

TRANSPORTATION AND CIRCULATION STUDY

# **ALCATRAZ FERRY EMBARKATION EIS**

GOLDEN GATE NATIONAL RECREATION AREA  
CALIFORNIA

DRAFT  
December 2013



**Alcatraz Ferry Embarkation EIS**  
**Golden Gate National Recreation Area**  
California  
December 2013

This report contains the results of a transportation impact analysis conducted for the Alcatraz Ferry Embarkation Environmental Impact Statement (EIS). The report describes the three action alternatives, including one at Pier 31½ on the Embarcadero, one at Pier 41 near Fisherman's Wharf, and one in Lower Fort Mason, and one project component common to all alternatives, a new service to Fort Baker. For the Lower Fort Mason alternative, three scenarios were considered: one in which the current transit system is largely kept intact, one in which the F-Market & Wharves historic streetcar is extended to the site, and one in which a shuttle is implemented operating between Fisherman's Wharf and Lower Fort Mason.

The report describes the travel demand associated with each of the alternatives, and how the various alternatives would affect traffic, transit capacity, parking, and bicycle and pedestrian circulation. The analysis identifies that the various alternatives would have significant impacts to the transportation network that require mitigation.

In addition, this report contains a supplemental report (Appendix A) which describes how a separately proposed Fort Mason special ferry service might affect the analyses described in this report.



# CONTENTS

<b>INTRODUCTION .....</b>	<b>1</b>
Report Organization .....	1
Project Description .....	2
Project Study Area .....	4
Pier 31½ Alternative Study Area .....	7
Pier 41 (Fisherman’s Wharf) Alternative Study Area .....	11
Lower Fort Mason Alternative Study Area .....	15
Related Regulations, Policies, and land Use Management Plans .....	19
Federal and State Regulations, Policies, and Plans .....	19
Regional Regulations, Policies, and Plans .....	19
Local Regulations, Policies, and Plans .....	20
Analysis Methodology .....	21
Intersection (Traffic) Analysis .....	22
Transit Analysis .....	26
Bicycle Facilities Analysis .....	33
Pedestrian Facilities Analysis .....	33
Parking Analysis .....	36
<b>AFFECTED ENVIRONMENT .....</b>	<b>39</b>
Roadway Facilities .....	39
Regional Access .....	39
Local Access .....	39
Existing Traffic (Intersection) Operations .....	42
Existing Transit Operations .....	54
San Francisco Municipal Railway (Muni) .....	54
Presidio Trust Shuttle Service .....	60
Bay Area Rapid Transit (BART) .....	61
Water Emergency Transportation Authority (WETA) .....	61
Golden Gate Transit .....	61
AC Transit .....	62
Caltrain 62	
Samtrans .....	62
Local and Regional Transit Screenline Analysis .....	62
Existing Bicycle Network .....	67
Pier 31½/71	
Pier 41 (Fisherman’s Wharf) .....	73
Lower Fort Mason .....	74
Existing Pedestrian Conditions .....	76
Pier 31½/78	
Pier 41 (Fisherman’s Wharf) .....	78
Lower Fort Mason .....	79
Existing Parking Conditions .....	81

Pier 31½/82	
Pier 41 (Fisherman’s Wharf).....	82
Lower Fort Mason.....	83
<b>PROPOSED PROJECT TRAVEL DEMAND.....</b>	<b>85</b>
Trip Generation.....	85
Total Person Trip Generation.....	85
Analysis Alternatives.....	87
Mode Split Analysis.....	87
Project Trips by Mode.....	91
Trip Distribution and Assignment.....	94
Daily Parking Demand.....	95
Pier 31½ and Pier 41 (Fisherman’s Wharf).....	96
Lower Fort Mason.....	96
Parking Demand Determination For Impact Analysis.....	97
<b>ENVIRONMENTAL CONSEQUENCES.....</b>	<b>101</b>
Significance Thresholds.....	101
Intersection (Traffic).....	101
Transit 102	
Bicycle Facilities.....	102
Pedestrian Facilities.....	102
Parking Facilities.....	102
Cumulative Conditions Forecasts.....	102
Assumed Future Transportation Improvements.....	102
Development of 2035 Cumulative Traffic and Transit Forecasts Methodology.....	104
No Action Alternative.....	105
Pier 31½ Alternative.....	105
Intersection Traffic.....	106
Transit 115	
Bicycle Facilities.....	122
Pedestrian Facilities.....	123
Parking Facilities.....	128
Construction.....	131
Pier 41 Alternative.....	131
Intersection Traffic.....	131
Transit 133	
Bicycle Facilities.....	134
Pedestrian Facilities.....	135
Parking Facilities.....	136
Construction.....	136
Lower Fort Mason Alternative - No F-Market Line Extension or Shuttle Scenario.....	137
Intersection Traffic.....	137
Transit 138	
Bicycle Facilities.....	139

TABLE OF CONTENTS

Pedestrian Facilities ..... 140

Parking Facilities ..... 140

Construction..... 141

Lower Fort Mason Alternative - F-Market Line Extension Only Scenario ..... 142

    Intersection Traffic ..... 142

    Transit Impacts..... 143

    Bicycle Facilities ..... 145

    Pedestrian Facilities ..... 145

    Parking Facilities ..... 145

    Construction Impacts..... 146

Lower Fort Mason Alternative (Shuttle Only) ..... 146

    Intersection Traffic ..... 146

    Transit 147

    Bicycle Facilities ..... 148

    Pedestrian Facilities ..... 149

    Parking Facilities ..... 149

    Construction Impacts..... 150

Summary ..... 150

**REFERENCES ..... 151**

**Tables**

Table 1. Existing and Projected Alcatraz Ferry Embarkation Site Daily Visitation (2010-2035) ..... 3

Table 2. Existing and Projected Annual Ferry Ridership (2010-2035) ..... 4

Table 3. Intersection LOS Criteria..... 25

Table 4. Pedestrian LOS Criteria at Signalized Intersections ..... 34

Table 5: Average Flow Pedestrian LOS Criteria for walkways and sidewalks (crosswalks) ..... 35

Table 6. Park Service- Specific Pedestrian LOS Criteria For Walkways<sup>1</sup> ..... 36

Table 7. Existing Conditions – Intersection Levels of Service ..... 51

Table 8. Existing Conditions – Muni Transit Service..... 55

Table 9A. Existing Conditions—Muni Capacity Utilization Analysis—AM Peak Hour..... 64

Table 9B. Existing Conditions—Muni Capacity Utilization Analysis—PM Peak Hour ..... 65

Table 9C. Existing Conditions—Muni Capacity Utilization Analysis—Weekend Midday Peak Hour.. 66

Table 10. Existing Conditions – Pedestrian Level of Service (intersection Delay and Crosswalk Space)  
..... 77

Table 11. Existing Conditions – Pedestrian Level of Service (Walkways) ..... 78

Table 12. Existing Conditions – Parking (Weekday) ..... 81

Table 13. Existing Conditions – Parking (Saturday) ..... 82

Table 14. Existing and Future Daily Person trips to the Alcatraz Ferry embarkation site ..... 86

Table 15. Existing and Future Peak Hour Person Trips to the Alcatraz Ferry Embarkation Site..... 87

Table 16. Person Trips (Inbound / Outbound / Total) By Mode ..... 92

Table 17. Vehicle Trips (Inbound / Outbound / Total) By Mode ..... 94

Table 18. Project Trip Origins / Destinations ..... 95

Table 19. Current Visitor Parking Locations Based on Survey Results..... 96

Table 20. Parking Demand Estimates at Pier 31½ and Fisherman’s Wharf ..... 96

Table 21. Parking Demand Estimates at Fort Mason..... 97

Table 22. Near-Term Conditions Intersection LOS ..... 107

Table 23. Long-Term Cumulative Conditions (Year 2035)—Intersection LOS ..... 111

Table 24A. Near-Term Muni Capacity Utilization Analysis—AM Peak Hour ..... 116

Table 24B. Near-Term Muni Capacity Utilization Analysis—PM Peak Hour ..... 117

Table 24C. Near-Term Muni Capacity Utilization Analysis—Weekend Midday Peak Hour ..... 118

Table 25A. Long-Term (Year 2035) Muni Capacity Utilization Analysis—AM Peak Hour..... 119

Table 25B. Long-Term (Year 2035) Muni Capacity Utilization Analysis—PM Peak Hour ..... 120

Table 25C. Long-Term (Year 2035) Muni Capacity Utilization Analysis—Weekend Midday Peak Hour  
..... 121

Table 26. Near-Term Conditions—Pedestrian LOS (Intersection Delay and Crosswalk Space)..... 124

Table 27. Near-Term Conditions—Pedestrian LOS (Walkways) ..... 127

Table 28. Near-Term Parking Supply and Occupancy (Weekday)..... 129

Table 29. Near-Term Parking Supply and Occupancy (Saturday)..... 130

Table 30. Summary of Impact Findings ..... 150

**Figures**

Figure 1. Study Area and Ferry Terminal Locations ..... 5

Figure 2. Pier 31½ Project Site..... 9

Figure 3. Pier 41 (Fisherman’s Wharf) Project Site ..... 13

Figure 4. Lower Fort Mason (Pier 3) Project Site..... 17

Figure 5. Study Intersections ..... 23

Figure 6A. Transit Study Areas: Pier 31½ Project Site ..... 27

Figure 6B. Transit Study Areas and Screenlines: Fisherman’s Wharf Project Site ..... 29

Figure 6C. Transit Study Areas and Screenlines: Lower Fort Mason Project Site ..... 31

Figure 7. Parking Study Areas ..... 37

Figure 8A. Intersection Lane Configurations and Peak Hour Traffic Volumes – Existing Conditions.. 45

Figure 8B. Intersection Lane Configurations and Peak Hour Traffic Volumes – Existing Conditions.. 47

Figure 8C. Intersection Lane Configurations and Peak Hour Traffic Volumes – Existing Conditions.. 49

Figure 9. Muni Transit Lines ..... 57

Figure 10. Existing Bicycle Facilities ..... 69

Figure 11. Peak Hour Bicycle Volumes Near Pier 31½..... 73

Figure 12. Peak Hour Bicycle Volumes Near Pier 41 ..... 74

Figure 13. Peak Hour Bicycle Volumes at Fort Mason Pier 4..... 75

Figure 14. Peak Hour Pedestrian Volumes at Entrance to Lower Fort Mason Parking Lot ..... 80

Figure 15. Peak Hour Pedestrian Volumes on Upper Fort Mason Stairway ..... 80

Figure 16. Final Weekday Mode Split Estimates ..... 90

Figure 17. Final Weekend Day Mode Split Estimates..... 91

Figure 18. Weekday Parking Demand By Alternative..... 98

Figure 19. Weekend Parking Demand By Alternative ..... 99



TABLE OF CONTENTS

**Appendixes**

Appendix A	Supplemental Transportation and Circulation Study
Appendix B	Traffic Analysis Calculations
Appendix C	Visitor Flow Counts
Appendix D	Visitor Survey and Travel Demand Analysis

## LIST OF ACRONYMS AND ABBREVIATIONS

ABAG	Association of Bay Area Governments
AWSC	all-way stop controlled
BART	Bay Area Rapid Transit
BRT	Bus Rapid Transit
City	City of San Francisco
CMP	Congestion Management Program
DPW	Department of Public Works
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
GGNRA	Golden Gate National Recreation Area
GMP	General Management Plan
HCM	<i>Highway Capacity Manual</i>
I-280	Interstate 280
I-80	Interstate 80
LOS	level of service
MTC	Metropolitan Transportation Commission
MTS	Metropolitan Transportation System
Muni	San Francisco Municipal Railway
NEPA	National Environmental Policy Act of 1969
NPS	National Park Service
ORCA	ORCA Consultants
Park Service	National Park Service
Project	relocation or improvement of the Alcatraz ferry embarkation site
RPP	Residential Parking Permit
SAFR	San Francisco Maritime National Historic Park
Samtrans	San Mateo County Transit
SD	Superdistrict
SF Guidelines	<i>City of San Francisco Transportation Impact Analysis Guidelines for Environmental Review</i>
SF-CHAMP	San Francisco's County's travel demand model
SFCTA	San Francisco County Transportation Authority
SFMTA	San Francisco Municipal Transportation Agency
SSSC	side street stop controlled
TEP	Transit Effectiveness Project
Transit Important	Transit Preferential Street or Primary Transit Street
TTRP	travel time reduction proposals
U.S. 101	U.S. Highway 101
WETA	Water Emergency Transportation Authority

## INTRODUCTION

The National Park Service (NPS or Park Service) is currently studying the feasibility of establishing a more permanent home for the mainland Alcatraz Ferry Embarkation Site, which is currently located at Pier 31½ along the northern waterfront of San Francisco. This report provides an assessment of the potential for impacts on transportation and circulation as a result of a relocated or improved embarkation site (Project). The transportation analysis evaluates impacts to the following transportation areas:

- Traffic (traffic operations at intersections)
- Transit (availability and demand for transit service)
- Pedestrian and bicycle access and circulation
- Parking (demand and availability)

## REPORT ORGANIZATION

The Project could affect local circulation near waterfront areas, including intersection level of service (LOS), demand for transit service (including bus and streetcar service), pedestrian and bicycle networks, and demand for parking. This report addresses potential issues associated with the Project alternatives on these modes. The report is divided into the following chapters:

- **Introduction** summarizes the Project, the study area used for the transportation analysis, applicable transportation regulations and policies, and the analysis methodology.
- **Existing Conditions/Affected Environment** describes the operating conditions of the existing transportation network in the project vicinity, including the surrounding roadway network, peak hour traffic volumes, and intersection operations. This section describes the current public transit network, bicycle facilities, and pedestrian facilities. A discussion of off-street and on-street parking conditions is also included.
- **Travel Demand Analysis** describes the Project alternatives' estimated transportation demand by presenting trip generation, trip distribution, mode split, and trip assignment forecasts relevant to each of the Project alternatives. Parking demand is also discussed.
- **Environmental Consequences** describes the anticipated operating conditions of the transportation network as a result of the Project. Specific evaluations include each alternative's near- and long-term impact on study intersections, transit, bicycles, pedestrians, and parking. This chapter also includes discussion of the potential effects during the construction of the Project at each of the alternative locations. The Environmental Consequences Section presents the following scenarios:
  - No Action Alternative/Baseline Conditions describes the anticipated near- and long-term operating conditions of the transportation network should the Park Service elect not to construct a longer-term Alcatraz embarkation facility. Under the No Action Alternative, the current arrangement, whereby the Park Service negotiates shorter-term contracts with concessionaires and may relocate the embarkation site with each new contract, would remain in place.
  - Action Alternatives describes the anticipated operating conditions of the existing transportation network after implementation of the Build alternatives. Since three alternative embarkation sites are being considered, separate analyses are

presented for each alternative. For one of the alternatives (Fort Mason), three separate transit scenarios are evaluated.

## PROJECT DESCRIPTION

The Park Service seeks to secure a site that provides for a long-term (50 years or more) orientation and ferry embarkation site for service to Alcatraz Island from the northern San Francisco waterfront. The Park Service desires an identifiable and well-functioning facility that provides a quality welcome and support program for visitors, connecting visitors to the history of Alcatraz Island, Golden Gate National Recreation Area (GGNRA), and the National Park system in general.

Currently, the Park Service contracts with a third-party provider that leases the existing embarkation site at Pier 31½ from the Port of San Francisco. The Park Service renews this contract approximately every 10 years, and in cases when a different provider is selected to operate ferry service, the entire operation may move to a different location along the waterfront. As a consequence, the Park Service has limited ability to make long-term improvements at a given site to support the desired Park Service visitor experience. To enable longer-term investments and provide a higher quality experience for visitors, the Park Service is considering identifying a preferred site and making a longer-term investment. In addition, visitor demand at Alcatraz is projected to grow. The proposed action, along with management improvements on Alcatraz Island, will help the Park Service accommodate this growth in an efficient and safe manner.

As part of the Draft Alcatraz Ferry Embarkation and Education Site Feasibility Study (URS 2011), nine potential sites were evaluated for a long-term ferry embarkation facility. Since then, alternative refinement has occurred, and three alternatives have been selected for further evaluation in the Environmental Impact Statement (EIS): Pier 31½ (current site), Pier 41 (Fisherman's Wharf), and Lower Fort Mason (Piers 1, 2 or 3).<sup>1</sup>

As part of all three Project alternatives, the embarkation facility would accommodate a third berth, which could accommodate some type of additional ferry service between the facility and other facilities along the San Francisco Bay. Although currently undefined, this service could consist of scheduled service to other NPS sites, a water taxi, or some other type of ferry service. As part of all three Project alternatives, the Park Service would also operate occasional special-event ferry service between the embarkation facility and the existing pier at Fort Baker.

Relocation of the Alcatraz ferry embarkation site to these sites, or in the case of Pier 31½ upgrading the existing embarkation facility to be a more permanent facility, would increase visitorship at the embarkation facility due to the additional ferry service to other sites, but would not itself increase visitorship to Alcatraz Island. Separately-planned improvements in the way visitor flow is managed on the island will also increase visitorship to the island, and therefore, to the embarkation facility. Although the on-island improvements that would accommodate this growth are not dependent on the Project alternatives, the Project alternatives would provide a better and more comfortable environment for increased visitor levels compared to the No Action Alternative.

The Project would provide the following landside visitor facilities at any of the alternative sites:

---

<sup>1</sup> Currently, Pier 3 is the most likely location at Lower Fort Mason, although combinations of Pier 3 with other buildings at Lower Fort Mason, including Pier 1 or 2, may be ultimately included. For purposes of assessing transportation impacts, all sites at Lower Fort Mason would have similar impacts and this analysis simply refers generally to Lower Fort Mason as a potential site.

INTRODUCTION

- Ferry service requirements – arrival/entry portal, ticketing, circulation areas, waiting areas, and queuing areas
- Visitor amenities – bathrooms, snacks, food, visitor-serving retail vendors, and group orientation space
- Educational facilities – exhibit spaces and visitor contact station
- Transportation access – bicycle parking and bus/taxi drop-off areas
- Operational space – storage and staff office space

Currently, the Alcatraz Ferry embarkation site accommodates approximately 1.4 million visitors annually. Due to management enhancements on Alcatraz Island proper, visitation to the embarkation site is expected to increase by approximately 20 percent in the future, to roughly 1.7 million visitors annually. The Project alternatives, and their associated third berth, would increase visitorship by approximately 100,000 visitors annually, or approximately six percent. The new embarkation facility would be designed to accommodate these visitation levels. Table 1 summarizes the existing and projected future visitation at the embarkation site. There are two metrics used for facility planning—the Design Day, which refers to the 85th percentile attendance level (i.e., the level that is only exceeded 15 percent of days), and the Peak Day, which refers to the 2nd or 3rd highest visitation levels observed in a year. This analysis is based on the Peak Day to present a conservative assessment of potential impacts.

**TABLE 1. EXISTING AND PROJECTED ALCATRAZ FERRY EMBARKATION SITE DAILY VISITATION (2010-2035)**

	Daily Visitation			
	Existing (2010)	Near-Term with Project Alternatives	Long-Term Future Baseline (2035)	Long-Term Future with Project Alternatives
<b>Peak Day</b>				
Alcatraz Tour Visitors	5,460	5,460	6,600	6,600
Non-Alcatraz Tour Visitors (No Ferry Travel)	700	700	800	800
<b>Non-Alcatraz Tour Visitors (Ferry Travel Associated with 3rd Berth)</b>	<b>0</b>	<b>390</b>	<b>0</b>	<b>390</b>
<b>Total</b>	<b>6,160</b>	<b>6,550</b>	<b>7,400</b>	<b>7,790</b>

Note:  
Source: *Draft Alcatraz Ferry Embarkation and Education Site Feasibility Study* (URS 2011)

Table 2 illustrates the expected increases in visitors on an annual basis for the No Action Alternative/National Environmental Policy Act (NEPA) Baseline Conditions and Project Alternatives. As shown, the Project Alternatives would help accommodate projected visitor growth patterns on Alcatraz Island and provide a third berth for additional ferry services to other locations.

**TABLE 2. EXISTING AND PROJECTED ANNUAL FERRY RIDERSHIP (2010-2035)**

	Baseline/No Action Alternative		Project Alternatives		
	2010	2035	Pier 31½	Pier 41	Fort Mason
<b>Year</b>					
<b>Total Annual Ferry Passengers</b>	<b>1.4 Million</b>	<b>1.7 Million</b>	<b>1.8 Million</b>	<b>1.8 Million</b>	<b>1.8 Million</b>
To Alcatraz	1.4 Million	1.7 Million	1.7 Million	1.7 Million	1.7 Million
To Other Locations	0	0	100,000	100,000	100,000

Note:

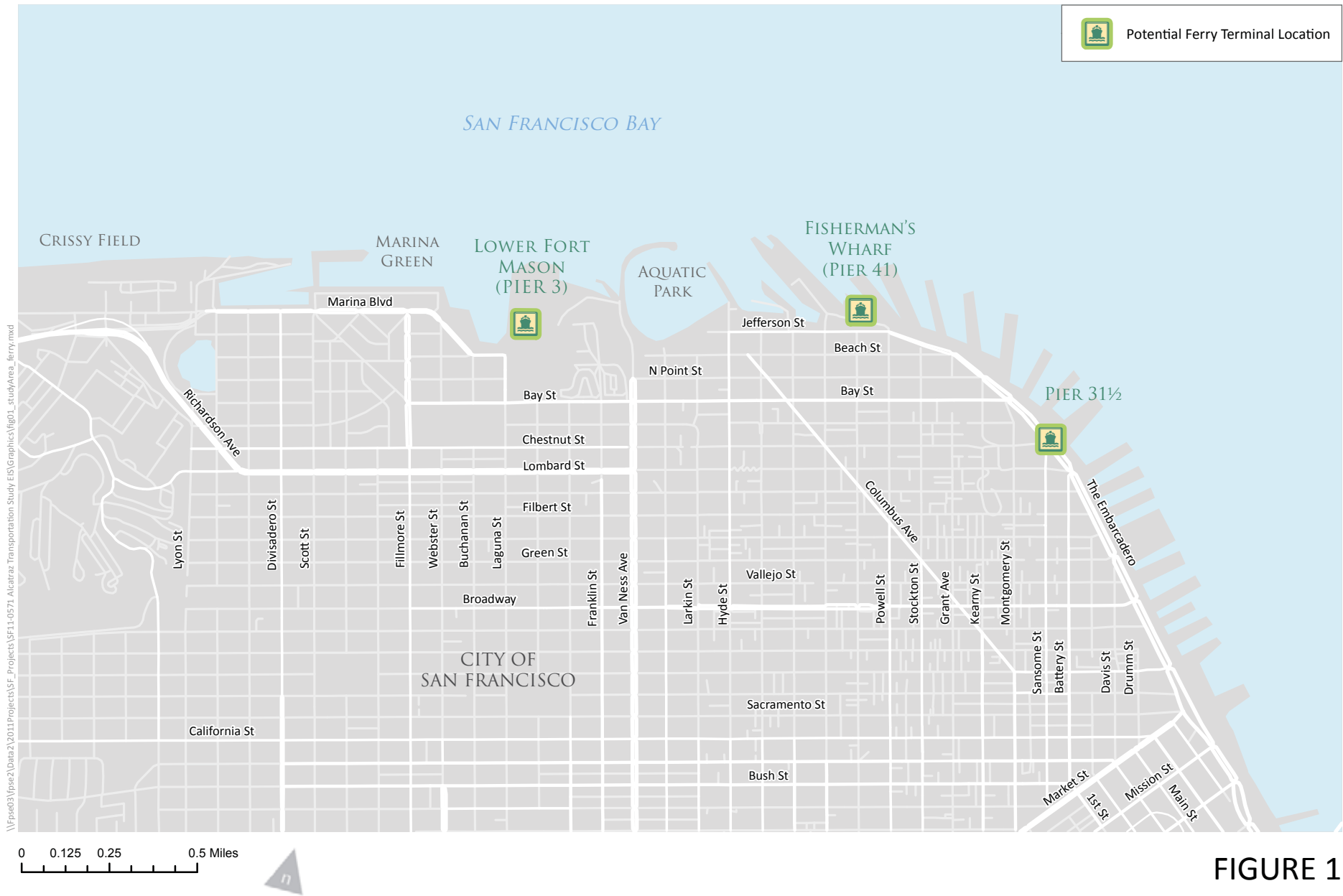
Source: *Draft Alcatraz Ferry Embarkation and Education Site Feasibility Study* (URS 2011)

## PROJECT STUDY AREA

The study area includes all aspects of the transportation network that may be measurably affected by the Project. The study area is defined by travel corridors and facilities (e.g., local roadways, bicycle lanes, transit lines, sidewalks) that visitors and employees may use to reach any of the potential sites. The following parameters were used to select the transportation project study area and transportation facilities analyzed in this report:

- Traffic (Intersection) LOS – intersections located along major roadways approaching the alternative sites or nearby public parking facilities
- Transit Service – San Francisco Municipal Railway (Muni) transit service serving the various alternative sites, defined as those major routes operating within 0.5 mile of the alternative sites with stops within the 0.5-mile radius; regional transit providers Bay Area Rapid Transit (BART), Golden Gate Transit, San Mateo County Transit (Samtrans) were also considered
- Bicycle Facilities – existing and planned bicycle routes within 0.5 mile of the alternative sites that provide direct or indirect access
- Pedestrian Facilities – existing sidewalks and crosswalks adjacent to the primary pedestrian entrances of each embarkation site
- Parking Facilities – on-street parking and public off-street parking garages located within 0.25 to 0.5 mile from the alternative sites, or other major parking facilities likely to be used by visitors

As shown in Figure 1, landside embarkation would occur at one of three potential locations along the northern and northeastern waterfront of the City of San Francisco (City). The easternmost landside terminal under consideration is Pier 31½, which is located along The Embarcadero between Bay Street and Sansome Street. Pier 31½ is the existing landside terminal for the Alcatraz Ferry. The Pier 41 (Fisherman’s Wharf) site is located along the Embarcadero between Powell Street and Stockton Street. Pier 41 is immediately between the Fisherman’s Wharf and Pier 39 tourist attractions, and was the embarkation site for the Alcatraz Ferry until 2006 when the site moved to Pier 31½. Lower Fort Mason is the westernmost location considered for the Project. Fort Mason is located in the Marina neighborhood of San Francisco. Pier 31½ and Pier 41 are currently owned by the Port of San Francisco and Lower Fort Mason is owned by the Park Service. A more detailed discussion of the study area surrounding each of the three potential sites follows Figure 1.



**FIGURE 1**  
**STUDY AREA AND FERRY TERMINAL LOCATIONS**  
 Golden Gate National Recreation Area  
 National Park Service/U.S. Department of the Interior  
 December 2013





### **Pier 31½ Alternative Study Area**

The Pier 31½ Alternative retains the current Alcatraz ferry embarkation site at Pier 31½ and proposes improvements to the existing facility. Located along The Embarcadero, the study area for this site is generally bounded by Broadway Street on the south, The Embarcadero on the north and east, and Sansome Street and Telegraph Hill on the west. Since there are steep grades between Telegraph Hill/Coit Tower and the waterfront, the Pier 31½ study area generally includes only the transportation facilities in the flat area of the waterfront that are directly accessible or connected to The Embarcadero (i.e., east of Telegraph Hill). Several parking garages within a two or three block walk west and northwest from this site provide parking. Transit service to the area includes the Historic F-Market & Wharves streetcar (F-Market line or F-Line); Powell-Mason Cable Car; 47 Van Ness, and 8X Bayshore Express bus routes. Other shorter circulator routes, such as the 39 Coit Tower, also provide service near the site, but are not likely to play a key role in access to the site for Alcatraz visitors.

The Pier 31½ Alternative would use the historic Pier 31½ bulkhead building on the Embarcadero, a small part of the Pier 33 shed, and all of the outdoor space between Piers 31 and 33 for embarkation support services. Site arrival and access options would be consistent with those of the No Action Alternative. The existing parking area would be reduced and redefined as accessible parking only. An accessible visitor and tour bus drop-off would be located along the Embarcadero, adjacent to the bulkhead building. Similar to the No Action Alternative, visitors would enter this site from the Embarcadero, just east of the bulkhead. Figure 2 presents the proposed conceptual layout of the Pier 31½ Alternative.

Primary access to Pier 31½ would remain on The Embarcadero. Pedestrians would enter the embarkation site immediately south of the existing pedestrian access point off of Herb Caen Way, which is the formal name for the shared pedestrian/bicycle promenade along the eastern side of The Embarcadero. This new access point is at an existing driveway and curb cut for the parking lot between Pier 31 and Pier 33. Pier 31 has a service vehicle entrance approximately 180 feet south of the existing embarkation site entrance. The pedicab stop located at Pier 33 would remain and be used by passengers accessing the improved embarkation site at Pier 31½.

Parking for the Pier 31½ site would remain dispersed. On-street parking in the area is generally full at peak times, and visitors are directed to off-street garages in the Fisherman's Wharf Area, including garages at Stockton Street/North Point Street, Stockton Street/Bay Street, Kearny Street/Bay Street, Kearny Street/Francisco Street, Kearny Street/Chestnut Street, and Montgomery Street/Lombard Street.





**FIGURE 2**

**PIER 31½ PROJECT SITE**

Golden Gate National Recreation Area  
National Park Service/U.S. Department of the Interior

December 2013



### **Pier 41 (Fisherman's Wharf) Alternative Study Area**

The Pier 41 Alternative would be located immediately west of Pier 39 tourist attractions and at the northern terminus of Powell Street at Stockton Street. Pier 41 is currently used by the Blue & Gold Ferry Fleet for ferry service between San Francisco, Sausalito, and Tiburon. Pier 41 served as the embarkation site for the Alcatraz Ferry for many years prior to 2006 when the service moved to the current location at Pier 31½.

The grid system in the Fisherman's Wharf area makes this site easily accessible from all directions, with primary access from The Embarcadero, Bay Street and Van Ness Avenue. Local direct access is provided via Jefferson Street and Powell Street. Several public parking lots and garages north of Bay Street provide parking for the area. The study area for this site is generally bounded by Bay Street on the south, Van Ness Avenue on the west, and The Embarcadero on the north and east. The Fisherman's Wharf area is well served by transit, including the F-Market/Wharf streetcar; 19 Polk, 30 Stockton, 47 Van Ness, and 8X Bayshore Express bus routes; and the Powell-Hyde and Powell-Mason cable car lines.

In general, the Fisherman's Wharf area is dominated by heavy pedestrian crowds during the day, particularly along the waterfront. The San Francisco Planning Department recently completed the Fisherman's Wharf Public Realm Plan that recommended a number of streetscape modifications along Jefferson Street to make the street more pedestrian-oriented, including decorative pavement, wider sidewalks, removal of on-street parking, and travel lane modifications. These improvements were constructed in June 2013.

The Pier 41 Alternative would expand the existing building structure to accommodate the required program elements. Site arrival and access would be accommodated via the existing infrastructure. An accessible drop-off would be provided along Jefferson Street, west of the building, in a space currently used for pedicabs, but also informally used for drop-off and pick-up activities. An existing tour bus drop-off located south of the site, adjacent to Pier 39, would provide tour bus access to Pier 41. Visitors would enter the site from the pedestrian plaza and promenade along the southern façade of the building. A new stairway and accessible ramp would bridge the existing grade change between the plaza and the building's main floor. Figure 3 presents the proposed conceptual layout of the Pier 41 Alternative.

The primary pedestrian access to Pier 41 would be through the plaza on the north side of The Embarcadero between Piers 39 and 41. The north leg of the intersection of Powell Street/The Embarcadero/Jefferson Street would provide the nearest vehicle drop-off/pick-up access. The waterfront side of The Embarcadero, north of Jefferson Street, will remain designated for pedicab and passenger loading and unloading.

Parking for the Pier 41 site would be dispersed using available on- and off-street public parking garages and lots. The nearest garage is Fisherman's Wharf garage located across The Embarcadero between Powell and Beach Streets. Other parking garages are located throughout the area and accommodate over 6,000 vehicles.





