E. TRANSPORTATION

This section analyzes the potential project-level and cumulative impacts on transportation and circulation resulting from implementation of the Proposed Project. Transportation-related issues of concern that are addressed include traffic on local and regional roadways, transit (including ferries), bicycles, pedestrians, freight loading, emergency vehicle access and construction-related activities. Additionally, a parking analysis is included for informational purposes. Transportation impacts are assessed for the land use development program for weekday AM and PM commute periods, and also for Saturday midday peak period conditions. This section also identifies mitigation measures that would reduce or avoid significant impacts.

This section is based on information contained in the Treasure Island and Yerba Buena Island Redevelopment Plan Transportation Impact Study. A copy of the Transportation Impact Study is included as Appendix C.

SETTING

The transportation study area includes all aspects of the transportation network that may be measurably affected by the Proposed 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 Proposed Project. Since the San Francisco-Oakland Bay Bridge (“Bay Bridge”) provides the only vehicular access on and off the Islands, the transportation study area includes freeway approaches to the Bay Bridge in the East Bay and several intersections on freeway approaches within downtown San Francisco. Areas near the San Francisco Ferry Building are also studied for pedestrian impacts.

The existing conditions of the on-island roadway system were not analyzed because the Proposed Project would redesign the existing public roadway system on Treasure Island.

A total of 17 existing intersections (one on Treasure Island, and 16 in downtown San Francisco), and the six Bay Bridge on- and off-ramps connecting with Yerba Buena Island were identified as the key locations that would likely be affected by the Proposed Project, and were selected for detailed study of the Proposed Project’s impacts. The intersection analysis did not include intersections in the East Bay because, unlike downtown San Francisco, there is no central place or roadway where a majority of trips would converge. Studying individual intersections would not reflect the way that trips from the Proposed Project would disperse throughout the East Bay via the three major freeways (i.e., I-680, I-580, and I-880) and major cities, such as Oakland,
Berkeley, Richmond, San Leandro, and Fremont. The 16 study intersections in downtown San Francisco include:

1. Fremont Street/Howard Street
2. Fremont Street/Folsom Street/I-80 Westbound Off-Ramp
3. Fremont Street/Harrison Street/I-80 Westbound Off-Ramp
4. First Street/Market Street
5. First Street/Mission Street
6. First Street/Howard Street
7. First Street/Folsom Street
8. First Street/Harrison Street/I-80 Eastbound On-Ramp
9. Essex Street/Folsom Street
10. Essex Street/Harrison Street/I-80 Eastbound On-Ramp
11. Second Street/Folsom Street
12. Second Street/Bryant Street
13. The Embarcadero/Harrison Street
14. Bryant Street/Sterling Street
15. Bryant Street/Fifth Street/I-80 Eastbound On-Ramp
16. Harrison Street/Fifth Street/I-80 Westbound Off-Ramp

The above intersections were selected for analysis because they are typically congested during peak periods due to traffic traveling to and from the Bay Bridge and downtown San Francisco and are therefore, most likely to experience increases in peak hour traffic associated with the Proposed Project. In addition to the 16 intersections within downtown San Francisco, the intersection of Avenue of the Palms/First Street on Treasure Island was analyzed (for conditions with the Proposed Project only) because it would serve as the gateway to the development on Treasure Island. Figure IV.E.1: Study Intersections, depicts the locations of the study intersections.

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

**ROADWAY NETWORK**

**Regional Access**

Three major freeways provide access to the Bay Bridge from the East Bay and vehicles on these facilities most frequently experience queues at the bridge’s toll plaza during the weekday AM
peak period (generally from 7:00 AM to 9:00 AM). Substantial queues associated with insufficient capacity on the Bay Bridge do not typically form at the toll plaza during the PM peak hour. On occasions when they do, they are typically associated with special events, incidents on the bridge, or other unique circumstances. The conditions on these three freeways — I-80, I-580, and I-880 — are described below.

**Interstate 80 (“I-80”)** is a major multi-lane freeway that provides the only vehicular access to the Islands, via the Bay Bridge. I-80 extends to the East Bay and northeast towards Sacramento and the Sierra Nevada Mountains. To the west, I-80 terminates at the merge with U.S. 101 in San Francisco. Along the Bay Bridge, I-80 consists of two decks, each with five travel lanes. The upper deck is for westbound travel and the lower deck is for eastbound travel. The east span of the Bay Bridge, between Yerba Buena Island and Emeryville/Oakland is currently being reconstructed with a new structure scheduled to open in 2013. The new span will provide five lanes in each direction with wider shoulders than the existing structure to better accommodate breakdowns and emergencies as well as a mixed-use pedestrian and bicycle path. The travel lanes will all be on a single level of the new structure. The west span of the Bay Bridge has recently been seismically retrofitted and will remain in its current configuration (i.e., two decks with five lanes in each direction). There is a separate study underway by the Bay Area Toll Authority (“BATA”) to evaluate potential alternative configurations for a proposed mixed-use pedestrian and bicycle path on the western portion of the Bay Bridge, but funding for its construction has not been identified and it is not assumed to be in place in this analysis.

The Bay Bridge travels through a short tunnel on Yerba Buena Island. On- and off-ramps are provided to Yerba Buena Island, linking to Treasure Island. In the westbound direction, one off-ramp is provided from the Bay Bridge to Yerba Buena Island on the east side of the tunnel. Two on-ramps are provided to westbound I-80 from Yerba Buena Island, one on each side of the tunnel. Similarly, there are two off-ramps from the eastbound Bay Bridge, one on each side of the tunnel. There is one eastbound on-ramp on the east side of the tunnel. Figure IV.E.2 illustrates the existing ramp configuration.

A number of ramps are being or are proposed to be reconfigured as part of two other projects. There would continue to be six ramps with the proposed configurations; however, the eastbound on-ramp on the east side of Yerba Buena Island will be modified as part of the Bay Bridge East Span project and some of the other ramps are proposed to be modified in the study underway by the SFCTA, as illustrated on Figure IV.E.3: Proposed Access Ramps with Existing Roadways, and described further below.¹

¹ Impact analysis in this transportation study takes into account conditions resulting from both the existing ramps, including the replacement of the eastbound on-ramp that is currently being rebuilt as part of the Bay Bridge East Span Project, and the potential improved or replaced ramps as part of the Yerba Buena Island Ramps Improvement Project.
SOURCE: Yerba Buena Island Internal Road Network and Connection with Treasure Island Final Report, AECOM, 2009
Note: 1. Eastbound off-ramp reopened in Fall 2009.
FIGURE IV.E.3: PROPOSED ACCESS RAMPS WITH EXISTING ROADWAYS

SOURCE: Yerba Buena Island Internal Road Network and Connection with Treasure Island Final Report, AECOM, 2009
Note: 1. Eastbound off-ramp reopened in Fall 2009.
As part of the Bay Bridge East Span Project, the following ramp changes will occur (based on the numbering shown on Figure IV.E.2 and Figure IV.E.3):

1. The eastbound on-ramp on the east side of Yerba Buena Island will be reconstructed entirely as part of the replacement of the Bay Bridge east span. The new ramp will be in a similar location to the existing ramp, but will provide increased acceleration distance. This is the only ramp improvement that has been approved and funded to date and is scheduled to be completed by 2013.

The Yerba Buena Island Ramps Improvement Project (the “Ramps Project”) is under a separate study underway by the San Francisco County Transportation Authority (“SFCTA”) evaluating potential reconfiguration of some of the westbound on- and off-ramps on the east side to the Bay Bridge tunnel. Although those improvements are part of a separate effort and not part of the Proposed Project, they are described in this section since they would affect the vehicular access to the Islands. The Draft EIR/EIS for that project is anticipated to be published in the summer of 2010. Final design is estimated to be completed by early 2011, and construction to start in early 2012.

The SFCTA and Caltrans are currently evaluating alternatives for the following ramps:

2. The westbound on-ramp on the east side of Yerba Buena Island would remain open to all traffic, but would be completely reconstructed to provide greater acceleration distance. The ramp would also be outfitted with ramp metering traffic signals to meter the flow of traffic onto the westbound Bay Bridge from the Islands. A separate bypass lane would be provided for high-occupancy vehicles, which is assumed for purposes of this analysis to be vehicles with three or more passengers (“HOV 3+”).

3. The westbound off-ramp on the east side of Yerba Buena Island, which is currently a left-hand exit, would be removed and replaced with a new right-hand exit that distributes exiting traffic onto Macalla Road, just west of the proposed reconstructed westbound on-ramp.

4. The westbound on-ramp on the west side of Yerba Buena Island would not be modified geometrically. However, it would be restricted to transit and emergency vehicle-use only, providing exclusive access for transit and emergency vehicles departing the Islands destined for the San Francisco mainland.

Improvement or replacement of the westbound on- and off-ramps, if undertaken, would be a separate project from both the Bay Bridge East Span project currently under construction and the Proposed Project. The improvement or replacement of the westbound on- and off-ramps are referred to as the “Ramps Project”. Figure IV.E.3 illustrates the proposed ramp configuration.

No significant changes are expected for the remaining two ramps on Yerba Buena Island. Replacement of the eastbound off-ramps was studied by the SFCTA and Caltrans and determined to be infeasible:
5. The eastbound off-ramp on the west side of Yerba Buena Island would remain unchanged from its current configuration.\(^2\)

6. The eastbound off-ramp on the east side of Yerba Buena Island, which was closed at the time that data was collected for this analysis, has recently been re-opened with no changes to its configuration. Following completion of bridge construction activities, the ramp will remain open and have signage and lighting improvements only that would be conducted as part of the Bay Bridge East Span project.

Impact analysis in this transportation study takes into account conditions resulting from both the existing ramps, including the replacement of the eastbound on-ramp that is currently being rebuilt as part of the Bay Bridge East Span project, and the potential improved or replaced ramps as part of SFCTA’s and Caltrans’ Yerba Buena Island Ramps Improvement Project.

At the time existing conditions data were collected for the impact analysis (in May 2008), both the westbound on-ramp and the eastbound off-ramp on the east side of the tunnel were closed due to construction of the east span of the Bay Bridge. Although the ramps have since re-opened, the impact analysis is based on conditions at the time data was collected (i.e., with the ramps closed).

In addition to ramp changes, the SFCTA and Caltrans are also evaluating retrofit of the nine viaduct structures on the west side of Yerba Buena Island. Retrofit of these structures is separate from the Proposed Project. As the retrofit would be a seismic safety project only and no changes to roadway alignment or capacity are proposed, the transportation impacts described in this Section would be the same whether the retrofit project was implemented or not.

The Bay Bridge currently operates at or near vehicular capacity in the peak direction most weekdays during the morning and evening peak periods. Queues are often observed on the approaches to the bridge from the East Bay during the AM peak period and from San Francisco in the weekday PM peak period. This occurs when the demand for travel onto the bridge in the peak direction (westbound in the morning and eastbound in the evening) is greater than the capacity of the bridge. Queues on the westbound approach are formed due to metering at the toll plaza. Queues on surface streets in San Francisco are formed due to limited capacity of on-ramps to the eastbound Bay Bridge. Although Saturday conditions can vary substantially depending on weather, season, and special events, this analysis is based on typical conditions in which bridge capacity is adequate to serve peak demands on Saturday.

Measurements of traffic flow on the Bay Bridge during the weekday peak period indicate a capacity of about 9,000 vehicles per hour per direction. This corresponds to around 1,800 vehicles per lane per hour, which is less than the ideal saturation flow rate of 2,200 vehicles per lane per hour defined by the 2000 Highway Capacity Manual (“2000 HCM”). The average flow,

---

\(^2\) Project Study Report on I-80 in the City and County of San Francisco at Yerba Buena Island from Post Mile 7.6 to Post Mile 8.1, Caltrans, December 2007.
however, is reasonable given minimal shoulder width, grades, and a mix of heavy vehicles, such as buses and trucks that reduce capacity from 2,200 vehicles per hour per lane that can be achieved on facilities under ideal conditions (wide shoulders, level grade, no trucks and buses, etc.).

The number of vehicles counted on the Bay Bridge does not necessarily represent all travel demand. The presence of queues approaching the Bay Bridge indicates that the demand exceeds the capacity of the Bay Bridge during certain times of day. The observed volume on the Bay Bridge represents the bridge’s capacity and the number of vehicles in queues approaching the facility represents the excess demand (i.e., the amount of demand that exceeds the capacity of the facility). The full existing demand is estimated by adding unserved demand to the counted traffic volumes. In the AM peak hour, the existing travel demand is 10,450 vehicles per hour in the peak westbound direction. In the PM peak hour, the existing demand is slightly less, at approximately 9,550 vehicles per hour in the peak eastbound direction. Demand in the off-peak directions in the AM and PM peak hours is currently less than the Bay Bridge capacity, and therefore all demand is represented in counts on the Bay Bridge. Existing freeway mainline volumes, as well as the amount of unserved demand on all approaches to the Bay Bridge, are depicted on Figure IV.E.4: Existing Freeway Travel Demand.

**Interstate 580 (“I-580”)** is a ten-lane, major freeway that travels southeast from the Bay Bridge through the City of Oakland towards the Tri-Valley area communities of Livermore, Dublin, and Pleasanton in southeastern Alameda County. I-580 merges with I-80 just east of the bridge toll plaza. I-580 shares the same route as I-80 between Emeryville and Albany. North of Albany, I-580 continues east towards the Richmond-San Rafael Bridge, where it merges with U.S. 101 and terminates in San Rafael.

**Interstate 880 (“I-880”)** is a six- to eight-lane, major freeway that extends south through the City of Oakland towards the East Bay and South Bay communities of Hayward, San Leandro, and Fremont in Alameda County and Milpitas and San Jose in Santa Clara County. I-880 merges with I-80 and terminates just east of the bridge toll plaza. In the South Bay, I-880 terminates at the I-280/Highway 17 interchange in San Jose.
TABLE IV.E.4: EXISTING FREEWAY TRAVEL DEMAND

San Francisco Approaches

<table>
<thead>
<tr>
<th></th>
<th>AM</th>
<th>PM</th>
<th>SAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demand</td>
<td>7,150</td>
<td>9,550</td>
<td>7,850</td>
</tr>
<tr>
<td>Served</td>
<td>7,150</td>
<td>9,000</td>
<td>7,850</td>
</tr>
<tr>
<td>Unserved (Queue)</td>
<td>0</td>
<td>550</td>
<td>0</td>
</tr>
</tbody>
</table>

**NOTE:** This refers to unserved demand on San Francisco city streets approaching the SFOBB. Additional unserved demand exists on northbound US 101/eastbound I-80 approaching the SFOBB. Unserved demand on US 101/A-80 is not quantified due to the complex nature of the approaching freeway network.

XX (YY) [ZZ] = AM (PM) [SAT] Volume in vehicles/hour

SOURCE: Fehr & Peers, 2009
Existing Yerba Buena Ramp Operations

As noted above, at the time existing conditions data were collected for the impact analysis, both the westbound on-ramp and the eastbound off-ramp on the east side of the tunnel were closed. Existing merge and diverge conditions were analyzed for the four open ramps (i.e., eastbound on-ramp (east side), eastbound off-ramp (west side), westbound on-ramp (west side), and westbound off-ramp (east side)). “Approach to Impacts Analysis” p. IV.E.47, presents the analysis methodology and the LOS definitions for ramp merge and diverge and stop-controlled intersection operations. During the AM and PM peak hour, the merge and diverge areas of the freeway generally operate at acceptable levels of service, except for the eastbound off-ramp on the west side of Yerba Buena Island during the PM peak hour. On the on-ramps themselves, however, vehicles experience substantial amounts of delay while waiting for gaps in traffic on the bridge. The ramps have very short acceleration lanes, poor sight distance, and tight curve radii, which, when combined with heavy mainline traffic volumes, result in a longer driver reaction time before entering the freeway.

Local Access

This section describes each of the streets that are within the transportation study area for the Proposed Project. These streets include twelve City streets on the San Francisco mainland and one street on Treasure Island, which is not currently a City street.

Howard Street is an east-west arterial in the study area. According to the San Francisco General Plan, Howard Street is a Major Arterial. Howard Street has been identified by the SFCTA, San Francisco’s Congestion Management Agency, as part of the City’s Congestion Management Plan (“CMP”) network, a series of freeways and Major Arterials serving a citywide function. The street has also been designated by the Metropolitan Transportation Commission (“MTC”) as part of the nine-county Bay Area’s Metropolitan Transportation System (“MTS”), a network of streets and highways serving regionally-important transportation functions. Between Fremont Street and The Embarcadero, Howard Street has two travel lanes in each direction, twelve-foot wide sidewalks and on-street parking on both sides of the street. Howard Street, west of its intersection with Fremont Street to 11th Street, is one-way westbound, with four travel lanes, twelve-foot wide sidewalks and on-street parking. Between Beale Street and 11th Street, Howard Street has a Class II bicycle lane designated part of Bicycle Route #30. In the downtown area, Howard Street has extensive transit facilities, with nine bus lines (including Muni and Golden Gate Transit) running on at least one block of the roadway. The Muni 76-Marin Headlands and the 30X-Marina Express run on Howard Street.

3 Closure of the westbound on-ramp and the eastbound off-ramp on the east side of Yerba Buena Island did not affect overall traffic volumes accessing Yerba Buena Island and Treasure Island, as alternate ramps were available in each direction.
Folsom Street is an east-west arterial in the study area. According to the San Francisco General Plan, Folsom Street is a Major Arterial Street. Folsom is also a CMP and MTS facility. Between 11th Street and The Embarcadero, this roadway is one-way eastbound, with four travel lanes, twelve-foot wide sidewalks and on-street parking on both sides of the street for most of its length. There are four bus lines (including Muni 12-Folsom and Golden Gate Transit) operating on the street. The street also has a Class II bicycle lane between The Embarcadero and 14th Street, designated part of Bicycle Route #30.

Harrison Street is an east-west arterial in the study area. According to the San Francisco General Plan, Harrison Street is a Major Arterial. Harrison Street is also designated as a CMP and MTS facility. Between Third Street and The Embarcadero, this roadway has two eastbound travel lanes, three westbound travel lanes, twelve-foot wide sidewalks and on-street parking on both sides of the street for most of its length. West of its intersection with Third Street, the roadway is one-way westbound, with four travel lanes, twelve-foot wide sidewalks and on-street parking. At Fourth Street, Harrison Street has access to the westbound on-ramps to I-80. The off-ramps at Fifth Street release westbound I-80 traffic onto Harrison Street. In the study area, Harrison Street has six Muni bus routes lines (12-Folsom-Pacific, 9X-Bayshore Express, 9AX Bayshore ‘A’ Express, 9BX Bayshore ‘B’ Express, 27-Bryant, and 47-Van Ness) running on portions of the street.4

Bryant Street is an east-west arterial in the study area. According to the San Francisco General Plan, Bryant Street is a Major Arterial. Bryant Street is also designated as a CMP and MTS facility. Between 11th Street and Second Street, this roadway is one-way eastbound, providing four travel lanes, twelve-foot wide sidewalks and on-street parking on both sides of the street for most of its length. At Fourth Street, there is an off-ramp from eastbound I-80, and at Fifth Street there is an on-ramp onto eastbound I-80. East of Second Street, Bryant Street provides access to HOV on-ramps onto the eastbound Bay Bridge. There are four Muni bus routes lines (9X-Bayshore Express, 9AX-Bayshore ‘A’ Express, 9BX-Bayshore ‘B’ Express, 27-Bryant, and 47-Van Ness) operating on the street.

Fremont Street is a north-south arterial that runs between I-80/Bay Bridge and Market Street. North of Market Street, Fremont Street becomes Front Street. According to the San Francisco General Plan, Fremont Street is a Major Arterial. Fremont is also designated as a CMP and MTS facility. Fremont Street is two-way between Harrison Street and Folsom Street, and one-way northbound north of Folsom Street. North of Mission Street, Fremont Street also has a bus-only lane for Muni buses exiting the Transbay Terminal. A second off-ramp from the westbound Bay Bridge terminates on Fremont Street between Folsom Street and Howard Street. Sidewalks on

---

4 As part of the December 2009 SFMTA changes to service, the 9-Bayshore routes were renumbered as 8-Bayshore routes.
both sides of the street average twelve feet in width, and are generally separated from traffic by on-street parking.

**First Street** is a north-south arterial that runs between Market Street and I-80 in the study area. According to the San Francisco General Plan, First Street is a Major Arterial, and is also designated as a CMP and MTS facility. First Street is one-way southbound between Market Street and Howard Street, where it provides three southbound lanes for mixed-traffic and one southbound transit-only lane. (One of the mixed-flow traffic lanes is only available during peak commute periods. During off-peak periods, parking is allowed and the lane is not used for traffic.) South of Howard Street, First Street provides four southbound travel lanes for mixed traffic. Sidewalks on both sides of the street average twelve feet in width, and are separated from traffic by on-street parking and street trees. First Street connects with the Bay Bridge eastbound on-ramp at Harrison Street and therefore serves as major link between the Financial District of San Francisco and I-80. Muni 2-Clement, 3-Jackson, and the 76-Marin Headlands run on First Street in the study area.

**Second Street** is a north-south street extending between Market Street and King Street. According to the San Francisco General Plan, Second Street is designated a Secondary Arterial roadway. Second Street has two lanes in each direction south of Mission Street. Between Market Street and Mission Street there are one northbound and two southbound travel lanes. On-street parking is provided on both sides of the street. Second Street is part of Bicycle Route #11 (Class III bicycle route) and is used by three Muni lines (9-San Bruno, 10-Townsend and 12-Folsom-Pacific).

**Fifth Street** is a north-south arterial that runs between Market Street and I-80 in the study area. According to the San Francisco General Plan, Fifth Street is a Major Arterial, and is part of the CMP network between Market Street and Brannan Street and is part of the MTS network between Howard Street and Brannan Street. This roadway generally has two travel lanes in both directions. At its intersections with Bryant Street and Harrison Street, Fifth Street has on- and off-ramp access to and from I-80 and the Bay Bridge. Sidewalks on both sides of the street average six feet in width, and are separated from traffic by on-street parking. The Muni 27-Bryant line runs on Fifth Street. Fifth Street is part of Bicycle Route #19 (Class III facility).

**The Embarcadero** is a north-south route that is located along the northeastern waterfront of San Francisco. According to the San Francisco General Plan, The Embarcadero is a Primary Transit Street, Major Arterial, and is designated as part of the CMP and MTS network. The Embarcadero has two lanes of traffic in each direction; however, three lanes are provided in each direction between the Ferry Building and Broadway. One of the three southbound lanes is a peak period tow-away parking lane during the evening commute. The Embarcadero has Class II bicycle lanes in both directions, as part of Bicycle Route #5. Muni operates light rail and streetcar lines within
the median of The Embarcadero and two bus lines (the 80X-Gateway Express and 82X-Levi Plaza Express) along mixed-flow segments. Sidewalks and on-street parking are provided on both sides of the street. The pedestrian path along the east side of The Embarcadero, Herb Caen Way, is designated as part of the San Francisco Bay Trail.

**Market Street** is a major east-west street that runs from just east of Clipper Street to Steuart Street (east of Clipper Street, Market Street becomes Portola Avenue). According to the San Francisco General Plan, Market Street is part of the Citywide Pedestrian Network, and is a Primary Transit Street and Transit Conflict Street. Market Street is also part of the CMP and MTS networks between Franklin Street and Clipper Street. No on-street parking is provided on Market Street east of Van Ness Avenue; however, several areas have loading zones that permit temporary parking for service vehicles and taxis. Within downtown San Francisco, Market Street is part of Bicycle Route #50 (Class III bicycle route). Muni buses (including 2-Clement, 21-Hayes, 6-Parnasus, 9-San Bruno, 9L-San Bruno Limited, 31-Balboa, 71/71L-Haight/Noriega), Muni Metro, the Muni F-Market & Wharves historic streetcar line, and BART also operate along or below Market Street.

**Essex Street** is a north-south street extending for only one-block between Folsom Street and Harrison Street/I-80. Although it has historically provided two travel lanes in each direction, the northbound lanes have been closed for several years to serve as a construction staging area. Generally, the southbound lanes provide peak period storage for queues of vehicles accessing the on-ramp to the Bay Bridge eastbound located at the intersection of Harrison Street/Essex Street.

**Mission Street** is an east-west street in the study area, extending from The Embarcadero to Van Ness Avenue. At Van Ness Avenue, Mission Street turns to run north-south to the southern City limits and into Daly City. Within the study area, Mission Street is designated as a Transit Conflict Street, and generally has one mixed-flow travel lane and one peak period transit-only lane in each direction, with on-street parking and sidewalks on both sides of the street. Parking is prohibited during peak periods. Muni (including 14-Mission, 14L-Mission Limited, and 14X-Mission Express), SamTrans, and Golden Gate Transit operate bus service on Mission Street.

**Treasure Island Road** is a two-lane street extending between Treasure Island and the I-80/Bay Bridge on- and off-ramps on Yerba Buena Island. Treasure Island Road becomes Avenue of the Palms on Treasure Island and Hillcrest Road on southern parts of Yerba Buena Island. There are no existing pedestrian or bicycle facilities on the roadway. Treasure Island Road connects to the Bay Bridge westbound on-ramp and the eastbound off-ramp on the west side of Yerba Buena Island. Treasure Island Road also extends south of the Bay Bridge, where it becomes Hillcrest Road near the U.S. Coast Guard property on Yerba Buena Island. The Muni line 108-Treasure Island runs on Treasure Island Road.
Intersection Operations

Existing conditions at the study intersections were analyzed for the peak hour of the typical weekday morning (7 to 9 AM) and evening (4 to 6 PM) peak periods, as well as the peak hour of the Saturday midday peak period (1 to 3 PM). The peak periods are consistent with most transportation analyses conducted in San Francisco and were selected because they represent the times during typical days that routinely experience the highest traffic volumes and greatest congestion. Figure IV.E.1: Study Intersections, depicts the study intersections.

Traffic conditions at the study intersections were evaluated using the Level of Service (“LOS”) methodology. 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. “Approach to Impacts Analysis,” p. IV.E.47, presents the analysis methodology and the LOS definitions for signalized and unsignalized intersections. Table IV.E.2 on p. IV.E.52, defines each of the levels of service and shows the average control delay associated with each level of service.

Existing operating conditions for the study intersections are presented in Table IV.E.15, p. IV.E.86–IV.E.87. During the weekday AM and PM, and Saturday peak hours, most study intersections currently operate within acceptable service conditions, at LOS D or better, with the following exceptions:

- First Street/Mission Street operates at LOS E in the PM peak hour;
- First Street/Howard Street operates at LOS E in the PM peak hour;
- First Street/Folsom Street operates at LOS E in the PM peak hour;
- First Street/Harrison Street/I-80 Eastbound On-Ramp operates at LOS E in the PM peak hour;
- Essex Street/Harrison Street/I-80 Eastbound On-Ramp operates at LOS F in the PM peak hour;
- Second Street/Folsom Street operates at LOS E in the PM peak hour;
- The Embarcadero/Harrison Street operates at LOS E in the AM peak hour and LOS F in the PM peak hour; and
- Bryant Street/Fifth Street/I-80 Eastbound On-Ramp operates at LOS F in the PM peak hour.

During the Saturday midday peak hour, none of the 16 study intersections currently operate at unacceptable LOS E or LOS F conditions.

Generally, conditions in downtown San Francisco are more congested in the PM peak hour than the AM peak hour. In the mornings, access to downtown San Francisco is constrained by the limited capacity of the Bay Bridge to deliver traffic into the City. In the evening, the opposite
IV. Environmental Setting and Impacts
E. Transportation

occurs, when traffic attempting to leave downtown San Francisco is constrained by the limited capacity of the Bay Bridge ramps onto the bridge, causing queues to form on surface streets leading to the bridge. Congestion in downtown San Francisco can vary depending on a number of other factors, including incidents on the bridge, special events, and seasonal variations in traffic and therefore, LOS may sometimes differ from what is presented in Table IV.E.15 due to variations in travel conditions. It should also be noted that traffic operations at a number of intersections in the South of Market area are affected by traffic associated with special events and during baseball season when the San Francisco Giants have home games at AT&T Park (on King Street, between Second and Third Streets). Transportation impacts associated with game day conditions are most severe prior to games and after the conclusion of games. The greatest impact occurs after weekday afternoon sellout events, during the 3:30 to 4:40 PM period when traffic, transit and pedestrian flows exiting the ballpark (and game-day street closures near the park) coincide with the evening commute traffic already on the transportation network. As a result, on days when San Francisco Giants play home games at AT&T Park, existing service levels at study intersections and the Bay Bridge, particularly those between the ballpark and the Bay Bridge, would generally be worse than those presented in Table IV.E.15.

Two of the study intersections included in the analysis (Folsom/Essex and Bryant/Sterling) are uncontrolled (i.e., no traffic signal or stop sign). At Folsom/Essex, traffic on eastbound Folsom Street destined for the eastbound Bay Bridge on-ramps at Harrison Street turns right from eastbound Folsom to southbound Essex Street. Similarly, Bryant Street/Sterling Street is uncontrolled and allows eastbound left turns and westbound right-turns to access the HOV-only on-ramp to the eastbound Bay Bridge at Sterling Street. Since approaches to these intersections are not controlled, delay cannot be calculated, and instead a qualitative discussion of the intersection operations was conducted. Observations indicate that these two intersections operate relatively well during the AM and Saturday peak periods. During the PM peak period on days when congestion leading onto the Bay Bridge is severe, queues from bridge on-ramps spill back into these intersections. At Folsom Street/Essex Street, this congestion primarily affects the two southern eastbound lanes on Folsom Street that facilitate turns onto southbound Essex Street. At Bryant Street/Sterling Street, this congestion primarily affects the two eastbound lanes on Bryant Street that turn onto the Bay Bridge on-ramp; the “through” travel lane on eastbound Bryant Street operates relatively free of congestion. The single lane on the westbound approach to this intersection on Bryant Street turns directly onto the on-ramp and is frequently congested during the PM peak hour.

Transit

Currently, one transit line serves the Islands from the Transbay Terminal in downtown San Francisco; the Muni line 108-Treasure Island. At the Transbay Terminal, passengers can access regional and other local public transportation services including many Muni, Golden Gate
Transit, AC Transit, and SamTrans lines. BART is within walking distance of the Transbay Terminal, and Caltrain can be reached via a transfer to another Muni line. Figure IV.E.5: Existing Public Transit Network, illustrates the public transit network in downtown San Francisco and Treasure Island.

The Muni line 108-Treasure Island provides 24-hour service between the Transbay Terminal and Treasure Island via the Bay Bridge using a 40-foot motor coach. On Treasure Island, the line operates on a loop on M Avenue, 13th Street, H Avenue and California Avenue.\(^5\) Scheduled service frequency is every 15 minutes during the morning, afternoon, and evening weekday peak periods and every 20 minutes during the weekend peak period; however, the actual run time for the line varies depending on congestion on the Bay Bridge. During the peak periods, the line has a run time of approximately 10 minutes from Treasure Island inbound towards the Transbay Terminal and a run time of approximately 8 minutes outbound from the Transbay Terminal to Treasure Island. The line spends approximately 15 minutes circulating on the Islands. Depending on the direction of travel (e.g., service to or from downtown San Francisco), the line is currently operating between 20 and 58 percent of capacity during the AM peak hour, and between 48 and 61 percent of capacity during the PM peak hour. During the Saturday peak hour, when scheduled service is every 20 minutes, the line operates between 46 and 70 percent of capacity.

At the Transbay Terminal, Muni Line 108-Treasure Island riders can connect to several other transit lines operating inside, adjacent to, or within a short walk of the Transbay Terminal. Muni operates 80 transit lines throughout San Francisco with stops within 2 blocks of 90 percent of all residences in the city. The agency is responsible for operating buses, light rail lines, cable cars, and the historic street cars in the City of San Francisco. In addition to the Muni line 108-Treasure Island, Muni lines 5-Fulton, 6-Parnassus, 14-Mission (including the 14L-Mission Limited and 14X-Mission Express), 38-Geary, 38L-Geary Limited, and 76-Marin Headlands have stops at the Transbay Terminal, facilitating direct connections to the 108-Treasure Island. The closest BART station to the Transbay Terminal is the Embarcadero Station located about one block away. The Ferry Building is located about five blocks from the Transbay Terminal and accommodates service to the East Bay and North Bay.

The existing Muni line 108-Treasure Island serving the project site was assessed by calculating the existing capacity utilization (riders as a percentage of capacity) at the maximum load point (the point of greatest demand). Data collected as part of SFMTA’s Transit Effectiveness Project (“TEP”) was used to calculate the capacity utilization, which was then compared to Muni’s

---

\(^5\) In December 2009, SFMTA eliminated the segment of the 108-Treasure Island bus route between the Transbay Terminal and the Caltrain terminal at Fourth Street and Townsend Street, and rerouted service on Treasure Island from Avenue M to Avenue H.
capacity utilization standard of 85 percent. A similar assessment was also conducted for the four downtown Screenlines. A similar assessment was also conducted for the four downtown Screenlines.6 “Approach to Impact Analysis”, p. IV.E.47, presents the analysis methodology for the transit capacity utilization and screenline analyses.

**AC Transit** is the primary bus operator for the East Bay, including Alameda and western Contra Costa Counties, and provides lines to the City of San Francisco and San Mateo County. AC Transit operates 27 “transbay” bus lines between the East Bay and the Transbay Terminal, many of which operate only during commute periods.

The **Golden Gate Bridge, Highway, and Transportation District (“GGBHTD”)** provides bus and ferry service between the North Bay (Marin and Sonoma Counties) and San Francisco. Within San Francisco, Golden Gate Transit bus lines 2, 4, 8, 18, 24, 26, 27, 38, 44, 54, 56, 58, 72, 73, 74, 76, 97, 10, 70, 80 and 101 operate on surface streets, with stops adjacent to the Transbay Terminal offering service to Marin and Sonoma Counties. Golden Gate Transit also operates ferry service between the Larkspur and Sausalito Ferry Terminals in Marin County and the San Francisco Ferry Building.

**SamTrans**, operated by the San Mateo County Transit District, provides bus and rail service in San Mateo County, and provides bus service between San Mateo County and San Francisco. SamTrans lines DX, FX, KX, MX, NX, PX, RX, 292, and 397 serve downtown San Francisco and the Transbay Terminal area, and provide connections to San Mateo County destinations.

**BART** operates regional rail transit service connecting San Francisco with the East Bay and northern San Mateo County. Although no direct connections from the Transbay Terminal are available to BART, the Bay Area’s regional rapid transit system, connections can be made at nearby facilities. Passengers can transfer between the Transbay Terminal and BART by walking two blocks north from Mission Street to the Montgomery Street Station on Market Street. Passengers can use BART to reach Pittsburg/Bay Point, Richmond, Fremont, Dublin, Millbrae, SFO and points in between.

**Caltrain** provides rail passenger service on the Peninsula and the Santa Clara Valley between Gilroy and San Francisco. The San Francisco Caltrain terminal is at Fourth Street between King Street and Townsend Street. To reach Caltrain, passengers could walk to the Montgomery Street Station and either take BART to Millbrae, where passengers can transfer directly to Caltrain, or board the Muni 10-Townsend, N-Judah or T-Third Street light rail lines, which provide service to

---

6 The concept of screenlines is used to describe the magnitude of travel to or from the greater downtown San Francisco area by corridors, and to compare estimated transit ridership to available capacity. Screenlines are hypothetical lines that would be crossed by persons traveling between downtown and other parts of San Francisco and the region. Individual transit lines are grouped into screenlines across which the transit lines travel.
the Fourth Street/King Street Caltrain Station, or the peak hour Muni express buses 80X, 81X and 82X, or Muni 76-Marin Headlands on Sundays.

**San Francisco Bay Area Water Emergency Transportation Authority ("WETA")** is responsible for implementing the Ferry Implementation and Operations Plan (the “IOP”) for the Bay Area, with a focus on building and operating a comprehensive public water transit system of ferries, feeder buses, and terminals to increase regional mobility in the Bay Area. There is no ferry service currently serving Treasure Island. However, the IOP proposes new ferry service between the San Francisco Ferry Building and Treasure Island. Existing ferry berths are located at the Ferry Building in San Francisco and include lines between San Francisco and Oakland, Alameda, and Vallejo that are operated by the WETA; ferry service provided by other operators includes service between San Francisco and Sausalito, Larkspur and Tiburon, as described above.

**Bicycles**

Existing bicycle facilities in the transportation study area include routes that are part of the San Francisco Bicycle Network. Bikeways are typically classified as Class I, Class II, or Class III facilities. Class I bikeways are paths with exclusive right-of-way for use by bicyclists or pedestrians. Class II bikeways are bicycle lanes striped within the paved areas of roadways and established for the preferential use of bicycles; Class III bikeways are signed bicycle routes that allow bicycles to share travel lanes with vehicles. Figure IV.E.6: Existing Bicycle Route Network, presents the bicycle routes in downtown San Francisco and in the South of Market area, as identified in the San Francisco Bicycle Route System map.

Currently on Treasure Island, there is a short bicycle lane striped on Avenue of the Palms and a pathway around the western side of the island. No bicycle facilities exist on the Bay Bridge.

Bicycles are allowed on most BART trains, except during peak commute hours (generally between 6:00 and 9:00 AM, and between 4:00 and 6:30 PM), or at any time on crowded cars. Caltrain allows a limited number of bicycles on all trains, and most Muni buses, including the Muni line 108-Treasure Island, are outfitted with racks to also carry a limited number of bicycles. Caltrans operates a transbay bicycle shuttle during morning and evening commute periods to transport bicyclists (and their bicycles) between the East Bay and San Francisco, but does not currently stop at Yerba Buena Island. The new east span of the Bay Bridge is expected to provide a bicycle and pedestrian path between Emeryville/Oakland and the Islands. BATA has recently completed a feasibility study examining the potential for a new bicycle/pedestrian path

---

7 Bicycle facilities are defined by the State of California in the California Streets and Highway Code Section, 890.4.
TREASURE ISLAND AND TERRE FAJNA ISLAND REDEVELOPMENT PROJECT EIR

FIGURE IV.E.6: EXISTING BICYCLE ROUTE NETWORK

IV.E.21
on the west span of the Bay Bridge. BATA has subsequently initiated a Project Study Report to examine design alternatives. If this project is constructed, there would be a continuous bicycle and pedestrian facility from Emeryville/Oakland to San Francisco, with connections to the Islands.

**Pedestrians**

The pedestrian environment surrounding the Ferry Building in downtown San Francisco is presented because the Proposed Project would include a ferry connection between Treasure Island and the Ferry Building. In addition, a discussion of the pedestrian environment in the vicinity of the Transbay Terminal is presented because the San Francisco terminus of the Muni line 108-Treasure Island is at the terminal. Existing pedestrian facilities on Treasure Island are not discussed because the Proposed Project would substantially alter and improve the existing street network on Treasure Island. The pedestrian network on Yerba Buena Island is limited and would be improved with the Proposed Project. Proposed Project improvements are presented in the “Impacts,” subsection on pp. IV.E.30 to IV.E.47.

