Parking supply is not considered to be a part of the permanent physical environment in San Francisco[114]. Parking conditions are not static, as parking supply and demand varies day to night, day-to-day, month-to-month, etc. Hence, the availability of parking spaces (or lack thereof) is not a permanent physical condition, but changes over time as people change their modes and patterns of travel.

Parking deficits are considered to be social effects, rather than impacts on the physical environment as defined by CEQA. Under CEQA, a project's social impacts need not be treated as significant impacts on the environment. Environmental documents should, however, address the secondary physical impacts that could be triggered by a social impact (CEQA Guidelines § 15131(a)). The social inconvenience of parking deficits, such as having to hunt for scarce parking spaces, is not an environmental impact, but there may be secondary physical environmental impacts, such as increased traffic congestion at intersections, air quality impacts, safety impacts, or noise impacts caused by congestion. The absence of a ready supply of parking spaces, combined with available alternatives to auto travel (e.g., transit service, taxis, bicycles or travel by foot) and a relatively dense pattern of urban development, may induce many drivers to seek and find alternative parking facilities, shift to other modes of travel, or change their overall travel habits. Any such resulting shifts to transit service in particular, would be in keeping with the City's "Transit First" policy. The City's Transit First Policy, established in the City's Charter Section 16.102 provides that "parking policies for areas well served by public transit shall be designed to encourage travel by public transportation and alternative transportation."

The transportation analysis accounts for potential secondary effects, such as cars circling and looking for a parking space in areas of limited parking supply, by assuming that all drivers would attempt to find parking at or near the project site and then seek parking farther away if convenient parking is unavailable.

D.i Transit—The project would have a significant effect on the environment if it would cause a substantial increase in transit demand that could not be accommodated by adjacent transit capacity, resulting in unacceptable levels of transit service; or cause a substantial increase in operating costs or delays such that significant adverse impacts in transit service levels could result.

The project would also have a significant effect on the environment if it would increase transit travel times on a particular route such that existing (or proposed) headways could not be maintained based on the existing (or proposed) vehicle fleet.

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[114] Under California *Public Resources Code*, Section 21060.5, "environment" can be defined as "the physical conditions which exist within the area which will be affected by a Project, including land, air, water, minerals, flora, fauna, noise, and objects of historic or aesthetic significance."

D.j Pedestrians—The project would have a significant effect on the environment if it would result in substantial overcrowding on public sidewalks, create potentially hazardous conditions for pedestrians, or otherwise interfere with pedestrian accessibility to the site and adjoining areas.

D.k Bicycles—The project would have a significant effect on the environment if it would create potentially hazardous conditions for bicyclists or otherwise substantially interfere with bicycle accessibility to the site and adjoining areas.

D.l Loading—The project would have a significant effect on the environment if it would result in a loading demand during the peak hour of loading activities that could not be accommodated within the proposed on-site loading facilities or within convenient on-street loading zones, and if it would create potentially hazardous traffic conditions or significant delays affecting traffic, transit, bicycles or pedestrians.

D.m Emergency Vehicle Access—The project would have a significant impact on the environment if it would result in inadequate emergency vehicle access.

D.n Construction—Construction-related impacts generally would not be considered significant due to their temporary and limited duration. However, in circumstances involving large development plans where construction would occur over long periods of time, construction-related impacts may be considered significant.

Analytic Method

This section presents the methodology for developing No Project and Project conditions, and information considered in the travel demand and impact analysis. Specifically, in the following order:

1. Approach to impact analysis, including analysis year and comparison to No Project conditions;
2. Future 2030 baseline transportation improvements assumed for the analysis of both 2030 No Project and Project conditions;
3. Methodology for development of future year 2030 No Project conditions traffic forecasts;
4. Transportation improvements proposed as part of the Project and assumed to be completed, and were included in assessment of travel demand and impact analysis;
5. Methodology and results of the Project travel demand forecasts for the development program, and separately for events at the stadium and arena;
6. Methodology for assessing impact of traffic volume increases on transit travel times; and,
7. Methodology for transit capacity utilization analysis.

1. Analysis Approach

The analysis of the Project was conducted for future year 2030 conditions. Year 2030 was selected as the future analysis year, since the San Francisco County Transportation Authority (SFCTA) travel demand model (SF-CHAMP) used in the analysis develops traffic and transit forecasts for cumulative development and growth through the year 2030. Often, analyses examine "Existing plus Project" and "Long-Term Future plus Project" conditions to assess the near- and long-term impacts of a project. However, because Project buildout is expected to occur over almost 20 years, a near-term plus project scenario would not materialize, and therefore, was not analyzed. In addition, the Project impact analysis was conducted for 2030 conditions, rather than existing conditions, to account for the substantial roadway and transit network and development changes associated with the Project that would occur over a period of about 20 years (Project construction initiated in 2011 and completed by 2029), and to account

for the major changes to the area that are projected to occur. The Project impact analysis therefore represents a cumulative growth scenario for the year 2030 for non-Project generated growth and transportation network improvements accounted for in the No Project conditions, and includes growth from development that would occur with implementation of the Project.

Project impacts were assessed by comparing future year 2030 conditions with the Project ("Project") to 2030 No Project conditions ("2030 No Project"). The 2030 No Project condition includes development within Hunters Point Shipyard associated with approved Phase I, as well as buildout of the existing Hunters Point Shipyard Redevelopment Plan, which would be replaced by the Project. However, for purposes of defining and assessing effectiveness of proposed mitigation measures, the total effect of the Project was considered (i.e., total vehicle, transit, bicycle and pedestrian trips generated by the Project were considered, not just the increase from the 2030 No Project condition which assumes development within the Hunters Point Shipyard component of the Project). Further, for purposes of determining the Project's contribution to cumulative impacts, the total Project effect was considered.

The Project was determined to have a significant traffic impact at an intersection if Project-generated trips would cause an intersection operating at LOS D or better under 2030 No Project conditions to operate at LOS E or LOS F, or intersections operating at LOS E under 2030 No Project conditions to deteriorate to LOS F conditions. At intersections that would operate at LOS E or LOS F under 2030 No Project conditions, and would continue to operate at LOS E or LOS F under Project conditions, the increase in Project vehicle trips were reviewed to determine whether the increase would contribute considerably to critical movements operating at LOS E or LOS F.

For freeway mainline and ramp analyses, locations where the Project would result in a change from LOS D or better under 2030 No Project conditions to LOS E or LOS F, or from LOS E or LOS F, with the Project are identified as Project impacts. At locations that would operate at LOS E or LOS F under 2030 No Project conditions, and would continue to operate at LOS E or LOS F under Project conditions, the Project trips, as a percentage of total traffic volumes on the facility were reviewed to determine whether the increase would contribute considerably to total volumes on the facility.

The Project was determined to have a significant impact if it would increase transit travel times such that additional transit vehicles would be required to maintain the proposed headways. This was assumed to be the case if either the Project's travel time increases to a particular route would be greater than ½ its proposed headway or if the number of required vehicles estimated using SFMTA's cost/scheduling model, which takes into account scheduled breaks and extra time built into schedules, increases by one or more vehicles with the addition of the Project characteristics. The Project would have a significant contribution to a cumulative impact if it was determined to have a significant Project impact. In a few circumstances, although no Project impact was identified, the Project contribution to the cumulative scenario was determined to be considerable when a transit line travels through intersections that would operate at LOS E or LOS F due to Project traffic.

The calculations that were used to determine the Project's contribution to cumulative impacts are contained in the appendices to the Transportation Study.

2. Future 2030 Baseline Transportation Improvements

In addition to improvements proposed by the Project, the analysis assumes completion of certain planned and reasonably foreseeable roadway and transit improvements in the Project vicinity that, although not part of the Project, could affect circulation. These improvements would be completed by the City and County of San Francisco directly or through development approvals.

Roadway Improvements

These improvements were identified as mitigation measures in the EIRs prepared for the Bayview Hunters Point Redevelopment Plan and the Visitacion Valley Redevelopment Plan, and implementation will be assured through conditions of approval placed on the development projects by the Planning Department and the San Francisco Redevelopment Agency.

- **Bayshore/Paul**—At this signalized intersection, as part of the Bayview Hunters Point Redevelopment Plan the signal will be changed from northbound and southbound Bayshore Boulevard operating with permitted left turns (left turns yield to oncoming traffic), to protected left turn movements with an exclusive signal phase.
- **Bayshore/Tunnel**—At this signalized intersection, the Visitacion Valley Redevelopment Plan calls for improvements to the signal-timing plan, to redistribute green time from the southbound left turn movement to the northbound/southbound through movements.
- **Bayshore/Arleta/San Bruno**—At this signalized intersection, the Visitacion Valley Redevelopment Plan calls for improvements to the signal-timing plan, to redistribute green time from the northbound left turn movement to the southbound through movement.
- **Bayshore/Leland**—At this signalized intersection, the Visitacion Valley Redevelopment Plan calls for improvements to the signal-timing plan, to redistribute green time from the northbound left turn movement to the northbound/southbound through movements. As part of this improvement, the westbound approach will be restriped to provide two travel lanes: a left-through lane and an exclusive right-turn lane.
- **Bayshore/Visitacion**—The Visitacion Valley Redevelopment Plan calls for reconfiguration of this signalized intersection to extend the southbound left turn pocket by 80 feet. As part of this improvement, the west-side Bayshore/Leland Muni bus stop would be relocated to the south of Leland Avenue.
- **Bayshore/Sunnydale**—The Visitacion Valley Redevelopment Plan calls for reconfiguration of this signalized intersection to extend the southbound left turn pocket by 100 feet. In addition, the Plan calls for improvements to the signal timing plan, to redistribute green time from the northbound/southbound left turn movements to the eastbound/westbound through movements. The westbound and eastbound approaches will be restriped to provide two travel lanes: a shared left-through lane and an exclusive right-turn lane.
- **Tunnel/Blanken**—The Visitacion Valley Redevelopment Plan calls for reconfiguration of this intersection to eliminate the all-way STOP-sign controls and install new traffic signal poles, masts and signal heads. In addition, the approaches to the intersection would be restriped to provide for two travel lanes for each approach.
- **Bayshore/Blanken**—At this signalized intersection, the Visitacion Valley Plan calls for restriping of the westbound approach of Blanken Avenue at Bayshore Boulevard to two lanes, to provide for an exclusive left-turn lane, and an exclusive right-turn lane.

- **Executive Park Improvements**—The Executive Park Property Owners are also required to make local roadway improvements when warranted by poor operating conditions. These include the following short-term and long-term improvements:
  - > Signalization of Harney Way/Executive Park Boulevard East
  - > Signalization and reconfiguration of Harney Way/Alana Way/Thomas Mellon Drive intersection
  - > Widening of Harney Way by one lane
  - > Signalization of Executive Park Boulevard West/Alana Way and the restriping of the southbound approach from one shared lane to one exclusive left lane and one exclusive right lane
  - > Widening of Alana Way by one lane and two lanes
  - > Signalization of Alana Way/Beatty Road

Two regional roadway improvements were included as part of the future year 2030 No Project and Project analysis. These improvements are currently being designed and analyzed to accommodate the travel demand associated with the areawide projects in both San Francisco and San Mateo counties. Implementation of these improvements would be based on fair-share funding measures through interjurisdictional study and cooperation, such as the ongoing interjurisdictional Bi-County Transportation Study effort led by the SFCTA. Within San Francisco, the Planning Department and the Redevelopment Agency will require project developer fair share contributions to these identified funding needs as a condition of development approval or as a condition of any Owner Participation Agreement. These regional roadway improvements are:

- **Geneva Avenue/Harney Way Extension**—Geneva Avenue, which currently ends at Bayshore Boulevard, would be extended east to meet Harney Way, improving east/west access in the area. The Geneva Avenue Extension would have three eastbound and three westbound travel lanes between Bayshore Boulevard and a new interchange with US-101. Currently, the nearest east/west access road is Blanken Avenue, which is designed as a neighborhood collector roadway and could not accommodate the additional east/west traffic generated by area projects. The lead agency for this Project is the City of Brisbane, with the Caltrans Project Study Report (PSR) expected to be completed in early 2010.
- **New US-101 Interchange at Geneva/Harney**—In conjunction with the extension of Geneva Avenue east, the existing Harney Way interchange would be redesigned as a typical diamond interchange. Caltrans and the City of Brisbane are the lead agencies for this project, and a PSR is currently being prepared. Two alternatives are currently being assessed; one with Geneva Avenue/Harney Way crossing under US-101, and one with Geneva Avenue/Harney Way crossing over US-101.

  The Geneva Avenue/Harney Way crossing of US-101 would have six lanes eastbound (three left-turn lanes and three through lanes) and six lanes westbound (three left-turn lanes and three through lanes), for a total of twelve lanes. The intersections of the northbound and southbound ramps with Geneva Avenue/Harney Way would be signalized. For both alternatives, a new bypass to the existing northbound Third Street off-ramp would be constructed, with the intention of diverting traffic on the existing off-ramp from the northbound mainline and improving conditions at the weave section where the new proposed northbound on-ramp from Harney Way would join the mainline.

Transit Improvements

SFMTA has proposed changes to several of the lines that would serve the study area as part of its Transit Effectiveness Project (TEP). The TEP is a comprehensive review of Muni operations, with numerous proposals for service and street network changes to address issues related to reliability, travel times, and service areas. Service planning changes are budget-neutral, while additional funding will be required for capital needs (e.g., additional buses). SFMTA will pursue Proposition K funds and federal grants for capital funding. The changes affecting the study area include:

- Eliminating 19-Polk service to the Hunters Point Shipyard.
- Increasing frequency on the 24-Divisadero from 8.5 minutes in the AM peak hour and 10 minutes in the PM peak hour to 7.5 minutes in the AM and PM peak hours.
- Increasing frequency on the 44-O'Shaughnessey to 6 minutes in the PM peak hour.
- Increasing frequency on the 54-Felton from 30 minutes to 20 minutes in the AM and PM peak hours.
- Extending the 48-Quintara-24th Street from its current terminus at 25th Street and Connecticut Street in Potrero Hill into the Hunters Point Shipyard in order to offset the elimination of the 19-Polk service to Hunters Point Shipyard. Frequencies on the 48-Quintara-24th Street would be reduced from 12 minutes to 15 minutes in the AM and PM peak hours.
- Extending the 28L-19th Avenue Limited from its current terminus at the Daly City BART station up to Geneva Avenue, terminating just east of Mission Street. The 28L-19th Avenue Limited would maintain its current 10-minute frequency in the AM and PM peak hours.
- Extending/rerouting the T-Third light rail line north of the station at Fourth and King Streets. Currently the T-Third continues north along The Embarcadero, entering the Market Street subway just north of Folsom Street. As part of the Central Subway project, beginning in approximately year 2016, the T-Third line will continue north on Fourth Street, entering a new subway under Fourth Street just south of Harrison Street. The new terminus will be in Chinatown, below Stockton Street. The Central Subway operating plan calls for single-car trains at 7.5-minute frequencies during peak hours between Chinatown and Bayview, as well as a two-car short-line train between Chinatown and Mariposa Street operating at 7.5-minute frequencies.

While not included in the assumptions for future transit conditions, the objectives of the ongoing Bayshore Intermodal Station Access Study would complement the TEP improvements, as well as Project transit improvements. The SFCTA is conducting the Bayshore Intermodal Station Access Study to develop multi-jurisdictional consensus around a vision and conceptual design for new intermodal transit connections and passenger access to the Bayshore Caltrain Station. Multiple planning processes are proceeding to develop projects that would connect new transit services to the Bayshore Station, including an extension of the T-Third light rail line from its current nearby terminus, the extension of the BRT line to Hunters Point Shipyard, and a new local street connection across Bayshore Boulevard, the Caltrain tracks, and US-101 as a Geneva Avenue extension. The SFCTA is partnering with stakeholder agencies to develop the proposed station connections in a seamless fashion and to promote strong multimodal access to the station. The end result will be a set of conceptual designs for the station and the new connections to serve as a vision that the individual projects will implement as they progress through their planning and preliminary engineering phases.

Bicycle Improvements

The *San Francisco Bicycle Plan*, adopted in June 2009, identifies near-term improvements that could be implemented within the next five years, as well as policy goals, objectives and actions to support these improvements. It also includes long-term improvements, and minor improvements that would be implemented to facilitate bicycling in San Francisco. When the injunction to stop implementation of the Bicycle Plan improvements that was issued on June 2006 by the Superior Court of California is lifted, that implementation of near-term improvements would be contracted. Funds for Bicycle Plan improvements would be available from the State Bicycle Transportation Account and San Francisco Measure C funding. The SFMTA, the San Francisco Recreation and Park Department (SFRDP), the Port of San Francisco (Port), or the San Francisco Department of Public Works (under the direction of SFMTA or SFRPD), would implement improvements, depending on which entity has jurisdiction. The *San Francisco Bicycle Plan* includes six short-term projects within the study area:

- *San Francisco Bicycle Plan* Project 4-2: Cargo Way Bicycle Lanes will involve the installation of Class II bicycle lanes in both directions on Cargo Way between Third Street and Jennings Street. On-street parking on the south side of Cargo Way will be removed, and a Class II left-turn bicycle lane will be installed on eastbound Cargo Way approaching Illinois Street and Amador Street. Cargo Way is not currently part of the citywide bicycle route network, and is under the jurisdiction of the Port.
- *San Francisco Bicycle Plan* Project 4-3: Illinois Street Bicycle Lanes would involve the installation of Class II bicycle lanes in both directions on Bicycle Route #5 on Illinois Street between 16th Street and Cargo Way. On-street parking on the east side of Illinois Street north of 22nd Street will be removed, and additional on-street parking spaces will be provided on Tennessee Street, 22nd Street, and 24th Street.
- *San Francisco Bicycle Plan* Project 4-4: Innes Avenue Bicycle Lanes will involve the installation of Class II or Class III bicycle facilities in both directions on Bicycle Route #68 on Innes Avenue between Donahue Street and Hunters Point Boulevard. Two options have been identified for this segment and a preferred option was not included in the Bicycle Plan Final EIR: Option 1 would add Class II bicycle lanes in both directions, and remove on-street parking on the south side of Innes Avenue between Hunters Point Boulevard and Earl Street, and on both sides of Innes Street between Earl Street and Donahue Street. Option 2 would be similar to Option 1, except for the segment from Hunters Point Boulevard to Earl Street, where sharrows would be added to the existing Class III bicycle route in both directions. There would be no parking or travel lane removals associated with Option 2 between Hunters Point Boulevard and Earl Street.
- *San Francisco Bicycle Plan* Project 5-4: Bayshore Boulevard Bicycle Lanes will involve the installation of Class II bicycle lanes in both directions of travel along most of Bayshore Boulevard between Cesar Chavez Street and Silver Avenue (Bicycle Route #25). Sharrows would be added in each direction between Cesar Chavez Street and approximately the beginning of the couplet split (i.e., at Jerrold Avenue). On-street parking will be removed on both sides of Bayshore Boulevard from the couplet split to Industrial Street, and one northbound lane will be removed beginning midblock between Helena and Industrial Streets. Sharrows will be added on northbound Bayshore Boulevard to Oakdale Avenue, Loomis Street, Barneveld Avenue, and Jerrold Avenue, and the northbound curbside bicycle lane from Helena Street to Marengo Street will be a shared transit and bicycle lane.
- *San Francisco Bicycle Plan* Project 5-5: Cesar Chavez Bicycle Lanes will involve the installation of Class II bicycle lanes in both directions on Bicycle Route #25 on Cesar Chavez Street between

Kansas Street (near US-101) and Mississippi Street (near I-280). To accommodate the bicycle lanes, one of the two eastbound travel lanes will be removed.

- *San Francisco Bicycle Plan* Project 5-13: San Bruno Bicycle Lanes will involve the installation of Class II bicycle lanes in both directions on Bicycle Route #25 on San Bruno Avenue between Silver Avenue and Paul Avenue. To accommodate the bicycle lanes, on-street parking would need to be removed in the segment between Silliman Street and Silver Avenue.

The *San Francisco Bicycle Plan* includes 24 long-term improvements that are proposed to be designed and implemented citywide over time. These improvements would complete the bicycle route network envisioned in the Bicycle Plan, close network gaps, refine and rationalize the bicycle route network, and improve safety and the bicyclist experience. Five long-term improvements have been identified within the study area for further design, environmental review, and possible implementation. With the exception of the Bay Trail improvements which involve construction of a Class I off-street path, and Mendell Street which is currently a plaza, the long-term improvements generally involve implementation of Class II or Class III bicycle facilities. Design of these improvements would occur within the context of the bicycle route network, planned development characteristics, and roadway network configuration at the initiation of the design and review process for each improvement. The five long-term improvements include:

- Long-Term Improvement L-3: Bay Trail Improvements in the vicinity of Hunters Point
- Long-Term Improvement L-4: Bayview Transportation Improvements Project
- Long-Term Improvement L-11: Industrial St between Loomis St and Oakdale Ave
- Long-Term Improvement L-12: Jennings St between Cargo Way and Evans Ave
- Long-Term Improvement L-15: Mendell St between Oakdale Ave and Palou Ave

3. Development of Year 2030 No Project Conditions

Future year 2030 No Project conditions were developed via a two-step process which utilized (1) the SFCTA travel demand model (SF-CHAMP) to determine background transit ridership and traffic growth on study area roadways, and (2) traffic volume overlays to reflect traffic volume turning movements associated with nearby developments that are not fully reflected in the SF-CHAMP model output.

SF-CHAMP Model Growth Projections

Future year 2030 traffic volume forecasts were estimated based on cumulative development and growth identified by SF-CHAMP travel demand model. The SF-CHAMP model is an activity-based travel demand model that has been validated to existing conditions and can be used to forecast future transportation conditions in San Francisco, and is updated regularly. The model predicts person-travel based on assumptions of growth in population, housing units, and employment by mode for auto, transit, walk, and bicycle trips. The SF-CHAMP model also provides forecasts of vehicular traffic on regional freeways, major arterials and on the study area local roadway network considering the available roadway capacity, origin-destination demand and congested travel speeds.

The SF-CHAMP model travel demand estimates incorporate the Association of Bay Area Governments (ABAG) land use and socio-economic database and growth forecasts for the year 2030 (Projections 2007), which provide forecasts of economic and population growth for San Francisco, as well as for the

remaining eight Bay Area counties. Within San Francisco, the San Francisco Planning Department is responsible for allocating ABAG's countywide growth forecast to each SFCTA Model Traffic Analysis Zone (TAZ), based upon existing zoning and approved plans, using an area's potential zoning capacity and the anticipated extent of redevelopment of existing uses. The increase in transit and vehicle trips between existing conditions and 2030 No Project conditions was based on a comparison between model output that represents existing conditions and model output for 2030 conditions.

Local Development Traffic and Transit Overlays

In the Project vicinity, several development proposals have recently been approved or are in environmental review. While these projects had been included as part of the growth projections in the SF-CHAMP model, to account for the localized effects of traffic and transit demand, the trip generation associated with those projects was extracted from the SF-CHAMP model output, and replaced by more detailed travel demand estimates used in the environmental review of these projects.

Those projects include the Visitacion Valley Redevelopment program (Visitacion Valley Redevelopment Program Final EIR), Hunters View (227-229 West Point Road EIR), Executive Park Development Plan (conversion of office space to residential, neighborhood serving retail and community space—EIR ongoing), and Brisbane Baylands. The 2030 No Project condition also assumes development within Hunters Point Shipyard associated with the approved Phase I, buildout of the existing Hunters Point Shipyard Redevelopment Plan, and proposed development within India Basin. Travel demand associated with Hunters Point Shipyard and India Basin development was developed consistent with the methodology described below for the Project conditions. No new development was assumed for Candlestick Point in the 2030 No Project condition, as there are no previously approved plans for the area.

Sunday PM Peak Hour Traffic Forecasts

Since the SF-CHAMP model is a weekday travel demand model, future year Sunday PM peak hour conditions were estimated based on the net growth developed for the weekday PM condition. Weekday PM to Sunday PM conversion factors were developed for each intersection, based on the existing relationship between weekday PM and Sunday PM peak hour, as determined from existing traffic counts.

4. Transportation Improvements Proposed as Part of the Project

Roadway Improvements

The Project would include on-site and external transportation improvements. The internal street network and external roadway improvements were designed to support transit, bicycle and pedestrian circulation, as shown in Figure III.D-6 (Proposed Roadway Improvements). Proposed roadway improvements would include the following:

Harney Way Widening—The existing four-lane Harney Way would widened to the north and south of its existing alignment, and would be rebuilt to contain between two and three travel lanes in each direction, turn pockets, two BRT-only lanes, Class I and Class II bicycle facilities, new sidewalks, as well as landscaped area. Initially, the roadway would be rebuilt as a new five-lane roadway (with right-of-way

SOURCE: Fehr & Peers, 2009.

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FIGURE III.D-6

Candlestick Point — Hunters Point Shipyard Phase II EIR

PROPOSED ROADWAY IMPROVEMENTS

reserved for additional lane(s) to be built in the future as needed for increased traffic levels). There would be two lanes in each direction, with eastbound left-turn lanes at Thomas Mellon Circle and Executive Park Boulevard East and a westbound right-turn lane at the Executive Park Boulevard East intersection. Figure III.D-7 (Proposed Harney Way Widening—Initial Configuration) presents the initial phase of Harney Way widening. A Class II bicycle lane would be provided on the north side of the roadway, and a Class I bicycle path would be provided on the south side of the roadway. Two exclusive Bus Rapid Transit (BRT)[115] lanes would be constructed adjacent to the roadway on its north side. They would be separated from the roadway by a six-foot median that would widen to ten feet at the proposed BRT stops to allow for a passenger-loading platform. A BRT stop at the intersection of Harney Way and Thomas Mellon would serve the proposed Executive Park development. Six lanes would be constructed west of Thomas Mellon Drive to connect with the future modifications to the US-101 interchange. The BRT right-of-way has been designed to meet "rail ready" standards for future conversion to light rail, although such conversion is not contemplated in this Project. New traffic signals would be installed at these intersections. After games at the new 49ers stadium, left turns would be prohibited at the two Harney Way intersections with Thomas Mellon Drive and Executive Park Boulevard for a period to allow for the configuration of the roadway to change to four westbound auto lanes and one eastbound auto lane.

Under the final configuration, a portion of the landscaped area installed as part of the initial widening would be rebuilt to provide an additional lane from the proposed Harney Interchange east to Arelious Walker Drive, if necessary. Figure III.D-8 (Proposed Harney Way Widening—Ultimate Configuration) presents the final configuration of the Harney Way widening.

New and Improved Roadways—The street network proposed for Hunters Point Shipyard and Candlestick Point would be an extension of the existing grid of the adjacent Bayview neighborhood, using typical Bayview block sizes. Within Candlestick Point the extension and completion of the street network would enhance access between the existing neighborhoods and the existing and proposed waterfront park. Within Hunters Point Shipyard, the street grid would be aligned to focus on connections to the waterfront.

Streets would be designed as complete streets consistent with the Better Streets Plan (Draft for Public Review, June 2008) to enable safe access for all users[116]. Proposed techniques would include driveway access management; traffic calming features such as signage and striping, pedestrian bulbouts where feasible at intersections, and refuge islands; streetscape amenities including street furniture, lighting, and plantings; and other features that would facilitate a high-quality pedestrian and bicycle network consistent with San Francisco's "Better Streets" Plan.

The spine of the Project's street network would be a continuous arterial beginning in the northwest of Hunters Point and traveling south to Candlestick Point. The portion of the arterial within Hunters Point

[115] Bus Rapid Transit (BRT) is an integrated system of facilities, services, and amenities that collectively improves the speed, reliability, and identity of bus rapid transit. BRT combines stations, vehicles, services, running ways (e.g., curb bus lanes, median busways, mixed-flow lanes), and Intelligent Transportation Systems (ITS) elements into an integrated system.
[116] Complete Streets are designed and operated to enable safe access for all users. Pedestrians, bicyclists, motorists, and transit riders of all ages would be able to safely move along and across a complete street.

SOURCE: RHAA, 2009.

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FIGURE III.D-7

Candlestick Point — Hunters Point Shipyard Phase II EIR

PROPOSED HARNEY WAY WIDENING – INITIAL CONFIGURATION

SOURCE: RHAA, 2009.

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FIGURE III.D-8

Candlestick Point — Hunters Point Shipyard Phase II EIR

PROPOSED HARNEY WAY WIDENING – ULTIMATE CONFIGURATION

would incorporate Innes Avenue, Robinson Street, and Crisp Avenue. The portion of the arterial connecting Hunters Point and Candlestick Point would incorporate a new Underwood Avenue extension and an improved Ingalls Street and Carroll Avenue. The reconfigured Arelious Walker Drive on the western edge of Candlestick Point would connect to an improved Harney Way at the southernmost point of Candlestick Point.

The Hunters Point Shipyard and Candlestick Point arterial streets would function as the primary thoroughfares of the project, with generally perpendicular collector, parkway and park edge streets playing a subordinate role. BRT lanes would be on the north side of Harney Way before diverting through the Candlestick Point site, using the Yosemite Slough bridge to reach Hunters Point Shipyard. Automobiles would not be permitted to use the Yosemite Slough bridge except on game days, and would instead be routed via Carroll Avenue, Ingalls Street, Thomas Avenue, and Griffith Street. The local streets that form the balance of the street network would be Neighborhood Residential streets.

Hunters Point Shipyard would be served by a four-lane roadway extension of Thomas Avenue connecting to Arelious Walker Drive and Crisp Avenue via Griffith Street. Ingalls Street would contain two travel lanes and on-street parking/loading on both sides of the roadway. The existing portion of Thomas Avenue would be converted from a two-lane to a four-lane facility. On Thomas Avenue, parking would be retained on both sides of the roadway. Innes Avenue east of Donahue Street would be reconfigured to provide for two travel lanes in each direction and on-street parking on both sides of the roadway (this segment was recently constructed as part of HPS Phase I and contains one travel lane in each direction).

Game Day Roadway Network—Several roadway lane configurations would be temporarily changed to allow for the efficient ingress and egress of auto traffic to and from the proposed 49ers stadium before and after games. These roadways include Innes Avenue, Robinson Avenue, and Fisher Avenue on the north side of the Hunters Point Shipyard; Crisp Avenue on the southern side of the Hunters Point Shipyard; Griffith Street, Thomas Avenue, and Ingalls Street between the Shipyard and Candlestick Point; and Arelious Walker and Harney Way on Candlestick Point. Additionally, the Yosemite Slough bridge would be opened to vehicular traffic during this period. The bridge would be able to carry four lanes of auto traffic before and after games. In all cases, a travel lane would be dedicated to the "off-peak" travel direction (away from the stadium pre-game and to the stadium post-game) for local traffic and emergency access vehicles. Traffic control officers would be stationed at major intersections.

Streetscape Improvements—Streetscape improvements are planned for several key Bayview Hunters Point roadways: Harney Way and Innes, Palou, Gilman, Ingerson, and Jamestown Avenues. These streets would serve as primary routes for pedestrians, bicyclists, transit riders, and drivers. They are proposed to enhance the safety and experience of road users and existing residents, and are consistent with San Francisco's "Better Streets" Plan.

Enhanced streetscape design, including street trees, sidewalk plantings, furnishings, and paving treatments would be designed to visually tie together the proposed Project with the greater Bayview neighborhood. Specific streetscape treatments would vary depending on existing right-of-way and traffic demands. Streetscape improvements would take into consideration visibility at STOP-sign controlled intersections.

Yosemite Slough Bridge—A new Yosemite Slough bridge would extend Arelious Walker Drive from Candlestick Point to Hunters Point Shipyard. The bridge would have an 81-foot-wide right-of-way and would contain a 40-foot-wide landscaped greenway, two 11-foot-wide BRT lanes, a sidewalk, and a Class I bicycle path. On 49ers game days, the 40-foot-wide landscaped area would be converted to four peak direction travel lanes for game day auto traffic. The Yosemite Slough bridge would not be used for vehicular traffic at any other time, including secondary events at the new stadium.

The Yosemite Slough bridge is a fundamental component of the proposed BRT service between Hunters Point Shipyard and points to the west, including Candlestick Point, the Bayshore Caltrain station, and the Balboa Park BART station. It would be a continuation of the dedicated right-of-way for BRT on Harney Way and through Candlestick Point that, along with signal priority to BRT vehicles, is essential to provide direct, fast and reliable BRT service, and is designed to be "rail ready" (not to preclude possible conversion to light-rail).

The bridge sidewalk and Class I bicycle path would provide a direct connection between Candlestick Point and Hunters Point Shipyard for pedestrians and bicyclists at all times, and would reduce the potential for conflicts between BRT vehicles and motorists, pedestrians and bicyclists.

During game days, the 40-foot-wide landscaped median would serve as the primary and most-direct route between the stadium parking areas and US-101. This route would minimize the intrusion of game day traffic onto local residential streets (by directing vehicles directly onto Harney Way) and reduce the duration of post-game congestion.

Other Off-site Improvements—The Project would include installation of new traffic signals at existing unsignalized intersections as part of the transit preferential treatment[117] on Palou Avenue, or when traffic volumes warrant signalization at:

- Palou Avenue and Griffith Street
- Palou Avenue and Hawes Street
- Palou Avenue and Ingalls Street
- Palou Avenue and Jennings Street
- Palou Avenue and Keith Street
- Palou Avenue and Lane Street
- Carroll Avenue and Ingalls Street
- Thomas Avenue and Ingalls Street
- Arelious Walker Drive and Carroll Avenue
- Arelious Walker Drive and Gilman Avenue
- Arelious Walker Drive and Ingerson Avenue
- Arelious Walker Drive and Harney Way
- Pennsylvania Avenue/25th Street
- Evans/Jennings/Middlepoint

[117] Transit preferential street treatments include measures (e.g., transit-only lanes, traffic signal pre-emption, sidewalk bus bulbs) that would improve transit travel times and service by giving priority to transit vehicles when conflicts with cars occur.

At the intersection Evans/Jennings/Middlepoint, in addition to signalization, the Project would revise the existing lane configuration on the Evans Avenue and Jennings Street approaches.

- The Project would reconfigure the existing three travel lanes on Evans Avenue for both the eastbound and westbound approaches to provide a shared through and left-turn lane, a through lane, and a right-turn lane. Since there are no bicycle lanes or on-street parking, this reconfiguration of the existing lanes would not impact parking or bicycle travel.
- The Project would reconfigure the southbound approach of Jennings Street to Evans Avenue to provide a southbound left turn pocket, and a shared southbound through and right-turn lane. The reconfiguration of the southbound approach would require displacement of about 200 feet of on-street parking on the west side of Jennings Street, which would eliminate about 8 to 10 parking spaces.

At the intersection of Palou/Griffith/Crisp, in addition to signalization, the Project would revise the existing lane configuration on the westbound Crisp Avenue, eastbound Palou Avenue, and northbound Griffith Street approaches.

- The Project would reconfigure the intersection by removing the southwest leg of Crisp Avenue and creating limited access for the eastern block of Palou Avenue. The Crisp Avenue westbound approach would be restriped to provide two approach lanes, a left-turn lane, and a shared left/through/right lane.
- The Project would also reconfigure the northbound Griffith Street approach to provide two lanes, a shared left/through/right-turn lane, and a right-turn lane. Additionally, the eastbound approach of Palou Avenue would be reconfigured to provide two approach lanes, a left-turn lane, and a shared through and right-turn lane. The reconfiguration of the northbound approach would require displacement of about 200 feet of on-street parking on the east side of Griffith Street, which would eliminate about 8 to 10 parking spaces.

At the intersection of Carroll/Ingalls, in addition to signalization, the Project would revise the existing lane configuration on the westbound approach of Carroll Avenue, the southbound approach of Ingalls Street, and the eastbound approach of Carroll Avenue.

- The Project would reconfigure Carroll Avenue to provide two travel lanes and a bicycle lane in each direction. This would allow for a shared left turn and through lane, and a shared through and right turn at both the east- and westbound approaches. The southbound approach would be reconfigured to allow for two approach lanes: a left-turn lane, and a shared through and right-turn lane. The reconfiguration of the southbound approach would require displacement of about 200 feet of on-street parking/loading on the west side of Ingalls Street.

At the intersection of Thomas/Ingalls, in addition to signalization, the Project would revise the existing lane configuration on the westbound approach of Thomas Avenue.

- The Project would reconfigure the westbound approach of Thomas Avenue to Ingalls Street to provide two lanes, a left-turn lane, and a shared through and right-turn lane. Thomas Avenue would be reconfigured to provide two travel lanes in each direction and on-street parking on both sides of the street.

Transportation Management System—The Project would include a transportation management system. The system would include the installation and coordination of existing and new signals at over 30 intersections in the Project vicinity and the surrounding area using fiber-optic technology including

several changeable message signs and lane use control signals on roadways with reversible lanes. A Transportation Management Center near the 49ers stadium site would operate the system on game days. The Transportation Management Center would be operated by SFMTA.

Transit Improvements

The Transportation Plan would include the following transit improvements, which were assumed as part of the future transportation system:

- Extension of existing Muni routes to better serve the Project site
- Increased frequencies on existing routes to provide more capacity
- Provision of new transit facilities and routes to the Project

New direct transit service is proposed to serve employment trips to downtown San Francisco. Connections to the regional transit network (BART and Caltrain) would serve employment centers in the South Bay and the East Bay. Many of the proposed transit lines would include transit priority systems that would use sensors to detect approaching transit vehicles and alter signal timings to improve transit efficiency. The proposed transit improvements are illustrated in Figure III.D-9 (Proposed Transit Improvements) and are described below:

- Three routes would be extended into the proposed Hunters Point Transit Center: the 24-Divisadero, the 44-O'Shaughnessy, and the 48-Quintara-24th Street.
- Frequencies on the 24-Divisadero would increase to 6 minutes in the AM and PM peak hours. Frequencies on the 44-O'Shaughnessey would remain at 6 minutes and frequencies on the 48-Quintara-24th Street would increase from 15 minutes to 10 minutes in the AM and PM peak hours.
- The Project would also extend the 29-Sunset from its current terminus near the Alice Griffith housing development, near Gilman Avenue and Giants Drive, into the proposed Candlestick Point retail area, and increase its frequency by reducing headways between buses from 10 minutes to 5 minutes during the AM and PM peak hours.
- The T-Third service between Bayview and Chinatown via the Central Subway would convert from one-car to two-car trains, but headways would remain unchanged. The ultimate service for the T-Third is under study by SFMTA as part of implementation of the Central Subway project, and may change. The information included in this study reflects discussions with SFMTA staff and the best available information at the time.
- The 28L-19th Avenue Limited would be extended to the Hunters Point Shipyard transit center. The 28L-19th Avenue Limited would travel along Geneva Avenue and the proposed Geneva Avenue extension to Harney Way. East of Bayshore Boulevard, the 28L-19th Avenue Limited would operate as BRT, traveling in exclusive bus lanes into the Candlestick Point area. The BRT route would travel through the Candlestick Point retail corridor, and cross over Yosemite Slough into the Hunters Point Shipyard transit center. Frequencies on the 28L-19th Avenue Limited would be increased, and headways between buses would be reduced from 10 minutes to 5 minutes.
- New CPX-Candlestick Express to downtown serving the Candlestick Point site, traveling along Harney Way (with potential stops at Executive Park), before traveling on US-101 toward downtown, terminating at or near the Transbay Terminal.