**FIGURE 3**  
**FISHERMAN'S WHARF (PIER 41) PROJECT SITE**

Golden Gate National Recreation Area  
 National Park Service/U.S. Department of the Interior

December 2013





## **Lower Fort Mason Alternative Study Area**

The Lower Fort Mason Alternative site is located at the eastern end of the Marina neighborhood district of San Francisco near the intersection of Laguna Street/Marina Boulevard. Marina Boulevard, Bay Street, Lombard Street and Van Ness Avenue provide primary access to the area. Lower Fort Mason currently has on-site parking, which is served by the north leg of the intersection of Buchanan Street/Beach Street/Marina Boulevard. Primary transit access to the area includes the 22 Fillmore, 28 Sunset, 30 Stockton, 43 Masonic, 47 Van Ness, and 49 Van Ness-Mission bus routes. On weekends, the 76 Marin Headlands also provides service to Lower Fort Mason. Because of uncertainty regarding the timing of proposed changes to transit in the area surrounding Lower Fort Mason, three scenarios have been studied. One scenario consists of the existing level of transit service in the study area. A second scenario evaluates the changes that would happen if the F-Market & Wharves historic streetcar line is extended into Lower Fort Mason (this proposed extension has recently completed environmental review process, although funding is not yet programmed). A third scenario involves a shuttle service that would be operated by the Park Service connecting between Fisherman's Wharf and Lower Fort Mason—essentially the same route that the proposed F-Market & Wharves streetcar extension would serve.

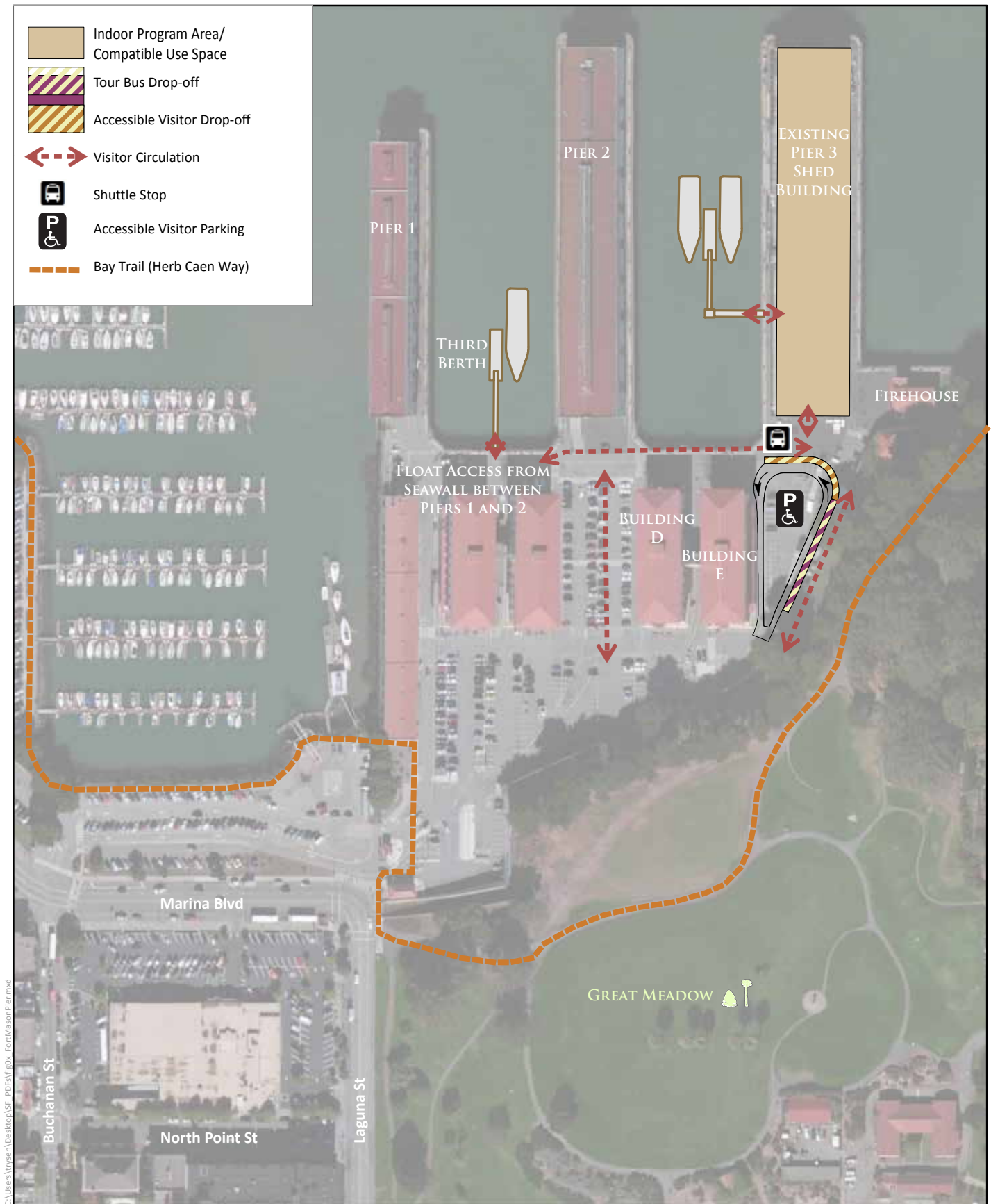
There are four primary pedestrian access points to the Lower Fort Mason Alternative: from the intersection of Laguna Street/Marina Boulevard; from the intersection of Buchanan Street/Beach Street/Marina Boulevard; via a pedestrian staircase connecting Upper and Lower Fort Mason; and, from the San Francisco Bay Trail to the west. The San Francisco Bay Trail, which runs through Fort Mason, is a multi-use path that extends westward towards the Golden Gate Bridge and eastward through Upper Fort Mason to Van Ness Avenue, where it continues along the Bay.

Lower Fort Mason is the westernmost proposed Project location. Currently, Pier 3 is the most likely location at Lower Fort Mason, although combinations of Pier 3 with other buildings at Lower Fort Mason, including Pier 1 or 2, may be ultimately included. For purposes of assessing transportation impacts, all sites at Lower Fort Mason would have similar impacts, and this analysis simply refers generally to Lower Fort Mason as a potential site.

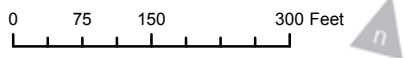
The Lower Fort Mason Alternative would locate the ferry embarkation site in Fort Mason's historic Pier 3 shed. The Alcatraz embarkation program would be located in the front (southern) portion of the pier shed, and compatible use space would be located in the back (northern) portion. (For purposes of this study, the comparable use is assumed to be similar to the current use, and therefore is not likely to affect transportation demand at the site. The vehicle circulation in front of Pier 3 would be revised to a one-way loop that would provide potential access to a shuttle that would drop off visitors. This revised access area would also accommodate accessible visitor and tour bus drop-off locations. Tour bus staging would be provided along the lower Fort Mason retaining wall south of the proposed interpretive rest area building. Existing parking within the revised loop circulation would be redefined as an accessible parking area. Parking for personal vehicles could be more limited at this site than for other alternatives. Figure 4 presents the proposed conceptual layout of the Lower Fort Mason Alternative.

Lower Fort Mason provides nearly 450 on-site, off-street parking spaces. The parking area currently serves existing businesses and special events.





C:\Users\trusech\Desktop\SF\_ppes\MapDoc\_FortMasonPier3.mxd



**FIGURE 4**  
**LOWER FORT MASON (PIER 3) PROJECT SITE**  
 Golden Gate National Recreation Area  
 National Park Service/U.S. Department of the Interior



## **RELATED REGULATIONS, POLICIES, AND LAND USE MANAGEMENT PLANS**

The following discusses the related regulations, policies, and land use management plans on the federal, state, and local levels that govern the review and analysis of transportation in the study area.

### **Federal and State Regulations, Policies, and Plans**

**NEPA of 1969.** NEPA requires all federal agencies to assess the environmental impacts of proposed projects and disclose the impacts of the project to the public in order to promote efforts that will prevent or eliminate damage to the environment. The President's Council on Environmental Quality was established to oversee NEPA for all federal agencies. The Park Service is the lead NEPA agency for this project.

**The Golden Gate National Recreation Area General Management Plan (GMP) (Draft Update 2011).** The GGNRA was established in 1972 and is governed by a GMP. The GMP is the master plan document for the GGNRA and describes the existing character of the park and sets forth plans and goals for future development within the park. The most recent GMP was established in 1980, and the GGNRA is currently working to finalize an update. The GGNRA has recently completed a Draft GMP and has prepared and circulated a Draft EIS on the Draft GMP.

The more recent Draft GMP identifies a vision for Alcatraz that gives visitors a more complete understanding of the complex history of Alcatraz Island, beginning with the embarkation site in San Francisco. The Draft GMP calls for enhanced education and visitor services on the San Francisco embarkation site.

### **Regional Regulations, Policies, and Plans**

**Water Emergency Transportation Authority's (WETA's) Water Transportation System Management Plan.** WETA is a regional agency authorized by the State of California to operate a comprehensive San Francisco Bay Area public water transit system. In 2009, WETA adopted the Emergency Water Transportation System Management Plan, which complements and reinforces other transportation emergency plans that will enable the Bay Area to restore mobility after a regional disaster. As discussed later in this report, WETA also operates passenger ferry service from the San Francisco Ferry Building and Pier 41.

**San Francisco Bay Trail Plan.** The Association of Bay Area Governments (ABAG) administers the San Francisco Bay Trail Plan. The Bay Trail is a multi-purpose recreational trail that, when complete, would encircle San Francisco Bay and San Pablo Bay with a continuous 400-mile network of bicycling and hiking trails. To date, 290 miles of the alignment have been completed. 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 project area, the 2005 Gap Analysis Study proposes to connect two Bay Trail segments along the waterfront: The Embarcadero between Taylor and Powell Streets, and Jefferson Street between Taylor Street and west of Hyde Street. The Bay Trail alignment as it relates to the Project sites is shown on figures 2 through 4.

## Local Regulations, Policies, and Plans

**San Francisco General Plan.** The Transportation Element of the San Francisco General Plan (City and County of San Francisco 2010a) 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 prioritize access from these modes.
- Objective 23: Improve the City’s pedestrian circulation system to provide for efficient, pleasant, and safe movement.
  - 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.

## INTRODUCTION

- 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.

**San Francisco Bicycle Plan.** The San Francisco Bicycle Plan (City and County of San Francisco 2009) 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 and minor improvements that would be implemented to facilitate bicycling in San Francisco.

**Transit-First Policy.** In 1998, 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 that 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 conducting City affairs.

**Better Streets Plan.** The Better Streets Plan focuses on creating a positive pedestrian environment through measures such as careful streetscape design and traffic calming to increase pedestrian safety. The Better Streets Plan includes guidelines for the pedestrian environment, which it defines as the areas of the street where people walk, shop, sit, play, or interact. Generally speaking, the guidelines are for design of sidewalks and crosswalks; however, in some cases, the Better Streets Plan includes guidelines for certain areas of the roadway, particularly at intersections.

## ANALYSIS METHODOLOGY

Transportation analysis was conducted for existing and future year "Cumulative" 2035 conditions with and without the proposed Project alternatives. Existing plus project conditions assess the near-term impacts of the proposed Project alternatives, while Year 2035 Cumulative conditions assess the long-term impacts of the Project alternatives in combination with other reasonably foreseeable development. Year 2035 was selected as the future analysis year to be consistent with available long-range population and employment growth projections, and is consistent with other recent transportation and environmental analyses conducted in San Francisco, including the *34th America's Cup and James R. Herman Cruise Terminal and Northeast Wharf Plaza Environmental Impact Report* (EIR; City and County of San Francisco 2011a), which examined many of the same transportation facilities analyzed in this document. Project impacts were assessed by comparing conditions the Proposed Project alternatives to the No Action Alternative/Baseline Conditions for both near- and long-term conditions.

The proposed measurement indices used to evaluate impacts to these topic areas are based on the proposed Project's consistency with applicable regional and local regulations and guidance, as described below. An alternative would be considered to have a major impact if, as compared to the No Action Alternative/Baseline Conditions, it would exceed established regulatory guidance.

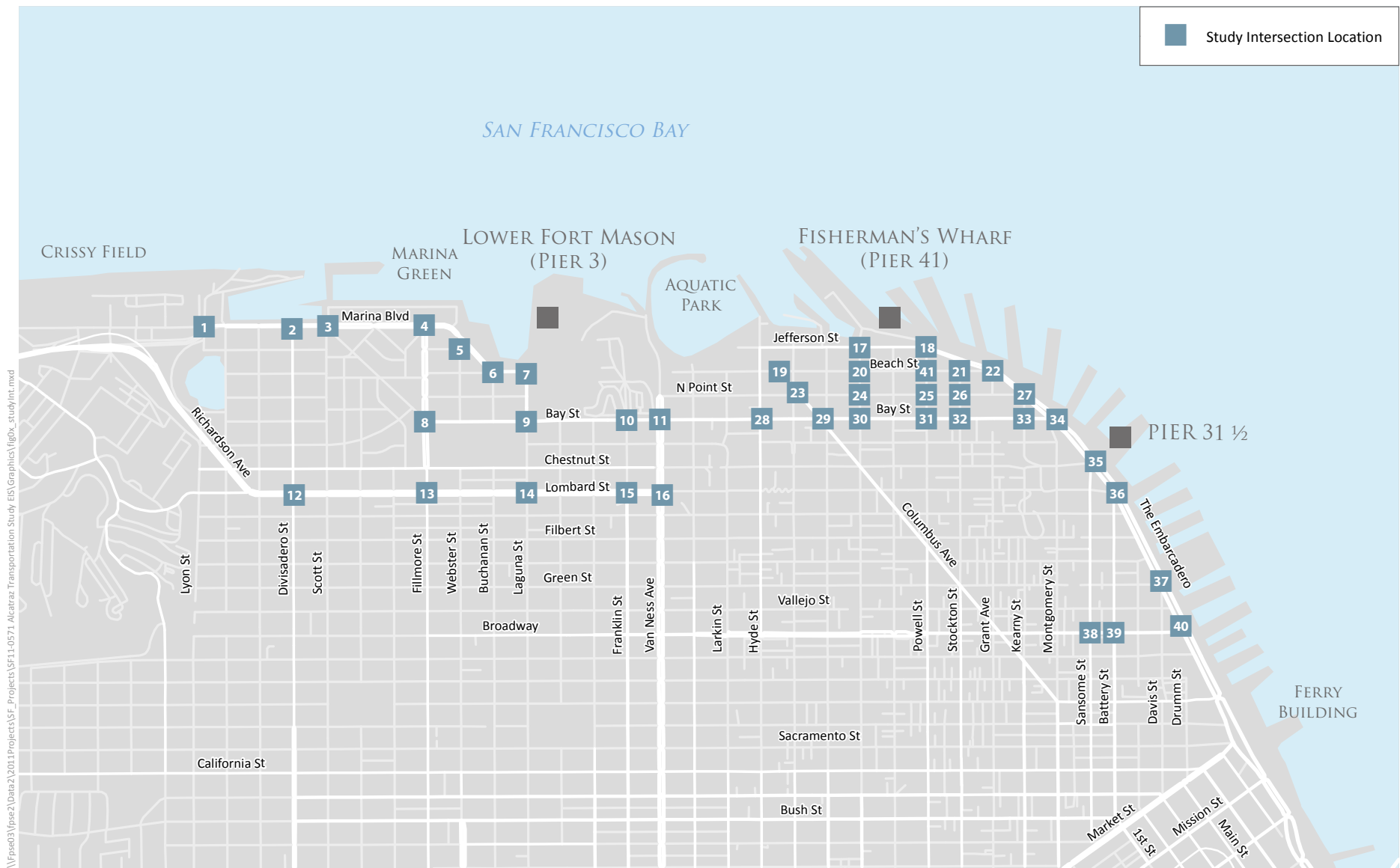
Baseline transportation conditions were established in 2012 through an analysis of weekday a.m., weekday p.m., and Saturday midday peak-hour conditions. The potential change in transportation conditions as a result of the activities at the proposed embarkation sites are evaluated by forecasting the change in travel demand in terms of person trips by mode, and determining if the projected changes could be accommodated with the existing and planned future transportation system. Changes to travel patterns resulting from the relocation of the site are also considered.

### Intersection (Traffic) Analysis

Intersection operations were analyzed at 41 study intersections in the study area most likely to be adversely affected by one or more of the Project alternatives. The selection of study intersections was informed by proximity to the Project alternative site locations, major routes providing access to the sites, other recent studies in the area (including the America's Cup EIR), engineering judgment, and knowledge of the study area. The geographic range and number of study intersections is similar to other projects of comparable size and scope along the San Francisco Waterfront. This transportation analysis examines traffic operations at the following 41 study intersections shown in Figure 5:

- |   |  |
|---|--|
| 1. Mason Street-Marina Boulevard/Yacht Road-Lyon Street | 22. Grant Street/Beach Street-The Embarcadero        |
| 2. Divisadero Street/Marina Boulevard                   | 23. Columbus Avenue/North Point Street               |
| 3. Scott Street-Cervantes Boulevard/Marina Boulevard    | 24. Taylor Street/North Point Street                 |
| 4. Fillmore Street/Marina Boulevard                     | 25. Powell Street/North Point Street                 |
| 5. Webster Street/Marina Boulevard                      | 26. Stockton Street/North Point Street               |
| 6. Buchanan Street/Marina Boulevard-Beach Street        | 27. Kearny Street/The Embarcadero/North Point Street |
| 7. Laguna Street/Marina Boulevard                       | 28. Hyde Street/Bay Street                           |
| 8. Fillmore Street/Bay Street-Cervantes Boulevard       | 29. Columbus Avenue-Jones Street/Bay Street          |
| 9. Laguna Street/Bay Street                             | 30. Taylor Street/Bay Street                         |
| 10. Franklin Street/Bay Street                          | 31. Powell Street/Bay Street                         |
| 11. Van Ness Avenue/Bay Street                          | 32. Stockton Street/Bay Street                       |
| 12. Divisadero Street/Lombard Street                    | 33. Kearny Street/Bay Street                         |
| 13. Fillmore Street/Lombard Street                      | 34. The Embarcadero/Bay Street                       |
| 14. Laguna Street/Lombard Street                        | 35. The Embarcadero/Sansome Street/Chestnut Street   |
| 15. Franklin Street/Lombard Street                      | 36. The Embarcadero/Battery Street/Lombard Street    |
| 16. Van Ness Avenue/Lombard Street                      | 37. The Embarcadero/Green Street                     |
| 17. Taylor Street/Jefferson Street                      | 38. Sansome Street/Broadway                          |
| 18. Powell Street/Jefferson Street-The Embarcadero      | 39. Battery Street/Broadway                          |
| 19. Columbus Avenue/Beach Street                        | 40. The Embarcadero/Broadway                         |
| 20. Taylor Street/Beach Street                          | 41. Powell Street/Beach Street                       |
| 21. Stockton Street/Beach Street                        |  |





\\Fpsc03\pse2\data2\2011\Projects\SF\_P\Projects\SF\_11-0571\_Alcatraz\_Transportation\_Study\_ES\Graphics\fig05\_studyint.mxd

**FIGURE 5**

**STUDY INTERSECTIONS**

Golden Gate National Recreation Area  
National Park Service/U.S. Department of the Interior

December 2013



Intersection operations are typically assessed using the concept of intersection LOS. The method to conduct LOS analysis is documented by the Transportation Research Board in the 2000 *Highway Capacity Manual* (HCM). LOS is a qualitative description of a facility's performance, but is most commonly based on the average delay per vehicle at an intersection. Intersection levels of service range from LOS A (i.e., free-flow conditions with little or no delay) to LOS F (i.e., jammed conditions with excessive delays).

LOS is based on control delay, which is defined as the delay directly associated with the traffic control device (i.e., a stop sign or signal), including 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 3 presents the relationship between LOS and delay for both signalized and unsignalized intersections. The LOS analysis for signalized intersections accounts for factors that affect delay at signalized intersections, including the turning movement volumes, lane geometries, and signal timing plan (e.g., cycle length, coordination, and phasing). Signal timing plans also include information about transit operations at intersections with special timing requirements when transit vehicles pass through the intersection (e.g., along The Embarcadero).

**TABLE 3. INTERSECTION LOS CRITERIA**

LOS	Average Control Delay (Seconds/Vehicle)		Description
	Signalized Intersections	Unsignalized Intersections	
A	< 10.1	< 10.1	Negligible delay: No approach is fully used and no vehicle waits longer than one red indication (at signals).
B	10.1 – 20.0	10.1 – 15.0	Minimal delay: An occasional approach is fully used and drivers begin to feel restricted.
C	20.1 – 35.0	15.1 – 25.0	Average/moderate, but acceptable delay. Most drivers feel restricted.
D	35.1 – 55.0	25.1 – 35.0	Tolerable delay. Some queuing may occur, but usually dissipates quickly.
E	55.1 – 80.0	35.1 – 50.0	Significant delay: Volume approaches capacity and vehicles may wait through several signal cycles. Drivers at unsignalized intersections may wait in long queues.
F	> 80.0	> 50.0	Excessive delay and congestion: Conditions are at capacity with long delay and queuing.

Note:

Source: Chapters 16 and 17, Highway Capacity Manual, (TRB 2000)

The LOS analysis for unsignalized intersections accounts for delay experienced on each approach. In San Francisco, LOS is most commonly reported for the approach experiencing the highest level of delay, whether the intersection is side-street stop controlled or all-way stop controlled. As shown in Table 3, unsignalized intersections have lower delay thresholds for LOS compared to signalized intersections due to driver performance expectations.

These study intersections were selected for analysis because they are located along travel routes to and from the proposed sites and nearby parking facilities, and therefore, were considered most likely to experience traffic impacts due to one or more of the proposed Project alternatives. Their operational characteristics were analyzed during the weekday a.m. (7 to 9 a.m.), weekday p.m. (4 to 6 p.m.) and Saturday midday (12 to 2 p.m.) peak periods to coincide with both the peak commuting hours and peak hours of activity along the waterfront. The analysis was conducted for

the peak hour within each of these longer periods. The analysis used guidance provided in the *City of San Francisco Transportation Impact Analysis Guidelines for Environmental Review*, dated October 2002 (SF Guidelines; City and County of San Francisco 2002) to determine impacts. The City considers intersections operating at LOS D or better to be acceptable and intersections operating at LOS E or F to be unacceptable.

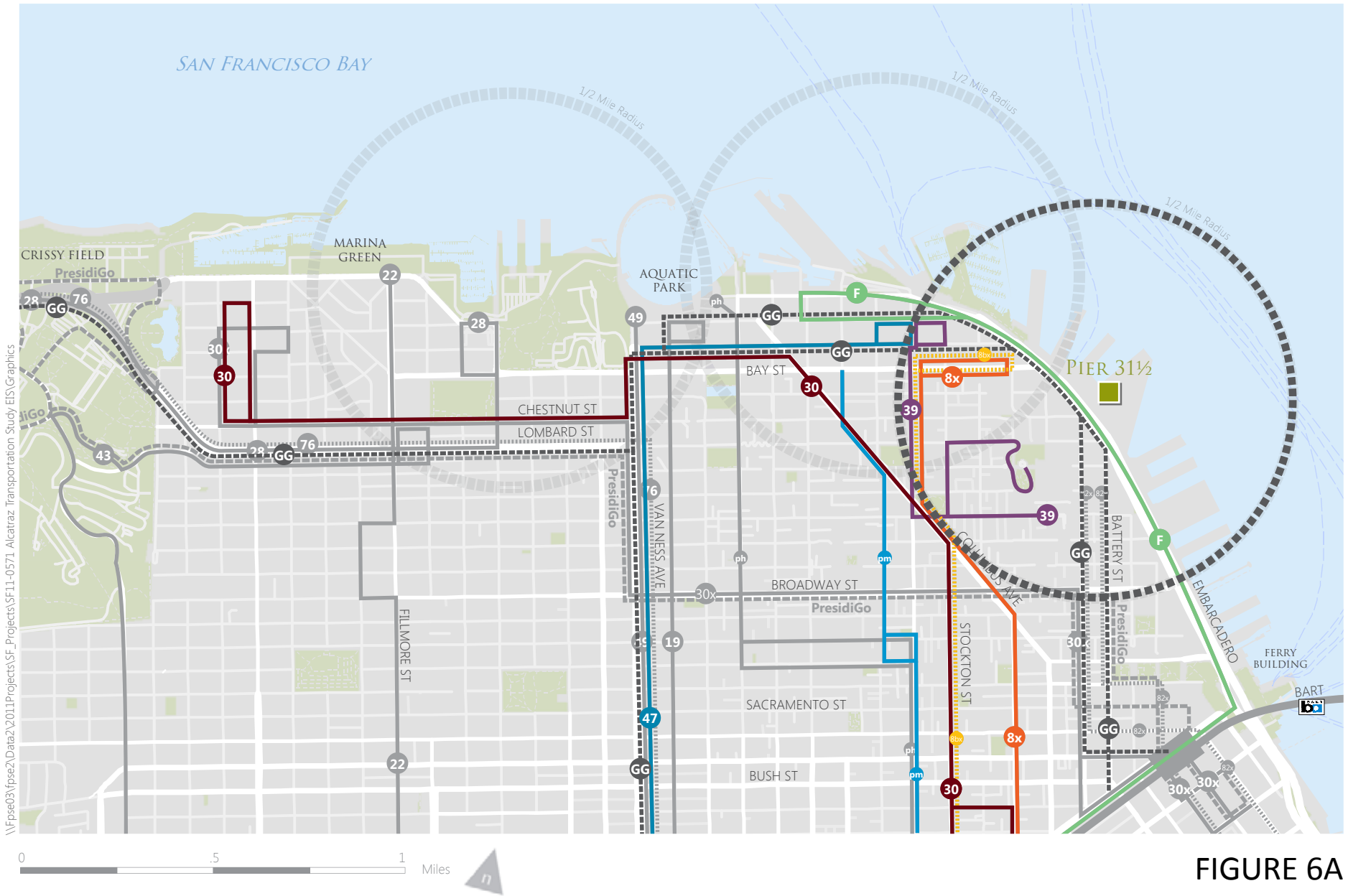
## Transit Analysis

Transit conditions are evaluated based on the ability of transit (including bus, streetcar, cable car, and light rail service) near an alternative site to accommodate the existing and projected ridership (Appendix B). Transit conditions are described using capacity utilization (i.e., peak-hour ridership demand versus peak-hour capacity) of the transit lines operating near the embarkation sites. The analysis uses a “screenline” method to calculate the total ridership and capacity on all transit routes and lines traveling to and from the proposed embarkation sites, consistent with the SF Guidelines and typical practice for impact analysis in San Francisco. The screenline method accounts for the fact that transit riders have multiple transit options to reach their destination and assesses whether an alternative would cause capacity utilization (i.e., the ratio of ridership to capacity) on transit screenlines to exceed the City’s standard<sup>2</sup> of 85 percent. For screenlines already exceeding 85 percent without the Project, the analysis will assess whether the alternative would substantially increase the capacity utilization.

Transit capacity utilization analysis is typically conducted using the San Francisco Planning Department’s standard downtown screenlines. These screenlines are designed to assess the ability of transit riders to travel between Downtown San Francisco and elsewhere in the City, which is typically indicative of commuter service. However, given that this is a more tourist-oriented site, the standard Muni screenlines were not used, and instead, unique Muni screenlines were developed specifically for this analysis. As shown in Figures 6A – 6C, transit lines with stops within ½ mile of each site were included in that site’s screenline analysis as follows:

- Pier 31½: F-Market & Wharves, 8X Bayshore Express, 47 Van Ness, Powell-Mason Cable Car
- Pier 41 (Fisherman’s Wharf):
  - North/South: 19 Polk, 47 Van Ness, 8X Bayshore Express
  - Downtown: 30 Stockton, Powell-Hyde Cable Car, Powell-Mason Cable Car
  - Waterfront: F-Market & Wharves
- Lower Fort Mason
  - North/South: 22 Fillmore, 43 Masonic, 47 Van Ness, 49 Van Ness/Mission
  - West: 28 sunset-19<sup>th</sup> Avenue, 76 Marin Headlands (weekends only)
  - East: 30 Stockton

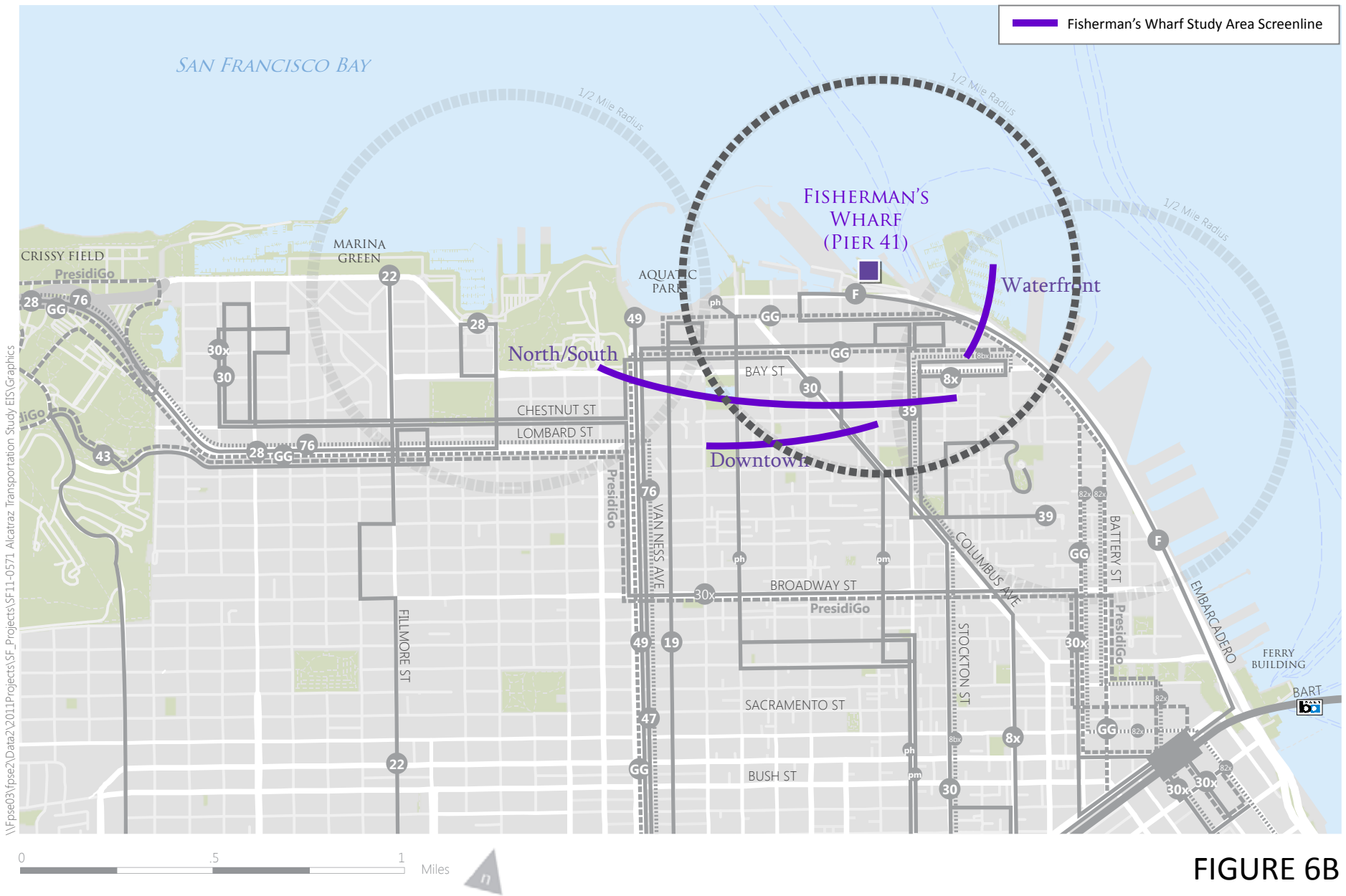
<sup>2</sup> San Francisco Municipal Railway, Short Range Transit Plan: FY 2006 – 2025, Adopted December 2005