The San Francisco Ferry Building currently serves ferries arriving and departing from Sausalito, Tiburon, Larkspur, Oakland, Alameda, and Vallejo approximately every half hour during the peak period (except for the Sausalito ferry, which departs approximately every 60 to 90 minutes). In addition to ferry activity, the Ferry Building is used as an indoor marketplace, houses several offices and restaurants, and provides sidewalk space for a twice weekly farmers’ market. With these uses, and its proximity to downtown San Francisco, the surrounding area experiences high levels of pedestrian activity.

The Embarcadero separates the Ferry Building from the rest of downtown San Francisco. The waterfront was redesigned after the elevated Embarcadero freeway structure was damaged in the 1989 Loma Prieta earthquake. In lieu of reconstructing the freeway decks, the City of San Francisco and Caltrans designed the new roadway as a six-lane, at-grade facility with a light rail line within the median. In addition to the Ferry Building, several other properties along the waterfront were redeveloped as office and/or restaurant uses. A wide sidewalk and mixed-use path is provided along the Bay (east) side of The Embarcadero and around the Ferry Building. The path is generally 25 feet wide; near the Ferry Building, the path widens to between 30 and 45 feet.

As a result of the relatively recent reconstruction of The Embarcadero, most of the pedestrian facilities in the area surrounding the Ferry Building are consistent and generally ADA-compliant. Major pedestrian crossings at The Embarcadero occur at the foot of Market Street and the Ferry Building, as well as at both of the adjacent intersections along The Embarcadero at Washington and Mission Street. In front of the Ferry Building, there are three crossing points – a central main (80-foot wide) crosswalk directly between the Ferry Building and Market Street, and two
narrower crosswalks on either end of Justin Hermann Plaza. Pedestrian crossings across The Embarcadero are signalized. Figure IV.E.7: Pedestrian Study Crosswalks in Downtown San Francisco, presents the locations where crosswalk Level of Service analyses were conducted.

Existing pedestrian density and LOS at the crosswalks near the Ferry Building are presented in Table IV.E.16, p. IV.E.94.

The crosswalks in the vicinity of Ferry Building operate at acceptable levels of service during all peak hours. Based on observations during the peak hours, platoons of pedestrians form routinely while waiting for a signal to cross The Embarcadero. Although enough pedestrians are present to cause slight delays for those that walk faster than others, there is sufficient space in the crosswalk for faster pedestrians to navigate around others. Most crosswalks operate with relatively little delay or congestion. While the crosswalk directly in front of the Ferry Building becomes more congested during peak periods, it nevertheless operates within acceptable service conditions (i.e., LOS D conditions or better).

The existing Transbay Terminal is located at First and Mission Streets, and is scheduled for demolition and reconstruction as part of the Transbay Transit Center Project. Preconstruction activities are currently underway, and construction of the new Transit Center started in spring 2010, and is expected to be completed in 2015. A temporary terminal, located on the block bounded by Main, Folsom, Beale and Howard Streets, opened in August 2010, and serves commuters during demolition and construction of the new Transit Center.

Pedestrian trips to and from the existing terminal occur from all directions, with the majority of trips to and from the north. Existing pedestrian conditions at the nearby crosswalks, walkways and corner queuing area generally operate at acceptable levels, with limited locations where pedestrian movements are restricted (e.g., at the northwest corner of Beale/Howard). The proposed Transit Center District Plan project includes a comprehensive plan for improvements and changes to streets, circulation and open spaces in the area to support the existing, planned, and proposed land uses and activity in the area. Improvements would include reconfiguration of existing rights-of-way to accommodate the anticipated increases in pedestrian volumes that would result from the intensification of land uses, extension of Caltrain and the construction of High Speed Rail.

**Loading and Parking**

Existing loading and parking conditions were not quantitatively assessed on the Islands since the existing roadway network is proposed to be reconfigured and off-street and on-street parking and loading facilities would be provided in new quantities and configuration.
FIGURE IV.E.7: PEDESTRIAN STUDY CROSSWALKS IN DOWNTOWN SAN FRANCISCO
In general, existing parking and loading operations on Treasure Island occur off-street within parking and loading areas designated for the individual buildings. On-street parking is permitted on most of the major roadways, except on the perimeter road and California Avenue. On Yerba Buena Island, on-street parking and loading is not permitted. Residential areas include off-street parking facilities.

Emergency Access

The Islands are currently served by both the San Francisco Police Department and Fire Department. The Fire Department operates Fire Station 48 on Avenue D on Treasure Island. The Islands could also be served by Fire Station 35, the fire boat headquarters, located at Pier 22 ½ at The Embarcadero and Harrison Street. The Bay Bridge is the only existing emergency access to and from the Islands and San Francisco or the East Bay. The primary on-island emergency routes include roadways leading to the Bay Bridge, including Avenue of the Palms and Treasure Island Boulevard. When the Bay Bridge is congested during peak periods, emergency vehicles maneuver around vehicles and into other open travel lanes, similar to other congested roadways in San Francisco. The California Vehicle Code requires drivers to make way for emergency vehicles. In an emergency situation under congested conditions, emergency vehicles maneuver around traffic and use any available space, regardless of whether or not that space is in a striped travel lane.

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 Proposed Project site. These plans and policies include the San Francisco General Plan, the San Francisco Bicycle Plan, and the Transit First Policy.

- Federal
- There are no Federal transportation regulations applicable to the Proposed Project.
- State
- Treasure Island Transportation Management Act
- AB 981, enacted in 2008, authorized the San Francisco Board of Supervisors to designate a board or agency to act as the transportation management agency for Treasure Island and Yerba Buena Island. The Treasure Island Transportation Management Agency (“TITMA”) is the name of the
agency designated in AB 981. AB 981 also authorizes the Board of Supervisors and the San Francisco County Transportation Authority, by a two-thirds majority of each body, to adopt a congestion pricing program for Treasure Island and Yerba Buena Island and to set an initial congestion pricing fee structure based on recommendation by TITMA. AB 981 also authorizes TITMA, among other things, to establish parking fees, fines, and other parking-related revenues, to establish a transit pass fee structure and program, and to adopt amendments to the congestion pricing fee structure.

- **Regional**

- **San Francisco Bay Trail Plan**

  Refer to Chapter III, Plans and Policies, for a description of the San Francisco Bay Plan and its application to the Proposed 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. In the vicinity of the Project site, the 2005 Gap Analysis Study proposes to connect existing Bay Trail segments in downtown San Francisco with the trail on the eastern span of the Bay Bridge. The proposed trail would then connect to the existing trails in Oakland.

- **Local**

- **San Francisco General Plan**

  The Transportation Element of the San Francisco General Plan is composed of objectives and policies that relate to the eight aspects of the citywide transportation system: General Regional Transportation, Congestion Management, Vehicle Circulation, Transit, Pedestrian, Bicycles, Citywide Parking, and Goods Management. The Transportation Element references San
Francisco’s “Transit First” Policy in its introduction, and contains the following objectives and policies that are directly pertinent to consideration of the Proposed Project:

Objective 2: Use the transportation system as a means for guiding development and improving the environment.

Policy 2.1: 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.

Policy 2.4: Organize the transportation system to reinforce community identity, improve linkages among interrelated activities, and provide focus for community activities.

Objective 9: Improve bicycle access to San Francisco from all outlying corridors.

Policy 9.2: Where bicycles are prohibited on roadway segments, provide parallel routes accessible to bicycles or shuttle services that transport bicycles.

Objective 11: 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.

Objective 14: 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.

Policy 14.2: Ensure that traffic signals are timed and phased to emphasize transit, pedestrian, and bicycle traffic as part of a balanced multimodal transportation system.

Policy 14.3: Improve transit operation by implementing strategies that facilitate and prioritize transit vehicle movement and loading.

Policy 14.4: 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.

Policy 14.7: 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.

Objective 18: 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.

Policy 18.2: 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.

Policy 18.4: 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…”

Objective 23: Improve the city’s pedestrian circulation system to provide for efficient, pleasant, and safe movement.
IV. Environmental Setting and Impacts
   E. Transportation

Policy 23.2: Widen sidewalks where intensive commercial, recreational, or institutional activity is present and where residential densities are high.

Policy 23.3: Maintain a strong presumption against reducing sidewalk widths, eliminating crosswalks, and forcing indirect crossings to accommodate automobile traffic.

Policy 23.6: Ensure convenient and safe pedestrian crossings by minimizing the distance pedestrians must walk to cross a street.

Objective 24: Improve the ambiance of the pedestrian environment.

Objective 28: Provide secure and convenient parking facilities for bicycles.

Policy 28.1: Provide secure bicycle parking in new governmental, commercial, and residential developments.

Policy 28.3: Provide parking facilities which are safe, secure, and convenient.

Objective 34: 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.

Policy 34.1: 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.

Policy 34.3: Permit minimal or reduced off-street parking for new buildings in residential and commercial areas adjacent to transit centers and along transit preferential street.

Objective 35: Meet short-term parking needs in neighborhood shopping districts consistent with preservation of a desirable environment for pedestrians and residents.

Policy 35.1: Provide convenient on-street parking specifically designed to meet the needs of shoppers dependent upon automobiles.

Policy 35.2: Assure that new neighborhood shopping district parking facilities and other auto-oriented uses meet established guidelines.

Objective 39: Make freeway and major surface street improvements to accommodate and encourage truck/service vehicles in industrial areas away from residential neighborhoods.

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 San Francisco Bicycle Plan identifies the citywide bicycle route network, and establishes the level of treatment (i.e., Class I, Class II or Class III facility) on each route. The Plan also 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.
Transit First Policy

In 1998, the San Francisco voters amended the City Charter (Charter Article 8A, Section 8A.115) to include a Transit-First Policy, which was first articulated as a City priority policy by the Board of Supervisors in 1973. The Transit-First Policy is a set of principles which underscore the City’s commitment that travel by transit, bicycle, and foot be given priority over the private automobile. These principles are embodied in the policies and objectives of the Transportation Element of the San Francisco General Plan. All City boards, commissions, and departments are required, by law, to implement transit-first principles in concluding City affairs.

IMPACTS

SIGNIFICANCE CRITERIA

The Planning Department’s Initial Study Checklist Form provides a framework of issues to be considered in evaluating a project’s impacts under CEQA. Implementation of a project could have a potentially significant impact related to transportation if the project were to:

- Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation, including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit;
- Conflict with an applicable congestion management program, including but not limited to level of service standards and travel demand measures, 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);
- 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;
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses;
- Result in inadequate emergency access; or
- Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., conflict with policies promoting bus turnouts, bicycle racks, etc.) regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities, or cause a substantial increase in transit demand which cannot be accommodated by existing or proposed transit capacity or alternative travel modes.

Below is a list of significance criteria used by the San Francisco Planning Department to assess whether a proposed project would result in significant impacts. These criteria are organized by mode to facilitate the transportation impact analysis; however, the transportation significance criteria are essentially the same as the ones presented above.
The operational impact on signalized intersections is considered significant when project-related traffic causes the intersection level of service to deteriorate from LOS D or better to LOS E or F, or from LOS E to LOS F. The project may result in significant adverse impacts at intersections that operate at LOS E or F under existing conditions depending upon the magnitude of the project’s contribution to the worsening of the average delay per vehicle. In addition, the project would have a significant adverse impact if it would cause major traffic hazards or contribute considerably to cumulative traffic increases that would cause deterioration in levels of service to unacceptable levels.

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 traffic volumes at study merge and diverge sections already operating at LOS E or LOS F.

Further, because all vehicular trips generated by this project would require access to and travel on the Bay Bridge, the project would be considered to have a significant impact if it would substantially increase queuing on bridge approaches, either in San Francisco or the East Bay.

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 delays or operating costs such that significant adverse impacts in transit service levels could result. With the Muni and regional transit screenlines analyses, the project would have a significant effect on the transit provider if project-related transit trips would cause the capacity utilization standard to be exceeded during the PM peak hour.

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.

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.

A 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 proposed on-site loading facilities or within convenient on-street loading zones, and created potentially hazardous conditions or significant delays affecting traffic, transit, bicycles or pedestrians.

The project would have a significant effect on the environment if it would result in inadequate emergency access.

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, impacts on transportation and circulation systems due to construction may be considered significant.
TRANSPORTATION IMPROVEMENTS ASSUMED IN THE ANALYSIS

Street Network Improvements on Treasure Island and Yerba Buena Island

The Proposed Project would largely reconfigure existing streets on Treasure Island, as illustrated on Figure IV.E.8: Proposed Treasure Island and Yerba Buena Island Street System. The planned street design for Treasure Island provides a layout to accommodate higher-density development sites, a Transit Hub, and open space. There are four main levels in the hierarchy of streets planned for Treasure Island:

- **Major Arterials** – California Avenue and Avenue C are the main east/west and north/south streets, respectively, on Treasure Island. Major arterials would generally include one 12-foot wide traffic lane in each direction (11-foot wide lanes when buses travel in only one direction), 8-foot wide parking bays, and 5-foot wide Class II bicycle lanes in each direction. Additional lanes may be added to Major Arterial streets as needed for dedicated left and right turn lanes. Landscaping and sidewalks would be provided on both sides of the street, although their widths would vary. Major arterials would provide primary access to the Bay Bridge. Their function is consistent with the same-titled street type designation in the Transportation Element of the San Francisco General Plan.

- **Secondary Arterials** – Secondary Arterials are roadways with similar characteristics to Major Arterials, but that do not provide primary access to the Bay Bridge. There would be two Secondary Arterials on Treasure Island: First Street, between Avenue of the Palms and Avenue D, and Avenue D, between First Street and California Avenue. Generally, they would include an 11-foot wide traffic lane and a 7-foot wide parking bay. Parking bays would be 8-feet wide when a 5-foot wide Class II bicycle lane is provided. To minimize bus conflicts, a 6-foot wide flex lane would be added between parking bays and the travel lane where parking occurs adjacent to the bus lines in the area near the Transit Hub. Similar to Major Arterials, there would be landscaping and sidewalks on both sides of the street. Their function is consistent with the same-titled street type designation in the Transportation Element of the San Francisco General Plan.

- **Collector Streets** – These roadways facilitate movement through and around the urban core, developed neighborhoods, and open space. They include a 10-foot wide traffic lane and a 7-foot wide parking bay in each direction. Where a Class II bicycle lane is present, the parking bay would be 8-feet wide. Collector Streets would also have sidewalks and landscaping on both sides of the street. Their function is consistent with the same-titled street type designation in the Transportation Element of the San Francisco General Plan.

- **Shared Public Ways** – These pedestrian- and bicycle-priority public rights-of-way are proposed primarily within the Cityside neighborhood with one shared public way in the Island Core neighborhood. These streets prioritize pedestrian and bicycle use of the entire right-of-way, while allowing occasional slow-moving vehicles to access local land uses and parking to provide necessary services. They may be designed with special paving, a variety of amenities, landscaping and seating, as well as pockets of on-street

---

8 The street names shown on Figure IV.E.8 are for identification purposes only and subject to change.
The street names shown on this figure are for identification purposes only and subject to change.

**LEGEND:**
- Major Arterial
- Secondary Arterial
- Collector Street
- Shared Public Way/Private Street

SOURCE: Fehr & Peers, 2009
IV. Environmental Setting and Impacts
   E. Transportation

Unlike the street system on Treasure Island, which would be reconstructed, the roadway system on Yerba Buena Island would largely remain in its current configuration, with the exception of improved emergency vehicle access, bicycle and pedestrian circulation improvements, and modifications to serve the revised Bay Bridge ramp configurations described on pp. IV.E.4 – IV.E.9.

Macalla Road on Yerba Buena Island would be converted to one-way operations, such that vehicles could only travel on Macalla Road from the Bay Bridge ramps to its terminus at the intersection with Treasure Island Road. The other major streets on Yerba Buena Island, which include Treasure Island Road, Hillcrest Road, South Gate Road, and a small section of Macalla Road east of the new westbound ramps, would continue to provide two-way operations. As noted earlier, with reconstruction of the westbound ramps as part of the proposed Ramps Project, the westbound on-ramp to the Bay Bridge on the west side of Yerba Buena Islands would be for transit and emergency vehicle access only.

Streets on Yerba Buena Island would also have four street classifications:

- **Major Arterials** – Major arterials on Yerba Buena Island would generally provide access between Treasure Island and the Bay Bridge, and include Treasure Island Road, South Gate Road, Hillcrest Road, and Macalla Road. Treasure Island Road, South Gate Road, and Hillcrest Road would include 12-foot wide travel lanes in each direction (11-feet wide when separated by a median or dedicated turn lane), and a 5-foot wide Class II bicycle lane.
  - On Treasure Island Road, a bicycle lane would be provided in the south and east-bound directions only (i.e., from Treasure Island towards the Bay Bridge only), with the exception that a Class II bicycle lane would be provided for a short segment in the northbound direction from Macalla Road to Treasure Island, connecting the proposed bicycle lane in the downhill direction on Macalla Road with Treasure Island. A short section on Treasure Island Road near the existing Bay Bridge westbound on-ramp would have a 14-foot wide travel lane and a Class III bicycle route instead of a Class II bicycle lane. There would be 10-foot Class I shared

---

9 The Draft Better Streets Plan (June 2008) focuses on creating a positive pedestrian environment through measures such as careful streetscape design and traffic calming to increase pedestrian safety. The Proposed 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.

10 The adoption of Mitigation Measure M-TR-24 could require the removal of the proposed bicycle lane on Treasure Island Road to accommodate a transit-only lane if congestion on Treasure Island Road adversely affects transit operations. If the proposed bicycle lane is removed, cyclists would continue to have a Class II contra-flow facility connecting Treasure Island and the Bay Bridge, via Macalla Road (see Impact TR-33).
bicycle/pedestrian facilities provided on both sides of Treasure Island Road between Treasure Island and Macalla Road. In addition, the 10-foot Class I shared bicycle/pedestrian facility proposed on the west side of Treasure Island Road would extend from the Transit Hub on Treasure Island to the proposed lookout point south of the Macalla Road intersection. Otherwise, no sidewalks would be provided on the section of Treasure Island Road between Macalla Road and the Bay Bridge.

- Macalla Road would be reconfigured to provide (from south to north) a 16-foot two-way Class I shared bicycle/pedestrian path, an 11-foot travel lane allowing one-way vehicular traffic only, from the Bay Bridge northwesterly towards Treasure Island Road,
a 2- to 3-foot buffer, and a 5- to 9-foot Class II bicycle lane in the downhill direction. Cyclists traveling downhill could use either the Class I facility or the Class II facility. Cyclists traveling in the uphill direction could use the Class I facility. Pedestrians traveling in either direction could use the Class I facility on the south side of Macalla Road.

- Secondary Arterials – The main access road into the central development and open space area would be designated as a Secondary Arterial street. The Secondary Arterial would provide a 15-foot wide travel lane in each direction (a 30-foot wide curb-to-curb roadway) and a 5-foot wide sidewalk on the north side of the street. The wide travel lanes would be designed to accommodate future transit and emergency vehicle access.

- Collector Streets – The Collector Street on Yerba Buena Island would be a one-way roadway, forming a loop traveling clockwise. It would include a 20-foot wide travel lane with 5-foot wide sidewalks on both sides of the street.

- Private Streets – The primary access to homes within the main western and eastern residential districts on Yerba Buena Island would be private streets. The private streets would include 11-foot wide travel lanes in each direction. The streets have been designed to accommodate emergency vehicle access, with turnaround areas and wider curb return radii at intersections.

Transit Improvements

The transportation analysis assumes a set of transit improvements for which full funding has been identified. The Proposed Project would include a new inter-modal bus and ferry terminal (Transit Hub) on the western shore of Treasure Island. As described below, the Transit Hub would be the consolidated terminal for Muni’s 108-Treasure Island line, the new AC Transit service, and the Islands shuttle line. The Transit Hub would also include bicycle lockers.

The proposed transit circulation plan is illustrated on Figure IV.E.9: Proposed Transit Circulation Plan, and include the following:

- New ferry service between the Transit Hub and downtown San Francisco. Ferries would operate with 50-minute headways during peak hours to and from downtown San Francisco between 5 AM and 9 PM (corresponding to a single ferry operating between Treasure Island and one of the existing docks in San Francisco);

- Muni line 108-Treasure Island would operate at its current 15-minute peak headway but would no longer circulate around most of Treasure Island. Instead, it would circulate only around the Transit Hub and the Island Core neighborhood. The 108-Treasure Island would continue to operate 24-hours per day, including overnight owl service;

11 The Treasure Island Transportation Plan was prepared as an exhibit to the 2006 Development Plan and Term Sheet (2006 Term Sheet) that was endorsed by the TIDA Board and San Francisco Board of Supervisors. The 2006 Transportation Plan included substantial improvements to the transit infrastructure and service, however, since full funding for these improvements has not been identified, a less robust transit service plan for which full funding has been identified was assumed for the impact analysis.
FIGURE IV.E.9: PROPOSED TRANSIT CIRCULATION PLAN
IV. Environmental Setting and Impacts  
E. Transportation

- New bus transit service operating between the Islands and downtown Oakland (operated by AC Transit) at approximately 10-minute headways during peak hours and less frequent service during off-peak hours; generally, bus service to Oakland would be provided between approximately 5 AM and 10 PM.

- A fleet of alternative fuel shuttle-buses that circulate throughout the Islands, with timed transfers at the Transit Hub offering fare-free rides to residents and visitors of the Islands.

In addition to the Transit Hub and service enhancements described above, the Proposed Project would provide a number of physical infrastructure improvements designed to prioritize transit movements, including bus stops and layover areas. In addition, as part of the Ramps Project, the existing westbound on-ramp to the Bay Bridge on the western side of Yerba Buena Island would be converted for transit and emergency vehicle access only. Buses traveling between the Islands and San Francisco would access the Bay Bridge via the transit and emergency vehicle access only westbound on-ramp and exit the Bay Bridge from the existing eastbound off-ramp on the west side of the Island. Buses would travel on Treasure Island Road between Treasure Island and the Bay Bridge ramps. In the event that the Ramps Project is not approved by the SFCTA and constructed by Caltrans, the existing westbound on-ramp on the west side of Yerba Buena Island would be used by both westbound buses and other vehicles.

Buses traveling between the Islands and the East Bay would use the new eastbound on-ramp on the east side of Yerba Buena Island to be constructed as part of the Bay Bridge East Span project. To access this on-ramp, buses leaving the Islands would travel along Treasure Island Road and Hillcrest Road. Buses traveling from the East Bay to the Islands would use either the existing westbound off-ramp on the east side of Yerba Buena Island or the proposed reconstructed westbound off-ramp, depending on whether the Ramps Project is approved and constructed. To access the Islands from the East Bay, buses would exit the Bay Bridge and travel on Macalla Road to its intersection with Treasure Island Road.

Bus circulation within Treasure Island would be along a one-way, two-block loop in the counterclockwise direction. AC Transit and Muni buses would travel east on First Street, where they would make their first stop. Buses would continue east on First Street, then north on Avenue D, where they would make a second stop. After this stop, buses would turn west onto California Avenue, where they would finish their run and layover until beginning their return trip. The return trip back to the Bay Bridge would involve continuing west on California Avenue and then south on Avenue of the Palms, with a stop at the new ferry terminal and Transit Hub in front of Building One, between California Avenue and First Street. From the Transit Hub, buses would continue across the causeway onto Yerba Buena Island via Treasure Island Road and continue toward the Bay Bridge. The proposed Muni line 108-Treasure Island would increase the distance some Job Corps commuters and visitors would need to walk to access a Muni bus stop because the 108-Treasure Island line would no longer circulate to the interior of Treasure Island.
However, the Job Corps commuters and visitors would be able to use the on-island shuttle, as described below.

The Proposed Project would also include a new, fare-free on-island shuttle system with three proposed lines: two serving the neighborhoods on Treasure Island (including the Job Corps), and a third serving Yerba Buena Island. Each of the three shuttle lines would provide continuous service from early morning to late evening. The fare-free shuttles would stop at the Transit Hub on Treasure Island, facilitating transfers to ferry and outbound Transbay bus service. In addition to the Transit Hub stop, the shuttles would stop at the two other stops where express bus lines from downtown San Francisco and Oakland drop off, allowing for convenient connections. The three shuttle lines would operate on a pulse schedule, with departures and arrivals matching the ferry service, the Muni line 108-Treasure Island, and AC Transit service at the Transit Hub.\(^\text{12}\)

**Pedestrian Circulation Improvements**

The pedestrian circulation network would encourage walking as the primary mode within the Development Plan Area. The comprehensive network of new sidewalks and shared streets would facilitate travel from and to transit facilities, shopping, schools and recreational uses on the Treasure Island. Generally, sidewalks on Treasure Island would be about 6 feet wide plus four to five feet of landscaping separating the sidewalk from adjacent roadways. Due to topography constraints, sidewalks on Yerba Buena Island would be limited to only one side of the street in many cases, and on some streets where there are no pedestrian destinations sidewalks are not proposed. However, several pedestrian trails would be provided through the open spaces and development areas on Yerba Buena Island. The proposed pedestrian circulation plan for Yerba Buena Island indicating the location of sidewalks is presented on Figure IV.E.10: Conceptual Yerba Buena Island Pedestrian Circulation Plan; all streets on Treasure Island would have sidewalks, except for the Shared Public Ways, where pedestrians would have priority over the entire right-of-way.

**Bicycle Circulation Improvements**

The Proposed Project includes new bicycle facilities on both Treasure Island and Yerba Buena Island. Figure IV.E.11: Proposed Bicycle Circulation Plan, illustrates the proposed bicycle circulation network for the Islands. On Treasure Island, the Proposed Project would provide a Class I shared bicycle and pedestrian path around the perimeter of the Island and through portions of the open space areas. In addition, the Proposed Project would include a Class I bicycle-only facility around the perimeter of the residential development. Class II bicycle lanes would be striped on the Major Arterial Roadways (Avenue C and California Avenue), and on First Street in

\(^{12}\) A pulse schedule is a timed transfer concept which seeks to schedule vehicles from various routes to arrive at transfer stations simultaneously to optimize operations and improve service quality.
N 20001000
OVERLOOK POINT
CLASS 1
BIKE ONLY
MIX BIKE / PED
CLASS 2
TWO WAY
ONE WAY
SHARED PUBLIC WAY / Mews - PED / BIKE / AUTO
CLASS 3 (BIKE / AUTO)

SOURCE: Perkins + Will

FIGURE IV.E.11: PROPOSED BICYCLE CIRCULATION PLAN
the westbound direction only. Other streets on Treasure Island would be designed to be bicycle-friendly by encouraging slow auto speeds and through development of a grid street network to provide direct routes and disperse traffic; however, no exclusive bicycle right-of-way would be provided and bicycles would share space on those streets with autos and, on the Shared Public Ways, with pedestrians.

- On Yerba Buena Island, the bicycle circulation network would consist of a two-way shared bicycle/pedestrian path west of Treasure Island Road leading to a scenic overlook about 500 feet south of the intersection with Macalla Road, and a one-way counterclockwise Class II bicycle lane loop around Treasure Island Road, Hillcrest Road, and Macalla Road, with connections to the planned bicycle/pedestrian path on the new Bay Bridge east span. One exception to the continuous Class II facility loop would be on a short section of Treasure Island Road, where the westbound on-ramp to the Bay Bridge diverges from Treasure Island Road, which is on an elevated structure. On this section, the Proposed Project calls for a Class III facility, with special colored pavement and frequent in-street stencils and signage to alert bicycles, autos, and buses that they must share the roadway at this location (see Figure IV.E.15).

- In addition, a 16-foot two-way, shared Class I bicycle/pedestrian path would be provided on Macalla Road. The Macalla Road bicycle path would provide a shorter, yet steeper, alternative route from Treasure Island to the Bay Bridge. A 10-foot two-way shared Class I bicycle/pedestrian path would also be constructed on the west side of Treasure Island Road between Treasure Island and the new lookout point just south of the Macalla Road intersection, as well as on the east side of Treasure Island Road between Treasure Island and Macalla Road. Other streets on Yerba Buena Island would allow shared bicycle/auto use, but no exclusive bicycle right-of-way would be provided.

There are four intersections on Yerba Buena Island at which enhanced bicycle treatments would be provided:

- **Hillcrest Road at South Gate Road** - The proposed bicycle treatments at this intersection are illustrated on Figure IV.E.12: Proposed Hillcrest Road at South Gate Road Intersection Configuration. This intersection would be a standard, three-legged side-street stop-controlled intersection. Movements on Hillcrest Road and the two eastbound ramps would be uncontrolled and the South Gate Road approach would be stop-controlled. Bicyclists traveling on the Class II bicycle lane on Hillcrest Road would be uncontrolled, and would be able to cross the intersection to access the Bay Bridge bicycle path on the north side of this intersection.

- **Macalla Road at the Bay Bridge Westbound On-Ramp** - The proposed bicycle treatments at this intersection are shown on Figure IV.E.13: Proposed Macalla Road at Bay Bridge Westbound On-Ramp Intersection Configuration. If the Ramps Project is
constructed, the shared bicycle/pedestrian path connecting Yerba Buena Island to the Bay Bridge would continue along the west side of South Gate Road until the intersection with Macalla Road and the Bay Bridge westbound ramps. The shared path would continue on the south side of Macalla Road to its terminus at Treasure Island Road.
Class 2 bike lane
Class 1 mixed-use path

NOT TO SCALE

NEW WESTBOUND ON / OFF-RAMPS

SOURCE: AECOM, 2009

IV.E.13: PROPOSED MACALLA ROAD AT BAY BRIDGE WESTBOUND ON-RAMP INTERSECTION CONFIGURATION
Area of Detail

- 10' Shared Bike/Pedestrian Path
- 5' Bike Lane
- 5' Bike Left Turn Lane
- 5' Bike Lane
- 10' Shared Bike/Pedestrian Path
- 11' Median
- 12' Median
- 11' Median
- 11' Median
- 12' Median
- 11' Median
- 11' Median
- 10' Shared Bike/Pedestrian Path
- 5' Bike Lane
- 4' Stripping
- Area outside of existing Right of Way
- 5' Bike Lane
- STOP
- 10' median
- 16' median
- Area of Detail

10' Two-Way Shared Bike/Pedestrian Path

NOT TO SCALE

SOURCE: AECOM, 2009

IV.E.42

Figure IV.E.14: Proposed Treasure Island Road at Macalla Road Intersection Configuration
- **Treasure Island Road at Macalla Road** - The proposed bicycle treatments at this intersection are shown on Figure IV.E.14: Proposed Treasure Island Road at Macalla Road Intersection Configuration. Bicyclists using Treasure Island Road to access the Class I two-way shared bike/pedestrian path on Macalla Road from Treasure Island would need to turn left across the opposing direction of traffic on Treasure Island Road to access Macalla Road. The Proposed Project would provide a new five-foot wide bicycle-only left-turn lane from Treasure Island Road to Macalla Road adjacent to an 11-foot wide travel lane on Treasure Island Road and separated from oncoming traffic by a 5-foot median. The bicycle-only turn lane and median would facilitate the left turn maneuver, and provide a clear and safe route to access Macalla Road from Treasure Island Road.

- **Treasure Island Road at Hillcrest Road/Westbound Transit and Emergency Vehicle-Only On-Ramp** - The proposed bicycle treatments at this intersection are shown on Figure IV.E.15: Proposed Treasure Island Road at Bay Bridge Westbound On-Ramp (West Side) Intersection Configuration. At this juncture, bicycles traveling southbound on Treasure Island Road would need to travel through the divergence of the proposed transit and emergency vehicle-only westbound on-ramp to the Bay Bridge. Approaching this junction, Treasure Island Road would have a six-foot wide bicycle lane and a three-foot wide chevron buffer separating the bicycle lane from a 12-foot wide travel lane. Just past the ramp junction, where bicyclists would cross over Treasure Island Road to merge onto Hillcrest Road, the existing roadway, which is on a bridge structure, narrows to 14 feet, which would not be adequate to provide a travel lane and a Class II bicycle lane. Since the roadway is on a bridge structure at this location, widening the roadway would not be a feasible option. Instead, an approximately 350 foot long section would be marked with shared-use arrows stenciled on the pavement reminding drivers and bicyclists to share the space. Once sufficient roadway width is provided, the roadway would return to having an 11-foot wide travel lane with a five-foot wide bicycle lane.

Also, if the Manual on Uniform Traffic Control Devices (MUTCD) is amended to permit colored pavement treatments and the SFMTA permits the proposed bicycle lane treatments, colored bicycle lane pavement treatments would be installed to increase bicycle visibility and safety at the following locations:

- Hillcrest Road approach to South Gate Road and the Bay Bridge bicycle/pedestrian path;
- Macalla Road Class II downhill bicycle lane at intersecting cross-streets; and
- Treasure Island Road/Macalla Road intersection.
  - Bicycle-only left-turn lane from Treasure Island Road to the Class I bicycle path on Macalla Road; and
  - Bicycle-only section of median on Treasure Island Road at Macalla Road.

Although colored bicycle lane pavement is not approved in the MUTCD, which is published by the Federal Highway Administration (“FHWA”) and governs traffic control devices used in the United States, the City of San Francisco Bicycle Plan includes the use of colored bicycle lanes to further enhance the bicycle environment and safety. The Federal Highway Administration (“FHWA”) recently approved a study proposed by SFMTA of solid and dashed green pavement for bicycle lanes. If the use of colored pavement materials is approved by the FHWA and the
BUSES ONLY On-Ramp

BUSES

SHARED AUTOS/BIKES

AUTOS

Eastbound Off-Ramp

END BIKE LANE

SOURCE: AECOM, 2009

BICYCLE LANE

SIGNS THAT WOULD BE POSTED

TREASURE ISLAND AND TERESA BUENA ISLAND REDEVELOPMENT PROJECT EIR

* FIGURE IV.E.15: PROPOSED TREASURE ISLAND ROAD AT BAY BRIDGE WESTBOUND ON-RAMP (WEST SIDE) INTERSECTION CONFIGURATION
Although Caltrans and BATA are considering alternatives for a shared use Class I bicycle facility on the west span of the Bay Bridge, that project is currently in its early planning stages and has not been assumed to be in place for purposes of this analysis. As noted above, a bicycle connection between Yerba Buena Island and the East Bay is currently under construction on the new east span of the Bay Bridge and has been assumed to be in place. Neither of these projects would be part of the Proposed Project. The Proposed Project would not preclude the implementation of either of these projects.

**Transportation Demand Management Plan**

The Proposed Project would develop and implement a Transportation Demand Management (“TDM”) Plan 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 Proposed Project. The TDM plan is contained within the 2006 Transportation Plan, and includes the following.\(^\text{13}\)

- **Treasure Island Transportation Management Agency (“TITMA”).** The Treasure Island Transportation Management Act of 2008 (AB 981) authorizes the San Francisco Board of Supervisors to designate a board or agency to serve as the transportation management agency for the Islands. The TITMA was created to, among other things, administer and oversee the collection of revenues from parking, transit passes and congestion pricing, and the disbursement of funds to transit operators.

- **Congestion Pricing.** As part of implementing the Proposed Project, TITMA would administer a variable congestion fee to residents of the Islands for accessing the Bay Bridge. Fees would be charged to Island residents for auto access between the Bay Bridge and the Islands during periods of peak congestion. This “congestion pricing” program is designed to discourage residents from making auto trips during peak travel periods and encourage other modes of travel to and from the Islands. The amounts and hours that fees would be charged would be controlled by the TITMA; however, as currently envisioned and analyzed in this report, the fees would be charged between 6 and 9 AM and between 4 and 7 PM, in both directions, Monday through Friday. One of the key attributes of this program is that the TITMA would have the authority to adjust the amounts and duration of charges to dynamically respond to changing travel behaviors. The State legislature authorized the use of congestion pricing for Treasure Island/Yerba Buena Island in 2008 (Chapter 317, Stats. of 2008). Visitors to the Islands, high-occupancy vehicles, and Coast Guard-related vehicles would not be charged a congestion pricing fee.

- **Parking Program.** There would be no free parking on the Islands. Parking for residents, employees, and visitors would occur in off-street facilities and on-street, short-term, metered spaces. In addition, parking would be unbundled from residential units, meaning that housing units would not be sold or leased with a dedicated parking space. A dedicated parking space would need to be purchased or leased at a separate cost and the cost of parking would not be included in the purchase or rent price for housing.

\(^\text{13}\) The Proposed Project TDM elements have been updated since the 2006 Transportation Plan, although the general nature of the TDM Plan remains the same as the 2006 Transportation Plan.
IV. Environmental Setting and Impacts
E. Transportation

• **Travel Coordinator.** The travel coordinator would be hired by the TITMA, and would be charged with providing travel options to Island users, including assistance with finding the best customized transit options for individuals. The travel coordinator would be responsible for developing and distributing outreach and marketing materials and monitoring the performance of most island TDM measures.

• **Car-Share Program.** A car-share program would be implemented on the Islands, providing members access to automobiles without having to purchase a car. This would likely be an extension of one or more of the car-share services currently provided throughout the rest of San Francisco. The operator of this program on the Islands has not yet been determined, nor has the exact number of car share spaces proposed for the Island. Car-share vehicles would be subject to the same on-island parking fees as other vehicles, unless parked in their designated parking space. The *Treasure Island and Yerba Buena Island Design for Development* would require the provision of car-share spaces in new buildings based on number of dwelling units, similar to the requirements in the *San Francisco Planning Code*.

• **Transit Hub.** All bus transit serving the Islands would serve the proposed ferry terminal. This would be the single spot on Treasure Island where all transit lines connect, including the on-island shuttles. The Transit Hub would provide the opportunity for centralized ticket sales, schedule and line information, and other transit amenities.

• **Prepaid Transit Voucher.** A comprehensive residential “prepaid transit voucher” program would be operated by the TITMA, whereby residents and hotel guests would be required to purchase transit passes (e.g., Muni Fast Pass, commuter checks, TransLink (Clipper) credit, etc.). The prepaid transit voucher would provide a subsidy to transit operators, and would reduce the “out-of-pocket” cost for transit use by residents and hotel patrons, and would thereby encourage residents to use transit regularly. The monetary value of the transit voucher that would be required would vary, but it is proposed to be similar in value to a Muni Fast Pass.

• **Bicycle Fleet.** A bicycle rental system would be provided for visitors and residents from a secure central “bicycle station” at the Transit Hub. The bicycle station would be attended during daylight hours, offering rentals to the public seven days per week. During unattended hours, access to the bicycle fleet would be available to Island residents with an access card. This program would be funded and administered by TITMA.

• **Carpool and Vanpools.** The Islands’ travel coordinator would provide carpool and vanpool matching services for Islands’ residents.