SOURCE: Fehr & Peers, 2009.

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FIGURE III.D-9

Candlestick Point — Hunters Point Shipyard Phase II EIR

PROPOSED TRANSIT IMPROVEMENTS

- New HPX- Hunters Point Shipyard Express to downtown serving the Hunters Point Shipyard site, traveling from the Hunters Point Shipyard Transit Center, along Innes Street, with stops at the India Basin and Hunters View areas, before continuing along Jennings Street, Cargo Way and Illinois Street to 25th Street, eventually entering I-280 northbound at 25th/Indiana. The HPX would continue non-stop to the Transbay Terminal in Downtown San Francisco.

For the purposes of this document, no assumptions were made about increasing frequencies at Caltrain's Bayshore Station below 30-minute headways, nor about extending Caltrain to downtown or having High-Speed Rail operate on Caltrain right-of-way and using Bayshore Station. Additionally, while SamTrans regional bus service connects the proximate area with the South Bay no assumptions were made for significant transit use of SamTrans.

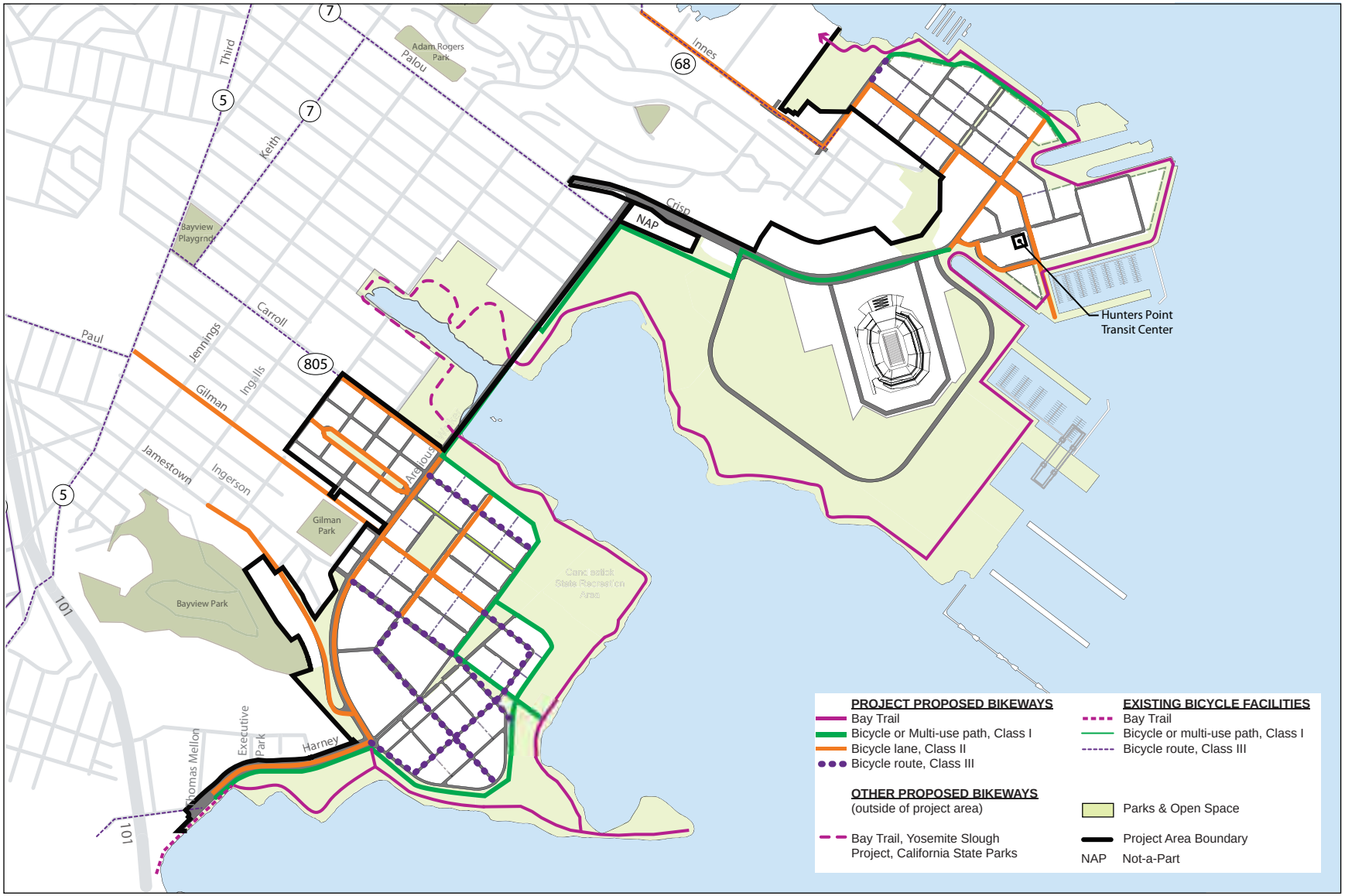
Bay Trail, Blue Greenway, and Bicycle Circulation Improvements

The Project would include the construction of the regionally adopted Bay Trail in the southeastern portion of San Francisco, and incorporation of the Blue Greenway, a network of enhanced pedestrian and bicycle links in through the eastern portion of San Francisco to the waterfront. Trail improvements would include a pedestrian and bicycle trail along the shoreline with connections to the existing and new parks, from the western boundary of Candlestick Point near the Harney Way/US-101 interchange, through the SRA, Yosemite Slough, and HPS shoreline to India Basin. The Bay Trail would be incorporated into the design of the parks.

Bikeways would provide connections within the Project and the surrounding neighborhoods and other parts of the City, including exclusive bikeways on the proposed Yosemite Slough bridge. Bicycle lanes would be provided along major roadways, consistent with City guidelines, and it is anticipated that as the street network develops, the bicycle facilities would be incorporated into the official Bicycle Route network. The Bay Trail would be extended along the entire Project waterfront. There would be bicycle parking in each commercial parking facility and residential garages. New commercial buildings with at least 20,000 gsf of floor area, as well as other facilities and attractions would provide locker and shower facilities. Bicycle racks would also be installed in parks, and along the streetscape of commercial and some residential streets. The proposed bicycle facilities and Bay Trail improvements within Hunters Point Shipyard and Candlestick Point are presented in Figure III.D-10 (Project Bicycle Network and Bay Trail Improvements).

Pedestrian Circulation Improvements

The pedestrian network would encourage walking as a primary mode of transportation within the Project site, and with separated pedestrian pathways, between Hunters Point and Candlestick Point on the Yosemite Slough bridge. Sidewalk and multi-use pathways would allow access to transit facilities and to shopping, schools, and recreation. The interior roadway network would include traffic calming features to facilitate safe pedestrian travel. The streets would be designed to accommodate multi modal travel with features including curb extensions, intersection bulb-outs, raised crosswalks, comprehensive signage, street trees, narrow roadway lanes, and short blocks and other features to slow auto traffic. All pedestrian facilities would meet *Americans with Disabilities Act* (ADA) standards and are designed to conform to San Francisco's "Better Streets Plan" wherever possible. The proposed pedestrian circulation plan for



SOURCE: Fehr & Peers, 2009.

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FIGURE III.D-10

Candlestick Point — Hunters Point Shipyard Phase II EIR

PROJECT BICYCLE NETWORK AND BAY TRAIL IMPROVEMENTS

Candlestick Point and Hunters Point Shipyard is presented on Figure III.D-11 (Project Pedestrian Circulation Plan).

Travel Demand Management Plan

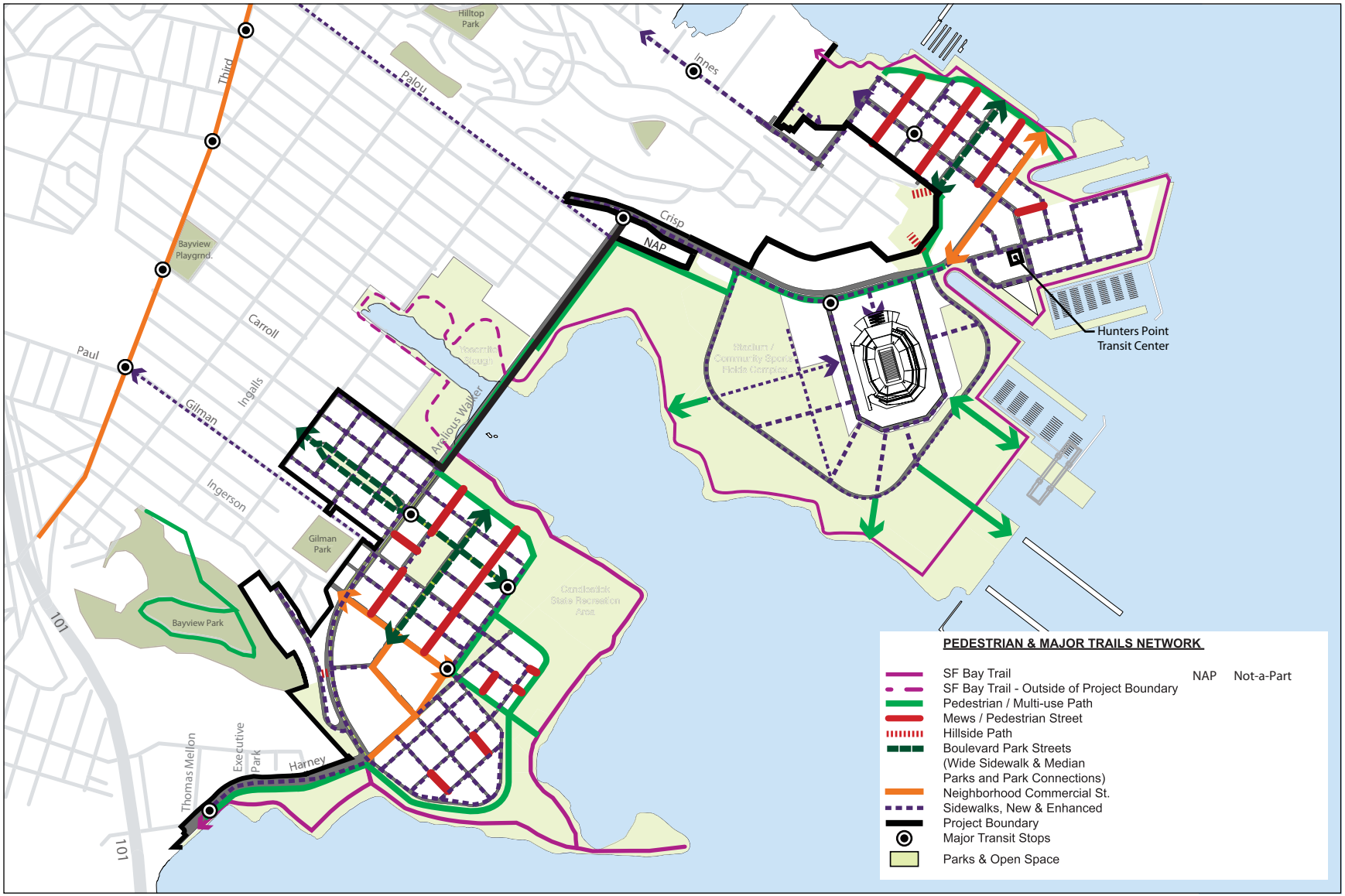
The Project would develop and implement a Transportation Demand Management (TDM) Program designed to reduce use of single-occupant vehicles and to increase the use of rideshare, transit, bicycle and walk modes for trips to and from, as well as within the Project. A draft TDM Program has been developed in consultation with SFMTA and the Planning Department and is available for review at the San Francisco Planning Department. The program would establish target goals, monitoring program, and a reporting program to SFMTA and the Agency. The TDM Program would highlight the demand management qualities of the overall Project, including:

- Jobs-Housing Linkage. By providing a range of job types (retail, research, hospitality, office, etc.) and a range of housing types from affordable apartments to single-family homes, the Project would maximize the potential jobs/housing "matches" on site. Each match reduces the number of vehicle trips that would enter and leave the Project site during peak hours.
- Streets designed for low speed and safe crossings. In addition to new residential and commercial buildings, the Project would provide new infrastructure, including streets. All new streets and intersection upgrades would consider the needs of pedestrians and bicyclists.
- Land uses and transit located to encourage walking. People walk more when destinations are within close proximity, along flat routes with easy street crossings, and through interesting areas with storefronts, street trees, street furniture, and other pedestrian-oriented amenities. The Project embraces these principles, with all homes located within a 15-minute walk of transit and neighborhood retail services integrated into residential blocks. Many existing neighborhoods would also benefit from their proximity to enhanced transit service, schools, retail locations, and jobs with the Project site.

The program would include a menu of TDM tools that, when employed, would make the most of the above design qualities of the Project TDM Plan. These include:

Parking Strategies

- Visitor Variable, Market-Rate Parking Pricing. Visitor parking charges at variable market rates would encourage transit use. This can be accomplished by increasing parking rates during the peak period when transit service is most frequent, or increasing parking rates progressively to favor short-term parking over long-term parking, discouraging commuter parking.
- Maximum Permitted Parking Ratios. The Project includes a maximum permitted of one off-street parking space per residential unit, as well as maximum permitted ratios for other development types.
- Flexible Parking Management Strategies. Additional parking management strategies such as residential permit parking, time of day restrictions, parking technologies, and parking wayfinding would also be considered as needed to supplement other parking strategies.
- Unbundled Residential Parking. As required for all new residential developments with more than 10 units in San Francisco, residential parking would be "unbundled" and sold or leased separately from units. Unbundling parking makes the cost of parking visible to households, and may



SOURCE: Fehr & Peers, 2009.

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FIGURE III.D-11

Candlestick Point — Hunters Point Shipyard Phase II EIR

PROJECT PEDESTRIAN CIRCULATION PLAN

encourage some residents to save money by opting for a single off-street space or no dedicated parking. Unbundled parking would also serve as a "self selection" incentive for residents who prefer to live in car-free or car-reduced neighborhoods.

Transit Strategies and Support Strategies:

- Central Transit Hub. A transit center at Hunters Point Shipyard would enable efficient and convenient transfers while providing a central location for transportation brochures and other information to be distributed and for attended bicycle parking. Major BRT stops throughout the Project site would also include information kiosks and real-time transit updates.
- Enhanced Transit Service and Bicycle Facilities. Exclusive bike lanes and frequent bus rapid transit (BRT) service operating in dedicated lanes with signal priority, would offer convenient alternatives to driving to, from, and within the Project site. Additional transit service would include extended Muni routes, increased Muni frequencies, and enhanced connections to the regional network (BART and Caltrain).
- Bicycle Support Facilities. Bicycle support facilities to encourage bicycling would include parking facilities in both residential and commercial developments (such as racks, indoor/long-term parking, lockers, and showers), attended bicycle parking and repair facilities at major destinations (with discounted rental space for a bike station at the Hunters Point Shipyard Transit Center), and potentially a bike sharing or rental program.
- Wayfinding. A comprehensive wayfinding signage program would support the network of walkways and shared-use paths, encouraging pedestrian and bicycle trips.
- EcoPass. Homeowner's dues would include the cost of transit passes. The transit pass or "EcoPass" would offer significant benefits including a group discount (transit pass costs, while mandatory, would be priced significantly lower than individual passes because they are mandatory), a steady funding stream for enhanced transit service, and a "self selection" incentive—whereby more Eco-Minded (transit-inclined) residents would be attracted to live in the Project site.
- Carshare Services. Local carshare organizations would provide carshare vehicles throughout the Project site. Carshare services, such as City CarShare and ZipCar, allow members to use vehicles when needed, paying based on how much they drive. Employers may include carshare memberships for their employees as an element of their mandatory TDM Program. For multi-unit housing developments, carshare vehicles may be provided in residential garages.
- Employee TDM Programs. Employers of 20 or more employees in the Project site would be required to participate in TDM programs that would encourage the use of transit and facilitate walking and bicycling among their employees through both incentives and disincentives. Elements of the TDM programs may include:
  - > Information Boards/Kiosks. Employers would display transit routes and schedules; carpooling and vanpooling information; and bicycle lanes, routes, paths and facility information on information boards/kiosks or direct employees to web resources. "Real-time" monitors would be located near transit hubs, at outdoor transit shelters and inside lobbies, employment areas and other sheltered, well-lit areas where transit patrons can wait in relative comfort within immediate sightline of the transit stop or station.
  - > Commuter Benefits. The TDM program would include participation in the Commuter Benefits program for tax-free paycheck deductions of transit and bicycle commuter expenses.
  - > Employee EcoPass. Opportunities to provide employees with an "EcoPass" would be pursued, similar to the programs already underway at the University of California and the City of

Berkeley. These passes would allow unlimited transit use and could be purchased at a discount bulk rate on a monthly and/or annual basis, and then be made available to all employees who work on the Project site.

> Carpool/Vanpools. Through their TDM program and in collaboration with the On-site TDM Coordinator, employers would offer carpool and vanpool matching services, subsidies, and priority accommodation. Designated and convenient spaces in parking facilities would be provided free to vanpools and carpools. The transit centers would also have designated signed areas for casual carpooling. Casual carpooling information would be provided through the On-site Coordinator's TDM website, brochures, and targeted marketing.

> Guaranteed Ride Home Program. A Guaranteed Ride Home program supported by employer participation would reimburse transit riders for return trip travel in the event of an emergency when an alternative means of travel is not available.

> Compressed Work Weeks, Flex Time, and Telecommuting. Through these strategies, employees would adjust their work schedule to reduce vehicle trips to the worksite.

Implementation and Monitoring Strategies

- CP-HPS Transportation Management Association. A Transportation Management Association (TMA) would be formed to develop, implement, operate, and administer strategies and programs to manage transportation resources in the Project and HPS Phase I, in accordance with the Project Transportation Demand Management Plan. The Transportation Coordinator (TC) team would act as staff to the TMA. The Board of Directors of the TMA representing private property owners would be established. The TMA would enter into Participation Agreements with property owners in the Project and HPS Phase I, setting forth the rights and obligations of each such owner relating to the programs and fees imposed by TMA.
- On-site Transportation Coordinator and Website. An On-site Transportation Coordinator would provide residents, employers, employees, and visitors with information regarding available transportation alternatives. The Transportation Coordinator would be responsible for implementation, monitoring, and improving on the measures of the TDM plan. The Coordinator would maintain a website to include transportation-related data and real-time transit information. The On-site Coordinator would serve as a liaison to City staff for all transportation concerns/communication needs.
- Targeted Marketing. From the day that the first employee comes in to work and the first family moves in, a plan would be in place to help people discover alternatives to driving alone in a car. The On-site Coordinator would be available to help people plan their trips and work with transportation agencies and others to promote transit, vanpooling, carpooling, and carsharing, bicycling, and walking. In addition to one-on-one outreach, TDM brochures and a website would be available on an ongoing basis. A yearly transportation options "fair" would also be scheduled for the neighborhood, with smaller outreach efforts available to employers and other organizations.
- Monitoring of Transportation Demand. The transportation measures and programs would all be monitored on an annual basis to determine the success of the programs and to allow the On-site Coordinator to make decisions about the allocation of resources or changes in the services that may be needed to better address the needs of the Project area. The objective of the monitoring would be to maximize the use of alternatives to the single occupant automobile and reduce peak hour congestion. A monitoring program could include user surveys, automobile counts, transit ridership, and bicycle and car share usage and costs.

- Monitoring Effectiveness of Congestion-Reducing and Traffic Calming Efforts. As part of annual monitoring, the On-site Coordinator would, in cooperation with SFMTA, review the effectiveness of the Project's transportation measures and other traffic calming measures implemented in the area to reduce congestion due to Project vehicle trips and minimize traffic spillover to neighboring residential streets. If warranted, the On-site Coordinator and SFMTA would consider implementation of additional traffic-calming and congestion-alleviating measures, such as adding additional lanes to the streets that approach Third Street, or other congested areas.

5. Project Travel Demand

This section presents the travel demand methodology and results for the Project development plan—i.e., the 10,500 residential dwelling, about 885,000 square feet of neighborhood- and regional-serving retail, and about 2,650,000 square feet of commercial office and R&D uses. Travel demand associated with sell-out 49er game and a secondary event at the stadium, as well as a sell-out event for the arena is also included in this section.

Project

The transportation effects associated with the travel demand generated by the Project land uses were determined by calculating the daily person-trips generated by the different types of Project land uses, and the portion of those trips that would occur during the peak hours analyzed. After determining the number of person trips generated by the Project, the trips were distributed to geographical origins/destination areas, including five San Francisco areas (downtown CBD, the rest of Superdistrict 1, Superdistrict 2, Superdistrict 3, Superdistrict 4) and three other regions in the Bay Area (South Bay, East Bay and North Bay)[118]. The mode split analysis then determined the portion of these trips made via automobile, transit, or any other mode of transportation, based upon the origin/destination of the trips, the purpose of the trips, and the availability of various modes. Finally, automobile occupancy rates were determined, to yield the average number of individuals in a vehicle, and, thus, determine the number of vehicles that would be traveling to and from the Project study area.

The methods commonly used for forecasting trip generation of development projects in San Francisco are based on person-trip generation rates, trip distribution information, and mode split data described in the Transportation Impact Analysis Guidelines for Environmental Review, SF Planning Department, October 2002 (*SF Guidelines).* These data are based on a number of detailed travel behavior surveys conducted within San Francisco. The data in the *SF Guidelines* are generally accepted as more appropriate than conventional methods because of the relatively unique mix of uses, density, availability of transit, and cost of parking commonly found in San Francisco. However, the methods describe in the *SF Guidelines* cannot be directly applied to the Project because of its large scale, specific location and distinctive character.

Similarly, standard trip generation rates, such as those provided by *Trip Generation,* 7th Edition, 2003, Institute of Transportation Engineers, would not be suitable for the Project, unless appropriate adjustments were made to account for the Project size, mix, and availability of transit.

[118] Superdistricts are travel analysis zones established by the Metropolitan Transportation Commission (MTC). San Francisco is divided into four Superdistricts delineated to capture the different travel characteristics that are associated with the various street network, transit opportunities, and geographical constraints of different areas of San Francisco.

To account for the trip-making patterns of this Project, a state-of-the-practice trip generation forecasting method was used in this analysis. This method was originally developed by Fehr & Peers and others for the US Environmental Protection Agency (EPA) and has been endorsed for use in project-specific and planning-level analyses by a number of jurisdictions, including the California Department of Transportation (Caltrans). This method is commonly referred to as the "4D" method, and generally accounts for the following factors that may influence travel behavior:

- Development scale—the amount of trips generated increases as the amount of development increases;
- Density of the project—the higher the project's density, the less vehicular traffic generated per unit of development;
- Diversity of uses—an appropriate mix of uses can lead to internalization of trips and trip-linking within a project; and,
- Design of project—a walkable, pedestrian- and bicycle-oriented circulation system can help to reduce automobile dependence within a project site.

The general concept behind the 4D method is that projects that deviate from a base case (in this case, ITE trip generation rates which represents a "national average") with respect to the four bulleted variables above exhibit different traffic generation patterns. Elasticities have been derived from travel behavior surveys from the Bay Area to help estimate how traffic generation changes as a function of changes in the 4Ds. Those elasticities are used to adjust the base case trip generation to account for the project's density, diversity, and pedestrian/bicycle friendliness (i.e., design) compared to typical suburban developments reflected in the ITE trip generation rates. Applying the 4D method results in a percentage reduction in vehicular traffic generation from the base case (i.e., ITE *Trip Generation*).

The travel demand analysis assumes implementation of the Project's improvements to transit service and a travel demand management (TDM) program, as described above. The transit improvements would be in addition to those currently proposed as part of SFMTA's Transit Effectiveness Program.

Project Trips by Mode

Table III.D-4 (Project Person and Vehicle Trips by Mode) summarizes the Project peak hour person-trips and vehicle trips during a typical weekday and Sunday. Between 28 and 34 percent of weekday AM and PM peak hour person-trips would be internal/linked trips that would remain within the Project site and would occur primarily by walking and bicycling. External trips would occur via auto, transit, and bicycle modes; approximately 76 percent of peak hour external trips would occur by auto, 21 percent by transit, and 3 percent by bicycling. During the Sundays PM peak hour, fewer trips would be internal to the Project site, and fewer trips would occur via transit. On Sundays between 20 and 33 percent of trips would be internal/linked. Of the external trips, between 79 and 82 percent would be by auto, between 15 and 18 percent by transit, and about 3 percent by bicycle mode.

Project Trip Distribution

Table III.D-5 (Project Weekday AM and PM Peak Hour Distribution Patterns) presents the distribution of the weekday AM and PM transit and vehicle trips to and from San Francisco and areas outside of San

Table III.D-4 Project Person and Vehicle Trips by Mode

	Person Trips					
	Auto	*Transit*	*Bicycle*	*Internal/Linked*	*Total*	*Vehicle Trips*
Weekday AM Peak						
Hunters Point Shipyard	3,078	845	121	1,789	5,833	1,924
Candlestick	3,696	966	144	2,942	7,748	2,310
Total	***6,774***	***1,811***	***265***	***4,731***	***13,581***	***4,234***
Weekday PM Peak						
Hunters Point Shipyard	3,463	1,001	138	1,839	6,441	2,164
Candlestick	7,861	1,889	302	3,920	13,972	4,913
Total	***11,324***	***2,890***	***440***	***5,759***	***20,413***	***7,077***
Sunday PM Peak						
Hunters Point Shipyard	2,674	518	99	1,548	4,839	1,666
Candlestick	7,460	1,379	273	4,176	13,288	4,663
Total	***10,134***	***1,897***	***372***	***5,724***	***18,127***	***6,329***

SOURCE: Fehr & Peers

Table III.D-5 Project Weekday AM and PM Peak Hour Distribution Patterns

	Transit Trips			*Vehicle Trips*		
	Work	*Non-Work*	*Total*	*Work*	*Non-Work*	*Total*
Weekday AM Peak						
Downtown CBD	17%	10%	15%	1%	2%	2%
Rest of Superdistrict 1	19%	11%	17%	2%	3%	2%
Superdistrict 2	12%	11%	11%	9%	6%	8%
Superdistrict 3	26%	39%	29%	35%	41%	37%
Superdistrict 4	8%	4%	7%	5%	2%	4%
Total San Francisco	*82%*	*75%*	*79%*	*52%*	*54%*	*53%*
Brisbane, Daly City, Colma, San Bruno, South San Francisco	11%	20%	13%	21%	32%	26%
Rest of South Bay	3%	4%	4%	7%	5%	6%
East Bay	4%	1%	4%	17%	8%	13%
North Bay	0%	0%	0%	3%	1%	2%
Total	***100%***	***100%***	***100%***	***100%***	***100%***	***100%***
Weekday PM Peak						
Downtown CBD	26%	10%	19%	2%	2%	2%
Rest of Superdistrict 1	23%	11%	18%	3%	3%	3%
Superdistrict 2	11%	11%	11%	10%	6%	8%
Superdistrict 3	18%	40%	27%	28%	44%	38%
Superdistrict 4	5%	5%	5%	4%	3%	3%
Total San Francisco	*83%*	*77%*	*80%*	*47%*	*58%*	*53%*

Table III.D-5 Project Weekday AM and PM Peak Hour Distribution Patterns

	Transit Trips			Vehicle Trips		
	Work	Non-Work	Total	Work	Non-Work	Total
Brisbane, Daly City, Colma, San Bruno, South San Francisco	10%	18%	13%	22%	30%	27%
Rest of South Bay	3%	4%	4%	8%	5%	6%
East Bay	4%	1%	3%	19%	7%	11%
North Bay	0%	0%	0%	4%	1%	2%
Total	***100%***	***100%***	***100%***	***100%***	***100%***	***100%***

SOURCE: Fehr & Peers

Francisco. Project trip distribution was based on information obtained from the SF-CHAMP model for the Traffic Analysis Zones included within the Project boundaries. During the weekday AM and PM peak hours, the majority of transit trips and about half of vehicle trips would occur within the boundaries of San Francisco, with a greater portion of work trips occurring by transit than non-work trips. Within San Francisco, the greatest number of trips would occur between the Project site and Superdistrict 3. Superdistrict 3 is the southeast quadrant of San Francisco and is bounded by the San Mateo County line to the south and San Francisco Bay to the east, and reaches westward to incorporate the Twin Peaks area. For trips outside of San Francisco, the majority would be to and from nearby Brisbane, Daly City, San Bruno and South San Francisco. Sunday trip distribution patterns would be similar to those presented for weekday PM peak hour conditions.

Stadium and Arena

The number of person-trips made by spectators to the proposed football stadium and the arena was estimated based on the proposed number of seats and a sell-out condition. For the stadium, travel demand is also presented for a smaller secondary event with an attendance of about 37,500 spectators.

49ers Game Day Travel Demand at the Proposed Stadium

As noted above, 49er game day travel demand estimates were based on a sellout game, when all 69,000 seats are sold. The number of person-trips made by spectators was estimated based on the number of seats proposed for the new stadium, less the average number of "no-shows." Information provided by the San Francisco 49ers indicates that with a 69,000-seat stadium, there would be approximately 3,450 "no-shows" per game (an average 5 percent), resulting in an actual attendance of 65,550 for a sellout game. In addition to the 65,550 spectators, the 49ers have indicated that currently up to 725 game operations/media personnel attend home games, and that approximately 2,610 other game day employees (concessions, security, janitorial, etc.) are on site each game, for a total on-site population of 68,885 people for a sell-out game.[119]

With the relocation of the stadium and provision of new transit service proposed by the Project, the mode of travel to the stadium is expected to change compared to existing conditions, with increased use of transit. Based on existing attendance data obtained from the 49ers and SFMTA, 81 percent of the

[119] The number of game operations/media personnel and other game day employees is expected to remain similar with a new stadium at Hunters Point Shipyard.

spectators arrive via automobile, and the remaining 19 percent come by transit, including 11 percent on Muni, 5 percent on SamTrans, Santa Clara Transit and Golden Gate Transit[120], and the remaining 3 percent come by other private charter service. Although mode split can vary from game to game, these percentages represent average game day conditions. As noted above, in light of the new transit service proposed by the Project, a modest rise in transit use (from 19 percent to 25 percent) to the stadium was assumed to occur. Given the extent of transit improvements and demonstrated evidence from other locations that the NFL would consider transit as a means to reach games, this increase is a reasonable assumption. This analysis assumes that game operations staff and media personnel would likely use autos. Other game day employees are likely to use transit in a similar ratio as patrons (i.e., 25 percent). In addition to the existing game day transit service provided by Muni and charter bus service, the following transit service was assumed in the travel demand estimates:

- Harney Way BRT. The new express service would run in dedicated bus lanes from the proposed stadium site to key points west and south. This would greatly improve pre-and post-game transit running times as buses would bypass congested traffic conditions on Harney Way. The BRT service would also offer efficient and convenient access to regional transit service, such as Caltrain and BART.
- Palou Avenue Transit Preferential Street. On game days Palou Avenue would be a dedicated transit-only street to allow buses to proceed to the T-Third light rail line and points west and north without mixing in congested pre- and post-game traffic.
- Extension of Existing Transit Routes. In addition to operating "game day express" bus routes from strategic locations throughout San Francisco consistent with current game-day operations, the Project transit plan calls for extending several existing Muni bus routes (i.e., 24-Divisadero, 44-O'Shaughnessy, and 48-Quintara-24th Street) to provide regular service into the Project site. This service would be part of regularly scheduled service and would not be special game day service. As a result, patrons would be expected to be familiar with the routes.

Table III.D-6 (Projected Football Game Day Trip Generation by Mode) summarizes the number of people on-site by mode of access, and the number of post-game transit and vehicle trips associated with a sell-out game. The number of vehicle trips was determined by dividing the number of attendees that arrive via auto by the vehicle occupancy rate (VOR). Average VORs not only vary by type of vehicle but can also tend to vary depending on the type of stadium seating. For example, existing San Francisco 49ers data indicate that the average VOR for spectators in the club seating sections is 2.0, while the average VOR for spectators in the general seating sections is 3.0.

The number of vehicles exiting the Project site following a game was determined based on the parking constraints associated with limiting game day off-street parking supply to 17,415 parking spaces, and variable factors such as game score, weather, traffic conditions, and the post game activities. An additional factor is the potential synergy after the football game between the stadium and the regional retail development at Candlestick Point, which may result in more spectators electing to stay later than currently do at Candlestick Park.

[120] In 2008 and 2009, game day SamTrans, Golden Gate Transit, and VTA transit service have been replaced with private charter. Ridership is expected to remain similar.

Table III.D-6 Projected Football Game Day Trip Generation by Mode

	Attendees by Mode	Vehicle Trips	Transit Trips
Spectators			
Auto	49,162	18,135	—
Charter Bus	3,656	—	3,656
Transit	12,732	—	12,732
Subtotal	*65,550*	*18,135*	*16,388*
Employees/Media			
Auto	2,683	2,000	—
Transit	653	—	653
Subtotal	*3,336*	*2,000*	*653*
Total	***68,886***	***20,135***	***17,041***

SOURCE: Fehr & Peers.

As noted above, the off-street parking supply dedicated for a football game would be 17,415 spaces, of which 340 spaces adjacent to the stadium would be reserved for buses, and the remaining 17,075 would be for private autos, RVs, limos, etc. Of the 17,075 spaces, 16,075 spaces would be adjacent to the stadium and the R&D development, and 1,000 spaces would be provided in Candlestick Point within a parking structure. As a result, 3,059 vehicles of the total unconstrained demand of 20,134 would not be able to park on-site on game days. These vehicles would likely park in other off-site parking lots and either walk or take transit into the stadium area. Therefore, although the demand for travel to the Project site on game days would be 20,134 vehicles, the actual amount that would park within the Project site on game days would be constrained by the 17,075 total parking spaces provided for game day spectators and/or employees.

Therefore, for a sell-out game, the vehicle exiting demand for the hour immediately following the end of the game would roughly range between 14,500 vehicles if there are some early and some late departures, and 17,100 vehicles if everyone attempted to leave at the end of the game. A typical end time for a Sunday football game is 4:00 P.M.

The geographic distribution of spectators was obtained from information provided by the San Francisco 49ers on their season ticket holders. Since the vast majority of football spectators are season ticket holders, the pattern can be expected to be representative of travel patterns by both season, as well as non-season, ticket holders. The information obtained from the 49ers indicates that approximately 40 percent of the season ticket holders reside in the South Bay, 16 percent in the East Bay, 14 percent within San Francisco, and 10 percent in the North Bay counties. The remaining 20 percent reside in locations outside the Bay Area such as the Central Valley and Sacramento.

Secondary (Non-Football) Events at the Proposed Stadium

It is anticipated that other types of events, such as soccer games or concerts, may also be scheduled at the stadium. A typical secondary event at the new stadium could occur at any time of day and on any day of the week, with an expected crowd ranging from 15,000 (e.g., monster truck rally) to sell-out

conditions. For purposes of the transportation analysis, an event with 37,500 spectators was analyzed, which reflects events such as a Metallica concert. Assuming an approximate weekday evening start time of about 7:00 P.M., the weekday PM peak hour (5:00 to 6:00 P.M.) was analyzed for pre-event conditions to address transportation impacts associated with possible secondary events on evening commute traffic conditions. Secondary events would be limited to 20 total occurrences per year.

Unlike football games, where there would be special transit service to the stadium, it is assumed that for secondary events only regularly scheduled transit service would be provided by Muni and only a small percentage of private charter buses would be expected. However, the amount of regularly scheduled PM peak period transit service serving the new stadium would be substantial, such that transit mode share for a secondary event at the stadium would be about 25 percent. It is estimated that the 37,500 spectators would generate about 28,125 persons coming by autos, and 9,375 persons taking transit, including regularly scheduled service and charter buses. Assuming that the average number of spectators per auto for a secondary event would be similar to that for football spectators in the general seating section (i.e., 3 spectators per auto), the 28,125 persons taking autos would translate to 9,375 vehicles to the stadium, and up to 10,100 vehicles including employees.

Based on a technical paper on major event traffic (ITE, 1997), it was assumed that approximately 25 percent of the total number of spectators at a secondary event would arrive within the one hour prior to the event start time, 50 percent would arrive within the second hour, and the remaining 25 percent would arrive within the third hour prior to the event start time. As such, about 50 percent, or 4,688 of the spectator vehicles would arrive between 5:00 and 6:00 P.M. for a weekday evening event starting at 7:00 P.M. Employees would arrive to the site earlier than 5:00 P.M.

The geographic distribution of trips associated with a secondary event would vary depending on the event. However, for the purposes of this transportation analysis, it was assumed that the geographic location of the secondary event spectators would be similar to that of the football spectators, where approximately 40 percent would come from the South Bay, 16 percent from the East Bay, 14 percent from within San Francisco, 10 percent from the North Bay, and 20 percent from locations outside of the Bay Area.

Events at the Proposed Arena

The Project also includes a new 10,000-seat arena within Candlestick Point that would be used for theater productions, concerts, speaking engagements, educational events, or sporting events, while most events at the arena would be for smaller audiences. It is anticipated that up to 150 events per year could occur at the arena (e.g., Wednesday, Friday, and Saturday every week per year). Similar to the analysis of secondary events at the stadium, assuming an approximate weekday evening start time of 7:00 P.M., the weekday PM peak hour (5:00 to 6:00 P.M.) was analyzed for pre-event conditions to address transportation impacts associated with sold-out events that may occur at the arena. Although no specific program has been developed for events at the arena, sell-out events with 10,000 attendees occurring during weekday evenings would likely be infrequent.

The analysis of a sold-out event at the arena assumes that only regularly scheduled transit service would be provided and that only a small number of attendees would arrive by private charter bus. The analysis assumes that 20 percent of attendees would arrive by transit. Therefore, of the 10,000 spectators, 2,000

would be expected to arrive by transit and 8,000 would be expected to arrive via auto. Assuming that the average vehicle occupancy for a sold-out event at the arena would be similar to that of spectators to a 49ers game or for a secondary event at the stadium (i.e., 3 spectators per auto), the 8,000 people arriving via auto would generate an additional 2,667 vehicles to the stadium, and up to 2,860 vehicles including employees (assuming similar ratios of employees to spectators as football game days).