**FIGURE 6A**  
**TRANSIT STUDY AREAS:**  
**PIER 31 1/2 PROJECT SITE**  
 Golden Gate National Recreation Area  
 National Park Service/U.S. Department of the Interior

December 2013

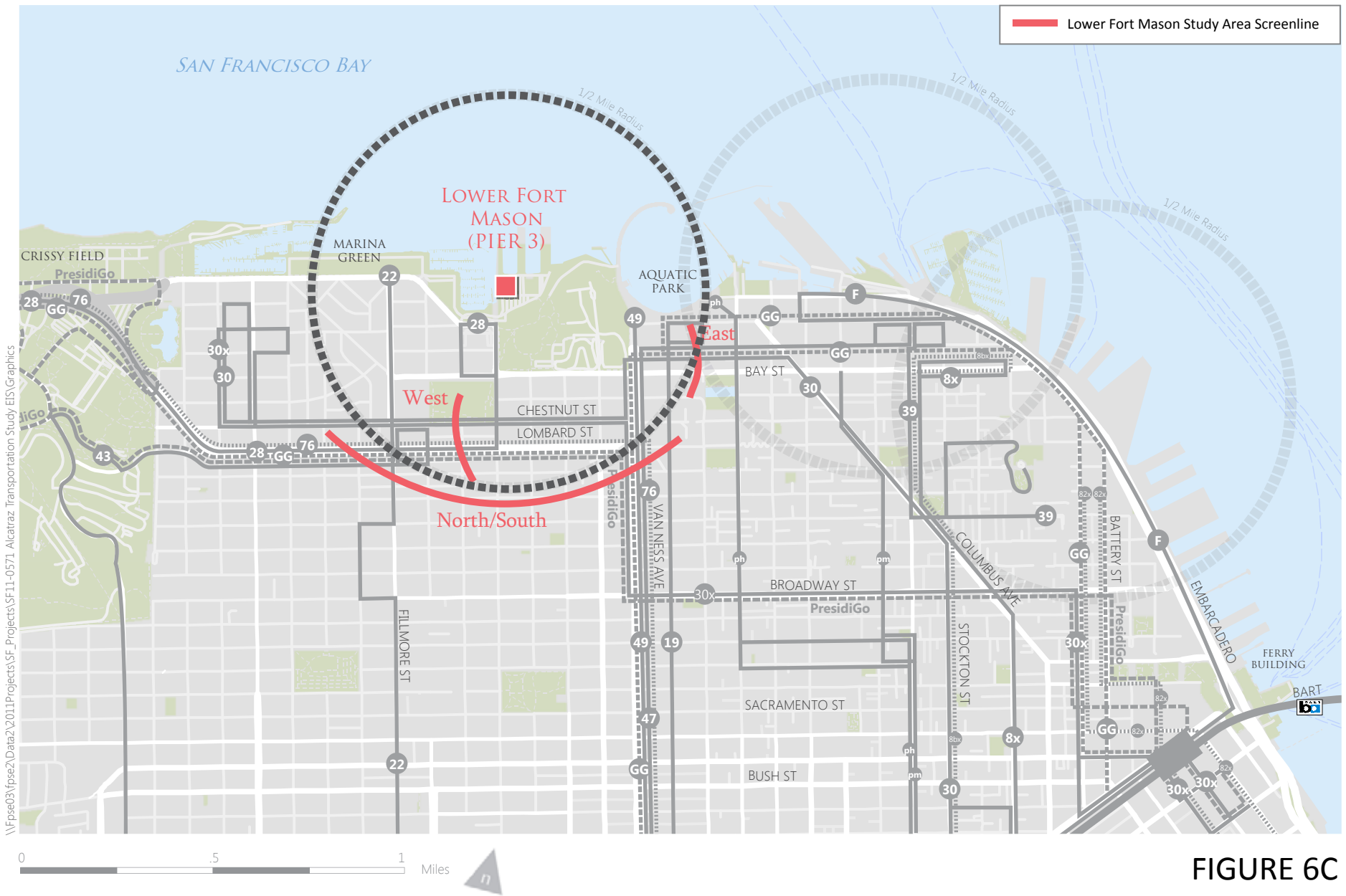




**FIGURE 6B**  
**TRANSIT STUDY AREAS AND SCREENLINES:**  
**FISHERMAN'S WHARF PROJECT SITE**  
 Golden Gate National Recreation Area  
 National Park Service/U.S. Department of the Interior







**FIGURE 6C**  
**TRANSIT STUDY AREAS AND SCREENLINES:**  
**LOWER FORT MASON PROJECT SITE**  
 Golden Gate National Recreation Area  
 National Park Service/U.S. Department of the Interior



Ridership for the transit routes and lines included in the analysis were obtained from the San Francisco Municipal Transportation Agency's (SFMTA's) ridership counts collected between 2009 and 2011. Future transit ridership for the cumulative condition was obtained from transit ridership forecasts developed for the SFMTA Transit Effectiveness Project (TEP) EIR. The TEP is an ongoing program that aims to improve service reliability, reduce travel time on transit, and improve customer experiences through the implementation of transit enhancements.

## **BICYCLE FACILITIES ANALYSIS**

Bicycle conditions include access to and circulation on the site and adjoining areas, including potential points of conflict, accessibility limitations, or potentially hazardous conditions resulting from the activities at the proposed embarkation site. The analysis determines whether an alternative would result in adverse changes to bicycle accessibility, including substantial conflicts between bicycles and pedestrians that would lead to changed patterns in bicycle circulation. The analysis will also determine whether bicycle parking supply would adequately meet projected demand and if it would be conveniently located.

The analysis includes a qualitative assessment of bicycle conditions within the vicinity of each of the proposed Project sites. Bicycle conditions with and without the proposed Project are described as they relate to the study area and include bicycle routes, safety and right of way issues, conflicts with traffic, and grade changes.

Existing bicycle volumes were collected during the a.m., p.m., and midday peak hours at the following locations:

- Pier 31½
  - The Embarcadero/Bay Street
  - The Embarcadero/Sansome Street/Chestnut Street
  - The Embarcadero Promenade (between Bay and Chestnut Streets)
- Pier 41 (Fisherman's Wharf)
  - The Embarcadero, east of Taylor Street
  - Taylor Street/Jefferson Street
  - Powell Street/Jefferson Street
- Lower Fort Mason
  - Buchanan Street/Marina Boulevard-Beach Street
  - Bay Trail Promenade near Fort Mason Pier 4 (see Figure 11 in Appendix C for the location of Pier 4)

## **PEDESTRIAN FACILITIES ANALYSIS**

Pedestrian conditions include access to and circulation on the site and adjoining areas, including potential points of conflict, accessibility limitations, or potentially hazardous conditions resulting from the activities at the proposed embarkation site. The analysis determines whether an alternative would result in adverse changes to pedestrian accessibility, including substantial conflicts between bicycles and pedestrians that would lead to changed patterns in pedestrian circulation.

Pedestrian conditions with and without the proposed Project are described as they relate to the study area, including major walkways and crosswalks, accessibility constraints, safety and right of way issues, conflicts with traffic, and grade changes. Existing pedestrian volumes were collected during the a.m., p.m., and midday peak hours at the following locations:

#### Pier 31½

- Intersections
  - The Embarcadero/Bay Street
  - The Embarcadero/Sansome Street/Chestnut Street
  - The Embarcadero/Battery Street/Lombard Street
- Walkway: The Embarcadero Promenade (between Bay and Chestnut Streets)

#### Pier 41 (Fisherman’s Wharf)

- Intersections
  - Taylor Street/Jefferson Street
  - Powell Street/Jefferson Street
- Walkway: The Embarcadero, east of Taylor Street

#### Lower Fort Mason

- Intersections
  - Buchanan Street/Marina Boulevard-Beach Street
  - Laguna Street/Marina Boulevard
- Walkway: Bay Trail Promenade near Fort Mason Pier 4 (see Figure 11 in Appendix C for the location of Pier 4)

Pedestrian facilities were also evaluated quantitatively under Existing No Project and Existing Plus Project conditions. Pedestrian conditions at intersections were evaluated based on the HCM methodology for pedestrian LOS at signalized intersections. Two distinct measures of pedestrian LOS include pedestrian delay and pedestrian density. Delay is a measurement similar to automobile delay and reflects time spent waiting for a “WALK” signal plus queuing time at the corner, measured in average seconds of delay per pedestrian. When pedestrians experience more than 30 seconds of delay, they are more likely to cross during gaps in traffic rather than wait for a signal. Table 4 provides LOS criteria associated with average delay at signalized intersections.

**TABLE 4. PEDESTRIAN LOS CRITERIA AT SIGNALIZED INTERSECTIONS**

LOS	Average Delay (Seconds/Pedestrian)	Likelihood of Noncompliance
A	<10	Low
B	10.1-20.0	Low to Moderate
C	20.1-30.0	Moderate
D	30.1-40.0	Moderate to High
E	40.1-60.0	High
F	>60	Very High

Note:

Source: Highway Capacity Manual (TRB 2000, Exhibit 18-9, page 18-8)

Pedestrian density is an indication of crowding within a given sidewalk or crosswalk space. Available space is the inverse of density. A crosswalk analysis was done for all marked crosswalks

at each of the study locations listed above where pedestrian volumes were collected. This evaluation requires determining a crosswalk’s time-space, which is the area available for circulating during the cycle length interval. The circulation space provided for each pedestrian is determined by dividing the time-space available for crossing by the total occupancy time, which can then be associated with the LOS criteria for walkways provided in Table 5.

**TABLE 5: AVERAGE FLOW PEDESTRIAN LOS CRITERIA FOR WALKWAYS AND SIDEWALKS (CROSSWALKS)**

LOS	Space (square feet/ pedestrian)	Description
A	>60	Pedestrians move in desired paths without altering their movements in response to other pedestrians. Walking speeds are freely selected, and conflicts between pedestrians are unlikely.
B	>40 – 60	There is sufficient area for pedestrians to select walking speeds freely, to bypass other pedestrians and to avoid crossing conflicts. At this level, pedestrians begin to be aware of other pedestrians and to respond to their presence when selecting a walking path.
C	>24 – 40	Space is sufficient for normal walking speeds, and for bypassing other pedestrians in primarily unidirectional streams. Reverse-direction or crossing movements can cause minor conflicts, and speeds and flow rate are somewhat lower.
D	>15 – 24	Freedom to select individual walking speeds and to bypass other pedestrians is restricted. Crossing or reverse-flow movements face a high probability of conflict, requiring frequent changes in speed and position. The LOS provides reasonably fluid flow, but friction and interaction between pedestrians is likely.
E	>8 – 15	Virtually all pedestrians restrict their normal walking speed, frequently adjusting their gait. At the lower range, forward movement is possible only by shuffling. Space is not sufficient for bypassing slower pedestrians. Cross- or reverse-flow movements are possible only with extreme difficulty. Design volumes approach the limit of walkway capacity, with stoppages and interruptions to flow.
F	8 or less	All walking speeds are severely restricted, and forward progress is made by shuffling. There is frequent, unavoidable contact with other pedestrians. Cross- and reverse-flow movements are virtually impossible. Flow is sporadic and unstable. Space is more characteristic of queued pedestrians than of moving pedestrian streams.

Note:  
Source: Highway Capacity Manual, (TRB 2000, Exhibit 11-8)

Walkways (not at intersections) were evaluated in accordance with a methodology developed by ORCA Consultants (ORCA), who have been used for other Park Service projects. The analysis methodology is detailed in the summary memorandum *AC34 – Spectator Sites on Park Service Properties, Visitation Estimates and Capacity Assessment, Preliminary Report, December 5, 2011*, prepared by ORCA as part of the environmental review for the 34th America’s Cup event in San Francisco. The methodology uses the 2000 HCM level of service descriptions for LOS A to LOS F conditions, however, adjusts the flow rates for the walkway analyses to reflect higher impact of bicycles, presence of slower-moving spectators/tourists on pathways, and high-volume urban conditions commonly found near the study areas. The ORCA study concluded that hourly flow volumes provide a more direct and consistent indicator than density levels for walkway

applications. LOS A represents free-flowing pedestrian conditions, while LOS F indicates that there are substantial restrictions to pedestrian movement and speed. The walkway analysis was conducted for the weekday a.m. and p.m. peak hours and the weekend midday peak hour. Table 6 presents LOS descriptions and recommended hourly flow volume standards developed for the San Francisco Maritime National Historic Park (SAFR) and GGNRA, which are applicable to the study area.

**TABLE 6. PARK SERVICE- SPECIFIC PEDESTRIAN LOS CRITERIA FOR WALKWAYS<sup>1</sup>**

LOS	Hourly Flow Volume for 18' Walkway	Hourly Flow Volume for 12' Walkway
A	<430	< 287
B	430-1,589	287-349
C	1,590-2,149	350-1,432
D	2,150-3,229	1,433-2,152
E	3,230-5,379	2,153-3,587
F	5,380 or more	>3,587

Notes:

Source: Highway Capacity Manual, Transportation Research Board, 2000

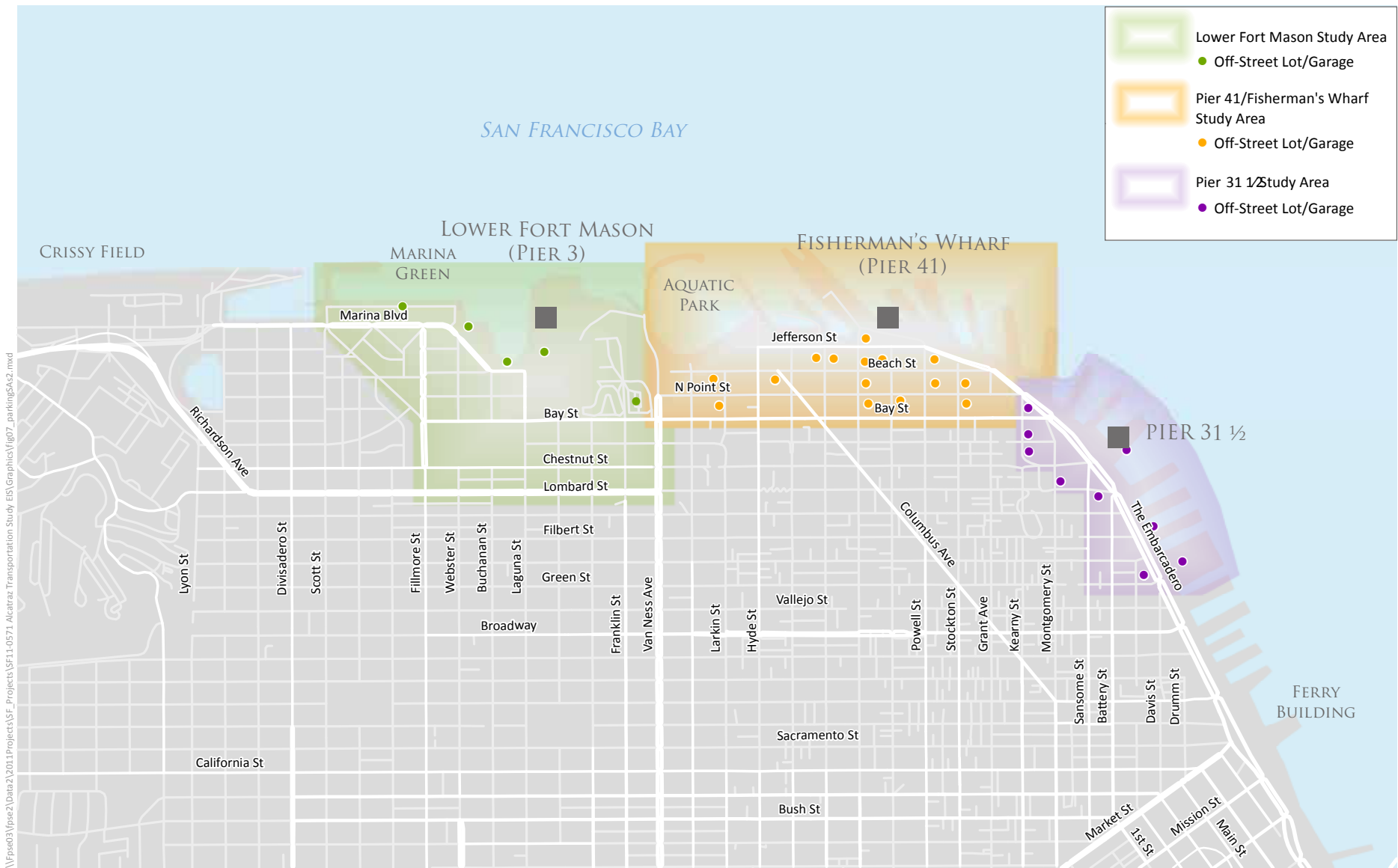
Hourly flow volume standards for SAFR and GGNRA reported in *America's Cup 34 - Spectator Sites on Park Service Properties Visitation Estimates and Level of Service Assessment* (ORCA 2012). Table 6 is adapted from Appendix C tables for varying path width.

## Parking Analysis

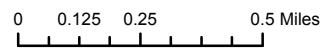
Parking conditions include the availability of on- or off-street parking near the embarkation site. The analysis determines whether an alternative would cause parking utilization to exceed the existing supply or if the current supply is already fully utilized during peak periods, as well as whether an alternative would substantially increase demand for parking.

Although the City does not have a threshold for what it considers acceptable parking occupancy, for purposes of this project, parking occupancy more than 95 percent of supply (indicating the parking is effectively at or over capacity) is considered unacceptable.

Parking occupancy and supply for surrounding on-street parking and off-street public parking garages and lots were collected and evaluated to determine whether parking demand generated by the Project could be accommodated within the existing supply. Off-street parking facilities within the study areas are shown in Figure 7. Parking demand generated by the Project was calculated using visitor survey data collected at the current Alcatraz ferry embarkation site.



\\fsc03\p02\data2\2013\Projects\SF\_P\Projects\SF\_P\11-0571\_Alcatraz\_Transportation\_Study\_EIS\Graphics\fig07\_parkingSA2.mxd



**FIGURE 7**  
**PARKING STUDY AREAS**  
 Golden Gate National Recreation Area  
 National Park Service/U.S. Department of the Interior  
 December 2013





## **AFFECTED ENVIRONMENT**

This chapter provides a description of the existing transportation and circulation conditions in the vicinity of the three proposed Project sites.

### **ROADWAY FACILITIES**

#### **Regional Access**

**U.S. Highway 101 (U.S. 101)** serves San Francisco and the Peninsula/South Bay, and extends north via the Golden Gate Bridge to the North Bay. Within San Francisco, Lombard Street and Van Ness Avenue are designated as U.S. 101. U.S. 101 is an access-controlled freeway south of South Van Ness and 13th Street. North of the Golden Gate Bridge, U.S. 101 is an eight-lane north-south freeway. The closest U.S. 101 on- and off-ramps are located at the western end of Marina Boulevard at the intersection of Marina Boulevard and Richardson Avenue.

**Interstate 80 (I-80)** connects San Francisco to the East Bay and points further east via the Bay Bridge. U.S. 101 and I-80 merge south of the project area on an elevated structure. The closest ramps providing access to and from downtown San Francisco are at the intersections of Fourth Street/Harrison Street, First Street/Harrison Street, Essex Street/Harrison Street and Sterling Street/Bryant Street (High Occupancy Vehicle-only between 3:30 p.m. and 7:00 p.m.) and the off-ramps at the intersections of Fremont Street/Harrison Street and Fourth Street/Bryant Street.

**Interstate 280 (I-280)** provides regional access to southern San Francisco, the Peninsula, and South Bay. I-280 has an interchange with U.S. 101 south of downtown San Francisco (south of the project area). The closest on- and off-ramps are located at the intersections of Fifth Street/King Street and Sixth Street/Brannan Street.

#### **Local Access**

This section describes local streets within the project vicinity that provide local access to the sites. These streets are described below, and illustrated on Figure 5.

**The Embarcadero** is a two-way north-south roadway that runs between King Street (in the South Beach area near AT&T Park) and Taylor Street (near Fisherman's Wharf). In general, The Embarcadero has two or three travel lanes in each direction, with a wide center median for the F-Market & Wharves historic streetcar and the N-Judah and T-Third light rail lines. The Embarcadero features pedestrian amenities including wide sidewalks, public art, viewing decks, active street and sidewalk activities, and open plazas. Left turns are permitted in the northbound direction with separate left-turn channelization and signal phasing at Washington Street, Broadway, Green Street, Chestnut Street, Bay Street, and North Point Street. In the southbound direction, no left turns are permitted into the historic and grand pier buildings fronting The Embarcadero, although left-turn pockets are provided for drivers wishing to make U-turns or access public parking facilities. No left turns are permitted out of mid-block pier driveways onto The Embarcadero going southbound; exits from those driveways are restricted to right turns only.

Bicycle facilities are provided on-street or on adjacent shared-use facilities of The Embarcadero. Specifically, Bicycle Route 5 runs along The Embarcadero as a Class II facility between King Street and North Point Street. On-street parking is not permitted on either side of the street. A 10-

foot wide sidewalk is provided on the land side, and a 25-foot wide pedestrian promenade runs along the waterfront. The San Francisco General Plan (City and County of San Francisco 2010a) identifies The Embarcadero as a Major Arterial in the Congestion Management Program (CMP) Network, a Metropolitan Transportation System (MTS) Street, a Transit Preferential Street (Transit Important), a Neighborhood Pedestrian Street.

In addition, The Embarcadero is designated as part of the Bay, Ridge, and Coast Trail, which is a recreational pedestrian/bicycle path connecting destinations and cities around the San Francisco Bay. In 1996, the City of San Francisco gave the name Herb Caen Way to the 25-foot wide pedestrian promenade that runs approximately 3.2 miles along the waterfront next to The Embarcadero from South Beach to Fisherman's Wharf. Herb Caen Way is part of the Bay Trail, which runs along the San Francisco Waterfront.

**North Point Street** is a two-way east-west roadway between The Embarcadero and Van Ness Avenue that has one travel lane and a bicycle lane (Class II facility) in each direction. On-street parking is permitted on both sides of the street. The San Francisco General Plan (City and County of San Francisco 2010a) identifies North Point Street as a Major Arterial in the CMP Network, a Transit Important Street, and a neighborhood Commercial Street. Bicycle Route 2 runs along North Point Street as a Class II facility.

**Bay Street** is a two-way east-west roadway that runs between The Embarcadero and Fillmore Street, with two travel lanes in each direction. On-street parking is permitted on both sides of the street, except weekdays between 4:00 and 7:00 p.m., when parking is prohibited on the north side of the street to create a third westbound travel lane. Bay Street functions as an arterial street for through traffic and provides access to the Golden Gate Bridge. The San Francisco General Plan (City and County of San Francisco 2010a) identifies Bay Street as Major Arterial in the CMP Network, an MTS street, and a Neighborhood Commercial Street.

**Chestnut Street** is an east-west roadway that runs discontinuously, due to grade, between The Embarcadero and Lyon Street (near the Presidio). In the vicinity of Piers 27-29, Chestnut Street is a two-lane westbound roadway between The Embarcadero and Montgomery Street, and a two-way one-lane each way roadway between Montgomery and Kearny streets. On-street parking is provided on both sides of the street. Chestnut Street is identified in the General Plan (City and County of San Francisco 2010a) as a Secondary Transit Preferential Street from Van Ness Avenue westward, and as a Neighborhood Commercial and Neighborhood Pedestrian Street from Fillmore Street to Richardson Avenue (near the Presidio).

**Lombard Street** is an east-west roadway that runs discontinuously due to grade between The Embarcadero and Lincoln Boulevard (near the Presidio). In the vicinity of Piers 27-29, Lombard Street is a two-lane, one-way westbound roadway between Montgomery Street and The Embarcadero. Parallel parking is provided on both sides of the street between Montgomery and Sansome Streets, and on the south side between Sansome Street and The Embarcadero. Diagonal parking is provided on the north side between Sansome Street and The Embarcadero.

**Green Street** is a two-way east-west roadway that is discontinuous between The Embarcadero and Lyon Street (near the Presidio). In the project vicinity, Green Street connects The Embarcadero and Sansome Street and has one travel lane each way with metered parking on either side of the street and a 10-foot-wide sidewalk on both sides of the street.

**Broadway Street** is a two-way east-west roadway that runs between The Embarcadero and Lyon Street, with two travel lanes in each direction. The Robert Levy Tunnel provides access for Broadway Street, between Hyde Street and Mason Street. In the San Francisco General Plan (City

and County of San Francisco 2010a), Broadway Street, between Franklin Street and The Embarcadero is defined as a Major Arterial, and an MTS Street. Bicycle Route 10 runs eastbound and westbound on Broadway between Webster Street and The Embarcadero; the segment of Broadway between Larkin Street and Powell Street comprising the Broadway Tunnel is designated as Bicycle Route 210. Along Broadway, Bicycle Route 210 and Route 10 are signed routes (Class III facility).

**Washington Street** is an east-west roadway that connects The Embarcadero with Arguello Boulevard. Washington Street operates two-way between The Embarcadero and Drumm Street, one-way westbound between Drumm and Powell Streets, one-way eastbound between Powell and Gough Streets, and two-way between Gough Street and Arguello Boulevard. Between Drumm Street and The Embarcadero, Washington Street has two lanes each way and parking on both sides. The San Francisco General Plan identifies Washington Street as a Major Arterial in the CMP Network between Kearny Street and The Embarcadero, a Transit Preferential Street between Hyde and Mason Streets, and a Neighborhood Pedestrian Street between Fillmore and Mason Streets.

**Battery Street** is a one-way southbound roadway between The Embarcadero and Market Street, with two travel lanes. The San Francisco General Plan (City and County of San Francisco 2010a) identifies Battery Street as a Major Arterial, as a Transit Preferential Street, and as a Neighborhood Pedestrian Street. Bicycle Route 11 runs on Battery Street as a Class III facility (signed route only) between Clay Street and Market Street.

**Sansome Street** is a one-way northbound roadway between Washington Street and The Embarcadero. South of Washington Street, Sansome Street is a two-way roadway, although the southbound movement to Market Street is restricted to commercial vehicles and transit. In the vicinity of The Embarcadero, Sansome Street has two northbound travel lanes. On-street parking is generally permitted on both sides of the street, although tow-away regulations are in effect during the evening peak period. The San Francisco General Plan (City and County of San Francisco 2010a) identifies Sansome Street as a Major Arterial, a Transit Preferential Street, and a Neighborhood Pedestrian Street.

**Van Ness Avenue** is a north-south street that runs between North Point Street and Market Street. In the vicinity of the Fort Mason project site, Van Ness Avenue is a six-lane roadway (three travel lanes each way) with metered parking on both sides of the street. In the San Francisco General Plan (City and County of San Francisco 2010a), Van Ness Avenue is classified as a Major Arterial in the CMP Network and part of the MTS Network, a Transit Preferential Street (Primary Transit Street – transit important), is part of the Citywide Pedestrian Network and a Neighborhood Pedestrian Street (neighborhood commercial street).

**Fillmore Street** is a north-south street that runs from Duboce Avenue to Marina Boulevard. In the vicinity of Lombard Street, Fillmore Street operates as a two-way road with one lane each way, parking on both sides of the street, and 15-foot-wide sidewalks. The San Francisco General Plan (City and County of San Francisco 2010a) identifies Fillmore Street as a Secondary Transit Street (from Chestnut Street to Duboce Avenue), a Citywide Pedestrian Network Street (between Chestnut Street and Duboce Avenue), a Neighborhood Network Connection Street (between Geary Boulevard and Haight Street), and as a Neighborhood Commercial Street (between Chestnut Street and Geary Boulevard). Trucks over 6,000 pounds are restricted on Fillmore Street between Union Street and Broadway.

**Divisadero Street** is a north-south street running from Marina Boulevard to Waller Street. In the vicinity of Lombard Street, Divisadero Street operates as a two-way street with one travel lane

each way and parking on both sides of the street. In the San Francisco General Plan (City and County of San Francisco 2010a), Divisadero Street is identified as a Major Arterial (from Castro Street to Pine Street), a Secondary Arterial (from Pine Street to Lombard Street), a Secondary Transit Street (from Castro Street to California Street), and a Neighborhood Commercial Street (between California Street and Haight Street). In addition, Divisadero Street is part of the CMP network between Castro Street, and Pine Street, and a MTS street between Lombard and Castro Streets.

**Laguna Street** is a north-south street that runs discontinuously between Beach Street and Market Street. In the vicinity of Lombard Street, Laguna Street has one travel lane each way and on-street parking on both sides of the street. North of Bay Street, Laguna Street has two travel lanes each way with no parking allowed on either side of the street. Trucks with a gross weight in excess of 6,000 pounds and tour buses or vans carrying eight or more passengers are prohibited from traveling on Laguna Street, north of Bay Street.<sup>3</sup>

**Marina Boulevard** is an east-west street that runs between Bay Street and the Doyle Drive approach to the Golden Gate Bridge. It is a four-lane roadway (two travel lanes each way) with regulated non-metered parking on the south side of the street. In the San Francisco General Plan, Marina Boulevard is classified as a Secondary Arterial and part of the MTS Network. Marina Boulevard is part of the Citywide Pedestrian Network (Bay, Ridge and Coastal trails). Bicycle Route 2 runs along Marina Boulevard between Fillmore Street and Lyon Street as a Class I facility (bicycle path). Trucks with a gross weight in excess of 6,000 pounds and tour buses or vans carrying eight or more passengers are prohibited from traveling on Marina Boulevard. The Marina Green, a seven-acre public park is adjacent to Marina Boulevard.

## EXISTING TRAFFIC (INTERSECTION) OPERATIONS

Existing conditions at the 41 study intersections were analyzed for the weekday morning (7:00 to 9:00 a.m.) and evening (4:00 to 6:00 p.m.) peak hour and the Saturday midday (12:00 to 2:00 p.m.) peak hour. Intersection turning movement counts were collected at the study intersections on multiple weekdays (Tuesday, Wednesday, and Thursday) and on Saturdays in March through May of 2011 and April and May of 2012. The counts collected in 2011 were obtained from the transportation analysis conducted for *The 34<sup>th</sup> America's Cup and James R. Herman Cruise Terminal and Northeast Wharf Plaza EIR* (City and County of San Francisco 2011a).

Although some of these counts are nearly two years old as of the drafting of this report, traffic volumes do not typically fluctuate substantially in a one- to two-year time frame, and anecdotal experience has actually suggested that traffic volumes in 2013 are somewhat lower than 2010 counts, which implies that, if anything, the older counts from 2011 and 2012 may be higher than 2013 conditions<sup>4</sup>. Existing turning movement volumes and lane configurations at the study intersections are shown in Figure 8.

Traffic volumes at intersections in downtown San Francisco are generally lower on Saturdays than on weekdays. On the other hand, Saturday midday peak hour traffic volumes are greater than the weekday a.m. and p.m. conditions at intersections in the vicinity of Fisherman's Wharf, particularly during good weather weekend days. During peak weekend conditions, congestion occurs along The Embarcadero northbound, at the approach to the intersections with Beach

<sup>3</sup> Local streets within the Russian Hill and Northbound neighborhoods also have restrictions prohibiting tour busses with eight or more passengers.

<sup>4</sup> Based on recent and historical data collected by Fehr & Peers

Street/Grant Street and North Point Street/Kearny Street. This portion of The Embarcadero is popular for tourism and recreational sightseeing, with a variety of businesses that draw locals and tourists alike during the weekends. This high level of activity contributes toward poor intersection operations in the area.