• **Ramp Metering.** Signals would be installed to limit, or “meter”, the number of vehicles than can enter the Bay Bridge from the Islands during peak commute periods. Ramp metering would be implemented for all on-ramps on Yerba Buena Island to control the volume of vehicles accessing the bridge, and to make entering the freeway a safer maneuver. Ramp metering could be implemented in one of two ways; either on the ramps themselves, as part of the separate Ramps Project proposed by SFCTA and Caltrans, or through signals on Yerba Buena Island roadways approaching the Bay Bridge. Any ramp metering on the Yerba Buena Island on-ramps themselves would be operated by Caltrans. Ultimately, Caltrans and TITMA would coordinate to facilitate effective implementation of this mechanism.
• **Guaranteed Ride Home Program.** All Islands residents and employees who become registered as carpool or transit riders would be reimbursed for return travel by taxi in the event of an emergency when an alternative means of travel is unavailable.

As described in more detail below, the analysis of the Proposed Project, including the estimate of trips generated by the Proposed Project, takes into account implementation of these TDM features.

**APPROACH TO ANALYSIS**

This section presents the methodology for developing Existing plus Project, 2030 Cumulative No Project, and 2030 Cumulative plus Project conditions, and information considered in the travel demand and impact analysis. Specifically, in the following order, this section describes:

1. Approach to impact analysis, including analysis years and analysis methodology;
2. Methodology used to forecast travel demand for the Proposed Project, and the results of the forecast;
3. Transportation improvements assumed to be in place as part of the Future 2030 Cumulative No Project conditions; and
4. Methodology for development of 2030 Cumulative No Project conditions traffic forecasts.

**Approach to Impacts Analysis**

The impacts of the Proposed Project on the surrounding roadway facilities were analyzed using the guidelines set forth in the City of San Francisco Planning Department’s *2002 Transportation Impact Analysis Guidelines for Environmental Review (SF Guidelines)*, modified to account for the unique location and character of the Proposed Project, as explained in more detail below. These guidelines provide direction for analyzing transportation conditions and in identifying the transportation impacts of a proposed project in the City of San Francisco.

The analysis of the Proposed Project was conducted for existing and future year 2030 conditions. “Existing plus Project” conditions assess the near-term impacts of the Proposed Project, while “2030 Cumulative plus Project” conditions assess the long-term impacts of the Proposed Project in combination with other development. Project impacts were assessed by comparing existing conditions with the Proposed Project to existing conditions without the Proposed Project, as well as by comparing the 2030 Cumulative plus Project to 2030 No Project conditions. Year 2030 was selected as the future analysis year because regional travel demand forecasting models used in this analysis developed by the San Francisco County Transportation Authority (“SFCTA”), the Metropolitan Transportation Commission (“MTC”), and the Alameda County Congestion Management Agency (“ACCMA”) develop traffic and transit forecasts for cumulative
development and growth through the year 2030. Although the buildout of the Proposed Project would occur over a period of years, the analysis assesses the impacts of the full buildout of the Proposed Project compared to both existing and future year 2030 conditions. Because the actual phasing of development would be market-driven and is unknown, it was determined that comparing the Proposed Project at full buildout against the two comparison points would best capture the full range of transportation impacts of the Proposed Project.

Freeway Analysis

The impacts of the Proposed Project on the Bay Bridge were analyzed by determining how the Project would increase the existing and forecasted vehicle queues leading to the bridge approaches. Observations were made on the following roadway segments in the East Bay and San Francisco:

- I-80 Westbound from Richmond to the Toll Plaza;
- I-580 Westbound from I-980 to the Toll Plaza;
- I-880 Northbound from I-980 to the Toll Plaza;
- Bryant Street (eastbound) between Second Street and Sixth Street;
- Harrison Street (eastbound) between First Street and Third Street;
- Harrison Street (westbound) between First Street and The Embarcadero;
- First Street (southbound) between Bay Bridge On-Ramp and Market Street; and
- Folsom Street (eastbound) between Essex Street and Fourth Street.

The Bay Bridge currently operates at or near vehicular capacity in the peak direction most weekdays during the morning and evening peak hours (westbound in the AM and eastbound in the PM). Queues leading to the bridge deck in the peak directions represent unmet demand (i.e., traffic that would like to be on the bridge, but is trapped in congestion leading up to the bridge). During periods when the Bay Bridge operates at its capacity, additional demand for travel on the Bay Bridge is constrained by the bridge approaches, including the East Bay Toll Plaza, which meters westbound traffic, and the on-ramps to the Bay Bridge from San Francisco which restrict the flow onto the Bay Bridge in the eastbound direction. The queues forming on these roadways may be exacerbated by additional traffic from the Proposed Project; therefore, the analysis of the Proposed Project’s impacts on the Bay Bridge is described in terms of increases to peak direction queuing on the East Bay or San Francisco approaches to the bridge. In addition to analyzing the

---

14 The travel demand models incorporate the Association of Bay Area Governments (ABAG) land use and socio-economic database and growth forecasts for the year 2030, which provide forecasts of economic and population growth for San Francisco, as well as for the remaining eight Bay Area counties, as well as the Metropolitan Transportation Commission’s (MTC) Regional Transportation Plan and SFCTA’s Countywide Transportation Plan. Within San Francisco, the San Francisco Planning Department is responsible for allocating ABAG’s countywide growth forecasts to each SFCTA 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.
queue lengths on the bridge approaches, the localized impacts on the Bay Bridge associated with Proposed Project traffic entering and exiting the Bay Bridge at the ramps connecting Yerba Buena Island to the Bay Bridge were analyzed. For purposes of ramp analysis, speed and gap data were collected at the Yerba Buena Island freeway on-ramps and off-ramps to calculate ramp merge and diverge LOS for the ramps between the Islands and the Bay Bridge.15 Unlike most freeway on-ramps, the ramps onto the Bay Bridge from Yerba Buena Island are stop-controlled, providing drivers with very limited acceleration distance to merge with the freeway travel lanes. Therefore, analysis of the on-ramps as if they were typical “uncontrolled” freeway merges does not provide a complete understanding of the operations of the on-ramps. Instead, the analysis of on-ramps was performed two ways:

First, the on-ramps were analyzed as STOP-sign controlled intersections, consistent with methods documented by the Transportation Research Board (“TRB”) in the 2000 HCM for unsignalized intersections. For intersections, LOS is based on “control delay.” Control delay is defined as the delay directly associated with the traffic control device (i.e., a stop sign or a traffic signal) and specifically includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. These delay estimates are considered meaningful indicators of driver discomfort and frustration, fuel consumption, and lost travel time. Table IV.E.1 presents the relationship between LOS and control delay for unsignalized intersections.

Second, the on-ramps were analyzed as typical ramp merge sections, consistent with the 2000 HCM Chapter 25 methodology for ramp merge junctions. Off-ramps from the Bay Bridge to Yerba Buena Island were treated as typical uncontrolled “diverge” sections and analyzed consistent with the methods described in the 2000 HCM Chapter 25. Ramp junction LOS is based on vehicular density. Ramp LOS analysis was conducted for typical weekday AM and PM peak hours and Saturday afternoon peak hour conditions and is described using LOS criteria similar to intersection LOS, as shown in Table IV.E.1.

15 The operations of roadway facilities are described with the term level of service (“LOS”). LOS is a qualitative description of traffic flow based on such factors as speed, travel time, delay, and freedom to maneuver. Six levels are defined from LOS A, with the best operating conditions, to LOS F, with the worst operating conditions. LOS E represents “at-capacity” operations. Operations are designated as LOS F when volumes exceed capacity, resulting in stop-and-go conditions. LOS is a general term that is used for all types of roadway facilities. Depending on the type and design of the exact facility being analyzed (e.g., a signalized intersection, a stop-controlled ramp, or a pedestrian crosswalk), more specific criteria are applied.
Table IV.E.1: Ramp Junction Level of Service Criteria

<table>
<thead>
<tr>
<th>LOS</th>
<th>Description</th>
<th>Merge/Diverge Analysis Method</th>
<th>Stop-Controlled Intersection Analysis Method</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Density (Passenger Cars Per Mile Per Lane)</td>
<td>Average Control Delay (Seconds per Vehicle)</td>
</tr>
<tr>
<td>A</td>
<td>Free-flow speeds prevail. Vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream. Little or no delay.</td>
<td>&lt; 10</td>
<td>≤ 10.0</td>
</tr>
<tr>
<td>B</td>
<td>Free-flow speeds are maintained. The ability to maneuver with the traffic stream is only slightly restricted. Short traffic delays.</td>
<td>&gt; 11 to 20</td>
<td>10.1 to 15.0</td>
</tr>
<tr>
<td>C</td>
<td>Flow with speeds at or near free-flow speeds. Freedom to maneuver within the traffic stream is noticeably restricted, and lane changes require more care and vigilance on the part of the driver. Average traffic delays.</td>
<td>&gt; 20 to 28</td>
<td>15.1 to 25.0</td>
</tr>
<tr>
<td>D</td>
<td>Speeds decline slightly with increasing flows. Freedom to maneuver with the traffic stream is more noticeably limited, and the driver experiences reduced physical and psychological comfort. Long traffic delays.</td>
<td>&gt; 28 to 35</td>
<td>25.1 to 35.0</td>
</tr>
<tr>
<td>E</td>
<td>Operation at capacity. There are virtually no usable gaps within the traffic stream, leaving little room to maneuver. Any disruption can be expected to produce a breakdown with queuing. Very long, noticeable traffic delays.</td>
<td>&gt; 35</td>
<td>35.1 to 50.0</td>
</tr>
<tr>
<td>F</td>
<td>Represents a breakdown in flow. Extreme delay with volume exceeding capacity.</td>
<td>Demand exceeds capacity</td>
<td>&gt; 50.0</td>
</tr>
</tbody>
</table>


As discussed in “Regional Access” in “Setting,” pp. IV.E.2 – IV.E.10, the SFCTA and Caltrans are currently preparing a Project Report and Environmental Document for the Yerba Buena Ramps Improvement Project that would replace the existing westbound on- and off-ramps located on the eastern side of Yerba Buena Island with new ramps that replicate the functional role of current ramps. The Yerba Buena Ramps Improvement Project is needed to address seismic deficiencies, improve traffic safety, and correct design standards so that the improved westbound on- and off-ramps would operate as typical ramps. However, since the Ramps Project has not been formally approved and/or finalized, the analysis of ramp junction performance for the Proposed Project was conducted with and without implementation of the Yerba Buena Ramps Improvement Project. For the scenario in which the ramps are improved, because they would operate as standard ramps, no STOP-sign controlled analysis was completed. For the scenario in
which the ramps remain in their current configuration with stop signs near the merge point, the
ramps were analyzed the same as existing conditions (using both stop-controlled and
merge/diverge section analysis methodologies).

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

Intersection Analysis

The analysis of the study intersections was conducted using a method documented in the 2000
HCM. As discussed in the Freeway Analysis section, for intersections, LOS is based on “control
delay.” Control delay is defined as the delay directly associated with the traffic control device
(i.e., a stop sign or a traffic signal) and specifically includes initial deceleration delay, queue
move-up time, stopped delay, and final acceleration delay. These delay estimates are considered
meaningful indicators of driver discomfort and frustration, fuel consumption, and lost travel time.
Table IV.E.2, below, presents the relationship between LOS and control delay for signalized
intersections.

The Proposed 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 No Project
conditions to operate at LOS E or LOS F, or intersections operating at LOS E under No Project
conditions to deteriorate to LOS F conditions. At intersections that would operate at LOS E or
LOS F under No Project conditions, and would continue to operate at LOS E or LOS F under
conditions with the Proposed Project, the increase in Proposed Project vehicle trips was reviewed
at the critical movements to determine whether the increase would contribute considerably to
unacceptable levels of service.16 For 2030 Cumulative plus Project conditions, if it was
determined that the Proposed Project would have a significant project-specific impact at an
intersection, then the impact would also be considered a significant cumulative impact. In
addition, the Project was determined to have a significant adverse impact if it contributed
considerably to cumulative traffic increases that would cause deterioration in levels of service to
unacceptable levels.

---

16 At an intersection, the critical traffic movements operate with the highest volume-to-capacity ratio. In
other words, the critical movements are the most congested movements.
Table IV.E.2: Signalized Intersection Level of Service Criteria

<table>
<thead>
<tr>
<th>Control/LOS</th>
<th>Description of Operations</th>
<th>Average Control Delay (seconds per vehicle)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Insignificant Delays: No approach phase is fully used and no vehicle waits longer than one red indication.</td>
<td>( \leq 10 )</td>
</tr>
<tr>
<td>B</td>
<td>Minimal Delays: An occasional approach phase is fully used. Drivers begin to feel restricted</td>
<td>&gt;(10.0\text{ and } \leq 20.0)</td>
</tr>
<tr>
<td>C</td>
<td>Acceptable Delays: Major approach phase may become fully used. Most drivers feel somewhat restricted</td>
<td>&gt;(20.0\text{ and } \leq 35.0)</td>
</tr>
<tr>
<td>D</td>
<td>Tolerable Delays: Drivers may wait through no more than one red indication. Queues may develop but dissipate rapidly without excessive delays</td>
<td>&gt;(35.0\text{ and } \leq 55.0)</td>
</tr>
<tr>
<td>E</td>
<td>Significant Delays: Volumes approaching capacity. Vehicles may wait through several signal cycles and long queues form upstream</td>
<td>&gt;(55.0\text{ and } \leq 80)</td>
</tr>
<tr>
<td>F</td>
<td>Excessive Delays: Represents conditions at capacity, with extremely long delays. Queues may block upstream intersections</td>
<td>&gt;(80.0)</td>
</tr>
</tbody>
</table>


Transit Analysis

The impact of additional transit ridership generated by the Proposed 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 screenlines across which the transit lines travel. The transit capacity utilization analysis was conducted for two conditions:

- At the point of greatest demand (i.e., the maximum load point) for the existing and proposed transit lines serving the Islands. (e.g., Muni line 108-Treasure Island, AC Transit service to the East Bay, ferry service between Treasure Island and downtown San Francisco); and,

- At the four standard downtown San Francisco 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 for most transit lines traveling into and out of downtown San Francisco. A quantitative analysis of regional service providers was not conducted. Some transit riders traveling to and from the Island may travel on regional transit lines in the peak direction of travel, but the number of riders would be negligible and would not substantially affect the screenlines.

The number of existing AM and PM peak hour riders was obtained from Muni monitoring data. Future year 2030 Cumulative No Project conditions transit ridership was forecasted using the SFCTA San Francisco Chained Activity Model Process (“SF-CHAMP”) travel demand model, as
prepared for the Transit Center District Plan. 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. For service provided by Muni, 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. Muni intends to operate the Treasure Island service with 40-foot buses, and the capacity for this type of vehicle was used in the calculations. 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. Analysis of new transit service anticipated to be provided as part of the Proposed Project was conducted by comparing the estimated demand to the proposed capacity (based on proposed vehicle type and service levels). For service provided by AC Transit and WETA, the analysis assumes a capacity utilization standard of 100 percent for the new ferry and AC Transit services, consistent with WETA and AC Transit standards, respectively.

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. Because transit travel into downtown San Francisco in the AM and out of downtown in the PM, travel across the screenlines tends to be the most congested transit flow in the City. The transit analysis includes an assessment of the degree to which the Proposed Project would create demand for transit service across four screenlines surrounding downtown San Francisco in the peak directions.

In addition to an evaluation of transit ridership and capacity, the Proposed Project’s impacts on transit were also measured in terms of increases to transit travel times on lines likely to experience Proposed Project-related increases in traffic congestion. The analysis identified intersection approaches where Proposed Project-generated vehicle trips would substantially increase transit delay.

The Proposed Project was determined to have a significant transit impact if project-generated transit trips would cause a transit line or downtown screenlines operating at less than its capacity utilization standard under No Project conditions, to operate at more than capacity utilization conditions (i.e., at more than 85 percent capacity utilization for Muni, and at more than 100 percent capacity utilization for AC Transit and WETA). The Proposed Project was determined to have a significant impact if it would cause a substantial increase in delays. The Proposed Project

---

17 Technical Memorandum – Transit Center District Plan – Transit Network Analysis, February 2, 2009. AECOM.
would have a significant contribution to a cumulative transit impact if it was determined to have a significant project impact.

**Bicycle and Pedestrian Analyses**

The project impact analysis includes a qualitative assessment of pedestrian and bicycle conditions on the Islands. Bicycle conditions are assessed as they relate to the Proposed Project site, including bicycle routes, safety and right-of-way issues, conflicts with traffic, and grade changes. In addition, the bicycle and pedestrian facilities located near the Ferry Building in San Francisco are also evaluated for Existing and Existing plus Project conditions since ferry transit service is expected to serve the Proposed Project, adding pedestrians and bicycles to the circulation system near the Ferry Building in San Francisco. Existing weekday AM and PM peak hour pedestrian volumes were collected at five crosswalks near the Ferry Building (across both directions of The Embarcadero), including Washington Street, Ferry Building (North), Market Street, Don Chee Way, and Mission Street. In addition, Saturday peak hour pedestrian volumes were collected at Market Street and Don Chee Way since those crosswalks in particular experience high pedestrian volumes on weekends. The crosswalk study locations are shown on Figure IV.E.7 on p. IV.E.24. Based on Proposed Project-generated increases in ferry ridership, the potential impact of these additional ferry passengers on the capacity of existing marked crossings on The Embarcadero was evaluated.

The level of service for the study crosswalks was calculated using the methodology presented in the *2000 HCM*. Crosswalk LOS levels are measures of the amount of space (square feet) each pedestrian has in the crosswalk (i.e., density). These measures depend on pedestrian volumes, signal timing, crosswalk dimensions and roadway widths. LOS A represents free-flowing pedestrian conditions, while LOS F indicates that there are substantial restrictions to pedestrian movement and speed. Table IV.E.3 shows the LOS criteria for pedestrians, based on the *2000 HCM* methodology.

**Table IV.E.3: Pedestrian Level of Service Criteria at Signalized Crossings**

<table>
<thead>
<tr>
<th>LOS</th>
<th>Pedestrian Delay (seconds/pedestrian)</th>
<th>Likelihood of Non-Compliance due to Delay</th>
<th>Density (ft²/pedestrian)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>≤ 10</td>
<td>Low</td>
<td>&gt; 13</td>
</tr>
<tr>
<td>B</td>
<td>10.1 – 20</td>
<td>Low to Moderate</td>
<td>10 – 13</td>
</tr>
<tr>
<td>C</td>
<td>20.1 - 30</td>
<td>Moderate</td>
<td>&gt; 6 – 9.9</td>
</tr>
<tr>
<td>D</td>
<td>30.1 – 40</td>
<td>Moderate to High</td>
<td>&gt; 3 – 5.9</td>
</tr>
<tr>
<td>E</td>
<td>40.1 - 60</td>
<td>High</td>
<td>&gt; 2 – 2.9</td>
</tr>
<tr>
<td>F</td>
<td>&gt; 80</td>
<td>Very High</td>
<td>&lt; 2</td>
</tr>
</tbody>
</table>

IV. Environmental Setting and Impacts
   E. Transportation

Loading Analysis

Loading analysis for the Proposed Project was conducted by comparing the loading supply that would be required per the Design for Development to the projected demand that would be generated by the proposed land uses. The loading analysis was conducted for the Proposed Project as a whole and for specific building uses, specifically retail, industrial and commercial spaces. Peak loading demands were determined using methods consistent with the SF Guidelines.

Construction Analysis

Potential short-term construction impacts were addressed using the construction phasing plan for the Proposed Project. The construction impact evaluation addresses the staging and duration of construction activity, truck routings, barge activity, estimated daily truck and vessel volumes, street and/or sidewalk closures and impacts on Bay Bridge traffic.

Parking Analysis

Parking analysis for the Proposed Project was conducted by comparing the proposed parking supply that would be permitted per the Design for Development to the projected demand that would be generated by the proposed land uses. The peak parking demand for the proposed residential and non-residential uses was calculated based on the methodology contained in the SF Guidelines. Some of the non-residential parking supply is expected to be available to multiple non-residential land uses and since land uses do not experience peak parking demand simultaneously, a shared parking analysis was conducted. The shared parking analysis for the non-residential uses was conducted by dividing the proposed development on the Islands into zones (using the proposed districts identified on pp. II.21-II.22 of Chapter II, Project Description) and comparing the temporal changes in demand for each use in the zone over the course of a typical day. Temporal changes in demand were estimated using methods described in Shared Parking, 2nd Edition. 18 The time during which each zone is expected to experience its peak parking demand, and the associated peak parking demand, is reported and compared with the proposed parking supply.

Proposed Project Travel Demand

This section presents the travel demand methodology, including total person trip generation by mode, vehicle trip generation, parking demand and loading demand. As described in Chapter II, Project Description, the existing housing on both Islands would be replaced as part of the Proposed Project, as well as almost all of the commercial and educational activities. The trip-

---

Estimating the net-new project trip generation involved forecasting the number of trips generated by build-out of the Proposed Project, less the number of trips associated with the existing uses on-site that would remain or be replaced by the Proposed Project. 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 *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 described in the *SF Guidelines* cannot be directly applied to the Proposed 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 (“ITE”), would not be suitable for the Proposed Project, unless appropriate adjustments were made to account for the Proposed Project size, mix, and availability of transit. Therefore, the trip generation forecasts were developed to account for the amount of development as well as specific development design variables such as mix of land uses and the proposed TDM Plan (e.g., congestion pricing).

To account for the trip-making patterns of the Proposed 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 U.S. 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 that represent a “national average”) with respect to the four bulleted variables above exhibit different traffic generation patterns. The sensitivity of travel
behavior to changes in the four variables, or elasticity, was 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 trip generation from the base case (i.e., as obtained from the ITE Trip Generation manual). This reduction reflects “internal trips” that would occur, but would not be off-Islands (i.e., they would remain on the Islands and would occur by walking and bicycling).

The travel demand analysis assumes implementation of the Proposed Project’s improvements to transit service and the TDM program, as described above.

The steps in determining the Proposed Project’s trip generation by mode include:

1. The total amount of person-trips generated by the Proposed Project was estimated using vehicle trip generation rates described in the ITE Trip Generation manual (and other sources, as necessary) and average vehicle occupancy survey data from the SF Guidelines and national surveys.19

2. Adjustments were made based on research conducted by Fehr & Peers and others to account for the unique nature of the project, including the mix of uses, the density, and the high quality of pedestrian and bicycle amenities proposed.

3. The percentage of total trips expected to use transit based on the high level of transit service proposed by the Project was forecasted based on survey data from San Francisco for similar locations.

4. The general origins and destinations of person-trips leaving the Islands were forecasted based on regional travel demand forecasting models and engineering judgment.

5. The person trips by auto, ferry, and bus forecasted to leave the Islands were assigned to specific lines, based on the mode choice identified in Step 3 and the trip distribution identified in Step 4.

6. The effects of implementing ramp metering and congestion pricing on weekdays for residents entering and departing the Islands by auto were predicted based on recent studies regarding the sensitivity of drivers to factors such as time delay and cost increases, with the decrease in auto trips re-assigned to transit.20 The congestion pricing analysis assumed that High Occupancy Vehicles (“HOVs”) with three or more persons (i.e., HOV 3+) would be exempt from the congestion pricing fee.

The result of steps 1-6 above is a projected person-trip generation, by land use and by mode, for the weekday AM and PM and Saturday peak hours. Table IV.E.4 shows the net person trips that

---

19 Trip generation estimates for land uses in the project description that are not contained in the ITE Trip Generation manual were estimated using survey data taken at facilities for the proposed land use, or estimated based on typical number of users for the athletic fields.

20 The transit costs for residents were adjusted to account for the prepaid transit vouchers.
IV. Environmental Setting and Impacts
   E. Transportation

would be generated by the project during the weekday AM and PM peak hours and the Saturday
peak hour in both directions of travel (i.e., entering and leaving the Islands).

Table IV.E.4: Person-Trip Generation by Land Use

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Size</th>
<th>Peak Hour Person-Trip Generation¹</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AM</td>
<td>PM</td>
</tr>
<tr>
<td>Residential</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hotel (Treasure Island)</td>
<td>450 Rooms</td>
<td>890</td>
</tr>
<tr>
<td>Hotel (Yerba Buena Island)</td>
<td>50 Rooms</td>
<td>27</td>
</tr>
<tr>
<td>Retail</td>
<td>207,000 square feet</td>
<td>995</td>
</tr>
<tr>
<td>Open Space (Athletic Fields)</td>
<td>40 acres</td>
<td>0</td>
</tr>
<tr>
<td>Open Space (Other)</td>
<td>260 acres</td>
<td>115</td>
</tr>
<tr>
<td>Marina</td>
<td>400 slips²</td>
<td>38</td>
</tr>
<tr>
<td>Flex</td>
<td>202,000 square feet³</td>
<td>113</td>
</tr>
<tr>
<td>Office</td>
<td>100,000 square feet</td>
<td>285</td>
</tr>
<tr>
<td>Police/Fire</td>
<td>30,000 square feet</td>
<td>285</td>
</tr>
<tr>
<td>School</td>
<td>105,000 square feet</td>
<td>789</td>
</tr>
<tr>
<td>Community Center</td>
<td>48,500 square feet</td>
<td>126</td>
</tr>
<tr>
<td>Cultural Park/Museum</td>
<td>75,000 square feet</td>
<td>0</td>
</tr>
<tr>
<td>Subtotal</td>
<td>8,671</td>
<td>12,422</td>
</tr>
</tbody>
</table>

Internal/Linked Trip Reduction

3,296 (38%)  4,850 (39%)⁴  5,743 (43%)⁴

Total Net External Person-Trip Generation⁵

5,375  7,423  7,562

Notes:
1 Trips occurring during the peak one hour during the weekday AM peak period of 7 to 9 AM, weekday PM peak
   period of 4 to 6 PM, and Saturday midday peak period of 1 to 3 PM.
2 The Marina use has already been analyzed in a prior EIR and is not part of the Proposed Project (although the
   construction of landside services associated with the Marina are included). The trip generation associated with the
   Marina is presented for informational purposes because it will be used to assess cumulative conditions.
3 Includes the non-retail portion of the adaptive reuse: 22,000 square feet food production/industrial/manufacturing,
   150,000 square feet entertainment, and 30,000 square feet community/office uses.
4 A 41% reduction was assumed for internal trips for the majority of Proposed Project uses during the PM peak hour,
   while a 10% reduction for internal trips was assumed for the cultural park. The result is an effective 39% reduction
   for the Proposed Project. For Saturday peak hour conditions, the trip generation analysis resulted in an effective
   44% reduction for internal/linked trips.
5 The Total External Person-Trip Generation does not account for the effects of congestion pricing or reduction in trips
due to existing uses to be removed.

Source: Fehr & Peers, 2010

Travelers mode choice is influenced by a number of factors, including travel times, convenience,
out-of-pocket costs, comfort, and other characteristics. A person’s perception of these factors
relative to various modal choices is different, depending on the specific origin and destination of
the trip. The congestion pricing analysis involved applying factors related to direct costs
(monetary costs such as transit fares, gasoline and maintenance costs, tolls) and indirect costs
(travel time), as well as the price elasticity of demand to the origin-destination trip tables for trips between the Islands and external origins and destinations.\textsuperscript{21}

The analysis involved calculating the percentage increase in travel cost for autos for an origin-destination pair when a congestion pricing fee is introduced. The increase in auto travel costs results in an estimated percent decrease in travel demand by auto. The Islands represent a unique scenario in that vehicle trips coming to or leaving the Islands during the AM and PM peak hours have no alternative vehicle routes. Therefore, any reduction in auto travel demand translates into corresponding increases in demand for other modes. Thus, the decrease in auto person trips associated with the congestion pricing fee was met with a corresponding increase in HOV 3+, bus and ferry trips. It is possible that instead of shifting from peak hour auto trips to peak hour transit trips, travelers may shift from peak hour auto trips to off-peak auto trips (a phenomenon commonly known as peak period spreading). However, analyzing a scenario in which all trips remain in the peak hour and assuming that trips shift from auto to transit ensures that a worst-case analysis of transit impacts is conducted. While the congestion pricing analysis focuses on peak hour effects, the congestion pricing scheme has been designed by the project sponsors to remain flexible with respect to time of day, amount charged, and directionality, among other factors, such that it can dynamically respond to changes over time. The effect of a $5.00 weekday peak hour congestion pricing fee would be expected to result in a reduction of 49 vehicle trips during the AM peak hour, and 43 vehicle trips during the PM peak hour.

The effect of the introduction of ramp metering to the Islands was also assessed with respect to travel demand because ramp metering would increase the travel time (and effective cost) for vehicles leaving the Islands. While it is anticipated that only the residents of the Island would pay the congestion fee, all vehicles with two or fewer people per vehicle would be required to wait for a ramp meter to enter the Bay Bridge during peak travel times. The analysis assumes that HOV 3+ trips would be able to bypass the meters, at least for the reconstructed westbound on-ramp. To calculate whether there would be a noticeable change in travel mode associated with meter delay, the same methodology utilizing the value of time principle as used for the congestion pricing analysis to forecast shifts from SOV and HOV 2, to HOV 3+, bus and ferry as applied to ramp metering. The analysis showed that effects of ramp metering would be relatively small; less than 0.5 percent reduction in vehicle trips during the AM and PM peak hours. This small change was considered negligible and therefore, the analysis does not account for any mode shift associated with ramp metering.

Table IV.E.5 summarizes the Proposed Project peak hour person-trips by mode and vehicle trips for the weekday AM and PM peak hours, and the Saturday peak hour. The external trips would occur via ferry, bus and auto; during the AM and PM peak hours approximately 12 to 14 percent

\textsuperscript{21} Price elasticity of demand – concept that price elasticity of demand for a commodity changes as a result of change in price of same commodity.
### Table IV.E.5: Person-Trip Generation by Mode

<table>
<thead>
<tr>
<th>Peak hour</th>
<th>Person-Trip Generation¹</th>
<th>Vehicle-Trips²</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>External</td>
<td>Internal</td>
</tr>
<tr>
<td></td>
<td>Ferry</td>
<td>Bus</td>
</tr>
<tr>
<td>AM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proposed Project</td>
<td>605</td>
<td>721</td>
</tr>
<tr>
<td>Less Existing Uses to be Removed 4</td>
<td>0</td>
<td>-142</td>
</tr>
<tr>
<td>Congestion Pricing Adjustment</td>
<td>+34</td>
<td>+44</td>
</tr>
<tr>
<td>Net New Trips</td>
<td>641 (14%)⁵</td>
<td>621 (13%)⁵</td>
</tr>
<tr>
<td>PM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proposed Project</td>
<td>787</td>
<td>952</td>
</tr>
<tr>
<td>Less Existing Uses to be Removed 4</td>
<td>0</td>
<td>-92</td>
</tr>
<tr>
<td>Congestion Pricing Adjustment</td>
<td>+30</td>
<td>+39</td>
</tr>
<tr>
<td>Net New Trips</td>
<td>817 (12%)⁵</td>
<td>898 (13%)⁵</td>
</tr>
<tr>
<td>Saturday</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proposed Project</td>
<td>473</td>
<td>696</td>
</tr>
<tr>
<td>Less Existing Uses to be Removed 4</td>
<td>0</td>
<td>-101</td>
</tr>
<tr>
<td>Congestion Pricing Adjustment</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Net New Trips</td>
<td>473 (7%)⁵</td>
<td>595 (9%)⁵</td>
</tr>
</tbody>
</table>

**Notes:**
1. This analysis assumes no external pedestrian or bicycle trips onto or off of the Islands. With construction of the new east span bicycle/pedestrian path, it is possible that some bicycle trips may occur. However, this number is expected to be very minor and not likely to affect the overall conclusions of this study. Further, the potential new bicycle facility on the west span is still in the conceptual discussion phases, and is not assumed to be in place in this analysis.
2. Vehicle-trips include passenger vehicles and vans.
3. Includes internal bicycle and pedestrian trips, and a relatively small number of internal auto trips (e.g., between Yerba Buena Island and Treasure Island).
4. Based on counts of peak hour vehicle traffic on the Islands and assumes that the existing trip generation of the Job Corps center on Treasure Island and at the Coast Guard Station and Sector Facility on Yerba Buena Island would remain the same.
5. Percentages shown are of total external trips. Some totals do not add up due to rounding.

*Source: Fehr & Peers, 2010*

of peak hour external trips would occur by ferry, 13 percent would occur by bus, and 73 to 75 percent would occur by auto. During the Saturday peak hour, about 7 percent of peak hour external trips would occur by ferry, 9 percent by bus, and 84 percent by auto. The number of vehicle trips generated by the Proposed Project during the peak hours would be 1,613 vehicles during the weekday AM peak hour, 2,462 vehicles during the PM peak hour, and 2,861 vehicles during the Saturday peak hour.

Project trip distribution was based on information obtained from three travel demand forecasting models: the SFCTA’s SF–CHAMP, the MTC and the ACCMA travel demand models.
Table IV.E.6 presents the distribution of the Proposed Project person trips to and from San Francisco and areas outside of San Francisco. The percentages shown are the aggregated trip distribution percentages for all trip types (work and non-work) and modes (transit and auto). For trips within San Francisco, the local SF-CHAMP model was used to determine the percent distribution among the four Superdistricts within the City. Overall, 64 percent of trips would be to and from the rest of San Francisco, 21 percent to and from the East Bay, 3 percent to and from the North Bay, and 12 percent to and from the South Bay.\(^{22}\) Within San Francisco, the majority would be to and from Superdistrict 1, which includes the downtown central business district and South of Market area.

Table IV.E.6: Proposed Project Trip Distribution Patterns\(^1\)

<table>
<thead>
<tr>
<th>Place of Trip Origin/Destination</th>
<th>San Francisco</th>
<th>East Bay</th>
<th>North Bay</th>
<th>South Bay</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average Model</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trip Distribution</td>
<td>64%</td>
<td>35%</td>
<td>9%</td>
<td>18%</td>
</tr>
</tbody>
</table>

**Note:**

\(^{1}\) The geographic distribution shown in the table is for external project trips.

**Source:** SFCTA, ACCMA, MTC, 2009; Fehr & Peers, 2010

Loading Demand

The *SF Guidelines* methodology for estimating freight loading/loading demand was used to calculate the Proposed Project demand. Daily truck trips generated for each of the land uses in the Proposed Project were calculated based on the rates per 1,000 square feet 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 IV.E.7 presents the number of trucks that would be generated by the Proposed Project land uses on a daily basis, and the demand for loading dock spaces during the peak hour of loading activities.

---

\(^{22}\) The intersection analysis did not include intersections in the East Bay because, unlike downtown San Francisco, there is no central place or roadway where a majority of trips would converge. Studying individual intersections would not reflect the way that trips from the Proposed Project would disperse throughout the East Bay via the major freeways and cities such as Oakland, Berkeley, Richmond, San Leandro, and Fremont.
Table IV.E.7: Proposed Project Loading Demand

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Size</th>
<th>Daily Trip Rate⁶</th>
<th>Daily Truck Generation</th>
<th>Peak hour Loading Dock Space Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office</td>
<td>130,000 sq ft¹</td>
<td>0.21</td>
<td>27</td>
<td>2</td>
</tr>
<tr>
<td>Retail</td>
<td>320,000 sq ft²</td>
<td>0.22</td>
<td>70</td>
<td>5</td>
</tr>
<tr>
<td>Restaurant</td>
<td>37,000 sq ft</td>
<td>3.60</td>
<td>133</td>
<td>8</td>
</tr>
<tr>
<td>Hotel</td>
<td>450,000 sq ft</td>
<td>0.09</td>
<td>41</td>
<td>2</td>
</tr>
<tr>
<td>Institutional</td>
<td>138,500 sq ft</td>
<td>0.10</td>
<td>14</td>
<td>1</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>22,000 sq ft³</td>
<td>0.51</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>Residential</td>
<td>9,577,150 sq ft (8,000 dwelling units)</td>
<td>0.03</td>
<td>287</td>
<td>17</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>583 Trucks</strong></td>
<td></td>
<td><strong>36 Spaces</strong></td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1. Includes 100,000 square feet of new office plus 30,000 square feet of community uses/offices planned in adaptive reuse of Building 1.
2. Includes all non-restaurant retail (170,000 square feet) and 150,000 square feet of entertainment uses proposed for adaptive reuse of Building 3.
3. Includes 13,500 square feet of community facilities, 35,000 square feet for Pier 1 Community Center, 15,000 square foot sailing center, and 75,000 square foot museum. Similar to parking analysis, loading demand for elementary school and police/fire facility will be provided separately within their facilities. Neither demand nor supply for elementary school and police/fire facility is included in this analysis.
4. Includes 22,000 square feet of food production space proposed in adaptive reuse of Building 2.
5. Typical peak hour of truck loading space demand occurs between 10 AM and 1 PM. Peak hour generation assumes deliveries occur between 8 AM and 5 PM, average park time of 25 minutes per vehicle, and that the peak hour deliveries occur at a 25 percent higher rate than other hours.
6. Per thousand square feet.

Source: SF Guidelines, 2002 and Fehr & Peers, 2010

Parking Demand

The SF Guidelines methodology for estimating parking demand was used to calculate the parking demand associated with the Proposed Project land uses and a shared parking analysis was applied to the non-residential parking demand. 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 by determining the peak parking demand estimates for each land use within the neighborhoods using the methodology within the SF Guidelines, and applying the Urban Land Institute (“ULI”) shared parking methodology to estimate the supply-reducing

April 21, 2011
Case No. 2007.0903E
Treasure Island / Yerba Buena Island
Redevelopment Project Final EIR
IV. Environmental Setting and Impacts
E. Transportation

Table IV.E.8: Proposed Project Parking Demand

<table>
<thead>
<tr>
<th>District</th>
<th>Peak Residential Parking Demand</th>
<th>Peak Shared Non-Residential Parking Demand</th>
<th>Total Peak Parking Demand¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cityside</td>
<td>4,134</td>
<td>92</td>
<td>4,226</td>
</tr>
<tr>
<td>Eastside</td>
<td>2,032</td>
<td>48</td>
<td>2,080</td>
</tr>
<tr>
<td>Island Core</td>
<td>3,737</td>
<td>1,546</td>
<td>5,283</td>
</tr>
<tr>
<td>Open Space</td>
<td>0</td>
<td>395</td>
<td>395</td>
</tr>
<tr>
<td><strong>Total Treasure Island²</strong></td>
<td><strong>9,903</strong></td>
<td><strong>2,081</strong></td>
<td><strong>11,984</strong></td>
</tr>
<tr>
<td>Yerba Buena Island</td>
<td>259</td>
<td>57</td>
<td>316</td>
</tr>
<tr>
<td><strong>Total Proposed Project³</strong></td>
<td><strong>10,162</strong></td>
<td><strong>2,138</strong></td>
<td><strong>12,300</strong></td>
</tr>
</tbody>
</table>

Notes:
1 Shared parking analysis based on peak parking demands calculated using SF Guidelines Parking Demand methodology and ULI Shared Parking methodology for temporal distribution of parking demand by land uses.
2 Excludes Yerba Buena Island. Peak demand for all of Treasure Island is not the same as the total peak parking demand for each neighborhood because the neighborhoods experience their peak demands at different times of the day.
3 Excludes parking demand associated with the Job Corps and U.S. Coast Guard.