Arrival and departure patterns for a sold-out event at the arena would likely be similar to those of secondary events at the stadium. It was assumed that 50 percent of the attendees, or 1,333 vehicles and 1,000 transit trips, would arrive between 5:00 and 6:00 P.M. for an event that begins at 7:00 P.M. Employees would arrive earlier and would not affect the 5:00 to 6:00 P.M. peak hour.

Similar to secondary events at the stadium, the geographic distribution of trips associated with events at the arena would vary depending on the event. For purposes of this analysis, it was assumed that the geographic location of the attendees would be similar to that of the football spectators, with 40 percent of attendees arriving from the South Bay, 16 percent from the East Bay, 14 percent from within San Francisco, 10 percent from the North Bay, and 20 percent from locations outside the Bay Area.

Parking Demand

The *SF Guidelines* methodology for estimating parking demand was used to calculate the parking demand associated with the land uses for each analysis scenario. Parking demand was estimated separately for residential and non-residential uses as follows:

- Residential Parking Demand—For individual development projects, residential parking demand is estimated based on the number and type of housing unit (i.e., studios/one bedroom versus two and two-plus bedroom units, and affordable versus market rate housing) that would be constructed.
- Non-Residential Parking Demand—Non-residential demand was estimated for both short-term and long-term demand. Long-term demand refers to demand generated by employee trips by auto, while short-term demand refers to demand associated with visitor trips. Long-term demand was calculated by applying the vehicle mode choice by Project subarea to the projected number of new employees associated with each land use. Average hour short-term demand was calculated by applying an average turnover of 5.5 vehicles per space to the daily non-work trips by vehicle (one-way trips).

Table III.D-7 (Project Parking Demand) presents the residential and non-residential parking demand for the Project. The parking demand excludes the stadium and arena event demands presented in the previous section.

Table III.D-7 Project Parking Demand

	Residential	Non-Residential		
Project Area	*Long Term Demand*	*Long Term Demand*	*Short-Term Demand*	*Total Demand*
Hunters Point Shipyard	3,110	3,818	996	7,924
Candlestick Point	9,212	1,475	2,622	13,309
Total	***12,322***	***5,293***	***3,618***	***21,233***

SOURCE: CHS Consulting, LCW Consulting

Loading Demand

The *SF Guidelines* methodology for estimating commercial vehicle and freight loading/loading demand was used to calculate the demand associated with each analysis scenario. Daily truck trips generated per 1,000 square feet were calculated based on the rates contained in the *SF Guidelines*, then converted to hourly demand based on a 9-hour day and a 25-minute average stay. Average hourly demand was converted to a peak hour demand by applying a peaking factor, as specified in the *SF Guidelines*. Table III.D-8 (Project Loading Demand) presents the number of trucks generated by the Project land uses on a daily basis, and the demand for loading dock spaces during the peak hour of loading activities.

Table III.D-8 Project Loading Demand

Project Area	*Daily Truck Generation*	*Peak Hour Loading Dock Space Demand*
Hunters Point Shipyard	713	41
Candlestick Point	507	29
Total	***1,220***	***70***

SOURCE: LCW Consulting.

6. Transit Delay Methodology

Project impacts to transit measured in terms of increases to transit travel times on routes serving the Project vicinity which would be most likely affected by congestion associated with Project-generated vehicle trips. The analysis evaluated the increases to transit travel times associated with the following three influencing factors.[121]

- **Traffic congestion delay**—Traffic congestion associated with increases in area traffic slow down transit vehicles and results in increased transit travel times. Traffic congestion delays were calculated by summing the average vehicular delay at each intersection along the transit line's route within the study area. The increase in total route segment delay is equal to the increase in travel time associated with the Project.
- **Transit re-entry delay**—Transit vehicles typically experience delays after stopping to pick up and drop off passengers while waiting for gaps in adjacent street traffic in order to pull out of bus stops. As traffic volumes on the adjacent street increase, re-entering the flow of traffic becomes more difficult and transit vehicles experience increased delay. Transit re-entry delay was calculated using empirical data presented in the 2000 Highway Capacity Manual (HCM). Total transit re-entry delay for each route was calculated as the sum of transit re-entry delay at each stop within the study area.
- **Passenger boarding delay**—Although increases in transit ridership are generally viewed positively, the amount of time a transit vehicle has to stop to pick up and drop off passengers (i.e., the transit vehicle dwell time) is directly correlated to the number of passengers boarding the

[121] The methodology used is similar to that used in the *San Francisco Bicycle Plan Draft EIR*, San Francisco Planning Department, November 2008, except that methodology included the additional transit delay associated with substantial increases in bicycle volumes, which was appropriate for a project contemplating large-scale changes to the City's bicycle network. Bicycle volumes are not expected to substantially change as part of this project, so the "bicycle delay" was not included. However, instead, this evaluation includes the added delay associated with increases in passenger boardings, which is more appropriate for this project since the project includes major improvements to area transit service.

vehicle. If, as proposed, the Project includes substantial improvements to transit service in the future (and as general transit ridership grows), vehicles would have to spend more time at stops, which may increase overall transit travel times. Passenger boarding delay was calculated assuming two seconds per passenger boarding for buses, and 0.5 seconds per passenger boarding for light rail vehicles. Passenger boardings within the study area were estimated by examining the increases in ridership across the study area cordons.

Although the transit routes in the study area would not be extended into the study area under existing conditions or under 2030 No Project conditions, transit delay for those scenarios was calculated as if the transit routes were extended only for purposes of comparing Project impacts. Generally, the increases in travel times associated with the Project are smaller than those associated with the increases expected between existing and 2030 No Project conditions. It should be noted that the determination of additional transit vehicles needed to maintain headways accounts for congestion on local streets, and does not include additional delay due to increased freeway congestion which would affect lines traveling on US-101 and I-280.

The Project was determined to have a significant impact if it would increase transit travel times such that additional transit vehicles would be required to maintain the proposed headways. This was assumed to be the case if either the Project's travel time increases to a particular route would be greater than ½ its proposed headway or if the number of required vehicles estimated using SFMTA's cost/scheduling model, which takes into account scheduled breaks and extra time built into schedules, increases by one or more vehicles with the addition of the Project characteristics.

The results of the analysis, in terms of additional buses needed to maintain headways, are summarized in Table III.D-9 (Additional Muni Transit Vehicle Requirements—2030 Conditions Weekday AM and PM Peak Periods). The transit vehicle requirements are presented for Project conditions (which reflects increases in transit travel times from 2030 No Project conditions) and for 2030 No Project conditions (which reflects increases in travel times between existing and 2030 No Project conditions). Additional information regarding the transit delay methodology and analysis results is included in the Transportation Study.

7. Transit Capacity Utilization Analysis Methodology

The impact of additional transit ridership generated by the Project was assessed by comparing the projected ridership to the available transit capacity. Transit "Capacity Utilization" refers to transit riders as a percentage of the capacity of a transit line, or group of lines combined and analyzed as cordons or Screenlines across which the transit lines travel. The transit capacity utilization analysis was conducted for three conditions:

- At three cordons in the Project vicinity to identify the localized impacts of Project transit trips on Muni routes
- At the four standard Downtown Screenlines used to assess impacts on transit service between downtown and the rest of the City. The Downtown screenline analysis is conducted at the maximum load point (i.e., the point of greatest demand) for most transit lines traveling into and out of Downtown
- At the three standard Regional Screenlines to determine impacts on regional service providers

Table III.D-9 Additional Muni Transit Vehicle Requirements—2030 Conditions Weekday AM and PM Peak Periods

Route	Project Requirement		2030 No Project Needs	
	AM	PM	AM	PM
9-San Bruno	1	1	5	7
23-Monterey	0	0	1	1
24-Divisadero	1	3	1	0
28L-19th Avenue/Geneva Limited	1	1	1	1
29-Sunset	1	3	1	0
44-O'Shaughnessy	2	2	3	4
48-Quintara-24th Street	1	0	1	1
54-Felton 2	0	1	1	1
T-Third	0	1	2	1
Total	***7***	***12***	***16***	***16***

SOURCE: Fehr & Peers

Muni

The number of AM and PM peak hour riders was obtained from Muni monitoring data for existing conditions, and adjusted for future year 2030 No Project conditions as described above using the SF-CHAMP travel demand model. The service capacity of each line was estimated by multiplying the passenger capacity of each transit vehicle by the number of actual trips that occurred when the ridership data was collected. The capacity includes seated passengers and an appreciable number of standing passengers per vehicle (the number of standing passengers is between 30 and 80 percent of the seated passengers depending upon the specific transit vehicle configuration). The maximum loads, including both seated and standing passengers, vary by vehicle type and are 45 passengers for a 30-foot bus, 63 passengers for a 40-foot bus, 94 passengers for a 60-foot bus, and 119 passengers for a light-rail vehicle. The percent utilization of capacity was then calculated by comparing the ridership demand to the capacity provided. Muni has established a capacity utilization standard of 85 percent.

The Muni capacity utilization analysis was conducted at three cordons at the perimeter of the study area. The three cordons and the Muni lines included in each analysis cordon are:

- North cordon at Cesar Chavez Street: T-Third, 9-San Bruno, 19-Polk lines
- West cordon located west of US-101: 23-Monterey, 24-Divisadero, 29-Sunset, 44-O'Shaughnessy, 26-Quintara-24th Street, 54-Felton
- East of Third Street: 19-Polk, 23-Monterey, 29-Sunset, 44-O'Shaughnessy, 54-Felton. The East of Third cordon was analyzed to assess the degree to which Project transit demand between the Project site and the T-Third Street light rail service would affect localized transit capacity

Downtown screenlines examine the overall utilization of Muni transit capacity into and out of downtown San Francisco from the Northeast, Northwest, Southeast, and Southwest of San Francisco. The downtown screenline analysis is included in the *SF Guidelines*, and has been recently updated to 2030

conditions as part of the analysis of the Planning Department's downtown Transit District Center project.

Regional Service Providers

Regional transit service was evaluated at the screenline level for the locations where different regional transit service enters San Francisco, including the North Bay (Golden Gate Transit and Ferries), East Bay (BART, AC Transit, Ferries), and South Bay (BART, Caltrain, SamTrans). All of the regional transit operators except BART have a one-hour load factor standard of 100 percent, which would indicate that all seats are full. BART has a peak period load factor standard of 115 percent, which indicates that all seats are full, and an additional 15 percent of the seating capacity are standees (i.e., 1.15 passengers per seat). The regional screenline analysis is included in the *SF Guidelines*, and has been recently updated to 2030 conditions as part of the analysis of the Planning Department's downtown Transit District Center project.

Additional information regarding the transit capacity utilization analysis, and illustration of the location of cordon and screenline locations, is included in the *Transportation Study*.

On-Site and Off-Site Construction Impacts

Impact TR-1: Construction Vehicle Traffic and Roadway Construction

Impact TR-1 **Construction of the Project would result in transportation impacts in the Project vicinity due to construction vehicle traffic and roadway construction and would contribute to cumulative construction impacts in the Project vicinity. (Significant and Unavoidable with Mitigation)** ***[Criterion D.n]***

Buildout of the Project would occur over a 20-year period between 2010 and 2029. Initial construction activities would include demolition of existing structures, utility relocation and site clearance and grading at Hunters Point Shipyard to make the land available for the new stadium. The new stadium and the Yosemite Slough bridge are anticipated to be completed by 2017 in time for the 2017 football season.

Construction of the Project would occur in several phases. The duration of each phase would vary, depending on the type of development (e.g., residential, retail, office) and the amount of building space included in each phase. The majority of development would occur and be occupied by the end of the second phase, which has a scheduled completion date of 2021. The majority of the roadway network improvements would occur by 2017 (Phase I), and most transit improvements would be phased in by 2021 (within Phase I and Phase II). Construction impacts within the Project site would affect new residents, employees, and visitors to the area. Overall, throughout the construction period the addition of worker-related vehicles and transit trips would be less than those associated with Project conditions at full buildout.

During construction of the Project phases, building activities would generate traffic volumes from construction workers, truck deliveries of supplies and construction equipment, and the hauling of soils during Project grading and excavation. The peak phases of construction activities would occur between 2012 and 2016, when grading and infrastructure improvements would be ongoing at both Candlestick

Point and Hunters Point Shipyard. During this phase, there would be between 50 and 180 construction workers that would be on-site on a daily basis, and between 140 and 570 construction truck trips that would travel to and from the site on a daily basis. These truck trip estimates assume that about 40 percent of the required import fill materials would be brought onto the site via barge, with the remaining arriving by truck. Shoreline improvements at both Hunters Point Shipyard and Candlestick Point would peak in 2016 and 2017, and would require an additional 40 to 50 construction workers on-site.

Construction related activities would generally occur Monday through Saturday, between 7:00 A.M. and 8:00 P.M., and the typical work shift for most construction workers would be from 7:00 A.M. to about 3:30 P.M. Construction is not anticipated to occur on Sundays or major legal holidays, but may occur on an as-needed basis. The hours of construction would be stipulated by the Department of Building Inspection, and the contractor would be required to comply with the San Francisco Noise Ordinance.[122] Delivery and removal of extra long or wide bridge construction components, equipment, or materials may occur outside theses hours on an as-needed basis.

Construction staging would mostly occur within the individual sites under construction or along existing street right-of-way. Construction staging would involve staging of construction vehicles, storage of construction materials, construction worker vehicles, delivery, and hauling trucks. Due to the large amount of vacant land in the Project site, construction staging would occur on-site, and construction-worker vehicles would likely park near construction sites in the Project site during most phases, and would not occupy spaces on neighborhood streets.

While the exact routes that construction trucks would be using would depend on the location of individual construction sites, it is expected that Harney Way, Hunters Point Expressway, Innes Avenue, Evans Avenue, Cesar Chavez Street, and Third Street would be the primary haul routes between US-101 and the various components of the Project.

In general, construction related transportation impacts would include impacts in the immediate vicinity of the development project under construction, on roadways within the Project site, and cumulative construction traffic impacts along the roadways in the Bayview Hunters Point neighborhood. Since the Project includes building construction as well as construction of a new street system and transit route extensions into the Project site, all Project construction operations would include plans for the closure of traffic/parking lanes and sidewalks adjacent to construction sites. The closure of sidewalks and parking lanes could last throughout the entire construction phase for each building or group of buildings. It is possible that more than one location within the Project site could be under construction at any one time and that multiple travel lane closures may be required.

During the construction period, temporary and intermittent disruption to existing and proposed transit routes and bus stops may occur, and some bus routes may need to be temporarily rerouted (for example, the 29-Sunset on Gilman Avenue and Giants Drive, the 54-Felton on Ingalls, the 23-Monterey and 44-O'Shaughnessey on Palou Avenue, and the 19-Polk on Innes Avenue. In addition, temporary and intermittent interference to transit operations caused by increased truck movements to and from the

[122] The San Francisco Noise Ordinance permits construction activities seven days a week, between 7:00 A.M. and 8:00 P.M.

construction sites may occur. Any change in transit routes and stops would have to be coordinated and approved by the SFMTA.

Due to the reduction in travel lanes, the remaining travel lanes would become more congested with automobiles, trucks and buses, which would pose a greater challenge for bicycle travel in the area. Since bicycle traffic in the Project vicinity is relatively low, this impact is not anticipated to be significant. Existing pedestrian volumes along the key access routes and at the proposed construction sites are low and, therefore, any sidewalk closures or rerouting of the walkway would not significantly affect pedestrian circulation. In general, temporary pedestrian walkways must be maintained in order to facilitate pedestrian movements.

The construction activities associated with the Project would overlap with construction activities of other development projects in the area, notably the HPS Phase I, Executive Park site, Brisbane Baylands, Visitacion Valley, India Basin Shoreline, and the Hunters View site. In addition, the Project construction activities would also overlap with nearby proposed transportation improvement projects, such as the US-101/Harney interchange improvements, and the Geneva Avenue Extension. These overlapping construction activities would increase the number of construction worker vehicles and trucks traveling to and from the project sites along Harney Way and Jamestown Avenue for the Executive Park project and for development within Candlestick Point, and on Cesar Chavez Street and Evans Avenue for the India Basin Shoreline, Hunters View project, and development within Hunters Point Shipyard. For example, construction activities of one or more projects that adversely affect roadway capacity (e.g., Harney Way widening), combined with construction vehicle traffic traveling to and from the roadway project and nearby development projects under construction (e.g., Executive Park and Candlestick Point), could result in increased delays due to traffic diversions and substantial increases in truck traffic.

Given the magnitude of development proposed for the area, the Project's prolonged construction period, and the lack of certainty about the timing of the projects in the area, significant Project-related and significant Project contributions to cumulative traffic and circulation impacts could occur on some roadways, such as US-101, Cesar Chavez Street, Evans Avenue, Harney Way, and Bayshore Boulevard. Cumulative impacts would include construction detours and increased travel times, although the extent and duration of delay would vary depending on individual driver's origin and destination, time of travel and use of alternate routes. Implementation of individual traffic control plans would minimize impacts associated with each project and reduce each project's contribution to cumulative impacts in overlapping areas. However, some disruption and increased delays could still occur even with implementation of traffic control plans, and it is possible that significant construction-related traffic impacts on local and regional roadways could still occur.

MM TR-1 *Candlestick Point–Hunters Point Shipyard Phase II Construction Traffic Management Program. The Project Applicant shall develop and implement a Candlestick Point–Hunters Point Shipyard Phase II Construction Traffic Management Program to minimize impacts of the Project and its contribution to cumulative impacts related to construction activities and construction traffic. The program shall provide necessary information to various contractors and agencies as to how to maximize the opportunities for complementing construction management measures and to minimize the possibility of conflicting impacts on the roadway system, while safely accommodating the traveling public in the area. The program shall supplement and expand, rather than modify or supersede any manual, regulations, or provisions set forth by SFMTA, DPW or other City departments and agencies.*

Preparation of the Construction Management Program shall be the responsibility of the Project Applicant, and shall be reviewed and approved by SFMTA and DPW prior to initiation of construction. The Project Applicant shall update the program prior to approval of development plans for Phase II, Phase III, and Phase IV of construction to reflect any change to Project development schedule, reflect transportation network changes, to update status of other development construction activities, and to reflect any changes to City requirements.

The program shall:

- *Identify construction traffic management practices in San Francisco, as well as other jurisdictions that although not being implemented in the City could provide useful guidance for a project of this size and characteristics.*
- *Describe procedures required by different departments and/or agencies in the City for implementation of a construction management plan, such as reviewing agencies, approval process, and estimated timelines.*
- *Describe coordination efforts associated with the Navy remediation efforts and scheduling regarding construction vehicle routing via the Crisp gate.*
- *Identify construction traffic management strategies and other elements for the Project, and present a cohesive program of operational and demand management strategies designed to maintain acceptable levels of traffic flow during periods of construction activities in the Bayview Hunters Point area. These could include construction strategies, demand management strategies, alternate route strategies, and public information strategies.*
- *Coordinate with other projects in construction in the immediate vicinity, so that they can take an integrated approach to construction-related traffic impacts.*
- *Present guidelines for selection of construction traffic management strategies.*

Implementation of mitigation measure MM TR-1 would help minimize the Project construction-related transportation impacts, and the Project's contribution to cumulative-construction related transportation impacts. However, some disruption and increased delays could still occur even with implementation of mitigation measure MM TR-1, and it is possible that significant construction-related transportation impacts on local and regional roadways could still occur. Localized construction-related transportation impacts would therefore remain significant and unavoidable.

Operational Impacts

Impact TR-2: Project and Cumulative Impacts to Traffic Volumes

Impact TR-2 **Implementation of the Project would cause an increase in traffic that would be substantial relative to the existing and proposed capacity of the street system, even with implementation of a Travel Demand Management Plan. (Significant and Unavoidable with Mitigation)** ***[Criterion D.a]***

The travel demand analysis presented above and the number of vehicle trips assumed in the traffic impact analysis reflects implementation of the Project TDM Plan to encourage transit use and discourage use of single-occupant vehicles. The results of the traffic impact analysis presented in Impact TR-3 though Impact TR-13 below indicate that implementation of the Project would result in significant increases in traffic volumes, and at some locations impacts would be significant and unavoidable. The

Project also would make a significant contribution to cumulative impacts at some locations. To minimize the potential for an increase in Project-generated vehicles and the Project's contribution to significant cumulative impacts, implementation of the Project TDM Plan would be required.

The final TDM Plan has not been formally approved yet[123] and mitigation measure MM TR-2 is required to ensure the final TDM Plan will be prepared and implemented. Thus, mitigation measure MM TR-2 below requires preparation, approval, and implementation of the final TDM Plan.

MM TR-2 *TDM Plan. The Project Applicant shall prepare and implement a final TDM plan, which shall include the following elements:*

- *Visitor Variable, Market-Rate Parking Pricing*
- *Maximum Permitted Parking Ratios*
- *Flexible Parking Management Strategies*
- *Unbundled Residential Parking*
- *Transit Strategies and Support Strategies*
- *Central Transit Hub*
- *Enhanced Transit Service and Bicycle Facilities*
- *Bicycle Support Facilities*
- *Wayfinding Signs*
- *EcoPass for Residents*
- *Carshare Services*
- *Employee TDM Programs*
  - > *Information Boards/Kiosks*
  - > *In-building Real-Time transit monitors with sightlines of transit hubs*
  - > *Commuter Benefits*
  - > *Employee EcoPass*
  - > *Carpool/Vanpools*
  - > *Guaranteed Ride Home Program*
  - > *Compressed Work Weeks, Flex Time, and Telecommuting*
- *CP-HPS Transportation Management Association*
- *On-site Transportation Coordinator and Website*
- *Targeted Marketing*
- *Monitoring of Transportation Demand*
- *Monitoring Effectiveness of Congestion-Reducing and Traffic-Calming Efforts*

The final TDM plan shall be approved as part of the Disposition and Development Agreement (DDA).

[123] A draft TDM has been prepared and is described above in "Analytic Method" section in Section III.D.4.

With implementation of the mitigation measure MM TR-2, alternative modes would be encouraged, the use of single-occupant vehicles would be discouraged, and the impact of additional vehicles generated by the Project would be lessened. However, as described in Impact discussions below, the Project would still result in significant and unavoidable impacts on traffic and transit operations, and would still make considerable contributions to cumulative impacts related to substantial increases in traffic. Thus, the Project and Project's contribution to traffic would remain significant and unavoidable.

Impact TR-3: Project and Cumulative Intersection Traffic Impacts

Impact TR-3 **Implementation of the Project would contribute traffic to significant cumulative impacts at intersections in the Project vicinity. (Significant and Unavoidable)** ***[Criteria D.a, D.b, D.g]***

An intersection level of service analysis was prepared for traffic operations at 60 study intersections for future year 2030 conditions. Project impacts were assessed by comparing future year 2030 conditions with the Project, to 2030 No Project conditions. The "Analysis Approach" section in Section III.D.4, presents the methodology used to determine Project impacts and whether the Project would contribute substantially to significant cumulative impacts. The Project was determined to have a significant traffic impact at an intersection if Project-generated trips would cause an intersection operating at LOS D or better under 2030 No Project conditions to operate at LOS E or LOS F, or intersections operating at LOS E under 2030 No Project conditions to deteriorate to LOS F conditions. At intersections that would operate at LOS E or LOS F under 2030 No Project conditions, and would continue to operate at LOS E or LOS F under Project conditions, the increase in Project vehicle trips were reviewed to determine whether the increase would contribute considerably to critical movements operating at LOS E or LOS F.

Table III.D-10 (Intersection LOS Existing, 2030 No Project and Project Conditions—Weekday AM Peak Hour) and Table III.D-11 (Intersection LOS Existing, 2030 No Project and Project Conditions—Weekday PM Peak Hour) present a comparison of the intersection LOS analysis for existing, 2030 No Project and Project conditions for the weekday AM and PM peak hours, respectively. Table III.D-12 (Intersection LOS Existing, 2030 No Project and Project Conditions—Sunday PM Peak Hour) presents this comparison for the Sunday PM peak hour. The results show that of the 60 study intersections, 39 are projected to operate at unacceptable levels under Project conditions during at least one peak hour based. At 10 of the 39 intersections, the Project would result in Project-specific impacts and would contribute to significant cumulative impacts. At nine of the 10 intersections where Project-specific impacts would result, no feasible mitigation measures have been identified.

- Third/Oakdale
- Third/Revere
- Third/Carroll
- Third/Jamestown
- Bayshore/Paul
- Bayshore/Cortland
- Bayshore/US-101 Northbound Off-ramp/Cesar Chavez
- Third/Williams/Van Dyke
- Third/Jerrold

Table III.D-10 Intersection LOS Existing, 2030 No Project and Project Conditions—Weekday AM Peak Hour

		Existing		2030 No Project		2030 Project	
	Intersection	Delay [a]	LOS [b]	Delay	LOS	Delay	LOS
1	Third St/25th St	14	B	>80/1.43	F	>80/1.54	F
2	Third St/Cesar Chavez St	36	D	>80/1.61	F	>80/1.63	F
3	Third St/Cargo Way	23	C	>80/1.36	F	>80/1.90	F
4	Third St/Evans Ave	35	C	>80/1.41	F	>80/1.43	F
5	Third St/Oakdale Ave	17	B	21	C	25	C
6	Third St/Palou Ave	15	B	>80/1.77	F	>80/1.91	F
7	Third St/Revere Ave	19	B	35	C	51	D
8	Third St/Carroll Ave	12	B	12	B	23	C
9	Third St/Paul Ave	27	C	>80/1.23	F	>80/2.00	F
10	Third St/Ingerson Ave	5	A	5	A	6	A
11	Third St/Jamestown Ave	13	B	29	C	>80/1.03	F
12	Third/Le Conte/US-101 nb off	11	B	50	D	50	D
13	25th St/Illinois St	7	A	14	B	13	B
14	25th St/Pennsylvania Ave	9	A	26	D	29	C
15	Cesar Chavez/Penns/I-280	78	E	>80/1.39	F	>80/1.39	F
16	Cesar Chavez St/Evans Ave	21	C	>80/1.92	F	>80/1.91	F
17	Cesar Chavez St/Illinois St	13	B	25	C	34	C
18	Bayshore Blvd/Paul Ave	21	C	61/1.56	E	>80/2.64	F
19	Bayshore/Hester/US-101 sb off	28	C	>80/1.34	F	>80/1.36	F
20	Bayshore Blvd/Tunnel Ave	19	B	>80/2.00	F	>80/2.05	F
21	Bayshore Blvd/Bacon St	76	E	>80/4.05	F	>80/4.08	F
22	Bayshore Blvd/Arleta St	25	C	>80/1.21	F	>80/1.23	F
23	Bayshore Blvd/Leland Ave	21	C	>80/1.24	F	>80/1.26	F
24	Bayshore Blvd/Visitacion Ave	17	B	>80/1.55	F	>80/1.56	F
25	Bayshore Blvd/Sunnydale Ave	20	C	>80/1.32	F	>80/1.34	F
26	Tunnel Ave/Blanken	11	B	43	D	>80/1.06	F

Table III.D-10 Intersection LOS Existing, 2030 No Project and Project Conditions—Weekday AM Peak Hour

		Existing		2030 No Project		2030 Project	
	Intersection	Delay [a]	LOS [b]	Delay	LOS	Delay	LOS
27	Alana Way/Beatty Ave (US-101 SB Ramps)[c]	10	A	>80/2.17	F	>80/2.31	F
28	Alana Way/Harney Way/Mellon (US-101 NB Ramps)[c]	8	A	>80/1.20	F	>80/1.35	F
29	Harney Way/Jamestown Ave [d]	8	A	12	B	20	B
30	Crisp Ave/Palou Ave [d]	11.4 (nb)	B	57/0.99	E	44	D
31	Ingalls St/Thomas Ave[d]	11.3 (wb)	B	19.0 (wb)	C	22	C
32	Ingalls St/Carroll Ave [d]	8	A	15	B	28	C
33	Ingalls St/Egbert Ave	8	A	8	A	9	A
34	Arelious Walker/Gilman Ave [d]	9.1 (sb)	A	>60 (eb)	F	30	C
35	Amador St/Cargo Way	28	C	65/1.06	E	54	D
36	Bayshore Blvd/Cortland Ave	19	B	37	D	>80/1.18	F
37	Bayshore Blvd/Oakdale Ave	30	C	43	D	51	D
38	Bayshore/Alemany/Industrial	44	D	>80/1.00	F	>80/1.05	F
39	Bayshore/US-101 nb off to Cesar	43	D	74/0.91	E	>80/0.94	F
40	Bayshore Blvd/Silver Ave	50	D	>80/1.58	F	>80/1.70	F
41	Bayshore Blvd/Blanken Ave	12	B	>80/1.48	F	>80/1.51	F
42	San Bruno Ave/Paul Ave	20	B	>80/1.21	F	>80/1.23	F
43	San Bruno Ave/Silver Ave	75	E	>80/1.43	F	>80/1.41	F
44	San Bruno/Mansell/101 sb off	17	C	>80/1.08	F	>80/1.11	F
45	San Bruno/Silliman/101 sb off	24	C	>80/1.08	F	>80/1.08	F
46	Innes Ave/Arelious Walker Drive [d]	8.6 (sb)	A	5	A	6	A
47	Innes Ave/Earl St	8.5 (sb)	A	17.3 (sb)	C	13.3 (sb)	B
48	Evans Ave/Jennings St	9	A	>80/1.96	F	28	C
49	Bayshore Blvd/Geneva Ave	24	C	>80/1.39	F	>80/1.40	F
50	Bayshore/Guadalupe Pkwy	16	B	21	C	21	C
51	Bayshore Blvd/Valley Dr	23	C	20	C	20	C
52	Bayshore Blvd/Old County Rd	28	C	40	D	39	D

Table III.D-10 Intersection LOS Existing, 2030 No Project and Project Conditions—Weekday AM Peak Hour

	Intersection	Existing		2030 No Project		2030 Project	
		Delay [a]	LOS [b]	Delay	LOS	Delay	LOS
53	Sierra Pt/Lagoon Way	12	B	>80/1.85	F	>80/1.85	F
54	Ingalls St/Palou Ave [d]	9	A	16	B	18	B
55	Keith St/Palou Ave [d]	9	A	10	A	9	A
56	Third/Williams/Van Dyke	22	C	18	B	30	C
57	Third St/Jerrold Ave	22	C	49	D	>80/0.74	F
58	Evans/Napoleon/Toland	37	D	>80/1.45	F	>80/1.50	F
59	Harney/Executive Park East	9.1 (sb)	A	25	C	25	C
60	Harney/Thomas Mellon	—	—	30	C	34	C

SOURCE: Fehr & Peers, 2009

a. Delay in seconds per vehicle. For Side Street STOP-controlled intersections, delay and LOS presented for worst approach. Worst approach indicated in ( ).
b. Intersections operating at LOS E or LOS F conditions highlighted in bold and overall intersection volume-to-capacity (v/c) ratio is presented.
c. Year 2030 analysis includes signalization as part of Executive Park Development or new Harney Interchange.
d. Year 2030 analysis includes signalization as part of Project.

Table III.D-11 Intersection LOS Existing, 2030 No Project and Project Conditions—Weekday PM Peak Hour

		Existing		2030 No Project		2030 Project	
	Intersection	Delay[a]	LOS[b]	Delay	LOS	Delay	LOS
1	Third St/25th St	16	B	>80/2.45	F	>80/2.92	F
2	Third St/Cesar Chavez St	31	C	>80/1.56	F	>80/1.76	F
3	Third St/Cargo Way	20	B	>80/1.44	F	>80/1.74	F
4	Third St/Evans Ave	34	C	>80/1.36	F	>80/1.53	F
5	Third St/Oakdale Ave	19	B	30	C	60/1.12	E
6	Third St/Palou Ave	30	C	>80/4.71	F	>80/5.99	F
7	Third St/Revere Ave	31	C	37	D	>80/1.14	F
8	Third St/Carroll Ave	14	B	14	B	75/0.93	E
9	Third St/Paul Ave	24	C	>80/1.37	F	>80/3.36	F
10	Third St/Ingerson Ave	5	A	7	A	43	D
11	Third St/Jamestown Ave	14	B	30	C	>80/6.64	F
12	Third/Le Conte/US-101 nb off	11	B	24	C	23	C
13	25th St/Illinois St	7	A	14	B	14	B
14	25th St/Pennsylvania Ave	12	B	>80/1.42	F	40	D
15	Cesar Chavez/Penns/I-280	39	D	>80/1.36	F	>80/1.37	F
16	Cesar Chavez St/Evans Ave	21	C	>80/1.83	F	>80/1.84	F
17	Cesar Chavez St/Illinois St	19	B	22	C	23	C
18	Bayshore Blvd/Paul Ave	17	B	>80/2.00	F	>80/2.90	F
19	Bayshore/Hester/US-101 sb off	13	B	>80/1.25	F	>80/1.28	F
20	Bayshore Blvd/Tunnel Ave	16	B	>80/2.30	F	>80/2.51	F
21	Bayshore Blvd/Bacon St	22	C	>80/1.87	F	>80/1.91	F
22	Bayshore Blvd/Arleta St	25	C	>80/1.36	F	>80/1.39	F
23	Bayshore Blvd/Leland Ave	22	C	>80/1.58	F	>80/1.67	F
24	Bayshore Blvd/Visitacion Ave	15	B	>80/1.43	F	>80/1.47	F
25	Bayshore Blvd/Sunnydale Ave	19	B	>80/1.15	F	>80/1.19	F
26	Tunnel Ave/Blanken	9	A	>80/1.46	F	>80/1.45	F

Table III.D-11 Intersection LOS Existing, 2030 No Project and Project Conditions—Weekday PM Peak Hour

		Existing		2030 No Project		2030 Project	
	Intersection	Delay[a]	LOS[b]	Delay	LOS	Delay	LOS
27	Alana Way/Beatty Ave (US-101 SB Ramps) [c]	9	A	>80/2.94	F	>80/3.25	F
28	Alana Way/Harney Way/Mellon (US-101 NB Ramps)[c]	8	A	>80/1.43	F	>80/1.74	F
29	Harney Way/Jamestown Ave[d]	8	A	40/1.03	E	41	D
30	Crisp Ave/Palou Ave[d]	11.6 (nb)	B	58/0.97	E	54	D
31	Ingalls St/Thomas Ave[d]	11.5 (wb)	B	27.9 (wb)	C	33	C
32	Ingalls St/Carroll Ave[d]	8	A	17	C	38	D
33	Ingalls St/Egbert Ave	8	A	9	A	9	A
34	Arelious Walker/Gilman Ave[d]	9.2 (sb)	A	>80 (eb)	F	36	D
35	Amador St/Cargo Way	24	C	60/1.05	E	59/1.04	E
36	Bayshore Blvd/Cortland Ave	25	C	>80/1.48	F	>80/1.87	F
37	Bayshore Blvd/Oakdale Ave	26	C	33	C	55	D
38	Bayshore/Alemany/Industrial	58/	E	>80/1.23	F	>80/1.18	F
39	Bayshore/US-101 nb off to Cesar	48	D	>80/0.88	F	>80/0.91	F
40	Bayshore Blvd/Silver Ave	50	D	>80/2.64	F	>80/2.91	F
41	Bayshore Blvd/Blanken Ave	11	B	>80/1.33	F	>80/1.40	F
42	San Bruno Ave/Paul Ave	20	B	>80/2.10	F	>80/2.71	F
43	San Bruno Ave/Silver Ave	46	D	>80/1.46	F	>80/1.56	F
44	San Bruno/Mansell/101 sb off	33	D	64/1.15	F	>80/1.22	F
45	San Bruno/Silliman/101 sb off	20	B	38	D	38	D
46	Innes Ave/Arelious Walker Drive[d]	8.7 (sb)	A	5	A	6	A
47	Innes Ave/Earl St	8.6 (sb)	A	23.1 (sb)	C	19.4 (sb)	C
48	Evans Ave/Jennings St	10	A	>80/2.41	F	31	C
49	Bayshore Blvd/Geneva Ave	25	C	>80/1.73	F	>80/1.76	F
50	Bayshore/Guadalupe Pkwy	14	B	50	D	49	D
51	Bayshore Blvd/Valley Dr	16	B	40	D	40	D
52	Bayshore Blvd/Old County Rd	29	C	>80/1.10	F	>80/1.13	F

Table III.D-11 Intersection LOS Existing, 2030 No Project and Project Conditions—Weekday PM Peak Hour

		Existing		*2030 No Project*		*2030 Project*	
	Intersection	*Delay[a]*	*LOS[b]*	*Delay*	*LOS*	*Delay*	*LOS*
53	Sierra Pt/Lagoon Way	16	C	>80/4.38	F	>80/4.38	F
54	Ingalls St/Palou Ave[d]	9	A	16	B	22	C
55	Keith St/Palou Ave[d]	9	A	8	A	8	A
56	Third/Williams/Van Dyke	22	C	17	B	>80/0.98	F
57	Third St/Jerrold Ave	23	C	>80/0.72	F	>80/0.88	F
58	Evans/Napoleon/Toland	46	D	>80/1.53	F	>80/1.61	F
59	Harney/Executive Park East	8.9 (sb)	A	25	C	26	C
60	Harney/Thomas Mellon	—	—	19	B	26	C

SOURCE: Fehr & Peers, 2009.

a. Delay in seconds per vehicle. For Side Street STOP-controlled intersections, delay and LOS presented for worst approach. Worst approach indicated in ( ).

b. Intersections operating at LOS E or LOS F conditions highlighted in bold and overall intersection volume-to-capacity (v/c) ratio is presented.

c. Year 2030 analysis includes signalization as part of Executive Park Development or new Harney Interchange.

d. Year 2030 analysis includes signalization as part of Project.