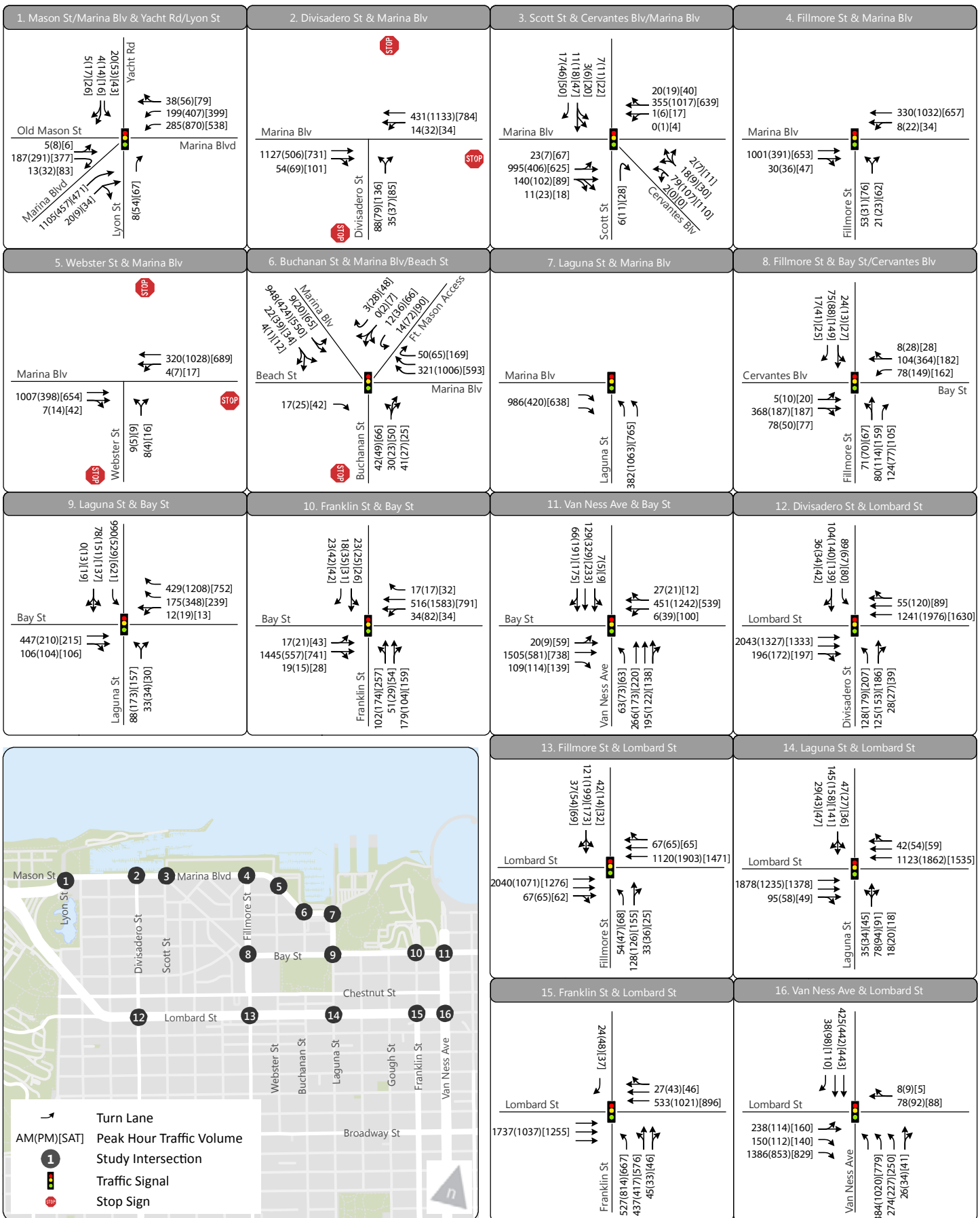
Existing levels of service at the study intersections are presented in Table 7 for the weekday a.m., weekday p.m., and the Saturday midday peak hours. Most study intersections currently operate at acceptable conditions (LOS D) or better, with the exception of the following:

- Divisadero Street/Marina Boulevard (a.m., p.m., Saturday)
- Franklin Street/Lombard Street (Saturday)
- Kearny Street/The Embarcadero/North Point Street (p.m., Saturday)
- Sansome Street/Broadway (a.m.)

The stop controlled intersections of Marina Boulevard/Webster Street and Columbus Street/Beach Street also exceed the LOS D threshold; however, they do not meet peak hour signal warrant criteria, and thus, are considered to operate acceptably.

Generally, these streets are congested because they are primary commute routes, and provide access to regional transportation facilities such as Lombard Street and the Golden Gate Bridge. In the case of Divisadero Street/Marina Boulevard, the intersection congestion is also because Marina Boulevard is adjacent to major regional recreation facilities, including the Marina Green and Crissy Field. As a result, commute traffic and recreational traffic both contribute to congestion along Marina Boulevard.



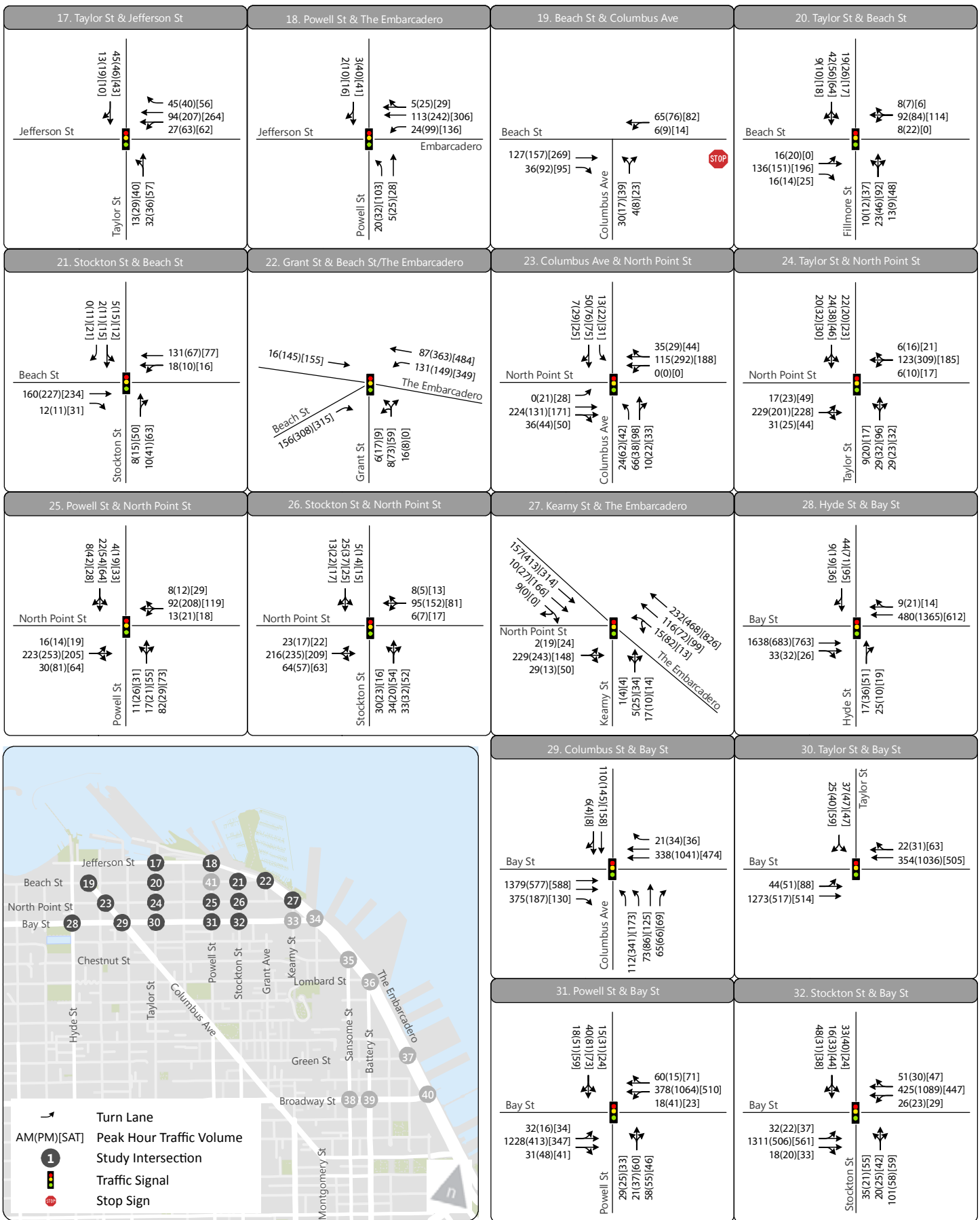


**FIGURE 8A**  
**INTERSECTION LANE CONFIGURATIONS AND**  
**PEAK HOUR TRAFFIC VOLUMES - EXISTING CONDITIONS**  
 Golden Gate National Recreation Area  
 National Park Service/U.S. Department of the Interior  
 December 2013

\\pse03\pse2\Data\2011\Projects\SF\_Projects\SFF11-0571\_Alcatraz\_Transportation\_Study\EIS\Graphics\8a\_ex\_volsandc.cai

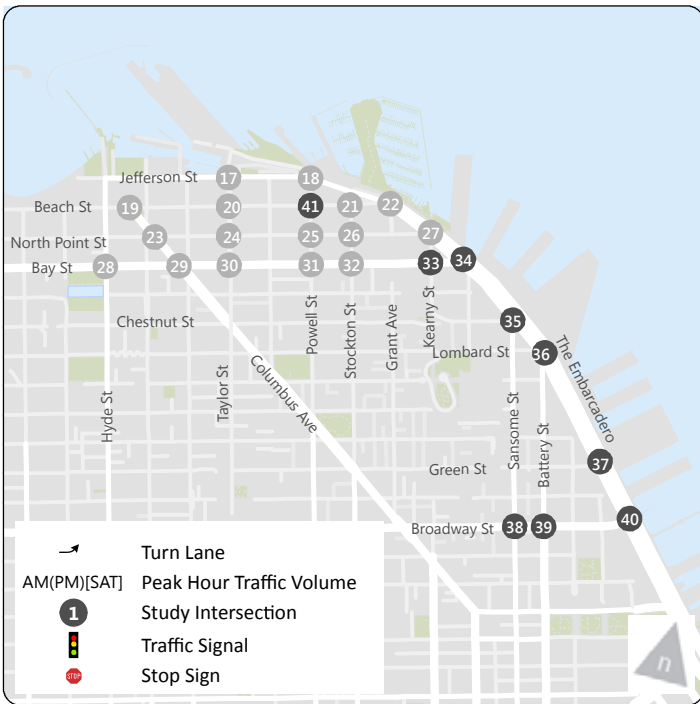
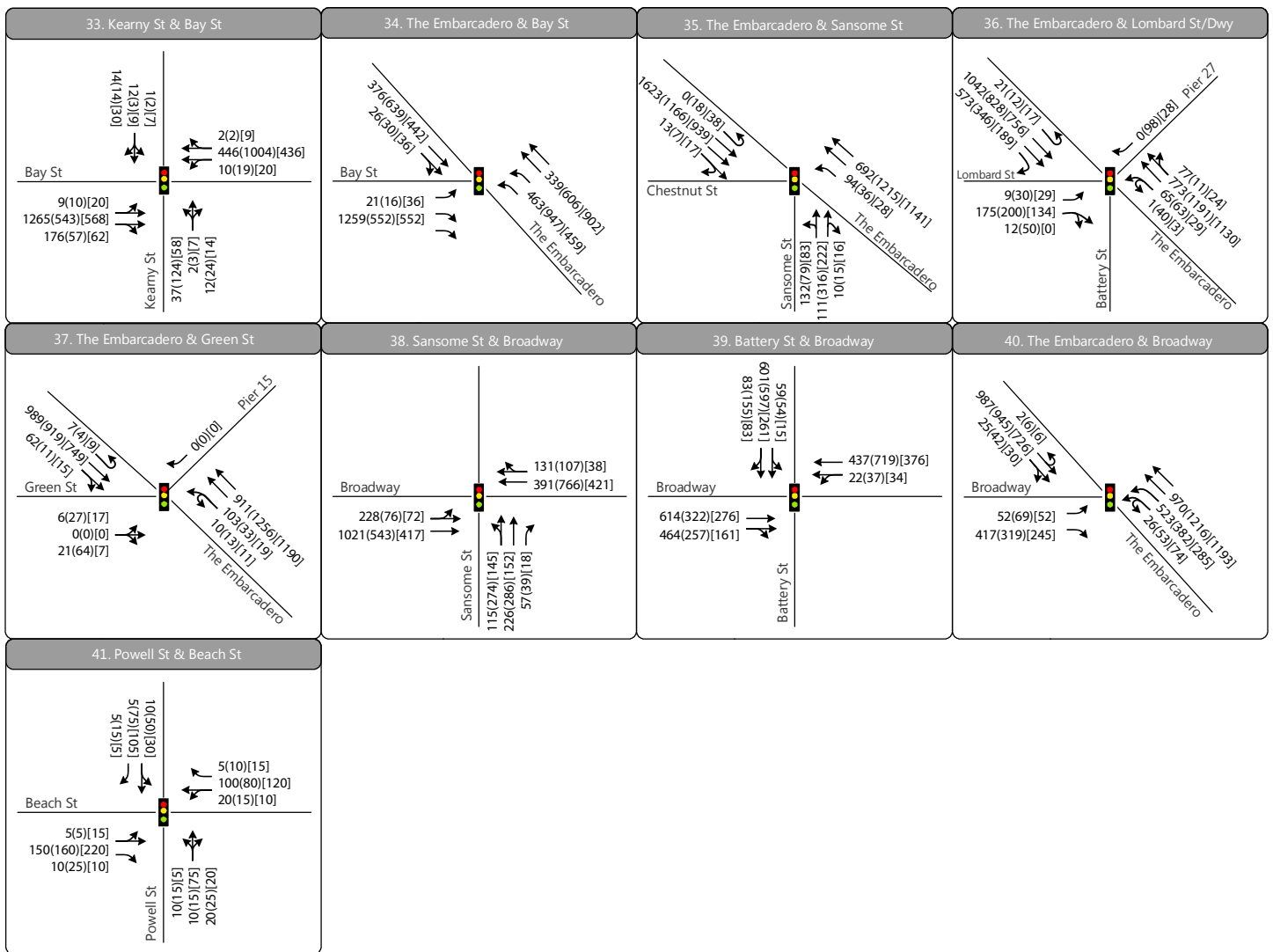






**FIGURE 8B**  
**INTERSECTION LANE CONFIGURATIONS AND**  
**PEAK HOUR TRAFFIC VOLUMES - EXISTING CONDITIONS**  
 Golden Gate National Recreation Area  
 National Park Service/U.S. Department of the Interior  
 December 2013





**FIGURE 8C**  
**INTERSECTION LANE CONFIGURATIONS AND**  
**PEAK HOUR TRAFFIC VOLUMES - EXISTING CONDITIONS**  
**Golden Gate National Recreation Area**  
**National Park Service/U.S. Department of the Interior**  
**December 2013**



**TABLE 7. EXISTING CONDITIONS – INTERSECTION LEVELS OF SERVICE**

	<b>Study Intersection</b>	<b>Traffic Control</b>	<b>Peak Hour</b>	<b>Delay<sup>3</sup></b>	<b>LOS</b>
1	Mason Street/Marina Boulevard/Yacht Road/Lyon Street	Signal	AM	16.6	B
			PM	39.6	D
			WE	53.6	D
2	Divisadero Street/Marina Boulevard	AWSC	<b>AM</b>	<b>&gt;50 (&gt;50)</b>	<b>F (F)</b>
			<b>PM</b>	<b>&gt;50 (&gt;50)</b>	<b>F (F)</b>
			<b>WE</b>	<b>37.4 (45.4)</b>	<b>E (E)</b>
3	Scott Street/Cervantes Boulevard/Marina Boulevard	Signal	AM	24.1	C
			PM	10.2	B
			WE	14.9	B
4	Fillmore Street/Marina Boulevard	Signal	AM	11.8	B
			PM	10.7	B
			WE	9.5	A
5	Webster Street/Marina Boulevard	AWSC	AM	28.6 (35.0)	D (D)
			PM	<b>37.2 (47.8)</b>	<b>E (E)</b>
			WE	16.3 (17.1)	C (C)
6	Buchanan Street/Marina Boulevard/Beach Street	Signal	AM	13.9	B
			PM	12.7	B
			WE	16.5	B
7	Laguna Street/Marina Boulevard	Signal	AM	1.6	A
			PM	3.0	A
			WE	2.6	A
8	Fillmore Street/Bay Street/Cervantes Boulevard	Signal	AM	24.1	C
			PM	23.7	C
			WE	16.8	B
9	Laguna Street/Bay Street	Signal	AM	53.1	D
			PM	40.3	D
			WE	27.5	C
10	Franklin Street/Bay Street	Signal	AM	17.2	B
			PM	11.9	B
			WE	15.3	B
11	Van Ness Avenue/Bay Street	Signal	AM	14.2	B
			PM	22.3	C
			WE	12.2	B
12	Divisadero Street/Lombard Street	Signal	AM	21.7	C
			PM	20.8	C
			WE	19.8	B
13	Fillmore Street/Lombard Street	Signal	AM	18.8	B
			PM	10.3	B
			WE	11.3	B

	<b>Study Intersection</b>	<b>Traffic Control</b>	<b>Peak Hour</b>	<b>Delay<sup>3</sup></b>	<b>LOS</b>
14	Laguna Street/Lombard Street	Signal	AM	11.8	B
			PM	18.6	B
			WE	20.0	B
15	Franklin Street/Lombard Street	Signal	AM	26.2	C
			PM	24.5	C
			<b>WE</b>	<b>57.2</b>	<b>E</b>
16	Van Ness Avenue/Lombard Street	Signal	AM	47.5	D
			PM	25.4	C
			WE	26.5	C
17	Taylor Street/Jefferson Street	Signal	AM	10.8	B
			PM	13.9	B
			WE	14.0	B
18	Powell Street/Jefferson Street/The Embarcadero	Signal	AM	8.0	A
			PM	10.2	B
			WE	16.8	B
19	Columbus Avenue/Beach Street	SSSC	AM	<b>6.7 (&gt;50)</b>	<b>A (F)</b>
			PM	<b>4.0 (&gt;50)</b>	<b>A (F)</b>
			WE	<b>15.0 (&gt;50)</b>	<b>B (F)</b>
20	Taylor Street/Beach Street	Signal	AM	11.1	B
			PM	12.8	B
			WE	13.1	B
21	Stockton Street/Beach Street	Signal	AM	20.4	C
			PM	20.1	C
			WE	21.2	C
22	Grant Street/Beach Street/The Embarcadero	Signal	AM	14.3	B
			PM	19.1	B
			WE	35.5	D
23	Leavenworth Street/Columbus Street/North Point Street	Signal	AM	17.0	B
			PM	17.9	B
			WE	15.0	B
24	Taylor Street/North Point Street	Signal	AM	14.8	B
			PM	15.4	B
			WE	12.5	B
25	Powell Street/North Point Street	Signal	AM	17.0	B
			PM	14.4	B
			WE	13.2	B
26	Stockton Street/North Point Street	Signal	AM	12.1	B
			PM	10.1	B
			WE	12.1	B
27	Kearny Street/The Embarcadero/North Point Street	Signal	AM	48.6	D
			<b>PM</b>	<b>&gt;80</b>	<b>F</b>
			<b>WE</b>	<b>&gt;80</b>	<b>F</b>

AFFECTED ENVIRONMENT

	<b>Study Intersection</b>	<b>Traffic Control</b>	<b>Peak Hour</b>	<b>Delay<sup>3</sup></b>	<b>LOS</b>
28	Hyde Street/Bay Street	Signal	AM	7.0	A
			PM	5.2	A
			WE	5.7	A
29	Columbus Avenue/Jones Street/Bay Street	Signal	AM	13.0	B
			PM	17.8	B
			WE	14.0	B
30	Taylor Street/Bay Street	Signal	AM	10.3	B
			PM	6.4	A
			WE	12.2	B
31	Powell Street/Bay Street	Signal	AM	13.8	B
			PM	9.6	A
			WE	12.1	B
32	Stockton Street/Bay Street	Signal	AM	13.5	B
			PM	7.4	A
			WE	11.6	B
33	Kearny Street/Bay Street	Signal	AM	6.5	A
			PM	11.9	B
			WE	7.5	A
34	The Embarcadero/Bay Street	Signal	AM	17.6	B
			PM	16.3	B
			WE	15.4	B
35	The Embarcadero/Sansome Street/Chestnut Street	Signal	AM	10.1	B
			PM	19.1	B
			WE	15.5	B
36	The Embarcadero/Battery Street/Lombard Street	Signal	AM	14.0	B
			PM	29.0	C
			WE	13.6	B
37	The Embarcadero/Green Street	Signal	AM	10.0	A
			PM	11.9	B
			WE	6.0	A
38	Sansome Street/Broadway	Signal	<b>AM</b>	<b>59.8</b>	<b>E</b>
			PM	14.9	B
			WE	10.7	B
39	Battery Street/Broadway	Signal	AM	27.9	C
			PM	21.1	C
			WE	17.8	B
40	The Embarcadero/Broadway	Signal	AM	25.4	C
			PM	22.4	C
			WE	17.1	B

Study Intersection		Traffic Control	Peak Hour	Delay <sup>3</sup>	LOS
41	Powell Street/Beach Street	Signal	AM	7.1	A
			PM	14.8	B
			WE	14.1	B

## Notes:

1 Delay presented in seconds per vehicle. For stop controlled intersections, delay and LOS presented for entire intersection, with worst approach presented in parenthesis. LOS for stop-controlled intersections is defined based on worst-case approach. **Bold** indicates LOS beyond established threshold.

AM = AM Peak Hour

AWSC = All-way stop controlled

PM = PM Peak Hour

SSSC = Side street stop controlled

WE = Weekend Peak Hour;

## EXISTING TRANSIT OPERATIONS

This section describes the transit network serving the Project study areas. Good transit access is provided throughout most of San Francisco; however, there are isolated areas within the waterfront areas that have limited or infrequent service. This section describes Muni service in the study area first, followed by a discussion of regional transit providers that operate within San Francisco. Service to and from the East Bay is provided by BART, AC Transit and ferries; service to and from the North Bay is provided by Golden Gate Transit buses and ferries; and service to and from the Peninsula and the South Bay is provided by Caltrain, Samtrans and BART.

### San Francisco Municipal Railway (Muni)

Local service is provided by the Muni, the transit division of the SFMTA. Muni bus, cable car, and historic streetcar lines provide service to the project study areas and can be used to access regional transit operators. Muni Metro refers to the light rail vehicles, particularly along the portions that operate as a subway. Figure 9 presents the Muni transit network in the northeast portion of San Francisco. Table 8 summarizes the routes, service hours and headways, nearest stops, and destinations of transit routes to each of the three proposed embarkation sites.

The F-Market & Wharves is a historic streetcar line connecting Fisherman's Wharf with the Castro District, by way of The Embarcadero and Market Street. It runs within mixed traffic lanes on Market Street, within a semi exclusive median along The Embarcadero, and within mixed traffic lanes within the Fisherman's Wharf area. Along the waterfront, it serves Pier 31½, Pier 39, Pier 41, Fisherman's Wharf, and the Ferry Building. The streetcar runs along Market Street, connecting to the Embarcadero BART/Muni Metro station at Market Street and Drumm Street. The F-Market & Wharves has stops within the median of The Embarcadero within one block of the existing Alcatraz Embarkation site at Pier 31½: at Chestnut Street/Sansome Street and at Bay Street. The F-Market & Wharves stops within one block of the Fisherman's Wharf embarkation site at Stockton Street and Powell Street. Along The Embarcadero, ridership demand can exceed capacity, particularly on weekends in the summer, and passengers have been observed waiting to board the next train.



**TABLE 8. EXISTING CONDITIONS – MUNI TRANSIT SERVICE**

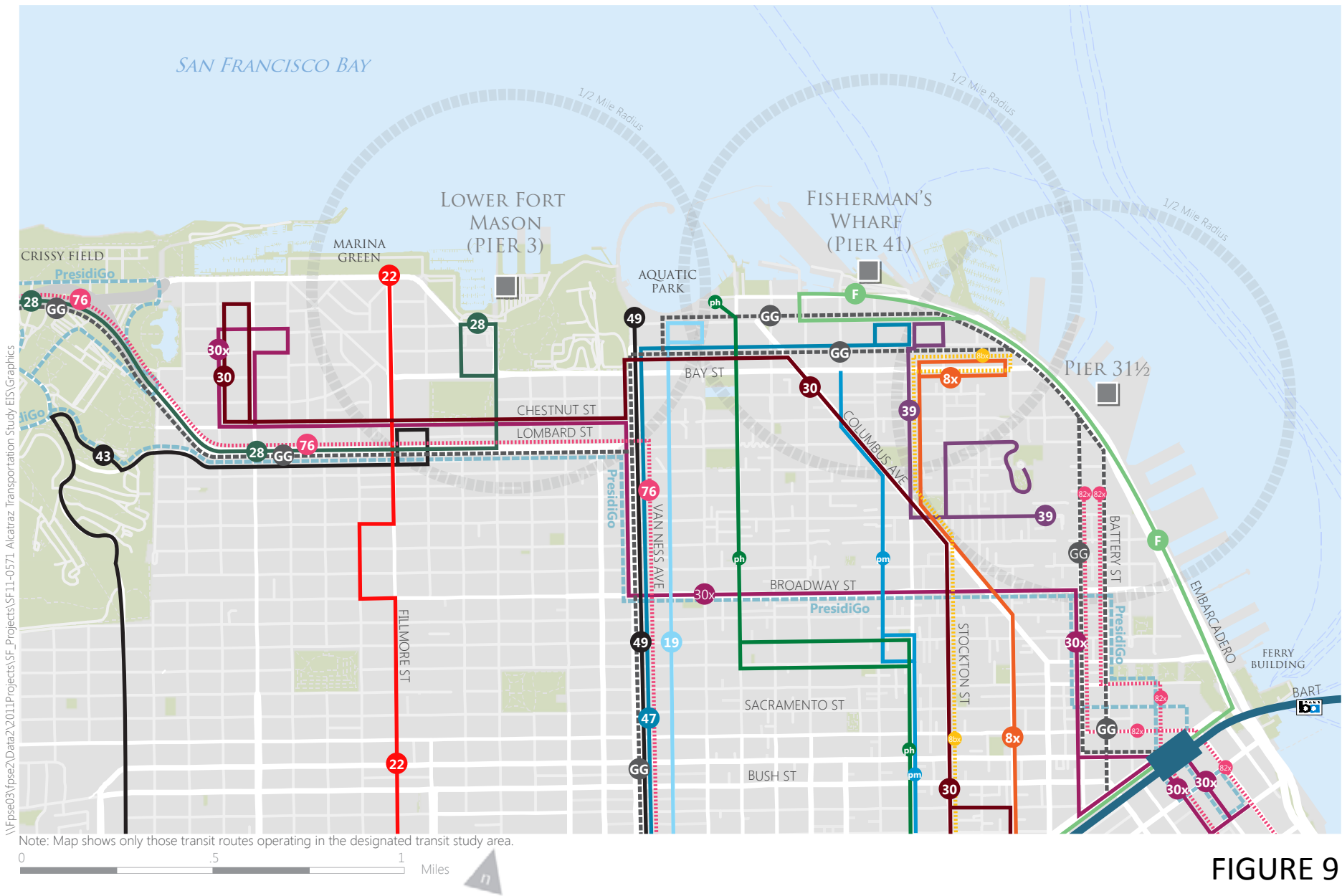
Route	Destination(s)	Nearest Stop Location	Service Frequency (min)			
			AM	Midday	PM	Sat
<b>Pier 31½</b>						
F-Market & Wharves	The Embarcadero, Market Street, Upper Market	Embarcadero/Bay	6	6	6	6
8X/8BX Bayshore Express	Balboa Park, Financial District, North Beach	Kearny/North Point	8	9	8	8
39 Coit Tower	Coit Tower, Fisherman's Wharf, North Beach	Stockton/North Point	--	20	20	20
47 Van Ness	Fisherman's Wharf, Soma	Powell/Beach	10	10	10	10
82X Levi Express	Levi Plaza, Caltrain	Battery/Filbert	20	--	15	--
<b>Pier 41 (Fisherman's Wharf)</b>						
F-Market & Wharves	The Embarcadero, Market Street, Upper Market	Jefferson/Taylor	6	6	6	6
Powell/Mason Cable Car (pm)	Union Square, North Beach, Chinatown, Fisherman's Wharf	Taylor/Bay	10	8	8	8
Powell/Hyde Cable Car (ph)	Union Square, Nob Hill, Russian Hill, Fisherman's Wharf	Hyde/Beach	10	8	8	8
8X/8BX Bayshore Express	Balboa Park, Financial District, North Beach	Powell/Bay	8	9	8	8
19 Polk	Fisherman's Wharf, Potrero, Bayview	Larkin/Beach	15	15	15	15
30 Stockton	Marina District, Chinatown, Caltrain	Columbus/Bay	7	12	12	10
39 Coit Tower	Coit Tower, Fisherman's Wharf, North Beach	Powell/Beach	--	20	20	20
47 Van Ness	Fisherman's Wharf, Soma	Powell/Beach	10	10	10	10
<b>Lower Fort Mason</b>						
Powell/Hyde Cable Car (ph)	Union Square, Nob Hill, Russian Hill, Fisherman's Wharf	Hyde/Beach	10	8	8	8
19 Polk	Fisherman's Wharf, Potrero, Bayview	Beach/Polk	15	15	15	15
22 Fillmore	Marina District, Pacific Heights, Mission, Potrero	Fillmore/Beach	9	10	8	10
28 19th Avenue	Marina District, Richmond, Sunset	Laguna/Marina	12	12	10	12
30 Stockton	Marina District, Chinatown, Caltrain	Laguna/Chestnut	7	12	12	10
30X Marina Express	Marina District, Financial District	Laguna/Chestnut	5	--	8	--
43 Masonic	Marina District, Haight-Ashbury, Balboa Park	Fillmore/Chestnut	10	12	12	15
47 Van Ness	Fisherman's Wharf, Soma	Van Ness/North Point	10	9	10	10

Route	Destination(s)	Nearest Stop Location	Service Frequency (min)			
			AM	Midday	PM	Sat
76 Marin Headlands	Marin Headland, Soma	Fillmore/Lombard	--	--	--	60

Note:

Source: SFMTA 2012

Soma = South of Market Area



\\Fse03\fpse2\011\Projects\SF\_0571 - Alcatraz Transportation Study EIS\Graphics

Note: Map shows only those transit routes operating in the designated transit study area.

**FIGURE 9**  
**MUNI TRANSIT LINES**  
 Golden Gate National Recreation Area  
 National Park Service/U.S. Department of the Interior  
 December 2013



Muni Metro operates six light rail vehicle lines that provide citywide service. The closest station location to the Pier 31½ embarkation site is the Embarcadero Station, which is located approximately one mile to the south. All six streetcar lines can be also accessed from the Embarcadero Station: the J Church, which provides service between the Embarcadero Station and Balboa Park; the L Taraval, which provides service between the Embarcadero Station and the San Francisco Zoo; the M Ocean View, which provides service between the Embarcadero Station and Balboa Park; the N Judah, which provides service between the Caltrain Station and Ocean Beach on weekdays and between the Embarcadero Station and Ocean Beach on weekends; and the K Ingleside/T Third which provide service between Balboa Park and the Sunnydale station (K-Ingleside runs from Balboa Park to West Portal, and continues as the T Third to the Sunnydale Station, while from the Sunnydale Station the T Third operates to Folsom Street and continues as a K-Ingleside to Balboa Park).

The Pier 41 (Fisherman’s Wharf) embarkation site is most accessible to Muni Metro via the Powell Street and Montgomery Street stations, where light rail riders would transfer to another Muni transit line to travel north to the waterfront. Metro riders traveling to the Lower Fort Mason embarkation site would most likely transfer to the 22 Fillmore at Church Street Station or the 47 Van Ness or 49 Van Ness/Mission at Van Ness Station.

Two projects could potentially affect transit service in the vicinity of one or more of the proposed embarkation sites.