Future 2030 No Project Transportation Improvements

As described in “Regional Access” on pp. IV.E.2-IV.E.10, there are a number of ongoing and proposed improvements to the Bay Bridge ramps at Yerba Buena Island. For the purposes of this transportation analysis, the following transportation improvements were assumed to be in place as part of the Future 2030 Cumulative No Project conditions:

- The improvements at the eastbound on-ramp on the east side of Yerba Buena Island that will be reconstructed as part of the replacement of the Bay Bridge East Span project were assumed to be in place.
- The improvements to the westbound on- and off-ramps on the east side of Yerba Buena Island currently being evaluated by Caltrans and SFCTA as part of the Ramps Project (i.e., reconstruction of the westbound on-ramp on the east side of Yerba Buena Island,

---

23 Shared Parking, published by the Urban Land Institute (“ULI”), provides the industry standard method of estimating the supply-reducing effects of shared parking. It provides the temporal distribution of parking demands (as a percentage of their peak demand) for various land uses for each hour of a typical day. The hourly demands of each use are summed together and the highest overall parking demand was identified as the combined peak demand.
replacement/reconstruction of the westbound off-ramp on the east side of Yerba Buena Island, and the conversion of the westbound on-ramp on the west side of Yerba Buena Island to a transit and emergency vehicle access-only lane) were also assumed in the transportation analysis. However, an analysis was also conducted to determine the Proposed Project impacts that would occur if the Ramps Project was not constructed.24

The San Francisco Planning Department is undertaking a comprehensive planning process for the area surrounding the new Transbay Transit Center and issued a Draft Transit Center District Plan (TCDP) for public review in November 2009. The study area for the Transbay Transit Center is roughly bounded by Market Street, The Embarcadero, Folsom Street, and Third Street. The TCDP proposes changes to the transportation network within the study area, such as conversion of existing one-way streets to two-way and reducing the number of travel lanes on some streets. The Planning Department is preparing an EIR analyzing the Draft TCDP, and plans to hold a series of public meetings and workshops to further develop and refine the recommendations in the Draft TCDP. It is likely that a number of elements of the Draft TCDP, including the roadway system recommendations, will continue to change and evolve over the course of the public review process, and will be further informed by the environmental review process currently under way for the Draft TCDP. Therefore, the proposed roadway changes described in the Draft TCDP have not been analyzed as part of this EIR, as it remains unknown whether or not they will be adopted in their current form or substantially revised. Ultimately, the impacts of such roadway changes will be evaluated in the environmental review document for the TCDP, which will include the additional traffic associated with the Proposed Project.

**Development of 2030 Cumulative No Project Conditions Traffic Forecasts**

Future conditions traffic forecasts for the Bay Bridge were developed based on a comparison of the future year 2030 output from the SFCTA and ACCMA travel demand forecasting models. The worst-case (i.e., highest) forecasts for each direction for each peak hour from each model were chosen as the 2030 baseline conditions analysis because of considerable variation between the models’ respective forecasts. Weekday AM and PM peak hour traffic volumes on the westbound and eastbound approaches of the Bay Bridge would increase without the Proposed Project as follows:

- In the AM peak hour, westbound queues in the East Bay would increase by 5,400 vehicles;
- In the AM peak hour, eastbound queues in downtown San Francisco would either stay unchanged or increase by about 250 vehicles;

---

24 In addition to ramp changes, the SFCTA and Caltrans are also evaluating retrofit of the nine viaduct structures on the west side of Yerba Buena Island. Retrofit of these structures is separate from this project. As the retrofit would be a seismic safety project only and no changes to roadway alignment or capacity are proposed, the transportation impacts described in this Section would be the same whether the retrofit project was implemented or not.
- In the PM peak hour, westbound queues in the East Bay would increase by 200 vehicles; and
- In the PM peak hour, eastbound queues in downtown San Francisco would increase by 4,700 vehicles.

Table IV.E.9 and Figure IV.E.16: No Project and With Project East Bay Queuing Approaching the Bay Bridge, present the expected year 2030 Cumulative No Project queuing at the approaches to the Bay Bridge.

**Table IV.E.9: Existing and 2030 Cumulative No Project Peak Hour Queuing on Bay Bridge Approaches (Miles)**

<table>
<thead>
<tr>
<th>Approach</th>
<th>No. of Lanes</th>
<th>Existing</th>
<th>2030 Cumulative No Project</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AM</td>
<td>PM</td>
<td>Sat</td>
</tr>
<tr>
<td><strong>East Bay Approaches</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I-80 WB</td>
<td>3</td>
<td>2.7</td>
<td>0.0</td>
</tr>
<tr>
<td>I-580 WB</td>
<td>3</td>
<td>1.5</td>
<td>0.0</td>
</tr>
<tr>
<td>I-880 WB</td>
<td>3</td>
<td>0.7</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>San Francisco Approaches</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harrison WB @ First</td>
<td>2</td>
<td>0.0</td>
<td>0.2</td>
</tr>
<tr>
<td>Bryant EB @ Second</td>
<td>2</td>
<td>0.0</td>
<td>0.2</td>
</tr>
<tr>
<td>Folsom EB @ Essex</td>
<td>2</td>
<td>0.0</td>
<td>0.3</td>
</tr>
<tr>
<td>First SB @ Howard</td>
<td>2</td>
<td>0.0</td>
<td>0.4</td>
</tr>
<tr>
<td>Bryant EB @ Fifth</td>
<td>3</td>
<td>0.0</td>
<td>0.1</td>
</tr>
</tbody>
</table>

**Notes:**
1. The number of lanes shown represents the number of lanes of queued traffic serving the Bay Bridge from each facility.
2. Assumes queued vehicle density of 150 vehicles per lane per mile for freeway and 264 vehicles per lane per mile for city streets based on aerial photo observations.
3. Most queues observed on westbound approaches in the PM peak period were due to weaving in the I-80/I-580/I-880 interchange and not necessarily due to bridge over-saturation or the service volume of the toll plaza.
4. Queues based on intersection turning movement forecast. Additional unserved demand would be queued on eastbound I-80 approaching the Bay Bridge.

**Source:** Fehr & Peers, 2010.
### Table: Queue Length Summary

<table>
<thead>
<tr>
<th>Approach</th>
<th>Existing AM Queue</th>
<th>Year 2030 No Project AM Queue</th>
<th>Project Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>I-80 WB</td>
<td>2.66 miles</td>
<td>5.5 - 8.0 miles</td>
<td>0.8 miles</td>
</tr>
<tr>
<td>I-580 WB</td>
<td>1.5 miles</td>
<td>1.9 - 2.5 miles</td>
<td>0.5 miles</td>
</tr>
<tr>
<td>I-880 WB</td>
<td>0.74 miles</td>
<td>1.0 - 5.6 miles</td>
<td>0.2 miles</td>
</tr>
</tbody>
</table>

---

**LEGEND:**
- **Queues**
  - Existing AM Peak Hour Queue
  - Maximum AM Peak Hour Queue - Year 2030 No Project
  - Project Contribution to Year 2030 Queues

**Source:** Fehr & Peers, 2009

**Figure IV.E.16:** No Project and With Project East Bay Queuing Approaching the Bay Bridge

---

**Treasure Island and Yerba Buena Island Redevelopment Project EIR**
IV. Environmental Setting and Impacts
   E. Transportation

2030 Cumulative No Project freeway volume forecasts for Saturday conditions were developed using a linear growth factor based on the growth observed between the existing and 2030 Cumulative No Project PM peak hour freeway forecasts. The factor was applied to existing Saturday peak hour volumes to develop 2030 Cumulative No Project Saturday peak hour forecasts. That process produced the following Saturday peak hour forecasts for travel on the Bay Bridge:

- In the Saturday peak hour, westbound volumes would be 8,150 vehicles per hour
- In the Saturday peak hour, eastbound volumes would be 8,500 vehicles per hour

Since Saturday peak hour traffic volumes under 2030 Cumulative No Project conditions would be less than the Bay Bridge capacity of 9,000 vehicles per hour, queues would not occur within the East Bay or on downtown San Francisco streets.

PROJECT IMPACTS

Construction Impacts

Impact TR-1: Construction of the Proposed Project would occur over a long period of time and would result in significant impacts on the transportation and circulation network. (Significant and Unavoidable with Mitigation)

Construction and build out of the Proposed Project would be phased and is expected to occur over approximately 15 to 20 years; however, the actual timing of construction would depend on market conditions and other factors. Proposed Project construction is expected to involve four major phases. The first phase would include demolition of existing uses and construction of horizontal infrastructure and portions of the geotechnical stabilization. The subsequent three phases would include development of the proposed new land uses and associated infrastructure extensions, as needed.

The construction schedule would be coordinated with the other current land-owners on the Islands who would remain (i.e., Department of Labor and the U.S. Coast Guard) and the construction of the Bay Bridge East Span project (by Caltrans) to minimize conflicts with the existing traffic onto and off of the Islands. The project sponsors would enter into an agreement with the U.S. Coast Guard with respect to construction schedule, construction activities, and maintenance of access to existing Coast Guard facilities on Yerba Buena Island. Construction staging would occur on the Islands, although truck traffic would be required to access the Islands via the Bay Bridge.

Construction activity would be expected to occur on Monday through Saturday, between 7 AM and 8 PM, and the typical work shift for most construction workers would be from 7 AM to
approximately 3:30 PM. Construction is not anticipated to typically occur on Sundays or major holidays.

Construction materials and equipment used on the Islands would be transported by truck and/or barge throughout the construction of the Proposed Project. Based on the amount and type of construction materials to be used and disposed of during construction, Table IV.E.10 estimates the maximum number of truck and barge trips that the project sponsors expect to be generated during construction of the Proposed Project.\textsuperscript{25} Table IV.E.10 lists trips either by year or in total; where total trips are provided, it is expected that the trips would be spread out throughout the 20-year duration of construction. It is important to note that not all of these activities would be generating truck traffic simultaneously, and some activities are presented as total trips while others as annual figures, so the total annual truck traffic is not necessarily the sum of each row. Further, the number of truck trips would be considerably less than the amount of new vehicle traffic generated by the Proposed Project.

**Table IV.E.10: Proposed Project Construction Traffic**

<table>
<thead>
<tr>
<th>Construction Use</th>
<th>Equipment and Materials Deliveries and Disposal Trips</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Truck Trips</td>
</tr>
<tr>
<td>Equipment Transport\textsuperscript{1}</td>
<td>200 per year</td>
</tr>
<tr>
<td>Demolition</td>
<td>100 total</td>
</tr>
<tr>
<td>Construction Materials\textsuperscript{1}</td>
<td>100,000 total</td>
</tr>
<tr>
<td>Asphalt</td>
<td>2,500 total</td>
</tr>
<tr>
<td>Aggregate</td>
<td>100 per year</td>
</tr>
<tr>
<td>Concrete</td>
<td>2,000 per year</td>
</tr>
<tr>
<td>Utilities\textsuperscript{1}</td>
<td>2,000 total</td>
</tr>
<tr>
<td>Landscaping\textsuperscript{1}</td>
<td>500 total</td>
</tr>
</tbody>
</table>

*Note:* The number of truck and barge trips will be determined by the needs of the construction crew. The maximum number of trips is listed for each; however, both transport methods would be used so the total number of trips for each would differ from what is listed.

*Source:* TICD (BKF), 2009.

Traffic-related construction impacts would be concentrated on the Bay Bridge, primarily in the vicinity of the Bay Bridge ramps to the Islands, and on local streets on Yerba Buena and Treasure Islands. Trucks using the Bay Bridge ramps are likely to be slower at accelerating onto and decelerating from the Bay Bridge than a typical passenger car, which may cause some minor, temporary, and localized delay to traffic on the Bay Bridge near the ramps.

\textsuperscript{25} *Treasure Island Infrastructure Update*, Section 5.6, p. 5 April 20, 2009.
Construction activities conducted by barge would be regulated by the Coast Guard. All construction-related vessel traffic in San Francisco Bay is regulated by the Coast Guard under the Vessel Traffic Service (“VTS”) program. All vessel operators have to inform the VTS of marine traffic in the Bay, and where a significant amount of traffic is anticipated, appropriate Notices to Mariners need to be coordinated with the Harbor Safety Committee and the VTS.

The Proposed Project would involve construction of a new street system, which would require temporary closure of traffic and parking lanes and sidewalks on the Islands. These closures could last the entire duration of construction of particular phases, and it is possible that more than one area could be closed simultaneously. These closures may involve temporary disruptions to the routes and stops for the Muni line 108-Treasure Island, the new AC Transit bus line, and the new Islands shuttle service, resulting in the need for rerouting. Changes to transit lines would be coordinated and approved, as appropriate, by SFMTA, AC Transit, and TITMA.

Closure of one or more travel lanes is not expected to cause severe congestion on the Islands because existing traffic volumes on the Islands are relatively low. However, the closures may create difficulties for bicycle and pedestrian circulation during construction. Mitigation Measure M-TR-1 would ensure that temporary accommodations for pedestrians and bicyclists would be maintained to minimize these potential disruptions.

Construction activities for the early phases of development may overlap with the final phases of construction of the new Bay Bridge east span which is expected to be completed by late 2013. This is discussed as part of cumulative construction impacts (see Impact TR-39 on p. IV.E.118).

In summary, the project construction activities could result in temporary impacts to the transportation system, including increased delay and congestion on the Bay Bridge near the ramps during the peak periods, and disruption to transit, pedestrian, bicycle, and vehicular traffic on the Islands due to roadway closures. Given the magnitude and duration of potential construction activities, and their potential impact on ramp operations on the Bay Bridge, these construction-related transportation impacts would be considered significant.

**Mitigation Measure M-TR-1: Construction Traffic Management Plan**

The project sponsors shall develop and implement a Construction Traffic Management Plan (“CTMP”), consistent with the standards and objectives stated below and approved by TIDA, designed to anticipate and minimize transportation impacts of various construction activities associated with the Proposed Project.

The Plan shall disseminate appropriate information to contractors and affected agencies with respect to coordinating construction activities to minimize overall disruptions and ensure that overall circulation on the Islands is maintained to the extent possible, with particular focus on
ensuring pedestrian, transit, and bicycle connectivity and access to the Bay and to recreational uses to the extent feasible. The CTMP shall supplement and expand, rather than modify or supersede, any manual, regulations, or provisions set forth by SFMTA, Department of Public Works (“DPW”), or other City departments and agencies.

Specifically, the CTMP shall:

- Identify construction traffic management best practices in San Francisco, as well as other jurisdictions that, although not being implemented in the City, could provide valuable information for a project of the size and characteristics of Treasure Island and Yerba Buena Island.

- As applicable, describe procedures required by different departments and/or agencies in the City for implementation of a Construction Traffic Management Plan, such as reviewing agencies, approval processes, and estimated timelines. For example:
  - The construction contractor will need to coordinate temporary and permanent changes to the transportation network on Treasure Island and Yerba Buena Island with TIDA. Once Treasure Island streets are accepted as City streets, temporary traffic and transportation changes must be coordinated through the SFMTA’s Interdepartmental Staff Committee on Traffic and Transportation (“ISCOTT”) and will require a public meeting. As part of this process, the CTMP may be reviewed by SFMTA’s Transportation Advisory Committee (“TASC”) to resolve internal differences between different transportation modes.
  - For construction activities conducted within Caltrans right-of-way, Caltrans Deputy Directive 60 (DD-60) requires a separate Transportation Management Plan and contingency plans. These plans shall be part of the normal project development process and must be considered during the planning stage to allow for the proper cost, scope and scheduling of the TMP activities on Caltrans right-of-way. These plans should adhere to Caltrans standards and guidelines for stage construction, construction signage, traffic handling, lane and ramp closures and TMP documentation for all work within Caltrans right-of-way.

- Changes to transit lines would be coordinated and approved, as appropriate, by SFMTA, AC Transit, and TITMA. The CTMP would set forth the process by which transit route changes would be requested and approved. Require consultation with other Island users, including the Job Corps and Coast Guard, to assist coordination of construction traffic management strategies. The project sponsors shall proactively coordinate with these groups prior to developing their CTMP to ensure the needs of the other users on the Islands are addressed within the Construction Traffic Management Plan.

- Identify construction traffic management strategies and other elements for the Proposed 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. These include, but are not limited to, construction strategies, demand management activities, alternative route strategies, and public information strategies. For example, the project sponsors may develop a circulation plan for the Island during construction to ensure that existing users can clearly navigate through the construction zones without substantial disruption.
IV. Environmental Setting and Impacts
   E. Transportation

- Require contractors to notify vendors that STAA trucks larger than 65 feet exiting from the eastbound direction of the Bay Bridge may only use the off-ramp on the east side of Yerba Buena Island.
Implementation of Mitigation Measure M-TR-1, a Construction Traffic Management Plan, would help reduce the Proposed Project’s construction-related traffic impacts. However, given the magnitude of the proposed development and the duration of the construction period, some disruptions and increased delays could still occur even with implementation of Mitigation Measure M-TR-1 (including ramp operations on the Bay Bridge), and it is possible that significant construction-related transportation impacts on regional roadways could still occur. Construction-related transportation impacts would therefore, remain significant and unavoidable.

**Operational Impacts**

Except near ramp merge and diverge sections, operations on the Bay Bridge are anticipated to operate similar to existing conditions (i.e., at capacity in peak directions during peak periods) since additional travel demand would be constrained by the toll plaza in the East Bay, eastbound on-ramp approaches in downtown San Francisco, and by ramp metering at the westbound on-ramp on Yerba Buena Island. Therefore, since the bridge’s approaches limit the number of vehicles that can reach the bridge, the Bay Bridge mainline would not exceed current peak volumes (i.e., its capacity). Generally, although Bay Bridge mainline operations would operate similarly to today’s peak hour conditions, through-traffic on the Bay Bridge could experience some increased congestion in the eastbound direction near the eastbound diverge section at Yerba Buena Island.

Bay Bridge Operations – Ramp Junction Merge/Diverge

**Impact TR-2:** Implementation of the Proposed Project would contribute to existing LOS E operating conditions during the weekday PM peak hour, and result in significant impacts during the Saturday peak hour at the eastbound off-ramp (west side of Yerba Buena Island). *(Significant and Unavoidable with Mitigation)*

Table IV.E.11 summarizes the ramp merge and diverge levels of service for the AM, PM, and Saturday peak hours. *(For conditions without the Ramps Project, the tables also present the stop-controlled intersection levels of service for the AM, PM, and Saturday peak hours.)* Figure IV.E.17: Existing plus Project Bay Bridge Travel Demand (With New Westbound On-Ramps), illustrates the demand volumes on the ramps, and Figure IV.E.16 illustrates the resulting vehicle queues.

---

26 Under conditions with the proposed reconstruction of the westbound ramps on the east side of Yerba Buena Island, the westbound on-ramp on the west side of the Island would be converted to transit and emergency vehicle-only. Under these conditions, no analysis of the transit and emergency vehicle-only westbound on-ramp was performed because volumes would be very low. Under conditions without the reconstruction of the westbound ramps, both a side-street stop analysis and a ramp merge analysis were conducted.
Table IV.E.11: Ramp Junction Analysis – Existing, Existing plus Project, and 2030 Cumulative plus Project Conditions

<table>
<thead>
<tr>
<th>Ramp</th>
<th>Peak Hour</th>
<th>Existing</th>
<th>Existing plus Project</th>
<th>2030 Cumulative plus Project</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Ramp Merge</td>
<td>Stop-Controlled</td>
<td>Ramp Merge</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Density/LOS$^2$</td>
<td>Delay/LOS$^3$</td>
<td>Density/LOS$^2$</td>
</tr>
<tr>
<td>Eastbound On-Ramp (East side)</td>
<td>AM</td>
<td>22.3/C</td>
<td>74.2/F</td>
<td>24.1/C</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>27.8/C</td>
<td>&gt;80/F</td>
<td>26.3/C</td>
</tr>
<tr>
<td></td>
<td>Sat</td>
<td>24.5/C</td>
<td>&gt;80/F</td>
<td>26.5/C</td>
</tr>
<tr>
<td>Eastbound Off-Ramp (West side)</td>
<td>AM</td>
<td>30.1/D</td>
<td>N/A</td>
<td>33.4/D</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>36.2/E</td>
<td>N/A</td>
<td>39.3/E</td>
</tr>
<tr>
<td></td>
<td>Sat</td>
<td>32.3/D</td>
<td>N/A</td>
<td>39.7/E</td>
</tr>
<tr>
<td>Eastbound Off-Ramp (East side)$^4$</td>
<td>AM</td>
<td>N/A</td>
<td>N/A</td>
<td>26.6/C</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>N/A</td>
<td>N/A</td>
<td>30.4/D</td>
</tr>
<tr>
<td></td>
<td>Sat</td>
<td>N/A</td>
<td>N/A</td>
<td>30.8/D</td>
</tr>
<tr>
<td>Westbound On-Ramp (West side)</td>
<td>AM</td>
<td>27.9/C</td>
<td>&gt;80/F</td>
<td>26.4/C</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>25.1/C</td>
<td>&gt;80/F</td>
<td>25.0/C</td>
</tr>
<tr>
<td></td>
<td>Sat</td>
<td>24.6/C</td>
<td>&gt;80/F</td>
<td>23.8/C</td>
</tr>
<tr>
<td>Westbound On-Ramp (East side)$^4$</td>
<td>AM</td>
<td>N/A</td>
<td>N/A</td>
<td>27.3/C</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>N/A</td>
<td>N/A</td>
<td>26.4/C</td>
</tr>
<tr>
<td></td>
<td>Sat</td>
<td>N/A</td>
<td>N/A</td>
<td>25.1/C</td>
</tr>
<tr>
<td>Westbound Off-Ramp (East side)</td>
<td>AM</td>
<td>32.8/D</td>
<td>N/A</td>
<td>32.5/D</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>29.4/D</td>
<td>N/A</td>
<td>32.6/D</td>
</tr>
<tr>
<td></td>
<td>Sat</td>
<td>28.5/D</td>
<td>N/A</td>
<td>31.8/D</td>
</tr>
</tbody>
</table>

Ramp Junction LOS with Ramps Project (on Reconstructed Westbound Ramps)

<table>
<thead>
<tr>
<th>Ramp</th>
<th>Peak Hour</th>
<th>Existing</th>
<th>Existing plus Project</th>
<th>2030 Cumulative plus Project</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Ramp Merge</td>
<td>Stop-Controlled</td>
<td>Ramp Merge</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Density/LOS$^2$</td>
<td>Delay/LOS$^3$</td>
<td>Density/LOS$^2$</td>
</tr>
<tr>
<td>Westbound On-Ramp (East side)$^5$</td>
<td>AM</td>
<td>N/A</td>
<td>N/A</td>
<td>24.0/C</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>N/A</td>
<td>N/A</td>
<td>25.2/C</td>
</tr>
<tr>
<td></td>
<td>Sat</td>
<td>N/A</td>
<td>N/A</td>
<td>29.6/D</td>
</tr>
<tr>
<td>Westbound Off-Ramp (East side)</td>
<td>AM</td>
<td>N/A</td>
<td>N/A</td>
<td>26.0/C</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>N/A</td>
<td>N/A</td>
<td>26.1/C</td>
</tr>
<tr>
<td></td>
<td>Sat</td>
<td>N/A</td>
<td>N/A</td>
<td>25.4/C</td>
</tr>
</tbody>
</table>

Notes:
- LOS E and LOS F conditions highlighted in **bold**. N/A = Not Applicable.
- $^1$ Under conditions without the Ramps Project, existing stop-control would remain in place on both westbound on-ramps. Under these conditions, similar to the analysis of existing conditions, both the HCM merge analysis and the HCM stop-controlled intersection analysis were performed. There are no stop signs at the off-ramps; therefore, there is no analysis for these ramps in the “Stop-controlled” column.
- $^2$ Density measured in passenger cars per mile per lane.
- $^3$ Delay measured in seconds per vehicle.
- $^4$ The eastbound off-ramp (east side) and westbound on-ramp (east side) were closed due to construction at the time the existing conditions data were collected, and therefore no ramp merge results are shown under the Existing column. Both ramps have since been reopened.
- $^5$ Under conditions with the Ramps Project, the westbound on-ramp (west side) is planned to be for transit and emergency vehicle access only. Thus, under conditions with the Ramps Project, ramp junction analysis was only performed for the westbound on-ramp (east side) because volumes would be very small on the westbound on-ramp (west side). Conditions at other YBI ramps would not change from those presented for conditions without the Ramps Project.

FIGURE IV.E.17: EXISTING PLUS PROJECT BAY BRIDGE TRAVEL DEMAND (WITH NEW WESTBOUND ON-RAMPS)

NOTE: This refers to unserved demand on San Francisco city streets approaching the SFOBB. Additional unserved demand exists on northbound US 101, eastbound I-80 approaching the SFOBB. Unserved demand on US 101/80 is not quantified due to the complex nature of the approaching freeway network.

San Francisco Approaches

<table>
<thead>
<tr>
<th></th>
<th>AM</th>
<th>PM</th>
<th>SAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demand</td>
<td>7,900</td>
<td>10,600</td>
<td>9,000</td>
</tr>
<tr>
<td>Served</td>
<td>7,900</td>
<td>9,000</td>
<td>9,000</td>
</tr>
<tr>
<td>Unserved (Queue)</td>
<td>0</td>
<td>1,600</td>
<td>0</td>
</tr>
</tbody>
</table>

San Francisco Approaches

<table>
<thead>
<tr>
<th></th>
<th>AM</th>
<th>PM</th>
<th>SAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demand</td>
<td>8,600</td>
<td>8,600</td>
<td>8,750</td>
</tr>
<tr>
<td>Served</td>
<td>8,550</td>
<td>8,300</td>
<td>7,950</td>
</tr>
<tr>
<td>Unserved (Queue)</td>
<td>2,050</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Based on the merge/diverge analysis, the Proposed Project would contribute traffic to the eastbound off-ramp diverge section on the west side of Yerba Buena Island, which was observed to operate at LOS E in the PM peak hour under existing conditions. Proposed Project traffic would comprise a majority of the traffic using the off-ramp during the PM peak hour and the project’s contribution would therefore, be considered substantial and a significant impact. The Proposed Project would also cause this same off-ramp diverge section to deteriorate from LOS D to LOS E in the Saturday peak hour. This means that during the weekday PM and Saturday peak hours, the roadway area on the Bay Bridge approaching the off-ramp would be operating near its capacity with virtually no usable gaps in the traffic stream and little room to maneuver, with notable congestion and/or queuing extending onto the Bay Bridge.

The primary cause for deficient operations at the eastbound off-ramp on the west side is its design, with a short deceleration distance followed by a tight curve. This design causes exiting vehicles to begin deceleration on the bridge mainline. To improve the operations of this diverge section, the off-ramp would need to be reconstructed to provide more deceleration distance and a less-severe curve. Reconstruction of this ramp would require major construction on the Bay Bridge, Yerba Buena Island, and Treasure Island Road, and is not contemplated at this time by the Ramps Project. These improvements were evaluated in the Project Study Report for the Ramps Project conducted by Caltrans and the SFCTA in December 2007 and were found to be infeasible.27

**Mitigation Measure M-TR-2: Expanded Transit Service**

As a means to reduce vehicular travel to and from the Islands, additional transit capacity shall be provided. The project sponsors shall work with WETA and SFMTA to develop and implement the Proposed Project’s transit operating plan. Elements of the plan include, but are not limited to:

- Additional ferry service to reduce peak period headways from 50-minutes to as much as 15-minute headways during the AM and PM peak periods.
- Increased frequency on the Muni line 108-Treasure Island service to reduce peak period headways from 15 minutes to as low as 7-minute headways in the AM peak period and as low as 5 minutes in the PM peak period.
- New bus service to another location in San Francisco (e.g., to the San Francisco Civic Center area) with frequencies as low as 12-minutes during the AM and PM peak periods. Service shall be provided between approximately 5 AM and 10 PM.

The proposed East Bay bus service would not change as part of this Mitigation Measure. Although specific headways are suggested as part of this Mitigation Measure, SFMTA and WETA would maintain the authority to modify service levels and routes as part of their ongoing system-wide operations management.

27 Project Study Report on I-80 in the City and County of San Francisco at Yerba Buena Island from Post Mile 7.6 to Post Mile 8.1, Caltrans, December 2007.
The additional transit capacity (in terms of increased frequencies) and transit accessibility (due to a new line) to San Francisco has been designed to reduce transit travel times and would make transit use a more attractive travel mode. The enhanced transit service has been designed to increase the transit mode share (including bus and ferry) from 27 to 44 percent during the AM peak hour, and from 25 to 40 percent during the PM peak hour. Correspondingly, the number of peak hour project-generated vehicle trips would decrease from 1,613 vehicles to 1,228 vehicles during the AM peak hour (a decrease in the number of vehicles of about 24 percent), and from 2,462 vehicles to 1,983 vehicles during the PM peak hour (a decrease in the number of vehicles of about 20 percent). During the Saturday peak hour, the transit mode share would increase from 16 percent to 26 percent, and the number of peak hour vehicles would decrease from 2,861 vehicles to 2,437 vehicles per hour (a decrease in the number of vehicles of about 15 percent).

Implementation of Mitigation Measure M-TR-2 (Expanded Transit Service) would reduce vehicle trip generation such that the Proposed Project’s impacts to the eastbound off-ramp diverge section would be reduced. However, for the weekday PM and Saturday peak hours this reduction in vehicle trips would have only a slight benefit to congestion around the off-ramp diverge section, and the levels of service would remain the same as those shown in Table IV.E.12. Further, although the project sponsors are working with WETA and SFMTA to ensure that the service proposed as part of this Expanded Transit Service mitigation measure is available, sources for full funding for the additional transit service contemplated under this Expanded Transit Service mitigation measure have not been identified or secured, and its implementation must be considered uncertain. Therefore, the Mitigation Measure would not reduce the Proposed Project’s impacts to less than significant levels. The Proposed Project’s impacts to this ramp diverge section would remain significant and unavoidable.

As noted above, Mitigation Measure M-TR-2 would result in a mode shift from auto to transit. The impacts of the shift from auto to transit are discussed, as appropriate, within the individual impact statements. For example, the impacts of additional transit ridership associated with this mitigation measure are discussed in Impact TR-19.

**Bay Bridge Operations – Ramp Delays without and with the Ramps Project**

**Impact TR-3: Under conditions without the Ramps Project, implementation of the Proposed Project would result in significant impacts at the two westbound on-ramps. (Significant and Unavoidable with Mitigation)**

Traffic volumes destined for the westbound Bay Bridge would exceed the capacity of the westbound on-ramps to the Bay Bridge, resulting in queues. These queues would increase vehicular travel times and cause traffic delay. Figure IV.E.18: Existing plus Project Bay Bridge Travel Demand (No New Westbound On-Ramps), illustrates the Bay Bridge and Yerba Buena Island ramp demand volumes and resulting volume of queued vehicles for conditions if the new
### Table IV.E.12: Ramp Junction Analysis – Proposed Project, and Project with Mitigation Measure M-TR-2 (Expanded Transit Service)

<table>
<thead>
<tr>
<th>Ramp</th>
<th>Peak Hour</th>
<th>Existing plus Project</th>
<th>Existing plus Project with Mitigation Measure M-TR-2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Ramp Merge Density/LOS²</td>
<td>Stop-Controlled¹ Delay/LOS³</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ramp Junction LOS without Ramps Project</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eastbound On-Ramp (East side)</td>
<td>AM</td>
<td>24.1/C</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>26.3/C</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Sat</td>
<td>26.5/C</td>
<td>N/A</td>
</tr>
<tr>
<td>Eastbound Off-Ramp (West side)</td>
<td>AM</td>
<td>33.4/D</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>39.3/E</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Sat</td>
<td>39.7/E</td>
<td>N/A</td>
</tr>
<tr>
<td>Eastbound Off-Ramp (East side)</td>
<td>AM</td>
<td>26.6/C</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>30.4/D</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Sat</td>
<td>30.8/D</td>
<td>N/A</td>
</tr>
<tr>
<td>Westbound On-Ramp (West side)</td>
<td>AM</td>
<td>26.4/C</td>
<td>&gt;80/F</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>25.0/C</td>
<td>&gt;80/F</td>
</tr>
<tr>
<td></td>
<td>Sat</td>
<td>23.8/C</td>
<td>&gt;80/F</td>
</tr>
<tr>
<td>Westbound On-Ramp (East side)</td>
<td>AM</td>
<td>27.3/C</td>
<td>&gt;80/F</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>26.4/C</td>
<td>&gt;80/F</td>
</tr>
<tr>
<td></td>
<td>Sat</td>
<td>25.1/C</td>
<td>&gt;80/F</td>
</tr>
<tr>
<td>Westbound Off-Ramp (East side)</td>
<td>AM</td>
<td>32.5/D</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>32.6/D</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Sat</td>
<td>31.8/D</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Ramp Junction LOS with Ramps Project (on Reconstructed Westbound Ramps)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Westbound On-Ramp (East side)</td>
<td>AM</td>
<td>24.0/C</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>25.2/C</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Sat</td>
<td>29.6/D</td>
<td>N/A</td>
</tr>
<tr>
<td>Westbound Off-Ramp (East side)</td>
<td>AM</td>
<td>26.0/C</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>26.1/C</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Sat</td>
<td>25.4/C</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Notes:**
LOS E and LOS F conditions highlighted in **bold**. N/A = Not Applicable

1. Under conditions without the Ramps Project, existing stop-control will remain in place on both westbound on-ramps. Under these conditions, similar to the analysis of existing conditions, both the HCM merge analysis and the HCM stop-controlled intersection analysis were performed. There are no stop signs at the off-ramps; therefore, there is no analysis for these ramps in the “Stop-controlled” column.

2. Density measured in passenger cars per mile per lane.

3. Delay measured in seconds per vehicle.

4. Under conditions with the Ramps Project, the westbound on-ramp (west side) is planned to be transit and emergency vehicle-only. Thus, under conditions with the Ramps Project, ramp junction analysis was only performed for the westbound on-ramp (east side) because volumes would be very small on the westbound on-ramp (west side).

Conditions on other YBI ramps would not change from those presented for conditions without the Ramps Project.

**Source:** Fehr & Peers, 2010.
Figure IV.E.18: Existing Plus Project Bay Bridge Travel Demand (No New Westbound On-Ramps)

**TREASURE ISLAND AND YERBA BUENA ISLAND REDEVELOPMENT PROJECT EIR**

**NOTE:** This refers to unserved demand on San Francisco city streets approaching the SFOBB. Additional unserved demand exists on northbound US 101/eastbound I-80 approaching the SFOBB. Unserved demand on US 101/I-80 is not quantified due to the complex nature of the approaching freeway network.

XX (YY) [ZZ] = AM (PM) [SAT] Volume in vehicles/hour

**TABLE 1: Existing Plus Project Bay Bridge Travel Demand**

<table>
<thead>
<tr>
<th></th>
<th>AM</th>
<th>PM</th>
<th>SAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demand</td>
<td>7,900</td>
<td>10,600</td>
<td>9,000</td>
</tr>
<tr>
<td>Served</td>
<td>7,900</td>
<td>9,000</td>
<td>9,000</td>
</tr>
<tr>
<td>Unserved (Queue)</td>
<td>0</td>
<td>1,600</td>
<td>200</td>
</tr>
</tbody>
</table>

**TABLE 2: East Bay Toll Plaza/Metering Lights**

<table>
<thead>
<tr>
<th></th>
<th>AM</th>
<th>PM</th>
<th>SAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demand</td>
<td>10,600</td>
<td>8,300</td>
<td>7,950</td>
</tr>
<tr>
<td>Served</td>
<td>8,550</td>
<td>8,300</td>
<td>7,950</td>
</tr>
<tr>
<td>Unserved (Queue)</td>
<td>2,050</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**FIGURE 20:** Existing Plus Project Bay Bridge Travel Demand (No New Westbound On-Ramps)

Source: Fehr & Peers, 2009
westbound on-ramps are not reconstructed as part of the Ramps Project. Figure IV.E.19: Existing plus Project Maximum On-Island Queue, illustrates the physical extents of queues on the Islands. Table IV.E.13 presents the average delays for the peak hours of analysis associated with the two westbound on-ramps.

Table IV.E.13: Maximum On-Ramp Queues and Average Delays – Existing plus Project Conditions

<table>
<thead>
<tr>
<th>Peak hour</th>
<th>Existing Ramps(^1,2,4) miles (minutes:seconds)</th>
<th>With Ramps Project(^1) miles (minutes:seconds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM</td>
<td>0.45 (2:06)</td>
<td>1.23 (5:12)</td>
</tr>
<tr>
<td>PM</td>
<td>0.45 (2:06)</td>
<td>1.10 (4:54)</td>
</tr>
<tr>
<td>Saturday(^3)</td>
<td>0.68 (2:54)</td>
<td>0.00 (0:00)</td>
</tr>
</tbody>
</table>

Notes:
1 Delays greater than 35 seconds per vehicle highlighted in *bold*.
2 Includes planned reconstruction of the eastbound ramp on the east side of Yerba Buena Island as part of the Bay Bridge East Span project.
3 Ramp metering not assumed to be in operation during the Saturday peak hour.
4 Queues and delays presented for Existing Ramps are for each of the two ramps; traffic was assumed to split equally between the two westbound on-ramps.


Although delays associated with on-ramp congestion are not typically analyzed for purposes of identifying impacts, this analysis includes an analysis of ramp delays. There are two reasons why this analysis was performed for the unique case of the Proposed Project. First, because the existing configuration of the ramps includes STOP signs at the ramp merge points, a side-street stop controlled analysis was conducted to better understand the operation of these unique ramps. (This allows for a comparison of delays at this stop-controlled operation under the current ramp configuration with the proposed ramp reconfiguration that would include ramp meters). The second reason why this analysis was performed for this project is that unlike most development projects, the ramps onto the Bay Bridge form the only egress from the Islands and there are no alternate vehicular travel routes. Because of this unique condition, this type of analysis is important to understanding the vehicular travel time implications of the Proposed Project and various ramp configurations.