Table III.D-12 Intersection LOS Existing, 2030 No Project and Project Conditions—Sunday PM Peak Hour

		Existing		2030 No Project		2030 Project	
	Intersection	Delay[a]	LOS[b]	Delay	LOS	Delay	LOS
1	Third St/25th St	13	B	63/0.57	E	58/0.70	E
2	Third St/Cesar Chavez St	23	C	31	C	66/0.73	E
3	Third St/Cargo Way	17	B	30	C	30	C
4	Third St/Evans Ave	32	C	57/0.65	E	59/0.87	E
5	Third St/Oakdale Ave	15	B	14	C	15	B
6	Third St/Palou Ave	29	C	>80/0.92	F	>80/4.03	F
7	Third St/Revere Ave	22	C	20	B	24	C
8	Third St/Carroll Ave	9	A	10	B	55/0.66	E
9	Third St/Paul Ave	21	C	64/0.73	E	>80/1.89	F
10	Third St/Ingerson Ave	3	A	3	A	27	C
11	Third St/Jamestown Ave	21	C	24	C	>80/1.24	F
12	Third/Le Conte/US-101 nb off	12	B	14	B	13	B
13	25th St/Illinois St	7	A	10	A	10	A
14	25th St/Pennsylvania Ave	10	A	45/1.01	E	34	C
15	Cesar Chavez/Penns/I-280	28	C	61/0.65	E	60/0.65	E
16	Cesar Chavez St/Evans Ave	15	B	18	B	19	B
17	Cesar Chavez St/Illinois St	14	B	18	B	18	B
18	Bayshore Blvd/Paul Ave	12	B	14	B	54	D
19	Bayshore/Hester/US-101 sb off	14	B	14	B	14	B
20	Bayshore Blvd/Tunnel Ave	8	A	53	D	60/1.59	E
21	Bayshore Blvd/Bacon St	13	B	63/0.57	E	58/0.70	E
22	Bayshore Blvd/Arleta St	12	B	17	B	30	C
23	Bayshore Blvd/Leland Ave	24	C	54	D	49	D
24	Bayshore Blvd/Visitacion Ave	18	B	41	D	38	D
25	Bayshore Blvd/Sunnydale Ave	15	B	64/0.98	E	70/1.03	E
26	Tunnel Ave/Blanken	19	B	55	D	55	D

Table III.D-12 Intersection LOS Existing, 2030 No Project and Project Conditions—Sunday PM Peak Hour

		Existing		2030 No Project		2030 Project	
	Intersection	Delay[a]	LOS[b]	Delay	LOS	Delay	LOS
27	Alana/Beatty (US-101 SB Ramps)[c]	8	A	30	C	51	D
28	Alana/Harney/Mellon (101 NB)[c]	8	A	>80/2.04	F	>80/2.34	F
29	Harney Way/Jamestown Ave[d]	9	A	54	D	>80/1.36	F
30	Crisp Ave/Palou Ave[d]	7	A	22	C	24	C
31	Ingalls St/Thomas Ave[d]	11.1 (sb)	B	37	D	46	D
32	Ingalls St/Carroll Ave[d]	9.9 (wb)	A	11.8 (wb)	B	26	C
33	Ingalls St/Egbert Ave	7	A	9	A	28	C
34	Arelious Walker/Gilman Ave[d]	7	A	8	A	8	A
35	Amador St/Cargo Way	8.9 (sb)	A	72.5 (eb)	F	36	D
36	Bayshore Blvd/Cortland Ave	28	C	21	C	20	B
37	Bayshore Blvd/Oakdale Ave	17	B	23	C	25	C
38	Bayshore/Alemany/Industrial	24	C	21	C	21	C
39	Bayshore/US-101 nb off to Cesar	35	D	40	D	52	D
40	Bayshore Blvd/Silver Ave	25	C	25	C	26	C
41	Bayshore Blvd/Blanken Ave	9	A	51	D	68/1.16	E
42	San Bruno Ave/Paul Ave	16	B	39	D	>80/1.46	F
43	San Bruno Ave/Silver Ave	41	D	>80/1.29	F	>80/1.40	F
44	San Bruno/Mansell/101 sb off	16	C	27	D	38/1.00	E
45	San Bruno/Silliman/101 sb off	17	B	78/0.36	E	70/0.37	E
46	Innes Ave/Arelious Walker Drive [d]	8.5 (sb)	A	4	A	6	A
47	Innes Ave/Earl St	8.5 (sb)	A	9.9 (sb)	A	10 (sb)	B
48	Evans Ave/Jennings St	8	A	33	D	20	C
49	Bayshore Blvd/Geneva Ave	20	C	44	D	43	D
50	Bayshore/Guadalupe Pkwy	10	B	9	A	9	A
51	Bayshore Blvd/Valley Dr	11	B	10	A	10	A
52	Bayshore Blvd/Old County Rd	26	C	43	D	42	D

Table III.D-12 Intersection LOS Existing, 2030 No Project and Project Conditions—Sunday PM Peak Hour

	Intersection	Existing		2030 No Project		2030 Project	
		Delay[a]	LOS[b]	Delay	LOS	Delay	LOS
53	Sierra Pt/Lagoon Way	8	A	43	D	44/1.01	E
54	Ingalls St/Palou Ave[d]	8	A	16	B	22	C
55	Keith St/Palou Ave[d]	8	A	10	B	7	A
56	Third/Williams/Van Dyke	22	C	14	B	23	C
57	Third St/Jerrold Ave	21	C	23	C	31	C
58	Evans/Napoleon/Toland	32	C	57/0.50	E	60/0.57	E
59	Harney/Executive Park East	8.8 (eb)	A	18	B	22	C
60	Harney/Thomas Mellon	—	—	15	B	19	B

SOURCE: Fehr & Peers, 2009

a. Delay in seconds per vehicle. For Side Street STOP-controlled intersections, delay and LOS presented for worst approach. Worst approach indicated in ( ).
b. Intersections operating at LOS E or LOS F conditions highlighted in bold and overall intersection volume-to-capacity (v/c) ratio is presented.
c. Year 2030 analysis includes signalization as part of Executive Park Development or new Harney Interchange.
d. Year 2030 analysis includes signalization as part of Project.

The degradation in level of service would primarily be due to Project-related traffic increases along Third Street and Bayshore Boulevard, and major east/west streets serving Project traffic (e.g., Carroll Avenue, Gilman Avenue, Jamestown Avenue). Improvements along Third Street are limited due to right-of-way constraints associated with the Third Street light rail, and traffic signals on intersections along Third Street are timed to prioritize transit movements along Third Street. The SFMTA has indicated that there may be slight adjustments to the traffic signal timing for intersections along Third Street that could be implemented that would reduce auto delay at signalized intersections without degrading transit travel times. However, those improvements would not be sufficient to improve intersection operating conditions to acceptable levels.

To accommodate additional right-of-way needed for additional lanes, Third Street would need to be widened to the east and the west. This would require demolition of existing structures and substantial right-of-way acquisition, or reduction in corner sidewalk width and prohibition of on-street parking along Third Street. Widening Third Street or reducing the corner sidewalk space at this location would be inconsistent with the pedestrian environment created by the Third Street Light Rail Project, as it would make the pedestrian crossing of Third Street longer, and would require more dedicated pedestrian crossing time as part of the signal phasing plan. Due to the issues related to acquisition of additional right-of-way, the measure was determined to be infeasible.

At the intersection of Bayshore/Paul, the degradation in level of service would primarily be due to forecasted traffic volume increases on Paul Avenue. Paul Avenue is one of a relatively few number of streets in the area that connects between the east and west side of US-101. As a result, east/west travel in the area is concentrated to the few streets that provide connections across the freeway, including Paul Avenue. Widening Paul Avenue at this intersection would create the need for major right-of-way acquisition and likely require reconstruction of the US-101 overpass to accommodate a wider Paul Avenue cross section, which would be infeasible. Sufficient right-of-way is also not available on Bayshore Boulevard to provide additional capacity. Widening of Bayshore Boulevard at Paul Avenue, Cortland Avenue or at the US-101 northbound off-ramp would also not be feasible, as roadway widening would require major right-of-way acquisition along the entire Bayshore Boulevard corridor, at great cost and displacement of existing homes and businesses.

The Project's traffic impacts and the Project's contribution to cumulative impacts at these nine study intersections therefore would be significant and unavoidable.

Impact TR-4: Project and Cumulative Intersection Traffic Impacts

Impact TR-4 **At the intersection of Tunnel/Blanken, implementation of the Project would result in significant Project AM peak hour traffic impacts, and would contribute to cumulative PM peak hour traffic impacts. (Significant and Unavoidable with Mitigation)** ***[Criteria D.a, D.b, D.g]***

At the signalized intersection of Tunnel/Blanken (currently unsignalized and required to be signalized as part of the Visitacion Valley Mitigation Program), the intersection operating conditions would worsen in the AM peak hour from LOS D under 2030 No Project conditions to LOS F with the Project, resulting in a significant impact. In the PM peak hour, the intersection would operate at LOS F under 2030 No

Project and with the Project conditions. Based on an assessment of the critical movements at the intersection and Project contributions, the Project would contribute to cumulative PM peak hour traffic impacts.

MM TR-4 *Restripe the northbound and southbound approaches of the intersection of Tunnel/Blanken to provide dedicated left-turn lanes adjacent to shared through/right-turn lanes. The restriping would require prohibition of parking for 160 feet in the southbound approach (loss of eight parking spaces) and for 100 feet in the northbound approach (loss of five parking spaces).*

Implementation of the intersection restriping shall be the responsibility of SFMTA, and shall be implemented when intersection improvements associated with the Visitacion Valley Redevelopment Plan (i.e., signalization) are no longer sufficient to maintain acceptable intersection level of service conditions.

With implementation of mitigation measure MM TR-4, operations at this intersection would improve, but not to acceptable LOS D or better conditions during the AM and PM peak hours. Therefore, Project-related impacts at this intersection would remain significant and unavoidable.

Impact TR-5: Contributions to Cumulative Intersection Traffic Impacts

Impact TR-5 **Implementation of the Project would contribute traffic at some study area intersections that would operate at LOS E or LOS F under 2030 No Project conditions. (Significant and Unavoidable)** ***[Criteria D.a, D.b, D.g]***

At intersections that would operate at LOS E or LOS F under 2030 No Project conditions, and would continue to operate at LOS E or LOS F under Project conditions, the increase in vehicle trips from 2030 No Project were reviewed to determine whether the increase would contribute considerably to critical movements operating at LOS E or LOS F. The Project contributions were examined at 29 study intersections that would operate at LOS E or LOS F under 2030 No Project conditions, and Project contributions were determined to be significant at 20 intersections. No feasible mitigation measures were identified at 16 of the 20 intersections:

- Third Street/25th Street
- Third Street/Cesar Chavez Street
- Third Street/Cargo Way
- Third Street/Evans Avenue
- Third Street/Palou Avenue
- Third Street/Paul Avenue
- Bayshore Boulevard/Visitacion Avenue
- Bayshore Boulevard/Alemany Boulevard/Industrial Street
- Bayshore Boulevard/Blanken
- San Bruno Avenue/Paul Avenue
- San Bruno Avenue/Silver Avenue
- San Bruno Avenue/Mansell Avenue/US-101 Southbound Off-ramp
- Cesar Chavez Street/Pennsylvania/I-280
- Bayshore Boulevard/Bacon Street
- Bayshore Boulevard/Sunnydale Avenue
- Evans Avenue/Napoleon Avenue/Toland Street

The poor operating conditions would be due to forecasted traffic volume increases in the study area, and particularly along the north/south routes on Third Street, Bayshore Boulevard, and San Bruno Avenue. Improvements at these intersections are limited due to right-of-way constraints. Since no feasible mitigation measures were identified for the 16 study intersections, the Project-related contributions to cumulative traffic impacts at these locations would be significant and unavoidable.

Impact TR-6: Contributions to Cumulative Impacts at Geneva/US-101 Southbound Ramps and Harney/US-101 Northbound Ramps

Impact TR-6 **Implementation of the Project could contribute traffic at the intersections of Geneva/US-101 Southbound Ramps and Harney/US-101 Northbound Ramps, which would operate at LOS F under 2030 No Project conditions. (Significant and Unavoidable with Mitigation)** ***[Criteria D.a, D.b, D.g]***

As noted in Impact TR-5, the Project contributions to cumulative impacts were examined at 29 study intersections that would operate at LOS E or LOS F under 2030 No Project conditions. Project contributions were determined to be significant at 20 intersections. No feasible traffic mitigation measures were identified at 16 of the 20 intersections (Impact TR-5), while a mitigation measure was identified for the intersections of Geneva/US-101 Southbound Ramps and Harney/US-101 Northbound Ramps addressed in Impact TR-6, Amador/Cargo/Illinois addressed in Impact TR-7, and Bayshore/Geneva addressed in Impact TR-8.

MM TR-6 *Mitigations and associated fair-share funding measures for cumulative regional roadway system impacts. The City of Brisbane and Caltrans, as part of the Harney Interchange Project, shall account for existing traffic, background traffic growth, and the most recent forecasts of traffic expected to be associated with each of several adjacent development projects, including the Project. The San Francisco County Transportation Authority (SFCTA) shall coordinate with the City of Brisbane and Caltrans to ensure Project-generated vehicle trips are accounted for in the Harney Interchange analyses and design.*

Mitigations and associated fair-share funding measures for cumulative regional roadway system impacts, including freeway segment impacts, shall be formulated through the current interjurisdictional Bi-County Transportation Study effort being led by the SFCTA. The Project Applicant shall contribute its fair share to the Harney Interchange Project.

Because the environmental review of the interchange project is not yet complete and the interchange would be approved by Caltrans, the implementation of mitigation measure MM TR-6 is uncertain and is outside of the City/Agency jurisdiction. Therefore, Project-related contributions to cumulative traffic impacts at these two intersections would remain significant and unavoidable.

Impact TR-7: Contributions to Cumulative Impacts at Amador/Cargo/Illinois

Impact TR-7 **Implementation of the Project could contribute traffic to the intersections of Amador/Cargo/Illinois, which would operate at LOS E under 2030 No Project. (Significant and Unavoidable with Mitigation) *[Criteria D.a, D.b, D.g]***

As noted in Impact TR-5, the Project contributions to cumulative impacts were examined at 29 study intersections that would operate at LOS E or LOS F under 2030 No Project conditions. Project contributions were determined to be significant at 20 intersections. No feasible traffic mitigation measures were identified at 16 of the 20 intersections (Impact TR-5), while mitigation measures were identified for the four intersections discussed in Impact TR-6, Impact TR-7, and Impact TR-8.

MM TR-7 *Feasibility study of reconfiguring the southbound approach on Illinois Street to provide a dedicated southbound left turn lane and a dedicated right-turn lane. SFMTA shall conduct a feasibility study with the Port of San Francisco to determine the feasibility of reconfiguring the southbound approach on Illinois Street to provide a dedicated southbound left turn lane and a dedicated right-turn lane. Sufficient right-of-way is available to implement this improvement; however, provision of two southbound lanes would require narrowing a portion of the island to the west of the southbound approach to Cargo Way. Implementation of the intersection improvements shall be the responsibility of SFMTA and the Port of San Francisco, and shall be implemented when traffic operating conditions with the existing intersection configuration worsens to unacceptable levels. If determined feasible, the Project Applicant shall contribute its fair share to the intersection improvements.*

With implementation of MM TR-7, operations at this intersection would improve to acceptable LOS C conditions during the AM and PM peak hours. However, since a feasibility study would be required, implementation of MM TR-7 is uncertain, and therefore, Project-related impacts at this intersection would remain significant and unavoidable.

Impact TR-8: Contributions to Cumulative Impacts at Bayshore/Geneva

Impact TR-8 **Implementation of the Project could contribute traffic to the intersections of Bayshore/Geneva, which would operate at LOS F under 2030 No Project. (Significant and Unavoidable with Mitigation) *[Criteria D.a, D.b, D.g]***

As noted in Impact TR-5, the Project contributions to cumulative impacts were examined at 29 study intersections that would operate at LOS E or LOS F under 2030 No Project conditions. Project contributions were determined to be significant at 14 intersections. No feasible traffic mitigation measures were identified at 16 of the 20 intersections (Impact TR-5), while mitigation measures were identified for the four intersections discussed in Impact TR-6, Impact TR-7, and Impact TR-8.

MM TR-8 *Mitigations and associated fair-share funding measures for cumulative regional roadway system impacts. The City of Brisbane, as part of the Geneva Avenue Extension Project, shall account for existing traffic, background traffic growth, and the most recent forecasts of traffic expected to be associated with each of several adjacent development projects, including the Project. The San Francisco County Transportation Authority (SFCTA) and SFMTA shall coordinate with the City of*

Brisbane to ensure projected traffic volumes are accounted for in the design of the Geneva Avenue Extension.

Mitigations and associated fair-share funding measures for cumulative regional roadway system impacts, including freeway segment impacts, shall be formulated through the current interjurisdictional Bi-County Transportation Study effort being led by the SFCTA. The Project Applicant shall contribute its fair share to the Geneva Avenue Extension Project.

Since implementation of mitigation measure MM TR-8 would be under the jurisdiction of the City of Brisbane, the implementation of the mitigation measure is uncertain. Therefore, the Project-related impacts at this intersection would remain significant and unavoidable.

Impact TR-9: Project and Cumulative Intersection Traffic Impacts

Impact TR-9 **Implementation of the Project would have less-than-significant Project and cumulative impacts at some study area intersections that would operate at LOS E or LOS F under 2030 No Project conditions. (Less than Significant)** ***[Criteria D.a, D.b, D.g]***

As described in Impact TR-5 and Impact TR-6, at 20 of 29 intersections that would operate at LOS E or LOS F under 2030 No Project conditions, and would continue to operate at LOS E or LOS F under Project conditions, the increase in vehicle trips from 2030 No Project caused by the Project was determined to be significant. Project contributions at the following 9 of the 29 study intersections were determined to be less than significant:

- Cesar Chavez/Evans Avenue
- Bayshore/Hester/US-101 Southbound off-ramp
- Bayshore Boulevard/Tunnel Avenue
- Bayshore Boulevard/Arleta Street
- Bayshore Boulevard/Leland Avenue
- Bayshore Boulevard/Silver Avenue
- San Bruno/Silliman Street/US-101 Southbound Off-ramp
- Bayshore Boulevard/Old County Road
- Sierra Point/Lagoon Way

The poor operating conditions at these study area intersections would be due to traffic volume increases associated with other developments in the Project vicinity. Since the Project would not contribute significantly to the poor operating conditions, Project-related impacts at these locations would be less than significant.

Impact TR-10: Project and Cumulative Traffic Spillover

Impact TR-10 **Implementation of the Project would result in significant Project traffic spillover impacts and contribute to cumulative traffic spillover impacts. (Significant and Unavoidable with Mitigation)** ***[Criterion D.a]***

As described in Impact TR-3 through Impact TR-9, the Project would result in traffic volumes on area roadways, and most substantially on key north/south and east/west streets, which would also experience cumulative traffic growth. A concern in the Bayview Hunters Point neighborhood is the likelihood that

existing residential streets would be "cut-throughs," shortcuts, or bypasses used by non-neighborhood traffic. Substantial amounts of cut-through traffic can result in impacts such as noise, safety impacts to pedestrians, impaired driveway access, interference with emergency vehicle access, increased dust, exhaust, and litter, and similar annoyances that adversely affect neighborhood character.

Within the Candlestick Point area, the Project would include new arterials connecting the Project site to Harney Way and US-101, as well as improvements to existing roadways such as Carroll Avenue, Gilman Avenue, and Jamestown Avenue. These improvements and new roadways would encourage residents and visitors to the Project to use the major arterials for access to and from the site, and would minimize the likelihood of cut-through traffic using residential streets in Bayview Hunters Point. Many of the residential streets in the neighborhood do not cross Third Street to connect with Bayshore Boulevard, and therefore are not attractive bypass routes. In addition, left turns from Third Street are permitted at limited locations, with Carroll Avenue, Gilman Avenue and Jamestown Avenue anticipated to serve as the key east/west routes for Project traffic.

SFMTA has recently completed the *Bayview Traffic Calming Project*[124] which was a community-based process to identify problem locations with a study area roughly bounded by Jamestown Avenue, Third Street and Evans Avenue, and traffic calming measures. The study resulted in a list of traffic calming measures (such as gateway islands, speed humps, speed cushions, and traffic circles) along specific roadways. Implementation of improvements will be phased, and most cost-efficient solutions will be implemented first. Implementation of SFMTA's traffic calming recommendations for the Bayview (e.g., gateway islands, speed humps, speed cushions, and traffic circles) would discourage cut-through traffic.

In addition, the TDM Plan included as part of MM TR-2 would require annual monitoring of traffic conditions to review the effectiveness of the Project's transportation measures and other traffic calming measures implemented in the area to reduce congestion due to Project vehicle trips and to minimize traffic spillover to neighboring residential streets. If warranted, the On-site TDM Coordinator and SFMTA would consider implementation of additional traffic-calming and congestion-alleviating measures, such as adding additional lanes to the streets that approach Third Street, or other congested areas. However, given that many intersections at or near the Project site would be congested, it is likely that spillover impacts would still occur.

Implementation of mitigation measures MM TR-2 and MM TR-17 would likely reduce spillover impacts. Nonetheless, cut-through traffic may occur during periods of congestion, and the impacts associated with spillover traffic would remain significant and unavoidable.

Impact TR-11: Contributions to Cumulative Freeway Mainline and Weaving Segments Impacts

Impact TR-11 **Implementation of the Project would contribute to significant cumulative traffic impacts at four freeway segments. (Significant and Unavoidable)** ***[Criteria D.a, D.b, D.g]***

[124] *Bayview Traffic Calming Project* report, SFMTA, December 2006.

Freeway mainline level of service analysis was prepared for six locations on US-101 and four locations on I-280. For freeway mainline and ramp analyses, locations where the Project would result in a change from LOS D or better under 2030 No Project conditions to LOS E or LOS F, or from LOS E or LOS F, with the Project are identified as Project impacts. At locations that would operate at LOS E or LOS F under 2030 No Project conditions, and would continue to operate at LOS E or LOS F under Project conditions, the Project trips, as a percentage of total traffic volumes on the facility were reviewed to determine whether the increase would contribute considerably to total volumes on the facility.

Table III.D-13 (Mainline and Weaving Segment LOS Existing, 2030 No Project and 2030 Project Conditions) presents the results of the freeway mainline and weaving section analysis for existing, 2030 No Project and Project conditions. The Project would not cause any freeway mainline segment to deteriorate from acceptable LOS D or better to LOS E or F conditions, nor would it cause any segment to deteriorate from LOS E to LOS F. However, the Project would contribute cumulatively considerable amounts of traffic to four freeway segments expected to operate at LOS E or LOS F under 2030 No Project conditions:

- US-101 northbound from Sierra Point to Alana/Geneva/Harney
- US-101 southbound from the I-80 Merge to Cesar Chavez
- US-101 southbound from Third/Bayshore to Alana/Geneva/Harney
- US-101 southbound from Alana/Geneva/Harney to Sierra Point

The Project's contributions to LOS E or LOS F conditions at the four freeway segments would be considered significant impacts. The projected poor operating conditions on the affected freeway segments could only be improved by creating additional mainline capacity, which would require substantial additional right-of-way acquisition, substantial freeway reconstruction, and associated substantial costs, and would require an associated interjurisdictional transportation improvement planning, prioritization and fair share funding formulation effort, that exceed the reasonable scope of the Project and reasonable control of the lead agency. More specifically:

- Freeway mainline widening to provide acceptable operational conditions would require acquisition of substantial right-of-way, and substantial and infeasible reconstruction of the affected freeway segments and associated over- and under-crossings, the cost of which far exceed the reasonable capability and responsibility of the Project, and for which no interjurisdictional fair share funding mechanism has been established
- The co-lead agencies (Planning Department and the Redevelopment Agency) do not have jurisdiction over the affected freeway right-of-way; the necessary right-of-way acquisition would necessarily involve Caltrans use of its eminent domain powers
- Expansion of portions of the affected freeway segments rights-of-way is constrained by existing topography
- Acquisition of portions of the necessary additional freeway mainline and associated under- and over-crossing right-of-way, and subsequent construction of the necessary freeway mainline widening and associated under- and over-crossings, could not be achieved without the displacement of existing businesses and households and demolition of existing residential and commercial establishments

Table III.D-13 Mainline and Weaving Segment LOS Existing, 2030 No Project and 2030 Project Conditions

	Existing		*2030 No Project*		*2030 Project*	
WEEKDAY AM PEAK HOUR						
Mainline Segment	***LOS***	***Density[a] (pc/mi/ln)***	***LOS***	***Density (pc/mi/ln)***	***LOS***	***Density (pc/mi/ln)***
US-101						
NB—Cesar Chavez to Vermont	E	44.6	F	>45	F	>45
NB—Harney Way to Third/Bayshore	D	33.8	F	>45	F	>45
NB—Sierra Point to Harney Way	D	33.8	E	40.5	E	44.0
SB—I-80 Merge to Cesar Chavez	D	33.4	F	>45	F	>45
SB—Third/Bayshore to Harney Way	E	43.0	F	>45	F	>45
SB—Harney/Geneva to Sierra Point	E	42.2	F	>45	F	>45
I-280						
NB—Alemany Off to Alemany On	E	39.1	>45	F	>45	F
SB—Alemany On to Alemany Off	C	23.9	D	34.6	D	34.6
Weaving Segment	***LOS***	***Service Vol. (pc/l)***	***LOS***	***Service Vol. (pc/l)***	***LOS***	***Service Vol. (pc/l)***
I-280						
NB—25th Street to Mariposa Street	E	1,680	F	>1,900	F	>1,900
SB—Mariposa Street to 25th Street	B	810	E	1,710	E	1,710
WEEKDAY PM PEAK HOUR						
Mainline Segment	***LOS***	***Density[a] (pc/mi/ln)***	***LOS***	***Density (pc/mi/ln)***	***LOS***	***Density (pc/mi/ln)***
US-101						
NB—Cesar Chavez to Vermont	D	26.8	F	>45	F	>45
NB—Harney Way to Third/Bayshore	E	42.3	F	>45	F	>45
NB—Sierra Point to Harney Way	E	42.9	F	>45	F	>45
SB—I-80 Merge to Cesar Chavez	D	33.8	F	>45	F	>45
SB—Third/Bayshore to Harney Way	E	36.0	F	>45	F	>45
SB—Harney/Geneva to Sierra Point	E	36.8	F	>45	F	>45
I-280						
NB—Alemany Off to Alemany On	C	23.9	D	33.3	D	33.3

Table III.D-13 Mainline and Weaving Segment LOS Existing, 2030 No Project and 2030 Project Conditions

	Existing		*2030 No Project*		*2030 Project*	
SB—Alemany On to Alemany Off	F	>45	F	>45	F	>45
Weaving Segment	***LOS***	***Service 3 Vol. (pc/l)***	***LOS***	***Service Vol. (pc/l)***	***LOS***	***Service Vol. (pc/l)***
I-280						
NB—25th Street to Mariposa Street	C	1,350	F	>1,900	F	>1,900
SB—Mariposa Street to 25th Street	E	1,630	F	>1,900	F	>1,900
		SUNDAY PM PEAK HOUR				
Mainline Segment	***LOS***	***Density[a] (pc/mi/ln)***	***LOS***	***Density (pc/mi/ln)***	***LOS***	***Density (pc/mi/ln)***
US-101						
NB—Cesar Chavez to Vermont	C	20.6	D	32.3	D	33.7
NB—Harney Way to Third/Bayshore	C	22.0	D	30.4	D	32.3
NB—Sierra Point to Harney Way	C	21.9	D	27.3	D	31.4
SB—I-80 Merge to Cesar Chavez	D	28.8	D	33.3	D	34.1
SB—Third/Bayshore to Harney Way	C	21.4	D	32.0	D	34.3
SB—Harney/Geneva to Sierra Point	C	21.2	C	24.9	D	28.6
I-280						
NB—Alemany Off to Alemany On	B	15.6	C	21.6	C	21.6
SB—Alemany On to Alemany Off	D	27.0	D	29.5	D	29.5
Weaving Segment	***LOS***	***Service 3, 4 Vol. (pc/l)***	***LOS***	***Service Vol. (pc/l)***	***LOS***	***Service Vol. (pc/l)***
I-280						
NB—25th Street to Mariposa Street	A	—	C	1,200	C	1,220
SB—Mariposa Street to 25th Street	A	—	C	1,310	C	1,300

SOURCE: Fehr and Peers, 2009

a. Segments operating at LOS E or LOS F conditions highlighted in bold
b. Density of vehicles per segment. pc/mi/ln = passenger cars per mile per lane.
c. For weaving sections service volume is reported as the measure of effectiveness. pc/h = passenger cars per hour
d. Weaving segments with speeds greater than 50 mph are outside of the realm of the weaving analysis, and thus are assumed to operate at LOS A.

Therefore, mitigation of this Project-related contribution to 2030 cumulative freeway congestion impacts to a less-than-significant level is considered to be infeasible. The Project-related contribution to this cumulative freeway segment congestion would be significant and unavoidable.

Impact TR-12: Freeway Ramp Impacts

Impact TR-12 **Implementation of the Project would result in significant impacts at four freeway on-ramp locations. (Significant and Unavoidable)** ***[Criteria D.a, D.b, D.g]***

Table III.D-14 (Ramp Junction LOS Existing, 2030 No Project and 2030 Project Conditions) presents the results of the freeway ramps analysis for existing, 2030 No Project and Project conditions. The Project would cause four ramp junctions to deteriorate from acceptable LOS D or better to LOS E or F conditions or from LOS E to LOS F conditions:

- US-101 northbound on-ramp from Alemany Boulevard
- US-101 northbound on-ramp from Harney Way
- US-101 northbound on-ramp from Bayshore Boulevard/Cesar Chavez Street
- US-101 southbound on-ramp from Harney Way/Geneva Avenue

The Project would result in significant traffic impacts at these locations. Providing additional on-ramp lanes would simply increase the volume of traffic entering the freeway mainline segment, and may exacerbate the poor merging conditions. As noted in Impact TR-11, widening of US-101 to provide additional capacity would not be feasible. Thus, mitigation of these impacts has been determined to be infeasible. Project impacts at these locations would be significant and unavoidable.

Impact TR-13: Contributions to Cumulative Freeway Ramp Impacts

Impact TR-13 **Implementation of the Project would contribute to significant cumulative traffic impacts at 12 freeway ramp locations. (Significant and Unavoidable)** ***[Criteria D.a, D.b, D.g]***

The Project would also contribute cumulatively significant traffic increases at ramp junctions projected to operate at LOS E or LOS F under 2030 No Project conditions:

- US-101 northbound on-ramp from Sierra Point Parkway
- US-101 northbound on-ramp from Harney Way
- US-101 northbound on-ramp from Alemany Boulevard
- US-101 northbound on-ramp from Bayshore Boulevard/Cesar Chavez Street
- US-101 southbound off-ramp to Bayshore Boulevard/Cesar Chavez Street
- US-101 southbound on-ramp from Third Street/Bayshore Boulevard
- US-101 southbound on-ramp from Harney Way/Geneva Avenue
- US-101 southbound on-ramp from Sierra Point Parkway
- I-280 northbound off-ramp to Cesar Chavez Street
- I-280 northbound on-ramp from Indiana Street/25th Street
- I-280 southbound off-ramp to Pennsylvania Avenue/25th Street
- I-280 southbound on-ramp from Pennsylvania Avenue/25th Street

Table III.D-14 Ramp Junction LOS Existing, 2030 No Project and 2030 Project Conditions

	Existing		2030 No Project		2030 Project		Project-Var. 1 (R&D)		Project-Var. 2 (Housing)	
Ramp Location	*LOS*	*Density[a] (pc/mi/ln)*	*LOS*	*Density (pc/mi/ln)*	*LOS*	*Density (pc/mi/ln)*	*LOS*	*Density (pc/mi/ln)*	*LOS*	*Density (pc/mi/ln)*
WEEKDAY PM PEAK HOUR										
US-101										
NB on from Sierra Point Parkway	C	27.0	C	27.5	D	30.4				
NB on from Harney Way[b]	C	20.2	F	>45	F	>45				
NB on from Bayshore	D	31.2	C	22.5	C	23.6				
NB on from Alemany/Industrial	E	36.4	F	>45	F	>45				
NB on from Bayshore/Cesar Chavez	F	>45	F	>45	F	>45				
SB off to Bayshore/Cesar Chavez	F	>45	F	>45	F	>45				
SB on from Cesar Chavez/Potrero	F	>45	F	>45	F	>45				
SB on from Alemany/San Bruno	C	24.1	D	28.8	C	24.1				
SB on from Third/Bayshore	D	30.0	F	>45	F	>45				
SB on from Harney/Geneva[b]	D	29.7	F	>45	F	>45				
SB on from Sierra Point/Lagoon	C	27.7	F	>45	F	>45				
I-280										
NB off to Cesar Chavez	F	>45	F	>45	F	>45				
NB on from Indiana/25th	D	33.4	F	>45	F	>45				
SB off to Pennsylvania/25th	C	23.6	E	37.0	E	36.9				
SB on from Pennsylvania/25th	C	22.9	E	36.3	E	36.1				
SUNDAY PM PEAK HOUR										
US-101										
NB on from Sierra Point Parkway	D	29.7	F	>45	F	>45				
NB on from Harney Way[b]	D	30.0	F	>45	F	>45				
NB on from Bayshore	D	28.6	D	27.9	D	30.0				
NB on from Alemany/Industrial	D	30.2	E	35.9	F	>45				

Table III.D-14 Ramp Junction LOS Existing, 2030 No Project and 2030 Project Conditions

	Existing		2030 No Project		2030 Project		Project-Var. 1 (R&D)		Project-Var. 2 (Housing)	
Ramp Location	LOS	Density[a] (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)
NB on from Bayshore/Cesar Chavez	B	19.6	F	>45	F	>45				
SB off to Bayshore/Cesar Chavez	F	>45	F	>45	F	>45				
SB on from Cesar Chavez/Potrero	F	>45	F	>45	F	>45				
SB on from Alemany/San Bruno	C	24.5	D	29.6	D	32.6				
SB on from Third/Bayshore	C	26.5	F	>45	F	>45				
SB on from Harney/Geneva[b]	C	24.2	D	31.9	F	>45				
SB on from Sierra Point/Lagoon	C	26.5	C	22.7	D	28.5				
I-280										
NB off to Cesar Chavez	D	28.4	F	>45	F	>45				
NB on from Indiana/25th	C	27.4	F	>45	F	>45				
SB off to Pennsylvania/25th	E	36.7	F	>45	F	>45				
SB on from Pennsylvania/25th	E	38.5	F	>45	F	>45				
SUNDAY PM PEAK HOUR										
US-101										
NB on from Sierra Point Parkway	B	19.3	A	9.1	A	9.8				
NB on from Harney Way[b]	B	19.5	D	33.0	E	35.1				
NB on from Bayshore	B	16.8	C	21.9	C	22.4				
NB on from Alemany/Industrial	C	23.5	C	24.6	C	25.6				
NB on from Bayshore/Cesar Chavez	C	26.1	D	31.7	F	>45				
SB off to Bayshore/Cesar Chavez	E	37.5	F	>45	F	>45				
SB on from Cesar Chavez/Potrero	D	30.6	F	>45	F	>45				
SB on from Alemany/San Bruno	B	17.3	C	21.2	C	22.5				
SB on from Third/Bayshore	B	16.5	C	23.9	D	26.1				
SB on from Harney/Geneva[b]	B	18.7	C	24.8	D	29.8				

Table III.D-14 Ramp Junction LOS Existing, 2030 No Project and 2030 Project Conditions

	Existing		*2030 No Project*		*2030 Project*		*Project-Var. 1 (R&D)*		*Project-Var. 2 (Housing)*	
Ramp Location	*LOS*	*Density[a] (pc/mi/ln)*	*LOS*	*Density (pc/mi/ln)*	*LOS*	*Density (pc/mi/ln)*	*LOS*	*Density (pc/mi/ln)*	*LOS*	*Density (pc/mi/ln)*
SB on from Sierra Point/Lagoon	B	18.3	C	21.6	C	22.6				
I-280										
NB off to Cesar Chavez	B	19.2	C	26.0	D	26.0				
NB on from Indiana/25th	B	18.4	C	25.6	D	25.8				
SB off to Pennsylvania/25th	C	27.0	D	30.7	D	30.9				
SB on from Pennsylvania/25th	C	26.4	D	29.5	D	29.5				

SOURCE Fehr and Peers, 2009

a. Density of vehicles per segment. pc/mi/ln = passenger cars per mile per lane.
b. Cumulative 2030 No Project conditions assume the reconstruction of the Harney Way interchange, as well as the extension of Geneva Avenue from Bayshore Boulevard east to the reconstructed interchange.
c. Ramp junctions at LOS E or LOS F conditions highlighted in bold

The Project would contribute to significantly cumulative traffic impacts at these locations. As described above in Impact TR-11, no feasible mitigation measures have been identified for the ramp junction locations. Therefore, the Project's contribution to cumulative impacts at the ramp locations would be significant and unavoidable.

Impact TR-14: Freeway Diverge Queue Storage Impacts

Impact TR-14 **Implementation of the Project could result in significant impacts related to freeway diverge queue storage at the Harney/US-101 Northbound Off-ramp. (Significant and Unavoidable with Mitigation)** ***[Criteria D.a, D.b, D.g]***

Table III.D-15 (Freeway Diverge Queue Storage Existing, 2030 No Project, and Project Conditions) presents the results of the ramp queue storage analysis for existing, 2030 No Project and Project conditions at 15 ramp locations. The Project would result in increases in traffic volumes that would cause the US-101 northbound off-ramp to Harney Way to experience queues that may extend back to the upstream freeway mainline segment which could result in unsafe conditions on the freeway mainline. The Project would therefore result in significant traffic impacts at this location.