**Extension of F-Line Streetcar Service to Fort Mason Center.** The F-Market & Wharves historic streetcar service currently terminates at Jones Street, where it turns to return to The Embarcadero to travel southbound. In 2011, the Park Service analyzed and environmentally-cleared a project to extend the F-Market & Wharves historic streetcar from its current terminus at Jones Street to Lower Fort Mason (NPS 2011). The extension would use an existing, but refurbished, tunnel under Upper Fort Mason that begins in the east at Van Ness Avenue near Aquatic Park and ends in the west near the intersection of Laguna Street and Beach Street. The purpose of this project would be to improve visitor access via transit to Lower Fort Mason. This project is currently unfunded; however, it is assumed to be in place under one of the alternatives considered for the Lower Fort Mason embarkation site.

**San Francisco Transit Effectiveness Project.** The SFMTA and San Francisco Planning Department are preparing the environmental documentation for the full implementation of the TEP, which is a comprehensive transit plan to improve the service, reliability, and quality of Muni service throughout the City. The TEP proposals were originally approved by the SFMTA Board of Directors in October 2008. The TEP proposes the following changes to transit service near the proposed embarkation sites:

- F-Market & Wharves: Service frequency would be increased.
- E Embarcadero: A new historic streetcar line would be added to The Embarcadero between 4th Street/King Street and Fisherman’s Wharf.
- 8X/BX Bayshore Express: This route would be eliminated north of Broadway and replaced by the 11 Downtown Connector.
- 11 Downtown Connector: A new local bus route would be added through Fisherman’s Wharf, North Beach, the Financial District, and South of Market neighborhoods via North Point Street, Powell Street, Columbus Avenue, Sansome Street, 2nd Street, and Folsom Street.
- 22 Fillmore: Service frequency would increase during the a.m. and p.m. peak periods. Other improvements to improve service and reliability would occur to the route in the Mission District.

- 28/28L 19th Avenue: Local service to the Marina District on the 28 19th Avenue would be replaced by limited service on the 28L 19th Avenue. The 28L 19th Avenue would terminate at Van Ness Avenue/Beach Street instead of at Lower Fort Mason.
- 30 Stockton: The 30 Stockton is one of the rapid network corridors being studied in the TEP environmental document. No changes would be made to the routing of the 30 Stockton; however, travel time reduction proposals (TTRPs) would be implemented to reduce travel time and improve reliability along Stockton Street, Columbus Avenue, and North Point Street. TTRP proposals include increasing bus stop spacing from one block to two blocks; optimizing stop locations at five existing stops; adding transit bulb outs at key locations; adding transit-only lanes on Van Ness Avenue, Columbus Avenue, and Kearny Street; and widening existing transit lanes to better accommodate bus vehicles.
- 43 Masonic: The 43 Masonic route would be extended to Lower Fort Mason, to replace service lost from the relocation of the 28/28L 19th Avenue terminal.
- 47 Van Ness: Service would terminate at Van Ness Avenue at North Point Street. The Fisherman's Wharf segment of the existing route would be replaced by service on a new transit route: the 11 Downtown Connector. Additionally, service would be coordinated with the Van Ness Bus Rapid Transit (BRT) Study currently under environmental review by the San Francisco County Transportation Authority (SFCTA).
- 49 Van Ness/Mission: Service would be coordinated with the Van Ness BRT Study currently under environmental review by the SFCTA. Additionally, a new limited service route would operate during the middle of the day to increase capacity and service along the corridor.
- 76 Marin Headlands: This route would run on both Saturdays and Sundays (currently Sunday service only).

With these modifications, transit service to the northern waterfront area and to each of the proposed embarkation sites would improve. The E Embarcadero and 11 Downtown Connector represent new service near Fisherman's Wharf and Pier 31½. Service on the 11 Downtown Connector and 43 Masonic would replace route changes to other lines, specifically service changes to the 8/8X Bayshore Express, 28/28L 19th Avenue, and 47 Van Ness routes. Improvements to service on the 22 Fillmore, 30 Stockton, 49 Van Ness/Mission, and 76 Marin Headlands would improve capacity, frequency, and reliability of service to the area. However, because the TEP has not been implemented as of the preparation of this study, it is not assumed to be in place in the near term, but is assumed to be in place in the long-term (year 2035) analysis.

### **Presidio Trust Shuttle Service**

The Presidio Trust operates two shuttle routes serving residents, employees and visitors, funded by revenues accrued to the trust from a variety of sources, including ongoing leasing activities. The PresidiGo Downtown service is interlined with the internal shuttle route (PresidiGo Around the Park) and allows Presidio riders to travel downtown without transferring to another bus. During peak commute hours, the Downtown Shuttle is available to Presidio residents and employees with an appropriate boarding pass as well as to members of the general public with a Muni Visitor Passport. It is available to all between 10:00 a.m. and 3:00 p.m. without a boarding pass. Riders can board the downtown shuttle service at the temporary Transbay Terminal, the Embarcadero BART/Muni Metro Station or at the intersection of Union Street and Van Ness Avenue. The shuttle provides direct drop-off to several sites within the park such as the Lombard Gate, the Letterman Digital Arts center, the YMCA and the Main Post Transit Center. PresidiGo downtown shuttle service is provided on weekdays from 5:45 a.m. to 9:00 p.m. Downtown service

operates with 15 minutes between shuttles during the two-hour morning and afternoon peak periods, 30 minutes between shuttles during the shoulder periods, and one hour between shuttles during the midday. There is no PresidiGo Downtown shuttle service on weekends and holidays.

PresidiGo Around the Park runs a continuous loop within the Presidio, making stops at nearly 40 park destinations. It is free and available to everyone. The internal shuttle routes connect residential areas, commercial areas, and visitor destinations in the park, as well as key transfer points to Muni and Golden Gate Transit buses, such as the Main Post Transit Center, Presidio Visitor Center, and the Lombard Gate. PresidiGo Around the Park shuttle service operates with 30 minutes between shuttles on weekdays between 6:30 a.m. and 8:30 p.m., and one hour between shuttles on weekends between 11:00 a.m. and 6:00 p.m. It operates on a limited weekend service schedule on federal holidays. PresidiGo shuttle ridership has been steadily increasing, and the Presidio Trust has been adding runs, extending service hours, and using larger vehicles in order to keep pace with the rising demand.

### **Bay Area Rapid Transit (BART)**

BART operates regional rail transit service in the metropolitan Bay Area. BART currently operates five lines: Pittsburg/Bay Point to San Francisco International Airport—Millbrae; Fremont to Daly City; Richmond to Daly City-Millbrae; Fremont to Richmond; and Dublin/Pleasanton to Daly City. Within downtown San Francisco, BART operates underground below Market Street. During the weekday p.m. peak period, headways are generally 5 to 15 minutes for each line. The Embarcadero BART/Muni station is located nearest to the proposed embarkation sites at Pier 31½ and Fisherman’s Wharf. Visitors to Lower Fort Mason would likely take BART to Embarcadero Station and transfer to the F-Market & Wharves, then walk to Lower Fort Mason, or take BART to Civic Center Station and transfer to the 19 Polk, 49 Van Ness/Mission or 47 Van Ness bus routes, or take BART to 16<sup>th</sup> Street BART station and transfer to the 22 Fillmore.

### **Water Emergency Transportation Authority (WETA)**

WETA currently operates ferry service between the San Francisco Ferry Building and Pier 41 to Alameda, Oakland and Vallejo. California Senate Bill 1093 directed WETA to create and adopt a Transition Plan for Bay Area ferry service. Under the Transition Plan, Vallejo Baylink, which is currently owned by the City of Vallejo and operated by Blue & Gold Fleet, would be consolidated under WETA. Ferries generally operate hourly between 6:30 a.m. and 8:30 p.m. on weekdays and every 90 minutes between 9:15 a.m. and 6:30 p.m. on weekends. Not all ferries provide service to Pier 41.

### **Golden Gate Transit**

Golden Gate Transit, operated by the Golden Gate Bridge, Highway, and Transportation District, provides bus service between the North Bay (Marin and Sonoma Counties) and San Francisco. Golden Gate Transit operates 22 commuter bus routes, nine basic bus routes and 16 ferry feeder bus routes into San Francisco, several of which are at or near the temporary Transbay Terminal. Basic bus routes operate at regular intervals of 15 to 90 minutes, depending on the time and day of week. Commute and ferry feeder bus routes operate at more frequent intervals in the mornings and evenings. Although Golden Gate Transit buses travel near some of the potential embarkation sites, Golden Gate Transit vehicles are prohibited from picking passengers up in San Francisco in the inbound direction and from dropping passengers off in San Francisco in the outbound

direction. Therefore, they are unlikely to play a critical role in access to any of the embarkation sites.

Golden Gate Transit also operates ferry service between the North Bay and San Francisco. During the morning and evening commute periods, ferries are operated between Larkspur and San Francisco, and between Sausalito and San Francisco. Additional North Bay ferry service operated by Blue & Gold connects both Sausalito and Tiburon with San Francisco. Both the Blue & Gold Fleet and the Golden Gate Transit District provide ferry service from Sausalito, Tiburon, and Larkspur to San Francisco at Pier 41 and the Ferry Building.

### **AC Transit**

AC Transit is the primary bus operator for the East Bay, including Alameda and western Contra Costa Counties. AC Transit operates 37 routes between the East Bay and San Francisco, all of which terminate at the temporary Transbay Terminal, located in the block bounded by Main, Beale, Howard and Folsom streets, until the permanent Transbay Terminal is completed. Most transbay service is peak-hour and peak-direction (to San Francisco during the a.m. peak period and from San Francisco during the p.m. peak period), with headways of 15 to 30 minutes per route.

### **Caltrain**

Caltrain provides rail passenger service on the Peninsula between Gilroy and San Francisco. The San Francisco terminal is located at Fourth and Townsend streets. Caltrain operates a combination of baby bullet (i.e., very limited stop), limited stop, and local service. Headways during the evening peak period are approximately 5 to 30 minutes.

### **Samtrans**

Samtrans, operated by the San Mateo County Transit District, provides bus service between San Mateo County and San Francisco. Samtrans operates three bus lines that serve San Francisco: the KX, 292 and 391 lines. In general, Samtrans service to downtown San Francisco operates along Mission Street to the temporary Transbay Terminal.

## **LOCAL AND REGIONAL TRANSIT SCREENLINE ANALYSIS**

Existing Muni lines serving the study sites were grouped into screenlines for which capacity utilization was determined. The concept of screenlines is used to describe the magnitude of travel to or from the area near the proposed embarkations sites compared to transit volumes and available capacities reported by the SFMTA and Muni. Screenlines are hypothetical lines that would be crossed by a person traveling between these areas and the project and other parts of San Francisco and region. The transit analysis is conducted by calculating the existing capacity utilization (percentage of riders to capacity) at the maximum load point (the point of greatest demand).

Since Pier 31½ has few direct routes that serve the area, capacity utilization and maximum load points are described for the individual lines serving the site (F-Market and Wharves, 8X Bayshore Express, 47 Van Ness, and Powell-Mason Cable Car) instead of for screenlines. These represent



the lines operating nearest to the site. Although the 82X Levi Express, and 39 Coit Tower operate near the Pier 31½ site, these lines serve local commuters (either residents/visitors of the southeastern neighborhoods of San Francisco or Telegraph Hill) and consequently transit riders destined for Pier 31½ would not be expected to use these lines.

For the Pier 41 (Fisherman's Wharf) and Lower Fort Mason sites, directional screenlines are comprised of inbound and outbound transit lines operating near the project locations. Figures 6A and 6B present the directional screenlines for the Pier 31 and Lower Fort Mason sites, respectively.

As shown in Tables 9A through 9C, transit service to each of the embarkation locations generally operates below 85 percent of available capacity during the weekday morning peak periods. In the p.m. peak period, the F-Market and Wharves and the Powell-Mason Cable Car, which provide service to Pier 31½ operate above SFMTA's 85 percent capacity utilization threshold in the outbound direction (i.e., from Pier 31½ to the south). The East Screenline of transit service to Fisherman's Wharf also operates above SFMTA's capacity utilization threshold in the outbound direction (i.e., away from Pier 41). All other routes and screenlines operate within SFMTA's capacity utilization threshold during the weekday p.m. peak hour. During the weekend peak hour, transit service to Pier 31½ experiences substantial crowding, primarily due to the higher activity levels along the northeastern waterfront associated with tourism. Specifically, the F-Market & Wharves exceeds SFMTA's capacity utilization thresholds in the direction toward Pier 31½, and the Powell-Mason cable car exceeds the threshold in both directions. Similarly, service to Fisherman's Wharf is also crowded during the weekend midday, with the east screenline (which consists of just a single line - the F-Market & Wharves) exceeding the City's threshold in the inbound (toward Fisherman's Wharf) direction. Transit service to Lower Fort Mason operates within the City's threshold during the weekend midday peak hour.

**TABLE 9A. EXISTING CONDITIONS—MUNI CAPACITY UTILIZATION ANALYSIS—AM PEAK HOUR**

	<b>Ridership</b>	<b>Capacity</b>	<b>Utilization</b>	<b>Ridership</b>	<b>Capacity</b>	<b>Utilization</b>
<b>Pier 31 Screenlines</b>						
Line	Inbound			Outbound		
47 Van Ness	294	378	78%	276	378	73%
F-Market & Wharves	289	700	41%	162	627	26%
Powell-Mason Cable Car	220	378	58%	92	378	24%
8X Bayshore Express	616	752	82%	504	752	67%
Total	1,418	2,208	64%	1,034	2,135	48%
<b>Fisherman's Wharf Screenlines</b>						
Screenline	Inbound			Outbound		
North/South Screenline	1,070	1,382	77%	1,000	1,382	72%
West Screenline	855	1,347	63%	553	1,247	44%
East Screenline	289	700	41%	162	627	26%
Total	2,213	3,429	65%	1,715	3,256	53%
<b>Lower Fort Mason Screenlines</b>						
Screenline	Inbound			Outbound		
North/South Screenline	1,280	1,881	68%	1,094	1,881	58%
West Screenline	471	693	68%	365	630	58%
East Screenline	514	1,118	46%	726	1,291	56%
Total	2,266	3,692	61%	2,184	3,802	57%

Note:

Source: SFMTA 2011

SFMTA typically refers to "inbound" and "outbound" with respect to service to downtown (i.e., inbound routes travel toward downtown and outbound routes travel away from downtown). However, for purposes of this report, "inbound" and "outbound" refer to the direction of travel relative to the project site.

**TABLE 9B. EXISTING CONDITIONS—MUNI CAPACITY UTILIZATION ANALYSIS—PM PEAK HOUR**

	<b>Ridership</b>	<b>Capacity</b>	<b>Utilization</b>	<b>Ridership</b>	<b>Capacity</b>	<b>Utilization</b>
<b>Pier 31 Screenlines</b>						
Line	Inbound			Outbound		
47 Van Ness	276	378	73%	258	378	68%
F-Market & Wharves	249	700	36%	718	700	103%
Powell-Mason Cable Car	356	473	75%	411	473	87%
8X Bayshore Express	408	752	54%	416	752	55%
Total	1,289	2,303	56%	1,803	2,303	78%
<b>Fisherman's Wharf Screenlines</b>						
Screenline	Inbound			Outbound		
North/South Screenline	856	1,382	62%	798	1,382	58%
West Screenline	1,433	2,193	65%	1,556	2,169	72%
East Screenline	249	700	36%	718	700	103%
Total	2,537	4,275	59%	3,071	4,251	72%
<b>Lower Fort Mason Screenlines</b>						
Screenline	Inbound			Outbound		
North/South Screenline	1,111	1,871	59%	1,181	1,871	63%
West Screenline	282	378	75%	282	378	75%
East Screenline	1,423	1,924	74%	909	1,948	47%
Total	2,816	4,173	67%	2,371	4,196	57%

## Notes:

Source: SFMTA 2011

SFMTA typically refers to "inbound" and "outbound" with respect to service to downtown (i.e., inbound routes travel toward Downtown and outbound routes travel away from downtown). However, for purposes of this report, "inbound" and "outbound" refer to the direction of travel relative to the project site.

**TABLE 9C. EXISTING CONDITIONS—MUNI CAPACITY UTILIZATION ANALYSIS—WEEKEND MIDDAY PEAK HOUR**

	<b>Ridership</b>	<b>Capacity</b>	<b>Utilization</b>	<b>Ridership</b>	<b>Capacity</b>	<b>Utilization</b>
<b>Pier 31 Screenlines</b>						
Line	Inbound			Outbound		
47 Van Ness	220	378	58%	220	378	58%
F-Market & Wharves	803	700	115%	307	700	44%
Powell-Mason Cable Car	428	473	90%	428	473	90%
8X Bayshore Express	556	705	79%	335	705	48%
Total	2,007	2,256	89%	1,290	2,256	57%
<b>Fisherman's Wharf Screenlines</b>						
Screenline	Inbound			Outbound		
North/South Screenline	888	1,459	61%	699	1,459	48%
West Screenline	1,160	1,415	82%	1,165	1,415	82%
East Screenline	803	700	115%	307	700	44%
Total	2,851	3,574	80%	2,171	3,574	61%
<b>Lower Fort Mason Screenlines</b>						
Screenline	Inbound			Outbound		
North/South Screenline	825	1,758	47%	923	1,758	53%
West Screenline	202	564	36%	216	564	38%
East Screenline	1,423	1,924	74%	909	1,948	47%
Total	2,816	4,173	67%	2,371	4,196	57%

Notes:

Source: SFMTA 2011

SFMTA typically refers to "inbound" and "outbound" with respect to service to downtown (i.e., inbound routes travel toward Downtown and outbound routes travel away from downtown). However, for purposes of this report, "inbound" and "outbound" refer to the direction of travel relative to the project site.

## **EXISTING BICYCLE NETWORK**

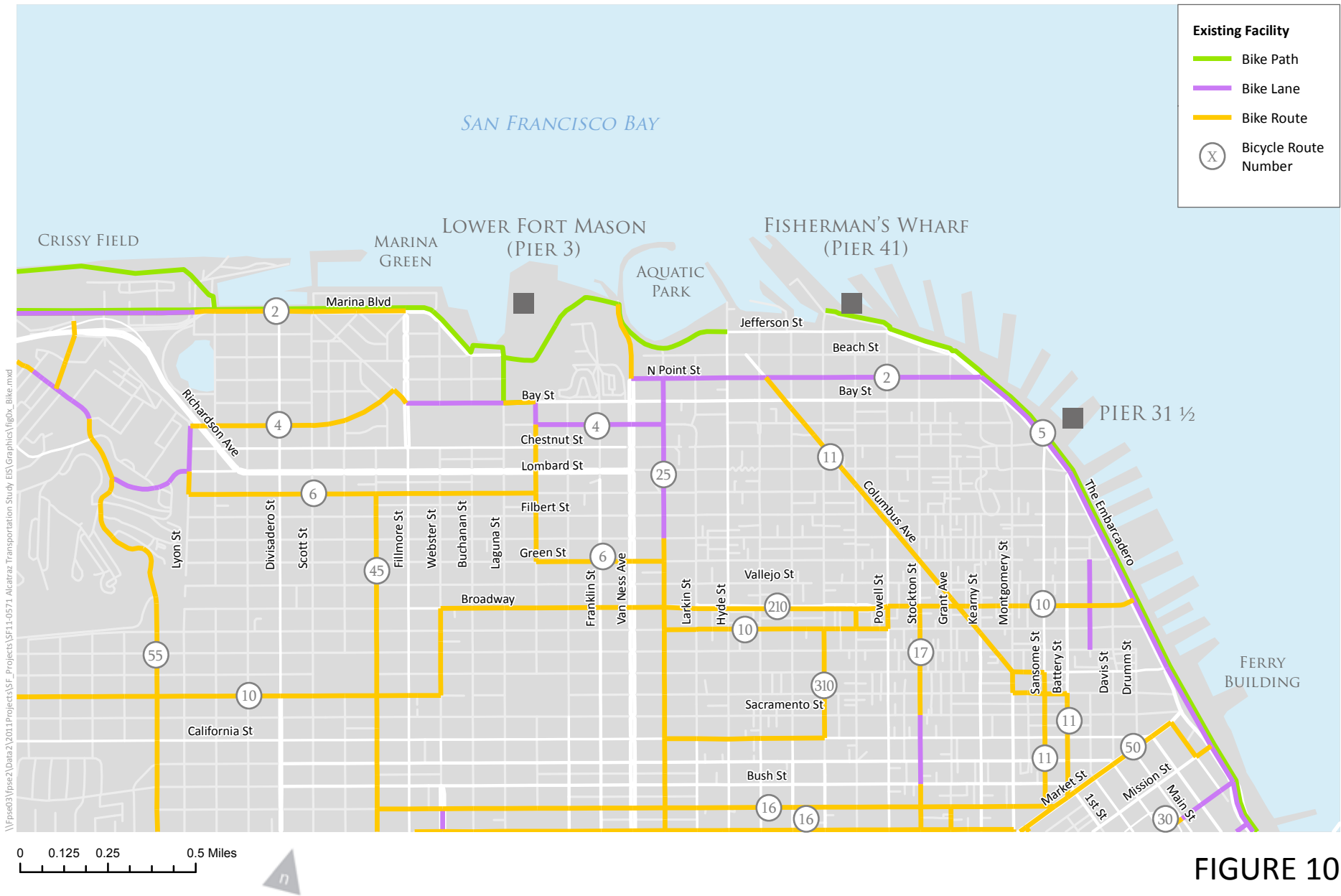
Existing bicycle facilities are part of the City of San Francisco bicycle network. Bikeways are typically classified into three categories:

- Class I: Pathways that provide exclusive right-of-way for use by bicyclists and pedestrians.
- Class II: Bicycle lanes striped within the roadway for use by bicyclists, typically between the vehicle travel lane and parking lane or curb.
- Class III: Bicycle routes that are signed and sometimes marked with shared lane markings (sharrows) where bicycles and vehicles share the same travel lane.

Figure 10 shows the bicycle network along the northeastern and northern waterfront of San Francisco. A description of each study area follows Figure 10. Bicycle counts were conducted at five representative sites between Saturday, October 8, 2011, and Thursday, October 20, 2011. October is generally a popular month for tourism in San Francisco due to reliably good weather and several special events. Therefore, these counts represent typical high-use conditions along San Francisco's waterfront. In addition to a full week of counts collected during normal October conditions, the counts also include one weekend day during the annual Fleet Week events, which represent uniquely crowded conditions for purposes of comparison.

At all visitor flow count locations, pedestrians outnumbered cyclists, often by a large margin. The largest pedestrian flows are typically at the pier locations on The Embarcadero, where flows are much larger than those at the three Fort Mason sites. Near Pier 41, Pier 39—a major visitor attraction—experiences the largest pedestrian volumes. In comparison, the largest bicycle volume was recorded at Jefferson Street, west of Hyde Street (at Maritime Park). Bicycle volumes are also relatively high at all sites west of the Fisherman's Wharf area. This is likely because of the many bicycle rental companies located in this area, and the large number of cyclists traveling between the rental locations and the Golden Gate Bridge.





**FIGURE 10**  
**EXISTING BICYCLE FACILITIES**  
 Golden Gate National Recreation Area  
 National Park Service/U.S. Department of the Interior  
 December 2013





### **Pier 31½**

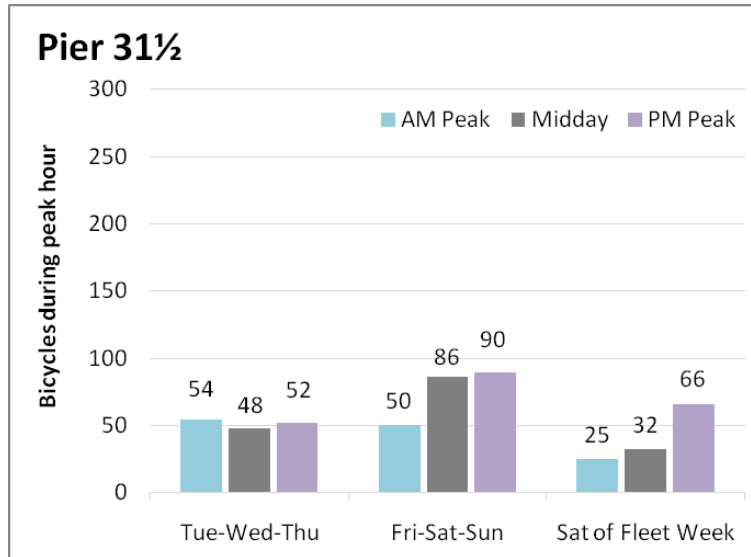
Pier 31½ is served by a few primary bicycle facilities. San Francisco Bicycle Route 5 is a Class II facility along The Embarcadero between North Point Street and AT&T Park in Soma. The eastern sidewalk of The Embarcadero is designated Herb Caen Way, a Class I shared bicycle/pedestrian path. San Francisco Bicycle Route 2 is a Class II facility along North Point Street between The Embarcadero and Van Ness Avenue through Fisherman's Wharf. There is also a pedicab stop located at Pier 31.

Bicycle activity was observed and counted on The Embarcadero between Bay Street and Chestnut Street, adjacent to Pier 31½. In general, about 75 percent of northbound bicyclists use Herb Caen Way rather than the northbound Class II bicycle lane on The Embarcadero. During busy days (e.g., weekends, good weather days, and special events) this path is crowded with pedestrians and as a result some cyclists shift to using the northbound on-street bicycle lane. Only about a third of southbound cyclists were observed using Herb Caen Way; instead, the majority of southbound bicyclists used the southbound bicycle lane.

In general, bicycle mobility throughout the study area is good. To access the existing Alcatraz ferry embarkation site at Pier 31½, northbound bicyclists can use either the northbound Class II bicycle lane on The Embarcadero or Herb Caen Way then dismount at the embarkation site. Southbound bicyclists either use Herb Caen Way or the southbound Class II bicycle lane on The Embarcadero and then cross The Embarcadero north of Pier 31½ at Bay Street or south of Pier 31½ at Chestnut Street/Sansome Street and backtrack to the embarkation site. Since Pier 31½ is located between two intersections and The Embarcadero has multiple lanes, a median, and transit, southbound cyclists unfamiliar with the area may find access to the east side of the street challenging.

Bicycle counts near Pier 31½ are displayed in Figure 11, which shows that the overall volumes are moderate and that weekend volumes are somewhat higher than weekday volumes. These counts only include bicycles traveling on the Embarcadero Promenade (Herb Caen Way) and do not include those traveling in Class II bike lanes on the roadway.





**FIGURE 11. PEAK HOUR BICYCLE VOLUMES NEAR PIER 31½**

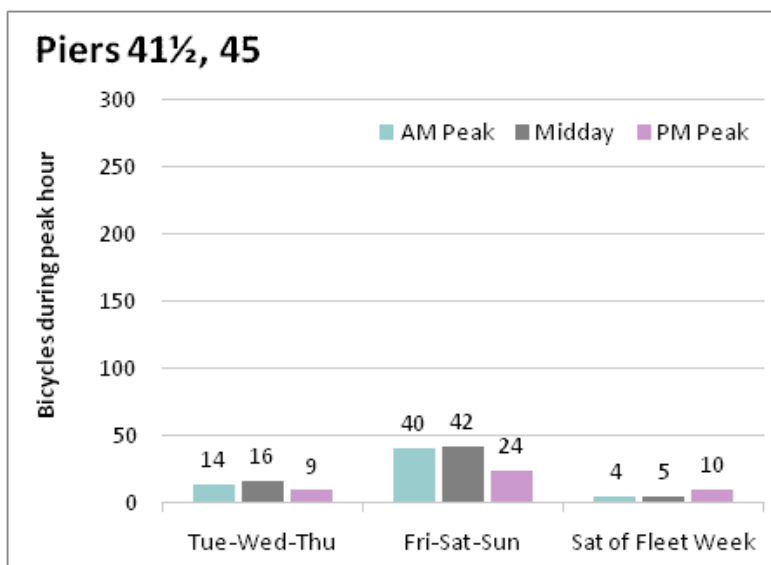
**Pier 41 (Fisherman’s Wharf)**

Similar to Pier 31½, Pier 41 is primarily served by Bicycle Routes 2 and 5. Bicycle access is also provided by Bicycle Route 11, which is a Class III facility on Columbus Avenue between North Point Street and the Financial District. North-south bicycle travel is also apparent on Polk Street, which varies between a designated Class II and III facility between Market Street and Beach Street. Herb Caen Way extends into Fisherman’s Wharf and ends at Pier 45 at Hyde Street<sup>5</sup>.

The sidewalks on the west side of The Embarcadero and north side of Jefferson Street can be crowded on weekends and days with good weather. At Pier 39, the Embarcadero promenade widens into a plaza to provide additional space for the mix of pedestrians, bicyclists, and street vendors. At Pier 41, the sidewalk and Herb Caen Way become more congested when passengers are disembarking ferries at Pier 41. During these times, cyclists on Herb Caen Way navigate through increased pedestrian traffic, which creates some conflicts.

Bicycle use along the Embarcadero west of Powell Street is fairly low, which may be attributed to high pedestrian volumes that impede bicycle travel. Compared to weekdays, weekend bicycle traffic is considerably higher. The majority of bicyclists are traveling westbound through the area since Jefferson Street is one-way westbound and cycling west to the Golden Gate Bridge is a typical and cyclical tourist pattern in the area. Figure 12 presents bicycle counts taken along the Embarcadero. During Fleet Week, cyclists may have been dissuaded from traveling through the area resulting in lower than average bicycle volumes.

<sup>5</sup> Herb Caen Way is located on the north side of The Embarcadero; however, in the Fisherman’s Wharf area, The Embarcadero veers to the north at Powell Street.



**FIGURE 12. PEAK HOUR BICYCLE VOLUMES NEAR PIER 41**

Jefferson Street is one-way westbound, and some cyclists (less than two percent) were observed traveling eastbound against traffic. To address wrong-way travel among other issues, the San Francisco Planning Department approved the Fisherman’s Wharf Public Realm Plan in 2012. As a result of the Plan, a portion of Jefferson Street has been converted from a one-way street to a two-way street with substantially wider sidewalks and traffic calming features to slow traffic and balance the mobility needs of all users in place.