Based on the STOP-sign controlled analysis, which was conducted only for conditions in which the westbound ramps on the east side of Yerba Buena Island are not reconstructed and in which case the two westbound on-ramps would remain STOP-sign controlled, the Proposed Project would contribute substantial traffic to both westbound ramps.\(^{28}\) As shown in Table IV.E.11, both westbound on-ramps would operate at LOS F in the AM, PM, and Saturday peak hours. Delays would be considered a significant impact to both westbound on-ramps in the AM, PM, and

\(^{28}\) The project-generated traffic would constitute over half of the total traffic using the on-ramps.
Notes:
1. Maximum queues expected to occur during the AM peak hour with Ramps Project.
2. Maximum queues expected to occur during the Saturday peak hour without Ramps Project.
3. The street names shown on this figure are for identification purposes only and subject to change.

LEGEND:
- Maximum Queue - Existing Ramps
- Maximum Queue - Proposed Ramps

Saturday peak hours under conditions in which those ramps remain STOP-sign controlled. If the existing configuration were to remain, it is unlikely that the existing STOP signs would be removed or that other physical improvements would be made to the on-ramps.

Implementation of Mitigation Measure M-TR-2 (Expanded Transit Service) would reduce vehicle trip generation such that the Proposed Project’s impacts to ramp delays at the two STOP-sign controlled westbound on-ramps from Yerba Buena Island to the Bay Bridge would be reduced. This mitigation measure would reinforce the proposed TDM practices included as part of the Proposed Project, including ramp metering, congestion pricing, etc., designed to encourage mode shift to transit. Aside from increasing transit, as proposed by Mitigation Measure M-TR-2, there do not appear to be other proven techniques that would achieve the desired mode shift. As presented in Table IV.E.12, p. IV.E.76, for the weekday AM and PM and Saturday peak hours, even with implementation of Mitigation Measure M-TR-2, vehicles would still experience delays consistent with LOS F operations, and the Proposed Project’s impacts to delay approaching the on-ramps would remain significant and unavoidable.

**Impact TR-4:** Under conditions with the Ramps Project, implementation of the Proposed Project would result in a significant impact during the AM and PM peak hours at the ramp meter at the westbound on-ramp (east side of Yerba Buena Island). *(Significant and Unavoidable with Mitigation)*

If the Ramps Project is implemented, and if as part of the Ramps Project the west side westbound on-ramp is converted to transit and emergency vehicle access only, stop control devices would be eliminated and all westbound traffic (except transit vehicles destined for San Francisco) would be consolidated to the westbound on-ramp on the east side of Yerba Buena Island. This improvement, consequently, would simply relocate the source of vehicular delay from existing stop signs at the two ramp merges to a new ramp meter upstream of the single remaining merge on the east side of Yerba Buena Island.

The delay associated with the ramp meter is shown in Table IV.E.13. As presented in Table IV.E.13 and illustrated on Figure IV.E.19, p. IV.E.79, the Proposed Project may result in extensive queues on Treasure Island Road that may interfere with traffic circulation. (The queues may also affect transit circulation, which is discussed later in Impacts TR-24 through TR-27.) Under conditions with the Ramps Project, queues would reach over one mile on Treasure Island Road just past the intersection with Macalla Road. However, queues would not extend onto Treasure Island.

Although the delays are technically caused by a ramp meter signal, the LOS criteria for unsignalized intersections were applied because the ramp meter signal functions more like a stop sign than a traditional traffic signal. Ramp meter signals would be installed either as part of the Caltrans Bay Bridge East Span project, or as part of the Proposed Project. Vehicular traffic delay...
under conditions with the reconstructed westbound ramps would be just over 5 minutes in the
AM peak hour and just under five minutes in the PM peak hour. This would be a significant
impact. Traffic would experience minimal delays in the Saturday peak hour since ramp meters
were assumed not to be in operation during that time.

As shown on Figure IV.E.19, p. IV.E.79, queues on the Islands and associated delay may affect
the U.S. Coast Guard operations around Yerba Buena Island and their access to the Bay Bridge.

Primary access between the Coast Guard Station and Sector Facility and the eastbound on-ramp is
via South Gate Road (which connects with North Gate Road). With the Proposed Project, South
Gate Road would be two-way between Hillcrest Road and the intersection with Macalla Road and
North Gate Road to allow for direct access onto the eastbound Bay Bridge on-ramp and bypass of
queued vehicles on Hillcrest Road. The intersection of South Gate Road with Hillcrest Road is
located at the eastbound on-ramp to the Bay Bridge, about 150 feet from the Bay Bridge mainline
structure. Under conditions when there is a queue at the eastbound on-ramp, vehicles on South
Gate Road would access the eastbound queue via forced-flow conditions similar to conditions at a
four-way STOP-sign controlled intersection (e.g., queued vehicles on Hillcrest Road would allow
vehicles stopped on South Gate Road to access Hillcrest Island Road under alternate vehicle right-
of-way). Since South Gate Road terminates at the intersection with Hillcrest Road and the
eastbound on-ramp, the vehicle delays experienced by Coast Guard vehicles when there are queued
conditions on Hillcrest Road would be less than if South Gate Road was one-way westbound. If
South Gate Road was one-way westbound, Coast Guard vehicles bound for the Bay Bridge would
be required to travel around Yerba Buena Island via Macalla Road, Treasure Island Road and
Hillcrest Road, and would experience the queued conditions for a longer distance.

Vehicles exiting Coast Guard facility driveways on Hillcrest Road would be required to travel
within queued conditions for some period of time. The duration of travel within queued
conditions and added delays would depend on the day of week, time of day, and conditions on the
Bay Bridge. Based on existing driveway locations, Coast Guard vehicles would be within queued
conditions for a distance of between 50 and 550 feet from the eastbound on-ramp, compared with
a maximum queue of about 1.2 miles (6,340 feet) on Hillcrest Road.

Coast Guard vehicles are equipped with lights and sirens, and during emergency conditions,
would be able to bypass queued vehicles. In addition, the longest potential queue the Coast
Guard vehicles would have to wait in would be about one-tenth of a mile, based on the distance
between the places such vehicles access the main YBI circulation route and the Bay Bridge.
Accordingly, the Proposed Project would not be expected to substantially affect access to the

Coast Guard Station and Sector Facility.

---

The north leg of the intersection of Hillcrest Road and South Gate Road is the on-ramp onto the Bay
Bridge eastbound.
Implementation of Mitigation Measure M-TR-2 (Expanded Transit Service) would reduce vehicle trip generation such that the Proposed Project’s impacts on ramp delays at the ramp meter at the reconstructed westbound on-ramp would be reduced. However, as shown in Table IV.E.14, with the proposed reconstructed on-ramps, delay would remain significant and unavoidable in the weekday peak hours.

Table IV.E.14: Maximum On-Ramp Queues and Delays – Existing plus Project and Existing plus Project with Mitigation Measure M-TR-2

<table>
<thead>
<tr>
<th>Peak hour</th>
<th>Existing plus Project</th>
<th>Existing plus Project with Mitigation Measure M-TR-2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ramps1,2 miles (minutes:seconds)</td>
<td>Ramps1,2 miles (minutes:seconds)</td>
</tr>
<tr>
<td>AM</td>
<td>0.45 (2:06)</td>
<td>1.23 (5:12)</td>
</tr>
<tr>
<td>PM</td>
<td>0.45 (2:06)</td>
<td>1.10 (4:54)</td>
</tr>
<tr>
<td>Saturday</td>
<td>0.68 (2:54)</td>
<td>0.00 (0:00)</td>
</tr>
</tbody>
</table>

Notes:
1 Delays greater than 35 seconds per vehicle highlighted in bold.
2 Includes planned reconstruction of the eastbound ramps on the east side of Yerba Buena Island as part of the Bay Bridge East Span project.
3 Delays for the Existing, Stop-Controlled ramps are shown in Table IV.E.12 as operating at greater than 80 second delays and LOS F; calculated distances do not reflect this more detailed analysis and therefore are not shown here to avoid confusion.
4 Ramp metering not assumed to be in operation during the Saturday peak hour.


Implementation of Mitigation Measure M-TR-2 (Expanded Transit Service) would reduce vehicle trip generation such that the Proposed Project’s impacts on ramp delays at the ramp meter at the reconstructed westbound on-ramp would be reduced by nearly one-half. However, as illustrated in Table IV.E.14, above, vehicles would still experience delays consistent with LOS E and LOS F operations, and the Proposed Project’s impacts on delay approaching the on-ramps would remain significant and unavoidable.

Impact TR-5: Under conditions without and with the Ramps Project, implementation of the Proposed Project would result in less than significant impacts at three ramp locations. (Less than Significant)

Under conditions without and with the Ramps Project, the eastbound on-ramp and the eastbound off-ramp on the east side of Yerba Buena Island, and the westbound off-ramp on the east side of Yerba Buena Island would operate at acceptable levels under Existing plus Project conditions (see Table IV.E.11). Therefore, the Proposed Project would result in less-than-significant impacts at these three ramps.
In summary, the Proposed Project would result in significant and unavoidable impacts to the eastbound off-ramp (west side) irrespective of whether the Ramps Project or Mitigation Measure M-TR-2 is implemented. Furthermore, if the Ramps Project is not implemented, the Proposed Project would result in significant and unavoidable impact to the westbound on-ramps (both sides of Yerba Buena Island) irrespective of whether Mitigation Measure M-TR-2 is implemented. On the other hand, if the Ramps Project is implemented, the Proposed Project would result in a significant and unavoidable impact to the westbound on-ramp on the east side of Yerba Buena Island only, irrespective of whether Mitigation Measure M-TR-2 is implemented. This is because the westbound on-ramp on the west side of Yerba Buena Island would be converted to a transit- and emergency vehicle-only ramp and all traffic destined for San Francisco would be funneled to the westbound on-ramp on the east side of Yerba Buena Island where it would be constrained by the metering lights. The Proposed Project would result in less than significant impacts at the eastbound on-ramp, eastbound off-ramp, and westbound off-ramp on the east side of Yerba Buena Island.

Bay Bridge Operations – Queuing at Toll Plaza Approaches

Impact TR-6: Implementation of the Proposed Project would result in a significant impact on queuing at the Bay Bridge toll plaza during the weekday AM peak hour, with and without the Ramps Project. (Significant and Unavoidable with Mitigation)

With the addition of Proposed Project traffic, some vehicles that would otherwise be on the Bay Bridge would be displaced, increasing queues at the toll plaza in the East Bay. For example, if the Bay Bridge operates at capacity in the westbound direction during the AM peak hour today, and a project on the Islands were to add 50 vehicles to the westbound on-ramp on Yerba Buena Island, those trips would displace 50 vehicles that would otherwise be able to travel westbound on the Bay Bridge. This would increase the westbound queue at the Bay Bridge toll plaza by 50 vehicles. A similar phenomenon would occur in the opposite direction in the PM peak hour, with project-generated traffic adding to queues on the eastbound approaches to the Bay Bridge, including surface streets in downtown San Francisco (equal to the number of vehicles the Proposed Project adds to downtown streets). The latter phenomenon is discussed under Impact TR-7.

The Proposed Project would add approximately 471 net new westbound vehicle trips to the critical sections of the Bay Bridge operating at capacity during the AM peak hour. These new trips would displace a similar amount of traffic on the Bay Bridge and increase queues on the westbound approach in the AM peak hour by approximately 471 vehicles. The Proposed Project’s increase to queues approaching the Bay Bridge from the East Bay in the AM peak hour would be considered significant.
Although Caltrans generally aims to work cooperatively with local jurisdictions regarding ramp metering, Caltrans retains the ultimate control of both the proposed ramp meters on Yerba Buena Island and the Bay Bridge toll plaza metering lights. It is possible that, in consultation with TITMA, Caltrans would reduce the metering rate for the on-ramps on Yerba Buena Island and allow more traffic to enter the Bay Bridge from the East Bay. This would reduce the Proposed Project’s impacts on queuing at the East Bay toll plaza, but would increase queues on the Islands. The analysis presented in this report describes a worst case for bridge and queuing conditions at the East Bay toll plaza; spillover effects in the East Bay outside of the toll plaza and its approaches are expected to be minimal.

Implementation of Mitigation Measure M-TR-2 (Expanded Transit Service) would reduce vehicle trip generation such that the Proposed Project’s impacts on queues approaching the Bay Bridge from the East Bay would be reduced. This mitigation measure would reinforce the proposed TDM strategies (such as travel coordinator, prepaid transit vouchers, congestion pricing, guaranteed ride home) designed to reduce use of single-occupant vehicles and to increase the use of transit (see TDM Plan in Section “Transportation Improvements Assumed in the Analysis” on pp. IV.E.30-IV.E.47). However, the Proposed Project would continue to increase queues on the East Bay bridge approaches during the AM peak hour, which would be a significant and unavoidable impact.

Bay Bridge Operations – Queuing on San Francisco Streets Approaches to Bay Bridge

Impact TR-7: Implementation of the Proposed Project would result in a significant impact on queuing on San Francisco streets approaching Bay Bridge during the weekday PM peak hour, under conditions with and without the Ramps Project. (Significant and Unavoidable with Mitigation)

With implementation of the Proposed Project, queues approaching the eastbound Bay Bridge from surface streets in San Francisco in the PM peak hour would increase by approximately 523 vehicles, although this unserved demand would be dispersed among multiple surface streets in San Francisco approaching the bridge. The Proposed Project’s increase to queues approaching the Bay Bridge from downtown San Francisco in the PM peak hour would be considered a significant impact.

Implementation of Mitigation Measure M-TR-2 (Expanded Transit Service) would reduce vehicle trip generation such that the Proposed Project’s impacts to queues approaching the Bay Bridge from downtown San Francisco would be reduced. However, the Proposed Project would continue to increase queues on the bridge approaches from downtown San Francisco during the PM peak hour, which would be considered a significant and unavoidable impact.

In summary, the Proposed Project would have significant and unavoidable impacts on queuing at the toll plaza and on San Francisco streets approaching the Bay Bridge during the AM and PM
peak hours, respectively. These impacts would occur irrespective of whether or not the Ramps Project was implemented. While Mitigation Measure M-TR-2 would somewhat reduce this impact, it would remain significant and unavoidable.

**Intersection Traffic Impacts**

Under Existing plus Project conditions, Proposed Project impacts were assessed by comparing conditions with the Proposed Project, to existing conditions without the Proposed Project. The Proposed Project was determined to have a significant traffic impact at an intersection if Proposed Project-generated trips would cause an intersection operating at LOS D or better under existing conditions to operate at LOS E or LOS F, or intersections operating at LOS E under existing conditions to deteriorate to LOS F conditions. At intersections that currently operate at LOS E or LOS F under Existing Conditions, and would continue to operate at LOS E or LOS F with the Proposed Project, the increase in Proposed Project vehicle trips was reviewed to determine whether the increase would contribute considerably to critical movements operating at LOS E or LOS F. The “Approach to Analysis” discussion, p. IV.E.47, presents the methodology used to determine Proposed Project impacts and whether the Proposed Project would contribute considerably to intersections currently operating at LOS E or LOS F conditions.

Table IV.E.15 presents the comparison of intersection LOS for Existing and Existing plus Project conditions. The results indicate that of the 17 study intersections, the Proposed Project would result in significant impacts at nine intersections.

- The Proposed Project would result in project-specific impacts at six signalized study intersections that operate at LOS D or better under Existing conditions and would deteriorate to LOS E or LOS F under Existing plus Project conditions, or that operate at LOS E under Existing conditions and would deteriorate to LOS F under Existing plus Project conditions (Impact TR-8 through Impact TR-13).
- The Proposed Project would contribute considerably to critical movements at one signalized study intersection that operates at LOS E or LOS F under Existing conditions and would continue to operate at LOS E or LOS under Existing plus Project conditions, resulting in a project-specific impact (Impact TR-14).
- The Proposed Project would have less than significant contributions at three signalized study intersections that operate at LOS E or LOS F under Existing conditions and that would continue to operate at LOS E or LOS F under Existing plus Project conditions (Impact TR-15).
- The Proposed Project would have less than significant impacts at five signalized intersections that would operate at LOS D or better under Existing plus Project conditions (Impact TR-16).
- The Proposed Project would contribute considerably to two uncontrolled study intersections that operate poorly under Existing conditions, resulting in a project-specific impact (Impact TR-17 and Impact TR-18).
<table>
<thead>
<tr>
<th>Intersection</th>
<th>Peak hour</th>
<th>Existing</th>
<th>Existing plus Project</th>
<th>2030 Cumulative No Project</th>
<th>2030 Cumulative plus Project</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Delay¹</td>
<td>LOS²</td>
<td>v/c</td>
<td>Delay¹</td>
</tr>
<tr>
<td>1. Fremont/Howard</td>
<td>AM</td>
<td>17.8</td>
<td>B</td>
<td>0.78</td>
<td>19.2</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>44.1</td>
<td>D</td>
<td>0.96</td>
<td>46.3</td>
</tr>
<tr>
<td></td>
<td>Sat</td>
<td>13.2</td>
<td>B</td>
<td>0.51</td>
<td>14.1</td>
</tr>
<tr>
<td>2. Fremont/Folsom</td>
<td>AM</td>
<td>28.9</td>
<td>C</td>
<td>0.68</td>
<td>30.4</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>23.9</td>
<td>C</td>
<td>0.41</td>
<td>24.5</td>
</tr>
<tr>
<td></td>
<td>Sat</td>
<td>20.4</td>
<td>C</td>
<td>0.17</td>
<td>20.8</td>
</tr>
<tr>
<td>3. Fremont/I-80 WB Off-</td>
<td>AM</td>
<td>10.9</td>
<td>B</td>
<td>0.36</td>
<td>11.0</td>
</tr>
<tr>
<td>Ramp/Harrison</td>
<td>PM</td>
<td>25.1</td>
<td>C</td>
<td>0.80</td>
<td>29.5</td>
</tr>
<tr>
<td></td>
<td>Sat</td>
<td>10.4</td>
<td>B</td>
<td>0.20</td>
<td>10.7</td>
</tr>
<tr>
<td>4. First/Market</td>
<td>AM</td>
<td>33.4</td>
<td>C</td>
<td>0.70</td>
<td>43.8</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>72.8</td>
<td>E</td>
<td>0.81</td>
<td>&gt;80</td>
</tr>
<tr>
<td></td>
<td>Sat</td>
<td>18.5</td>
<td>B</td>
<td>0.58</td>
<td>28.0</td>
</tr>
<tr>
<td>5. First/Mission</td>
<td>AM</td>
<td>14.8</td>
<td>B</td>
<td>0.77</td>
<td>15.2</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>67.8</td>
<td>E</td>
<td>0.88</td>
<td>&gt;80</td>
</tr>
<tr>
<td></td>
<td>Sat</td>
<td>16.3</td>
<td>B</td>
<td>0.55</td>
<td>21.1</td>
</tr>
<tr>
<td>6. First/Howard</td>
<td>AM</td>
<td>14.6</td>
<td>B</td>
<td>0.79</td>
<td>15.4</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>73.7</td>
<td>E</td>
<td>1.12</td>
<td>74.5</td>
</tr>
<tr>
<td></td>
<td>Sat</td>
<td>22.2</td>
<td>C</td>
<td>0.42</td>
<td>19.3</td>
</tr>
<tr>
<td>7. First/Folsom</td>
<td>AM</td>
<td>12.1</td>
<td>B</td>
<td>0.52</td>
<td>12.0</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>70.6</td>
<td>E</td>
<td>1.14</td>
<td>&gt;80</td>
</tr>
<tr>
<td></td>
<td>Sat</td>
<td>17.3</td>
<td>B</td>
<td>0.33</td>
<td>17.6</td>
</tr>
<tr>
<td>8. First/Harrison/I-80</td>
<td>AM</td>
<td>29.0</td>
<td>C</td>
<td>0.63</td>
<td>28.4</td>
</tr>
<tr>
<td>EB On-Ramp</td>
<td>PM</td>
<td>&gt;80</td>
<td>E</td>
<td>1.29</td>
<td>&gt;80</td>
</tr>
<tr>
<td></td>
<td>Sat</td>
<td>10.7</td>
<td>B</td>
<td>0.55</td>
<td>13.3</td>
</tr>
<tr>
<td>9. Essex/Harrison /I-80</td>
<td>AM</td>
<td>7.4</td>
<td>A</td>
<td>0.37</td>
<td>7.5</td>
</tr>
<tr>
<td>EB On-Ramp¹</td>
<td>PM</td>
<td>&gt;80</td>
<td>F</td>
<td>1.22</td>
<td>&gt;80</td>
</tr>
<tr>
<td></td>
<td>Sat</td>
<td>15.1</td>
<td>B</td>
<td>0.36</td>
<td>15.6</td>
</tr>
<tr>
<td>10. Second/Folsom</td>
<td>AM</td>
<td>13.4</td>
<td>B</td>
<td>0.50</td>
<td>13.5</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>59.4</td>
<td>E</td>
<td>0.93</td>
<td>68.0</td>
</tr>
<tr>
<td></td>
<td>Sat</td>
<td>14.8</td>
<td>B</td>
<td>0.34</td>
<td>14.9</td>
</tr>
<tr>
<td>11. Second/Bryant</td>
<td>AM</td>
<td>11.1</td>
<td>B</td>
<td>0.37</td>
<td>11.1</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>32.4</td>
<td>C</td>
<td>0.90</td>
<td>32.8</td>
</tr>
<tr>
<td></td>
<td>Sat</td>
<td>11.5</td>
<td>B</td>
<td>0.38</td>
<td>11.6</td>
</tr>
</tbody>
</table>
### Table IV.E.15 (continued)

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Peak hour</th>
<th>Existing</th>
<th>Existing plus Project</th>
<th>2030 Cumulative No Project</th>
<th>2030 Cumulative plus Project</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Delay1</td>
<td>LOS2</td>
<td>Delay1</td>
<td>Delay1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>v/c</td>
<td></td>
<td>v/c</td>
<td>v/c</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AM</td>
<td>E 0.81</td>
<td>68.5 E 0.81</td>
<td>&gt;80 F 0.88</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PM</td>
<td>38.5 D 0.85</td>
<td>48.6 D 0.85</td>
<td>&gt;80 F 1.22</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sat</td>
<td>12.0 B 0.39</td>
<td>12.2 B 0.40</td>
<td>14.9 B 0.51</td>
</tr>
<tr>
<td>12. The Embarcadero / Harrison</td>
<td>AM</td>
<td>68.6</td>
<td>E</td>
<td>68.5</td>
<td>&gt;80 F</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>38.5</td>
<td>D</td>
<td>48.6</td>
<td>&gt;80 F</td>
</tr>
<tr>
<td></td>
<td>Sat</td>
<td>12.0</td>
<td>B</td>
<td>12.2</td>
<td>14.9</td>
</tr>
<tr>
<td>13. Bryant /Fifth /I-80 EB On-Ramp</td>
<td>AM</td>
<td>22.0</td>
<td>C 0.56</td>
<td>23.5 C 0.58</td>
<td>&gt;80 F 1.27</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>&gt;80 F</td>
<td>1.65</td>
<td>&gt;80 F 1.74</td>
<td>&gt;80 F 2.49</td>
</tr>
<tr>
<td></td>
<td>Sat</td>
<td>53.2</td>
<td>D 0.70</td>
<td>61.3 E 0.73</td>
<td>53.4 D 0.93</td>
</tr>
<tr>
<td></td>
<td>AM</td>
<td>25.1</td>
<td>C 0.51</td>
<td>26.7 C 0.54</td>
<td>31.6 C 0.67</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>51.0</td>
<td>D 0.89</td>
<td>63.5 E 0.93</td>
<td>&gt;80 F 1.01</td>
</tr>
<tr>
<td></td>
<td>Sat</td>
<td>25.9</td>
<td>C 0.56</td>
<td>25.2 C 0.62</td>
<td>29.4 C 0.79</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AM</td>
<td>18.1 B 0.85</td>
<td>&gt;80 F 1.11</td>
<td>34.7 C 0.71</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PM</td>
<td>40.5 D 1.03</td>
<td>&gt;80 F 1.11</td>
<td>33.1 C 0.84</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sat</td>
<td>50.6 D 1.09</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**

1. Whole intersection weighted average stopped delay expressed in seconds per vehicle calculated using methods described in the 2000 HCM. In rare cases, if the Proposed Project adds traffic to movements with lower average delay than the average delay for the entire intersection, the Proposed Project could result in lower average delay per vehicle than the “No Project” condition.

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

3. Intersections 9 and 14 are uncontrolled intersections without stop signs or traffic signals; therefore, a level-of-service analysis is not applicable and these intersections are not included in this table.

4. Since the Proposed Project would substantially change travel patterns onto and off of the Island, this intersection at Avenue of the Palms/First Street on Treasure Island was not analyzed under Existing Conditions.

**Source:** Fehr & Peers, 2010
IV. Environmental Setting and Impacts
E. Transportation

Impact TR-8: Implementation of the Proposed Project would result in a significant project impact at the signalized intersection of First/Market. *(Significant and Unavoidable with Mitigation)*

During the PM peak hour, vehicular traffic generated by the Proposed Project would cause the intersection of First/Market to deteriorate from LOS E to LOS F, resulting in a significant project impact. The degradation in LOS at this intersection would primarily be due to increases to the southbound through traffic, which combined with existing evening commute traffic destined for the Bay Bridge, would cause the intersection to deteriorate to unacceptable conditions.

Traffic signals at this intersection are timed to prioritize transit movements on Market Street. As a result, modifications to signal timing to provide more capacity for southbound traffic would likely impact transit operations on Market Street, which would be inconsistent with the City’s Transit First policy. Further, providing additional traffic lanes at this intersection would require substantial reduction in sidewalk widths, which would be inconsistent with the pedestrian environment provided on Market Street.

Implementation of Mitigation Measure M-TR-2 (Expanded Transit Service) would improve operations at this intersection, but it would continue to operate at LOS F conditions during the PM peak hour. The Proposed Project’s traffic impact at the study intersection of First/Market would therefore, be significant and unavoidable. The Proposed Project’s traffic impact at this intersection would also be significant and unavoidable because funding for implementation of Mitigation Measure M-TR-2 is uncertain.

Impact TR-9: Implementation of the Proposed Project would result in a significant project impact at the signalized intersection of First/Mission. *(Significant and Unavoidable with Mitigation)*

During the PM peak hour, vehicular traffic generated by the Proposed Project would cause the intersection of First/Mission to deteriorate from LOS E to LOS F conditions, resulting in a significant project impact. The degradation in LOS at this intersection would primarily be due to increases to the southbound through traffic, which, combined with existing evening commute traffic destined for the Bay Bridge, would deteriorate conditions to unacceptable levels.

Traffic signals at this intersection are timed to prioritize transit movements on Mission Street. As a result, modifications to signal timing to provide more capacity for southbound traffic would likely impact transit operations on Mission Street, which would be inconsistent with the City’s Transit First policy. Providing additional traffic lanes at this intersection would require substantial reduction in sidewalk widths, which would be inconsistent with the pedestrian environment encouraged by the City of San Francisco and proposed as part of the Transit Center District Plan currently under study.
Implementation of Mitigation Measure M-TR-2 (Expanded Transit Service) would improve operations at this intersection, but it would continue to operate at LOS F conditions during the PM peak hour. The Proposed Project’s traffic impacts at the study intersection of First/Mission would therefore, remain significant and unavoidable. The Proposed Project’s traffic impact at this intersection would also be significant and unavoidable because funding for implementation of Mitigation Measure M-TR-2 is uncertain.

Impact TR-10: Implementation of the Proposed Project would result in a significant project impact at the signalized intersection of First/Folsom. *(Significant and Unavoidable with Mitigation)*

During the PM peak hour, vehicular traffic generated by the Proposed Project would cause the intersection of First/Folsom to deteriorate from LOS E to LOS F conditions, resulting in a significant project impact. The degradation in LOS at this intersection would primarily be due to Proposed Project-related traffic increases along First Street destined to the Bay Bridge on-ramp at First/Harrison. Travel lane capacity at this intersection has been maximized, and providing additional travel lanes would require substantial reduction in sidewalk widths, which would be inconsistent with the transit and pedestrian environment encouraged by the City of San Francisco and proposed as part of the Transit Center District Plan currently under study.

Implementation of Mitigation Measure M-TR-2 (Expanded Transit Service) would improve operations at this intersection, but it would continue to operate at LOS F conditions during the PM peak hour. The Proposed Project’s traffic impacts at the study intersection of First/Folsom would therefore, remain significant and unavoidable. The Proposed Project’s traffic impact at this intersection would also be significant and unavoidable because funding for implementation of Mitigation Measure M-TR-2 is uncertain.

Impact TR-11: Implementation of the Proposed Project would result in a significant project impact at the signalized intersection of First/Harrison/I-80 Eastbound On-Ramp. *(Significant and Unavoidable with Mitigation)*

During the PM peak hour, vehicular traffic generated by the Proposed Project would cause the intersection of First/Harrison/I-80 Eastbound On-Ramp to deteriorate from LOS E to LOS F conditions, resulting in a significant project impact. The degradation in LOS at this intersection would primarily be due to Proposed Project-related traffic increases along First Street destined to the Bay Bridge on-ramp. Travel lane capacity at this intersection has been maximized, and providing additional travel lanes at these intersections would require substantial reduction in sidewalk widths, which would be inconsistent with the transit and pedestrian environment encouraged by the City of San Francisco.

Implementation of Mitigation Measure M-TR-2 (Expanded Transit Service) would improve operations at this intersection, but it would continue to operate at LOS F conditions during the
IV. Environmental Setting and Impacts
   E. Transportation

PM peak hour. The Proposed Project’s traffic impact at the study intersection of First/Harrison/I-80 Eastbound On-Ramp would therefore, remain significant and unavoidable. The Proposed Project’s traffic impact at this intersection would also be significant and unavoidable because funding for implementation of Mitigation Measure M-TR-2 is uncertain.

**Impact TR-12: Implementation of the Proposed Project would result in a significant project impact at the signalized intersection of Bryant/Fifth/I-80 Eastbound On-Ramp. (Significant and Unavoidable with Mitigation)**

During the Saturday peak hour, vehicular traffic generated by the Proposed Project would cause the intersection of Bryant/Fifth/I-80 Eastbound On-Ramp to deteriorate from LOS D to LOS E conditions, resulting in a significant project impact. In addition, with implementation of the Proposed Project, the intersection would continue to operate at LOS F conditions during the PM peak hour. The Proposed Project contribution to traffic volumes at the critical movements was examined and it was determined that the Proposed Project vehicle trips would contribute considerably to the critical movements, thereby resulting in a significant project impact.

The degradation in LOS at this intersection is primarily due to increases to the southbound through traffic and to northbound traffic on Fifth Street turning onto the I-80 Eastbound On-Ramp. Providing additional travel lanes at this intersection would require substantial reduction in sidewalk widths, which would be inconsistent with the pedestrian environment encouraged by the City of San Francisco. Implementation of Mitigation Measure M-TR-2 (Expanded Transit Service) would improve operations at this intersection, but the intersection would continue to operate at LOS E during the Saturday peak hour and at LOS F during the PM peak hour, and the Proposed Project would continue to substantially contribute to these poor operating conditions during the PM peak hour. Therefore, no feasible mitigation measures have been identified to reduce Proposed Project’s impacts to less than significant levels, and the traffic impact at this intersection would remain significant and unavoidable. The Proposed Project’s traffic impact at this intersection would also be significant and unavoidable because funding for implementation of Mitigation Measure M-TR-2 is uncertain.

**Impact TR-13: Implementation of the Proposed Project would result in a significant project impact at the signalized intersection of Fifth/Harrison/I-80 Westbound Off-Ramp. (Significant and Unavoidable with Mitigation)**

During the PM peak hour, vehicular traffic generated by the Proposed Project would cause the intersection of Fifth/Harrison/I-80 Westbound Off-Ramp to deteriorate from LOS D to LOS E, resulting in a significant project impact. The degradation in LOS at this intersection would primarily be due to Proposed Project-related traffic increases along Fifth Street to and from the I-80 ramps at Fifth Street. Travel lane capacity at this intersection has been maximized, and providing additional travel lanes would require substantial reduction in sidewalk widths, which
would be inconsistent with the transit and pedestrian environment encouraged by the City of San Francisco.

Implementation of Mitigation Measure M-TR-2 (Expanded Transit Service) would improve operations at this intersection, but it would continue to operate at LOS E conditions during the PM peak hour. The Proposed Project’s traffic impact at the study intersection of Fifth/Harrison/I-80 Westbound Off-Ramp would therefore remain significant and unavoidable. The Proposed Project’s traffic impact at this intersection would also be significant and unavoidable because funding for implementation of Mitigation Measure M-TR-2 is uncertain.

**Impact TR-14: Implementation of the Proposed Project would contribute substantially to existing LOS E conditions at the signalized intersection of Second/Folsom, resulting in a significant project impact. (Significant and Unavoidable with Mitigation)**

With implementation of the Proposed Project, the intersection of Second/Folsom would continue to operate at LOS E conditions during the PM peak hour. The Proposed Project contribution to traffic volumes at the critical movements was examined and it was determined that the Proposed Project vehicle trips would contribute considerably at the critical movements that operate poorly. Specifically, the Proposed Project would contribute substantially to the critical southbound left-turn movement, and therefore, the Proposed Project’s contribution to poor operating conditions at this intersection would be considered significant.

Providing additional travel lanes at this intersection would require substantial reduction in sidewalk widths, which would be inconsistent with the pedestrian environment, encouraged by the City of San Francisco and proposed as part of the Transit Center District Plan currently under study. Implementation of the Mitigation Measure M-TR-2 (Expanded Transit Service) would improve operations at this intersection, but the intersection would continue to operate at LOS E during the PM peak hour, resulting in a significant and unavoidable impact. The Proposed Project’s traffic impact at this intersection would also be significant and unavoidable because funding for implementation of Mitigation Measure M-TR-2 is uncertain.

**Impact TR-15: Implementation of the Proposed Project would have less than significant impacts at three signalized study intersections that operate at LOS E or LOS F under Existing Conditions. (Less than Significant)**

With implementation of the Proposed Project, the intersections of First/Howard, Essex/Harrison/I-80 Eastbound On-ramp, and The Embarcadero/Harrison would continue to operate at LOS E or LOS F conditions. The Proposed Project contribution to traffic volumes at critical movements at these intersections was examined, and it was determined that Proposed Project vehicle trips would not add considerable traffic to these intersections, and therefore,
impacts to these intersections would be less than significant. No mitigation measures would be required.

**Impact TR-16:** Implementation of the Proposed Project would have less than significant impacts at five signalized study intersections that would operate at LOS D or better under Existing plus Project Conditions. *(Less than Significant)*

With implementation of the Proposed Project, the intersections of Fremont/Howard, Fremont/Folsom, Fremont/I-80 Westbound Off-Ramp/Harrison, Second/Bryant, Avenue of the Palms/First Street would continue to operate at LOS D or better during the AM, PM and Saturday peak hours. Therefore, impacts to these intersections would be less than significant. No mitigation measures would be required.

**Impact TR-17:** Implementation of the Proposed Project would result in a significant project impact at the uncontrolled study intersection of Folsom/Essex. *(Significant and Unavoidable with Mitigation)*

The study intersection of Folsom/Essex is not currently controlled by either traffic signals or STOP signs, and both approaches to the intersection are uncontrolled. During the weekday PM peak hour, the intersection is affected by PM peak period traffic destined to the Bay Bridge eastbound on-ramps at Harrison Street and at Bryant Street. During the PM peak period, queues form on the approaches to the on-ramps that spill back into the intersection, resulting in queued operations within the travel lanes serving the on-ramps. Implementation of the Proposed Project would add vehicles to these existing queues, and contributions to the queued operations would be considered a significant impact.

Implementation of Mitigation Measure M-TR-2 (Expanded Transit Service) would reduce the number of Proposed Project vehicles that would travel through this intersection; however, it would continue to operate at queued conditions and the Proposed Project would continue to substantially contribute to these queues. The Proposed Project’s traffic impacts at the uncontrolled intersection of Folsom/Essex would therefore, be significant and unavoidable. The Proposed Project’s traffic impact at this intersection would also be significant and unavoidable because funding for implementation of Mitigation Measure M-TR-2 is uncertain.

**Impact TR-18:** Implementation of the Proposed Project would result in a significant project impact at the uncontrolled study intersection of Bryant/Sterling. *(Significant and Unavoidable with Mitigation)*

The study intersection of Bryant/Sterling is not currently controlled by either traffic signals or STOP signs, and both approaches to this intersection are uncontrolled. During the weekday PM peak hour, both intersections are affected by PM peak period traffic destined to the Bay Bridge eastbound on-ramps at Harrison Street and at Bryant Street. During the PM peak period, queues form on the approaches to the on-ramps that spill back to the intersection, resulting in queued
operations within the travel lanes serving the on-ramps. Implementation of the Proposed Project would add vehicles to these existing queues, and contributions to the queued operations would be considered a significant impact.

Implementation of Mitigation Measure M-TR-2 (Expanded Transit Service) would reduce the number of Proposed Project vehicles that would travel through this intersection; however, it would continue to operate at queued conditions and the Proposed Project would continue to substantially contribute to these queues. The Proposed Project’s traffic impacts at the intersection of Bryant/Sterling would therefore, be significant and unavoidable. The Proposed Project’s traffic impact at this intersection would also be significant and unavoidable because funding for implementation of Mitigation Measure M-TR-2 is uncertain.

Transit Impacts

Capacity Utilization Impacts

The Proposed Project would include improvements to transit service between the Islands and San Francisco, and between the Islands and Oakland, which would increase the transit capacity serving the Islands. Improvements would include:

- New ferry service from a new Transit Hub located on the western shore of Treasure Island. Ferries would operate with 50-minute headways to and from downtown San Francisco between 5 AM and 9 PM (corresponding to a single ferry operating between Treasure Island and one of the existing docks in San Francisco);
- Muni bus line 108-Treasure Island would operate at its current 15-minute peak headway, but would no longer circulate around most of Treasure Island. Instead, it would circulate only around the Transit Hub and Island Core neighborhood. The 108-Treasure Island would continue to operate 24-hours per day, including overnight owl service;
- New bus transit service operating between the Islands and downtown Oakland (operated by AC Transit) at approximately 10-minute headways during peak hours and less frequent service during off-peak hours; generally, bus service to Oakland would be provided between approximately 5 AM and 10 PM; and,
- A fleet of alternative fuel shuttle-buses that circulate throughout the Islands, with timed transfers at the Transit Hub offering fare-free rides to residents and visitors of the Islands.