Table III.D-15 Freeway Diverge Queue Storage Existing, 2030 No Project, and Project Conditions

		Existing	*2030 No Project*	*Project*
Ramp Location	*Ramp Storage*	*95th % Queue[a]*	*95th % Queue*	*95th % Queue*
		WEEKDAY AM PEAK HOUR		
US-101				
NB off to Harney Way2	2,800	< 100	1,725	2,350
NB off to Bayshore/Cesar Chavez	750	400	Spillback	Spillback
SB off to San Bruno/Silliman	600	225	225	225
SB off to San Bruno/Mansell	650	< 100	< 100	<100
SB off to Bayshore/Hester	1,700	225	275	275
SB off to Harney/Geneva2	1,000	< 100	Spillback	Spillback
SB off to Sierra Point/Lagoon	1,250	< 100	Spillback	Spillback
I-280				
NB off to Cesar Chavez	2,500	1,500	Spillback	Spillback
SB on from Pennsylvania/25th	900	< 100	< 100	< 100
		WEEKDAY PM PEAK HOUR		
US-101				
NB off to Harney Way[b]	2,800	< 100	Spillback	Spillback
NB off to Bayshore/Cesar Chavez	750	375	525	525
SB off to San Bruno/Silliman	600	325	425	425
SB off to San Bruno/Mansell	650	150	350	350

Table III.D-15 Freeway Diverge Queue Storage Existing, 2030 No Project, and Project Conditions

		Existing	*2030 No Project*	*Project*
Ramp Location	*Ramp Storage*	*95th % Queue*[a]	*95th % Queue*	*95th % Queue*
SB off to Bayshore/Hester	1,700	225	125	125
SB off to Harney/Geneva[b]	1,000	< 100	Spillback	Spillback
SB off to Sierra Point/Lagoon	1,250	< 100	1,000	1,000
I-280				
NB off to Cesar Chavez	2,500	650	900	900
SB on from Pennsylvania/25th	900	< 100	875	875
		SUNDAY PM PEAK HOUR		
US-101				
NB off to Harney Way[b]	2,800	< 100	1,450	Spillback
NB off to Bayshore/Cesar Chavez	750	275	350	350
SB off to San Bruno/Silliman	600	175	250	250
SB off to San Bruno/Mansell	650	< 100	< 100	100
SB off to Bayshore/Hester	1,700	300	300	325
SB off to Harney/Geneva[b]	1,000	< 100	Spillback	Spillback
SB off to Sierra Point/Lagoon	1,250	< 100	125	125
I-280				
NB off to Cesar Chavez	2,500	300	825	825
SB on from Pennsylvania/25th	900	< 100	150	175

SOURCE Fehr & Peers 2009

a. Ramps where there is potential for spillback are highlighted in bold.
b. 95th percentile queue is the length of queue that has a probability of 5 percent or less of being exceeded during the peak hour.
c. 2030 No Project conditions assume the reconstruction of the Harney Way Interchange as well as the connection of Geneva Avenue to the reconstructed interchange.

Mitigation measure MM TR-6 provides for the Project Applicant to pay a fair share toward the construction of the Harney Way Interchange Project, which could mitigate for the Project's contributions to this impact. Because the environmental review of the interchange project is not yet complete and the interchange project would be undertaken and approved by Caltrans, the implementation of mitigation measure MM TR-6 is uncertain and is outside the City/Agency jurisdiction. Therefore, Project-related impacts related to freeway diverge queue storage would be significant and unavoidable.

Impact TR-15: Contributions to Cumulative Freeway Diverge Queue Storage—Impacts

Impact TR-15 **Implementation of the Project could contribute to significant cumulative traffic impacts related to freeway diverge queue storage at some off-ramp locations (US-101 Northbound off-ramp to Harney Way, and US-101 Southbound Off-ramp to Harney Way/Geneva Avenue). (Significant and Unavoidable with Mitigation)** ***[Criteria D.a, D.b, D.g]***

The Project would also contribute cumulatively significant traffic increases at off-ramps where queues may extend onto freeway mainline segments under year 2030 No Project Conditions:

- US-101 northbound off-ramp to Harney Way
- US-101 northbound off-ramp to Bayshore/Cesar Chavez
- US-101 southbound off-ramp to Harney/Geneva
- US-101 southbound off-ramp to Sierra Point/Lagoon
- I-280 northbound off-ramp to Cesar Chavez

Mitigation measure MM TR-6 provides for the Project Applicant to pay a fair share toward the construction of the Harney Way Interchange Project, which could mitigate for the Project's contributions to this impact. Because the environmental review of the interchange project is not yet complete and the interchange would be undertaken and approved by Caltrans, the implementation of mitigation measure MM TR-6 is uncertain and is outside the City/Agency jurisdiction. Therefore, Project's contribution to impacts related to freeway diverge queue storage would remain significant and unavoidable.

Impact TR-16: Project and Cumulative Impacts on Harney Way

Impact TR-16 **Implementation of the Project would increase traffic volumes and would not contribute to cumulative traffic volumes on Harney Way. (Less than Significant with Mitigation)** ***[Criterion D.a]***

As part of the Project, the existing four-lane Harney Way would be widened to the north and south of its existing alignment, and would be rebuilt to contain between two and three travel lanes in each direction, turn pockets, two BRT-only lanes, Class I and Class II bicycle facilities, new sidewalks, as well as a landscaped area. Initially, the roadway would be rebuilt as a new five-lane roadway (with right-of-way reserved for additional lane(s) to be built in the future as needed for increased traffic levels). There would be two lanes in each direction, with eastbound left-turn lanes at Thomas Mellon Circle and Executive Park Boulevard East and a westbound right-turn lane at the Executive Park Boulevard East intersection. A Class II bicycle lane would be provided on the north side of the roadway, and a Class I bicycle path would be provided on the south side of the roadway. Two exclusive BRT lanes would be constructed adjacent to the roadway on its north side. After 49ers games at the new stadium, left turns would be prohibited at the two Harney Way intersections with Thomas Mellon Drive and Executive Park Boulevard for a period to allow for the configuration of the roadway to change to four westbound auto lanes and one eastbound auto lane. Under the final configuration, a portion of the landscaped area installed as part of the initial widening would be rebuilt to provide additional lane(s) from the proposed Harney Interchange east to Arelious Walker Drive, if necessary.

The initial phase of Harney Way widening would provide for additional landscaping area (i.e., in the area that would be converted to future travel lane(s)), which would make the pedestrian crossing of Harney Way shorter than with the final configuration. Under both the initial and final configurations, pedestrian crosswalks would be provided at the signalized intersections of Harney Way with Jamestown Avenue, Executive Park East and Thomas Mellon Drive, and pedestrian crossing times would be provided consistent with the requirements of the California Manual of Uniform Traffic Control Devices (MUTCD).

Since the need for the final lane configuration on Harney Way would depend on the rate of buildout of the Project, as well as the rate and extent of buildout of cumulative development in the area such as the Executive Park development, further studies would be needed to determine if and when additional travel lanes are needed to accommodate the traffic volume demand.

MM TR-16 *Widen Harney Way as shown in Figure 5 in the Transportation Study. Prior to issuance of the grading permit for Phase II of the Project, the Project Applicant shall widen Harney Way as shown in Figure 5 in the Transportation Study. Prior to the issuance of grading permits for Phases 2, 3 and 4, the Project Applicant shall fund a study to evaluate traffic conditions on Harney Way and determine whether additional traffic associated with the next phase of development would result in the need to modify Harney Way to its ultimate configuration, as shown in Figure 6 in the Transportation Study, unless this ultimate configuration has already been built. This study shall be conducted in collaboration with the SFMTA, which would be responsible for making final determinations regarding the ultimate configuration. The ultimate configuration would be linked to intersection performance, and it would be required when study results indicate intersection LOS at one or more of the three signalized intersection on Harney Way at mid-LOS D (i.e., at an average delay per vehicle of more than 45 seconds per vehicle). If the study and SFMTA conclude that reconfiguration would be necessary to accommodate traffic demands associated with the next phase of development, the Project Applicant shall be responsible to fund and complete construction of the improvements prior to occupancy of the next phase.*

With implementation of the mitigation measure MM TR-16, Harney Way would be widened and improved to its final configuration when traffic demand warrants additional capacity. Therefore, potential Project impacts and Project contribution to cumulative impacts on traffic capacity on Harney Way would be reduced to less than significant as demonstrated in Table III.D-10, Table III.D-11, and Table III.D-12.

Impact TR-17: Project and Cumulative Transit Capacity Impacts

Impact TR-17 **Implementation of the Project would not exceed available transit capacity, because the Project and the Project's contribution to cumulative demand would be accommodated within the existing transit service, proposed TEP service, plus the service proposed as part of the Project. (Less than Significant with Mitigation)** ***[Criterion D.f]***

The Project would include substantial improvements to transit service in the Hunters Point Shipyard, Candlestick Point, and Bayview neighborhoods, in addition to improvements currently proposed as part of SFMTA's Transit Effectiveness Program. As discussed in Impact TR-18, the Project improvements to

transit service, combined with existing service and proposed TEP improvements, would provide transit capacity to accommodate the new transit riders generated by the Project and by cumulative development.

Although the Project Description includes a plan for increased transit service to the study area (described in the "Analytic Method" section in Section III.D.4), because the final Transit Plan has not been formally approved by SFMTA, mitigation measure MM TR-17 is required to ensure the final Transit Plan will be prepared and implemented. Thus, mitigation measure MM TR-17 below requires preparation, approval, and implementation of the final transit-operating plan.

MM TR-17 *Implement the Project's Transit Operating Plan. The Project Applicant shall work with SFMTA to develop and implement the Project's Transit Operating Plan. Elements of the Project Transit Operating Plan shall include:*

- *Extension of the 24-Divisadero, the 44-O'Shaughnessy, and the 48-Quintara-24th Street into Hunters Point Shipyard.*
- *Increased frequency on the 24-Divisadero to 6 minutes in the AM and PM peak periods. Extension of the 29-Sunset from its current terminus near the Alice Griffith housing development, near Gilman Avenue and Giants Drive, into the proposed Candlestick Point retail area. The 29-Sunset would operate a short line between Candlestick Point and the Balboa Park BART station. This would increase frequencies on the 29-Sunset by reducing headways between buses from 10 minutes to 5 minutes during the AM and PM peak periods between Candlestick Point and the Balboa BART station. Every other bus would continue to serve the Sunset District (to the proposed terminus at Lincoln Drive and Pershing Drive in the Presidio) at 10-minute headways.*
- *Convert T-Third service between Bayview and Chinatown via the Central Subway from one-car to two-car trains or comparable service improvement. Extension of the 28L-19th Avenue Limited from its TEP-proposed terminus on Geneva Avenue, just east of Mission Street, into the Hunters Point Shipyard transit center. The 28L-19th Avenue Limited would travel along Geneva Avenue across US-101 via the proposed Geneva Avenue extension and new interchange with US-101, to Harney Way. East of Bayshore Boulevard, the 28L-19th Avenue Limited would operate as BRT, traveling in exclusive bus lanes into the Candlestick Point area. The BRT route would travel through the Candlestick Point retail corridor, and cross over Yosemite Slough into the Hunters Point Shipyard transit center.*
- *The 28L-19th Avenue Limited would operate a short line to the Balboa Park BART station. This would increase frequencies on the 28L-19th Avenue Limited by reducing headways between buses from 10 minutes to 5 minutes for the segment between Hunters Point Shipyard and the Balboa Park BART station. Every other bus would continue to the Sunset District (to the proposed terminus at North Point Street and Van Ness Avenue) at 10-minute headways. If the TEP-proposed extension of the 28L has not been implemented by the SFMTA by the time implementation of this measure is called for in the Transportation Study (Appendix D), the Project Applicant shall fund the extension of that line between its existing terminus and Bayshore Boulevard.*
- *New CPX-Candlestick Express to downtown serving the Candlestick Point site, traveling along Harney Way (with potential stops at Executive Park), before traveling on US-101 toward downtown, terminating at the Transbay Terminal.*
- *New HPX-Hunters Point Shipyard Express to downtown serving the Hunters Point Shipyard site, traveling from the Hunters Point Shipyard Transit Center, along Innes Avenue, with stops*

at the India Basin and Hunters View areas, before continuing along Evans Avenue to Third Street, eventually entering I-280 northbound at 25th/Indiana. The HPX would continue non-stop to the Transbay Terminal in Downtown San Francisco.

Funds for the implementation of this mitigation measure are expected to be generated from a combination of Project revenues that accrue to the City, and other funding sources. With implementation of the Transit Plan, Project-generated transit trips would be accommodated within the existing and proposed transit capacity, and therefore Project impacts on transit capacity would be less than significant.

Impact TR-18: Project and Cumulative Transit Impacts— Ridership and Capacity Utilization at Study Area Cordons

Impact TR-18 **With full implementation of the Project with proposed transit improvements, the Project demand and the Project's contribution to cumulative demand would not exceed the proposed transit system's capacity at the study area cordons. (Less than Significant with Mitigation)** ***[Criteria D.f, D.i]***

Full implementation of the Project's transit improvements would result in substantial increases in capacity for both the north/south and east/west lines serving the Project vicinity. Table III.D-16 (Comparison of Capacity at Study Area Cordons Existing, 2030 No Project and Project Conditions—Weekday AM and PM Peak Hours) presents a comparison of the overall cordon capacity for Muni service for existing conditions, 2030 No Project conditions (with the TEP improvements assumed to be in place), and the Project conditions. Specifically, the Project would more than double overall east/west transit capacity at the cordon just east of Third Street (primarily due to the new BRT route). North-south transit capacity to the north of the Project site would double, and capacity to the south of the Project site would increase by more than 80 percent over the transit service proposed by the TEP.

Table III.D-16 Comparison of Capacity at Study Area Cordons Existing, 2030 No Project and Project Conditions— Weekday AM and PM Peak Hours

Cordon	*Existing Capacity*[a]	*2030 No Project TEP Capacity*[b]	*2030 Project Capacity*[c]
East of Third Cordon	1,715	1,715	3,988
North Cordon	2,085	1,769	3,546
West Cordon	2,033	2,224	4,002

SOURCE: SFMTA, Fehr & Peers

a. Capacity presented in riders per hour. Inbound and Outbound Capacity the same—one direction of capacity presented.

b. Year 2030 No Project reflects implementation of TEP recommendations for lines serving the study area. 19-Polk will no longer serve the study area, but will be replaced by the 48-Quintara, and the 56-Rutland will be eliminated.

c. Project conditions reflect TEP, plus Project improvements.

Table III.D-17 (Project Transit Trips and Capacity Utilization at Study Area Cordons Existing, 2030 No Project and Project Conditions—Weekday AM and PM Peak Hours) summarizes the capacity utilization for each of the three study area cordons for the AM and PM peak hours for the existing, 2030 No Project and Project conditions. With the transit capacity increases proposed by the Project, the total

transit travel demand on Muni under Project conditions could be accommodated for each of the three cordons during the AM and PM peak hours. All three cordons would operate at less than Muni's 85 percent capacity utilization standards.

Table III.D-17 Project Transit Trips and Capacity Utilization at Study Area Cordons Existing, 2030 No Project and Project Conditions—Weekday AM and PM Peak Hours

	Existing		*2030 No Project*		*Project*	
Intersection	*Ridership*	*Capacity Utilization*	*Ridership*	*Capacity Utilization*	*Ridership*	*% Utilized*
AM PEAK HOUR						
East of Third Cordon						
Inbound	686	40%	1,353	79%	2,548	64%
Outbound	319	19%	1,577	92%	1,541	39%
North Cordon						
Inbound	859	41%	2,065	117%	2,458	69%
Outbound	754	36%	1,901	107%	2,151	61%
West Cordon						
Inbound	1,348	68%	2,053	92%	3,164	79%
Outbound	722	36%	1,536	69%	1,870	47%
PM PEAK HOUR						
East of Third Cordon						
Inbound	389	23%	1,382	81%	2,002	50%
Outbound	253	15%	848	49%	2,092	52%
North Cordon						
Inbound	846	41%	2,049	116%	2,675	75%
Outbound	626	30%	1,628	92%	2,231	63%
West Cordon						
Inbound	711	36%	1,196	54%	1,938	48%
Outbound	824	42%	1,249	56%	2,374	59%

SOURCE: Fehr & Peers.

If Project-related transit capacity improvements are not provided, then only the capacity presented in Table III.D-16 for the 2030 No Project conditions would be available to accommodate Project and cumulative transit ridership. As indicated in Table III.D-17, under 2030 No Project conditions, the capacity utilization at the study area cordons is projected to exceed Muni's 85 percent capacity utilization standard. With the addition of Project-generated transit trips, the severity of the standard exceedance would increase, and would result in significant impacts. Because the final transit plan has not been formally approved by SFMTA, mitigation measure MM TR-17 is required to ensure the final Transit Plan will be prepared and implemented.

With implementation of mitigation measure MM TR-17, the Project's impacts and the Project's contribution to cumulative impacts on transit capacity at the study area cordons would be less than significant.

Impact TR-19: Project and Cumulative Impacts—Transit Capacity Utilization at Downtown Screenlines

Impact TR-19 **Implementation of the Project would add transit trips and the Project's contribution to cumulative transit trips to the Downtown Screenlines would not increase demands in excess of available capacity. (Less than Significant)** ***[Criterion D.f, D.i]***

Project transit improvements would not affect the capacity at the four Downtown Screenlines; however, a portion of the Project trips would cross the Southwest screenline and contribute to total ridership at this location. Table III.D-18 (Project Transit Trips and Capacity Utilization at Downtown Screenlines Existing, 2030 No Project and Project Conditions—Weekday AM and PM Peak Hours) summarizes the capacity utilization for the downtown screenlines for the AM and PM peak hours for the Project conditions. The Project would only add peak-direction riders through the Southeast downtown screenline. Ridership on other screenlines would remain unchanged from 2030 No Project conditions. With the addition of Project trips all downtown screenlines would continue to operate with Muni's 85 percent utilization standard. Therefore, Project impacts on transit capacity at the Downtown Screenlines would be less than significant.

Table III.D-18 Project Transit Trips and Capacity Utilization at Downtown Screenlines Existing, 2030 No Project and Project Conditions—Weekday AM and PM Peak Hours

	Existing		*2030 No Project*		*Project*	
Intersection	*Ridership*	*Capacity Utilization*	*Ridership*	*Capacity Utilization*	*Ridership*	*%Util.*
AM Peak Hour						
Northeast	1,882	50%	3,008	78%	3,008	78%
Northwest	7,434	65%	8,949	75%	8,949	75%
Southeast	4,248	67%	7,248	71%	7,536	74%
Southwest	6,627	76%	7,674	76%	7,674	76%
Total All Screenlines	***20,191***	***67%***	***26,879***	***74%***	***27,167***	***75%***
PM Peak Hour						
Northeast	1,886	52%	3,140	67%	3,140	78%
Northwest	6,621	65%	8,155	70%	8,155	75%
Southeast	4,668	66%	7,733	78%	8,263	83%
Southwest	7,434	77%	8,829	82%	8,829	82%
Total All Screenlines	***20,609***	***68%***	***27,857***	***75%***	***28,347***	***80%***

SOURCE: Fehr & Peers.

Impact TR-20: Project and Cumulative Impacts—Transit Capacity and Utilization at Regional Screenlines

Impact TR-20 **Implementation of the Project would add transit trips and the Project's contribution to cumulative transit trips would not contribute significantly to Regional Screenlines conditions where overall ridership is projected to exceed available capacity. (Less than Significant)** ***[Criterion D.f, D.i]***

Project transit improvements would not affect the capacity of the Regional Screenlines; however, a portion of the Project trips would cross the East Bay, North Bay and South Bay screenlines and contribute to total ridership at these locations. Table III.D-19 (Project Transit Trips and Capacity Utilization at Regional Screenlines Project and Project Variants—Weekday AM and PM Peak Hours) summarizes the capacity utilization for the regional transit provider screenlines for the AM and PM peak hours for existing, 2030 No Project, and Project conditions. The Project would contribute small ridership increases to regional transit, with the greatest increase to and from the South Bay. The Project would contribute slightly fewer trips to the South Bay in the off-peak directions (southbound in the AM peak hour and northbound in the PM peak hour) than in the peak directions. Off-peak direction ridership would remain within available capacity in the AM and PM peak hours.

Table III.D-19 Project Transit Trips and Capacity Utilization at Regional Screenlines Project and Project Variants—Weekday AM and PM Peak Hours

	Existing		*2030 No Project*		*Project*	
Intersection	*Ridership*	*Capacity Utilization*	*Ridership*	*Capacity Utilization*	*Ridership*	*% Utilized*
AM PEAK HOUR						
East Bay						
BART	18,064	123%	36,202	185%	36,202	185%
AC Transit	1,670	55%	3,347	61%	3,347	61%
Ferries	667	56%	1,971	83%	1,971	83%
Subtotal	*20,401*	*108%*	*41,520*	*151%*	*41,520*	*151%*
North Bay						
Golden Gate Transit	1,510	57%	2,623	106%	2,621	106%
Ferries	949	56%	1,647	97%	1,647	97%
Subtotal	*2,459*	*56%*	*4,268*	*102%*	*4,268*	*102%*
South Bay						
BART	11,185	105%	12,409	89%	12,416	89%
Caltrain	2,128	65%	4,454	70%	4,451	70%
SamTrans	686	65%	794	75%	799	75%
Ferries	—	--	152	51%	152	51%
Subtotal	*13,999*	*94%*	*17,809*	*82%*	*17,818*	*82%*
Total All Screenlines	***36,859***	***96%***	***63,597***	***119%***	***63,606***	***119%***

Table III.D-19 Project Transit Trips and Capacity Utilization at Regional Screenlines Project and Project Variants—Weekday AM and PM Peak Hours

	Existing		*2030 No Project*		*Project*	
Intersection	*Ridership*	*Capacity Utilization*	*Ridership*	*Capacity Utilization*	*Ridership*	*% Utilized*
PM PEAK HOUR						
East Bay						
BART	16,985	120%	30,241	154%	30,268	154%
AC Transit	2,517	60%	4,485	68%	4,485	68%
Ferries	702	46%	2,147	79%	2,147	79%
Subtotal	*20,204*	*102%*	*36,873*	*128%*	*36,900*	*128%*
North Bay						
Golden Gate Transit	1,397	63%	2,513	114%	2,513	114%
Ferries	906	53%	1,630	96%	1,630	96%
Subtotal	*2,303*	*59%*	*4,143*	*106%*	*4,143*	*106%*
South Bay						
BART	9,545	92%	10,631	76%	10,707	76%
Caltrain	1,986	61%	3,959	62%	4,008	63%
SamTrans	575	61%	362	39%	404	43%
Ferries	—	—	75	25%	75	25%
Subtotal	*12,106*	*83%*	*15,027*	*69%*	*15,194*	*70%*
Total All Screenlines	***34,613***	***90%***	***56,043***	***103%***	***56,237***	***103%***

SOURCE: Fehr & Peers.

BART to the East Bay and Golden Gate Transit to the North Bay are projected to exceed operating standards under 2030 conditions during both the weekday AM and PM peak hours. Project contributions to these Screenlines would be minimal (fewer than 50 transit riders). Therefore, the Project impacts and the Project's contribution to cumulative impacts on Regional transit capacity would be less than significant.

Impact TR-21: Project and Cumulative Transit Operations Impacts—9-San Bruno

Impact TR-21 **Implementation of the Project could increase congestion and contribute to cumulative conditions at intersections along San Bruno Avenue, which would increase travel times and impact operations of the 9-San Bruno. (Significant and Unavoidable with Mitigation)** ***[Criterion D.i]***

Project-related transit delays due to congestion on study area roadways and passenger loading delays associated with increased ridership would result in significant impacts on the operation of the 9-San Bruno. Within the study area, the 9-San Bruno would experience substantial delays at key intersections along San Bruno Avenue, including at Silver Avenue, Silliman Avenue, Paul Avenue/Dwight Street, and at Mansell Street. Overall, the Project-related congestion would add up to 8 minutes of delay per bus

during peak hours. The provision of transit-only lanes on San Bruno Avenue, and other transit-priority treatments would reduce travel time delays and impacts on this line.

MM TR-21.1 *Maintain the proposed headways of the 9-San Bruno. To address Project impacts to the 9-San Bruno, prior to issuance of a grading permit for Phase I, the Project Applicant in cooperation with SFMTA shall conduct a study to evaluate the effectiveness and feasibility of the following improvements which could reduce Project impacts on transit operations along the San Bruno Avenue corridor, generally between Campbell Avenue and Silver Avenue. The study shall create a monitoring program to determine the implementation extent and schedule (as identified below) to maintain the proposed headways of the 9-San Bruno.*

- *Install a transit-only lane on northbound San Bruno Avenue for the one-block section (400 feet) between Silliman Street and Silver Avenue. This would involve removal of five metered spaces on the east side of San Bruno Avenue, just south of Silver Avenue. Treatment for transit-only lanes can range from striping to physical elevation changes or barriers to protect transit right-of-way from mixed-flow traffic.*
- *Install a transit-only lane on southbound San Bruno Avenue at the approach to Dwight Street/Paul Avenue. This lane would function as a so-called "queue-jump" lane, allowing buses to bypass queues on southbound San Bruno Avenue at the intersection. The lane should begin approximately 200 feet north of Dwight Street and extend one block (about 300 feet) south of Paul Avenue to Olmstead Street. This would involve the removal of up to 20 on-street parking spaces on the west side of San Bruno Avenue. This treatment could be limited to peak hours only, which would minimize the impact of the parking loss. The segment of San Bruno Avenue between Dwight Street and Olmstead Street is designated as Bicycle Routes #705 and 5 (Class III signed routes).*
- *At the intersection of San Bruno/Silver install signal priority treatments on westbound Silver Avenue, where buses waiting to turn left from Silver Avenue onto southbound San Bruno Avenue must currently wait through almost an entire signal cycle due to the heavy oncoming traffic on eastbound Silver Avenue. Installation of a transit signal pre-emption at this location that provides a "green" signal for westbound vehicles but holds eastbound vehicles when buses are present would allow transit vehicles to turn left onto San Bruno Avenue without having to wait for opposing eastbound through traffic to clear.*

The Project Applicant shall fully fund the costs of implementing the transit priority improvements (either the improvements identified above, or alternative improvements of equal or greater effectiveness and comparable cost) as determined by the study and the monitoring program. Other options to be evaluated in the study could include comprehensive replacement of stop-controlled intersections with interconnected traffic signals equipped with transit priority elements.

MM TR-21.2 *Purchase additional transit vehicles as necessary to mitigate the Project impacts and Project contribution to cumulative impacts to headways on the 9-San Bruno. Should mitigation measure MM TR-21.1 not be feasible or effective, the Project Applicant shall work with SFMTA to purchase additional transit vehicles as necessary to mitigate the Project impacts and Project contribution to cumulative impacts to headways on the 9-San Bruno. Funds for the implementation of this mitigation measure are expected to be generated from a combination of Project revenues that accrue to the City, and other funding sources.*

The three treatments for Impact TR-21 contained in mitigation measure MM TR-21.1 combined could reduce AM peak hour travel times by 4 minutes and 6 seconds in the northbound direction, and 6

minutes 18 seconds in the southbound direction. During the PM peak hour, these treatments could reduce PM peak hour travel times by 4 minutes 6 seconds in the northbound direction and by 8 minutes in the southbound direction. With the combination of mitigation measures, transit travel times in each direction and during each peak period would be no greater than for 2030 No Project conditions. However, because 2030 No Project conditions constitute adverse delays to transit service, cumulative adverse delays to transit service would occur even with these Project transit mitigation measures. Because adverse transit delays affecting this line are generated by adverse traffic congestion to which the Project has a considerable contribution, the Project also has a cumulatively considerable contribution to adverse transit delays.

Implementation of mitigation measure MM TR-21.2, on the other hand, would allow operation of headways as described under MM TR-17. However, given the congestion along the San Bruno Avenue corridor, implementation of MM TR-21.2 alone, without MM TR-21.1, might not be sufficient to reduce the impact to less-than-significant levels.

Implementation of MM TR-21.1 would exacerbate LOS F conditions at the intersections of San Bruno/Silver, San Bruno/Silliman/US-101 Southbound off-ramp, and San Bruno/Paul that were identified as having significant and unavoidable impacts. Additional impacts of these mitigation measures would be similar to impacts addressed in this Section III.D.4 regarding traffic circulation, parking supply, loading supply and operations, and bicycle circulation. Impacts of the mitigation measures regarding air quality and noise levels would be similar to those identified in Section III.H (Air Quality) and Section III.I (Noise and Vibration), respectively.

Because a feasibility study of the improvements contemplated in mitigation measure MM TR-21.1 would be required, implementation of MM TR-21.1 is uncertain. Because implementation of MM TR-21.2 alone, without MM TR-21.1, might not be sufficient to reduce the impacts on the 9-San Bruno to a less-than-significant level, the Project impacts on the 9-San Bruno would remain significant and unavoidable.

Impact TR-22: Project and Cumulative Transit Operations Impacts—23-Monterey, 24-Divisadero & 44-O'Shaugnessy

Impact TR-22 **Implementation of the Project would contribute traffic to cumulative conditions at intersections along Palou Avenue, which would increase travel times and impact operations of the 23-Monterey, 24-Divisadero, and the 44-O'Shaughnessy. (Significant and Unavoidable with Mitigation)** ***[Criterion D.i]***

Project-related transit delays due to congestion on study area roadways and passenger boarding delays associated with increased ridership would result in significant impacts on the operation of the 23-Monterey, 24-Divisadero, and 44-O'Shaughnessy. Along Palou Avenue these lines would be affected by the substantial congestion projected at the intersection of Third/Palou and the queues that would extend to the east and west of Third Street. Overall, the Project-related congestion would add up to 7 minutes of delay per bus during peak hours. The provision of transit-only lanes on Palou Avenue would reduce travel time delays and impacts on these lines.

MM TR-22.1 *Maintain the proposed headways of the 23-Monterey, 24-Divisidero and the 44-O'Shaughnessy. To address Project impacts to the 23-Monterey, 24-Divisidero and the 44-O'Shaughnessy, prior to issuance of a grading permit for Phase I, the Project Applicant in cooperation with SFMTA shall conduct a study to evaluate the effectiveness and feasibility of the following improvements which could reduce Project impacts on transit operations along the Palou Avenue corridor, generally between Griffith Street and Newhall Street. The study shall create a monitoring program to determine the implementation extent and schedule (as identified below) to maintain the proposed headways of the 23-Monterey, 24-Divisidero and the 44-O'Shaughnessy.*

- *Convert one of the two westbound travel lanes on Palou Avenue between Keith Street and Newhall Street (three blocks) to a transit-only lane at all times. Treatment for transit-only lanes can range from striping to physical elevation changes to protect right-of-way from mixed-flow traffic. Because the westbound lanes between Third Street and Newhall Street are relatively narrow, parking would likely need to be prohibited on the north side of Palou Avenue between Third Street and Newhall Street (approximately 600 feet) during peak periods to maximize the effectiveness of the transit-only lane.*
- *Convert one of the two eastbound travel lanes on Palou Avenue between Newhall Street and Third Street (one block) to a transit-only lane at all times. Because the eastbound travel lanes between Newhall Street are relatively narrow, parking would likely need to be prohibited on the south side of Palou Avenue between Newhall Street and Third Street (approximately 600 feet) during peak periods to maximize the effectiveness of the transit-only lane. In the eastbound direction, east of Third Street, buses would re-enter the single mixed-flow traffic lane at the bus stop on the far (east) side of Third Street.*
- *There are currently pedestrian corner bulbs on the northwest and southwest corners of the intersection of Palou Avenue and Third Street. In order to accommodate the transit-only lanes west of Third Street, these bulbouts would be reconfigured or removed. Although removing pedestrian bulb-outs may increase pedestrian crossing distances and is generally inconsistent with the City's desire to prioritize pedestrian activity, in this case, the improvement would offer substantial benefits to transit travel times by allowing a transit-only lane through a congested intersection. This would be consistent with the City's transit-first policy.*
- *During the PM peak period only, prohibit parking on westbound Palou Avenue for the four-block segment between Griffith Street/Crisp Avenue and Keith Street, to provide for a PM peak period curb transit-only lane along this segment. This would create a continuous westbound transit-only lane on Palou Avenue between Griffith Street/Crisp Avenue and Newhall Street during the PM peak period.*
- *As an alternative to the bulleted measures above, narrow the existing sidewalks on Palou Avenue from Third Street to Crisp Avenue (seven blocks) from 15 feet to 12 feet in width. The pedestrian bulb-outs on the west side of Third Street would be removed. The resulting 12-foot-wide sidewalks would be consistent with the Better Streets Plan guidelines. The reduction in sidewalk width would allow for the provision of a 7-foot-wide on-street parking lane, an 11-foot-wide transit-only lane, and a 10-foot-wide mixed-flow lane in each direction on Palou Avenue. This would preserve on-street parking along the corridor and provide a seven-block transit-only lane on Palou Avenue between Griffith Street/Crisp Avenue and Newhall Street. Treatment for transit-only lanes can range from striping to physical elevation changes to protect right-of-way from mixed-flow traffic.*

The Project Applicant shall fully fund the costs of implementing the transit priority improvements (either the improvements identified above, or alternative improvements of equal or greater effectiveness

and comparable cost) as determined by the study and the monitoring program. Other options to be evaluated in the study could include signal priority treatments at other signalized intersections including at Bayshore/Cortland, Bayshore/Industrial, and Bayshore/Oakdale.

MM TR-22.2 *Purchase additional transit vehicles as necessary to mitigate the Project impacts and Project contribution to cumulative impacts to headways on the 23-Monterey, the 24-Divisadero and the 44-O'Shaughnessy. Should mitigation measure MM TR-22.1 not be feasible or effective, the Project Applicant shall work with SFMTA to purchase additional transit vehicles as necessary to mitigate the Project impacts and Project contribution to cumulative impacts to headways on the 23-Monterey, the 24-Divisadero and the 44-O'Shaughnessy. Funds for the implementation of this mitigation measure are expected to be generated from a combination of Project revenues that accrue to the City, and other funding sources.*

Implementation of the transit-only lanes would reduce travel times on the three routes:

- **23-Monterey**—The Project would not result in Project-specific impacts to the 23-Monterey because increases in Project-generated vehicles would not increase intersection delay and transit travel times such that additional transit vehicles would be required to maintain the proposed headways. However, it would contribute to cumulatively significant impacts identified for the 2030 No Project condition. The mitigation measures identified for Palou Avenue would improve service on the 23-Monterey, but the route would continue to experience cumulatively significant impacts.
- **24-Divisadero**—Combined, these measures (either the first three bullets combined or the fourth alone) could reduce AM peak hour travel times by 4 minutes and 45 seconds in the westbound direction and by 4 minutes in the eastbound direction. During the PM peak hour travel times could be reduced by 8 minutes and 15 seconds in the westbound direction and by 4 minutes in the eastbound direction. In each direction and peak hour, the transit travel times with the Project might not be greater than the 2030 No Project travel times by more than ½ headway, and therefore additional transit vehicles would not be required.
- **44-O'Shaughnessy**—The improvements along Palou Avenue between Keith Street and Newhall Street would improve the travel times on the 44-O'Shaughnessy such that in each direction and peak hour, the transit travel times with the Project would not be greater than the 2030 No Project travel times by more than ½ headway, and therefore additional vehicles would not be required to maintain the proposed headways.

With the combination of treatments identified in mitigation measure MM TR-22.1, transit travel times in each direction and during each peak period would be no greater than for 2030 No Project conditions. However, because 2030 No Project conditions constitute adverse delays to transit service, cumulative adverse delays to transit service would occur even with these Project transit mitigation measures. Because adverse transit delays affecting this line are generated by adverse traffic congestion to which the Project has a considerable contribution, the Project also has a cumulatively considerable contribution to adverse transit delays.

Implementation of mitigation measure MM TR-22.2, on the other hand, would allow operation of headways as described under MM TR-17. However, given the congestion along the Palou Avenue corridor, implementation of MM TR-22.2 alone, without MM TR-22.1, might not be sufficient to reduce the impact to less-than-significant levels.

Implementation of MM TR-22.1 would also exacerbate automobile LOS F conditions at the intersection of Third/Palou that would have significant and unavoidable impacts under Project conditions. In addition, these measures may result in new significant and unavoidable impacts at intersections along Palou Avenue (i.e., at Griffith/Crisp, Ingalls, Jennings, Lane, Keith Streets). Additional impacts of these mitigation measures would be similar to impacts addressed in this Section III.D.4 regarding traffic circulation, parking supply, loading supply and operations, and bicycle circulation. Impacts of the mitigation measures regarding air quality and noise levels would be similar to those identified in Section III.H and Section III.I, respectively.

Because a feasibility study of the improvements contemplated in mitigation measure MM TR-22.1 would be required, implementation of MM TR-22.1 is uncertain. Because implementation of MM TR-22.2 alone, without MM TR-22.1, might not be sufficient to reduce the impacts on the 23-Monterey, 24-Divisadero, and 44-O'Shaughnessy to a less-than-significant level, the Project impacts on the 23-Monterey, 24-Divisadero, and 44-O'Shaughnessy would remain significant and unavoidable.

Impact TR-23: Project and Cumulative Transit Operations Impacts—29-Sunset

Impact TR-23 **Implementation of the Project would increase congestion at intersections along Gilman Avenue and Paul Avenue, which would increase travel times and would impact operations of the 29-Sunset. (Significant and Unavoidable with Mitigation)** ***[Criterion D.i]***

Project-related transit delays due to congestion on study area roadways and passenger loading delays associated with increased ridership would result in significant impacts on the operation of the 29-Sunset. Within the study area, the 29-Sunset would experience substantial delays at key intersections along Gilman Avenue and Paul Avenue, particularly at Third Street and Bayshore Boulevard. Overall, the Project-related congestion would add up to 17 minutes of delay per bus during peak hours. The provision of transit-only lanes on Gilman Avenue and Paul Avenue would reduce travel time delays and impacts on this line.

MM TR-23.1 *Maintain the proposed headways of the 29-Sunset. To address Project impacts to the 29-Sunset, prior to issuance of a grading permit for Phase I, the Project Applicant in cooperation with SFMTA shall conduct a study to evaluate the effectiveness and feasibility of the following improvements which could reduce Project impacts on transit operations along the Gilman Avenue and Paul Avenue corridor, generally between Arelious Walker Drive and Bayshore Boulevard. The study shall create a monitoring program to determine the implementation extent and schedule (as identified below) to maintain the proposed headways of the 29-Sunset.*

- *For the five-block segment of Gilman Avenue between Arelious Walker Drive and Third Street, prohibit on-street parking on westbound Gilman Avenue during the AM and PM peak periods to provide for three westbound travel lanes. During the peak periods convert one of the three westbound travel lanes to transit-only. During off-peak periods, parking would be allowed, and buses would travel in one of the two mixed-flow lanes. The peak period transit lanes would impact 90 parking spaces.*
- *For the same five-block segment of Gilman Avenue between Arelious Walker Drive and Third Street, restripe the eastbound direction to provide two travel lanes, one of which would accommodate on-street parking and one of which would be a mixed-flow travel lane. During the*

AM and PM peak periods, prohibit on-street parking in the eastbound direction, and operate one of the two eastbound lanes as transit-only lanes. The peak period transit lanes would impact 80 parking spaces.