### Lower Fort Mason

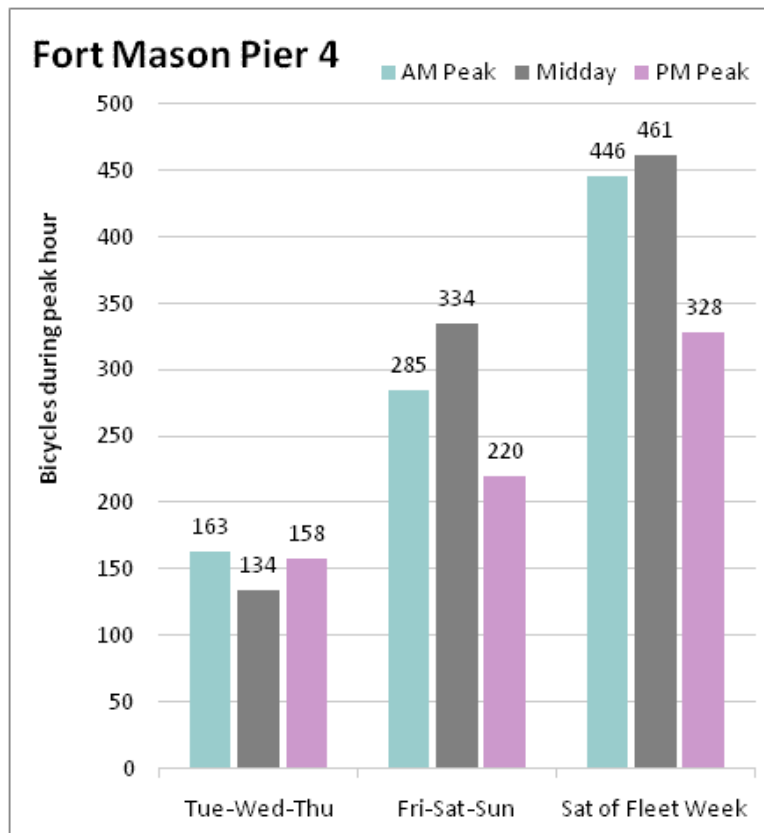
Lower Fort Mason is well connected to the surrounding bicycle network, particularly for east-west bicycle travel. A portion of the San Francisco Bay Trail (Class I) runs along the waterfront beginning at the end of Jefferson Street in Fisherman’s Wharf to Lower Fort Mason and westerly towards the Golden Gate Bridge through Marina Green and Crissy Field. Although this is a continuous route between Fisherman’s Wharf and Fort Mason, the segment on the northeast side of Fort Mason near Pier 4 is very steep and can be challenging for some cyclists. The segment of the path along Marina Boulevard between Fort Mason and Crissy Field, also designated Bicycle Route 2, is currently being reconstructed to better delineate bicycle and pedestrian space along this busy path. Additionally, Francisco Street, Alhambra Street, and Bay Street (between Fillmore and Octavia) are designated Bicycle Route 4, which varies between a Class II and III facility between the Presidio in the west and Polk Street to the east. Although north-south bicycle travel is limited by steep hills in the Pacific Heights neighborhood (approximately 0.75 mile south of Lower Fort Mason), three north-south routes serve the area. Bicycle Route 106 is a Class III facility on Octavia Boulevard between Bay Street (Fort Mason) and Green Street that is an alternate route to reach Polk Street (via Bicycle Route 6 on Green Street). Polk Street (Bicycle Route 25, which varies between a Class II and III) is the most flat and direct of the north-south routes through the area. Steiner Street is also designated a Class III bicycle route (Bicycle Route 45) between Fulton Street, near Alamo Square, and Greenwich Street, in Cow Hollow. Bicyclists on Steiner Street can reach Lower Fort Mason using Greenwich Street (Bicycle Route 6) and Octavia Street (Bicycle Route 106).

Bicycle counts were conducted at intersections near entrances to Lower Fort Mason at Laguna Street/Beach Street and Marina Boulevard-Beach Street/Buchanan Street. Bicyclist activity was

observed at the Bay Trail Promenade around Fort Mason, on the Marina Boulevard multi-use path and on select local streets. During peak hours, vehicle traffic on Laguna Street, Beach Street and Marina Boulevard is heavy and most cycling occurred on the multi-use path, sidewalk and Bay Trail. Although the continuation of the Bay Trail from Upper Fort Mason to Marina Green is along the waterfront through the lower Fort Mason parking lot, some bicyclists were observed using the sidewalk on the north side of Beach Street, which connects to the Marina Boulevard multi-use path. Bicycle volumes are higher on weekends than during the week at the entrance to the Lower Fort Mason parking lot.

The Bay Trail in Upper Fort Mason travels down a relatively steep grade to Laguna Street/Beach Street, and terminates at an approximately 7-foot-wide sidewalk where substantial volumes of pedestrians and bicycles queue to cross the street. This area was recently redesigned to slow bicyclists and direct pedestrians to the crosswalk on the south leg of the intersection, and while improved, the area remains constrained with many conflicts.

To the east of Pier 4, pedestrians and bicyclists are provided with a relatively flat Class I facility path through San Francisco Maritime National Historic Park with relatively limited conflicts. However, to the west, the Class I facility climbs a rather steep hill to Upper Fort Mason. This hill creates challenges for cyclists and pedestrians traveling uphill. In this same area, cyclists traveling downhill are often traveling at high speeds, which increases the likelihood for conflicts with pedestrians and slower cyclists. Figure 13 summarizes bicycle counts near Pier 4. Similar to the counts at other locations along the waterfront, the majority of bicycle travel occurs in the westbound direction due to the high popularity of cycling from Fisherman’s Wharf westward across the Golden Gate Bridge.



**FIGURE 13. PEAK HOUR BICYCLE VOLUMES AT FORT MASON PIER 4**

## **EXISTING PEDESTRIAN CONDITIONS**

Pedestrian counts were taken throughout the study area between Saturday, October 8, 2011, and Thursday, October 20, 2011. October is generally a popular month for tourism in San Francisco due to reliably good weather and several special events. Therefore, these counts represent typical high-use conditions along San Francisco's waterfront. In addition to a full week of counts collected during normal October conditions, the counts also include one weekend day during the annual Fleet Week events, which represent uniquely crowded conditions for purposes of comparison. The analysis, however, is based on the typical October conditions, and not the Fleet Week conditions.

The pedestrian environments near the proposed embarkation sites were reviewed and evaluated. As described in the Methodology section, a LOS analysis was conducted for crosswalks at select intersections in the study area as well as major pedestrian walkways. Tables 10 and 11 summarize the analysis results. A discussion of each site follows the tables.

**TABLE 10. EXISTING CONDITIONS – PEDESTRIAN LEVEL OF SERVICE (INTERSECTION DELAY AND CROSSWALK SPACE)**

Intersection	Crosswalk Location	Weekday a.m. Peak Hour		Weekday p.m. Peak Hour		Weekend Peak Hour	
		Delay / Signalized Intersection LOS	Space / Crosswalk LOS	Delay / Signalized Intersection LOS	Space / Crosswalk LOS	Delay / Signalized Intersection LOS	Space / Crosswalk LOS
<b>Pier 31½</b>							
Embarcadero / Bay Street	North (Embarcadero)	7 / A	>60 / A	7 / A	>60 / A	7 / A	>60 / A
	West (Bay)	23 / C	>60 / A	23 / C	>60 / A	23 / C	>60 / A
Embarcadero / Chestnut Street / Sansome Street	South (Embarcadero)	22 / C	>60 / A	22 / C	>60 / A	22 / C	>60 / A
	West (Chestnut)	16 / B	>60 / A	16 / B	>60 / A	16 / B	>60 / A
	West (Sansome)	7 / A	>60 / A	7 / A	>60 / A	7 / A	>60 / A
Embarcadero / Lombard Street / Battery Street	North (Embarcadero)	18 / B	>60 / A	18 / B	>60 / A	18 / B	>60 / A
	West (Lombard)	20 / B	>60 / A	20 / B	>60 / A	20 / B	>60 / A
	West (Battery)	25 / C	>60 / A	25 / C	>60 / A	25 / C	>60 / A
<b>Pier 41</b>							
Taylor Street / Jefferson Street	North (Taylor)	12 / B	>60 / A	14 / B	37 / C	11 / B	18 / D
	South (Taylor)	12 / B	>60 / A	14 / B	44 / B	11 / B	25 / C
	East (Jefferson)	12 / B	>60 / A	14 / B	>60 / A	12 / B	43 / B
	West (Jefferson)	12 / B	>60 / A	14 / B	>60 / A	12 / B	>60 / A
Powell Street / Jefferson Street	North (Embarcadero)	14 / B	>60 / A	21 / C	12 / E	21 / C	6 / F
	South (Powell)	14 / B	>60 / A	21 / C	54 / B	21 / C	59 / B
	East (Embarcadero)	14 / B	>60 / A	21 / C	46 / B	21 / C	32 / C
	West (Jefferson)	14 / B	>60 / A	21 / C	36 / C	21 / C	36 / C
<b>Lower Fort Mason</b>							
Laguna Street / Beach Street	South (Laguna)	26 / C	>60 / A	26 / C	>60 / A	12 / B	>60 / A
	West (Beach)	26 / C	>60 / A	26 / C	>60 / A	12 / B	>60 / A
Buchanan Street / Beach Street – Marina Boulevard	North (driveway)	6 / A	>60 / A	6 / A	>60 / A	9 / A	57 / B
	South (Buchanan)	6 / A	>60 / A	6 / A	>60 / A	9 / A	>60 / A
	East (Marina)	25 / C	>60 / A	25 / C	>60 / A	12 / B	>60 / A

Notes:

Delay is measured in seconds per pedestrian. Space is measured in square feet per pedestrian. **Bold** values reflect facilities operating worse than established significance thresholds.

**TABLE 11. EXISTING CONDITIONS – PEDESTRIAN LEVEL OF SERVICE (WALKWAYS)**

Analysis Location and Day of Week	Hourly Flow Volumes / LOS		
	a.m. Peak Hour	Mid-day Peak Hour	p.m. Peak Hour
<b>Pier 31½ - Embarcadero Promenade (between Bay and Chestnut Streets); 18 foot Walkway</b>			
Tues-Thur	834 / B	840 / B	777 / B
Fri, Sat, Sun	1,222 / B	1,711 / C	1,707 / C
<b>Pier 41 - Embarcadero Promenade (east of Taylor Street); 12 foot Walkway</b>			
Tues-Thur	611 / C	982 / C	817 / C
Fri, Sat, Sun	537 / C	1,692 / D	1,186 / C
<b>Lower Fort Mason - Bay Trail west of Fort Mason Pier 4; 12 foot Walkway</b>			
Tues-Thur	218 / A	172 / A	241 / A
Fri, Sat, Sun	368 / C	380 / C	378 / C

**Pier 31½**

Near the existing embarkation site at Pier 31½, sidewalks along the east side of The Embarcadero are generally 18 to 25 feet wide. Additional uncovered pedestrian space is provided on-site to accommodate visitors waiting to embark. Sidewalks on the west side of The Embarcadero are generally 10 feet wide. Pedestrians can cross The Embarcadero at either Bay Street, which is approximately 350 feet north of Pier 31, or Chestnut Street/Sansome Street, which is 700 feet south of Pier 31. As shown in Table 10, all study location crosswalks near Pier 31½ operate at acceptable LOS during analysis periods.

Most active uses on The Embarcadero are located on the waterfront (east side) where the majority of pedestrian activity occurs. The east side of the Embarcadero has few interruptions from cross streets and driveways, and therefore is an attractive facility for recreational purposes. Embarcadero pedestrian volumes can vary substantially depending on weather or day of the week. The walkway analysis conducted for the Embarcadero promenade indicates weekend p.m. peak hour pedestrian volumes are more than twice weekday p.m. peak hour pedestrian volumes. However, the walkway operates at LOS C or better conditions during all analysis periods.

**Pier 41 (Fisherman's Wharf)**

The waterfront area near Pier 41 experiences very high pedestrian activity. Near Fisherman's Wharf the Embarcadero promenade widens out to a large plaza to accommodate increased pedestrian demand and tourist-related activities, primarily. The area immediately adjacent to Pier 39 is also used for tour bus pick-up and drop-off, which temporarily increases pedestrian volumes during boarding and alighting.

Jefferson Street, between Powell Street and Taylor Street has 15-foot sidewalks. During peak days and times, these sidewalks can become overcrowded. The area has a distinct peaking of foot traffic in the midday period, and pedestrian traffic is typically higher on the weekend than during the week. The City is currently constructing pedestrian improvements as part of the Fisherman's Wharf Public Realm Plan. Once implemented, sidewalks on the south side of Jefferson Street between Powell Street and Taylor Street will be widened from the existing width to



approximately 30 feet. This improvement will alleviate some of the existing pedestrian congestion.

The crosswalks at Powell Street/Jefferson Street and Taylor Street/Jefferson Street were analyzed to determine pedestrian level of service. During both the weekday p.m. peak hour and the Saturday peak hour, the north crosswalk across the Embarcadero at Powell Street operates at unacceptable LOS, meaning that pedestrian crowding is severe. Sidewalk improvements underway as part of the Fisherman's Wharf Public Realm Plan will help address some of the pedestrian overcrowding (City and County of San Francisco 2011a); however, these crossings will likely continue to be very crowded during peak times, special events, and on Saturdays.

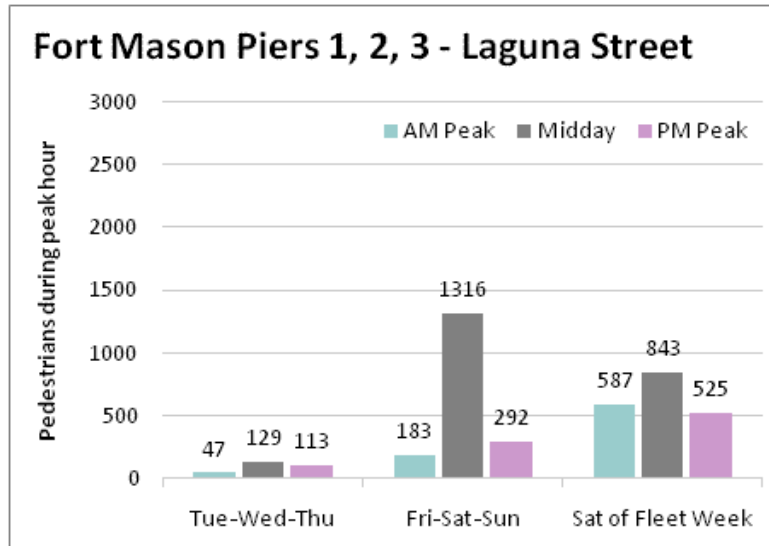
Similar to near Pier 31½, the east side of the Embarcadero near Pier 41 has few interruptions from cross streets and driveways, and therefore is an attractive facility for recreational purposes. Embarcadero pedestrian volumes can vary substantially depending on weather or day of the week. The walkway operates at LOS D or better conditions during all analysis periods.

### **Lower Fort Mason**

Lower Fort Mason has four primary pedestrian access points: near the corner of Laguna Street/Beach Street; the driveway entrance at Buchanan Street/Beach Street-Marina Boulevard; the stairway between the Upper Fort Mason Bay Trail Promenade and Lower Fort Mason; and the Bay Trail adjacent to the Marina Green. There are pedestrian pathways marked through the Lower Fort Mason parking lot to the primary buildings on the site.

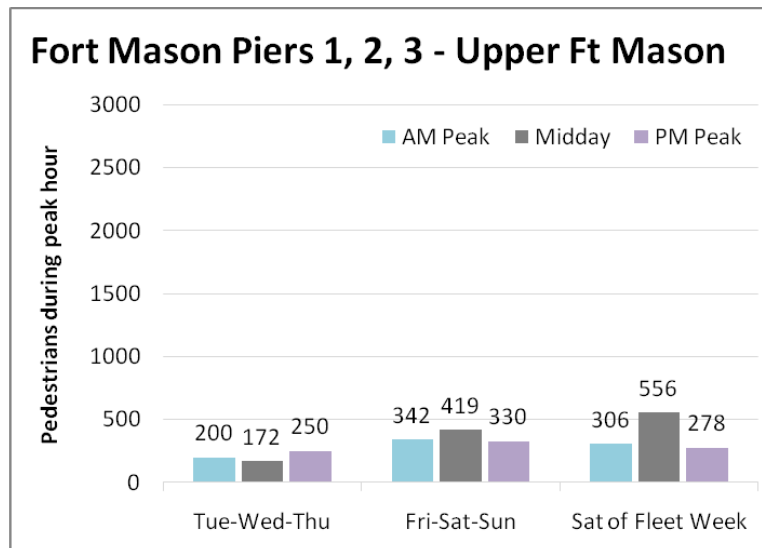
Pedestrians walking to Lower Fort Mason from the east (i.e., Fisherman's Wharf) would likely use the Bay Trail Promenade around Upper Fort Mason between Pier 4 and Lower Fort Mason. Sidewalks near Lower Fort Mason, including Laguna Street, Buchanan Street, North Point Street, and Beach Street, are generally 10 to 15 feet wide. The north side of Marina Boulevard, west of Webster Street is designated as part of the Bay Trail (Class I) and has delineated bicycle and pedestrian space to better separate the high volume of both bicyclists and pedestrians that use the path. This path is between 15 to 20 feet wide. Crosswalks along Marina Boulevard have been striped with high visibility continental crosswalk striping.

A substantial amount of weekend pedestrian activity in this area is concentrated at the intersection of Laguna Street/Beach Street, where the Bay Trail Promenade joins the sidewalk along the eastern side of the intersection. As Figure 14 indicates, pedestrian volumes passing by the gated entrance to the Lower Fort Mason parking lot north of the Marina Boulevard/Laguna Street intersection are much higher during weekends than during the week.



**FIGURE 14. PEAK HOUR PEDESTRIAN VOLUMES AT ENTRANCE TO LOWER FORT MASON PARKING LOT**

Pedestrian volumes entering Lower Fort Mason from the stairway connecting to Upper Fort Mason are also higher on weekends than during the week (see Figure 15). On weekdays, pedestrian volumes are consistently higher than the Laguna Street entrance, suggesting that this is a well-used entryway to Lower Fort Mason.



**FIGURE 15. PEAK HOUR PEDESTRIAN VOLUMES ON UPPER FORT MASON STAIRWAY**

Pedestrian access to Lower Fort Mason from the east side, adjacent to Pier 4, are somewhat challenging. To the east, pedestrians are provided with a relatively flat Class I facility (dedicated, multi-use path) through San Francisco Maritime National Historic Park that offers sweeping views of Aquatic Park and the San Francisco Bay, with relatively limited conflicts. However, to the west, the Class I facility climbs a rather steep hill to Upper Fort Mason, which presents some physical challenges to some visitors and where conflicts with bicycles can be challenging.

## EXISTING PARKING CONDITIONS

Parking conditions within 0.25 mile of each proposed embarkation site, shown in Figure 7, were evaluated based on parking occupancy and supply surveys conducted in 2011 and data from the San Francisco Municipal Transportation Agency's *SFPark* Program (City and County of San Francisco 2011c). Tables 12 and 13 summarize publically available off-street parking supply within each study area for a weekday and Saturday, respectively. Parking is categorized as either on-street parking (i.e., metered and unmetered parking spaces) or off-street parking (i.e., publically-accessible garages and surface lots). Calculated parking utilization is also reported based on occupancy observations during four time periods. Following Tables 12 and 13, parking conditions surrounding each embarkation site are described.

As shown in Table 12, overall parking utilization is generally below 80 percent during the weekday, although in some cases, on-street parking may be fully utilized while spare capacity exists in off-street facilities. On Saturdays, parking is generally more available (i.e., less occupied) compared to weekdays around Pier 31½. Parking occupancy surrounding Lower Fort Mason increases on Saturday and is likely due to nearby recreational areas at Marina Green or special events at Fort Mason.

**TABLE 12. EXISTING CONDITIONS – PARKING (WEEKDAY)**

Embarkation Site / Parking Area	Supply	Occupancy				Parking Utilization			
		9-12	12-3	3-6	6-9	9-12	12-3	3-6	6-9
<b>Pier 31½</b>									
Off-Street	1,126	674	748	613	296	60%	66%	54%	26%
On-Street	687	562	707	651	438	82%	103%	95%	64%
Total	1,813	1,236	1,455	1,264	734	68%	80%	70%	40%
<b>Pier 41 (Fisherman's Wharf)</b>									
Off-Street	3,325	1,025	1,730	1,713	1,195	31%	52%	52%	36%
On-Street	2,886	1,500	1,905	1,760	-	52%	66%	61%	-
Total	6,211	2,525	3,632	3,473	-	41%	59%	56%	-
<b>Piers 1, 2, or 3 (Lower Fort Mason)</b>									
Public Garages	321	120	185	169	153	37%	58%	53%	48%
Marina Green	672	337	412	394	202	50%	61%	59%	30%
Lower Fort Mason	437	168	215	226	167	38%	49%	52%	38%
Upper Fort Mason	350	314	282	297	215	90%	81%	85%	61%
On-Street	1,990	1,354	1,362	1,665	1,847	68%	68%	84%	93%
Total	3,770	2,293	2,456	2,751	2,584	61%	65%	73%	69%

**TABLE 13. EXISTING CONDITIONS – PARKING (SATURDAY)**

Embarkation Site / Parking Area	Supply	Occupancy				Parking Utilization			
		9-12	12-3	3-6	6-9	9-12	12-3	3-6	6-9
<b>Pier 31½</b>									
Off-Street	1,126	307	536	678	501	27%	48%	60%	44%
On-Street	687	205	265	294	321	30%	39%	43%	47%
Total	1,813	512	801	972	822	28%	44%	54%	45%
<b>Pier 41</b>									
Off-Street	3,325	916	1,970	2,630	2,209	28%	59%	79%	66%
On-Street	2,886	1,732	2,597	2,597	-	60%	90%	90%	-
Total	6,211	2,648	4,567	5,227	-	43%	74%	84%	-
<b>Lower Fort Mason</b>									
Public Garages	321	118	159	166	216	37%	50%	52%	67%
Marina Green	672	329	548	540	247	49%	82%	80%	37%
Lower Fort Mason	437	199	479	528	324	46%	110%	121%	74%
Upper Fort Mason	350	303	303	371	300	87%	87%	106%	86%
On-Street	1,990	1,828	1,841	1,896	1,895	92%	93%	95%	95%
Total	3,770	2,777	3,330	3,501	2,982	74%	88%	93%	79%

Note:

Source: Task 9 2012 Visitor Flow Survey Analysis (Appendix D)

**Pier 31½**

In the vicinity of Pier 31½, there are approximately 1,125 off-street parking spaces in garages and lots within 0.25 mile of the site. The parking garages in the area are privately-owned, but available to the public. Surface parking in the area is generally managed by the Port of San Francisco, and only represents a small portion of the total off-street parking count. Within 0.25 mile of Pier 31½, there are approximately 690 on-street parking spaces. This count includes spaces to the northeast of Telegraph Hill but does not include spaces within 0.25 mile that would require a circuitous route to the Pier due to topography or discontinuous streets. For example, spaces on Chestnut Street east of Kearny Street were included in the count, but spaces on Chestnut Street west of Telegraph Hill were not due to the large hill and the break in Chestnut Street.

During the week, parking is most utilized between 12:00 and 3:00 p.m., when 80 percent of available spaces are occupied. Off-street parking garages are between 50 and 70 percent occupied during business hours (generally 9:00 a.m. to 6:00 p.m.), and after 6:00 p.m. parking utilization drops to 26 percent. On-street parking in the area is also effectively full between 9:00 a.m. and 6:00 p.m., when utilization is between 80 and 100 percent. Between noon and 3:00 p.m., more vehicles were observed parking on-street than spaces were available (103%). This is likely related to vehicles double parking or parking illegally in unmarked spaces. Weekend parking utilization is around 50 percent reflecting the ability to find available parking easily.

**Pier 41 (Fisherman's Wharf)**

There are approximately 3,325 off-street parking spaces in garages and surface lots in the vicinity of Pier 41. Approximately 2,890 on-street parking spaces serve the area. The Fisherman's Wharf

area is located within a *SFpark* study area subject to regular parking rate adjustments to manage and balance parking demand. During the most recent cycle, on-street parking rates in this area were increased in response to high demand on Saturdays. This *SFpark* parking management strategy is intended to increase turnover of on-street parking spaces and encourage people staying for longer periods to use garages and surface lots (City and County of San Francisco 2011c).

Parking is about 60 percent occupied during peak times on a weekday (12:00 to 6:00 p.m.). Off-street parking lots and garages were found to be about half full during this time period. On weekends, parking around Pier 41 is about 80 percent occupied during peak times on Saturday (12:00 to 6:00 p.m.) with on-street parking at about 90 percent utilization. None of the parking locations exceed 95 percent utilization.

### **Lower Fort Mason**

Parking supply in the Lower Fort Mason area consists of multiple parking types and areas: SFMTA-managed public off-street parking garages (approximately 320 spaces); on-street unmetered parking (approximately 1,990 spaces); off-street surface parking lots at Marina Green (approximately 670 spaces); off-street surface parking lot at Lower Fort Mason (approximately 440 spaces); and off-street surface parking lots at Upper Fort Mason (approximately 350 spaces). On-street parking surrounding Lower Fort Mason is subject to posted regulations of the San Francisco Residential Parking Permit (RPP) program. The RPP designation allows residents who live on streets north of Lombard Avenue to purchase a RPP “M” permit. During weekdays, vehicles with an M permit may park on-street for an unlimited time, except for posted street cleaning restrictions. Non-residents or visitors without an M permit are allowed to park for up to two hours between the hours of 8:00 a.m. and 6:00 p.m. South of Lombard Avenue, streets are part of the K RPP zone, which functions the same as the M zone.

During the week, public parking garages, lots at Marina Green, and the Lower Fort Mason lot generally operate well below capacity, with only about 50 to 60 percent of total available spaces occupied between 12:00 and 6:00 p.m. The Upper Fort Mason parking area is essentially full between 9:00 a.m. and 6:00 p.m., when 80 to 90 percent of available spaces are occupied. These lots are used by Park Service and Golden Gate National Parks Conservancy employees, and higher occupancy is consistent with typical work hours. After 6:00 p.m., only about 60 percent of these spaces remain occupied.

During the week, on-street parking around Lower Fort Mason is about 70 percent occupied between 9:00 a.m. and 3:00 p.m. After 3:00 p.m., parking occupancy increases to about 85 percent; then to 93 percent after 6:00 p.m. This pattern (i.e., lower occupancy during the day and higher occupancy in the evening) is typical of residential areas where residents leave for work in the morning and return home in the evening.

Parking around Lower Fort Mason is generally more constrained on the weekend. Public parking garages (Pierce Street Garage and Lombard Street Garage) are about 50 percent occupied between 12:00 and 6:00 p.m. and are about 70 percent occupied after 6:00 p.m. Off-street parking at Marina Green is about 80 percent occupied between 12:00 and 6:00 p.m. The Upper Fort Mason lots are generally about 85 to 90 percent full throughout the day, with an increase in demand between 3:00 and 6:00 p.m. The Lower Fort Mason lot is over capacity between 12:00 and 6:00 p.m.

On weekends, on-street parking surrounding Lower Fort Mason is effectively full, with more than 90 percent of available spaces occupied at all times of day. Due to high-occupancy, finding available on-street parking is challenging, and may result in some drivers circling the block looking for available parking. RPP restrictions are not in effect on Saturdays, and therefore, any vehicle may park for an unlimited amount of time.

## PROPOSED PROJECT TRAVEL DEMAND

This chapter presents the methodology and results of the travel demand forecast analysis prepared for the proposed Project. Regardless of which site is selected, the forecast demand is expected to be the same at any of the three sites, but will increase over the No Action Alternative/Baseline Conditions visitor levels. In addition, as noted earlier, in the long-term condition, improvements to visitor management on Alcatraz Island, implemented as part of a separate effort, will allow for an increase of approximately 20 percent of visitors to the Island. This would occur in the long-term future under all alternatives, including the No Action Alternative/Baseline Conditions.

However, while the total person demand under all of the action alternatives is expected to be the same at any of the three proposed embarkation sites, the modes to travel to and from each site may be different. The type of activities and travel patterns generated by the ferry embarkation site are unique and largely driven by projected visitation, ferry capacity and tour schedule.

The travel demand methodology relied upon background documentation related to overall visitor levels prepared for the landside facilities, specifically:

- Visitor projections developed in the *Draft Alcatraz Ferry Embarkation and Education Site Feasibility Study* (URS 2011)
- Arrival and departure patterns described in the *Draft Embarkation Facility Space Planning Model-Results* (ORCA 2011)

Two other sources were used to convert these sources into peak hour travel demand by mode:

- The existing Alcatraz Ferry schedule
- Mode split projections: *Task 9 2012 Visitor Flow Survey Analysis* (Appendix D)

Travel demand was calculated using the following four-step process: person trip generation to determine the number of new person trips generated on a daily and peak hour basis; trip mode split analysis to determine the mode of travel used by each person traveling to the embarkation site; trip distribution to evaluate the direction of approach and departure from the embarkation site; and trip assignment to roadways, sidewalks, and/or transit lines based on the geographic distribution of the travel demand.

This chapter also discusses parking demand for the three sites.

## TRIP GENERATION

### Total Person Trip Generation

Daily and peak hour person trip generation forecasts for the embarkation sites were developed based on the existing and expected visitors to the island and embarkation site. The Alcatraz ferry embarkation site currently has about 5,460 touring visitors (i.e., ticketed passengers taking the ferry to the island) and 700 non-touring visitors on a peak day of the year (i.e., visitors that travel to the embarkation site but do not board a ferry to Alcatraz Island [URS 2011]). Typically, the non-touring visitors consist of visitors that do not have pre-purchased tickets and cannot be accommodated because ferries are sold out.

In general, visitation peak is controlled by the capacity of Alcatraz Island, and not necessarily the number of ferries that arrive and depart from the embarkation site. After planned long-term enhancements are made on-island to more efficiently manage visitor flow, the Park Service expects that approximately 20 percent more visitors can be accommodated on a peak day (i.e., about 6,600 daily Alcatraz Island visitors). Similarly, the number of non-touring visitors is expected to increase in the long term, from approximately 700 to 800 per day (URS 2011). Enhancements to landside facilities at the embarkation site (regardless of where it is located) as part of the Action Alternatives are expected to more comfortably accommodate the increased number of visitors, but they are not essential to the growth, which would occur with or without the enhancements to the embarkation facility.

Under the Action Alternatives, the embarkation facility would contain an additional boat berth that could be used to operate additional ferry service elsewhere in the San Francisco Bay. Although the ultimate use of this third berth is yet undefined, the additional ferry service could be a water taxi or a circular route that serves multiple Park Service sites in the Bay, for example. The Park Service has forecasted that this service would add up to 100,000 additional visitors annually, or just over 5 percent of the projected Alcatraz visitor levels of 1.7 million annually.

Table 14 summarizes the existing, future and net new daily person trips to the embarkation site.

**TABLE 14. EXISTING AND FUTURE DAILY PERSON TRIPS TO THE ALCATRAZ FERRY EMBARKATION SITE**

	Daily Person Trips		
	No Action/Baseline	Action Alternatives	Net New Person Trips
<b>Near-Term</b>			
Alcatraz Tour Visitors	5,460	5,460	<b>0</b>
Non-Alcatraz Tour Visitors	700	1,090	<b>390</b>
<b>Total</b>	<b>6,160</b>	<b>6,550</b>	<b>390</b>
<b>Long-Term (2035)</b>			
Alcatraz Tour Visitors	6,600	6,600	<b>0</b>
Non-Alcatraz Tour Visitors	800	1,190	<b>390</b>
<b>Total</b>	<b>7,400</b>	<b>7,790</b>	<b>390</b>

Note:  
Source: URS 2011

To determine the number of person trips occurring during the peak hour, the visitor arrival patterns discussed in the *Draft Embarkation Facility Space Planning Model-Results* study (ORCA 2011) were reviewed. The study provided information on the typical visitor arrival time before a ferry leaves the dock, length of stay after disembarking from a ferry, and the number of non-island tour visitors expected to be at the site during a typical hour throughout the day. The Alcatraz Ferry arrival and departure schedule for summer 2013 was used to identify the number of boats arriving and departing from the embarkation site during the peak hours analyzed in this report (a.m., p.m., and Saturday midday). Table 15 summarizes resulting existing and future peak hour person trips to the Alcatraz ferry embarkation site under the Action Alternatives.



**TABLE 15. EXISTING AND FUTURE PEAK HOUR PERSON TRIPS TO THE ALCATRAZ FERRY EMBARKATION SITE**

	Inbound Person Trips		Outbound Person Trips	
	Existing (2010)	Future (2035)	Existing (2010)	Future (2035)
<b>No Action Alternative</b>				
a.m. Peak Hour (8 to 9 a.m.)	1,200	1,440	0	0
p.m. Peak Hour (5 to 6 p.m.)	600	720	1,050	1,260
Saturday	1,200	1,440	1,050	1,260
<b>Action Alternatives</b>				
a.m. Peak Hour (8 to 9 a.m.)	1,270	1,510	0	0
p.m. Peak Hour (5 to 6 p.m.)	640	760	1,110	1,320
Saturday	1,270	1,510	1,110	1,320

**ANALYSIS ALTERNATIVES**

The proposed embarkation sites are located in three distinct areas along the waterfront with differing transportation facilities and land use. Therefore, unique mode split information is required for each of the proposed sites. In addition, mode split determination for Lower Fort Mason required more disaggregation to reflect three different transit or shuttle scenarios. In addition to the No Action alternative, the following five Action Alternatives are included in this analysis:

- Pier 31½
- Pier 41
- Lower Fort Mason - No F-Market Line Extension or Shuttle Scenario – This scenario assumed current transit provision to the area without extension of the F-Market line or shuttle.
- Lower Fort Mason - F-Market Line Extension Only Scenario – This scenario assumed that the F-market line would be extended to Fort Mason but that no shuttle would be provided.
- Lower Fort Mason - Shuttle Only Scenario – This scenario assumed that a shuttle would be provided with service between Fisherman’s Wharf and Fort Mason but that the F-Market line would not be extended.