Combined, the improvements would provide an overall transit capacity of 1,415 passengers per hour per direction (eastbound/westbound), including 839 passengers per hour by ferry and 576 passengers per hour by bus (including 324 passengers on AC Transit and 252 passengers on Muni). Table IV.E.16 shows the capacity by transit provider and by direction. Implementation of the Proposed Project would result in a total of 1,460 transit trips during the AM peak hour, 1,998 transit trips during the PM peak hour, and 1,290 transit trips during the Saturday peak hour.
## Table IV.E.16: Existing and Existing plus Project Transit Ridership and Capacity Utilization

<table>
<thead>
<tr>
<th>Route</th>
<th>Existing</th>
<th>Existing plus Project</th>
<th>% Utilization 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Capacity</td>
<td>Rider-ship</td>
<td>% Utilization</td>
</tr>
<tr>
<td><strong>AM Peak Hour</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AC Transit EB ²</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>AC Transit WB ²</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Muni EB Bus Service from SF ³</td>
<td>252</td>
<td>51</td>
<td>20%</td>
</tr>
<tr>
<td>Muni WB Bus Service to SF ³</td>
<td>252</td>
<td>145</td>
<td>58%</td>
</tr>
<tr>
<td>Ferry EB ⁴</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Ferry WB ⁴</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>PM Peak Hour</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AC Transit EB</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>AC Transit WB</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Muni EB Bus Service from SF</td>
<td>252</td>
<td>121</td>
<td>48%</td>
</tr>
<tr>
<td>Muni WB Bus Service to SF</td>
<td>252</td>
<td>153</td>
<td>61%</td>
</tr>
<tr>
<td>Ferry EB</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Ferry WB</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Saturday Peak Hour</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AC Transit EB</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>AC Transit WB</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Muni EB Bus Service from SF</td>
<td>189</td>
<td>86</td>
<td>46%</td>
</tr>
<tr>
<td>Muni WB Bus Service to SF</td>
<td>189</td>
<td>133</td>
<td>70%</td>
</tr>
<tr>
<td>Ferry EB</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Ferry WB</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Notes:**
- N/A = Not Applicable
- Bold indicates capacity utilization exceeds 85 percent capacity utilization standard for the Muni line 108-Treasure Island, and 100 percent capacity utilization standard for new ferry and AC Transit service. Exceedance of the capacity utilization standard is considered a significant impact.
- New AC Transit bus service between the Islands and downtown Oakland at 10-minute peak headways.
- Muni line 108-Treasure Island service at 15-minute headways during peak periods.
- New ferry service between Treasure Island and San Francisco at 50-minute peak headways.

**Source:** Fehr & Peers, 2010.
Impact TR-19: Implementation of the Proposed Project would exceed the available transit capacity of Muni’s 108-Treasure Island bus line serving the Islands. *(Significant and Unavoidable with Mitigation)*

Table IV.E.16 summarizes the total ridership and capacity utilization for each transit provider serving the Islands (i.e., Muni line 108-Treasure Island, new ferry line, and new AC Transit line) for the weekday AM and PM peak hours, and for the Saturday peak hour. The total transit travel demand on Muni buses would not be accommodated during the three peak hours of analysis, and the 108-Treasure Island bus line would exceed Muni’s capacity utilization standard of 85 percent. Since Muni bus service between the Islands and San Francisco would exceed Muni’s standard of 85 percent capacity utilization during the AM, PM and Saturday peak hours, the Proposed Project’s impact to transit capacity would be considered a significant impact. If the unserved demand for the 108-Treasure Island service shifted to the ferry, the combined bus and ferry demand would be 72 percent of the combined bus and ferry capacity between the Islands and San Francisco during the AM peak hour, and 91 percent of total capacity during the PM peak hour from San Francisco to the Islands. During the Saturday peak hour, the combined bus and ferry demand would be 53 percent of the combined bus and ferry capacity to the Islands from San Francisco, and would be 56 percent of capacity from the Islands to San Francisco.

With implementation of Mitigation Measure M-TR-2, the Proposed Project’s transit demand would be accommodated within Muni because there would be more frequent Muni service and corresponding increases in capacity. Therefore, implementation of Mitigation Measure M-TR-2 described on pp. IV.E.74 would create sufficient capacity on Muni to accommodate all the riders generated by the Proposed Project, as shown in Table IV.E.17. However, because full funding for this Expanded Transit Service has not yet been identified, its implementation remains uncertain. Accordingly, Proposed Project impacts to transit capacity would remain significant and unavoidable.

Impact TR-20: Implementation of the Proposed Project would not exceed the transit capacity of the proposed new AC Transit bus line serving the Islands. *(Less than Significant)*

As indicated on Table IV.E.16, the capacity utilization for the proposed AC Transit service between downtown Oakland and the Islands would generally be between 20 and 40 percent during the peak hours. Proposed Project transit capacity utilization impacts on the proposed AC Transit bus service would therefore be less than significant.

Impact TR-21: Implementation of the Proposed Project would not exceed the transit capacity of the proposed new ferry line serving Treasure Island. *(Less than Significant)*

As indicated on Table IV.E.16, the capacity utilization for the proposed ferry service between downtown San Francisco and Treasure Island would generally be between 30 and 60 percent
IV. Environmental Setting and Impacts
E. Transportation

during the weekday AM and PM peak hours, and between 25 and 30 percent during the Saturday peak hour. Proposed Project transit capacity utilization impacts on the proposed ferry service would therefore be less than significant.

Table IV.E.17: Transit Ridership and Capacity Utilization – Existing plus Project and Existing plus Project with Mitigation Measure M-TR-2

<table>
<thead>
<tr>
<th>Route</th>
<th>Existing plus Project</th>
<th>Existing plus Project with Mitigation Measure M-TR-2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Capacity</td>
<td>Rider-ship</td>
</tr>
<tr>
<td>AM Peak Hour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AC Transit EB</td>
<td>324</td>
<td>107</td>
</tr>
<tr>
<td>AC Transit WB</td>
<td>324</td>
<td>67</td>
</tr>
<tr>
<td>Muni EB Bus Service from SF</td>
<td>252</td>
<td>261</td>
</tr>
<tr>
<td>Muni WB Bus Service to SF</td>
<td>252</td>
<td>384</td>
</tr>
<tr>
<td>Ferry EB</td>
<td>839</td>
<td>238</td>
</tr>
<tr>
<td>Ferry WB</td>
<td>839</td>
<td>403</td>
</tr>
<tr>
<td>PM Peak Hour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AC Transit EB</td>
<td>324</td>
<td>96</td>
</tr>
<tr>
<td>AC Transit WB</td>
<td>324</td>
<td>134</td>
</tr>
<tr>
<td>Muni EB Bus Service from SF1</td>
<td>252</td>
<td>515</td>
</tr>
<tr>
<td>Muni WB Bus Service to SF1</td>
<td>252</td>
<td>431</td>
</tr>
<tr>
<td>Ferry EB</td>
<td>839</td>
<td>479</td>
</tr>
<tr>
<td>Ferry WB</td>
<td>839</td>
<td>343</td>
</tr>
<tr>
<td>Saturday Peak Hour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AC Transit EB</td>
<td>324</td>
<td>79</td>
</tr>
<tr>
<td>AC Transit WB</td>
<td>324</td>
<td>90</td>
</tr>
<tr>
<td>Muni EB Bus Service from SF1</td>
<td>189</td>
<td>328</td>
</tr>
<tr>
<td>Muni WB Bus Service to SF1</td>
<td>189</td>
<td>320</td>
</tr>
<tr>
<td>Ferry EB</td>
<td>839</td>
<td>221</td>
</tr>
<tr>
<td>Ferry WB</td>
<td>839</td>
<td>252</td>
</tr>
</tbody>
</table>

Notes:
1 Bold indicates capacity utilization exceeds 85 percent capacity utilization standard for the Muni line 108-Treasure Island, and 100 percent capacity utilization standard for new ferry and AC Transit service.
2 New AC Transit bus service between the Islands and downtown Oakland at 10-minute peak headways.
3 15-minute headways during peak periods for Proposed Project, and 7-minute headways in AM peak and 5-minutes in PM peak under Expanded Transit Service mitigation measure.
4 New ferry service between Treasure Island and San Francisco at 50-minute peak headways for the Proposed Project, and 15-minute headways in AM and PM peak for Expanded Transit Service mitigation measure.

Impact TR-22: Implementation of the Proposed Project would add transit trips to the San Francisco downtown screenlines; however, this would not increase demand in excess of available capacity. (Less than Significant)

The Proposed Project would not adversely affect the capacity at the four downtown screenlines; however, a portion of the Proposed Project trips would cross the screenlines and contribute to total Muni ridership. Table IV.E.18 summarizes the capacity utilization for the downtown screenlines for the weekday AM and PM peak hours for the Existing plus Project and Cumulative plus Project conditions. Although the Proposed Project is expected to generate a substantial number of transit riders, Proposed Project-generated transit riders transferring to or from downtown lines would more likely be traveling in off-peak directions. For example, during the AM peak hour, the peak direction of transit riders generated by the Proposed Project would be from the Islands into downtown San Francisco, which would not adversely affect the screenlines. Those riders continuing on transit to other destinations from downtown San Francisco would travel in the “outbound” direction, away from downtown San Francisco. This would be in the off-peak direction for the downtown screenlines, when peak transit flows would be in the “inbound” direction during the AM peak hour. The reverse phenomenon occurs during the PM peak hour.

As shown in Table IV.E.18, the Proposed Project’s contribution to ridership in the peak direction to the downtown screenlines would be relatively small. With the addition of the Proposed Project trips, all downtown screenlines would continue to operate within Muni’s 85 percent utilization standard. Therefore, the Proposed Project impacts on transit capacity at the downtown screenlines would be less than significant, and no mitigation would be required.

Impact TR-23: Implementation of the Proposed Project would add transit trips to AC Transit, BART, Golden Gate Transit, SamTrans, Caltrain and other ferry lines; however, this would not increase demand in excess of available capacity. (Less than Significant)

A portion of the new transit trips generated by the Proposed Project would transfer from the 108-Treasure Island and new ferry line to other regional transit operators including AC Transit, BART, Golden Gate Transit, SamTrans, Caltrain, and other ferry lines. Similar to the impact assessment presented above in Impact TR-22 for the Muni downtown screenlines, Proposed Project-generated transit riders transferring to other regional operators would more likely be traveling in the off-peak direction, for which there is generally available capacity. Some transit riders traveling to and from the Islands may travel on regional transit lines in the peak direction, but the number of riders would be negligible and would not substantially affect screenlines for regional transit providers.
Table IV.E.18: Muni Downtown Screenlines Existing and 2030 Cumulative Conditions

<table>
<thead>
<tr>
<th></th>
<th>Existing</th>
<th>Existing plus Project</th>
<th>2030 Cumulative No Project</th>
<th>2030 Cumulative Plus Proposed Project</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Riders</td>
<td>Capacity</td>
<td>% Utilization</td>
<td>Project Trips</td>
</tr>
<tr>
<td>AM Peak Hour</td>
<td></td>
<td></td>
<td></td>
<td>Total</td>
</tr>
<tr>
<td>Northeast</td>
<td>1,882</td>
<td>3,781</td>
<td>50%</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7,434</td>
<td>11,437</td>
<td>65%</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4,248</td>
<td>6,301</td>
<td>67%</td>
<td>89</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6,627</td>
<td>8,699</td>
<td>76%</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>20,191</td>
<td>30,218</td>
<td>67%</td>
<td>160</td>
</tr>
<tr>
<td></td>
<td>19,909</td>
<td>30,373</td>
<td>66%</td>
<td>234</td>
</tr>
<tr>
<td>PM Peak Hour</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northeast</td>
<td>1,186</td>
<td>3,599</td>
<td>33%</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6,621</td>
<td>10,123</td>
<td>65%</td>
<td>65</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4,668</td>
<td>7,028</td>
<td>66%</td>
<td>130</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7,434</td>
<td>9,623</td>
<td>77%</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>19,909</td>
<td>30,373</td>
<td>66%</td>
<td>234</td>
</tr>
</tbody>
</table>

For example, during the AM peak hour, the majority of Proposed Project-generated transit trips would be traveling off of the Islands. Those traveling to the East Bay would take the new AC Transit bus line to downtown Oakland, and then transfer to BART to continue to destinations served by BART. These BART trips would be in the off-peak direction for BART in the AM peak hour. Similarly, trips destined for points served by BART in San Francisco and the Peninsula would take either the Muni line 108-Treasure Island bus or the new ferry line into downtown San Francisco. From there they would transfer to BART and travel away from downtown San Francisco, which is also the off-peak direction in the AM peak hour. The reverse would occur during the PM peak hour, when transit riders returning to the Islands would travel in the off-peak direction to access the Muni line 108-Treasure Island, the new AC Transit line, or the new ferry service. For example, transit riders returning to the Ferry Building from Peninsula destinations on BART would be traveling in the off-peak direction for BART in the PM peak hour.

Since Proposed Project-generated transit riders transferring to other lines would be dispersed over multiple operators and lines, and since these trips would primarily occur in the off-peak direction of transit demand, the additional trips would not substantially affect the peak direction capacity utilization of regional providers. Therefore, impacts to regional transit operator capacity, including AC Transit, BART, Golden Gate Transit, SamTrans, Caltrain and other ferry lines would be less than significant, and no mitigation measures would be required.

Operational Impacts on Treasure Island/Yerba Buena Island

Impact TR-24 Implementation of the Proposed Project without the Ramps Project would result in queues extending from the westbound Bay Bridge at Yerba Buena Island on-ramps which would impact Muni line 108-Treasure Island operations. (Less than Significant with Mitigation)

Vehicle queues on the Bay Bridge on-ramp approaches from Yerba Buena Island would extend along Treasure Island Road potentially blocking bus circulation from Treasure Island toward the Bay Bridge, causing delays to bus service. Under conditions without the Ramps Project, the two existing westbound on-ramps would both remain open to mixed-flow traffic (i.e., autos, trucks and buses). It is likely that Muni would use the westernmost on-ramp on the west side of Yerba Buena Island. As illustrated on Figure IV.E.19, p. IV.E.79, and Table IV.E.13, p. IV.E.78, queues from this ramp would extend as far as approximately ½-mile from the on-ramp during weekday peak hours, resulting in delays of approximately two minutes per vehicle. During the Saturday peak hour, queues would extend just over 2/3 mile, with delays of approximately three minutes per vehicle. This would be considered a significant impact to Muni operations.

With implementation of Mitigation Measure M-TR-2 (Expanded Transit Service) the Proposed Project’s vehicle traffic generation would be reduced such that queues would be reduced (to
between 0 and 400 feet) at each on-ramp during weekday peak hours, but would remain approximately 1/3 mile during Saturday peak hours. Since full funding for this Expanded Transit Service mitigation measure has not yet been identified, its implementation remains uncertain.

Mitigation Measure M-TR-24: Provide Transit Only Lane between First Street on Treasure Island and the transit and emergency vehicle-only westbound Bay Bridge on-ramp.

Implementation of Mitigation Measure M-TR-24 would only be triggered if the extent of actual vehicle queuing impacts the proposed Muni line 108-Treasure Island on Treasure Island Road and creates delays for Muni buses accessing the westbound transit-only on-ramp. As such, throughout the life of the project, the TITMA, in consultation with SFMTA and using SFMTA’s methodology, shall monitor the length and duration of potential queues on Treasure Island Road and the associated delays to Muni service. If the queues between First Street and the westbound on-ramp on the west side of Yerba Buena Island result in an operational delay to Muni service equal to or greater than the prevailing headway during the AM, PM or Saturday peak periods, SFMTA, in consultation with TITMA, shall implement a southbound transit-only lane between First Street on Treasure Island and the transit and emergency vehicle-only westbound Bay Bridge on-ramp. The implementation of a transit-only lane would be triggered if impacts are observed over the course of six months at least 50 percent of the time during the AM, PM, or Saturday peak periods.

Implementation of Mitigation Measure M-TR-24 to provide a transit and emergency vehicle-only lane between First Street on Treasure Island and the westbound Bay Bridge on-ramp would allow Muni vehicles to bypass vehicle queues that may occur and therefore, the impact to Muni operations would be reduced to a less-than-significant level.

Implementation of this mitigation measure would entail the following:

- Elimination or reduction of the proposed median on Treasure Island Road between First Street and just south of Macalla Road; and
- Elimination of the proposed southbound Class II bicycle lane on Treasure Island Road and a small portion of Hillcrest Road south of the intersection with Macalla Road. The Class I facility on Treasure Island Road connecting Treasure Island and the proposed new lookout point, just south of the Macalla Road intersection, would remain. Bicyclists who use the Class I path to the lookout point and continue on Treasure Island Road toward Hillcrest Road would have to share the lane with traffic, similar to other roadways where bicycle lanes are not provided. Bicyclists would still be able to use Class I bicycle paths and Class II bicycle lanes proposed on Macalla Road to connect between the Islands and the bicycle path on the new east span of the Bay Bridge.

As discussed above, implementation of Mitigation Measure M-TR-24 would reduce the impact to Muni operations to a less-than-significant level.
Impact TR-25: Implementation of the Proposed Project without the Ramps Project would impact AC Transit operations on Hillcrest Road between Treasure Island and the eastbound on-ramp to the Bay Bridge. *(Significant and Unavoidable with Mitigation)*

Although the new AC Transit bus service would not utilize the westbound on-ramps, queues from both westbound ramps would interfere with AC Transit bus travel between Treasure Island and the eastbound on-ramp to the Bay Bridge. This would be considered a significant impact on AC Transit operations.

With implementation of Mitigation Measure M-TR-2 (Expanded Transit Service), the Proposed Project’s vehicle traffic generation would be reduced such that queues would be reduced to much smaller levels (between 0 and 400 feet) at each on-ramp during weekday peak hours, but would remain approximately 1/3 mile during Saturday peak hours. Since full funding for this Expanded Transit Service mitigation measure has not yet been identified, its implementation remains uncertain.

Implementation of Mitigation Measure M-TR-24 to provide a transit and emergency vehicle-only lane between First Street on Treasure Island and the westbound Bay Bridge on-ramp would allow AC Transit vehicles to bypass vehicle queues; however, since this improvement would extend the transit lane only to the westbound on-ramp (because there is not sufficient right-of-way to extend a lane on Hillcrest Road), AC Transit vehicles would continue to experience congestion between the transit only westbound on-ramp and the eastbound on-ramp, and impacts to AC Transit operations would remain significant and unavoidable.

Impact TR-26: Implementation of the Proposed Project with the Ramps Project would result in significant impacts to Muni line 108-Treasure Island operations. *(Less than Significant with Mitigation)*

Under conditions with the Ramps Project, the westbound on-ramp on the west side of Yerba Buena Island would be converted to transit and emergency vehicle access only, and all traffic destined for the westbound Bay Bridge would be routed to the westbound on-ramp on the east side of Yerba Buena Island. In this scenario, queues would extend from the westbound on-ramp on the east side of Yerba Buena Island to more than one mile onto Treasure Island Road, just past Macalla Road. Muni line 108-Treasure Island buses leaving the Transit Hub would need to travel through this queue for approximately ½ mile before reaching the transit and emergency vehicle-only westbound on-ramp. This would be considered a significant impact to Muni operations.

Implementation of Mitigation Measure M-TR-2 (Expanded Transit Service) would reduce the travel time delays, but not to less-than-significant levels. In addition, funding for this service is

---

30 The Ramps Project would implement both reconstruction of the east side ramps and restrict access on the west side westbound on-ramp for transit- and emergency-vehicle-access only.
uncertain. Implementation of Mitigation Measure M-TR-24 to provide a transit and emergency vehicle-only lane between First Street on Treasure Island and the westbound Bay Bridge on-ramp would allow Muni vehicles to bypass vehicle queues that may occur and therefore, the impact to Muni operations would be reduced to a less-than-significant level.

**Impact TR-27:** Implementation of the Proposed Project with the Ramps Project would impact AC Transit operations on Treasure Island Road and Hillcrest Road between Treasure Island and the eastbound on-ramp to the Bay Bridge. *(Significant and Unavoidable with Mitigation)*

While AC Transit vehicles would not be using the westbound Bay Bridge on-ramps, queues from the westbound on-ramp on the east side of Yerba Buena Island would impede AC Transit travel between Treasure Island and the eastbound on-ramp to the Bay Bridge. AC Transit vehicles would travel in this queue nearly for its entire length (from just north of Macalla Road to the eastbound on-ramp to the Bay Bridge), resulting in delays of approximately five minutes per vehicle. This would be considered a significant impact to AC Transit operations.

With implementation of Mitigation Measure M-TR-2 (Expanded Transit Service), the Proposed Project’s vehicle traffic generation would be reduced such that queues would be reduced to smaller levels (from 1.25 miles to between ½ - ¾ miles) at each on-ramp during weekday peak hours. The Proposed Project’s impacts on AC Transit operations would remain significant because AC Transit vehicles would still have to travel through queues on the west side of Yerba Buena Island to reach the eastbound on-ramp. Further, since full funding for this service has not yet been identified, its implementation remains uncertain.

Implementation of Mitigation Measure M-TR-24 would improve operations for AC Transit buses destined to the eastbound on-ramp. However, since this improvement would extend only to the transit and emergency vehicle-only westbound on-ramp on the west side of Yerba Buena Island and since sufficient right-of-way is not available to extend a transit-only lane beyond the transit and emergency vehicle-only westbound on-ramp, AC Transit vehicles would continue to experience congestion between the transit and emergency vehicle-only westbound on-ramp and the eastbound on-ramp. The impact to AC Transit operations would remain significant and unavoidable.

**Impact TR-28:** Implementation of the Proposed Project would not impact operations of the existing or proposed ferry services on San Francisco Bay *(Less than Significant)*

The Proposed Project includes a Ferry Terminal and intermodal Transit Hub located in the Island Center at the southwestern shore of Treasure Island. This facility would serve as the eastern terminus of ferry service between Treasure Island and the City. The impacts of constructing and operating the Ferry Terminal/Transit Hub are analyzed as appropriate in this EIR. *(See, e.g.,*
IV. Environmental Setting and Impacts
E. Transportation

hydrological impacts associated with constructing ferry terminal, analysis of noise and air quality impacts associated with ferry operations).

The ferry service would be provided at approximately 50-minute intervals. WETA has sufficient capacity at the San Francisco Ferry Building to accommodate this ferry service without disrupting other, existing ferry service that uses the Ferry Building. Because existing ferry service would not be disrupted, this impact is considered less than significant.

As detailed in the Project Description (Chapter II), as development proceeds, ferry service may also expand. Ultimately, it is anticipated that ferry service would be provided to and from San Francisco at 15-minute intervals at peak periods, with the ferry operating between 5 AM and 9 PM. This increased service may require expanded facilities at the San Francisco terminal. WETA and the Port of San Francisco are currently analyzing options for expanding these facilities. Prior to approval of expansion of such service, analysis will be performed of the impacts of expanding these facilities. At this time, whether and how these facilities may expand is considered speculative.

Operational Impacts in downtown San Francisco

As described in Impact TR-8 through Impact TR-14 above, in downtown San Francisco the Proposed Project-generated vehicle trips would result in significant project impacts at six study intersections (Impact TR-8 through Impact TR-13) and would contribute considerably to one intersection currently operating at LOS E (Impact TR-14). The increases in vehicle delay due to the project-generated vehicle trips may also affect transit lines that travel through these intersections. Muni, Golden Gate Transit, and SamTrans bus lines travel through five of the seven intersections affected by the Proposed Project. Therefore, an assessment was conducted to determine whether the increase in delay would result in a significant impact to transit operations.31 The assessment at the five impacted intersections below includes a discussion of Muni, Golden Gate Transit, and SamTrans impacts on transit identified in Impact TR-29 through Impact TR-32.

First/Market – During the PM peak hour, vehicular traffic generated by the Proposed Project would cause the intersection of First/Market to deteriorate from LOS D to LOS F, resulting in a significant project impact (see Impact TR-8). A total of 13 Muni bus lines (2-Clement, 3-Jackson, 5-Fulton, 6-Parnassus, 9/9L-San Bruno, 21-Hayes, 30-Stockton, 30X-Marina Express, 31-Balboa, 38/38L/38X-Geary, 71/71L-Haight/Noriega, 76-Marin Headlands, 81X-Caltrain

31 During the PM peak hour, no transit routes travel through the intersection of First/Folsom or First/Harrison/I-80 Eastbound On-Ramp, and therefore, discussion of these intersections is not provided.
Express) and one Muni streetcar line (F-Market & Wharves) travel through this intersection during the weekday PM peak hour.³²

Under Existing plus Project PM peak hour conditions, the eastbound and westbound approaches on Market Street would operate at acceptable levels of service (LOS D or better), so the Proposed Project’s contribution of traffic on Market Street approaches would not significantly impact transit lines on Market Street. However, the southbound movement would operate at LOS F. Only the 30X-Marina Express would be subject to increased delays due to congestion on the Bush Street and Battery Street approaches to the intersection of First/Market. Since the Proposed Project would have a considerable contribution to delay at the southbound approach to First/Market, the Proposed Project would have a significant impact on transit travel times on the 30X-Marina Express.

**First/Mission** – During the PM peak hour, vehicular traffic generated by the Proposed Project would cause the intersection of First/Mission to deteriorate from LOS E to LOS F, resulting in a significant project impact (see Impact TR-9). During the PM peak hour, a total of six Muni bus lines (5-Fulton, 6-Parnassus, 14/14L-Mission, 38/38L-Geary, 71/71L-Haight-Noriega, 76-Marin Headlands), eight Golden Gate Transit lines (10, 54, 70, 72, 73, 76, 80, 101), and three SamTrans bus lines (292, 391, 397) travel through this intersection. However, all approaches to this intersection include dedicated transit-only lanes; therefore, transit lines traveling through this intersection would not be affected by Proposed Project-generated increases in intersection delay, and the Proposed Project’s impacts on transit travel times for all lines traveling through this intersection would be less than significant.

**Bryant/Fifth/I-80 Eastbound On-Ramp** – The Proposed Project would contribute a significant amount of traffic to movements at this intersection that would operate at LOS E or LOS F during the PM peak hour, and would cause this intersection to deteriorate from LOS D to LOS E during the Saturday peak hour, thereby resulting in significant traffic impacts (see Impact TR-12). Three Muni bus lines travel through this intersection (9X/9AX/9BX-Bayshore Express lines, 27-Bryant, and 47-Van Ness).³³ Transit lines at this intersection share lanes with mixed-flow traffic along both Bryant Street and Fifth Street. The 9X/9AX/9BX-Bayshore Express lines and the 27-Bryant travel eastbound on Bryant Street, while the 47-Van Ness travels northbound on Fifth Street.

During the PM peak hour, the northbound right and eastbound through movements, and the southbound approach would operate at unacceptable levels of service, and a majority of the delay would be a result of congestion leading towards the Bay Bridge. The proposed project would add traffic to the northbound and southbound approaches and the eastbound left turn movement. The

---

³² Golden Gate Transit bus routes 2, 4, 8, 24, 26, 27, 38, 44, 54, 56, 58, 72, 74 and 76 travel through the intersection of First/Market only during the AM peak period.

³³ In December 2009, SFMTA implemented service changes that included renumbering route 9-Bayshore Express to route 8-Bayshore Express.
IV. Environmental Setting and Impacts
   E. Transportation

9X/9AX/9BX-Bayshore Express lines operate in the southernmost through lane on Bryant Street and the project would not add new trips to the eastbound through movement; therefore, during the PM peak hour the Proposed Project would only cause a significant impact to transit travel times on the 27-Bryant (which turns left from Bryant Street to Fifth Street) and 47-Van Ness (which runs northbound on Fifth Street) during the PM peak hour.

During the Saturday peak hour, the northbound approach would operate at unacceptable levels of service. The project would add new trips to this approach; therefore, the Proposed Project would have a significant impact on the 47-Van Ness during the Saturday peak hour.

Harrison/Fifth/I-80 Westbound Off-Ramp – During the PM peak hour, vehicular traffic generated by the Proposed Project would cause the intersection of Harrison/Fifth/I-80 Westbound Off-Ramp to deteriorate from LOS D to LOS E, resulting in a significant traffic project impact (see Impact TR-13). Four Muni bus lines travel through this intersection (9X/9AX/9BX-Bayshore Express, 12-Folsom-Pacific, 27-Bryant, 47-Van Ness). Transit lines at this intersection share lanes with mixed-flow traffic along both Harrison Street and Fifth Street. During the PM peak hour, the westbound approach operates acceptably; therefore no impact was identified for the 12-Folsom-Pacific and the 9X/9AX/9BX-Bayshore Express lines that run westbound on Harrison Street. However, Fifth Street northbound and southbound approaches, and the I-80 westbound off-ramp approach would operate at unacceptable levels of service during the PM peak hour. The Proposed Project’s contribution to increases in delay on the northbound and southbound approaches would be substantial; therefore, the Proposed Project’s impacts on transit travel times for the 27-Bryant and 47-Van Ness lines, which travel on Fifth Street, would be considered significant impacts.

Second/Folsom – With implementation of the Proposed Project, the intersection of Second/Folsom would continue to operate at LOS E during the PM peak hour. The Proposed Project traffic volume increases were determined to contribute substantially to the poor operating conditions, thereby resulting in significant traffic project impacts (see Impact TR-14). Three Muni bus lines (10-Townsend, 12-Folsom-Pacific, 76-Marin Headlands) and 19 Golden Gate Transit bus lines (2, 4, 8, 18, 24, 27, 38, 44, 54, 56, 58, 72, 73, 74, 76, 10, 70, 80, 101) travel through this intersection. Transit lines at this intersection share lanes with mixed-flow traffic along both Folsom Street and Second Street. During the PM peak hour, the intersection would operate with substantial amounts of vehicle delay, primarily as a result of Bay Bridge-destined traffic. Folsom Street has four eastbound travel lanes at this intersection, and buses use the northmost lane, which does not lead to an on-ramp to the Bay Bridge and would be less congested than the southern lanes. Therefore, project contributions to congestion on Folsom Street would have a minimal effect to operations on the 12-Folsom-Pacific, 76-Marin Headlands, and Golden Gate Transit buses, which travel on Folsom Street, and would be considered less than significant.
The 10-Townsend would need to maneuver through northbound and southbound mixed-flow traffic on Second Street destined for the Bay Bridge; however, these approaches would continue to operate at acceptable levels of service. Thus, the Proposed Project’s contribution to travel time to the 10-Townsend at this intersection would also be considered less than significant.

**Impact TR-29: The Proposed Project would increase congestion in downtown San Francisco, which would increase travel times and would impact operations of the Muni 27-Bryant bus line. (Significant and Unavoidable)**

As discussed above, the Proposed Project contributions to adverse traffic conditions at the intersections of Bryant/Fifth/I-80 Eastbound On-Ramp and Harrison/Fifth/I-80 Westbound Off-Ramp would affect the travel times of the 27-Bryant therefore, the Proposed Project impacts on the 27-Bryant operations would be a significant impact. At the intersections of Fifth/Bryant/I-80 Eastbound On-Ramp and Fifth/Harrison/I-80 Westbound Off-Ramp no feasible mitigation measures have been identified. Implementation of Mitigation Measure M-TR-2 (Expanded Transit Service) would improve operations at these intersections, but the intersections would continue to operate poorly. Since no feasible mitigation measures have been identified, the Proposed Project’s impacts on transit delay on the 27-Bryant would remain significant and unavoidable.

**Impact TR-30: The Proposed Project would increase congestion in downtown San Francisco, which would increase travel times and would impact operations of the Muni 30X-Marina Express bus line. (Significant and Unavoidable)**

As described above, the 30X-Marina Express bus operations would be affected by Proposed Project-related traffic delays at the intersection of First/Market, which would be considered a significant impact on transit travel times on the 30X-Marina Express. Potential mitigation measures for the intersection of First/Market are limited, as traffic signals at this intersection are timed to prioritize transit movements on Market Street. Modifications to signal timing to provide more capacity to the southbound movement which would operate poorly would likely in turn impact transit operations on Market Street and be inconsistent with the City’s Transit First policy. Providing additional travel lanes at this intersection would require substantial reduction in sidewalk widths, which would be inconsistent with the pedestrian environment on Market Street. Implementation of Mitigation Measure M-TR-2 (Expanded Transit Service) would improve operations at these intersections, but the intersections would continue to operate poorly. Since no feasible mitigation measures have been identified, the Proposed Project’s impacts on transit delay on the 30X-Marina Express would remain significant and unavoidable.

**Impact TR-31: The Proposed Project would increase congestion in downtown San Francisco, which would increase travel times and would impact operations of the Muni 47-Van Ness bus line. (Significant and Unavoidable)**
As described above, the 47-Van Ness bus operations would be affected by Proposed Project-related traffic delays at the intersection of Bryant/Fifth/I-80 Eastbound On-Ramp and Harrison/Fifth/I-80 Westbound Off-Ramp, which would be considered a significant impact on transit travel times on the 47-Van Ness.

At the intersections of Fifth/Bryant/I-80 Eastbound On-Ramp and Fifth/Harrison/I-80 Westbound Off-Ramp no feasible mitigation measures have been identified. Implementation of Mitigation Measure M-TR-2 (Expanded Transit Service) would improve operations at these intersections, but the intersections would continue to operate poorly. Since no feasible mitigation measures have been identified, the Proposed Project’s impacts on transit delay on the 47-Van Ness would remain significant and unavoidable.

Impact TR-32: The Proposed Project would increase congestion in downtown San Francisco during the PM peak hour; however, it would not impact operations of Golden Gate Transit or SamTrans bus lines. (Less than Significant)

As described above, during the PM peak hour the Proposed Project-generated vehicle trips would result in significant impacts at the intersections of First/Mission and Second/Folsom through which Golden Gate Transit and SamTrans buses travel.

During the AM and Saturday peak hours, the Proposed Project would not adversely affect any of the study intersections through which Golden Gate Transit or SamTrans routes travel. During the PM peak hour, Golden Gate Transit buses travel through the intersections of First/Mission and Second/Folsom, while SamTrans buses travel through the intersection of First/Mission. At the intersection of First/Mission, transit operates within dedicated transit-only lanes and therefore, Proposed Project impacts on transit due to increased traffic congestion would be less than significant. At the intersection of Second/Folsom, Golden Gate Transit buses use the northern-most travel lane which is not subject to the queued conditions associated with Bay Bridge-destined traffic and therefore, Proposed Project impacts on Golden Gate Transit due to increased traffic congestion would be less than significant.

In summary, the Proposed Project would exceed the capacity utilization of the Muni line 108-Treasure Island. Implementation of Mitigation Measure M-TR-2 would provide the additional capacity needed to accommodate the transit demand without exceeding the Muni capacity utilization threshold of 85 percent. However, since the funding for implementation of Mitigation Measure M-TR-2 is uncertain, this impact would remain significant and unavoidable. Further, the Proposed Project would result in Muni and AC Transit operational delays associated with the potential queues between Macalla Road and the westbound on-ramp on the east side of Yerba Buena Island. These operational delays would be considered significant whether or not the Ramps Project is implemented. Implementation of Mitigation Measure M-TR-24 would reduce
IV. Environmental Setting and Impacts
E. Transportation

the Muni line 108-Treasure Island transit delay impacts to a less-than-significant level by providing a transit-only lane. Impacts to AC Transit would be reduced with implementation of Mitigation Measure M-TR-24 but not to a less-than-significant level and therefore, would be considered significant and unavoidable. Finally, the Proposed Project would result in significant and unavoidable impacts to Muni lines 27-Bryant, 30X-Marina Express and 47-Van Ness as a result of project-generated vehicle trips contributing to the congestion levels in downtown San Francisco.

Bicycles

Impact TR-33: The Proposed Project would not create potentially hazardous conditions for bicyclists on the Islands and would provide more bicycle accessibility to the site than currently exists. *(Less than Significant)*

The Proposed Project includes bicycle facilities in the form of bicycle paths (Class I facilities) and bicycle lanes (Class II facilities) that would facilitate bicycling within the site. Class I bicycle paths would be placed around the perimeter of Treasure Island and within the open space areas to connect residential areas with open space and retail areas on Treasure Island. Class II bicycle lanes would be provided on Treasure Island Road and Avenue of the Palms, California Avenue, and Avenue C. A one-way (westbound) Class II bicycle lane would also be provided on First Street, parallel to California Avenue. No designated Class III bicycle routes would be provided on the island, although all other streets are proposed to be designed to encourage shared use by bicycles and autos through the use of various traffic calming features designed to lower auto travel speeds. Figure IV.E.11 presents the proposed bicycle circulation plan for the Islands.

- On Yerba Buena Island, a one-way Class II bicycle lane would be provided on Treasure Island Road and Hillcrest Road, which would continue as a loop around South Gate Road and Macalla Road, back to Treasure Island Road. Macalla Road is one-way northbound for vehicles; a two-way Class I shared bicycle/pedestrian facility would also be provided from Treasure Island Road to South Gate Road, continuing on South Gate Road to its intersection with Hillcrest Road, and the Class I path connecting to the new Bay Bridge eastern span path, although portions of this facility near the bridge and ramps connections are proposed to be constructed separately by the Ramps Project and the Bay Bridge eastern span replacement project. As a result, Macalla Road would provide a Class I bicycle path connecting Treasure Island Road and the Bay Bridge for bicycle traffic in each direction, as well as a Class II bicycle lane specifically for bicycle traffic traveling in the downhill direction from the Bay Bridge toward Treasure Island.

- There would be one primary bicycle route from the Bay Bridge to Treasure Island, on Macalla Road, either via the Class I or Class II facilities provided on that roadway. There would be two
primary routes from Treasure Island to the Bay Bridge. The Class I facility on Macalla Road would be the most direct (although steeper) route to the Bay Bridge from Treasure Island. Bicyclists who opt for a longer, but less steep route from Treasure Island to the Bay Bridge would use the one-way Class II bicycle lane on Treasure Island Road and Hillcrest Road. At the intersection of Hillcrest Road and South Gate Road, bicyclists would be able to enter the Bay Bridge bicycle/pedestrian path providing access to the East Bay. Bicyclists traveling on Macalla Road to access the Bay Bridge bicycle path would use the Class I bicycle path on Macalla Road.
and South Gate Road between Treasure Island and the Bay Bridge eastbound ramps intersection at Hillcrest Road and South Gate Road, where the Class I facility would intersect the Bay Bridge eastern span facility.

In addition to the bicycle routes, the Proposed Project includes enhanced bicycle treatments at four intersections on the Islands – at Hillcrest Road at South Gate Road, Macalla Road at the Bay Bridge Westbound Ramps, Treasure Island Road at Macalla Road, and Treasure Island Road at Hillcrest Road/Westbound transit and emergency vehicle-only On-Ramp (these treatments are described in “Transportation Improvements Assumed in the Analysis,” pp. IV.E.30 – IV.E.47 and illustrated on Figures IV.E.8 through IV.E.15). At the intersection of Hillcrest Road at South Gate Road, bicycle treatments would allow for an uncontrolled crossing of South Gate Road for bicyclists destined to the Bay Bridge bicycle path. At Macalla Road and the Bay Bridge westbound ramps, treatments would include a Class II bicycle-only lane in the downhill direction between the Bay Bridge westbound ramps and Treasure Island Road. At the intersection of Treasure Island Road and Macalla Road, a new bicycle-only left turn lane from Treasure Island Road onto Macalla Road would be provided to facilitate the left-turn maneuver, while at Treasure Island Road and the Bay Bridge westbound on-ramp, treatments such as shared-use arrows and signage would be provided to facilitate bicycle travel. These improvements would facilitate safe bicycle travel through these intersections while accommodating autos and transit vehicles.