- *As an alternative to the two bulleted measures above, narrow the existing sidewalks on Gilman Avenue from Third Street to Griffith Street (four blocks) from 15 feet to 12 feet in width. The resulting 12-foot-wide sidewalks would be consistent with the Better Streets Plan guidelines. The reduction in sidewalk width would allow for the provision of a 7-foot-wide on-street parking lane, an 11-foot-wide transit-only lane, and a 10-foot-wide mixed-flow lane in each direction on Gilman Avenue. This would preserve on-street parking along the corridor and provide four-block transit-only lanes on Gilman Avenue between Griffith Street and Third Street. Treatment for transit-only lanes can range from striping to physical elevation changes to protect right-of-way from mixed-flow traffic.*
- *Prohibit on-street parking on the north side of Paul Avenue, between Third Street and Bayshore Boulevard to create two westbound through lanes. Convert one westbound through lane to transit-only in the AM and PM peak periods. The peak period transit-only lane would impact 40 parking spaces. At the intersection of Paul Avenue and Bayshore Avenue, provide transit signal priority treatment (i.e., queue jump) to allow transit vehicles to maneuver into the mixed flow left-hand lane, facilitating a left-turn movement immediately west of Bayshore Boulevard from westbound Paul Avenue to southbound San Bruno.*

The Project Applicant shall fully fund the costs of implementing the transit priority improvements (either the improvements identified above, or alternative improvements of equal or greater effectiveness and comparable cost) as determined by the study and the monitoring program. Other options to be evaluated in the study could include transit priority treatments on San Bruno Avenue, on the portions where the 29-Sunset travels.

MM TR-23.2 *Purchase additional transit vehicles as necessary to mitigate the Project impacts and Project contribution to cumulative impacts to headways on the 29-Sunset. Should mitigation measure MM TR-23.1 not be feasible or effective, the Project Applicant shall work with SFMTA to purchase additional transit vehicles as necessary to mitigate the Project impacts and Project contribution to cumulative impacts to headways on the 29-Sunset. Funds for the implementation of this mitigation measure are expected to be generated from a combination of Project revenues that accrue to the City, and other funding sources.*

Implementation of transit-only lanes identified in mitigation measure MM TR-23.1 could reduce AM peak hour transit travel times by 4 minutes and 48 seconds in the westbound direction and 5 minutes and 10 seconds in the eastbound direction. During the PM peak, these measures would reduce transit travel times by 5 minutes and 20 seconds in the westbound direction and by 2 minutes in the eastbound direction. With the combination of mitigation measures, transit travel times in each direction and during each peak period would be no greater than for 2030 No Project conditions. However, because 2030 No Project conditions constitute adverse delays to transit service, cumulative adverse delays to transit service would occur even with these Project transit mitigation measures. Because adverse transit delays affecting this line are generated by adverse traffic congestion to which the Project has a considerable contribution, the Project also has a cumulatively considerable contribution to adverse transit delays.

Implementation of mitigation measure MM TR-23.1, on the other hand, would allow operation of headways as described under MM TR-17. However, given the congestion along the Gilman Avenue

corridor, implementation of MM TR-23.2 alone, without MM TR-23.1, might not be sufficient to reduce the impact to less-than-significant levels.

Implementation of MM TR-23.1 would also exacerbate automobile LOS F conditions at the intersection of Third/Paul and Paul/Bayshore that was identified as having significant and unavoidable impacts. Additional impacts of these mitigation measures would be similar to impacts addressed in this Section III.D.4 regarding traffic circulation, parking supply, loading supply and operations, and bicycle circulation. Impacts of the mitigation measures regarding air quality and noise levels would be similar to those identified in Section III.H and Section III.I, respectively.

Because a feasibility study of the improvements contemplated in mitigation measure MM TR-23.1 would be required, implementation of MM TR-23.1 is uncertain. Because implementation of MM TR-23.2 alone, without MM TR-23.1, might not be sufficient to reduce the impacts on the 29-Sunset to a less-than-significant level, the Project impacts on the 29-Sunset would remain significant and unavoidable.

Impact TR-24: Project and Cumulative Impacts to Transit Operations—48-Quintara-24th Street

Impact TR-24 **Implementation of the Project would increase congestion at intersections along Evans Avenue, which would increase travel times and impact operations of the 48-Quintara-24th Street. (Significant and Unavoidable with Mitigation)** ***[Criterion D.i]***

Project-related transit delays due to congestion on study area roadways and passenger loading delays associated with increased ridership would result in significant impacts on the operation of the 48-Quintara-24th Street. Within the study area, the 48-Quintara-24th Street would experience substantial delays at key intersections along Evans Avenue, particularly at the key intersections with Third Street, Napoleon/Toland Streets and at Cesar Chavez Street. Overall, the Project-related congestion would add up to 3 minutes of delay per bus during peak hours. The provision of transit-only lanes on Evans Avenue and other transit-priority treatments would reduce travel time delays and impacts on this line.

MM TR-24.1 *Maintain the proposed headways of the 48-Quintara-24th Street. To address Project impacts to the 48-Quintara-24th Street, prior to issuance of a grading permit for Phase I, the Project Applicant in cooperation with SFMTA shall conduct a study to evaluate the effectiveness and feasibility of the following improvements which could reduce Project impacts on transit operations along the Evans Avenue corridor, generally between Hunters Point Boulevard and Napoleon Street. The study shall create a monitoring program to determine the implementation extent and schedule (as identified below) to maintain the proposed headways of the 48-Quintara-24th Street.*

- *On Evans Avenue, between Jennings Street and Napoleon Street (a nine-block segment—about 6,000 feet), convert one of the two travel lanes in each direction to a transit-only lane at all times. Treatment for transit-only lanes can range from striping to physical elevation changes or barriers to protect transit right-of-way from mixed-flow traffic.*

The Project Applicant shall fully fund the costs of implementing the transit priority improvements (either the improvements identified above, or alternative improvements of equal or greater effectiveness and comparable cost) as determined by the study and the monitoring program. Other options to be

evaluated in the study could include extension of transit only lanes in one or both directions between Napoleon Street and Cesar Chavez Street or onto Hunters Point Boulevard and Innes Avenue.

MM TR-24.2 *Purchase additional transit vehicles as necessary to mitigate the Project impacts and Project contribution to cumulative impacts to headways on the 48-Quintara-24th Street. Should mitigation measure MM TR-24.1 not be feasible or effective, the Project Applicant shall work with SFMTA to purchase additional transit vehicles as necessary to mitigate the Project impacts and Project contribution to cumulative impacts to headways on the 48-Quintara-24th Street. Funds for the implementation of this mitigation measure are expected to be generated from a combination of Project revenues that accrue to the City, and other funding sources.*

Provision of the transit-only lane on Evans Avenue, as identified in mitigation measure MM TR-24.1 would reduce AM peak hour transit travel times by 80 seconds in the westbound direction, and by 2 minutes and 33 seconds in the eastbound direction. During the PM peak hour transit travel times would be reduced by 1 minute and 40 seconds in the westbound direction, and by 2 minutes and 15 seconds in the eastbound direction. With the combination of mitigation measures, transit travel times in each direction and during each peak period would be no greater than for 2030 No Project conditions. However, because 2030 No Project conditions constitute adverse delays to transit service, cumulative adverse delays to transit service would occur even with these Project transit mitigation measures. Because adverse transit delays affecting this line are generated by adverse traffic congestion to which the Project has a considerable contribution, the Project also has a cumulatively considerable contribution to adverse transit delays.

Implementation of mitigation measure MM TR-24.2, on the other hand, would allow operation of headways as described under MM TR-17. However, given the congestion along Evans Avenue, implementation of MM TR-24.2 alone, without MM TR-24.1, might not be sufficient to reduce the impact to less-than-significant levels.

Implementation of mitigation measure MM TR-24.1 would also exacerbate automobile LOS F conditions at some intersections that were identified as significant and unavoidable impacts. In addition, it would ultimately be at SFMTA's discretion whether the transit-only lane would be implemented in the center lanes or in the lanes adjacent to the curb. Implementation of center-running lanes may have some operational benefit (depending on the results of feasibility study to be conducted if conditions warrant implementation of this measure), center-running lanes may result in loss of some additional on-street parking near stop platforms. Additional impacts of these mitigation measures would be similar to impacts addressed in this Section III.D.4 regarding traffic circulation, parking supply, loading supply and operations, and bicycle circulation. Impacts of the mitigation measures regarding air quality and noise levels would be similar to those identified in Section III.H and Section III.I, respectively.

Because a feasibility study of the improvements contemplated in mitigation measure MM TR-24.1 would be required, implementation of MM TR-24.1 is uncertain. Because implementation of MM TR-24.2 alone, without MM TR-24.1, might not be sufficient to reduce the impacts on the 48-Quintara-24th Street to a less-than-significant level, the Project impacts on the 48-Quintara-24th Street would remain significant and unavoidable.

Impact TR-25: Project and Cumulative Impacts to Transit Operations: 54-Felton

Impact TR-25 **Implementation of the Project would increase congestion at intersections in the study area, and make a considerable contribution to cumulative impacts that would increase travel times and impact operations of the 54-Felton. (Significant and Unavoidable with Mitigation)** ***[Criterion D.i]***

Additional traffic congestion associated with Project vehicle trips would result in significant impacts to the operations of the 54-Felton, particularly during the PM peak hour. Overall, the Project-related congestion would add up to 6 minutes of delay per bus during peak hours. However, unlike many of the other transit routes within the study area, the 54-Felton provides a relatively circuitous neighborhood collector service, which typically includes a number of turns and short distances on individual streets. As a result, mitigation measures that provide transit-only lanes are not practical due to the difficulty of accommodating turning movements at intersections. Further, although the 54-Felton would travel along Third Street between Palou Avenue and Hudson Street, relocating the 54-Felton to the dedicated light rail transit right-of-way in the center of Third Street would not be feasible because the train platforms are high-floor and on the left-hand side and buses load and unload from the right-hand side at low-floor stops. There is not adequate space in the existing right-of-way to provide new platforms to load and unload passengers from a bus in this area.

MM TR-25 *Purchase additional transit vehicles to mitigate the Project impacts and Project contribution to cumulative impacts to headways on 54-Felton. SFMTA shall purchase additional transit vehicles to mitigate the Project impacts and Project contribution to cumulative impacts to headways on 54-Felton. Funds for the implementation of this mitigation measure are expected to be generated from a combination of Project revenues that accrue to the City, and other funding sources.*

While the provision of additional transit vehicles for the 54-Felton would reduce impacts associated with increased travel times, the transit vehicles would still be subject to delays resulting from increased congestion, and therefore Project impacts on the 54-Felton would remain significant and unavoidable.

Impact TR-26: Project and Cumulative Impacts to Transit Operations: T-Third

Impact TR-26 **Implementation of the Project would increase congestion at intersections along Third Street, and make a considerable contribution to cumulative impacts that would increase travel times and impact operations of the T-Third. (Significant and Unavoidable with Mitigation)** ***[Criterion D.i]***

Project-related transit delays due to congestion on Third Street and passenger loading delays associated with increased ridership would result in significant impacts on the operation of the T-Third. Within the study area, the T-Third would primarily experience delays related to increased traffic volumes within the segment between Thomas Avenue and Kirkwood Avenue where the light rail operates within a mixed-flow travel lane. Along the remainder of Third Street and Bayshore Boulevard, the T-Third operates within an exclusive right-of-way. Overall, the Project-related congestion would add up to 3 minutes of delay per bus during peak hours. Providing exclusive right-of-way for the T-Third in the segment between Thomas Avenue and Kirkwood Avenue would reduce travel time delays for the T-Third.

MM TR-26.1 *Maintain the proposed headways of the T-Third. To address Project impacts to the T-Third, prior to issuance of a grading permit for Phase I, the Project Applicant in cooperation with SFMTA shall conduct a study to evaluate the effectiveness and feasibility of the following improvement that could reduce Project impacts on transit operations along Third Street between Thomas Avenue and Kirkwood Avenue. The study shall create a monitoring program to determine the implementation extent and schedule (as identified below) to maintain the proposed headways of the T-Third.*

- *Reconfigure the section of Third Street between Thomas Avenue and Kirkwood Avenue (9 blocks) where the light rail vehicles currently share the travel lane with auto traffic to provide a dedicated transit right-of-way, consistent with the rest of the route. This would require either removal of one travel lane in each direction on Third Street, or removal of on-street parking and some sidewalk bulbouts. In addition, left-turns from Third Street in this segment would be restricted in both directions. Treatment for transit-only lanes can range from striping to physical elevation or barriers to protect transit right-of-way from mixed-flow traffic.*

Implementation of the intersection reconfiguration shall be the responsibility of SFMTA, and shall be implemented when the results of the study described above indicate transit improvements are necessary. The Project Applicant shall fully fund the costs of implementing the transit priority improvements prior to approval of subsequent phases of development.

MM TR-26.2 *Purchase additional transit vehicles as necessary to mitigate the Project impacts and Project contribution to cumulative impacts to headways on the T-Third. Should mitigation measure MM TR-26.1 not be feasible or effective, the Project Applicant shall work with SFMTA to purchase additional transit vehicles as necessary to mitigate the Project impacts and Project contribution to cumulative impacts to headways on the T-Third. Funds for the implementation of this mitigation measure are expected to be generated from a combination of Project revenues that accrue to the City, and other funding sources.*

Providing an exclusive right-of-way for the T-Third as identified in mitigation measure MM TR-26.1 above, would reduce all delays associated with traffic congestion on Third Street during both AM and PM peak periods, such that transit travel times in year 2030 with the Project would be less than under than existing conditions.

Implementation of mitigation measure MM TR-26.2, on the other hand, would allow operation of headways as described under MM TR-17. However, given the congestion along Third Street, implementation of MM TR-26.2 alone, without MM TR-26.1, might not be sufficient to reduce the impact to less-than-significant levels.

Implementation of mitigation measure MM TR-26.2 would also exacerbate automobile LOS F conditions at intersections along Third Street that were identified as significant and unavoidable impacts. Additional impacts of these mitigation measures would be similar to impacts addressed in this Section III.D.4 regarding traffic circulation, parking supply, loading supply and operations, and bicycle circulation. Impacts of the mitigation measures regarding air quality and noise levels would be similar to those identified in Section III.H and Section III.I, respectively.

Because a feasibility study of the improvements contemplated in mitigation measure MM TR-26.1 would be required, implementation of MM TR-26.1 is uncertain. Because implementation of MM TR-26.2 alone, without MM TR-26.1, might not be sufficient to reduce the impacts on the T-Third to a less-than-significant level, the Project impacts on the T-Third would remain significant and unavoidable.

Impact TR-27: Project Impacts to Transit Operations: 28L-19th Avenue/Geneva Limited

Impact TR-27 **Implementation of the Project could increase congestion at the intersection of Geneva Avenue and Bayshore Boulevard. This would increase travel times and impact operations of the 28L-19th Avenue/Geneva Limited. (Significant and Unavoidable with Mitigation)** ***[Criterion D.i]***

Increased congestion associated with Project vehicle trips would impact the operations of the 28L-19th Avenue/Geneva Limited, which would be a significant impact. In the Project vicinity, the 28L-19th Avenue/Geneva Limited would generally travel in the exclusive BRT lanes, but would be subject to delays at the intersection of Geneva Avenue and Bayshore Boulevard. Overall, the Project-related congestion would add up to 4 minutes of delay per bus during peak hours. The intersection of Bayshore/Geneva would be reconfigured as part of the Geneva Avenue Extension project, and the provision of transit-only lanes on Geneva Avenue on the eastbound and westbound approaches to the intersection would reduce the impact of cumulative congestion.

MM TR-27.1 *Ensure transit preferential treatment is accounted for in the design of the Geneva Avenue Extension. The City of Brisbane, as part of the Geneva Avenue Extension Project, shall account for existing traffic, background traffic growth, and the most recent forecasts of traffic expected to be associated with each of several adjacent development projects, including the Project. The San Francisco County Transportation Authority (SFCTA) and SFMTA shall coordinate with the City of Brisbane to ensure transit preferential treatment is accounted for in the design of the Geneva Avenue Extension.*

MM TR-27.2 *Purchase additional transit vehicles as necessary to mitigate the Project impacts and Project contribution to cumulative impacts to headways on the 28L-19th Avenue/Geneva Limited. Should mitigation measure MM TR-27.1 not be feasible or effective, the Project Applicant shall work with SFMTA to purchase additional transit vehicles as necessary to mitigate the Project impacts and Project contribution to cumulative impacts to headways on the 28L-19th Avenue/Geneva Limited. Funds for the implementation of this mitigation measure are expected to be generated from a combination of Project revenues that accrue to the City, and other funding sources.*

Since implementation of mitigation measure MM TR-27.1 would be under the jurisdiction of the City of Brisbane, the implementation of the mitigation measure is uncertain. Implementation of MM TR-27.2, on the other hand, would allow operation of headways as described under MM TR-17. However, given the congestion along Geneva Avenue, implementation of MM TR-27.2 alone, without MM TR-27.1, might not be sufficient to reduce the impact to less-than-significant levels.

Because implementation of mitigation measure MM TR-27.2 alone, without MM TR-27.1, might not be sufficient to reduce the impacts on the 28L-19th Avenue/Geneva Limited to a less-than-significant level, the Project impacts on the 28L-19th Avenue/Geneva Limited would remain significant and unavoidable.

Impact TR-28: Project and Cumulative Impacts to Transit Operations of 9X, 9AX, 9BX- Bayshore Expresses and the 14X-Mission Express when on US-101

Impact TR-28 **Implementation of the Project would increase congestion on US-101 mainline and ramps, which would increase travel times and impact operations of the 9X, 9AX, 9BX-Bayshore Expresses, and 14X-Mission Express. The Project would also contribute to cumulative impacts on these transit routes on US-101. (Significant and Unavoidable)** ***[Criterion D.i]***

As described above in Impact TR-11, the Project would contribute to cumulative traffic impacts on US-101 northbound and southbound. The projected increases in congestion would affect transit lines operating on US-101, notably the 9X, 9AX, and 9BX-Bayshore Expresses, and the 14X-Mission Express (the 14X-Mission Express operates southbound on US-101, and northbound on I-280). The Project's new CPX-Candlestick Express between Candlestick Point and downtown would also use US-101 and be subject to increased travel times due to freeway congestion. The impact on transit travel operations would be considered a significant impact.

Potential strategies to reduce congestion impacts on transit travel times could include bus-only operation on the shoulders of US-101, re-opening of the US-101 northbound Silver Avenue on-ramp for transit only, and creating transit-only lanes on I-280 along with rerouting of the transit lines to I-280. Additional studies and coordination with Caltrans would be required to determine the feasibility of these strategies. As feasibility of these strategies is uncertain, the impact on the 9X, 9AX, 9BX-Bayshore Expresses and the 14X-Mission Express operations would remain significant and unavoidable.

Impact TR-29: Project and Cumulative Impacts on Transit Operations on I-280— : 14X-Mission Express

Impact TR-29 **Implementation of the Project would not contribute to cumulative impacts on the 14X-Mission Express transit route when on I-280. (Less than Significant)** ***[Criterion D.i]***

As described above in Impact TR-11 and Table III.D-13 (Mainline and Weaving Segment LOS Existing, 2030 No Project and 2030 Project Conditions), the Project would not result in any Project-specific impacts on I-280, and would not contribute significantly to cumulative impacts. Project impacts on transit operations on I-280 would be less than significant.

Impact TR-30: Project and Cumulative Impacts on Regional Transit

Impact TR-30 **Implementation of the Project would increase congestion and contribute to cumulative congestion on US-101 and on Bayshore Boulevard, which would increase travel times and adversely affect operations of SamTrans bus lines on these facilities. No feasible mitigation has been identified. (Significant and Unavoidable)** ***[Criterion D.i]***

As described above in Impact TR-5 and Impact TR-11, the Project would increase congestion and contribute to cumulative traffic congestion on Bayshore Boulevard and on US-101, which would impact the travel times of SamTrans buses using these facilities. Potential strategies to reduce transit delay could

include providing transit-only lanes on Bayshore Boulevard, permitting bus-only use of the shoulders of US-101, and providing transit-only lanes on I-280 (and rerouting SamTrans buses from US-101 to I-280).

Additional studies and coordination with SamTrans, Caltrans, and the City of Brisbane would be required to determine the feasibility of these strategies. Since implementation of these strategies is uncertain the impact on SamTrans bus operations would remain significant and unavoidable.

Impact TR-31: Bicycle Network and Circulation

Impact TR-31 **During implementation of the Project, bicycle facilities would be expanded to serve additional users. This would be a beneficial impact of the Project. (No Impact)** ***[Criterion D.k]***

The street network proposed for Candlestick Point would be an extension of the existing grid of the adjacent Bayview neighborhood, which would facilitate access between the new uses and the rest of San Francisco, and provide a connection between existing Bayview Hunters Point neighborhood and the existing and proposed waterfront amenities.

A number of existing and proposed Project roadways would include bicycle facilities in the form of bicycle lanes (Class II facilities) or signed routes (Class III facilities—e.g., roadways with sharrow designations) that would facilitate bicycling within and in the vicinity of the Project. Off-street Class I pathways would be provided around the bayside perimeter of Candlestick Point, across the proposed Yosemite Slough bridge, and into Hunters Point Boulevard via Crisp Road. Within the Project site, the Bay Trail would also be completed.

Outside of the Project site, street improvements would include striping of bicycle lanes on Innes Avenue, Gilman Avenue, Jamestown Avenue and on Harney Way. As noted in Section III.D.3 (Regulatory Framework), the *San Francisco Bicycle Plan* includes a near-term project on Innes Avenue (Bicycle Route #68) between Donahue Street and Hunters Point Boulevard; however, a preferred option was not identified in the Final EIR for the Bicycle Plan. The Project proposes to provide a bicycle lane in both directions on Innes Avenue between Donahue Street and Hunters Point Boulevard, which would require removal of on-street parking on the south side of Innes Avenue between Earl Street and Hunters Point Boulevard. The Project proposal is consistent with Option 1 in the Bicycle Plan, however, it would not preclude implementation of Option 2 (sharrows added to the existing Class III facility), if that option were determined to be preferable by SFMTA.

Overall, bicycle access and the environment for bicycling would improve within and in the vicinity of the Project site. The facilities would be adequate to meet the bicycling demand associated with the Project uses.

Impact TR-32: Project and Cumulative Impact on Bicycle Circulation on Palou Avenue

Impact TR-32 **Implementation of the Project's proposed transit preferential treatments and significant increases in traffic volumes on Palou Avenue could result in impacts on bicycle travel on Bicycle Routes #70 and #170 between Griffith Street and Third Street. (Significant and Unavoidable with Mitigation)** ***[Criterion D.k]***

Outside of the Project site Bicycle Route #70 and Bicycle Route #170 on Palou Avenue are designated as Class III signed routes, and the combination of the proposed transit preferential treatment and the substantial increase in traffic volumes and congestion would result in potentially significant impacts on bicycle travel on this route. When faced with traffic congestion and a constrained bicycle environment, bicyclists may chose to ride on other streets not designated as part of the bicycle route network. The bicycle route could be relocated to a parallel route, such as either Quesada Avenue or Revere Avenue. Both of these streets provide a more level terrain than Palou Avenue.

MM TR-32 *Determine the feasibility of relocating Bicycle Routes #70 and #170. Prior to issuance of the grading permit for Phase I, the Project Applicant shall fund a study to determine the feasibility of relocating Bicycle Routes #70 and #170. The study of the bicycle route relocation, necessary environmental clearance documentation, and implementation shall be the responsibility of SFMTA. Since the feasibility of the relocation of the routes is uncertain at this time, the Project impact on bicycle circulation on Palou Avenue would remain significant and unavoidable.*

Because a feasibility study of the relocation of Bicycle Routes #70 and #170 on Palou Avenue would be required, the implementation of MM TR-32 is uncertain, and therefore the Project impact on bicycle circulation would remain significant and unavoidable.

Impact TR-33: Pedestrian Circulation

Impact TR-33 **During implementation of the Project, pedestrian facilities would be expanded to serve additional users. This would be a beneficial impact of the Project. (No Impact)** ***[Criterion D.j]***

The street network proposed for Candlestick Point would be an extension of the existing grid of the adjacent Bayview neighborhood, which would facilitate access between the new uses and the rest of San Francisco, and provide a connection between existing Bayview neighborhood and the existing and proposed waterfront amenities. Other pedestrian amenities in both Candlestick Point and Hunters Point Shipyard would include crosswalks at unsignalized intersection, pedestrian crosswalks and signals at all new signalized intersections, corner bulbouts, and completion of sidewalk network where currently incomplete (e.g., Arelious Walker Drive, Palou Avenue). Along Gilman Avenue between Earl Street and Hunters Point Boulevard, and on Palou Avenue and Gilman Avenue between Arelious Walker Drive and Third Street, sidewalks would be reconstructed and landscaping improvements would be implemented.

Sidewalk widths on new or improved streets within the Project site would range from 10 feet to 15 feet in width, with the majority of streets having sidewalks 12 feet or greater in width. The Project would also include new sidewalks, and minor sidewalk narrowing on a number of existing streets, including:

- Griffith Street—narrow east and west sidewalks between Palou Avenue and Thomas Avenue from 12 to 11 feet
- Thomas Avenue—narrow north and south sidewalks between Griffith Street and Ingalls Street from 15 to 12 feet
- Ingalls Street—narrow east and west sidewalks between Yosemite Avenue and Carroll Avenue from 15 to 11 feet
- Carroll Avenue—new 12-foot-wide sidewalks between Ingalls Street and Arelious Walker Drive
- Harney Way—new 15-foot-wide sidewalk on north side from Thomas Mellon Drive to Jamestown Avenue

Overall, with the Project, pedestrian access would improve over the 2030 No Project conditions, except where sidewalks would be narrowed. The proposed narrowing of sidewalks would still allow for maintenance of sufficient clear space for people using walking aids or wheelchairs, as needed to meet ADA requirements. Development of the Project would increase pedestrian presence in the area. Since pedestrian volumes within the Project site are very low, the addition of pedestrian trips associated with the Project would be accommodated within the existing and proposed sidewalk network.

Impact TR-34: Project and Cumulative Pedestrian Safety Impacts Due to Increases in Traffic Volumes

Impact TR-34 **Implementation of the Project would result in traffic volumes on area roadways that would not substantially affect pedestrian circulation and safety in the Project vicinity. (Less than Significant)** ***[Criterion D.j]***

A qualitative assessment was also conducted of potential pedestrian impacts resulting from increased travel demand outside of the Project site. As noted in previous sections, the Project would increase vehicle and bicycle volumes in the Bayview Hunters Point area, which would increase the potential for pedestrian-vehicle and pedestrian-bicycle conflicts particularly in locations where the sidewalk network is incomplete or where vehicles park on sidewalks, causing pedestrians to walk in the roadway and mix with vehicular traffic. The Project-proposed sidewalk network improvements on Innes Avenue, Palou Avenue, Gilman Avenue, and Jamestown Avenue would improve and define the pedestrian network on these roadways. Along Third Street sidewalks have been improved and pedestrian signals and crosswalks were installed as part of the Third Street light rail project. As cumulative development occurs within the area, individual development projects would be required to address any sidewalk deficiencies adjacent to their site.

With the Project, the number of pedestrians on streets outside of the Project site would increase as a result of the expanded recreational uses, extension of transit lines, and overall increase in commercial activity in the area. While the presence of an increased number of pedestrians may partially offset risks associated with increased pedestrian-vehicle and pedestrian-bicycle conflicts, the enhanced pedestrian network and "safety in numbers" conditions due to increased pedestrian presence would cause drivers to expect and adapt to increased interactions with pedestrians.

SFMTA and SFCTA have recognized the existing inadequacies in the Bayview Hunters Point area to the pedestrian network. SFMTA has begun implementing the Bayview Traffic Calming Project, which was

developed through a community-based process that identified problem locations with a study area roughly bounded by Jamestown Avenue, Third Street and Evans Avenue, and traffic calming measures. Community concerns included high traffic volumes, numerous trucks, speeding cars, and reckless driving. The study resulted in a list of traffic calming measures (such as gateway islands, speed humps, speed cushions, and traffic circles) along specific roadways. Implementation of improvements is being phased in, and most cost-efficient solutions are being implemented first. The Project improvements would not preclude implementation of the traffic calming measures and would complement the goals of the community to enhance pedestrian safety. SFCTA has recently initiated the Bayview Hunters Point Neighborhood Transportation Plan (NTP) study that is focusing on the existing needs and concerns of the community, to develop smaller-scale solutions that could be implemented in the near-term. Measures such as better bus stops, brighter lighting, and landscaping, as well as parking management and mobility strategies such as shuttle service will be explored with the community.

The San Francisco Department of Public Health (DPH) analyzes pedestrian injuries in traffic accidents from a public health perspective. DPH notes that traffic accidents in general are a leading cause of death and injury in the United States. Beyond direct injuries and deaths, as matter of public health, DPH states that increased pedestrian safety can encourage walking, which in turn can have direct health benefits such as reducing obesity and indirect benefits such as improved air quality resulting from lesser traffic volumes.

There are a number of factors that contribute to increased pedestrian-vehicle collisions, and the number of collisions at an intersection is a function of the traffic volume, travel speeds, intersection configuration, traffic control, surrounding land uses, location, and number of pedestrians. The Project would result in a substantial change in the street network in the Project site, and includes street improvements that would enhance pedestrian safety in the Project site and beyond. The increased potential for pedestrian-vehicle conflicts and pedestrian injury would be tempered by the "safety in numbers" factor in an area currently characterized by low pedestrian volumes and mix of industrial and residential land uses. Overall, the existing and proposed pedestrian facilities would be adequate to meet the pedestrian demand associated with the Project land uses, and the Project impacts on pedestrian circulation within and in the vicinity of the Project would be less than significant.

Impact TR-35: Project and Cumulative Parking Impacts—Demand and Supply Comparison

Impact TR-35 **Implementation of the Project would not result in significant impacts associated with a lack of an adequate supply of parking that could not be accommodated within alternative modes. (Less than Significant)** ***[Criteria D.e and D.h]***

The parking impact assessment associated with the Project includes the comparison of the parking demand to the maximum off-street parking ratios for the Project as identified in the Project Description, plus the number of new on-street parking spaces that would be provided on new and reconfigured streets in the Project site. Since the Project proposes maximum permitted parking controls (not minimum requirements), the parking demand is also compared to conditions if no off-street parking is provided; that is, if only on-street parking spaces were provided.

Table III.D-20 (Summary of Project Parking Demand and Maximum Permitted Supply) summarizes the aggregate of the parking demand calculated for Project land uses, and also presents the maximum permitted off-street parking for the Project as well as the proposed number of new on-street parking spaces that would be provided.[125] Figure III.D-12 (Project Parking Supply) presents the estimates of maximum off-street parking supply and on-street supply by area. Table III.D-21 (Summary of Project Parking Shortfalls for No Minimum and Maximum Permitted Supply) summarizes the parking demand, and the resultant parking shortfalls assuming Project parking supply for two scenarios: based on the maximum permitted supply; and, assuming provision of no off-street spaces but that only the on-street parking spaces would be available. Since the Project does not include minimum requirements (instead specifying the maximum parking supply that would be permitted) it is possible that the Project could be constructed without any off-street parking. However, most development projects in San Francisco develop the maximum permitted supply, and therefore the comparison of the parking demand to the maximum permitted off-street supply and to no off-street supply presents the range of potential parking impacts.

Table III.D-20 Summary of Project Parking Demand and Maximum Permitted Supply

	Demand				Supply[a]		
	Residential	Non-Residential		Total	Maximum Permitted	New	
Project Area	Long Term	Long Term	Short Term	Demand	Off Street[b]	On Street	Total
Hunters Point Shipyard	3,110	3,818	996	7,924	6,678	683	7,361
Candlestick Point	9,212	1,475	2,622	13,309	10,196	1,360	11.556
Total	***12,322***	***5,293***	***3,618***	***21,233***	***16,874***	***2,043***	***18,917***

SOURCE: CHS Consulting, LCW Consulting

a. Does not include stadium supply or game day demand.

b. Maximum number of spaces permitted per draft Design for Development standard for Candlestick Point Hunters Point Shipyard Phase II Development Plan.

Table III.D-21 Summary of Project Parking Shortfalls for No Minimum and Maximum Permitted Supply

		Minimum Supply		Maximum Supply	
Scenario/Project Area	Total Demand	Supply	Shortfall	Supply	Shortfall
Hunters Point Shipyard	7,924	683	- 7,241	7,361	- 563
Candlestick Point	13,309	1,360	- 11,949	11,556	- 1,753
Total	***21,233***	***2,043***	***- 19,190***	***18,917***	***- 2,316***

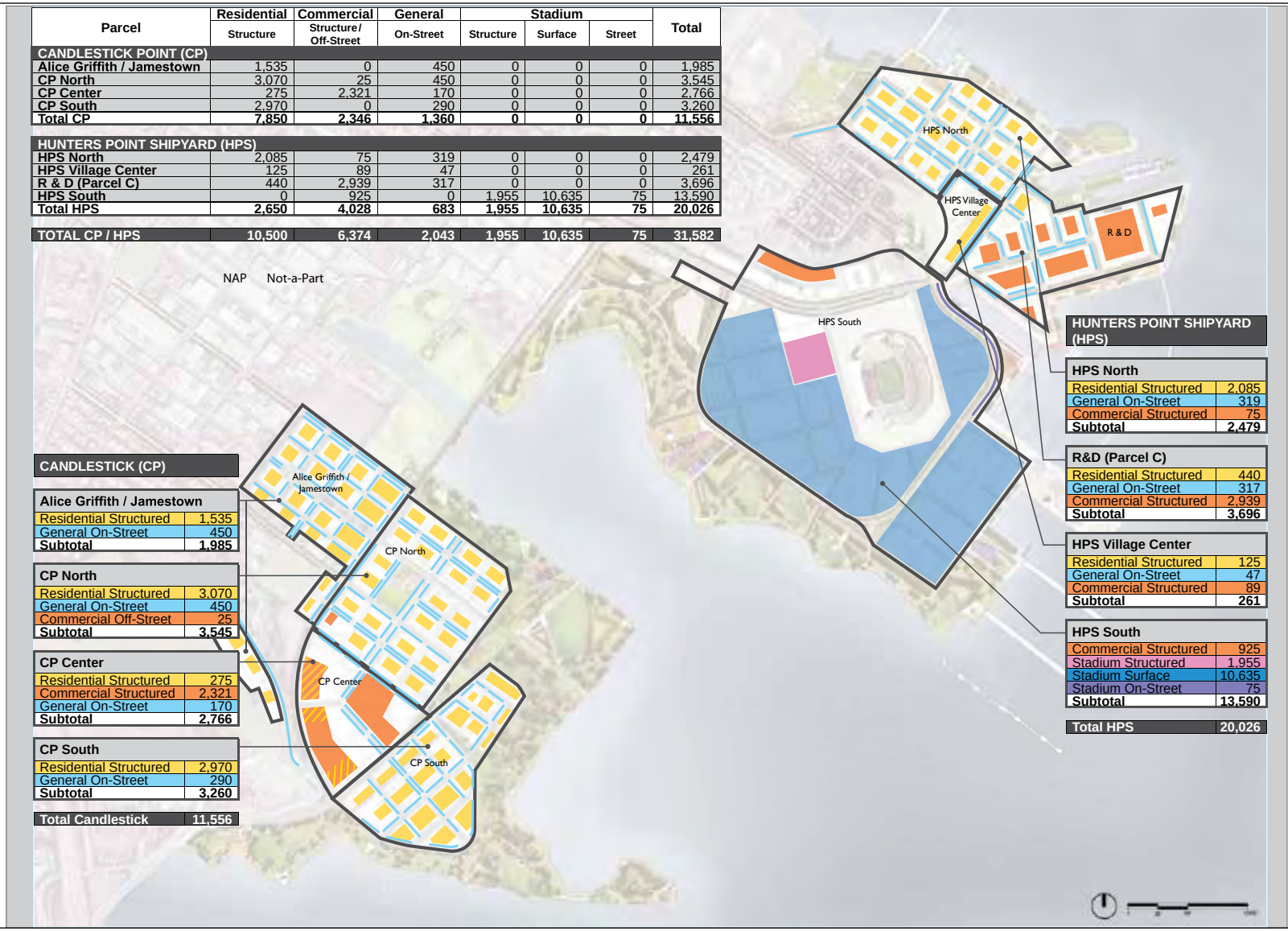
SOURCE: CHS Consulting, LCW Consulting

Includes off-street and new on-street supply; does not include stadium supply or game day demand.

[125] The Project would include some on-street parking in the Project site for both commercial and general/residential uses. About 683 on-street spaces would be provided within Hunters Point Shipyard and 1,360 spaces within Candlestick Point for a total of 2,043 spaces.

Parcel	Residential	Commercial	General	Stadium			Total
	Structure	Structure/ Off-Street	On-Street	Structure	Surface	Street	
CANDLESTICK POINT (CP)							
Alice Griffith / Jamestown	1,535	0	450	0	0	0	1,985
CP North	3,070	25	450	0	0	0	3,545
CP Center	275	2,321	170	0	0	0	2,766
CP South	2,970	0	290	0	0	0	3,260
Total CP	**7,850**	**2,346**	**1,360**	**0**	**0**	**0**	**11,556**
HUNTERS POINT SHIPYARD (HPS)							
HPS North	2,085	75	319	0	0	0	2,479
HPS Village Center	125	89	47	0	0	0	261
R & D (Parcel C)	440	2,939	317	0	0	0	3,696
HPS South	0	925	0	1,955	10,635	75	13,590
Total HPS	**2,650**	**4,028**	**683**	**1,955**	**10,635**	**75**	**20,026**
TOTAL CP / HPS	**10,500**	**6,374**	**2,043**	**1,955**	**10,635**	**75**	**31,582**

NAP Not-a-Part



SOURCE: Fehr & Peers, 2009.

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FIGURE III.D-12

Candlestick Point — Hunters Point Shipyard Phase II EIR

PROJECT PARKING SUPPLY

As shown in Table III.D-20, the demand analysis indicates a Project need for about 21,233 spaces, compared with a maximum permitted supply of about 18,917 spaces; therefore the maximum off-street parking supply would be approximately 2,316 spaces less than the estimated peak demand. Residential spaces would comprise approximately 79 percent of the total shortfall spaces, and non-residential commercial spaces the remaining 21 percent of the shortfall:

- The residential parking demand of 12,322 spaces, compared to a maximum permitted of 10,500 spaces (one space per unit), would result in a deficit of 1,822 spaces.
- The non-residential demand would be 8,911 spaces, of which 41 percent would be needed for short-term use, while the remaining 59 percent would be needed for long-term use. The non-residential commercial parking demand, compared with a maximum permitted number of about 8,417 spaces, would result in a deficit of 494 spaces.

If no off-street parking is provided, the parking shortfall associated with the Project would increase substantially, and there would be a deficit of about 19,190 spaces. As indicated above, this represents the maximum shortfall, as it is anticipated that most, if not all, maximum permitted parking would likely be constructed.