**MODE SPLIT ANALYSIS**

**Pier 31½ and Fisherman’s Wharf.** An on-site survey was conducted at the current Alcatraz ferry embarkation site at Pier 31½ and at Fisherman’s Wharf to assess travel behavior specific to each location. The results of the survey were used to estimate travel mode split for the proposed Project at these sites. The survey methodology and sampling procedures are described in *Alcatraz Ferry Embarkation EIS Memorandum: Task 9 2012 Visitor Flow Survey Analysis*, which is included in the Appendix D of this report. The survey sampling period ran from July 14 through July 22, 2012, and included 5 weekdays and 4 weekend days. On each sampling day, two surveyors were

1 located at each site and collected responses between 9 a.m. and 5 p.m. The actual response rates  
2 were higher than expected, which resulted in exceeding the required confidence intervals  
3 required by the Park Service set forth in Programmatic Approval for Park Service Sponsored  
4 Public Surveys.

5  
6 **Fort Mason.** Fort Mason does not currently generate a large number of visitors on a daily basis.  
7 Additionally, the population currently traveling to Fort Mason is substantially different from the  
8 population of tourists visiting Alcatraz, due to the different types of uses, lack of robust, direct  
9 transit service, and relative availability of parking on-site. Therefore, no survey was conducted of  
10 existing visitors at Fort Mason, because, even if a large enough sample were collected, the travel  
11 behavior of existing Fort Mason visitors would not be representative of visitors to Alcatraz if the  
12 embarkation facility were located in Fort Mason. Although no data was collected, it is likely that  
13 the trips to Fort Mason, which include office, educational, and limited retail uses, are more  
14 heavily tilted toward single-occupant automobile use than the typical tourist traveling to Alcatraz.

15  
16 Forecasts for mode share of Alcatraz visitors if the embarkation facility were to be located at Fort  
17 Mason were derived from a combination of the visitor surveys collected at Fisherman's Wharf  
18 and Pier 31½ and other surveys conducted by the City. The methodology is described below.

19  
20 Because Fort Mason is somewhat more automobile-oriented and less transit-rich than  
21 Fisherman's Wharf, visitors currently traveling by car or taxi to Fisherman's Wharf are  
22 anticipated to use the same mode of transportation to access Fort Mason to take the Alcatraz  
23 ferry. However, those who currently walk or take public transportation to Fisherman's Wharf  
24 might shift to a different mode of transportation due to the hilly terrain and lower transit  
25 accessibility at Fort Mason.

26  
27 The City of San Francisco Planning Department published the (City and County of San Francisco  
28 2002) for use in conducting transportation impact analyses. While these guidelines are not  
29 intended for such a unique use as the Alcatraz ferry embarkation site, they do contain useful data  
30 regarding general travel behavior in different parts of San Francisco based on surveys conducted  
31 throughout the city. The SF Guidelines define four quadrants of San Francisco as Superdistricts,  
32 which are consistent with the travel analysis zones established by the Metropolitan  
33 Transportation Commission (MTC). The northeastern quadrant is referred to as Superdistrict 1,  
34 which includes Pier 31½ and Fisherman's Wharf. The northwestern quadrant is referred to as  
35 Superdistrict 2, which includes Fort Mason.

36  
37 **Fort Mason - No F-Market Line Extension or Shuttle Scenario.** Current mode split data from  
38 the Pier 31½ and Fisherman's Wharf surveys were used to calculate the mode split under the No  
39 F-Market Line Extension or Shuttle Scenario. The values were adjusted using the SF Guidelines  
40 data to better represent conditions at Fort Mason. Guideline mode split data for Superdistrict 1  
41 were compared with mode split data from Superdistrict 2. Trips to Superdistrict 2 have a higher  
42 auto mode share, a slightly lower transit mode share, and a lower walk mode share than trips to  
43 Superdistrict 1. The percent increase or decrease in each mode share from Superdistrict 1 to  
44 Superdistrict 2 from the SF Guidelines was calculated, and adjustment factors were applied to the  
45 average mode share from the combined Pier 31½ and Fisherman's Wharf surveys to obtain an  
46 estimate of the mode share to Fort Mason. It is worth noting that the surveyed mode splits at Pier  
47 31½ and Fisherman's Wharf were generally similar with the mode splits identified in the SF  
48 Guidelines, although the non-auto mode share was slightly higher, which is understandable given  
49 the higher portion of tourists who are likely staying at hotels downtown and who do not rent cars.

50  
51 Applying the adjustments previously described better captures both the unique features of the  
52 more tourist-oriented population that would use the Alcatraz ferry embarkation site and the

1 distinctions between transportation environments at Pier 31½, Fisherman’s Wharf, and Fort  
 2 Mason. This approach is based on the existing transportation infrastructure, which means it does  
 3 not account for the proposed addition of a new BRT system along Van Ness Avenue, with a  
 4 terminus adjacent to Upper Fort Mason, the extension of the F-Market line, or implementation of  
 5 a shuttle service to Fort Mason. The resulting adjusted mode share, which can be seen in the first  
 6 bar in Figures 12 and 13, is the proposed estimate for Fort Mason under the No F-Market Line  
 7 Extension or Shuttle Scenario.

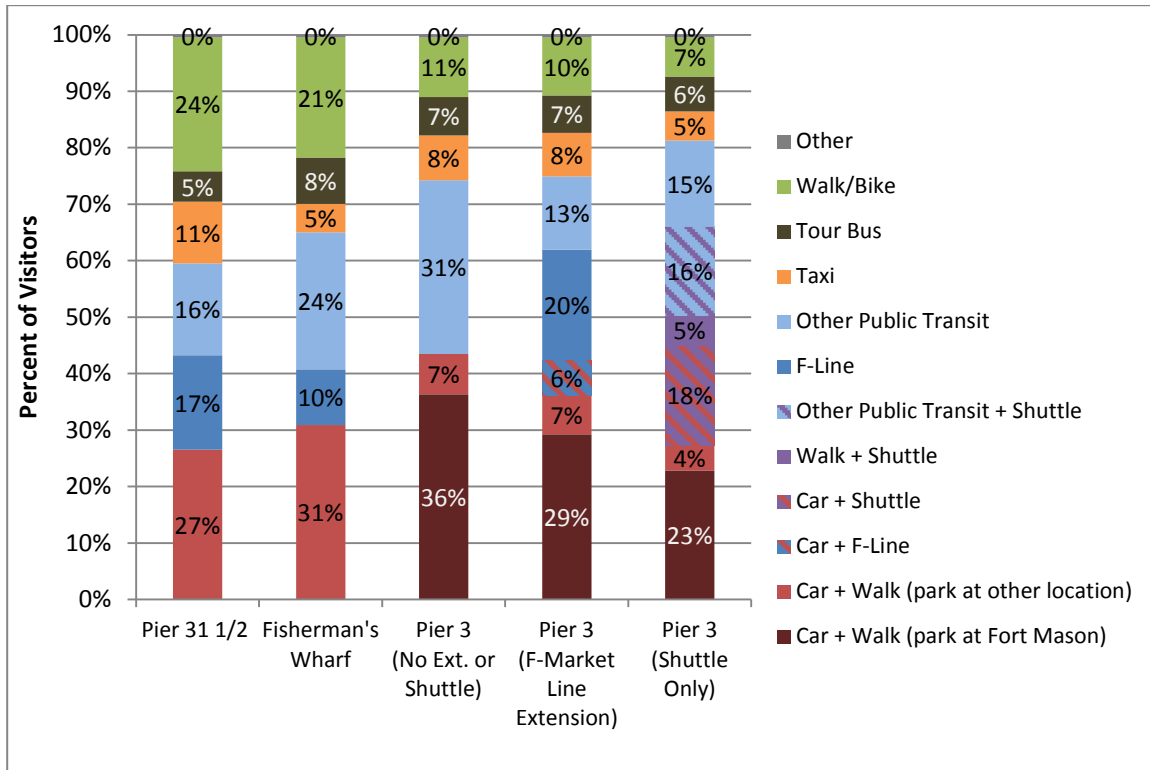
8  
 9 **Fort Mason - F-Market Line Extension Only Scenario.** To estimate the effect of adding the  
 10 F-Market line extension, the extension was assumed in combination with other planned transit  
 11 investments in the area, such as the Van Ness BRT line, which would make public transportation  
 12 access at Fort Mason more similar to Fisherman’s Wharf and Pier 31½. For example, both the  
 13 Fort Mason and the Fisherman’s Wharf locations would be near an F-Market line stop and within  
 14 0.5 mile of a Powell-Hyde cable car stop and seven other Muni bus lines. Therefore, the mode  
 15 share estimates from the surveys at Fisherman’s Wharf and Pier 31½ were adjusted using the SF  
 16 Guidelines adjustment factors for auto and walk mode shares, but not for the public transit mode  
 17 share for this future condition. Adjustments resulted in an increase in public transit riders and an  
 18 incremental reduction in those arriving by car compared to the No F-Market Line Extension or  
 19 Shuttle Scenario.

20  
 21 The same ratio of F-Market line to other public transportation users from surveyed visitors’  
 22 stated mode of transportation to Fort Mason was used to estimate the percentage of visitors  
 23 taking the F-Market line to Fort Mason. Those using other public transportation would likely  
 24 take other adjacent routes, such as the Powell Street cable car, the Van Ness BRT, or other local  
 25 bus routes. The mode split for the “F-Market Line Extension Only Scenario is summarized in the  
 26 fourth bar in Figures 16 and 17.

27  
 28 **Fort Mason - Shuttle Only Scenario.** In the Park Service’s July 2012 survey, visitors were asked  
 29 about their preferred travel method both under conditions with only the F-Market line extended  
 30 into Fort Mason and with a shuttle service running between the F-Market line terminus in  
 31 Fisherman’s Wharf and Fort Mason. Generally, more people stated they would use the shuttle  
 32 than would use the F-Market line. Some visitors would first drive to Fisherman’s Wharf and then  
 33 board the shuttle.

34  
 35 To estimate the mode share at Fort Mason under conditions with a shuttle in operation,  
 36 adjustment factors were calculated based on the difference in mode share from the respondents’  
 37 stated preferences from the surveys under conditions with the F-Market only and under  
 38 conditions with a shuttle only. These adjustment factors were applied to the mode share estimates  
 39 derived for the “F-Market Extension Only Scenario” to develop mode share projections for  
 40 conditions at Fort Mason with a shuttle service.

41  
 42 These results are based on the best available information at this time. However, it is important to  
 43 recognize a few data weaknesses. First, the shuttle projections are based on stated preference  
 44 surveys, which are not always as accurate as surveys of actual behavior. Further, they do not take  
 45 into account the cost or marketing strategy of the shuttle. If the shuttle were free and the Park  
 46 Service were to heavily advertise it as the primary means to access Fort Mason, it might be more  
 47 popular than if it were to be provided at an extra cost and marketing was somewhat limited. This  
 48 analysis assumes relatively low (or no) marginal cost for taking the shuttle and that Park Service  
 49 would promote the shuttle to all visitors. The analysis also assumes that the shuttle would only  
 50 operate between Fisherman’s Wharf and Fort Mason, although it is possible that a more extensive  
 51 route structure, with connections to downtown hotels and regional transit providers (such as  
 52 BART and ferries), could be provided.

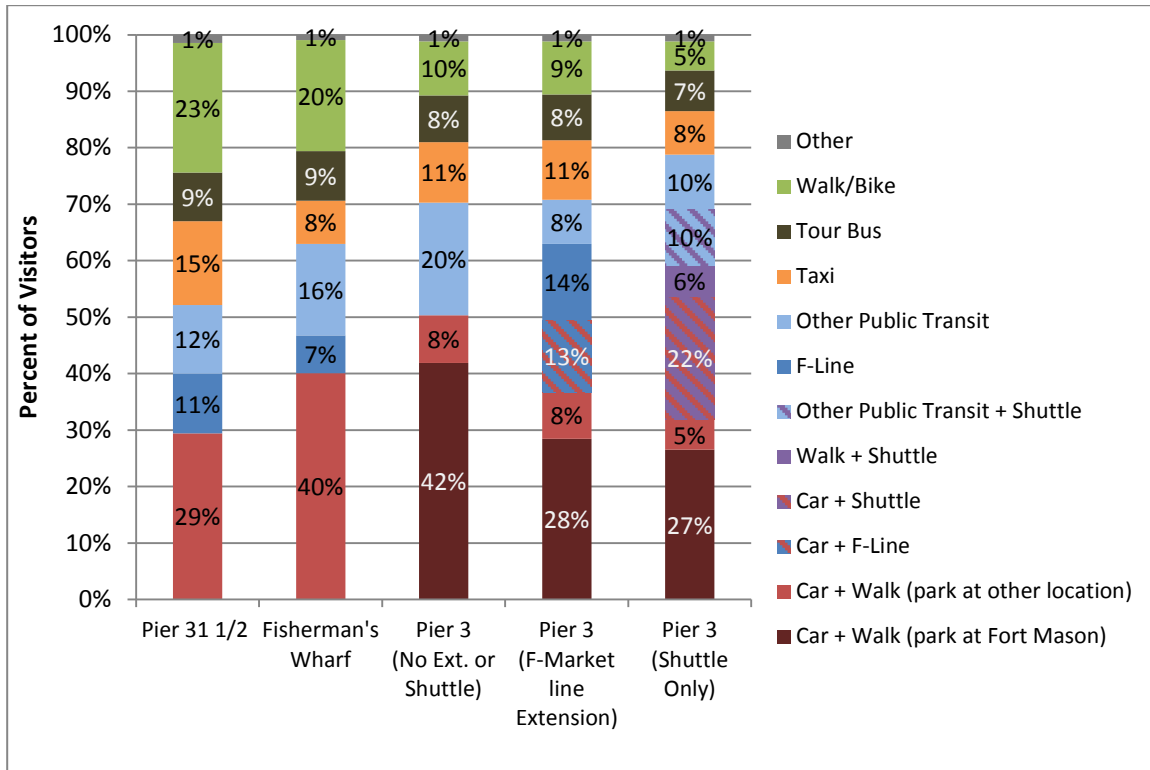


1  
2 **FIGURE 16. FINAL WEEKDAY MODE SPLIT ESTIMATES**

3 Note:  
4 Other public transit category for the Fort Mason - No F-Market Line Extension or Shuttle Only scenarios  
5 may include visitors who take the F-Market line to Fisherman's Wharf and then walk or take the shuttle to Fort  
6 Mason. Other public transit options include the cable cars and Muni lines.

7

PROPOSED PROJECT TRAVEL DEMAND



1  
2 **FIGURE 17. FINAL WEEKEND DAY MODE SPLIT ESTIMATES**

3 Note:  
4 Other public transit category for the Fort Mason - No F-Market Line Extension or Shuttle, and Shuttle Only scenarios  
5 may include visitors who take the F-Market line to Fisherman's Wharf and then walk or take the shuttle to Fort  
6 Mason. Other public transit options include the cable cars and Muni lines.  
7  
8

9 **Project Trips by Mode**

10  
11 Person trips by mode were determined from the total person trip generation and mode split data  
12 described previously. Table 16 summarizes the resulting inbound and outbound person trips by  
13 mode for each of the proposed alternatives.  
14

**TABLE 16. PERSON TRIPS (INBOUND / OUTBOUND / TOTAL) BY MODE**

Mode	Alternative				
	Pier 31½	Pier 41	Lower Fort Mason (No F-Market Line or Shuttle)	Lower Fort Mason (F-Market Line)	Lower Fort Mason (Shuttle)
<b>a.m. Peak Hour (8 to 9 a.m.)</b>					
Walk/Bike	306 / 0 / 306	268 / 0 / 268	140 / 0 / 140	128 / 0 / 128	90 / 0 / 90
Tour Bus	64 / 0 / 64	102 / 0 / 102	90 / 0 / 90	90 / 0 / 90	77 / 0 / 77
Taxi	140 / 0 / 140	77 / 0 / 77	102 / 0 / 102	102 / 0 / 102	64 / 0 / 64
Other Public Transit	204 / 0 / 204	306 / 0 / 306	395 / 0 / 395	166 / 0 / 166	191 / 0 / 191
F-Line	217 / 0 / 217	128 / 0 / 128	0 / 0 / 0	255 / 0 / 255	0 / 0 / 0
Other Public Transit + Shuttle	0 / 0 / 0	0 / 0 / 0	0 / 0 / 0	0 / 0 / 0	204 / 0 / 204
Walk + Shuttle	0 / 0 / 0	0 / 0 / 0	0 / 0 / 0	0 / 0 / 0	64 / 0 / 64
Car + Shuttle	0 / 0 / 0	0 / 0 / 0	0 / 0 / 0	0 / 0 / 0	229 / 0 / 229
Car + F Line	0 / 0 / 0	0 / 0 / 0	0 / 0 / 0	77 / 0 / 77	0 / 0 / 0
Car + Walk (Other)	344 / 0 / 344	395 / 0 / 395	90 / 0 / 90	90 / 0 / 90	51 / 0 / 51
Car + Walk (Fort Mason)	0 / 0 / 0	0 / 0 / 0	458 / 0 / 458	369 / 0 / 369	306 / 0 / 306
Other	0 / 0 / 0	0 / 0 / 0	0 / 0 / 0	0 / 0 / 0	0 / 0 / 0
<b>p.m. Peak Hour (5 to 6 p.m.)</b>					
Walk/Bike	153 / 268 / 421	134 / 234 / 368	70 / 123 / 193	64 / 112 / 176	45 / 78 / 123
Tour Bus	32 / 56 / 88	51 / 90 / 141	45 / 78 / 123	45 / 78 / 123	39 / 67 / 106
Taxi	70 / 123 / 193	39 / 67 / 106	51 / 90 / 141	51 / 90 / 141	32 / 56 / 88
Other Public Transit	102 / 179 / 281	153 / 268 / 421	198 / 346 / 544	83 / 145 / 228	96 / 167 / 263
F-Line	109 / 190 / 299	64 / 112 / 176	0 / 0 / 0	128 / 223 / 351	0 / 0 / 0
Other Public Transit + Shuttle	0 / 0 / 0	0 / 0 / 0	0 / 0 / 0	0 / 0 / 0	102 / 179 / 281
Walk + Shuttle	0 / 0 / 0	0 / 0 / 0	0 / 0 / 0	0 / 0 / 0	32 / 56 / 88
Car + Shuttle	0 / 0 / 0	0 / 0 / 0	0 / 0 / 0	0 / 0 / 0	115 / 201 / 316
Car + F Line	0 / 0 / 0	0 / 0 / 0	0 / 0 / 0	39 / 67 / 106	0 / 0 / 0
Car + Walk (Other)	172 / 301 / 473	198 / 346 / 544	45 / 78 / 123	45 / 78 / 123	26 / 45 / 71
Car + Walk (Fort Mason)	0 / 0 / 0	0 / 0 / 0	229 / 401 / 630	185 / 323 / 508	153 / 268 / 421
Other	0 / 0 / 0	0 / 0 / 0	0 / 0 / 0	0 / 0 / 0	0 / 0 / 0

PROPOSED PROJECT TRAVEL DEMAND

Mode	Alternative				
	Pier 31½	Pier 41	Lower Fort Mason (No F-Market Line or Shuttle)	Lower Fort Mason (F-Market Line)	Lower Fort Mason (Shuttle)
<b>Weekend Peak Hour</b>					
Walk/Bike	293 / 256 / 549	255 / 223 / 478	128 / 112 / 240	115 / 101 / 216	64 / 56 / 120
Tour Bus	115 / 101 / 216	115 / 101 / 216	102 / 90 / 192	102 / 90 / 192	90 / 78 / 168
Taxi	191 / 167 / 358	102 / 90 / 192	140 / 123 / 263	140 / 123 / 263	102 / 90 / 192
Other Public Transit	153 / 134 / 287	204 / 179 / 383	255 / 223 / 478	102 / 90 / 192	128 / 112 / 240
F-Line	140 / 123 / 263	90 / 78 / 168	0 / 0 / 0	179 / 156 / 335	0 / 0 / 0
Other Public Transit + Shuttle	0 / 0 / 0	0 / 0 / 0	0 / 0 / 0	0 / 0 / 0	128 / 112 / 240
Walk + Shuttle	0 / 0 / 0	0 / 0 / 0	0 / 0 / 0	0 / 0 / 0	77 / 67 / 144
Car + Shuttle	0 / 0 / 0	0 / 0 / 0	0 / 0 / 0	0 / 0 / 0	268 / 234 / 502
Car + F Line	0 / 0 / 0	0 / 0 / 0	0 / 0 / 0	166 / 145 / 311	0 / 0 / 0
Car + Walk (Other)	369 / 323 / 692	497 / 435 / 932	102 / 90 / 192	102 / 90 / 192	64 / 56 / 120
Car + Walk (Fort Mason)	0 / 0 / 0	0 / 0 / 0	535 / 468 / 1003	357 / 312 / 669	344 / 301 / 645
Other	13 / 12 / 25	13 / 12 / 25	13 / 12 / 25	13 / 12 / 25	13 / 12 / 25

Note:

Values represent total person trips generated by the entire alternative and not net "new" trips.

It is necessary to convert person trips for vehicle-related trip types into vehicle trips. The analysis assumes that tour buses would be fully occupied (i.e., person-trips for the tour bus were converted to bus trips based on the capacity of a coach bus). The occupancy for taxis and cars is based on the SF Guidelines data for visitor trips on weekends. This largely represents tourist traffic, and it is appropriate to use this data for visitor trips to Alcatraz for weekday and weekends, as in this case, the weekend and weekday trips are both comparable to the weekend visitor trips to San Francisco in the SF Guidelines. Specifically, the following occupancy assumptions were used to arrive at the total number of vehicle trips generated by the proposed Project for each alternative:

- 40 people / tour bus
- 3.9 people / taxi or car

Table 17 provides the resulting vehicle trips associated with each alternative.

Similarly, for the Pier 31½ and Fisherman's Wharf alternatives, the transit trips generated by the proposed project are the sum of the Tour Bus, F-Line and Other Public Transit lines. For the Fort

Mason Alternatives, the transit trip generation includes those three modes, plus Other Public Transit plus Shuttle and Car plus F-Line modes, as summarized in Table 16.

**TABLE 17. VEHICLE TRIPS (INBOUND / OUTBOUND / TOTAL) BY MODE**

Mode	Alternative				
	Pier 31½	Pier 41	Lower Fort Mason (No F-Market Line or Shuttle)	Lower Fort Mason (F-Market Line)	Lower Fort Mason (Shuttle)
<b>a.m. Peak Hour (8 to 9 a.m.)</b>					
Tour Bus	2 / 0 / 2	3 / 0 / 3	3 / 0 / 3	3 / 0 / 3	2 / 0 / 2
Taxi	36 / 0 / 36	20 / 0 / 20	27 / 0 / 27	27 / 0 / 27	17 / 0 / 17
Car + Walk	89 / 0 / 89	102 / 0 / 102	23 / 0 / 23	23 / 0 / 23	14 / 0 / 14
Car + Walk (Fort Mason)	0 / 0 / 0	0 / 0 / 0	118 / 0 / 118	95 / 0 / 95	78 / 0 / 78
Car + Shuttle	0 / 0 / 0	0 / 0 / 0	0 / 0 / 0	0 / 0 / 0	59 / 0 / 59
Car + F-Line	0 / 0 / 0	0 / 0 / 0	0 / 0 / 0	20 / 0 / 20	0 / 0 / 0
<b>Total</b>	127 / 0 / 127	125 / 0 / 125	171 / 0 / 171	169 / 0 / 169	171 / 0 / 171
<b>p.m. Peak Hour (5 to 6 p.m.)</b>					
Tour Bus	1 / 2 / 3	2 / 3 / 5	2 / 2 / 4	2 / 2 / 4	1 / 2 / 3
Taxi	18 / 32 / 50	11 / 18 / 29	14 / 23 / 37	14 / 23 / 37	8 / 15 / 23
Car + Walk	45 / 77 / 122	51 / 89 / 140	12 / 20 / 32	12 / 20 / 32	7 / 12 / 19
Car + Walk (Fort Mason)	0 / 0 / 0	0 / 0 / 0	59 / 103 / 162	48 / 84 / 132	39 / 69 / 108
Car + Shuttle	0 / 0 / 0	0 / 0 / 0	0 / 0 / 0	0 / 0 / 0	30 / 52 / 82
Car + F-Line	0 / 0 / 0	0 / 0 / 0	0 / 0 / 0	11 / 18 / 29	0 / 0 / 0
<b>Total</b>	64 / 111 / 175	64 / 110 / 174	87 / 148 / 235	86 / 147 / 233	86 / 149 / 235
<b>Weekend Peak Hour</b>					
Tour Bus	3 / 3 / 6	3 / 3 / 6	3 / 3 / 6	3 / 3 / 6	3 / 2 / 5
Taxi	50 / 43 / 93	27 / 23 / 50	36 / 32 / 68	36 / 32 / 68	27 / 23 / 50
Car + Walk	95 / 84 / 179	127 / 111 / 238	27 / 23 / 50	27 / 23 / 50	17 / 15 / 32
Car + Walk (Fort Mason)	0 / 0 / 0	0 / 0 / 0	138 / 121 / 259	92 / 81 / 173	89 / 77 / 166
Car + Shuttle	0 / 0 / 0	0 / 0 / 0	0 / 0 / 0	0 / 0 / 0	69 / 60 / 129
Car + F-Line	0 / 0 / 0	0 / 0 / 0	0 / 0 / 0	42 / 37 / 79	0 / 0 / 0
<b>Total</b>	148 / 130 / 278	157 / 138 / 295	204 / 179 / 383	200 / 176 / 376	205 / 178 / 383

## TRIP DISTRIBUTION AND ASSIGNMENT

Vehicle trip generation was split into local and visitor trips based on survey responses. For local trips, distribution was derived from the City of San Francisco Transportation Impact Analysis Guidelines for Environmental Review (City of San Francisco 2002). The City provides data according to geographic areas, namely one of the four Superdistricts (SD) in San Francisco. This



analysis uses SD-1 data for Pier 31½ and Pier 41 alternatives SD-2 data for the Fort Mason alternatives. This data set provides an adequate representation and maintains consistency between the analyses of different projects within the City. For visitor trips, distribution was based on the relative location of hotels throughout San Francisco. The resulting total origin-destination percentages are provided in Table 18.

Vehicle trip assignment was based on the assumed location of available parking, the general directions of approach and departure identified in the trip distribution phase, knowledge of the study area and engineering judgment.

**TABLE 18. PROJECT TRIP ORIGINS / DESTINATIONS**

	Percent Distribution of Project Trips - To Site and Leaving Site		
	AM Peak Hour	PM Peak Hour	Weekend Peak Hour
<b>Pier 31½</b>			
West	28%	28%	28%
Southwest	46%	46%	43%
South	26%	26%	29%
<b>Pier 41</b>			
West	54%	54%	52%
South	16%	16%	15%
Southeast	30%	30%	33%
<b>Lower Fort Mason</b>			
West	8%	9%	10%
Southwest	11%	11%	12%
Southeast	63%	62%	60%
East	18%	18%	18%

Similar to the vehicle trip assignment, transit person-trips were assigned to specific routes and screenlines based on the trip distribution patterns shown in Table 18.

**DAILY PARKING DEMAND**

As part of the on-site survey conducted at the current Alcatraz ferry embarkation site at Pier 31½ and at Fisherman’s Wharf, parking-specific questions were asked to help determine where people currently park and where they may park in the future. Estimates of total parking demand and parking location were developed from survey responses. Visitors who drove or carpooled to the survey locations were asked where they parked. Responses are summarized in Table 19. Most drivers at Pier 31½ and Fisherman’s Wharf parked in parking garages.

**TABLE 19. CURRENT VISITOR PARKING LOCATIONS BASED ON SURVEY RESULTS**

Parking Location	Pier 31½ Surveyed Visitors Who Drove or Carpoled		Fisherman's Wharf Surveyed Visitors Who Drove or Carpoled	
	Week Day	Weekend Day	Week Day	Weekend Day
On-Street	11%	16%	22%	17%
Parking Lot	27%	25%	23%	21%
Parking Garage	62%	59%	56%	62%

Survey data were used to estimate future parking demand at each site, as is shown in Tables 20 and 21. These analyses are based on an estimated 6,550 daily visitors to Alcatraz Island (i.e., the near-term with project conditions) to reflect the peak day demand and may differ slightly from prior forecasts, which were based on a daily visitation level of 6,400.

### **Pier 31½ and Pier 41 (Fisherman's Wharf)**

Based on mode split data, the estimated parking demand increase associated with visitors to Pier 31½ is approximately 30 vehicles per day on weekdays and weekend days over the course of an entire day (i.e., not all at the same time). This increase is in addition to the existing parking demand associated with the facility at Pier 31½, and is primarily associated with the addition of a third berth. (In the long-term, when management strategies increase visitorship to Alcatraz Island, the parking demand would increase further).

If the facility were to relocate to Pier 41, the existing demand near Pier 31½ would be relocated to Pier 41, along with the increase associated with the third berth. The total increase in parking demand near Fisherman's Wharf would be approximately 520 vehicles per day on weekdays and 650 vehicles per day on weekends, with a substantial decrease in parking demand near Pier 31½.

**TABLE 20. PARKING DEMAND ESTIMATES AT PIER 31½ AND FISHERMAN'S WHARF**

	Pier 31½ <sup>1</sup>		Fisherman's Wharf	
	Week Day	Weekend Days	Week Day	Weekend Days
Estimated Daily Alcatraz Island Visitors	390	390	6,550	6,550
Daily Cars Parking (Excluding Taxis)	26	27	519	653
Daily Cars Parking On-Street	3	5	114	111
Daily Cars Parking in a Lot	7	7	119	137
Daily Cars Parking in a Garage	16	17	291	405

Note:

1 Represents the net increase in visitors at the embarkation site compared to existing conditions.

### **Lower Fort Mason**

Table 21 presents parking demand forecasts for the Lower Fort Mason alternative scenarios. Under the No F-Market Line Extension or Shuttle Scenario, approximately 720 cars on weekdays and 840 cars on weekend days are expected to park in the parking lot at Fort Mason or on-street in the surrounding neighborhood. Under the other two Fort Mason scenarios, many drivers are

expected to park near Fisherman’s Wharf and take the F-Market line or the shuttle to Fort Mason thus reducing the parking demand in and around Fort Mason. Under the F-Market Line Extension Only Scenario, those visitors classified on Figures 16 and 17 as “Car + Walk” were assumed to park in the Fort Mason lots or on-street in the surrounding neighborhood and then walk to Fort Mason. Those using “Car + F-Market line” were assumed to park elsewhere, potentially near Fisherman’s Wharf, and then take the F-Market line to Fort Mason. Similarly, those classified as “Car + Walk” for the “shuttle only” scenario were assumed to park near Fort Mason, while those using “Car + Shuttle” were assumed to park elsewhere and take the shuttle to Fort Mason.

The total cars parking by location and scenario are summarized in Table 21. Based on this analysis, the F-Market Line Extension Only Scenario would have the lowest number of cars parking; however, the “shuttle only” scenario would have the lowest number of cars parking in and around Fort Mason, as many people would likely opt to park at Fisherman’s Wharf and take the specially-branded Alcatraz shuttle from Fisherman’s Wharf.