Minimum bicycle parking standards would be required for residential and commercial uses. Bicycle parking would be required in all residential buildings with four or more residential units. In buildings with up to 50 residential units, 1 bicycle parking space would be provided for each 2 residential units. In buildings with more than 50 units, 25 bicycle parking spaces would be required for the first 50 units and 1 space for every 4 units over 50 units. Office buildings would be required to provide bicycle parking at a rate of 3 spaces for buildings between 10,001 and 20,000 gsf, 6 bicycle spaces for buildings between 20,001 and 50,000 gsf, and 12 bicycle spaces for larger buildings. Retail buildings between 25,001 and 50,000 gsf would be required to have 3 bicycle parking spaces; those between 50,001 and 100,000 gsf would be required to have 6 bicycle parking spaces; and those over 100,000 gsf would be required to have 12 bicycle parking spaces.

Overall, the Proposed Project would provide a roadway network on Treasure Island and Yerba Buena Island and improvements that would encourage bicycling and enhance bicycle access. The facilities would be adequate to meet the bicycling demand associated with the Proposed Project, and no mitigation would be required.

The adoption of Mitigation Measure M-TR-24 would result in the removal of the proposed bike lane on Treasure Island and Hillcrest Roads after the intersection of Treasure Island Road and Macalla Road to accommodate a transit-only lane (Mitigation Measure M-TR-24 would only be
implemented if queues on Treasure Island Road materialize and substantially affect transit
operations). Cyclists would continue to have a Class I facility connecting Treasure Island and
the Bay Bridge, via Treasure Island Road (eastern side) and Macalla Road. Since Macalla Road is
steeper than Treasure Island and Hillcrest Roads, riding uphill could be challenging even for
experienced bicyclists. Nevertheless, the bicycle facilities would remain adequate to meet the
bicycling demand associated with the Proposed Project and Mitigation Measure M-TR-24 would
not result in a significant impact on bicycle travel.

Impact TR-34: Implementation of the Proposed Project would not create potentially
hazardous conditions for bicyclists or otherwise substantially interfere with
cycle accessibility on mainland San Francisco. (Less than Significant)

Primary bicycle access between the Islands and the rest of San Francisco would be via ferries
traveling between the San Francisco Ferry Building and the proposed new Transit Hub on
Treasure Island. Secondary bicycle access would be via buses between the Islands and
downtown San Francisco. The Bay Bridge East Span project includes a bicycle/pedestrian path
that would connect the East Bay to Yerba Buena Island, and the Proposed Project would provide
a connection to this facility with the pedestrian and bicycle facilities on Yerba Buena Island and
to the proposed Bay Trail around the perimeter of Treasure Island. As indicated in
“Transportation Improvements Assumed in the Analysis,” pp. IV.E.30-IV.E.47, BATA has
initiated a study to design a new bicycle/pedestrian path on the west span of the Bay Bridge. If
this project is approved, funded and ultimately constructed, there would be a continuous bicycle
connection between the East Bay, the Islands and San Francisco. However, that improvement is
not assumed to be in place in this analysis.

The San Francisco Bicycle Plan includes a number of near-term projects in the South of Market
area that would improve bicycle circulation. The City plans to stripe new bicycle lanes along
Fifth Street, Second Street, Fremont Street, Beale Street and Howard Street. These new bicycle
lanes would improve north and south bicycle circulation by connecting the existing bicycle lanes
on Folsom Street, Howard Street, and King Street, and Market Street.

The Proposed Project would generate new bicycle trips within San Francisco; however, these new
trips would be relatively small in number compared to existing bicycle ridership and would be
accommodated on the existing and planned bicycle network. Within mainland San Francisco, the
Proposed Project would not create any potentially hazardous conditions for bicyclists, nor would
it otherwise substantially interfere with bicycle accessibility. Therefore, the Proposed Project’s
impact to the bicycle network and bicycle accessibility on mainland San Francisco would be less
than significant, and no mitigation would be required.

In summary, the Proposed Project would not create potentially hazardous conditions for bicyclists
or substantially interfere with bicycle accessibility on the Islands or mainland San Francisco.
Implementation of Mitigation Measure M-TR-24 would result in the removal of a Class II bicycle lane on Treasure Island Road, but bicycle facilities on the Islands would remain adequate to meet the demand associated with the Proposed Project.

**Pedestrians**

**Impact TR-35: The Proposed Project would not create potentially hazardous conditions for pedestrians and would provide better pedestrian accessibility to the site than currently exists. (Less than Significant)**

The Proposed Project’s circulation plan is designed to encourage walking and bicycling as primary on-island travel modes. To accommodate the pedestrian demand, the street system on the Islands would be designed with special attention to sidewalks, pedestrian paths, and shared public ways.34

Sidewalks would be constructed along all streets on Treasure Island, except on the pedestrian priority shared public ways, where pedestrians would have use of the full right of way (discussed below). Intersections would include crosswalks and a number of corner bulbouts to shorten pedestrian crossing distances and improve pedestrian visibility. Sidewalk widths would vary throughout the area, but would adhere to Americans with Disabilities (“ADA”) requirements and/or Title 24 of the California Code of Regulations (California Physical Access Laws), as applicable.

Pedestrian facilities in addition to sidewalks that are proposed for Treasure Island include:

- A mixed-use path around the perimeter of Treasure Island;
- A mixed-use promenade along the Marina;
- An 80-foot wide pedestrian-only linear park along Third Street between California Avenue and Eastside Avenue; and
- Walkways through proposed Buildings 1, 2, and 3.

The Shared Public Way is a new City street type proposed for Treasure Island. The shared public ways would be narrow, low-speed facilities without separate pedestrian and auto accommodations. Instead, pedestrians and autos would be permitted to use and share the entire space. While autos would be permitted to use shared public ways, vehicular volumes would be relatively low because these streets would be narrow and less direct than the Secondary Arterials and Collector Streets. Generally, vehicles are expected to use shared public ways to access some parking and/or make short trips. Since vehicle trips on these streets would be at low-speed, conflicts with pedestrians and bicycles sharing the facility are expected to be minimal.

---

34 Shared public ways are described in “Transportation Improvements Assumed in the Analysis,” p. IV.E.30-IV.E.32, and would be subject to design criteria set forth in the draft *Design for Development* for the Proposed Project.
On Yerba Buena Island, sidewalks would be built on most public streets, and a pedestrian path would be constructed as part of a two-way, mixed-use bike/pedestrian facility along Treasure Island Road to a scenic overlook about 500 feet south of the intersection with Macalla Road. In addition to sidewalks, several trails through the open spaces and development areas would be constructed on Yerba Buena Island. A new Class I shared bicycle/pedestrian facility would also be constructed on Macalla Road and South Gate Road providing pedestrian connections between Treasure Island and the Bay Bridge eastern span bicycle/pedestrian facility.

The proposed sidewalk system on Treasure Island would facilitate direct, convenient travel between proposed uses. The proposed sidewalk and pedestrian path system on Yerba Buena Island would be less direct due to the topography of the Island, but would nonetheless provide adequate pedestrian connections to all uses on the Island. Since the new pedestrian trips generated by the Proposed Project would not result in substantial overcrowding on the proposed pedestrian facilities, or result in hazardous conditions, the Proposed Project impacts on pedestrians would be less than significant. No mitigation measures would be required.

In summary, the Proposed Project would not create potentially hazardous conditions for pedestrians or result in substantial overcrowding of public crosswalks near the Ferry Building.

**Impact TR-36:** Implementation of the Proposed Project would not result in substantial overcrowding of public crosswalks near the Ferry Building, and pedestrian facilities would continue to operate at acceptable levels. *(Less than Significant)*

Proposed Project pedestrian trips associated with the new ferry service to the Islands would travel through the San Francisco Ferry Building, and would be accommodated on the sidewalks and crosswalks in the vicinity of the Ferry Building. The additional pedestrians would primarily affect conditions during peak AM and PM commute periods, when ferries arrive and depart from other cities in the Bay Area. The Proposed Project would generate 641 pedestrian trips in the AM peak hour, 818 pedestrian trips in the PM peak hour, and 473 pedestrian trips during the Saturday peak hour at the Ferry Building (corresponding to the number of ferry passengers generated by the Proposed Project). Assuming that the new pedestrian trips would be distributed to crosswalks around the Ferry Building similar to existing pedestrian travel patterns, a majority of pedestrians would cross The Embarcadero at Market Street. Table IV.E.19 summarizes the distribution of pedestrian trips across Market Street at crosswalks near the Ferry Building, and the resulting LOS for the AM, PM and Saturday peak hours. The Proposed Project would result in increased densities at each of the study crosswalks. However, all crosswalks would continue to operate at acceptable LOS D or better; therefore, the Proposed Project’s impacts on pedestrian facilities in San Francisco would be less than significant, and no mitigation would be required.
Table IV.E.19: Pedestrian Crosswalk Levels of Service, Existing and Existing plus Project Conditions

<table>
<thead>
<tr>
<th>Crosswalk1</th>
<th>Existing</th>
<th></th>
<th></th>
<th>Existing plus Project</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pedestrian Volumes2</td>
<td>Density4</td>
<td>LOS</td>
<td>Project Trips</td>
<td>Density4</td>
<td>LOS</td>
</tr>
<tr>
<td>AM Peak Hour</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Washington Street1</td>
<td>120</td>
<td>33.3</td>
<td>A</td>
<td>26</td>
<td>27.4</td>
<td>A</td>
</tr>
<tr>
<td>Ferry Bldg (North)</td>
<td>400</td>
<td>8.0</td>
<td>C</td>
<td>87</td>
<td>6.6</td>
<td>C</td>
</tr>
<tr>
<td>Market Street</td>
<td>1,964</td>
<td>8.2</td>
<td>C</td>
<td>427</td>
<td>6.7</td>
<td>C</td>
</tr>
<tr>
<td>Don Chee Way</td>
<td>133</td>
<td>21.1</td>
<td>A</td>
<td>29</td>
<td>17.3</td>
<td>A</td>
</tr>
<tr>
<td>Mission Street1</td>
<td>333</td>
<td>12.0</td>
<td>B</td>
<td>72</td>
<td>9.9</td>
<td>C</td>
</tr>
<tr>
<td>PM Peak Hour</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Washington Street1</td>
<td>261</td>
<td>15.3</td>
<td>A</td>
<td>46</td>
<td>13.0</td>
<td>A</td>
</tr>
<tr>
<td>Ferry Bldg (North)</td>
<td>378</td>
<td>8.5</td>
<td>C</td>
<td>67</td>
<td>7.2</td>
<td>C</td>
</tr>
<tr>
<td>Market Street</td>
<td>3,452</td>
<td>4.6</td>
<td>D</td>
<td>614</td>
<td>3.9</td>
<td>D</td>
</tr>
<tr>
<td>Don Chee Way</td>
<td>184</td>
<td>15.2</td>
<td>A</td>
<td>33</td>
<td>12.9</td>
<td>B</td>
</tr>
<tr>
<td>Mission Street1</td>
<td>345</td>
<td>11.6</td>
<td>B</td>
<td>61</td>
<td>9.9</td>
<td>C</td>
</tr>
<tr>
<td>Saturday Peak Hour3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market Street</td>
<td>3,718</td>
<td>4.3</td>
<td>D</td>
<td>334</td>
<td>4.0</td>
<td>D</td>
</tr>
<tr>
<td>Don Chee Way</td>
<td>380</td>
<td>7.4</td>
<td>C</td>
<td>28</td>
<td>6.9</td>
<td>C</td>
</tr>
</tbody>
</table>

Notes:
1 Since the intersections of The Embarcadero with Washington Street and Mission Street each have two crosswalks, the north and south legs of each intersection were averaged.
2 Pedestrian counts provided by the City of San Francisco, taken from the Regional Signal Timing Program study conducted by Katz, Okitsu & Associates in 2006 and 2007.
3 The Ferry Building hosts a farmers market on Saturdays.
4 Density measured in square feet per pedestrian.


Loading

Impact TR-37: The Proposed Project would not result in a loading demand during the peak hour of loading activities that could not be accommodated within the proposed on-site loading supply or within on-street loading zones. (Less than Significant)

The loading impacts assessment includes the comparison of the demand for the loading spaces to the minimum number of loading spaces that would be required per the loading supply ratios provided in the Treasure Island and Yerba Buena Island Design for Development for the Proposed Project. As indicated in “Approach to Analysis, p. IV.E.55, 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 for each of the land uses in the Proposed Project, then converted
to an hourly demand for spaces. The freight loading spaces would be provided based on the
ratios provided in Table IV.E.20.

Table IV.E.20: Freight Loading Space Requirement Ratios

<table>
<thead>
<tr>
<th>Use or Activity</th>
<th>Gross Floor Area of Structure or Use (square feet)</th>
<th>Minimum Number of Freight Loading Spaces Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retail stores, wholesaling, manufacturing, and all other uses primarily engaged in the handling of goods.</td>
<td>0-10,000</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>10,001-60,000</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>60,001-100,000</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>over 100,000</td>
<td>3, plus 1 for each additional 80,000 square feet</td>
</tr>
<tr>
<td>Offices, hotels, apartments, and all other uses not included above.</td>
<td>0-100,000</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>100,001-200,000</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>200,001-500,000</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Over 500,000</td>
<td>3, plus 1 for each additional 400,000 square feet</td>
</tr>
</tbody>
</table>


Although the precise location and orientation of development parcels is currently unknown, some
guidelines would be included in the Treasure Island and Yerba Buena Island Design for Development to minimize the impacts of loading operations on autos, transit, bicyclists and pedestrians, and to ensure that loading activities do not result in hazardous conditions.
Specifically:

- The standards for on-street loading require the TIDA Executive Director to review the
design of all on-street loading facilities to ensure that they are designed to minimize
conflicts with transit, bicycle and pedestrians; possible conditions include requiring a
dedicated loading zone located outside of the path of travel of vehicular, bicycle,
pedestrian and transit routes, or limiting hours of operation for freight loading zones
located within vehicular, bicycle, pedestrian and transit routes to avoid conflicts.

- Guidelines that must be considered in reviewing loading include the following:
  - In the selection between an off-street location and an on-street location for loading,
on-street loading is recommended, in order to reduce the number of curb cuts.
  - Off-street loading zone driveways, where provided, should be located away from
    major pedestrian routes and intersections and shared with parking entrances, where
    possible.
- A loading zone(s) should be located in the same development block as the use served and, where located off-street, should provide adequate means of ingress/egress to a street or alley.

- Entrances to off-street loading facilities should be minimized in size and designed with visual buffers from pedestrian areas, where feasible.

- Garage and service entries should include either opaque or translucent garage door panels. Portions of the garage visible from the public realm should reflect the same architectural character employed throughout the rest of the building.

- Exit door alcoves on the sidewalk are discouraged, unless they share space with any active surveillance such as primary entrances or active community uses.

- Where off-street loading is provided, adequate reservoir space should be provided on private property for entrance of vehicles to off-street parking and loading zones, except with respect to spaces independently accessible directly from the street.

- Trash/recycling facilities and other utility services should be provided for all buildings in a location that balances residential access, convenient pick-up, maintenance, and screening from the active pedestrian zones of the street.

- On-street loading would be prohibited in the Treasure Island transit loop adjacent to the Ferry Terminal and Buildings 1 and 2, unless the loading space(s) can be located outside of the travel path of buses and shuttles or loading hours are restricted to times that would not interfere with transit operations.

Table IV.E.21 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 AM and 1 PM) and the estimated supply based on the draft Design for Development.

Overall, the Proposed Project would provide an adequate number of loading spaces to accommodate peak hour loading demand within the off-street or on-street loading supply that is required by the Proposed Project’s Design for Development. However, Table IV.E.21 also indicates that specific uses within the Proposed Project, such as restaurant and office may not have adequate supply. The supply calculations assume the entire square footage as a single use, when it is possible that individual buildings may provide a greater number of loading spaces that would serve the demand, or that loading spaces provided for retail or other uses would be available for shared use by restaurants and offices in mixed-use buildings. TIDA, in coordination with TITMA, would monitor whether the number of available loading spaces for any restaurant or office user would meet the peak loading space demand for that user. If a shortfall is observed, TIDA and the TITMA would work together to designate additional on-street loading zones (typically converting an on-street parking space into a flexible loading space by painting the curb yellow and restricting meter hours to allow for loading in particular time frames).
Table IV.E.21: Summary of Proposed Project Loading Demand and Supply

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Daily Truck Trip Generation Rates</th>
<th>Daily Truck Generation</th>
<th>Peak Loading Space Demand</th>
<th>Minimum Supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office</td>
<td>0.21</td>
<td>130,000&lt;sup&gt;1&lt;/sup&gt;</td>
<td>27</td>
<td>1</td>
</tr>
<tr>
<td>Retail</td>
<td>0.22</td>
<td>320,000&lt;sup&gt;2&lt;/sup&gt;</td>
<td>70</td>
<td>6</td>
</tr>
<tr>
<td>Restaurant</td>
<td>3.60</td>
<td>37,000</td>
<td>133</td>
<td>1</td>
</tr>
<tr>
<td>Hotel</td>
<td>0.09</td>
<td>450,000&lt;sup&gt;3&lt;/sup&gt;</td>
<td>41</td>
<td>2</td>
</tr>
<tr>
<td>Institutional</td>
<td>0.10</td>
<td>138,500&lt;sup&gt;4&lt;/sup&gt;</td>
<td>14</td>
<td>1</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>0.51</td>
<td>22,000&lt;sup&gt;5&lt;/sup&gt;</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>Residential</td>
<td>0.03</td>
<td>9,577,150&lt;sup&gt;6&lt;/sup&gt;</td>
<td>287</td>
<td>26</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>583 Trucks</strong></td>
<td><strong>36 Spaces</strong></td>
</tr>
</tbody>
</table>

**Notes:**

1. Proposed Project includes 100,000 square feet of new office plus 30,000 square feet of community uses/offices planned in adaptive reuse of Building 1.
2. Includes all non-retail retail (170,000 square feet) and 150,000 square feet of entertainment uses proposed for adaptive reuse of Building 3.
3. 500 hotel rooms.
4. Includes 13,500 square feet of community facilities, 35,000 square feet for Pier 1 Community Center, 15,000 square foot sailing center, and 75,000 square foot museum. Similar to parking analysis, loading demand for elementary school and police/fire facility would be provided separately within their facilities. Neither demand nor supply for elementary school and police/fire facility is included in this analysis.
5. Includes 22,000 square feet of food production space proposed in adaptive reuse of Building 2.
6. Proposed Project includes 8,000 dwelling units.
7. Typical peak hour of truck loading space demand occurs between 10 AM to 1 PM. Peak hour generation assumes deliveries occur between 8 AM and 5 PM, average park time of 25 minutes per vehicle, and that the peak hour deliveries occur at a 25 percent higher rate than other hours.

**Source:** SF Guidelines, 2002 and Fehr & Peers, 2010.

Freight loading ratios and design standards and guidelines included in the Proposed Project’s Treasure Island and Yerba Buena Island Design for Development would ensure that adequate loading supply is provided, and that loading operations do not create hazardous conditions or substantially affect autos, transit, bicycles and pedestrians. Therefore, the Proposed Project impacts related to loading operations would be less than significant. No mitigation is required.

**Emergency Access**

**Impact TR-38: Implementation of the Proposed Project would not result in significant emergency access impacts. (Less than Significant)**

The Proposed Project would include local police and fire facilities that would provide emergency first response to incidents on the Islands. The Proposed Project includes the maintenance or reconstruction of the existing roadway network on Treasure Island and Yerba Buena Island and
therefore, existing emergency response routes would 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, etc.).

Congestion associated with queuing approaching the Bay Bridge westbound on-ramps would not interfere with emergency vehicle access to the Islands from either San Francisco or the East Bay. If emergency vehicles were required to exit the Islands during periods when there was congestion approaching the Bay Bridge, similar to other congested roadway facilities in San Francisco and the region, emergency vehicles would be able to maneuver into other traffic lanes, depending on the specific traffic conditions at the time. The California Vehicle Code requires drivers to make way for the emergency vehicles, and drivers would likely pull out of the way of approaching emergency vehicles by using available roadway shoulders or pulling closer to other vehicles. Avenue of the Palms and Treasure Island Boulevard would be multi-lane roadways, and emergency vehicles could choose to bypass queued vehicles by traveling in the opposite travel lane, which is permitted when sirens are used. Under conditions with implementation of the Ramps Project, after bypassing queued vehicles on Treasure Island Boulevard, emergency vehicles could use the dedicated transit-only and emergency vehicle-only westbound on-ramp on the west side of Yerba Buena Island to access the Bay Bridge. If this is not feasible or the desired route, the emergency vehicle could proceed to the westbound on-ramp on the east side of Yerba Buena Island and use the HOV bypass lane, or the eastbound on-ramp towards the East Bay. Under conditions without the Ramps Project, the vehicle queues on the westbound on-ramps are expected to be shorter, and emergency vehicles would be required to maneuver through a shorter queue on the westbound on-ramp on the west side of Yerba Buena Island, as vehicles would be able to pull over onto the shoulder of the roadway. The existing westbound on-ramp on the west side of Yerba Buena Island is approximately 24 feet wide and could accommodate both queued vehicles and emergency vehicles. Therefore, the Proposed Project’s impacts to emergency access would be considered less than significant.

**CUMULATIVE IMPACTS**

The geographic context for the analysis of cumulative transportation impacts is the Bay Bridge and its approaches and the local roadway network in downtown San Francisco, and transit operations between the Islands and San Francisco and the East Bay.

Proposed Project impacts related to bicycle and pedestrian circulation, parking and loading supply and demand, and construction would be localized and site-specific and would not contribute to impacts from other developments within San Francisco. The Proposed Project would make no significant contribution to cumulative pedestrian and bicycle conditions related to travel within San Francisco.
Construction Impacts

Impact TR-39: Construction of the Proposed Project would occur over a long period of time and would contribute to cumulative construction impacts in the Project vicinity. *(Significant and Unavoidable with Mitigation)*

The construction activities for the early phases of development may partially overlap with construction activities associated with the final phases of construction of the new Bay Bridge east span, which is expected to be completed by late 2013. In addition, if the Ramps Project is approved for construction, construction of the new ramps would likely start in early 2012 and overlap with the Proposed Project for a period of two years. The Proposed Project’s largest construction activity would be the preparations for infrastructure and stabilization, which would occur in the first few years.

Given the magnitude of development, the Project’s prolonged construction period, and the lack of certainty of timing of the projects in the area, significant project contributions to cumulative traffic and circulation impacts could occur on the Bay Bridge, and on the Yerba Buena Island and Treasure Island access roads. Cumulative impacts would also include construction detours and increased travel times, although the extent and duration would vary, depending on each individual project’s schedule and construction activities. Typically, movement of construction vehicles and equipment is timed to avoid peak commute hours, which could reduce the potential for cumulative construction period traffic impacts. Implementation of a separate Transportation Management Plan (TMP) under Caltrans Deputy Directive 60 (DD-60) would be required by Caltrans for construction affecting the Bay Bridge and would be expected to 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 the Islands roadways and the Bay Bridge would still occur.

Implementation of Mitigation Measure M-TR-1, a Construction Traffic Management Plan, would help minimize the Proposed Project’s contribution to cumulative construction-related traffic impacts. However, some disruption and increased delays could still occur even with implementation of M-TR-1, and it is possible that significant construction-related traffic impacts could still occur in the project vicinity. Construction-related transportation impacts would therefore, remain significant and unavoidable.
Operational Impacts

Bay Bridge Operations – Ramp Junction Merge/Diverge

**Impact TR-40:** Implementation of the Proposed Project would contribute to significant cumulative traffic impacts at the eastbound off-ramp (west side of Yerba Buena Island). *(Significant and Unavoidable with Mitigation)*

The operational characteristics of the Yerba Buena Island ramps were analyzed to determine project impacts. Table IV.E.11, p. IV.E.72, summarizes the ramp merge and diverge levels of service for 2030 Cumulative plus Project conditions. Based on the merge/diverge analysis, under 2030 Cumulative plus Project conditions, the Proposed Project would contribute traffic to the eastbound off-ramp diverge section on the west side of Yerba Buena Island. Project traffic would comprise a majority of the traffic using the off-ramp during the PM and Saturday peak hours and the project’s contribution would therefore, be considered substantial. This means that during the weekday PM and Saturday peak hours, the roadway area on the Bay Bridge approaching the off-ramp would be operating near its capacity with virtually no usable gaps in the traffic stream and little room to maneuver, with notable congestion and/or queuing extending onto the Bay Bridge.

Implementation of Mitigation Measure M-TR-2 would reduce vehicle trip generation such that the project’s cumulative impacts to the eastbound off-ramp diverge section would be reduced. However, as illustrated in Table IV.E.12 on p. IV.E.77, this would have only a slight benefit to congestion around the off-ramp diverge section and the Proposed Project’s cumulative impacts on this ramp diverge section would remain significant and unavoidable. This impact would occur irrespective of whether the Ramps Project was implemented.

Bay Bridge Operations – Ramp Delays without and with the Ramps Project

**Impact TR-41:** Under conditions without the Ramps Project, implementation of the Proposed Project would contribute to significant cumulative impacts at the two westbound on-ramps. *(Significant and Unavoidable with Mitigation)*

Similar to Existing plus Project conditions, under 2030 Cumulative plus Project conditions, traffic volumes destined for the westbound Bay Bridge would exceed the capacity of the westbound on-ramps to the Bay Bridge, resulting in queues. Queues and associated delays would be the same under 2030 Cumulative plus Project conditions as Existing plus Project conditions, as presented in Table IV.E.11, p. IV.E.72. Delays would be considered a significant impact to both westbound on-ramps in the AM, PM, and Saturday peak hours under 2030 Cumulative plus Project conditions.

Implementation of Mitigation Measure M-TR-2 (Expanded Transit Service) would reduce vehicle trip generation such that cumulative impacts to ramp delays at the two stop controlled westbound on-ramps would be reduced. However, as presented in Table IV.E.12, p. IV.E.77, for the
weekday AM and PM and Saturday peak hours, autos would still experience delay consistent with LOS F and the project’s impacts on delay approaching the on-ramps would remain significant and unavoidable.

**Impact TR-42:** Under conditions with the Ramps Project, implementation of the Proposed Project would result in significant cumulative impacts during the AM and PM peak hours at the ramp meter at the westbound on-ramp (east side of Yerba Buena Island). *(Significant and Unavoidable with Mitigation)*

If the Ramps Project were constructed and the west side westbound on-ramp was converted to transit and emergency vehicle-only, stop control devices would be eliminated and all westbound traffic (except transit vehicles destined for San Francisco) would be consolidated to the westbound on-ramp on the east side of Yerba Buena Island. This consolidation would simply relocate the source of vehicular delay from stop signs at the two ramp merges to a ramp meter upstream of the single remaining merge on the east side of Yerba Buena Island. The delay associated with the ramp meter is shown in Table IV.E.13, p. IV.E.78. Although the delays are technically caused by a ramp meter signal, the LOS criteria for unsignalized intersections were applied because the ramp meter signal functions more similarly to a stop sign than a traditional traffic signal.

Under 2030 Cumulative plus Project conditions, vehicular traffic delay under conditions with the reconstructed westbound ramps would be the same as Existing plus Project conditions. This would be a significant impact. Traffic would experience minimal delays in the Saturday peak hour since ramp meters were assumed not to be in operation during that time.

Implementation of Mitigation Measure M-TR-2 (Expanded Transit Service) would reduce vehicle trip generation such that the project’s impacts to ramp delays at the ramp meter at the reconstructed westbound on-ramp would be reduced by nearly one-half. However, autos would still experience delay consistent with LOS F and the Project’s cumulative impacts to delay approaching the on-ramps would remain significant and unavoidable.

**Impact TR-43:** Under 2030 Cumulative plus Project conditions without and with the Ramps Project, implementation of the Proposed Project would result in less than significant impacts at three ramp locations. *(Less than Significant)*

Under 2030 Cumulative plus Project conditions without and with the Ramps Project, the eastbound on-ramp and the eastbound off-ramp on the east side of Yerba Buena Island, and the westbound off-ramp on the east side of Yerba Buena Island would operate at acceptable levels (see Table IV.E.11). Therefore, under 2030 Cumulative plus Project conditions, the Proposed Project would result in less-than-significant impacts at these three ramps.
Bay Bridge Operations – Queuing of Toll Plaza Approaches

**Impact TR-44:** Implementation of the Proposed Project would contribute to significant cumulative queuing impacts at the Bay Bridge toll plaza during the AM and PM peak hours, whether or not the Ramps Project is implemented. *(Significant and Unavoidable with Mitigation)*

Under 2030 Cumulative plus Project conditions, the Proposed Project would add 471 vehicle trips in the AM peak hour and 465 vehicle trips in the PM peak hour to the approaches to the Bay Bridge in the East Bay (no queues on the westbound approach to the Bay Bridge are projected for Saturday peak hour conditions). The extent to which the Proposed Project would exacerbate westbound queues at the East Bay toll plaza is depicted on Figure IV.E.16, p. IV.E.66. Similar to Existing plus Project conditions, the Proposed Project’s contribution to cumulative increases to queuing on Bay Bridge approaches in the East Bay would be considered a significant impact.

Implementation of Mitigation Measure M-TR-2 (Expanded Transit Service) would reduce vehicle trip generation such that the project’s impacts to queues approaching the Bay Bridge from the East Bay would be reduced. However, the Proposed Project would continue to contribute to significant cumulative impacts during the AM and PM peak hours, which would be a significant and unavoidable impact.

Bay Bridge Operations – Queuing on San Francisco Streets Approaching the Bay Bridge

**Impact TR-45:** Implementation of the Proposed Project would contribute to significant cumulative queuing impacts on San Francisco streets approaching the Bay Bridge during the weekday AM and PM and Saturday peak hours, whether or not the Ramps Project is implemented. *(Significant and Unavoidable with Mitigation)*

Under 2030 Cumulative plus Project conditions, the Proposed Project would add between 230 and 523 vehicle trips to congested downtown San Francisco streets during the weekday AM and PM and Saturday peak hours. The additional vehicles would increase on-street queues. The Proposed Project’s contribution to cumulative increases in peak hour queuing on Bay Bridge approaches in downtown San Francisco would be significant.

Implementation of Mitigation Measure M-TR-2 (Expanded Transit Service) would reduce vehicle trip generation such that the Proposed Project’s contributions of vehicles approaching the Bay Bridge from downtown San Francisco during the peak hours would be reduced. However, the Proposed Project would continue to contribute to significant cumulative impacts during the peak hours, which would be a significant and unavoidable impact.
Intersection Traffic Impacts

Under 2030 Cumulative plus Project conditions, Proposed Project impacts were assessed by comparing conditions with the Proposed Project, to 2030 Cumulative No Project conditions. The Proposed Project was determined to have a significant cumulative traffic impact at an intersection if Proposed Project-generated trips would cause an intersection operating at LOS D or better under 2030 Cumulative No Project conditions to operate at LOS E or LOS F, or intersections operating at LOS E to deteriorate to LOS F conditions. At intersections that operate at LOS E or LOS F under 2030 Cumulative No Project conditions, and would continue to operate at LOS E or LOS F under 2030 Cumulative plus Project conditions, the increase in Proposed Project vehicle trips was reviewed to determine whether the increase would contribute considerably to critical movements operating at LOS E or LOS F. Finally, at intersections where project-specific impacts were identified for Existing plus Project conditions, the Proposed Project would also be considered to result in a cumulative impact under 2030 Cumulative plus Project conditions.

Table IV.E.15 presents the comparison of intersection LOS for 2030 Cumulative No Project and 2030 Cumulative plus Project conditions. The results indicate that under 2030 Cumulative conditions all 14 signalized study intersections in downtown San Francisco would operate at unacceptable levels under conditions with the Proposed Project during at least one peak hour.35

- The Proposed Project would result in project-specific impacts at six of the ten study intersections that would operate at LOS D and deteriorate to LOS E or LOS F, or that would operate at LOS E and deteriorate to LOS F under Existing plus Project conditions (Impact TR-8 through Impact TR-13). Because the Proposed Project results in significant project-specific impacts at these intersections, it would also result in cumulative impacts at these intersections (Impact TR-46 through Impact TR-51).

- The Proposed Project would contribute considerably to critical movements at one study intersection that operates at LOS E or LOS F under 2030 Cumulative No Project conditions, resulting in a project impact (Impact TR-52).

- The Proposed Project would have less than significant contributions at seven intersections that would operate at LOS E or LOS F under 2030 Cumulative No Project conditions (Impact TR-53).

- The Proposed project would result in project-specific impacts at two uncontrolled intersections (Impact TR-17 and Impact TR-18). Because the Proposed Project would result in significant project-specific impacts, it would also result in cumulative impacts at these intersections (Impact TR-54 and Impact TR-55).

35 Analysis includes 14 signalized intersections in downtown San Francisco, two uncontrolled intersections in downtown San Francisco, and the intersection of Avenue of the Palms/First Street on Treasure Island. Under Existing plus Project conditions, the intersection of Avenue of the Palms/First Street would operate at LOS D or better during the AM, PM and Saturday peak hours.
Impact TR-46: Implementation of the Proposed Project would result in significant project and cumulative impacts at the intersection of First/Market. *(Significant and Unavoidable with Mitigation)*

As described in Impact TR-8, the Proposed Project would result in significant project impacts at the intersection of First/Market under Existing plus Project conditions. Under 2030 Cumulative plus Project conditions, the intersection of First/Market would operate at LOS E or LOS F conditions during all three peak hours. During the Saturday peak hour, vehicular traffic generated by the Proposed Project would cause the intersection to deteriorate from LOS C to LOS E, resulting in a significant cumulative impact. In addition, the Proposed Project would contribute considerably to critical movements operating at LOS E or LOS F during the PM peak hour, resulting in significant cumulative impacts. During the AM peak hour, the Proposed Project contributions to critical movements were determined to be less than significant.

Impacts could be minimized by providing additional capacity at this intersection. However, modifications to signal timing to provide more capacity for southbound traffic would likely impact transit operations on Market Street, which would be inconsistent with the City’s Transit First policy. Further, providing additional traffic lanes at this intersection would require substantial reduction in sidewalk widths, which would be inconsistent with the pedestrian environment provided on Market Street.

Implementation of Mitigation Measure M-TR-2 (Expanded Transit Service) would improve operations at this intersection, but not to LOS D or better. Further, while implementation of M-TR-2 would reduce the number of vehicles traveling through this intersection, the Proposed Project’s contribution would remain considerable. The Proposed Project’s traffic impacts at the study intersection of First/Market would therefore, be significant and unavoidable. The Proposed Project’s traffic impact at this intersection would also be significant and unavoidable because funding for implementation of Mitigation Measure TR-2 is uncertain.

Impact TR-47: Implementation of the Proposed Project would result in significant project and cumulative impacts at the intersection of First/Mission. *(Significant and Unavoidable with Mitigation)*

As described in Impact TR-9, the Proposed Project would result in significant project impacts at the intersection of First/Mission during the PM peak hour under Existing plus Project conditions. Under 2030 Cumulative plus Project conditions, the intersection of First/Mission would operate at LOS F conditions during the PM peak hour, and the Proposed Project would contribute considerably to critical movements operating at LOS E or LOS F, resulting in significant project and cumulative impacts.

Impacts could be minimized by providing additional capacity at this intersection. However, providing additional traffic lanes at this intersection would require substantial reduction in
sidewalk widths, which would be inconsistent with the pedestrian environment encouraged by the City of San Francisco and proposed as part of the Transit Center District Plan currently under study.

Implementation of Mitigation Measure M-TR-2 (Expanded Transit Service) would improve operations at this intersection during the PM peak hour, but not to LOS D or better. Further, while implementation of M-TR-2 would reduce the number of vehicles traveling through this intersection, the Proposed Project’s contribution would remain considerable. The Proposed Project’s traffic impacts at the study intersection of First/Mission would therefore, be significant and unavoidable. The Proposed Project’s traffic impact at this intersection would also be significant and unavoidable because funding for implementation of Mitigation Measure TR-2 is uncertain.

Impact TR-48: Implementation of the Proposed Project would result in significant project and cumulative impacts at the intersection of First/Folsom. (Significant and Unavoidable with Mitigation)

As described in Impact TR-10, the Proposed Project would result in a significant project impact at the intersection of First/Folsom under Existing plus Project conditions. Under 2030 Cumulative plus Project conditions, the intersection of First/Folsom would operate at LOS F conditions during the PM peak hour, although the Proposed Project contributions to critical movements were determined to be less than significant. As noted above, at intersections where project-specific impacts were identified for Existing plus Project conditions, the Proposed Project would also be considered to result in a project and cumulative impact under 2030 Cumulative plus Project conditions, and therefore the Proposed Project would result in a significant cumulative impact at the intersection of First/Folsom.

Impacts could be minimized by providing additional capacity at this intersection. However, travel lane capacity at this intersection has been maximized, and providing additional travel lanes would require substantial reduction in sidewalk widths, which would be inconsistent with the transit and pedestrian environment encouraged by the City of San Francisco and proposed as part of the Transit Center District Plan currently under study.

Implementation of Mitigation Measure M-TR-2 (Expanded Transit Service) would improve operations at this intersection, but not to LOS D or better. Further, while implementation of M-TR-2 would reduce the number of vehicles traveling through this intersection, the Proposed Project’s impact would remain considerable. The Proposed Project’s traffic impacts at the study intersection of First/Folsom would therefore, be significant and unavoidable. The Proposed Project’s traffic impact at this intersection would also be significant and unavoidable because funding for implementation of Mitigation Measure TR-2 is uncertain.
Impact TR-49: Implementation of the Proposed Project would result in significant project and cumulative impacts at the intersection of First/Harrison/I-80 Eastbound On-Ramp. *(Significant and Unavoidable with Mitigation)*

As described in Impact TR-11, the Proposed Project would result in significant project impacts at the intersection of First/Harrison/I-80 Eastbound On-Ramp under Existing plus Project conditions. Under 2030 Cumulative plus Project conditions, the intersection of First/Harrison/I-80 Eastbound On-Ramp would operate at LOS F conditions during the PM peak hour, and the Proposed Project would contribute considerably to critical movements operating at LOS E or LOS F, resulting in significant project and cumulative impacts.

Impacts could be minimized by providing additional capacity at this intersection. However, travel lane capacity at this intersection has been maximized, and providing additional travel lanes would require substantial reduction in sidewalk widths, which would be inconsistent with the transit and pedestrian environment encouraged by the City of San Francisco and proposed as part of the Transit Center District Plan currently under study.