Due to parking supply constraints and accessibility to transit, future Project parking demand may be somewhat lower than estimated, and therefore the parking space shortfall would also be less than presented above in Table III.D-21. Specifically:

- The parking demand estimates included in Table III.D-20 and Table III.D-21 represent the number of spaces that would be required in order to accommodate all the vehicles anticipated to result from the Project if the proposed parking supply was unconstrained. Since the parking supply would be constrained, the actual parking demand would be expected to be less.
- The parking demand estimates represent the peak parking demand calculated separately for each land use. Since all land uses do not experience the peak parking demands simultaneously, the peak parking demand may be less than presented. The Project-proposed parking ratios are generally less than the existing *Planning Code* requirement for similar uses to discourage auto use and to reflect the potential for shared parking opportunities among the various uses. For example, a restaurant can share parking with an office complex, since restaurant parking demand peaks in the evening, while office parking demand peaks during the middle of the day. Public parking facilities, such as the one proposed in Candlestick Point, and on-street parking spaces can usually be shared efficiently among many destinations. Accounting for the shared parking would reduce the non-residential parking demand, and the excess demand that would not be accommodated within the proposed parking supply would also be less.
- The Project includes a Travel Demand Management program that includes a number of parking strategies to make auto use and ownership less attractive, as well as strategies to encourage alternative modes. While the TDM program was assumed in developing Project travel demand, the residential parking demand was based on standard *SF Guidelines* parking demand rates that are based on Citywide averages.
- Residents within Hunters Point Shipyard and Candlestick Point would have new and improved existing transit routes connecting the Project site with downtown and with Caltrain and BART. Under Project conditions, capacity on local and regional lines would be available to accommodate additional Project transit trips.

As part of its "transit first" policy, the City and County of San Francisco does not require that the supply of parking spaces equals the demand. Consequently, even though it is anticipated that the Project would provide the maximum number of parking spaces permitted, they may not be sufficient to accommodate the actual demand. If fewer spaces than the maximum permitted were to be constructed, the projected shortfall would increase. Therefore, individuals who would prefer to drive may use transit because the perceived convenience of driving is lessened by a shortage of parking. This shortage is not considered a significant environmental effect because it implements a policy intended to reduce citywide traffic congestion and air quality effects. Even with a shortage of off-street parking, measures often are implemented that result in more efficient use of the parking spaces provided. By promoting carpooling, allowing for the shared use of parking, and implementing pricing strategies designed to encourage short-term parking, the spaces provided for non-residential use would likely be used by more individuals, be vacant for shorter periods of time, and attract drivers needing short-term parking.

Since the proposed parking supply in the Project site would not meet demand, it is possible that some drivers may seek available parking in adjacent Bayview residential areas to the west. The potential increase in parking demand in adjacent neighborhoods would likely spill over to streets with existing industrial uses in the Project vicinity, which could, in turn, increase demand for parking in nearby Bayview residential areas. Residential streets near the Project site do not currently have parking restrictions and are about 70 percent occupied during the weekday midday and evening periods. Commercial and industrial spillover into residential areas is not expected to be a substantial problem because parking demand in residential areas in Bayview would be highest at night, when the commercial and industrial parking demand is lowest. If parking demand is found to exceed supply in the Bayview residential area, the City's residential parking permit program could be introduced to the area to help ensure availability of parking for local residents. The extent of spillover into the nearby industrial and residential neighborhoods to the west would be limited by the existing topography (e.g., steep grades due to the Bayview Hill), the distance between the Project site and available parking supply, and concerns related to safety in the industrial area. Transit service with available capacity and on-site carsharing services would provide an alternative to seeking parking supply further afield.

On days when events were scheduled at the stadium, parking spaces in the Bayview and Candlestick Point area would be in great demand. Those arriving to the Project vicinity on weekends after drivers have started arriving for the stadium event would have difficulty parking on event days unless they have already-reserve parking, such as spaces allocated to residential units.

Additionally, no cumulative parking impacts are expected. Other cumulative projects in the area, such as most of the surrounding existing development, Executive Park, and India Basin, are located too far from the Project site to expect that drivers going to other projects would seek parking on the Project site, or that drivers going to the Project site would park far outside the Project boundaries. Additionally, in some areas, the topography is not conducive to parking beyond the Project site boundaries. Consequently, there is no potential for significant cumulative parking impacts.

As noted above, in San Francisco, parking supply is not considered a permanent physical condition, and changes in the parking supply would not be a significant environmental impact under CEQA, but rather a social effect. The loss of parking may cause potential social effects, which would include cars circling and looking for a parking space in neighboring streets. The secondary effects of drivers searching for

parking is typically offset by a reduction in vehicle trips due to some drivers, who are aware of constrained parking conditions in a given area, shifting to other modes. Hence, any secondary environmental impacts that may result from a shortfall in parking would be minor. Therefore, the parking shortfall would not result in significant parking impacts, and Project impacts on parking would be less than significant.

Impact TR-36: Loss of Existing On-Street Parking

Impact TR-36 **Implementation of the Project roadway improvements would displace on-street parking spaces, and the existing demand could be accommodated in the nearby vicinity. (Less than Significant)** ***[Criteria D.e and D.h]***

Some existing on-street parking spaces would be lost because of Project changes to the existing roadway configuration. The bus transit preferential treatments and streetscape improvements on Palou Avenue between Third Street and Griffith Street would result in a net loss of approximately 60 parking spaces (about 40 spaces due to bus stop improvements and corner bulbouts, and 20 spaces on the north side of the street between Ingalls and Griffith Streets where vehicles park perpendicular off-street within the sidewalk right-of-way). In addition, on the following streets a total of about 77 on-street parking spaces would be displaced:

- Carroll Avenue between Hawes and Ingalls Streets (26 spaces)
- Innes Avenue between Earl Street and Hunters Point Boulevard (51 spaces)

Project intersection improvements and mitigation measures would require removal of some on-street parking at the approaches to intersections. These on-street losses include:

- Evans/Jenning/Middlepoint—8 to 10 spaces on the west side of Jennings Street at the southbound approach to Evans.
- Palou/Griffith/Crisp—8 to 10 spaces on the east side of Griffith Street at the northbound approach.
- Carroll/Ingalls—8 to 10 spaces on the west side of Ingalls Street at the southbound approach.
- Blanken/Tunnel—13 spaces on the east side of Tunnel Avenue at the northbound and southbound approaches.

Project mitigation measures related to transit improvements would also result in peak period parking prohibitions. At some locations, such as on Third Street and Paul Avenue, parking spaces would be eliminated.

- San Bruno Avenue—5 spaces on the east side of San Bruno Avenue south of Silver Avenue, and 20 spaces on the west side of San Bruno Avenue between Woolsey Street and Olmstead Street.
- Palou Avenue—about 140 spaces on the north side and 130 spaces on the south side of Palou Avenue between Newhall Street and Crisp Avenue.
- Gilman Avenue—about 90 spaces on the north side and 80 spaces on the south side of Gilman Avenue between Arelious Walker Drive and Third Street.
- Paul Avenue—about 40 parking spaces on the north side of Paul Avenue between Third Street and Bayshore Boulevard.

- Third Street—about 110 spaces on the east and west curbs of Third Street between Thomas Avenue and Kirkwood Avenue.

The parking demand that would be displaced due to the temporary and permanent parking losses would be accommodated on other streets in the study area. At some locations, residents and visitors to commercial establishments would have to walk further between their parking space and destination, or switch to transit or other modes. The impact related to parking supply would be less than significant.

Impact TR-37: Loading Impacts

Impact TR-37 **Implementation of the Project would not result in significant impacts associated with a lack of adequate supply of loading spaces. (Less than Significant)** ***[Criterion D.I]***

Loading impacts assessment associated with the Project includes the comparison of the demand for the loading spaces to the minimum number of loading spaces specified in the Project description. As indicated in the "Analytic Method" section in Section III.D.4, the demand for loading spaces was estimated based on the development program and the daily truck trip generation rates for 1,000 gross square feet of use, then converted to hourly demand.

If the loading demand is not met on site and could not be accommodated within on-street loading zones, trucks could temporarily double-park and partially block local streets while loading and unloading goods which could result in disruptions and impacts to traffic and transit operations, as well as to bicyclists and pedestrians. Because any effects of unmet loading demand would be temporary inconveniences, any excess demand would not be a significant impact. The Project would establish a minimum number of loading spaces; more could be provided as part of individual development projects.

In addition to off-street facilities and on-street loading zones, approximately 300 feet of curb space on the Stadium Outer Ring Road would be designated for truck parking. The parking areas would have 17-foot-wide parking lanes that would fully accommodate wider trucks without impeding on adjacent bicycle or travel lanes. This designated truck parking area would meet the needs of truck drivers to take a ten-hour rest period that is governed by federal and state safety rules, and to stage when off-street loading facilities are not ready to accommodate deliveries. The designation of this on-street parking area would reduce the potential for truck drivers to seek long-term parking on residential streets in the Project site and within Bayview Hunters Point.

Table III.D-22 (Summary of Project Loading Demand and Supply) summarizes the estimate of daily truck trips generated by the proposed land uses and the associated demand for loading dock spaces during the peak hour of loading activities (which generally occurs between 10:00 a.m. and 1:00 p.m.) and the estimated supply. The estimated loading supply would be greater than the loading demand during the peak hour of loading operations. Within the Hunters Point Shipyard the loading demand and estimated supply would be similar, while within Candlestick Point the supply would substantially exceed the demand. This is due primarily to the calculation for retail uses, which has the most intensive loading demand. For the regional retail uses within Candlestick Point, loading facilities would be located to meet multiple tenants within the retail development. Project impacts related to loading operations would be less than significant.

Table III.D-22 Summary of Project Loading Demand and Supply

Scenario/Project Area	Daily Truck Generation	Peak Hour Loading Dock Space Demand	Supply[a,b]
Hunters Point Shipyard	713	41	42
Candlestick Point	507	29	59
Total	***1,220***	***70***	***101***

SOURCE: LCW Consulting, 2009

a. Minimum number of loading spaces permitted per draft Design for Development standard for CP-HPS Phase II Development Plan.

b. Does not include stadium loading facilities.

Impact TR-38: Stadium 49ers Game Site Access and Traffic Impacts

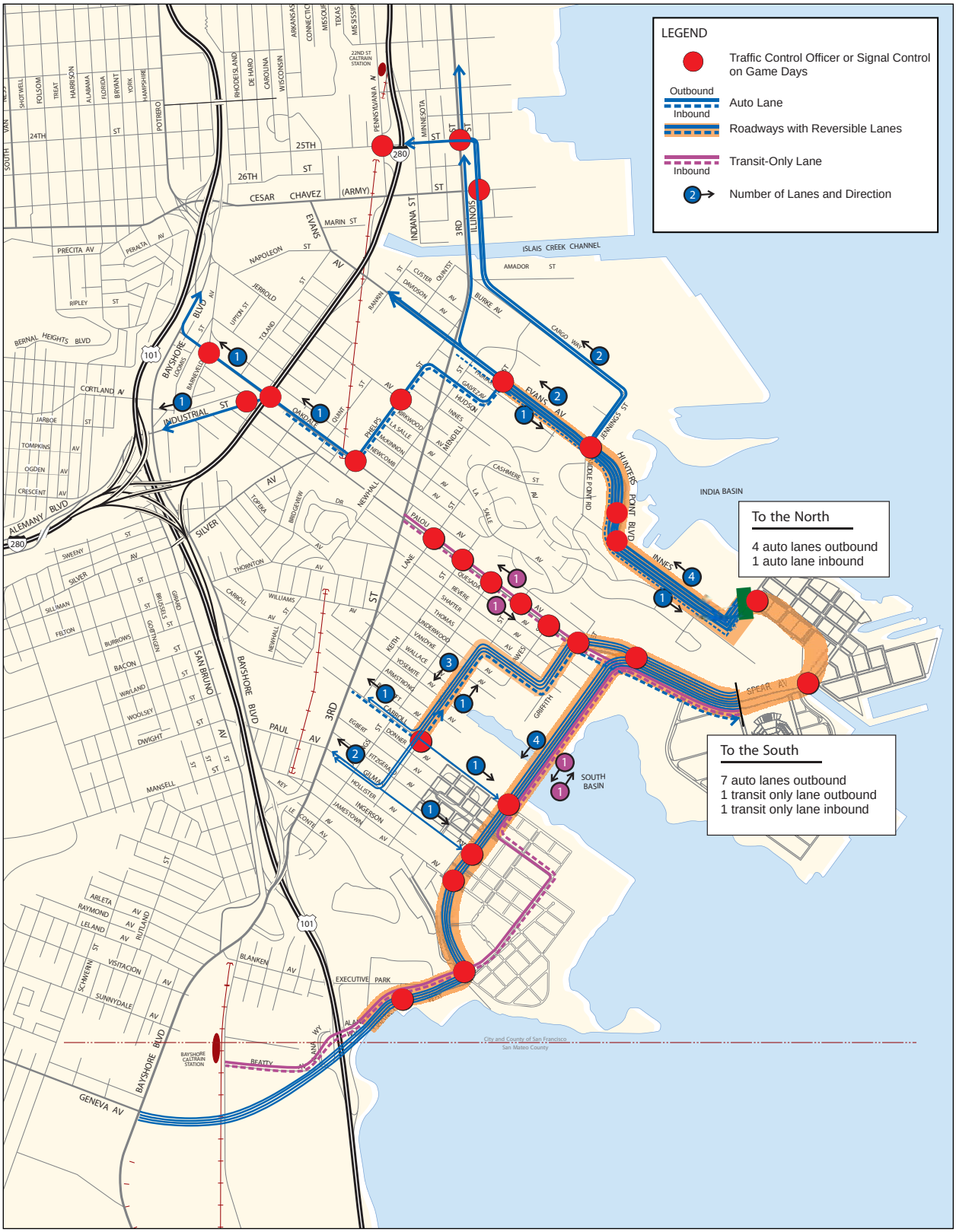
Impact TR-38 **For as many as 12 times a year, 49ers games at the proposed stadium would result in significant impacts on study area roadways and intersections. (Significant and Unavoidable with Mitigation)** ***[Criterion D.a]***

With the Project, the existing traffic management of pre-game and post-game traffic would be adjusted to reflect the new stadium location and access routes. The Project includes a new Traffic Management Center, to be staffed by City employees, to dynamically monitor and operate traffic signals along primary ingress and egress routes to efficiently move traffic into and out of the area prior to and after games. In addition, similar to existing conditions, traffic control officers would be stationed at key locations to ensure efficient traffic movements. The overall game day traffic control plan is shown in Figure III.D-13 (Stadium Game Day Traffic Control Plan).

Similar to existing conditions, the majority of stadium-bound traffic would use a portion of US-101 to access the Project site on game days. Traffic from the south would predominantly use northbound US-101 and access the site via Harney Way, while traffic from the north would predominantly use southbound US-101 and I-280 and access the site via Cesar Chavez Street, Cargo Way, Evans Avenue, and Innes Street. Some trips to the site would use Bayshore Boulevard or Third Street to access the area via Carroll Avenue, Gilman Avenue, and Ingalls Street.

Prior to and after games at the proposed stadium, special measures (similar to those in place for existing football games) would be taken to allow the site's circulation system to accommodate unique game day traffic flows. Figure III.D-14 (Stadium Game Day Ingress Routes) presents the pre-game circulation plan and Figure III.D-15 (Stadium Game Day Egress Routes) present the post-game circulation plan. Prior to games, the site's roadways would be geared towards inbound flow and after games the roadways would be geared towards outbound flow.

Vehicles accessing the new stadium from the south would use Harney Way. Harney Way would be configured to provide four inbound lanes (to the stadium) and one outbound lane between US-101 and Arelious Walker Drive. Arelious Walker Drive, between Harney Way and Crisp Avenue would provide four inbound lanes. Crisp Avenue would provide seven inbound lanes between Arelious Walker Drive and the new stadium. The lane configurations would be reversed for post-game conditions.



SOURCE: Fehr & Peers, 2009.

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FIGURE III.D-13

Candlestick Point — Hunters Point Shipyard Phase II EIR

STADIUM GAME DAY TRAFFIC CONTROL PLAN

SOURCE: Fehr & Peers, 2009.

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FIGURE III.D-14

Candlestick Point — Hunters Point Shipyard Phase II EIR

STADIUM GAME DAY INGRESS ROUTES

SOURCE: Fehr & Peers, 2009.

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FIGURE III.D-15

Candlestick Point — Hunters Point Shipyard Phase II EIR

STADIUM GAME DAY EGRESS ROUTES

Vehicles accessing the new stadium from the south would be routed via the routes described above to Crisp Avenue, where they would be channeled to a Ring Road on the southern portion of the stadium. Access to the internal parking aisles would be from the Ring Road.

Vehicles accessing the new stadium from the north would use Evans Avenue and Cargo Way. These inbound routes would merge at the intersection of Hunters Point Boulevard/Jennings/Evans. From there, the inbound route along Hunters Point Boulevard and Innes Avenue would provide four inbound lanes and one outbound lane. The lane configurations along Hunters Point Boulevard and Innes Avenue would be reversed for post-game conditions.

Under typical traffic conditions, traffic impacts are measured in terms of intersection levels of service. However, due to the unique circumstances following a football game, including manual and dynamic control of intersections by traffic control officers and complex travel patterns, traditional methods of calculating intersection levels of service are not be appropriate. Instead, for post-game conditions, traffic impacts associated with the new stadium are described in terms of the magnitude, duration, and expected locations of congestion.

The one-hour period immediately following the conclusion of a football game is generally the worst-case period. The amount of vehicular traffic associated with the new stadium is expected to be similar to, or even slightly less than, the amount of traffic associated with the existing stadium because of the improved transit service proposed to serve the new stadium. However, because under the Project conditions, there would be additional development around the stadium compared to the 2030 No Project conditions, the additional vehicle trips associated with the new stadium and increased surrounding development would somewhat increase congestion and delays following a football game from 2030 No Project conditions.

As shown on Table III.D-23 (Locations of Congestion Following San Francisco 49ers Football Game), the proposed location of the new stadium would create additional exit routes such that more streets would be congested following a game than under the 2030 No Project conditions. Providing additional egress routes would spread the post-game congestion, and provide a quicker parking lot clearance time. However, it would result in game day traffic congestion along Innes Avenue, Evans Avenue, and Cargo Way, which would not experience substantial congestion following a game under the 2030 No Project condition.

One result of providing additional egress routes from the proposed new stadium is that traffic congestion is expected to clear the area quicker. The projected clearance time for a sell-out game at the proposed stadium would be about one and a half hours, compared to almost three hours for the existing stadium under 2030 No Project conditions. The projected clearance time is based on the number of vehicles parked in the stadium parking lot, which would be less for the proposed stadium than for the existing stadium. Due to the multiple access routes serving the stadium, the number of roadways expected to experience post-game traffic congestion is expected to increase with the Project, however, as noted above the total duration of expected post-game congestion is expected to be considerably less than under the 2030 No Project condition.

Table III.D-23 Locations of Congestion Following San Francisco 49ers Football Game

Exit Route	*No Project (Existing Stadium)*	*Project (HPS Stadium)*
Harney Way, between Candlestick Park and US-101	X	X
Jamestown, Ingerson, Gilman, and Carroll Avenues, between Candlestick Park and Third Street	X	X
Paul Avenue, between Third Street and Bayshore Boulevard	X	X
Third Street, between Jamestown and Cesar Chavez Street	X	X
Innes Avenue/Hunters Point Boulevard, between Earl Street and Jennings Street		X
Jennings Street/Cargo Way/Illinois Street, between Evans Avenue and 25th Street		X
Evans Avenue, between Jennings Street and Cesar Chavez Street		X
Cesar Chavez Street, between US-101 and I-280		X

SOURCE: Fehr & Peers, June 2009

Analysis based on expected stadium exit routes. Other exit routes identified in Figure III.D-15, but not shown on this table are downstream of major bottlenecks and, although expected to carry additional post-game traffic, are not expected to function at capacity.

Similar to the roadway analysis, because the post-game traffic is expected to be spread out over a greater number of exit routes, more freeway interchanges are expected to handle larger numbers of game day traffic. Two freeway segments, I-280 southbound between the Alemany Street off- and on-ramps and US-101 northbound at the on-ramp from Bayshore Boulevard would actually see improvements, compared to the 2030 No Project conditions. This is because traffic from the proposed stadium location would use different routes to reach the freeway. The Project would impact the segment of I-280 northbound between 25th Street/Indiana Street and Mariposa Street.

The Project would result in new freeway facilities operating unacceptably. However, the duration of expected congestion would likely be less due to the higher level of transit use, the Transportation Management Center housed within the stadium to increase efficiency of exiting traffic, and the greater amount of identified post-game exit routes and freeway access points. Overall, since new facilities, including local streets and freeway facilities, would experience congested traffic following a football game, traffic impacts associated with the new stadium during game days would be significant.

The Project includes measures to reduce the magnitude of the traffic impacts associated with the new stadium, including limiting the parking supply, providing a more robust transit system, and locating the stadium so as to better disperse traffic following a game. As a result, the exit capacity of the new stadium would be greater than that of the existing stadium. Mitigation measures associated with additional roadway widening would have unwanted secondary impacts on pedestrian and bicycle conditions during non-game days, which represent the vast majority of the time, and were therefore not considered further. However, mitigation measure MM TR-38 is required to ensure that a management plan for accommodating the increased vehicle, transit, pedestrian and bicycle demands during game days is prepared and implemented.

MM TR-38 *Transportation Management Plan (TMP) for the stadium. The stadium operators shall develop and maintain a Transportation Management Plan (TMP) for the stadium. The stadium operator shall work with representatives from the SFMTA, the State Highway Patrol, the Police Department,*

private charter operators, Caltrain and others on a continuing basis to develop and refine the TMP, as determined appropriate by SFMTA. The final stadium TMP shall be approved by SFMTA. Preparation of the TMP shall be fully funded by the stadium operator, and shall be completed in time for implementation on opening day of the stadium.

The following actions shall be included in the TMP:

- *Information on transportation options to the stadium, including game day service by the various regional service providers shall be distributed to season ticket holders, employees, and other patrons if possible.*
- *A brochure, information packet, and/or web page providing full information on transit access to the stadium, similar to that currently offered at the 49ers website, shall be updated and maintained.*
- *The use of charter buses to the stadium shall be encouraged and expanded. A number of measures shall be considered that could be implemented at low-cost to expand the use of group charters, including reduced parking costs, publicize the groups in 49ers publications and mailings, provide priority parking, provide lounges for bus drivers and provide support services for rooter clubs.*
- *Residential Permit Parking Program and/or additional parking restrictions, such as time limits, during game days, particularly in the Bayview Hunters Point areas, shall be explored with residents to reduce potential for intrusion of stadium vehicles into the adjacent neighborhood during a football game or secondary event.*
- *The stadium operator shall implement measures to encourage carpools of 4-plus persons per vehicle.*
- *The stadium operator shall charge a higher parking cost for low occupancy vehicles.*
- *The stadium operator shall develop a separate TDM plan for employees of the stadium and concessionaires. The plan shall consider measures such as providing employees and concessionaires with free or subsidized transit passes to encourage transit use and reduce vehicular travel to the stadium. Employees shall not receive preferential parking.*
- *The stadium operator shall develop measures with CPSRA to ensure that game day spectators do not park in CPSRA day use parking lots. Strategies to be explored include limiting parking in CPSRA lots to a limited duration during game days (e.g., to a two-hour period), or an increase in parking fees equivalent to game day parking, and ticketing and enforcement.*
- *The TMP shall ensure that regular transit routes operate acceptably near the stadium. The plan should consider providing alternate routes for those transit lines that do not have exclusive right-of-way on game days (48-Quintara-24th Street, 44-O'Shaughnessy, 29-Sunset) onto transit-only facilities such as the BRT right-of-way to the south and Palou Avenue to the north (which would be a transit-only facility on game days).*

Implementing this mitigation measure would likely reduce automobile travel to the stadium and encourage transit usage. However, even with implementation of mitigation measure MM TR-38, the Project's impacts on Sunday pre-game and post-game period traffic conditions would remain significant and unavoidable.

Impact TR-39: Stadium 49er Game Transit Impacts

Impact TR-39 **Implementation of the Project with existing game day service and Project transit improvements would not be adequate to accommodate projected transit demand. (Significant and Unavoidable with Mitigation)** ***[Criteria D.f, D.i]***

During game days, the regularly scheduled bus service adjacent to the stadium would continue to operate on normal routes, providing direct service to the stadium and into the Hunters Point Shipyard Transit Center. Special game day transit, including charter buses and public transit express service would access the stadium via Palou Avenue, which would be converted to transit-only on game days. These buses would conduct passenger loading and unloading on Crisp Avenue, in front of the stadium. The stadium parking program calls for 340 bus parking spaces to store empty buses during the game. Figure III.D-16 (Stadium Game Day Transit) illustrates the Project's game day transit service.

During sellout games, about 16,388 spectators and 652 game day employees are expected to use transit to access the stadium, a total of 17,040 transit riders. Assuming similar transit ridership from regional providers (including charter service expected to replace service previously provided by Golden Gate Transit, the Santa Clara Valley Transportation Authority, and SamTrans) and other private charters, the expected Muni ridership to the stadium would be 12,040 (an increase of about 5,500 patrons from existing conditions). This ridership includes transit patrons who use regional transit, such as Caltrain and BART, and transfer to Muni to access the stadium.

As presented in Table III.D-24 (Game Day Muni Capacity by Line), the combination of regularly scheduled transit service and game day express routes, similar to what is provided to the existing stadium, is expected to be approximately 8,400 passengers per hour. Therefore, with a projected Muni ridership of 12,040 patrons and capacity of 8,400 passengers per hour, there would be a capacity shortfall of approximately 3,640 passengers per hour. This shortfall in transit capacity would be considered significant.

Table III.D-24 Game Day Muni Capacity by Line

Route	*One-Way Hourly Capacity (passengers per hour)*
24-Divisadero	400[a]
28L-19th Avenue/Geneva Avenue	800[a]
44-O'Shaughnessy	450[a]
48-Quintara	250[a]
Game Day Express Service (75X, 77X, 78X, 79X, 86, and 87)	6,500[b]
Total	***8,400***

SOURCE: SFMTA, Fehr & Peers, 2009

a. Assumes Sunday peak hour capacity is 75 percent of typical weekday peak hour capacity, per SFMTA TEP assumptions.

b. Based on existing ridership on these express routes

SOURCE: Fehr & Peers, 2009.

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FIGURE III.D-16

Candlestick Point — Hunters Point Shipyard Phase II EIR

STADIUM GAME DAY TRANSIT

MM TR-39 *SFMTA shall increase frequency on regularly scheduled Muni routes serving the stadium area on game days. In addition, the stadium operator shall fund additional Muni shuttle service between the stadium and regional transit service, including BART (Balboa Park and/or Glen Park Station) and Caltrain (Bayshore Station). Although the specific frequencies of individual routes should be determined based on patron characteristics that may evolve over time, the increased transit service, taken as an aggregate, should generally compensate for the projected shortfall of 3,600 passengers per hour on the existing and proposed transit lines.*

Prior to opening day at the new stadium, the City and stadium operator shall determine costs associated with the increased service and determine funding sources. Examples of funding sources that shall be considered include a surcharge on game tickets or other such revenue mechanism. Implementation of increased transit service would be the responsibility of SFMTA and the stadium operator, and would be implemented when projected attendance warrants additional service.

With implementation of mitigation measure MM TR-39, the Project's impacts to transit service on Sundays during a football game could be reduced to less-than-significant levels. However, due to the traffic impacts during post-game conditions (see Impact TR-38 for discussion of traffic impacts) on transit operations, which could not be mitigated, the impact on transit operations would remain significant and unavoidable.

Impact TR-40: Stadium 49ers Game Bicycle Impact

Impact TR-40 **For as many of 12 times per year during game days, bicycle access in the vicinity of the proposed stadium would be constrained, however, accommodations for bicycle access and circulation would be provided. (Less than Significant) *[Criterion D.k]***

The Project would improve bicycle access to the area in terms of new bicycle lanes on existing and reconfigured roadways, and bicycle access within and in the vicinity of the Project site would be maintained on game days. However, bicycle access would be constrained due to the heavy traffic volumes at locations further away from the Project site where bicycle lanes are not provided. At these locations, bicyclists would likely divert to roadways not designated as stadium access routes (e.g., bicyclists may use Revere Avenue instead of Gilman Avenue for access to and from the stadium).

For those patrons arriving by bicycle, the proposed stadium would provide improved amenities compared to the existing stadium. Bicycle racks and lockers would be provided at the stadium entrances. In addition, a bicycle valet, similar to the service operated at AT&T Park for San Francisco Giants baseball games would be provided.

Bicycle access to the stadium on football game days would be difficult, as at present, due to heavy traffic volumes. However, bicycle access to the new stadium would be provided, and impacts on bicycle operations would therefore be less than significant.

Impact TR-41: Stadium 49ers Game Pedestrian Impacts

Impact TR-41 **For as many of 12 times per year during game days, pedestrian access in the vicinity of the proposed stadium would be constrained, however, accommodations for pedestrian access and circulation would be provided. (Less than Significant)** ***[Criterion D.j]***

Pedestrian access to the stadium from external locations would be provided via 15-foot sidewalks on either side of Crisp Avenue. All other streets leading into the stadium site would provide 12 to 15-foot-wide sidewalks. Near the stadium, game day pedestrians would be allowed to cross the Crisp Avenue at two locations where the Ring Road intersects Crisp Avenue. In addition, pedestrians traveling between the stadium and the 3,000 parking spaces in the Hunters Point Shipyard R&D campus would cross the Ring Road on the south side of Crisp Avenue. Because of the need to balance pedestrian flows with efficient auto egress, temporary pedestrian overcrossings, similar to the one recently installed across Hunters Point Expressway, would be provided. Traffic control officers would also be stationed at the overcrossings, as well as at other at-grade crossings.

Pedestrian travel throughout the Project site may be disrupted by game day traffic, and pedestrian travel near the new stadium, would experience crowding. However, this is expected and understandable for large events, and would be similar to conditions at the existing stadium.

Pedestrian access to the stadium during game days would be difficult, as at present, due to heavy traffic volumes. However, since pedestrian access would be maintained, stadium game day impacts on pedestrian circulation would be less than significant.

Impact TR-42: Stadium 49ers Game State Park Access Impacts

Impact TR-42 **For as many as 12 times per year during game days, access to state park facilities for vehicles, bicyclists and pedestrians would be constrained, and heavy traffic congestion could discourage use of the park. However, access for vehicles, bicyclists, and pedestrians would be maintained. (Less than Significant)** ***[Criteria D.j, D.k]***

With the Project, the Bay Trail around Yosemite Slough would be completed, and all existing connections to the Bay Trail would be maintained. Pedestrian and bicycle access to the developed state park lands would be maintained, and the Project's extensive improvements to the area bicycle and pedestrian network would facilitate access to the state parks lands. Pedestrian and bicycle access to state park lands on game days would be similar to existing condition; that is, heavy traffic congestion in the pre- and post-game periods could discourage bicycle use to and from CPSRA during these periods, generally during two hours before and after each game.

Because there would be at least one lane open to traffic in each direction during pre- and post-game operations on roadways providing access to CPSRA facilities, vehicle access to state parks would still be accommodated on game days. However, as with bicycle access, heavy traffic congestion during game days could discourage vehicular access to and from the state parks during these periods.

Overall, since vehicle, bicycle and pedestrian access to state park facilities would be maintained during game days, impacts related to access would be less than significant.

Impact TR-43: Stadium 49ers Game Parking Impacts

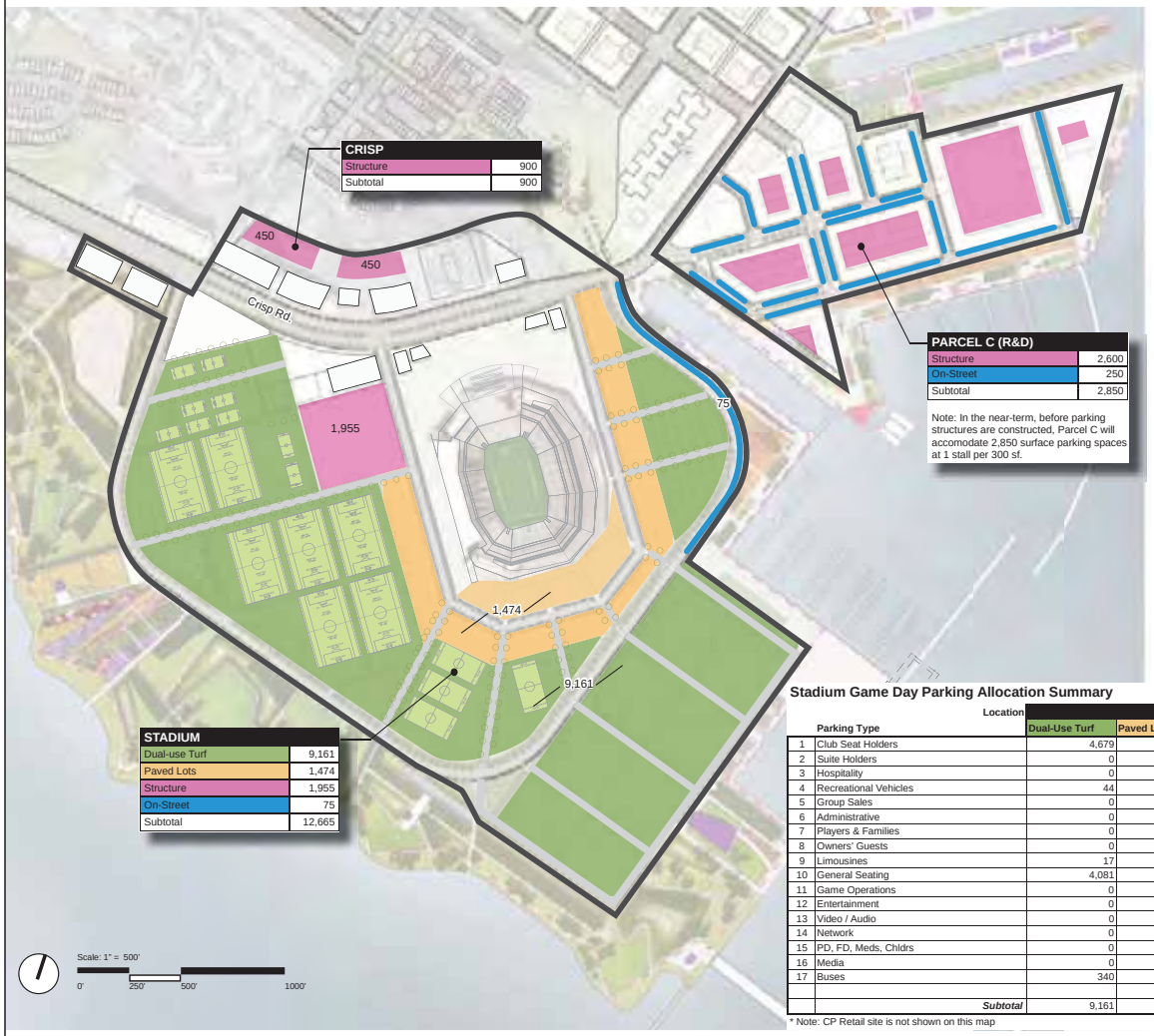
Impact TR-43 **For as many of 12 times per year during game days, parking demand associated with sell-out events would exceed the proposed on-site supply, resulting in a parking supply shortfall. The shortfall would be accommodated within other on-street and off-street parking facilities, and some patrons may elect to take transit to the stadium. (Less than Significant)** ***[Criteria D.e, D.h]***

The 49ers stadium area would have a total supply of 17,415 game day parking spaces, as presented on Figure III.D-17 (Proposed Stadium Game Day Parking). A total of 12,665 of the 17,415 parking spaces would be adjacent to the stadium, and accessible via a new loop road on the southern portion of the stadium. Of the 12,665 spaces, 340 spaces adjacent to the stadium would be reserved for buses, and the remaining 12,325 would be for private autos, RVs, limos, etc. Parking structures on the north side of Crisp Avenue, immediately across from the stadium, would accommodate an additional 750 vehicles, and would be accessible from Crisp Avenue. The R&D campus in Hunters Point Shipyard would provide an additional 3,000 spaces, of which 2,747 would be in structures and 253 would be on street.[126] These spaces would be accessible from internal roadways, which, in turn, would be accessible from Crisp Avenue. An additional 1,000 spaces would be provided in Candlestick Point retail parking structure that on game days would be reserved for stadium spectators.

A sell-out event at the stadium would result in a total game day travel demand of 20,134 vehicles (excluding buses) that would need to be accommodated. The Project would have a total game day parking supply of 17,415 spaces, of which 17,075 would be available for vehicle parking (340 spaces would be designated for buses). The 20,134-space parking demand would not be met within the 17,075-space parking supply, thus resulting in a shortfall of 3,059 spaces.

It is anticipated that the shortfall would be met similar to existing conditions, where spectators park in satellite parking lots, on street, or within private lots in the area. Currently about 4,300 parking spaces are available within satellite lots, and about 3,000 spaces on private lots that are generally restricted for use by residents, customers, and employees of private businesses. The likely result is that many patrons may elect to park in other off-site parking lots and either walk or take transit to the stadium. Some patrons may park within the CPSRA day use parking lots. Additionally, some patrons may also elect to take transit instead. Through effective parking management, including real-time information, public relations campaigns, and parking pricing strategies, the additional parking demand can be effectively managed.

[126] The on-street parking spaces in Area C would be made available for fixed-rate, longer-term parking by football patrons and controlled by City parking control officers on game days.