Implementation of Mitigation Measure M-TR-2 (Expanded Transit Service) would improve operations at this intersection during the PM peak hour, but not to LOS D or better. Further, while implementation of M-TR-2 would reduce the number of vehicles traveling through this intersection, the Proposed Project’s contribution would remain considerable. The Proposed Project’s traffic impacts at the study intersection of First/Harrison/I-80 Eastbound On-Ramp would therefore, be significant and unavoidable. The Proposed Project’s traffic impact at this intersection would also be significant and unavoidable because funding for implementation of Mitigation Measure TR-2 is uncertain.

Impact TR-50: Implementation of the Proposed Project would result in significant project and cumulative impacts at the intersection of Bryant/Fifth/I-80 Eastbound On-Ramp. *(Significant and Unavoidable with Mitigation)*

As described in Impact TR-12, the Proposed Project would result in significant project impacts at the intersection of Bryant/Fifth/I-80 Eastbound On-Ramp under Existing plus Project conditions. Under 2030 Cumulative plus Project conditions, the intersection of Bryant/Fifth/I-80 Eastbound On-Ramp would operate at LOS E or LOS F conditions during all three peak hours. During the Saturday peak hour, vehicular traffic generated by the Proposed Project would cause the intersection to deteriorate from LOS D to LOS E, resulting in a significant project and cumulative impact. During the AM and PM peak hours, the Proposed Project contributions to critical movements were determined to be less than significant.

Impacts could be minimized by providing additional capacity at this intersection. However, travel lane capacity at this intersection has been maximized, and providing additional travel lanes
would require substantial reduction in sidewalk widths, which would be inconsistent with the transit and pedestrian environment encouraged by the City of San Francisco.

Implementation of Mitigation Measure M-TR-2 (Expanded Transit Service) would improve operations at this intersection, but not to LOS D or better. Further, while implementation of M-TR-2 would reduce the number of vehicles traveling through this intersection, the Proposed Project’s contribution would remain considerable. The Proposed Project’s traffic impacts at the study intersection of Bryant/Fifth/I-80 Eastbound On-Ramp would therefore, be significant and unavoidable. The Proposed Project’s traffic impact at this intersection would also be significant and unavoidable because funding for implementation of Mitigation Measure TR-2 is uncertain.

Impact TR-51: Implementation of the Proposed Project would result in significant project and cumulative impacts at the intersection of Harrison/Fifth/I-80 Westbound Off-Ramp. (Significant and Unavoidable with Mitigation)

As described in Impact TR-13, the Proposed Project would result in significant project impacts at the intersection of Fifth/Harrison/I-80 Westbound Off-Ramp under Existing plus Project conditions. Under 2030 Cumulative plus Project conditions, the intersection of Fifth/Harrison/I-80 Westbound Off-Ramp would operate at LOS F conditions during the PM peak hour, and the Proposed Project would contribute considerably to critical movements operating at LOS E or LOS F, resulting in significant project and cumulative impacts.

Impacts could be minimized by providing additional capacity at this intersection. However, travel lane capacity at this intersection has been maximized, and providing additional travel lanes would require substantial reduction in sidewalk widths, which would be inconsistent with the transit and pedestrian environment encouraged by the City of San Francisco.

Implementation of Mitigation Measure M-TR-2 (Expanded Transit Service) would improve operations at this intersection during the PM peak hour, but not to LOS D or better. Further, while implementation of M-TR-2 would reduce the number of vehicles traveling through this intersection, the Proposed Project’s contribution would remain considerable. The Proposed Project’s traffic impacts at the study intersection of Fifth/Harrison/I-80 Westbound Off-Ramp would therefore, be significant and unavoidable. The Proposed Project’s traffic impact at this intersection would also be significant and unavoidable because funding for implementation of Mitigation Measure TR-2 is uncertain.

Impact TR-52: Implementation of the Proposed Project would result in significant project and cumulative impacts at the intersection of Second/Folsom. (Significant and Unavoidable with Mitigation)

Under both 2030 Cumulative No Project and 2030 Cumulative plus Project conditions, the intersection of Second/Folsom would operate at LOS F conditions during the AM and PM peak
IV. Environmental Setting and Impacts
E. Transportation

hours. Based on the assessment of the project-generated vehicle trips, the Proposed Project would contribute considerably to critical movements operating at LOS E or LOS F during both peak hours, resulting in significant project and cumulative impacts.

Impacts could be minimized by providing additional capacity at this intersection. However, travel lane capacity at this intersection has been maximized, and providing additional travel lanes would require substantial reduction in sidewalk widths, which would be inconsistent with the transit and pedestrian environment encouraged by the City of San Francisco.

Implementation of Mitigation Measure M-TR-2 (Expanded Transit Service) would improve operations at this intersection during the PM peak hour, but not to LOS D or better. Further, while implementation of M-TR-2 would reduce the number of vehicles traveling through this intersection, the Proposed Project’s contribution would remain considerable. The Proposed Project’s traffic impacts at the study intersection of Second/Folsom would therefore be significant and unavoidable. The Proposed Project’s traffic impact at this intersection would also be significant and unavoidable because funding for implementation of Mitigation Measure TR-2 is uncertain.

Impact TR-53: Implementation of the Project would have less than significant impacts at seven study intersections that would operate at LOS E or LOS F under 2030 Cumulative plus Project conditions. (Less than Significant)

At 7 of 14 signalized study intersections that would operate at LOS E or LOS F under 2030 Cumulative No Project conditions, and would continue to operate at LOS E or LOS F under 2030 Cumulative plus Project conditions, the Proposed Project contributions to traffic volumes at the critical movements was examined. Based on this assessment, it was determined that Proposed Project vehicle trips would represent a less than cumulatively considerable contribution to LOS E or LOS F operating conditions and therefore, traffic impacts would be less than significant at the following intersections:

- Fremont/Howard
- Fremont/Folsom
- Fremont/I-80 Westbound Off-Ramp/Harrison
- First/Howard
- Essex/Harrison/I-80 Eastbound On-Ramp
- Second/Bryant
- The Embarcadero/Harrison

The poor operating conditions at these study intersections would be due to traffic volume increases associated with other developments in the Proposed Project vicinity. Since the
Proposed Project would not result in a considerable contribution to the poor operating conditions, Proposed Project impacts at these intersections would be less than significant.

**Impact TR-54: Implementation of the Proposed Project would contribute to significant cumulative impacts at the uncontrolled study intersection of Folsom/Essex.** *(Significant and Unavoidable with Mitigation)*

As indicated in Impact TR-17, the study intersection of Folsom/Essex is not currently controlled by either traffic signals or stop signs, and both approaches to the intersection are uncontrolled. Under 2030 Cumulative conditions, the existing queues that form on the approaches to the I-80 eastbound on-ramp and that spill back into the intersection would increase due to background traffic growth. Implementation of the Proposed Project would add vehicles to these existing queues, and contributions to the queued operations would be considered a significant cumulative impact.

Implementation of Mitigation Measure M-TR-2 (Expanded Transit Service) would reduce the number of Proposed Project vehicles that would travel through this intersection; however, it would continue to operate at queued conditions and the Proposed Project would continue to substantially contribute to these queues. Further, while implementation of Mitigation Measure M-TR-2 would reduce the number of vehicles going through this intersection, the Proposed Project’s contribution to queued conditions would remain considerable. The Proposed Project’s traffic impacts at the uncontrolled study intersection of Folsom/Essex would therefore, be significant and unavoidable. The Proposed Project’s traffic impact at this intersection would also be significant and unavoidable because funding for implementation of Mitigation Measure TR-2 is uncertain.

**Impact TR-55: Implementation of the Proposed Project would contribute to significant cumulative impacts at the uncontrolled study intersection of Bryant/Sterling.** *(Significant and Unavoidable with Mitigation)*

As indicated in Impact TR-18, the study intersection of Bryant/Sterling is not currently controlled by either traffic signals or stop signs, and both approaches to the intersection are uncontrolled. Under 2030 Cumulative conditions, the existing queues that form on the approaches to the I-80 eastbound on-ramp and that spill back into the intersection would increase due to background traffic growth. Implementation of the Proposed Project would add vehicles to these existing queues, and contributions to the queued operations would be considered a significant cumulative impact.

Implementation of Mitigation Measure M-TR-2 (Expanded Transit Service) would reduce the number of Proposed Project vehicles that would travel through this intersection; however, it would continue to operate at queued conditions and the Proposed Project would continue to substantially contribute to these queues. Further, while implementation of Mitigation Measure
M-TR-2 would reduce the number of vehicles going through this intersection, the Proposed Project’s contribution to queued conditions would remain considerable. The Proposed Project’s traffic impacts at the uncontrolled study intersection of Bryant/Sterling would therefore, be significant and unavoidable. The Proposed Project’s traffic impact at this intersection would also be significant and unavoidable because funding for implementation of Mitigation Measure TR-2 is uncertain.

Transit Impacts

Capacity Utilization Impacts

Under the 2030 Cumulative plus Project conditions, the capacity utilization impacts on the Muni, AC Transit and ferry service to and from Treasure Island would be the same as under the Existing plus Project conditions (Impact TR-19 through Impact TR-21) because transit would only serve the proposed development, which is analyzed at full buildout. Additional ridership generated by other projects in San Francisco or other Bay Area locations would not be expected to combine with ridership generated by the Proposed Project such that impacts beyond those already identified would occur. As discussed earlier in this chapter, the Proposed Project would result in significant capacity utilization impact on Muni. Implementation of Mitigation Measure M-TR-2 would reduce this impact to a less-than-significant level. However, the impact on Muni would remain significant and unavoidable because funding for implementation of Mitigation Measure M-TR-2 is uncertain. The Proposed Project would result in less-than-significant impacts to AC Transit and the ferry because they would have sufficient capacity to accommodate all the transit riders generated by the development.

Impact TR-56: The Proposed Project’s contribution to cumulative transit trips to the downtown screenlines would not increase demands in excess of available capacity. (Less than Significant)

Proposed Project transit improvements would not affect the capacity at the four downtown screenlines; however, a portion of the Proposed Project trips would cross the screenlines and contribute to total ridership at the maximum load points. Table IV.E.18, p. IV.E.98, summarizes the capacity utilization for the downtown screenlines for the AM and PM peak hours for the 2030 Cumulative plus Project conditions. As shown in Table IV.E.18, the Proposed Project’s contribution to ridership in the peak direction for any of the downtown screenlines would be relatively small, and with the addition of Project trips all downtown screenlines would continue to operate within Muni’s 85 percent utilization standard. Therefore, Project impacts on transit capacity at the downtown screenlines under 2030 Cumulative plus Project conditions would be less than significant.
Impact TR-57: The Proposed Project’s contributions to cumulative transit trips on AC Transit, BART, Golden Gate Transit, SamTrans, Caltrain and other ferry lines would not increase demands in excess of available capacity. (Less than Significant)

As discussed in Impact TR-23, a portion of the new transit trips generated by the Proposed Project would transfer from the 108-Treasure Island and new ferry line to other regional transit operators including AC Transit, BART, Golden Gate Transit, SamTrans, Caltrain, and other ferry lines. Similar to the impact assessment presented above in Impact TR-56 for the Muni downtown screenlines under 2030 Cumulative plus Project conditions, Proposed Project-generated transit riders transferring to other regional operators would more likely be traveling in the off-peak direction, for which there is generally available capacity. Some transit riders traveling to and from the Islands may travel on regional transit lines in the peak direction, but the number of riders would be negligible and would not substantially affect screenlines for regional transit providers.

Since Proposed Project-generated transit riders transferring to other lines would be dispersed over multiple operators and lines, and since these trips would primarily occur in the off-peak direction of transit demand, the additional trips would not substantially affect the peak direction capacity utilization of regional providers. Therefore, under 2030 Cumulative plus Project conditions, impacts to regional transit operator capacity, including AC Transit, BART, Golden Gate Transit, SamTrans, Caltrain and other ferry lines would be less than significant, and no mitigation measures would be required.

Operational Impacts on Treasure Island/Yerba Buena Island

Under the 2030 Cumulative plus Project conditions, the operational transit impacts on Muni, AC Transit and ferry service would be the same as under the Existing plus Project conditions (Impact TR-24 through Impact TR-28) because the roadway system would only serve the proposed development, which is analyzed at full buildout. Additional vehicles generated by other projects in San Francisco or other Bay Area locations would not be expected to combine with the project-generated vehicles that would use Treasure Island and Hillcrest Roads such that impacts beyond those already identified would occur. As discussed earlier in this chapter, the Proposed Project would result in significant operational impact on Muni (with and without the Ramps Project) due to vehicular queues that could form on Treasure Island Road. Implementation of Mitigation Measure M-TR-24 would reduce this impact to a less-than-significant level. The Proposed Project would also result in a significant operational impact on AC Transit (with and without the Ramps Project) for the same reason. However, the impact on AC Transit would be significant and unavoidable because there is insufficient right-of-way between the westbound on-ramp (on the west side of YBI) and the eastbound on-ramp (on the east side of YBI) to provide a transit-only lane. The Proposed Project would result in less-than-significant impact to ferry operations.
Operational Impacts in Downtown San Francisco

As described in Impact TR-46 through Impact TR-52 above, in downtown San Francisco the Proposed Project-generated vehicle trips would result in significant project and cumulative impacts at seven study intersections (Impact TR-46 through Impact TR-52). The increases in vehicle delay due to the project-generated vehicle trips may also affect transit lines that travel through these intersections. Muni, Golden Gate Transit, and SamTrans bus lines travel through five of the seven intersections and therefore, an assessment was conducted to determine whether the increase in delay would result in a significant impact to transit operations. The assessment at the five impacted intersections below includes a discussion of Muni, Golden Gate Transit and SamTrans impacts on transit identified in Impact TR-58 through Impact TR-62.

First/Market – Under 2030 Cumulative plus Project conditions, the intersection of First/Market would operate at LOS E or LOS F conditions during all three peak hours. During the Saturday peak hour, vehicular traffic generated by the Proposed Project would cause the intersection to deteriorate from LOS C to LOS E, resulting in a significant cumulative impact. In addition, the Proposed Project would contribute considerably to critical movements operating at LOS E or LOS F during the PM peak hour, resulting in significant project and cumulative impacts. During the AM peak hour, the Proposed Project contributions to critical movements were determined to be less than significant.

A total of 13 Muni bus lines (2-Clement, 3-Jackson, 5-Fulton, 6-Parnassus, 9/9L-San Bruno, 21-Hayes, 30-Stockton, 30X-Marina Express, 31-Balboa, 38/38L/38X-Geary, 71/71L-Haight/Noriega, 76-Marin Headlands, 81X-Caltrain Express) and one Muni streetcar line (F-Market & Wharves) travel through this intersection during the weekday PM and Saturday peak hours.

Under 2030 Cumulative plus Project conditions, the eastbound and westbound approaches on Market Street would operate at acceptable levels of service (LOS D or better), so the Proposed Project’s contribution of traffic on Market Street approaches would not significantly impact transit lines on Market Street. During the weekday PM and Saturday peak hours, the southbound movement would operate at LOS F. Transit lines that would be affected (i.e., those that approach the intersection traveling southbound) include the 30X-Marina Express. These lines would experience increases in delay due to congestion on Bush Street, Battery Street and First Street. Since the Proposed Project would result in a significant contribution to delay at this approach, the Proposed Project would have a significant cumulative impact on transit travel times on the 30X-Marina Express.

36 During the PM peak hour, no transit routes travel through the intersection of First/Folsom or First/Harrison/I-80 Eastbound On-Ramp and therefore, discussion of these intersections is not provided.
First/Mission – Under 2030 Cumulative plus Project conditions, the intersection of First/Mission would operate at LOS F conditions during the PM peak hour, and the Proposed Project would contribute considerably to critical movements operating at LOS E or LOS F, resulting in significant project and cumulative impacts. During the PM peak hour, a total of six Muni bus lines (5-Fulton, 6-Parnassus, 14/14L-Mission, 38/38L-Geary, 71/71L-Haight-Noriega, 76-Marin Headlands), eight Golden Gate Transit lines (10, 54, 70, 72, 73, 76, 80, 101), and three SamTrans bus lines (292, 391, 397) travel through this intersection. However, all approaches to this intersection include dedicated transit-only lanes; therefore, transit lines traveling through this intersection would not be affected by Proposed Project-generated increases in cumulative intersection delay, and the Proposed Project’s contribution to cumulative transit impacts at this intersection would be less than significant.

Bryant/Fifth/I-80 Eastbound On-Ramp – Under 2030 Cumulative plus Project conditions, the intersection of Bryant/Fifth/I-80 Eastbound On-Ramp would operate at LOS E or LOS F conditions during all three peak hours. During the Saturday peak hour, vehicular traffic generated by the Proposed Project would cause the intersection to deteriorate from LOS D to LOS E, resulting in a significant project and cumulative impact. During the AM and PM peak hours, the Proposed Project contributions to critical movements were determined to be less than significant. Three Muni bus lines travel through this intersection (9X/9AX/9BX-Bayshore Express lines, 27- Bryant, 47-Van Ness). Transit lines at this intersection share lanes with mixed-flow traffic along both Bryant Street and Fifth Street. The 9X/9AX/9BX-Bayshore Express lines and the 27-Bryant travel eastbound on Bryant Street, while the 47-Van Ness travels northbound on Fifth Street.

During the PM peak hour, the northbound right and eastbound through movements, and the southbound approach would operate at unacceptable levels of service, and a majority of the delay would be a result of congestion leading towards the Bay Bridge. The proposed project would only add traffic to the northbound and southbound approaches and the eastbound left turn movement. The 9X/9AX/9BX-Bayshore Express lines operate in the southernmost through lane on Bryant Street and the project would not add new trips to the eastbound through movement; therefore, during the PM peak hour the Proposed Project would only cause a significant cumulative impact to transit travel times on the 27-Bryant (which turns left from Bryant Street to Fifth Street) and 47-Van Ness (which runs northbound on Fifth Street) during the PM peak hour.

During the Saturday peak hour, the northbound approach would operate at unacceptable levels of service. The project would add new trips to this approach; therefore, the Proposed Project would have a significant cumulative impact on the 47-Van Ness during the Saturday peak hour.

Harrison/Fifth/I-80 Westbound Off-Ramp – Under 2030 Cumulative plus Project conditions, the intersection of Harrison/Fifth/I-80 Westbound Off-Ramp would operate at LOS F conditions
during the PM peak hour, and the Proposed Project would contribute considerably to critical movements operating at LOS E or LOS F, resulting in significant project and cumulative impacts. Four Muni bus lines travel through this intersection (9X/9AX/9BX-Bayshore Express, 12-Folsom-Pacific, 27-Bryant, 47-Van Ness). Transit lines at this intersection share lanes with mixed-flow traffic along both Harrison Street and Fifth Street. During the PM peak hour, the westbound approach operates acceptably; therefore no impact was identified for the 12-Folsom-Pacific and the 9X/9AX/9BX-Bayshore Express lines that run westbound on Harrison Street. However, Fifth Street northbound and southbound approaches, and the I-80 westbound off-ramp approach would operate at unacceptable levels of service during the PM peak hour. The Proposed Project’s contribution to increases in delay on the northbound and southbound approaches would be substantial; therefore, the Proposed Project’s cumulative impacts on transit travel times for the 27-Bryant and 47-Van Ness lines, which travel on Fifth Street, would be considered a significant impact.

**Second/Folsom** – Under both 2030 Cumulative No Project and 2030 Cumulative plus Project conditions, the intersection of Second/Folsom would operate at LOS F during the AM and PM peak hours. Based on the assessment of the project-generated vehicle trips, the Proposed Project would contribute considerably to critical movements operating at LOS E or LOS F during both peak hours, resulting in significant project and cumulative impacts. Three Muni bus lines (10-Townsend, 12-Folsom-Pacific, 76-Marin Headlands) and 19 Golden Gate Transit bus lines (2, 4, 8, 18, 24, 27, 38, 44, 54, 56, 58, 72, 73, 74, 76, 10, 70, 80, 101) travel through this intersection. Transit lines at this intersection share lanes with mixed-flow traffic along both Folsom Street and Second Street. During the AM and PM peak hour, the intersection would operate with substantial amounts of vehicle delay, primarily as a result of Bay Bridge-destined traffic. Folsom Street has four eastbound travel lanes at this intersection, and buses use the north-most lane, which does not lead to an on-ramp to the Bay Bridge and would be less congested than the southern lanes. Therefore, project contributions to congestion on Folsom Street would have a minimal effect to operations on the 12-Folsom-Pacific, 76-Marin Headlands, and Golden Gate Transit buses, which travel on Folsom Street. However, the 10-Townsend would need to maneuver though Second Street northbound and southbound mixed-flow traffic destined for the Bay Bridge, which as noted above would operate with substantial amounts of vehicle delay. Since the Proposed Project would result in a significant contribution to the southbound movement at the intersection of Second/Folsom, the Proposed Project’s contribution to cumulative travel time impacts to the 10-Townsend would be considered significant.
Impact TR-58: The Proposed Project would contribute to cumulative congestion in downtown San Francisco, which would increase travel time and would impact operations of the Muni 27-Bryant bus line. (Significant and Unavoidable with Mitigation)

The Proposed Project contributions to adverse traffic conditions at the intersections of Bryant/Fifth/I-80 Eastbound On-Ramp and Harrison/Fifth/I-80 Westbound Off-Ramp would affect the travel times of the 27-Bryant. Therefore the Proposed Project’s cumulative impact on the 27-Bryant operations would be a significant impact.

At the intersections of Fifth/Bryant/I-80 Eastbound On-Ramp and Fifth/Harrison/I-80 Westbound Off-Ramp no feasible mitigation measures have been identified. Implementation of the Mitigation Measure M-TR-2 (Expanded Transit Service) would improve operations at these intersections, but the intersections would continue to operate poorly during the PM peak hour. Since no feasible mitigation measures have been identified, the Proposed Project’s cumulative impacts on transit travel times on the 27-Bryant would remain significant and unavoidable. The Proposed Project’s cumulative transit impact would also be significant and unavoidable because funding for implementation of Mitigation Measure M-TR-2 is uncertain.

Impact TR-59: The Proposed Project would contribute to cumulative congestion in downtown San Francisco, which would increase travel time and would impact operations of the Muni 30X-Marina Express bus line. (Significant and Unavoidable with Mitigation)

As described above, the 30X-Marina Express bus operations would be affected by Proposed Project-related traffic delays at the intersection of First/Market, which would be considered a significant cumulative impact on transit travel times on the 30X-Marina Express. Potential mitigation measures for the intersection of First/Market are limited, as traffic signals at this intersection are timed to prioritize transit movements on Market Street. Modifications to signal timing to provide more capacity to the southbound movement which would operates poorly would likely in turn impact transit operations on Market Street and be inconsistent with the City’s Transit First policy. Providing additional travel lanes at this intersection would require substantial reduction in sidewalk widths, which would be inconsistent with the pedestrian environment on Market Street. Implementation of the Mitigation Measure M-TR-2 (Expanded Transit Service) would improve operations at the intersection of First/Market, but the intersection would continue to operate poorly during the PM peak hour. Since no feasible mitigation measures have been identified, the Proposed Project’s cumulative impacts on transit travel times on the 30X-Marina Express would be significant and unavoidable. The Proposed Project’s cumulative transit impact would also be significant and unavoidable because funding for implementation of Mitigation Measure M-TR-2 is uncertain.
Impact TR-60: The Proposed Project would contribute to cumulative congestion in downtown San Francisco, which would increase travel time and would impact operations of the Muni 47-Van Ness bus line. *(Significant and Unavoidable with Mitigation)*

As described above, the 47-Van Ness bus operations would be affected by Proposed Project-related traffic delays at the intersection of Bryant/Fifth/I-80 Eastbound On-Ramp and Harrison/Fifth/I-80 Westbound Off-Ramp, which would be considered a significant cumulative impact on transit travel times on the 47-Van Ness.

At the intersections of Fifth/Bryant/I-80 Eastbound On-Ramp and Fifth/Harrison/I-80 Westbound Off-Ramp no feasible mitigation measures have been identified. Implementation of the Mitigation Measure M-TR-2 (Expanded Transit Service) would improve operations at these intersections, but the intersections would continue to operate poorly during the PM peak hour. Since no feasible mitigation measures have been identified, the Proposed Project’s cumulative impact on transit travel times on the 47-Van Ness would remain significant and unavoidable. The Proposed Project’s cumulative transit impact would also be significant and unavoidable because funding for implementation of Mitigation Measure M-TR-2 is uncertain.

Impact TR-61: The Proposed Project would contribute to cumulative congestion in downtown San Francisco, which would increase travel time and would impact operations of the Muni 10-Townsend bus line. *(Significant and Unavoidable with Mitigation)*

As described above, the 10-Townsend would need to maneuver though Second Street northbound and southbound mixed-flow traffic destined for the Bay Bridge, and under 2030 Cumulative plus Project conditions the Proposed Project would have a significant contribution to the southbound movement; therefore, the Proposed Project’s contribution to cumulative impacts on the 10-Townsend at this intersection would be considered significant.

Providing additional travel lanes at this intersection would require substantial reduction in sidewalk widths, which would be inconsistent with the pedestrian environment, encouraged by the City of San Francisco and proposed as part of the Transit Center District Plan currently under study. Implementation of the Mitigation Measure M-TR-2 (Expanded Transit Service) would improve operations at this intersection, but the intersection would continue to operate poorly during the PM peak hour. Since no feasible mitigation measures have been identified; the Proposed Project’s cumulative impacts on transit travel times on the 10-Townsend would remain significant and unavoidable. The Proposed Project’s cumulative transit impact would also be significant and unavoidable because funding for implementation of Mitigation Measure M-TR-2 is uncertain.
IV. Environmental Setting and Impacts
   E. Transportation

Impact TR-62: The Proposed Project would contribute to cumulative congestion in downtown San Francisco during the PM peak hour, however would not impact operations of Golden Gate Transit or SamTrans bus lines. (Less than Significant)

As described above, during the PM peak hour the Proposed Project-generated vehicle trips would result in significant impacts at the intersections of First/Mission and Second/Folsom through which Golden Gate Transit and SamTrans buses travel.

During the PM peak hour, Golden Gate Transit buses travel through the intersections of First/Mission and Second/Folsom, while SamTrans buses travel through the intersection of First/Mission. At the intersection of First/Mission, transit operates within dedicated transit-only lanes and therefore, Proposed Project impacts on transit due to increased traffic congestion would be less than significant. At the intersection of Second/Folsom, Golden Gate Transit buses use the north-most travel lane which is not subject to the queued conditions associated with Bay Bridge-destined traffic and therefore, Proposed Project impacts on transit due to Proposed Project contributions to cumulative traffic impacts would be less than significant.

PARKING INFORMATION

San Francisco does not consider parking supply as part of the permanent physical environment and therefore does not consider changes in parking conditions to be environmental impacts as defined by CEQA. The San Francisco Planning Department acknowledges, however, that parking conditions may be of interest to the public and the decision-makers. Therefore, a parking analysis for the Proposed Project is presented for information purposes.

Parking conditions are not static, as parking supply and demand varies from day to day, from day to night, from 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.

In and of themselves, 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 Section 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, noise impacts caused by congestion, or transit impacts associated with a shift in mode. In the experience of San Francisco transportation planners, however, 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, induces 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 Article 8A, Section 8A.115, provides that “parking policies for areas well served by public transit shall be designed to encourage travel by public transportation and alternative transportation.”

In summary, changes in parking conditions are considered to be social impacts rather than impacts on the physical environment. Since the secondary impacts associated with a parking shortfall could affect the physical environment, they are analyzed within the context of CEQA. Accordingly, the following parking analysis, as it relates to parking shortfalls, is presented for informational purposes only. A potential secondary impact of a parking shortfall on transit, related to the Proposed Project’s impact on Muni’s 108-Treasure Island bus line, has been identified and is also presented.

Off-street parking would not be required for any proposed land use on Treasure Island or Yerba Buena Island, and instead the Draft Treasure Island and Yerba Buena Island Design for Development includes maximum permitted parking ratios, with a specific limit on the total number of off-street parking spaces that may be provided. Table IV.E.22 presents the parking ratios and maximum supply by land use. Car-share parking spaces would be provided at a rate of 1 car-share space for residential buildings with 50 to 200 units, and 2 car-share spaces plus 1 more space for every 200 additional units in buildings with 201 or more units. Car-share parking spaces would not count against the maximum parking allowed. Car-share spaces would be required in commercial buildings at a rate of 1 space for each 50 parking spaces for all buildings with more than 25 parking spaces.

The parking impact assessment associated with the Proposed Project includes the comparison of the parking demand to the maximum off-street parking ratios for the Proposed Project as provided in the Draft Design for Development document for the Proposed Project, plus the number of new on-street parking spaces that would be provided on streets in the Project site.

Table IV.E.23 summarizes the aggregate of the parking demand calculated for the Proposed Project land uses, and also presents the maximum permitted off-street parking and new on-street parking spaces that would be provided. There would be no free parking on the Islands for either on-street or off-street spaces. Overall, the project proposes 10,675 parking spaces, including 1,035 on-street spaces.
Table IV.E.22: Permitted Parking Ratios and Maximum Off-Street Car Parking Spaces

<table>
<thead>
<tr>
<th>Use or Activity</th>
<th>Maximum Number of Off-Street Car Parking Spaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>1 for each dwelling unit calculated on an aggregate basis for all dwelling units constructed within the Development Plan Area, but in no event more than 8,000 residential accessory parking spaces within the Development Plan Area</td>
</tr>
<tr>
<td>Office/Commercial</td>
<td>1 for every 1,000 square feet of gross floor area calculated on an aggregate basis for all office/commercial uses (other than retail, hotel and marina) but in no event more than 302 office/commercial accessory spaces within the Development Plan Area</td>
</tr>
<tr>
<td>Retail</td>
<td>2 for every 1,000 square feet of gross floor area calculated on an aggregate basis for all retail uses, but in no event more than 414 retail accessory spaces within the Development Plan Area</td>
</tr>
<tr>
<td>Hotel</td>
<td>0.4 for every hotel room calculated on an aggregate basis for all hotel uses on Treasure Island and Yerba Buena Island, but in no event more than 180 hotel accessory spaces on Treasure Island and 40 hotel accessory spaces on Yerba Buena Island</td>
</tr>
<tr>
<td>Marina</td>
<td>0.6 spaces for every slip constructed within the Development Plan Area calculated on an aggregate basis, but in no event more than 236 Marina accessory spaces within the Development Plan Area</td>
</tr>
</tbody>
</table>

Note: Final maximum allocation of parking spaces within the Development Plan Area would be pursuant to the DDA and SUD.


Overall, during the peak hour of parking demand for all of Treasure Island, the Proposed Project would result in a deficit of 1,664 parking spaces, including a deficit of 2,218 residential spaces and a surplus of 554 non-residential spaces. Yerba Buena Island would experience a shortfall of 81 spaces during its peak hour of parking demand, comprised of 64 residential spaces and 17 non-residential spaces. For non-residential uses, each neighborhood would provide a surplus of non-residential parking spaces; conversely, each neighborhood would experience a deficit of residential spaces compared to peak demand.

As noted above, the Proposed Project includes maximum permitted parking controls, rather than imposing minimum amounts of parking to be constructed with each use. Since developers would not be required to provide parking, theoretically, these requirements could result in no off-street parking on the Islands, resulting in a substantially greater parking deficit. However, this is not a reasonably likely scenario, as most developments projects in San Francisco develop the
IV. Environmental Setting and Impacts
E. Transportation

Table IV.E.23: Summary of Proposed Project Peak Hour Parking Demand and Maximum Permitted Supply

<table>
<thead>
<tr>
<th>Neighborhood</th>
<th>Residential</th>
<th></th>
<th>Non-Residential</th>
<th></th>
<th>Total</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Demand¹</td>
<td>Supply²</td>
<td>Surplus/</td>
<td>Demand⁴</td>
<td>Supply⁴</td>
<td>Surplus/</td>
</tr>
<tr>
<td></td>
<td>Demand²</td>
<td>(Deficit)³</td>
<td>Demand⁵</td>
<td>Supply⁴</td>
<td>(Deficit)³</td>
<td>Supply⁵</td>
</tr>
<tr>
<td>Cityside</td>
<td>4,216</td>
<td>3,255 (961)</td>
<td>92</td>
<td>541</td>
<td>449</td>
<td>4,308</td>
</tr>
<tr>
<td>Eastside</td>
<td>2,075</td>
<td>1,601 (474)</td>
<td>48</td>
<td>334</td>
<td>286</td>
<td>2,123</td>
</tr>
<tr>
<td>Island Core</td>
<td>3,737</td>
<td>2,944 (783)</td>
<td>1,546</td>
<td>1,296 (250)</td>
<td>5,283</td>
<td>4,240</td>
</tr>
<tr>
<td>Open Space</td>
<td>0</td>
<td>0</td>
<td>395</td>
<td>464</td>
<td>69</td>
<td>395</td>
</tr>
<tr>
<td>Total Treasure Island</td>
<td>10,028</td>
<td>7,800 (2,218)</td>
<td>2,081</td>
<td>2,635 (554)</td>
<td>12,109</td>
<td>10,435 (1,664)</td>
</tr>
<tr>
<td>Yerba Buena Island</td>
<td>264</td>
<td>200 (64)</td>
<td>57</td>
<td>40 (17)</td>
<td>321</td>
<td>240</td>
</tr>
<tr>
<td>Total</td>
<td>10,292</td>
<td>8,000 (2,282)</td>
<td>2,138</td>
<td>2,675 (537)</td>
<td>12,430</td>
<td>10,675 (1,745)</td>
</tr>
</tbody>
</table>

Notes:
1. Residential parking demand includes a limited amount of visitor parking demand that would be accommodated on-street.
2. Residential parking supply includes the maximum number of off-street parking spaces permitted per standards identified in Table IV.E.22.
3. Since residential visitor demand would be accommodated on-street, rather than in the off-street residential parking supply, the residential parking deficit and non-residential parking surplus may both be overstated.
4. A total of 1,035 on-street parking spaces would be provided. Supply allocation by neighborhood obtained from TICD and includes 495 on-street spaces in the Cityside neighborhood, 310 on-street spaces in the Eastside neighborhood, and 230 on-street spaces in the Island Core neighborhood.

Source: Fehr & Peers, 2010

maximum permitted supply. Some centralized off-street parking is proposed as part of the Project and is likely to be built even if individual buildings do not provide parking. Market analysis conducted for TICD indicated that providing less than one parking space per residential unit could affect the financeability of the development program, the marketability of the homes, and livability of the Islands, and make the project economically infeasible. In addition, parking fees for non-residential uses would be a substantial portion of the funding supporting transit facilities and other features of the Proposed Project’s TDM Plan. With no off-street commercial parking, there would not be sufficient funds to support the entire TDM Plan and transit services, and the Proposed Project would be infeasible.

The Proposed Project would not eliminate any parking specifically reserved for employees and visitors of the existing uses on Treasure Island (Job Corps) and Yerba Buena Island (U.S. Coast Guard) that would remain in use after implementation of the Proposed Project. However, U.S.

37 Treasure Island Parking Analysis, S L State & Associates, June 2010. Also refer to Section VII. Alternatives, p.VII.77, which provides additional information regarding infeasibility of a reduced parking alternative.
Coast Guard employees currently park in the approximately 15 parking spaces near the Yerba Buena Island hilltop parking lot outside of Coast Guard property. The Proposed Project would eliminate these 15 parking spaces. Thus, with construction of the Proposed Project, U.S. Coast Guard employees accustomed to finding relatively easy free parking on the Islands would no longer be able to do so. With implementation of the Proposed Project, U.S. Coast Guard and Job Corps staff would either have to park within their respective campuses or within the paid parking lots constructed as part of the Proposed Project (similar to other visitors and employees on the Islands). Visitors to the Proposed Project would not be able to park in the Job Corps or U.S. Coast Guard areas.

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 by the Design for Development, they may not be sufficient to accommodate the actual demand for residential uses. If fewer spaces than the maximum permitted were to be constructed, the projected shortfall for residential uses would increase, or a shortfall for non-residential uses may occur. 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 is considered a social impact. 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 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.

The effects of the restricted parking supply, may result in individuals shifting mode from vehicles to transit. If this were to occur, it would exacerbate the impacts on the Muni line 108-Treasure Island identified in Impact TR-24, and would therefore, result in a secondary indirect physical environmental impact on transit operations.

Impact TR-63: Implementation of the Proposed Project parking supply maximums would exacerbate the exceedance of the capacity utilization standard on Muni’s 108-Treasure Island bus line serving the Islands. (Significant and Unavoidable with Mitigation)

As described above, if the maximum permitted parking supply is provided, there would be an overall shortfall of parking spaces on the Islands, primarily related to the residential uses. In general, in San Francisco, parking deficits are considered to be social impacts. 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, noise impacts caused by congestion, or transit impacts associated with a shift in mode. The lack of readily
available parking supply may result in some drivers seeking and finding alternative parking facilities, shifting to other modes of travel, or changing their overall travel habits. The conditions on the Islands are unique from the rest of San Francisco in that the isolated nature of the Islands does not allow for drivers to seek alternative parking facilities, and instead drivers would need to shift to other modes of travel or change their travel habits. Unlike the rest of San Francisco where alternate available modes include transit, walking, bicycling and taxis, alternate travel modes for off-Islands travel are limited to transit. Therefore, it is anticipated that the parking shortfall on the Islands could result in a shift from auto to transit modes, resulting in an increase in transit travel demand during the peak hours. Depending on the direction of travel, the shift would affect the Muni line 108-Treasure Island bus line, the new AC Transit bus line, and the new ferry service between Treasure Island and downtown San Francisco.

Impacts TR-19 through Impact TR-21 presented the transit impact analysis comparing the projected peak hour transit demand to the capacity that would be available. Implementation of the Proposed Project would not exceed the transit capacity of the new AC Transit bus line (Impact TR-20) or the new ferry service (Impact TR-21) and therefore, an increase in transit demand on these lines due to a mode shift would be accommodated without substantially affecting the lines’ capacity utilization standard.

Impact TR-19 identified a significant and unavoidable impact for capacity utilization of the Muni line 108-Treasure Island bus line. During the three peak hours of analysis, the total transit demand for the 108-Treasure Island would not be accommodated within the 85 percent capacity utilization standard, and an increase in transit demand due to a mode shift would exacerbate the exceedance of the capacity utilization standard. Therefore, a shift in mode from auto to transit would result in a worsening of the identified significant impact on Muni line 108-Treasure Island transit operations.

As with Impact TR-19, implementation of Mitigation Measure M-TR-2 (Expanded Transit Service) would reduce the secondary impact on transit to a less than significant level. However, because full funding for Expanded Transit Service has not yet been identified its implementation remains uncertain and therefore, the secondary parking impacts on transit would remain significant and unavoidable.