Stadium Game Day Parking Allocation Summary

	Location	STADIUM					CRISP	PARCEL C			CP RETAIL*	TOTAL
	Parking Type	Dual-Use Turf	Paved Lots	Structure	On-Street	Subtotal	Structures	Structures	On-Street	Subtotal	Structures	
1	Club Seat Holders	4,679	0	0	0	4,679	0	0	0	0	0	4,679
2	Suite Holders	0	0	1,202	0	1,202	0	0	0	0	0	1,202
3	Hospitality	0	44	0	0	44	0	0	0	0	0	44
4	Recreational Vehicles	44	0	0	0	44	0	0	0	0	0	44
5	Group Sales	0	0	20	0	20	0	0	0	0	0	20
6	Administrative	0	0	25	0	25	0	0	0	0	0	25
7	Players & Families	0	220	0	0	220	0	0	0	0	0	220
8	Owners' Guests	0	60	0	0	60	0	0	0	0	0	60
9	Limousines	17	0	0	0	17	0	0	0	0	0	17
10	General Seating	4,081	680	483	75	5,319	900	2,600	250	2,850	1,000	10,069
11	Game Operations	0	0	225	0	225	0	0	0	0	0	225
12	Entertainment	0	30	0	0	30	0	0	0	0	0	30
13	Video / Audio	0	30	0	0	30	0	0	0	0	0	30
14	Network	0	60	0	0	60	0	0	0	0	0	60
15	PD, FD, Meds, Chldrs	0	200	0	0	200	0	0	0	0	0	200
16	Media	0	150	0	0	150	0	0	0	0	0	150
17	Buses	340	0	0	0	340	0	0	0	0	0	340
	Subtotal	9,161	1,474	1,955	75	12,665	900	2,600	250	2,850	1,000	**17,415**

* Note: CP Retail site is not shown on this map

SOURCE: Fehr & Peers, 2009.

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FIGURE III.D-17

Candlestick Point — Hunters Point Shipyard Phase II EIR

PROPOSED STADIUM GAME DAY PARKING

The satellite parking lots identified in the parking supply are privately owned and operated and are not under the control of the stadium operator. Some of the satellite and private lots may not be available in the future due to development of other uses on that land (e.g., Executive Park development project). Development of the satellite and private lots would likely occur gradually so that the parking deficit would increase incrementally over time. Without the use of satellite lots, and without the provision of additional parking on-site (such as in a garage) or off-site (on adjacent properties such as Brisbane Baylands), stadium spectators would park on street further from the stadium (such as in the Bayview), or switch to alternative modes of transportation such as transit or charter buses.

As noted above, during game days, 1,000 parking spaces in the Candlestick Point retail parking structure would be reserved for stadium spectators, and as a result fewer spaces would be available for Candlestick Point retail patrons. In general, peak parking demand for shopping centers is lower on Sundays than on Saturdays or weekdays, and it is expected that during game days retail patrons would adjust their shopping trip to outside of the game day period, find short-term parking on-street, or access the shopping center via transit. During December when parking demand at shopping centers increases due to holiday shopping, the number of retail patrons that would be affected would increase. However, these patrons could be accommodated within the transit service provided pre- and post-game days.

Since stadium game day parking demand would be accommodated within the proposed parking facilities, privately owned satellite parking lots, and on street, and since alternative modes of transportation such as transit and charter buses would be available for spectators, stadium game day impacts on parking would be less than significant.

Impact TR-44: Stadium 49ers Game Loading Impacts

Impact TR-44 **Implementation of the Project would result in stadium game day loading demand that would be accommodated within the proposed on-site supply. (Less than Significant)** ***[Criterion D.1]***

The preliminary design for the new stadium includes loading dock accommodating four semi-trailer trucks and an adjacent TV staging and loading area. The TV staging and loading area would be used for loading/unloading on the days leading up to a game. Separate trash and recycling areas would be provided. The loading facilities for the stadium would be designed based on experience at the existing stadium, and for the needs for large special events such as Monday Night Football games or the Super Bowl.

A total of 100 delivery trucks are expected to serve the stadium in the week prior to a game. The majority of these trucks would serve the concession and food service functions. Stadium-bound delivery trucks would make their deliveries in advance of events to avoid peak travel periods that occur in the hours leading up to a game. Vendors would be notified by the stadium operator of appropriate delivery times.

Based on information obtained from the 49ers for the existing stadium, for a Sunday afternoon game, truck deliveries would occur in the middle of the week, with about 10 percent occurring on Wednesday, 40 percent on Thursday, and 50 percent on Friday. This truck traffic would be spread over the entire day. The peak stadium delivery day would be Friday, when approximately 50 trucks would make deliveries to

the stadium. As is currently done, television trucks would arrive in advance of events to allow for appropriate set-up time and to avoid peak travel periods.

The proposed stadium loading facilities would be sufficient to accommodate projected demand, and therefore impacts related to loading would be less than significant.

Impact TR-45: Stadium 49ers Game Emergency Vehicle Access

Impact TR-45 **During game days, accommodation for emergency access would be provided. (Less than Significant)** ***[Criterion D.m]***

During game days, two-way inbound and outbound vehicular circulation would be provided at all times, via three primary routes. On the Harney Way/Arelious Walker Drive route, emergency vehicles would be allowed to use the BRT-only lanes (the BRT-only lanes break off from the primary auto route and continue on Harney Way, east of Arelious Walker Drive, and on Egbert Street before reconnecting with Arelious Walker Drive immediately south of the Yosemite Slough bridge). Emergency vehicles would also be allowed to use Palou Avenue, which would be transit-only on game days. Both of these routes would be free of congestion, and would offer emergency vehicle access between regional facilities and Crisp Avenue. Emergency vehicles would be able to enter the stadium parking lot via Crisp Avenue. Emergency vehicles would also be able to use Innes Avenue, as there would be at least one lane in each direction on this route open to traffic. However, since immediately following games the outbound direction may be congested, this may not be a desirable route as the Harney Way BRT lanes or Palou Avenue.

Since multiple emergency access routes would be provided, stadium game day impacts on emergency access would be less than significant.

Impact TR-46: Stadium Secondary Event Site Access and Traffic Impacts

Impact TR-46 **Weekday evening secondary events at the stadium would result in increased congestion at intersections, freeway mainline, and freeway ramps already operating at unacceptable LOS under Project conditions without a secondary event, and result in significant impacts at nine additional intersections and one additional freeway off-ramp. (Significant and Unavoidable with Mitigation)** ***[Criteria D.a, D.b, D.g]***

The impact analysis of a secondary event at the new stadium assumed a weekday evening event with an attendance of 37,500 spectators. Secondary events could occur at any time of the day, and on any day of the week. Secondary events at the stadium would be limited to 20 total occurrences per year.

After exiting regional freeways, traffic generated by a secondary event would access the site via Cesar Chavez Street, Cargo Way, Evans Avenue, Innes Avenue, Bayshore Boulevard, Third Street, Carroll Avenue, Gilman Avenue, and Ingalls Street. The number of vehicles on the roadways accessing the stadium would vary by route and the size of the event.

During a weekday evening secondary event, it is projected that approximately one half of vehicle trips generated by a secondary event, or 4,688 vehicles would arrive approximately one hour prior to an event

start time, likely between 5:00 and 6:00 p.m., coinciding with the weekday evening peak hour. Project vehicle trips would be added to the following freeway facilities that would operate at LOS E or LOS F during the weekday PM peak hour:

- US-101 northbound from Harney Way to Third/Bayshore
- US-101 northbound from Sierra Point Parkway to Harney Way
- US-101 southbound from Mariposa Street to Cesar Chavez
- US-101 southbound off-ramp to Harney Way
- I-280 southbound off-ramp to Pennsylvania/25th

In addition, the secondary event would cause an additional off-ramp to operate at LOS F conditions:

- US-101 southbound off-ramp to Bayshore/Cesar

Table III.D-25 (Intersection Level of Service Project and Secondary Event—Weekday PM Peak Hour—2030 Conditions) compares the intersection LOS operating conditions for the Project weekday PM peak hour conditions without a secondary event to conditions with a secondary event. The table includes only the intersections along the access routes that would be primarily affected by secondary event traffic. Although other study intersections may experience traffic increases immediately preceding and following an event, the increase is not expected to be substantial since those locations would not be on primary routes between regional transportation facilities and the stadium.

With a secondary event, an additional 9 intersections would operate at LOS E or LOS F conditions, beyond those identified for the PM peak hour under Project conditions, including:

- Harney/Jamestown
- Crisp/Palou
- Ingalls/Thomas
- Ingalls/Carroll
- Arelious Walker/Gilman
- Amador/Cargo
- Innes/Arelious Walker
- Evans/Jennings
- Harney/Executive Park East
- Harney/Thomas Mellon

Additionally, traffic associated with a secondary event would exacerbate traffic operations at 11 intersections that would operate at LOS E or LOS F conditions without a secondary event in the PM peak hour, including:

- Third/25th
- Third/Evans
- Third/Carroll
- Third/Paul
- Third/Jamestown
- Cesar Chavez/Evans
- Alana Way/Beatty
- Alana Way/Harney/Mellon

Table III.D-25 Intersection Level of Service Project and Secondary Event—Weekday PM Peak Hour—2030 Conditions

		Project No Event		Project with Secondary Event	
	Intersection	Delay[a]	LOS[b]	Delay	LOS
1	Third St/25th St	>80	F	>80	F
2	Third St/Cesar Chavez	>80	F	>80	F
4	Third St/Evans Ave	>80	F	>80	F
8	Third St/Carroll Ave	75	E	74	E
9	Third St/Paul Ave	>80	F	>80	F
10	Third St/Ingerson Ave	43	D	39	D
11	Third St/Jamestown Ave	>80	F	>80	F
12	Third/Le Conte/US-101 nb off	23	C	28	C
14	25th St/Pennsylvania Ave	40	D	45	D
16	Cesar Chavez St/Evans Ave	>80	F	>80	F
17	Cesar Chavez St/Illinois St	23	C	40	D
27	Alana Way/Beatty Ave[c]	>80	F	>80	F
28	Alana Way/Harney Way/Mellon[c]	>80	F	>80	F
29	Harney Way/Jamestown Ave[d]	41	D	>80	F
30	Crisp Ave/Palou Ave[d]	54	D	>80	F
31	Ingalls St/Thomas Ave[d]	33	C	>80	F
32	Ingalls St/Carroll Ave[d]	38	D	>80	F
34	Arelious Walker/Gilman Ave[d]	36	D	>80	F
35	Amador St/Cargo Way	59	E	>80	F
46	Innes Ave/Arelious Walker Drive[d]	6	A	67	E
47	Innes Ave/Earl St	19.4(sb)	C	22.4(sb)	C
48	Evans Ave/Jennings St	31	C	>80	F
58	Evans/Napoleon/Toland	>80	F	>80	F
59	Harney Way/Executive Park East	26	C	>80	F
60	Harney Way/Thomas Mellon	26	C	>80	F

SOURCE: Fehr & Peers

a. Delay in seconds per vehicle.

b. Intersections operating at LOS E or LOS F conditions highlighted in bold.

c. Year 2030 analysis includes signalization as part of Executive Park Development or new Harney Interchange.

d. Year 2030 analysis includes signalization as part of Project.

- Amador/Cargo Way
- Innes/Arelious Walker
- Evans/Napoleon/Toland

Overall, since new facilities, including local streets and freeway facilities, would experience congested traffic following prior to a secondary event, traffic impacts associated with the new stadium during secondary events would be significant.

MM TR-46 *The stadium operator shall develop as part of a stadium Transportation Management Plan (TMP), a strategy for coordinating with representatives of SFMTA and the SF Police Department for deploying traffic control officers in the Project vicinity to increase efficiency of pre- and post- event traffic, similar to what would be in place for football game days. The secondary event component of the stadium TMP shall be approved by SFMTA. The stadium operator shall fully fund implementation of the secondary event (i.e., non-49ers football events) measures.*

Implementation of this mitigation measure would likely improve vehicle entrance and exit flows to the stadium site, maintain orderly traffic operations, and reduce intrusion onto neighborhood streets near the stadium. However, even with the implementation of mitigation measure MM TR-46, on days when special events are held at the stadium, the Project's impacts to the study roadway network would be significant and unavoidable.

Impact TR-47: Stadium Secondary Event Transit Impacts

Impact TR-47 **With implementation of the Project, the existing transit service and Project improvements would not be adequate to accommodate projected transit demand during secondary events with attendance of 37,500 spectators. In addition, transit lines serving the area would experience additional delays due to traffic generated by the secondary event. (Significant and Unavoidable with Mitigation)** ***[Criteria D.f, D.i]***

During secondary events, regularly scheduled bus service adjacent to the stadium would continue to operate, providing direct service to the stadium and into the Hunters Point Shipyard Transit Center. Additional secondary event-related transit service is not proposed. Table III.D-26 (Weekday PM Peak Hour One-Way Muni Capacity to Stadium by Line Weekday PM Conditions) presents the total one-way capacity that would be available during the weekday PM peak hour.

Table III.D-26 Weekday PM Peak Hour One-Way Muni Capacity to Stadium by Line Weekday PM Conditions

Route	*Peak Hour Frequency (minutes)*	*One-Way Hourly Capacity (passengers per hour)*
24-Divisadero	6	635
28L-19th Avenue/Geneva Avenue	5	1,130
44-O'Shaughnessy	6	635
48-Quintara	10	380
HPX—Hunters Point Express	12	320
Total		***3,100***

SOURCE: SFMTA, Fehr & Peers

During the weekday evening period, up to 4,688 additional transit riders would be generated by a secondary event during the peak hour prior to the event. These would be in addition to the 1,037 transit trips inbound to the study area in the PM peak hour on routes serving the stadium area (e.g., 24-Divisadero, 28L-19th Avenue Limited, 44-O'Shaughnessey, 48-Quintara-24th Street, and HPX as extended to serve the event). Therefore, the overall one-way transit demand in the PM peak hour on days when a

special event is being held at the stadium could be up to 5,725 riders. As shown in Table III.D-26, the total one-way transit capacity serving the stadium site during a typical weekday PM peak hour would be 3,100 passengers per hour, which would result 2,625 riders that would not be accommodated. This would be considered a significant impact.

MM TR-47 *SFMTA shall increase frequency on regularly scheduled Muni routes serving the stadium area prior to large special events. In addition, the stadium operator shall fund additional Muni shuttle service between the stadium and regional transit service, including BART (Balboa Park and/or Glen Park stations) and Caltrain (Bayshore station).*

- *Routes 24-Divisadero, 28L-19th Avenue Limited, and 44-O'Shaughnessey would already be operating near their maximum frequency. Therefore, this mitigation measure primarily applies to the 48-Quintara-24th Street route and the new HPX service. If each of these routes were increased to have five-minute frequencies (typically considered the maximum frequency that can be regularly maintained), the transit capacity toward the stadium would increase by 828 passengers per hour, for a total of 3,928 passengers. Even with the additional service on these two lines, there would be a shortfall of 1,797 passengers per hour in transit capacity.*
- *Additional express service to key regional transit destinations and regional charter express service, similar to what is offered on football game days, would offset a portion of the shortfall in transit capacity. The amount and nature of special service to special stadium events would depend on the type and size of the special event. Generally, the capacity of the express service should compensate for the shortfall of 1,797 passengers per hour for a 37,500-person event (transit supply, would of course, be designed on a case-by-case basis depending on the expected size of the secondary event).*
- *SFMTA and the stadium operator shall implement a stadium transportation systems plan similar to that developed for game-day operations (except that the Yosemite Slough bridge shall not be available for private automobiles), on a case-by-case basis depending on the expected size of the secondary event.*

Prior to opening day at the new stadium, the City and the stadium operator shall determine costs associated with the increased service and determine funding requirements. Examples of funding sources that shall be considered include a surcharge on game tickets, parking or admission surcharge, or other such revenue mechanism. Implementation of increased transit service would be the responsibility of SFMTA and the stadium operator, and would be implemented when projected attendance warrants additional service.

With implementation of Project mitigation measure MM TR-47, the Project's impacts to transit service on special event days would be reduced, but not to less-than-significant levels. In addition, traffic impacts during secondary events would not be mitigated, and would impact transit operations. Therefore, the impact on transit operations would remain significant and unavoidable.

Impact TR-48: Stadium Secondary Event Bicycle Impacts

Impact TR-48 **With implementation of the Project, bicycle circulation would not be impeded during secondary events at the stadium. (Less than Significant)** ***[Criterion D.k]***

During secondary events, bicyclists would have access to the proposed bicycle facilities on existing and reconfigured roadways, as it is not anticipated that any special roadway network restrictions would be

required to accommodate secondary event traffic. Bicycle access would be maintained on all study area roadways.

For those patrons arriving to the stadium by bicycle, the stadium would include bicycle racks and lockers would be provided at the stadium entrances. In addition, a bicycle valet, similar to the service operated at AT&T Park for the San Francisco Giants would also be provided. Overall, while traffic volumes on area roadways would increase during secondary events, the increase would not be sufficient to substantially affect bicycle circulation, and impacts on bicycle operations would therefore be less than significant.

Impact TR-49: Stadium Secondary Event Pedestrian Impacts

Impact TR-49 **With implementation of the Project, pedestrian circulation would not be impeded during arena events. (Less than Significant)** ***[Criterion D.j]***

The proposed street and sidewalk network in the vicinity of the stadium is designed to accommodate sell-out football game day crowds accessing and leaving the stadium site. Pedestrian access to the stadium during secondary events would be accommodated within the existing and proposed sidewalk network, although due to large number of pedestrians and vehicles accessing the stadium, pedestrians may experience crowding. However, this is expected and would be managed during large events as part of the stadium operations. Therefore, secondary event impacts on pedestrian circulation would be less than significant.

Impact TR-50: Stadium Secondary Event Parking Impacts

Impact TR-50 **With implementation of the Project, parking demand associated with a secondary event with an attendance of 37,500 spectators would be accommodated within the proposed supply. (Less than Significant)** ***[Criterion D.h]***

The parking supply associated with secondary events would vary, depending on the size of the event. For a secondary event with 37,500 spectators, it is anticipated that the stadium parking supply of 12,665 spaces would be made available. These include the dual-use fields, paved lot, structured parking facilities, and on-street parking.

A stadium secondary event with 37,500 spectators is expected to generate up to 10,100 vehicles, or about one half that of a sell-out football game day. These vehicles would be accommodated within the stadium parking supply. Impacts of stadium secondary events on parking would be less than significant.

Impact TR-51: Project Site Access and Traffic Impacts from Arena uses

Impact TR-51 **With implementation of the Project, weekday evening events at the arena would exacerbate congestion at intersections, freeway mainline, and freeway ramps already operating at unacceptable LOS under Project conditions without an arena event, and result in significant traffic impacts at Harney Way and Jamestown Avenue, which was operating acceptably under Project conditions without an arena event. (Significant and Unavoidable with Mitigation)** ***[Criteria D.a, D.b, D.g]***

The impact analysis of arena events assumed a weekday evening sell-out event at the 10,000-seat arena. Although no specific program has been developed for events at the arena, sell-out events with 10,000 attendees occurring during weekday evenings would likely be infrequent. Smaller-sized events during the weekday evening, and events occurring during the day and on weekends would have fewer impacts due to the lower traffic volumes demands on the study area roadways.

Access to the arena would be via the existing roadway network—US-101, Harney Way, Gilman Avenue, and Third Street—as well as local streets within Candlestick Point. The number of vehicles would vary by route and the size of the event.

During a weekday evening event, it is projected that approximately one half of vehicle trips generated by a sell-out arena event, or 1,333 vehicles, would arrive approximately one hour prior to an event beginning, likely between 5:00 and 6:00 p.m. and therefore would coincide with the weekday evening peak hour. Project vehicle trips would be added to freeway facilities that would operate at LOS E or LOS F during the weekday PM peak hour for Project conditions:

- US-101 northbound from Harney Way to Third/Bayshore
- US-101 northbound from Sierra Point to Harney Way
- US-101 southbound from Mariposa Street to Cesar Chavez
- US-101 southbound off-ramp to Harney Way

Table III.D-27 (Intersection Level of Service Project No Event and Arena Event—Weekday PM Peak Hour—2030 Conditions) presents a comparison of intersection LOS operating conditions for the Project weekday PM peak hour conditions without a sell-out event to conditions with a sell-out event at the arena. Only the intersections along the access routes that would be primarily affected by arena traffic are listed.

During the weekday PM peak hour, the LOS at the intersection of Harney/Jamestown would change from LOS D under Project conditions without an event to LOS F conditions for Project conditions with an event. This would be a significant impact.

Additionally, traffic associated with a sell-out arena event would exacerbate traffic operations at 11 intersections that would operate at LOS E or LOS F conditions under Project conditions without an event, including:

- Third/25th
- Third/Cesar Chavez
- Third/Evans
- Third/Oakdale
- Third/Revere
- Third/Carroll
- Third/Jamestown
- Alana Way/Beatty
- Alana Way/Harney/Mellon
- Third/Williams/Van Dyke
- Third/Jerrold

Table III.D-27 Intersection Level of Service Project No Event and Arena Event—Weekday PM Peak Hour—2030 Conditions

		Project No Event		Project with Arena Event	
	Intersection	Delay[a]	LOS[b]	Delay	LOS
1	Third St/25th St	>80	F	>80	F
2	Third St/Cesar Chavez	>80	F	>80	F
3	Third St/Cargo Way	>80	F	>80	F
4	Third St/Evans Ave	>80	F	>80	F
5	Third St/Oakdale Ave	60	E	60	E
6	Third St/Palou Ave	>80	F	>80	F
7	Third St/Revere Ave	>80	F	>80	F
8	Third St/Carroll Ave	75	E	74	E
9	Third St/Paul Ave	>80	F	>80	F
10	Third St/Ingerson Ave	43	D	41	D
11	Third St/Jamestown Ave	>80	F	>80	F
12	Third/Le Conte/US-101 nb off	23	C	24	C
19	Bayshore Blvd/Paul Ave	>80	F	>80	F
27	Alana Way/Beatty Ave[c]	>80	F	>80	F
28	Alana Way/Harney Way/Mellon[c]	>80	F	>80	F
29	Harney Way/Jamestown Ave[d]	41	D	>80	F
34	Arelious Walker/Gilman Ave[d]	36	D	37	D
56	Third/Williams/Van Dyke	>80	F	>80	F
57	Third St/Jerrold Ave	>80	F	>80	F
59	Harney Way/Executive Park East	26	C	30	C
60	Harney Way/Thomas Mellon	26	C	42	D

SOURCE: Fehr & Peers

a. Delay in seconds per vehicle.
b. Intersections operating at LOS E or LOS F conditions highlighted in bold.
c. Year 2030 analysis includes signalization as part of Executive Park Development or new Harney Interchange.
d. Year 2030 analysis includes signalization as part of Project.

Overall, since local streets and freeway facilities would experience increased congested prior to an arena event, traffic impacts associated with the new arena would be significant.

MM TR-51 *Transportation Management Plan (TMP). The arena operator shall develop a Transportation Management Plan (TMP) for coordinating with representatives of SFMTA and the SF Police Department for deploying traffic control officers in the Project vicinity to increase efficiency of pre- and post- event traffic, and for developing incentives to increase transit ridership to the arena. Implementation of this mitigation measure would likely speed vehicle entrance and exit to the arena site as well as maintain orderly traffic operations and reduce intrusion onto minor routes to and from the arena. Traffic control officers would facilitate traffic flow at the intersection of Harney/Jamestown which would operate at LOS F conditions with a sell-out arena event. The final arena TMP shall be*

approved by SFMTA. Preparation of the TMP Plan shall be fully funded by the arena operator, and shall be completed in time for implementation on opening day of the arena.

However, even with the implementation of MM TR-51, the Project's impacts to the study roadway network during a sell-out event at the arena would be significant and unavoidable.

Impact TR-52: Transit Impacts from Arena uses

Impact TR-52 **With implementation of the Project, sell-out weekday evening events at the arena could be accommodated within the existing and proposed transit service. (Significant and Unavoidable with Mitigation)** ***[Criteria D.f, D.i]***

Arena events would be served by the existing and proposed transit routes serving Candlestick Point. Additional transit service is not planned as part of special events at the arena. Table III.D-28 (Weekday PM Peak Hour One-Way Muni Capacity to Arena by Line) presents the total one-way capacity that would be available during the weekday PM peak.

Table III.D-28 Weekday PM Peak Hour One-Way Muni Capacity to Arena by Line

Route	*Peak Hour Frequency (minutes)*	*One-Way Hourly Capacity (passengers per hour)*
29-Sunset	5	768
28L-19th Avenue/Geneva Avenue	5	1,130
CPX—Candlestick Point Express	10	380
Total		***2,278***

SOURCE: SFMTA, Fehr & Peers

During the weekday evening period, up to 1,000 transit riders would be generated in the peak hour prior to an event. These would be added to the 1,023 transit trips inbound to the study area during the PM peak hour on routes serving the arena (e.g., 29-Sunset, 28L-19th Avenue Limited, and the proposed CPX service). Therefore, the overall one-way transit demand in the PM peak hour on days when an event is being held at the arena could be up to 2,023. As shown in Table III.D-28, the total one-way transit capacity serving the arena during a typical weekday PM peak hour would be 2,278 passengers per hour, which would be adequate to serve the arena event and background demand generated by the Project land uses.

As described in Impact TR-51 above, traffic associated with a sell-out event at the arena would add to already congested conditions on the study area roadway network, and these conditions could not be mitigated to less-than-significant levels. Therefore, traffic impacts would impact transit service accessing the Project site. Providing transit-priority treatments on Gilman Avenue, as described in MM TR-23.1 would reduce travel time impacts on the 29-Sunset (the 28L-19th Avenue/Geneva Avenue and the CPX would be traveling with the proposed transit-only lanes and would not be subject to increased traffic congestion).

The impact of traffic congestion on transit service could be avoided with implementation of mitigation measure MM TR-23.1 identified above. Implementation of this mitigation measure would reduce impacts on transit operations to less-than-significant. However, due to the uncertainty of this mitigation, the impact would remain significant and unavoidable.

Impact TR-53: Bicycle Impacts from Arena uses

Impact TR-53 **With implementation of the Project, bicycle circulation would not be impeded during arena events. (Less than Significant)** ***[Criterion D.k]***

During arena events, bicyclists would have access to the proposed bicycle facilities on existing and reconfigured roadways, as it is not anticipated that any special roadway network restrictions would be required to accommodate arena event traffic. Bicycle conditions would be similar to those described in Impact TR-29.

For those patrons arriving to the arena by bicycle, the arena would include bicycle racks and lockers would be provided at the stadium entrances. Overall, while traffic volumes on area roadways would increase during arena events, the increase would not be sufficient to affect bicycle circulation, and impacts on bicycle operations would therefore be less than significant.

Impact TR-54: Pedestrian Impacts from Arena uses

Impact TR-54 **With implementation of the Project, pedestrian circulation would not be impeded during arena events. (Less than Significant)** ***[Criterion D.j]***

In the vicinity of the arena, 12- to 15-foot-wide sidewalks would be provided. In addition, the arena would be set back from the street to provide a pedestrian plaza area for gathering pedestrians. Pedestrian access to the arena events would be accommodated within the proposed sidewalk network, although due to large number of pedestrians and vehicles accessing the arena during a sell-out event, pedestrians may experience crowding. However, this is expected and would be managed during large events by the arena operator. Therefore, arena event impacts on pedestrian circulation would be less than significant.

Impact TR-55: Parking Impacts from Arena uses

Impact TR-55 **With implementation of the Project, arena parking demand would be accommodated on street and within proposed off-street parking facilities. (Less than Significant)** ***[Criteria D.e, D.h]***

No separate parking facilities would be provided for arena patrons. Visitors would utilize proposed public off-street and on-street parking spaces in the vicinity of the proposed arena. A sell-out arena event would generate a demand for 2,860 vehicles (including patrons and employees), which would be accommodated within the approximately 2,300 parking spaces within structured parking in Candlestick Point, and within the approximately 1,000 on-street parking spaces in the Candlestick Point North, South and Central areas (refer to Figure III.D-12).

During the weekday evenings, parking demand associated with the commercial uses in Candlestick Point that would utilize the public parking garage would be less than during the day, and spaces would be

available for arena events. There would generally be a shortfall in parking supply, compared to Project parking demand, and therefore depending on the time of day of the arena event, surplus capacity may not be available to accommodate the arena parking demand. Arena events during peak periods of commercial activity would increase the shortfall in parking spaces. It is possible that some drivers may seek available parking in the available Bayview area, or others may shift to transit. As discussed in Impact TR-35, the secondary effects of drivers searching for parking is typically offset by a reduction in vehicle trips due to some drivers, who are aware of constrained parking conditions in a given area, shifting to other modes. Hence, any secondary environmental impacts that may result from a shortfall in parking would be minor. Therefore, the parking shortfall would not result in significant parking impacts, and Project impacts on parking would be less than significant.

Impact TR-56: Air Traffic Impacts

Impact TR-56 **Implementation of the Project would not impact air traffic. (No Impact)** ***[Criterion D.c]***

The Project site is not near an airfield; San Francisco International Airport is about seven miles to the south. This distance is outside of the limit for objects near airports in the guidance published by the Federal Aviation Administration (FAA) (within 20,000 feet or less than 4 miles from an airport). The FAA requires notice of construction for any structures within 20,000 feet what would extend 200 feet above ground level.[127] The proposed height of the tallest buildings (420 feet) would be approximately 30 feet higher than the crest of the adjacent Bayview Hill (which reaches an elevation of about 390 feet). The Project applicant will notify FAA prior to construction of buildings exceeding 200 feet to ensure compliance with FAA requirements. For those reasons, the heights of the Project buildings would not interfere with or result in any changes to air traffic. Therefore, Project impacts on air traffic safety would be less than significant.

Impact TR-57: Hazards due to Design Features

Impact TR-57 **Implementation of the Project would not create hazards due to any proposed design features. (Less than Significant)** ***[Criterion D.d]***

The Project includes construction of new roadways within the Project site, the construction of the Yosemite Slough bridge, and streetscape and intersection improvements outside of the Project site. New and reconfigured roadways would be designed in accordance with City standards, and would need to be reviewed and approved by the City prior to construction. Therefore, Project impacts related to hazards would be less than significant.

[127] Federal Aviation Administration, Advisory Circular AC 70/7460-2K, Proposed Construction or Alteration of Objects that May Affect the Navigable Airspace, March 1, 2000, available at http://www.airweb.faa.gov/Regulatory_and_Guidance_Library/rgAdvisoryCircular.nsf/0/22990146db0931f186256c2a00721867/$FILE/ac70-7460-2K.pdf, accessed October 28, 2008.

Impact TR-58: Emergency Access

Impact TR-58 Implementation of the Project would not result in significant emergency access impacts. (Less than Significant) ***[Criterion D.m]***

The Project includes the construction of new roadways to facilitate emergency access. Existing emergency response routes would either be maintained in their existing locations or rerouted as necessary. Further, all development would be designed in accordance with City standards, which include provisions that address emergency access (e.g., minimum street widths, minimum turning radii). In addition, emergency vehicles would be able to utilize transit lanes when streets are congested. Therefore, Project impacts on emergency access would be less than significant.

Cumulative Impacts

The geographic context for the analysis of cumulative transportation impacts is the study area, as shown in Figure III.D-1, which, as explained above, includes all aspects of the transportation network that may be measurably affected by the Project. While cumulative impacts associated with the Project have been discussed above, together with Project-specific impacts, they are restated here for ease of reference. Several of the Project's transportation impacts would also make significant contributions to cumulative impacts in the study area.[128]

The Project would make significant contributions to the following cumulative traffic impacts: construction-related transportation impacts (Impact TR-1); traffic congestion (Impact TR-2); intersection traffic impacts at several intersections (Impact TR-3, Impact TR-4, Impact TR-5, Impact TR-6, Impact TR-7 and Impact TR-8); traffic impacts at several freeway mainline segments, weaving segments, ramps, and freeway diverge queue storage (Impact TR-11, Impact TR-13, Impact TR-15); and traffic spillover to adjacent neighborhoods (Impact TR-10). In addition, the Project would contribute to cumulative traffic volumes on Harney Way (Impact TR-16). Mitigation measures have been identified for many of these cumulative traffic impacts. Specifically, mitigation measures have been identified for Impact TR-1, Impact TR-2, Impact TR-4, Impact TR-6, Impact TR-7, Impact TR-8, Impact TR-10, Impact TR-15, and Impact TR-16. Most of these mitigation measures, however, are either uncertain at this time, or would be effective only to reduce, but not to completely avoid, these cumulative traffic impacts. Of these mitigation measures, and MM TR-16, related to the widening of Harney Way, would be effective to reduce Project-related contributions to cumulative traffic impacts on Harney Way to a less-than-significant level. Other mitigation measures that would be implemented and would reduce but not avoid significant effects are MM TR-1 [Construction Traffic Management Plan] to reduce construction traffic effects, MM TR-2 [Transportation Demand Management Plan] to reduce the Project's overall contribution to traffic, and MM TR-4 to reduce impacts at the intersection of Tunnel/Blanken. Implementation of MM TR-6 [Harney/US-101 Interchange], MM TR-7 [Amador/Cargo/Illinois], and MM TR-8 [Geneva/Bayshore] remains uncertain. Thus, cumulative traffic impacts associated with Impact TR-1, Impact TR-2, Impact TR-4, Impact TR-6, Impact TR-7, Impact TR-8, Impact TR-10 and Impact TR-15 for which mitigation measures have been identified

[128] These impacts are described in more detail above. The calculations to support these impact conclusions are located in the Transportation Study, attached as Appendix D to this EIR.

would remain significant and unavoidable with mitigation. On the other hand, for cumulative traffic Impact TR-3, Impact TR-5, Impact TR-11, and Impact TR-13 no feasible mitigation measures have been identified. Therefore, these cumulative traffic impacts would also be significant and unavoidable.

The Project would make significant contributions to the following cumulative transit impacts: transit capacity (Impact TR-17); ridership and capacity utilization at study area cordons (TR-18); transit operation impacts on several transit lines (Impact TR-21, Impact TR-22, Impact TR-23, Impact TR-24, Impact TR-25, Impact TR-26 and Impact TR-27); transit operations on US-101 (TR-28); and regional transit operations on US-101 and Bayshore Boulevard (Impact TR-30). The Project would not make significant contributions to cumulative transit impacts regarding transit capacity utilization at downtown and regional screenlines (Impact TR-19 and Impact TR-20). Mitigation measures (MM TR-17, MM TR-21.1, MM TR-21.2, MM TR-22.1, MM TR-22.2, MM TR-23.1, MM TR-23.2, MM TR-24.1, MM TR-24.2, MM TR-25, MM TR-26.1, MM TR-26.2, MM TR-27.1, MM TR-27.2) have been identified for most of the Project's cumulative transit impacts (Impact TR-17, Impact TR-18, Impact TR-21, Impact TR-22, Impact TR-23, Impact TR-24, Impact TR-25, Impact TR-26, and Impact TR-27). The identified mitigations would reduce two of the identified Project-related cumulative transit impacts to less-than-significant levels: transit capacity (Impact TR-17) and ridership and capacity utilization at study area cordons (Impact TR-18). For the rest of the cumulative transit impacts for which mitigations have been identified, the mitigations are either uncertain at this time, or would be effective to reduce, but not to completely avoid, the cumulative transit impacts related to the Project. Specifically, this would be the case for all the mitigation measures that have been identified to alleviate congestion-related transit operation impacts on several Muni lines (Impact TR-21, Impact TR-22, Impact TR-23, Impact TR-24, Impact TR-25, Impact TR-26, and Impact TR-27). These cumulative transit impacts, therefore, would remain significant and unavoidable, even with mitigation. There are only two cumulative transit impacts for which no mitigation measures have been identified: transit operations on US-101 (Impact TR-28); and regional transit operations on US-101 and Bayshore Boulevard (Impact TR-30). These cumulative transit impacts associated with the Project would remain significant and unavoidable.

With one localized exception, the Project would make no significant contributions to cumulative bicycle circulation impacts in the area. On the contrary, the Project would have a beneficial impact on bicycle circulation (Impact TR-31). The Project would connect the existing Bayview Hunters Point neighborhood (and the rest of the City) with the proposed waterfront amenities. Specifically, the Project would provide a number of roadways which would facilitate bicycling within and in the vicinity of the Project, including off-street Class I pathways along the Bay, at Candlestick Point, across the proposed Yosemite Slough bridge, and into Hunters Point Boulevard. The Project site would also facilitate completion of the Bay Trail. Overall, bicycle access and the environment for bicycling would improve within and in the vicinity of the Project site, and the facilities would be adequate to meet the bicycling demand associated with the Project and adjacent uses. The one exception would be that of bicycle circulation on Bicycle Routes #70 and #170 along Palou Avenue, between Griffith Street and Third Street. As described above, these bicycle routes may be adversely affected by the combination of the proposed transit preferential treatment and vehicular congestion in the area (Impact TR-32). A mitigation measure has been identified for this impact (MM TR-32), but since its implementation is uncertain at this time, this impact would remain significant and unavoidable.

Pedestrian circulation impacts by their very nature are site-specific and would not contribute to impacts from other development projects. The Project would contribute to cumulative traffic conditions that would affect pedestrian safety but the Project and Project contribution to cumulative pedestrian safety impacts would be less-than significant. The Project would lessen impacts that would otherwise result to cumulative pedestrian safety through its beneficial effects on pedestrian circulation in the area. The Project would provide a connection between the Bayview neighborhood (and the rest of the City) and the waterfront, and would include many pedestrian amenities that would, overall, enhance the pedestrian experience in the Project site and its vicinity (Impact TR-33 and Impact TR-34). Thus, there would be no cumulative pedestrian impacts associated with the Project.

Similarly, the Project would make no significant contribution to cumulative parking impacts. As explained above, other cumulative projects in the area, such as most of the surrounding existing development, Executive Park, and India Basin, are located too far from the Project site to expect that drivers going to those projects would park at the Project site, or that drivers going to the Project site would park at those sites. Additionally, the topography is not conducive to parking beyond the Project site boundaries. Consequently, there is no potential for significant cumulative parking impacts (Impact TR-35).

Loading impacts, like pedestrian impacts, are by their very nature localized and site-specific, and would not contribute to impacts from other development projects near the Project site. Moreover, the Project would have no loading impacts, as the estimated loading supply would be generally greater than the loading demand, and any effects of unmet loading demand would be temporary inconveniences and not rise to the level of a significant impact (Impact TR-37).

Finally, the Project would contribute to cumulative traffic and transportation impacts associated with 49ers games at the stadium (Impact TR-38 and Impact TR-39); secondary events to be held at the stadium (Impact TR-46 and Impact TR-47), and events at the arena (Impact TR-51 and Impact TR-52). Mitigation measures have been identified for these impacts (MM TR-38, MM TR-39, MM TR-46, MM TR-47, and MM TR-51). However, these mitigation measures would reduce, but not completely avoid the Project's contributions to these cumulative impacts. Therefore, these cumulative impacts would remain significant and unavoidable. The Project would not contribute to cumulative bicycle, pedestrian and parking impacts at these facilities for the reasons explained previously concerning the Project contribution to bicycle, pedestrian and parking impacts (Impact TR-40, Impact TR-41, Impact TR-42, Impact TR-48, Impact TR-49, Impact TR-50, Impact TR-53, Impact TR-54, and Impact TR-55).