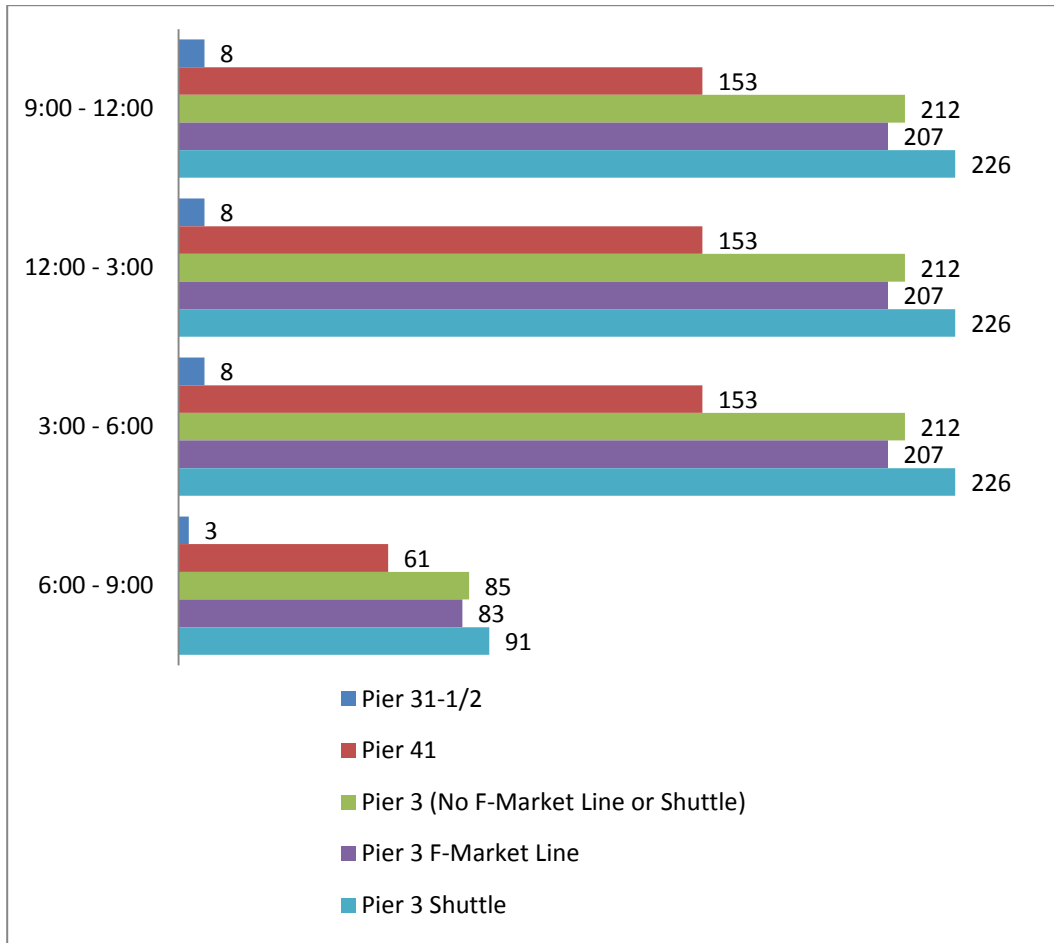
**TABLE 21. PARKING DEMAND ESTIMATES AT FORT MASON**

	No F-Market Line Extension or Shuttle Scenario		F-Market Line Extension Only Scenario		Shuttle Only Scenario	
	Weekday	Weekend Day	Weekday	Weekend Day	Weekday	Weekend Day
Estimated daily Alcatraz Island visitors	6,550	6,550	6,550	6,550	6,550	6,550
Average vehicle occupancy	3.9	3.9	3.9	3.9	3.9	3.9
Daily cars parking (excluding those arriving by taxi)	720	837	703	821	770	887
Daily cars parking at Fort Mason	720	837	598	607	470	532
Daily cars parking elsewhere	0	0	105	213	300	355

**PARKING DEMAND DETERMINATION FOR IMPACT ANALYSIS**

Parking demand by analysis time period (9:00 a.m. to 12:00 p.m.; 12:00 to 3:00 p.m.; 3:00 to 6:00 p.m.; and 6:00 to 9:00 p.m.) was determined by reviewing the Alcatraz Island ferry schedule and assigning the total daily vehicle trips to the study areas on an hourly basis. The calculated parking demand over the course of a typical day was determined by comparing the total number of vehicle trips generated over the course of a day with the ferry departure and arrival schedules. Figures 18 and 19 provide the parking demand at each embarkation site during the four analysis periods on a typical weekday and weekend day, respectively.

Within each time period, total parking demand was assigned to off-street and on-street categories based on survey responses described previously and tabulated for existing conditions as reported in Tables 12 and 13. In the case of Fort Mason, demand was subdivided in to two categories: Lower Fort Mason area and “other” area, which is assumed to be Fisherman’s Wharf.

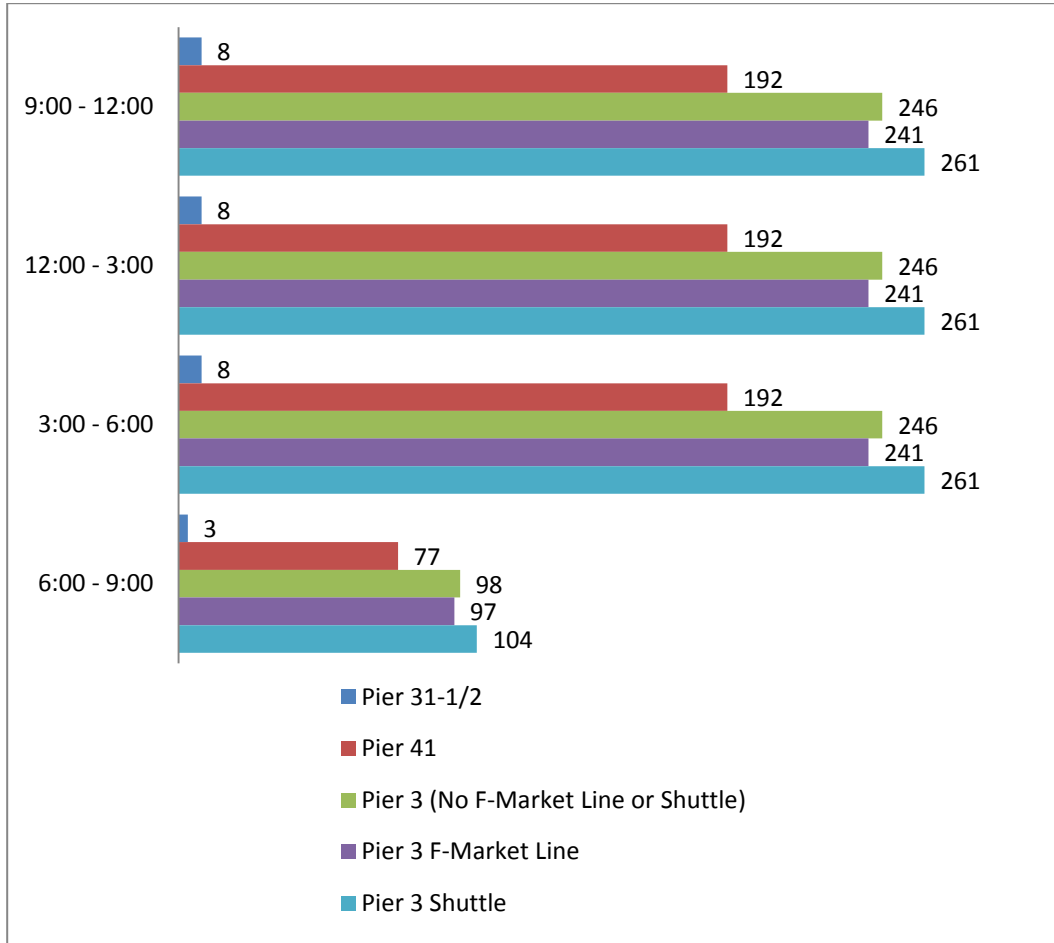


**FIGURE 18. WEEKDAY PARKING DEMAND BY ALTERNATIVE**

Note:

Pier 31½ demand estimates reflect only “net” new parking demand, not parking for the entire project as it is already reflected in the background parking occupancy data.

PROPOSED PROJECT TRAVEL DEMAND



**FIGURE 19. WEEKEND PARKING DEMAND BY ALTERNATIVE**

Note: Pier 31½ demand estimates reflect only “net” new parking demand, not parking for the entire project as it is already reflected in the background parking occupancy data.



## ENVIRONMENTAL CONSEQUENCES

This chapter describes the anticipated operating conditions of the transportation network as a result of the proposed Project. Specific evaluations include the proposed Project's impact on study intersections, transit, bicycles, pedestrians, and parking. This section also includes discussion of the potential effects during the construction of the proposed Project. This section presents the following scenarios:

**NEPA Baseline/No Action Alternative** - describes the anticipated near- and long-term conditions in the study area if the Park Service elects not to establish a long-term site for the embarkation facility. Near-term operating conditions for the NEPA Baseline/No Action Alternative are based on the existing conditions. Long-term operating conditions for the NEPA Baseline/No Action Alternative are based on forecasted future volumes in the study area from the City's travel demand forecasting model plus the effect of visitor flow management strategies on Alcatraz Island that could increase visitor levels by 20 percent.

**NEPA Baseline Plus Project/Action Alternatives** describe the anticipated near- and long-term operating conditions of the existing transportation network after implementation of the proposed Project. The Action Alternatives are based on the near- and long-term NEPA Baseline/No Action Alternative conditions plus the additional trips generated by the addition of a third ferry berth. Since three embarkation sites are being considered and Fort Mason has three transit scenarios under consideration, separate analyses are presented for each of the following:

- Pier 31½ Alternative
- Pier 41 Alternative
- Lower Fort Mason Alternative - No F-Market Line Extension or Shuttle Scenario
- Lower Fort Mason Alternative - F-Market Line Extension Only Scenario
- Lower Fort Mason Alternative - Shuttle Only Scenario

## SIGNIFICANCE THRESHOLDS

Using methodologies presented in the Introduction Section, conditions with the Project Alternatives are compared to the baseline conditions and evaluated against specific significance thresholds to determine project impacts. The proposed measurement indices (i.e., significance thresholds) used to evaluate impacts to these topic areas are based on the proposed Project's consistency with applicable regional and local regulations and guidance, as described below. An alternative would be considered to have a major impact if, as compared to baseline conditions, it would exceed established regulatory guidance.

### Intersection (Traffic)

The measurement index used to evaluate traffic impacts is change in intersection LOS. An alternative is considered to have a major impact to a signalized intersection if it would cause intersection LOS to change from LOS D or better to LOS E or LOS F, from LOS E to LOS F, or contribute a substantial number of vehicle trips to intersections already operating at LOS E or F. Changes to unsignalized intersections are also considered major if the same criteria above are met and peak hour traffic signal warrant criteria are met.

1 **Transit**

2  
3 The measurement index to evaluate transit impacts is capacity utilization. An alternative is  
4 considered to have a major impact if it increases ridership such that capacity utilization exceeds  
5 85 percent for Muni, or increases ridership by 1 percent or more if capacity utilization exceeds 85  
6 percent without the project.  
7

8  
9 **Bicycle Facilities**

10  
11 The measurement indices to evaluate impacts to bicycle access and circulation are changes in  
12 either access or modal conflicts. An alternative is considered to have a major impact if it would  
13 result in substantial adverse changes in bicycle accessibility and circulation or substantially  
14 increase conflicts between bicycles and pedestrians.  
15

16  
17 **Pedestrian Facilities**

18  
19 The measurement index used to evaluate pedestrian impacts is change in pedestrian LOS. An  
20 alternative is considered to have a major impact to a pedestrian facility if it would cause LOS to  
21 change from LOS D or better to LOS E or LOS F, to change from LOS E to LOS F, or to  
22 contribute a substantial number of vehicle trips to crosswalks already operating at LOS E or F.  
23

24 Pedestrian access and circulation are also evaluated for either access or modal conflicts. An  
25 alternative is considered to have a major impact if it results in substantial adverse changes in  
26 pedestrian accessibility and circulation or substantially increases conflicts between pedestrians  
27 and other modes, such as pedestrians and vehicles.  
28

29  
30 **Parking Facilities**

31  
32 The measurement index used to evaluate parking impacts is parking utilization. An alternative  
33 would be considered to have a major impact if it would cause the projected parking occupancy to  
34 increase to more than 95 percent of supply in the study area (indicating the parking is effectively  
35 at capacity), or if parking is already at 95 percent utilization or higher, if the project would  
36 increase demand by more than one percent of existing supply.  
37

38  
39 **CUMULATIVE CONDITIONS FORECASTS**

40  
41 In addition to assessing the near-term effects of the No Action and the Action Alternatives, this  
42 analysis includes an examination of the long-term effects of the alternatives in conjunction with  
43 other reasonably foreseeable projects and actions in the study area that could cumulatively affect  
44 the environment. In this case, the analysis is based on year 2035 conditions, which represents the  
45 most recent forecasts developed by the City at the time this analysis was conducted.  
46

47  
48 **Assumed Future Transportation Improvements**

49  
50 The Long-Term (Year 2035) No Action/NEPA Baseline analysis assumes that the Alcatraz ferry  
51 embarkation site remains where it is located today – at Pier 31½. Under this scenario, more



1 efficient visitor management on Alcatraz Island would increase visitor use at the embarkation  
2 facility by approximately 20 percent.

3  
4 The future year 2035 cumulative analysis assumes the completion of certain planned and  
5 reasonably foreseeable traffic, pedestrian, transit and bicycle changes, as described below, that,  
6 although not part of the proposed Project, could affect circulation. These improvements would  
7 be completed by the City directly.

- 8  
9
- 10 • The Planning Department's *Northeast Embarcadero Study* (City and County of San  
11 Francisco 2010b) presents public realm improvements and urban design guidelines for  
12 new development within a 40-acre study area that is roughly located on the west side  
13 of The Embarcadero between Market and North Point streets. Roadway modifications  
14 required as part of the public realm/pedestrian improvements identified in the  
15 Northeast Embarcadero Study would affect the study intersections of  
16 Broadway/Battery Street, Broadway/Sansome Street, The Embarcadero/Broadway,  
17 and The Embarcadero/Washington Street. On Broadway, the number of travel lanes  
18 would be reduced from two lanes in each direction, to one lane in each direction (plus  
19 left turn pockets within a center median), and bicycle lanes in each direction would be  
20 installed. On Washington Street, the number of travel lanes is also proposed to be  
21 reduced from two lanes in each direction, to one lane in each direction. As a result of  
22 these changes, at the northbound approach of The Embarcadero at Broadway and at  
23 Washington Street, the number of left turn lanes would be reduced from two to one.
  - 24 • *The Planning Department's Fisherman's Wharf Public Realm Plan* would provide an  
25 overall vision for the streets, open spaces and building design in Fisherman's Wharf  
26 (City and County of San Francisco 2011b). It would also implement a parking signage  
27 program, traffic circulation plan, passenger and freight loading management, gateway  
28 improvement projects, streetscape improvements, and open space improvements.  
29 Roadway modifications required as part of the public realm improvements identified  
30 in the *Fisherman's Wharf Public Realm Plan* would affect the study intersections of The  
31 Embarcadero/Beach Street/Grant Street and The Embarcadero/North Point  
32 Street/Kearny Street (City and County of San Francisco 2011b). Although a number of  
33 variants related to traffic operations are presented, the 2035 cumulative analysis  
34 incorporates the variant that would divert the northbound Embarcadero traffic to  
35 westbound Beach Street. Intersection modifications include restriping of existing  
36 travel lanes and signal timing changes to accommodate the proposed traffic diversion.
  - 37 • *The Port of San Francisco's Embarcadero Promenade Design Criteria* (Port of San  
38 Francisco 2011) would provide direction to the Port and City efforts to increase the  
39 pedestrian carrying capacity and public realm quality of The Embarcadero Promenade  
40 by refining and improving the placement and organization of street fixtures and  
41 furniture, removing specified raised seating/platforms of the Embarcadero Art Ribbon  
42 that constrain pedestrian circulation, and establishing criteria for tenant design  
43 improvements along waterfront bulkhead buildings.
  - 44 • SFMTA's TEP, which would institute a series of changes to Muni's service to  
45 streamline operations, including changes to frequencies, service hours, route  
46 alignments, and vehicle capacity.
  - 47 • Central Subway (utility relocation currently underway) would extend Muni's T Third  
48 light rail line from the intersection of Fourth/King into Union Square and Chinatown.
  - 49 • Transbay Transit Center project, currently under construction, would serve existing  
50 transit service at the temporary terminal, as well as Caltrain's Downtown Extension  
and possibly intercity high-speed rail.

- 1 • Transit Center District Plan project would allow for greater development around the  
2 Transbay Transit Center and result in changes to the public realm, including  
3 modifications to intersection geometries and direction of streets.
- 4 • Expanded ferry service on San Francisco Bay, consistent with the WETA  
5 Implementation and Operations Plan (WETA 2003).
- 6 • The San Francisco Bicycle Plan Howard Street Bicycle Lane project would create a  
7 westbound bicycle lane on Howard Street between The Embarcadero and Fremont  
8 Street, and would result in travel lane reductions on Howard Street (City and County  
9 of San Francisco 2009).
- 10 • The San Francisco Bicycle Plan Long-Term Improvement on Battery Street between  
11 Clay Street and The Embarcadero would involve installation of Class II and/or Class  
12 III bicycle facilities in the southbound direction to provide a southbound connection  
13 between existing Bicycle Route 5 on The Embarcadero and existing Bicycle Route 11  
14 on Battery Street south of Clay Street. This 10-block section of Battery Street is not  
15 currently part of the bicycle route network.
- 16 • The San Francisco Bicycle Plan Long-Term Improvement on the San Francisco Bay  
17 Trail, which runs as an unimproved on-street trail through Fisherman’s Wharf along  
18 The Embarcadero (Powell Street to Taylor Street) and Jefferson Street (Taylor Street  
19 to Hyde Street), both one-way westbound streets. The on-street trail is not currently  
20 part of the bicycle route network.
- 21 • The City of San Francisco routinely monitors its traffic signals and their operations  
22 and makes adjustments as travel demands change. This analysis assumes that the City  
23 would respond to projected growth in traffic by revising signal timing plans for  
24 intersections projected to operate at LOS E or F in year 2035, although the adjustments  
25 assumed were constrained by existing cycle lengths and required minimum pedestrian  
26 crossing times. As a result, some intersections are projected to operate better in  
27 cumulative conditions than under existing conditions.
- 28 • Although it does not substantially affect the analysis, it is worth noting here that the  
29 Park Service has also recently completed a planning exercise to redesign the parking  
30 lot and entrance area immediately to the north of Pier 1 to better organize the space  
31 and to create a more attractive entrance to Lower Fort Mason. Improvements include  
32 restriping, clearer signage, and landscaping.

### **Development of 2035 Cumulative Traffic and Transit Forecasts Methodology**

34  
35  
36  
37 Future year 2035 cumulative conditions were developed via a two-step process that (1) utilized  
38 the San Francisco’s County’s travel demand model (SF-CHAMP) to determine background traffic  
39 growth on study area roadways; and (2) used traffic volume overlays to reflect traffic volume  
40 turning movements associated with developments that are not fully reflected in the SF-CHAMP  
41 model output.

42  
43 Future year 2035 traffic volume forecasts were estimated based on cumulative development and  
44 growth, as well as the planned transportation and infrastructure projects listed above using the  
45 SF-CHAMP travel demand model. The SF-CHAMP model is an activity-based travel demand  
46 model that has been validated to represent future transportation conditions in San Francisco and  
47 is updated regularly. The model predicts person travel for a full day based on assumptions of  
48 growth in population, housing units, and employment, which are then allocated to different  
49 periods throughout the day, using time of day sub-models. The SF-CHAMP model predicts future  
50 travel demand by mode for auto, transit, walk and bicycle trips. The SF-CHAMP model provides  
51 forecasts of vehicular traffic on regional freeways, major arterials, and on the study area local

1 roadway network, considering the available roadway capacity, origin-destination demand, and  
 2 travel speeds when assigning the future travel demand to the roadway network.

3  
 4 The SFCTA model divides San Francisco into approximately 981 geographic areas, known as  
 5 Traffic Analysis Zones. The SF-CHAMP model also includes zones outside of San Francisco for  
 6 which data is obtained through the current MTC Model. For each TAZ, the SF-CHAMP model  
 7 estimates the travel demand based on TAZ population and employment growth assumptions  
 8 developed by the ABAG for year 2035 (Projections 2009). Within San Francisco, the San  
 9 Francisco Planning Department is responsible for allocating ABAG's countywide growth forecast  
 10 to each SF-CHAMP model TAZ, based upon existing zoning and approved plans, using an area's  
 11 potential zoning capacity, and the anticipated extent of redevelopment of existing uses.

12  
 13 Future year 2035 intersection turning movement volumes were developed by applying growth  
 14 factors calculated from traffic volume growth between year 2010 and 2035 conditions, obtained  
 15 from the SF-CHAMP model to actual traffic volumes collected in the field. Traffic demand  
 16 associated with development not fully reflected within the SF-CHAMP model, such as the  
 17 anticipated 20 percent increase in visitor levels to the Alcatraz ferry embarkation site was added  
 18 to the intersection turning movement volumes. Since the SF-CHAMP model is a weekday travel  
 19 demand model, future year Saturday midday peak hour conditions were estimated based on the  
 20 net growth developed for the weekday p.m. condition. This approach was consistent with the  
 21 methodology used on previous analyses of weekend conditions in the Northeast Waterfront and  
 22 provided conservative results, since in addition to the expected growth of visitor-oriented uses, it  
 23 included additional growth from standard uses, such as offices, that would not generate as many  
 24 trips on a weekend as they would on a weekday.

25  
 26 Future year 2035 transit ridership for the Muni downtown and regional transit screenlines was  
 27 based on the analysis conducted for the TEP EIR for future year 2035 conditions (City and  
 28 County of San Francisco 2013).

## 31 **NO ACTION ALTERNATIVE**

32  
 33 Under the No Action Alternative, the Park Service would not establish a long-term location for  
 34 the embarkation facility and would not construct a third berth for additional ferry service. The  
 35 Park Service would likely continue to establish short-term (e.g., 10-year) concession agreements  
 36 with vendors based on a competitive bid process. As under the current process, the embarkation  
 37 facility could be relocated with each new concession contract, depending on the successful bid. It  
 38 would be speculative to assume that the No Action Alternative would result in the embarkation  
 39 site being relocated to any particular location. However, past experience suggests that it would  
 40 likely remain somewhere along the Embarcadero waterfront, similar to the Pier 31½ and  
 41 Fisherman's Wharf alternatives, and would not likely go to Fort Mason, because of the lack of  
 42 existing infrastructure. Under the No Action Alternative, the Park Service would be able to  
 43 accommodate the projected long-term increase in visitation levels at Alcatraz Island, but would  
 44 not provide additional ferry support services. Operating conditions for intersections, transit  
 45 screenlines, pedestrian facilities, and parking conditions in the No Action Alternative for both  
 46 near- and long-term conditions are described in Tables 21 through 28.

## 49 **PIER 31½ ALTERNATIVE**

50  
 51 This section describes the anticipated effects of implementing the Pier 31½ Alternative, in which  
 52 case a permanent facility would be constructed at the site of the existing embarkation facility.

1 **Intersection Traffic**

2  
3 Impacts to intersection traffic are evaluated in terms of both near-term and long-term future (year  
4 2035) conditions.

5  
6 **Near-Term Conditions.** Intersection turning movement volumes change as a result of Project  
7 implementation. In general, if the Pier 31½ Alternative is selected, traffic volumes would increase  
8 slightly due to the addition of a third ferry berth, which could accommodate additional service  
9 elsewhere in San Francisco Bay without increasing visitor levels at Alcatraz Island.

10  
11 Tables 22 and 23 present the near- and long-term LOS results, respectively, for the No Action  
12 Alternative and for all of the Action Alternatives, including the Pier 31½ Alternative.

13  
14 The Pier 31½ Alternative would cause the all-way stop controlled intersection of **Webster**  
15 **Street / Marina Boulevard** to deteriorate from LOS D to LOS E in the AM peak hour. However,  
16 the volumes do not meet the peak hour traffic signal warrant criteria and therefore the impact  
17 would be considered **less than significant**.

TABLE 22. NEAR-TERM CONDITIONS INTERSECTION LOS

Study Intersection	Traffic Control	Peak Hour	No Action Alternative/NEPA Baseline		Pier 31½		Pier 41		Lower Fort Mason (No F-Market Line or Shuttle)		Lower Fort Mason (F-Market Line)		Lower Fort Mason (Shuttle)	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1 Mason Street/Marina Boulevard/Yacht Road/Lyon Street	Signal	AM	16.6	B	16.7	B	16.8	B	16.7	B	16.7	B	16.7	B
		PM	39.6	D	39.6	D	39.4	D	39.6	D	39.6	D	39.6	D
		WE	53.6	D	53.5	D	52.8	D	53.3	D	53.4	D	53.5	D
2 Divisadero Street/Marina Boulevard	AWSC	AM	>50 (>50)	F (F)	>50 (>50)	F (F)	>50 (>50)	F (F)	>50 (>50)	F (F)	>50 (>50)	F (F)	>50 (>50)	F (F)
		PM	>50 (>50)	F (F)	>50 (>50)	F (F)	>50 (>50)	F (F)	>50 (>50)	F (F)	>50 (>50)	F (F)	>50 (>50)	F (F)
		WE	37.4 (45.4)	E (E)	37.6 (45.7)	E (E)	40.6 (>50)	E (F)	39.9 (49.6)	E (E)	40.0 (48.7)	E (E)	39.9 (48.4)	E (E)
3 Scott Street/Cervantes Boulevard/Marina Boulevard	Signal	AM	24.1	C	24.2	C	25.1	C	25.8	C	25.7	C	25.5	C
		PM	10.2	B	10.2	B	10.2	B	10.3	B	10.3	B	10.2	B
		WE	14.9	B	15.0	B	15.1	B	15.2	B	15.1	B	15.1	B
4 Fillmore Street/Marina Boulevard	Signal	AM	11.8	B	11.8	B	11.9	B	11.9	B	11.9	B	11.9	B
		PM	10.7	B	10.8	B	10.9	B	11.0	B	11.0	B	11.0	B
		WE	9.5	A	9.5	A	9.5	A	9.9	A	9.8	A	9.8	A
5 Webster Street/Marina Boulevard	AWSC	AM	28.6 (35.0)	D (D)	28.8 (35.1)	D (E)	30.7 (37.5)	D (E)	31.6 (39.8)	D (E)	31.3 (39.3)	D (E)	30.9 (38.4)	D (E)
		PM	37.2 (47.8)	E (E)	37.4 (48.1)	E (E)	39.7 (>50)	E (F)	45.6 (>50)	E (F)	44.2 (>50)	E (F)	42.2 (>50)	E (F)
		WE	16.3 (17.1)	C (C)	16.4 (17.2)	C (C)	17.5 (18.4)	C (C)	21.5 (22.9)	C (C)	19.9 (21.2)	C (C)	19.3 (20.5)	C (C)
6 Buchanan Street/Marina Boulevard/Beach Street	Signal	AM	13.9	B	13.9	B	14.0	B	14.3	B	14.3	B	14.2	B
		PM	12.7	B	12.7	B	12.7	B	13.3	B	13.3	B	13.2	B
		WE	16.5	B	16.5	B	16.8	B	20.0	B	19.2	B	18.9	B
7 Laguna Street/Marina Boulevard	Signal	AM	1.6	A	1.6	A	1.7	A	1.5	A	1.5	A	1.5	A
		PM	3.0	A	3.1	A	3.1	A	3.2	A	3.2	A	3.1	A
		WE	2.6	A	2.6	A	2.7	A	2.9	A	2.9	A	2.9	A
8 Fillmore Street/Bay Street/Cervantes Boulevard	Signal	AM	24.1	C	24.1	C	24.1	C	24.0	C	24.0	C	24.1	C
		PM	23.7	C	23.7	C	23.7	C	23.6	C	23.7	C	23.7	C
		WE	16.8	B	16.8	B	16.8	B	17.0	B	16.9	B	16.9	B
9 Laguna Street/Bay Street	Signal	AM	53.1	D	53.2	D	54.5	D	50.8	D	51.0	D	51.3	D
		PM	40.3	D	40.3	D	40.7	D	43.3	D	42.8	D	42.2	D
		WE	27.5	C	27.5	C	28.0	C	31.0	C	30.1	C	29.9	C
10 Franklin Street/Bay Street	Signal	AM	17.2	B	17.4	B	17.5	B	20.3	C	20.8	C	21.1	C
		PM	11.9	B	11.9	B	12.1	B	13.3	B	13.3	B	13.2	B
		WE	15.3	B	15.2	B	15.2	B	15.4	B	15.7	B	15.7	B
11 Van Ness Avenue/Bay Street	Signal	AM	14.2	B	14.2	B	14.4	B	14.7	B	14.6	B	14.5	B
		PM	22.3	C	22.3	C	22.3	C	22.4	C	22.2	C	22.2	C
		WE	12.2	B	12.3	B	12.6	B	12.3	B	12.4	B	12.4	B
12 Divisadero Street/Lombard Street	Signal	AM	21.7	C	21.8	C	22.2	C	21.4	C	21.4	C	21.4	C
		PM	20.8	C	20.9	C	21.1	C	21.1	C	21.1	C	21.0	C
		WE	19.8	B	19.8	B	19.9	B	21.0	C	20.7	C	20.6	C

Study Intersection	Traffic Control	Peak Hour	No Action Alternative/NEPA Baseline		Pier 31½		Pier 41		Lower Fort Mason (No F-Market Line or Shuttle)		Lower Fort Mason (F-Market Line)		Lower Fort Mason (Shuttle)	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
13 Fillmore Street/Lombard Street	Signal	AM	18.8	B	18.8	B	19.0	B	18.6	B	18.6	B	18.6	B
		PM	10.3	B	10.3	B	10.3	B	10.4	B	10.3	B	10.3	B
		WE	11.3	B	11.3	B	11.3	B	11.8	B	11.6	B	11.5	B
14 Laguna Street/Lombard Street	Signal	AM	11.8	B	11.8	B	11.9	B	11.8	B	11.8	B	11.8	B
		PM	18.6	B	18.6	B	18.7	B	18.4	B	18.4	B	18.4	B
		WE	20.0	B	20.0	B	20.1	C	19.8	B	19.8	B	19.8	B
15 Franklin Street/Lombard Street	Signal	AM	26.2	C	26.3	C	26.3	C	27.1	C	27.2	C	27.3	C
		PM	24.5	C	24.5	C	24.8	C	24.4	C	24.4	C	24.4	C
		WE	<b>57.2</b>	<b>E</b>	<b>57.3</b>	<b>E</b>	<b>56.8</b>	<b>E</b>	<b>62.6</b>	<b>E</b>	<b>62.8</b>	<b>E</b>	<b>63.3</b>	<b>E</b>
16 Van Ness Avenue/Lombard Street	Signal	AM	47.5	D	47.7	D	48.6	D	46.2	D	46.3	D	46.4	D
		PM	25.4	C	25.4	C	25.7	C	25.2	C	25.2	C	25.2	C
		WE	26.5	C	26.6	C	28.0	C	25.7	C	25.8	C	25.8	C
17 Taylor Street/Jefferson Street	Signal	AM	10.8	B	10.8	B	10.8	B	10.8	B	10.8	B	10.8	B
		PM	13.9	B	13.9	B	13.9	B	13.9	B	13.9	B	13.9	B
		WE	14.0	B	14.0	B	13.9	B	14.0	B	14.0	B	14.0	B
18 Powell Street/Jefferson Street/The Embarcadero	Signal	AM	8.0	A	8.0	A	8.1	A	8.3	A	8.2	A	8.1	A
		PM	10.2	B	10.2	B	10.2	B	10.2	B	10.2	B	10.2	B
		WE	16.8	B	16.7	B	16.8	B	16.9	B	16.7	B	16.7	B
19 Columbus Avenue/Beach Street	SSSC	AM	<b>6.7 (&gt;50)</b>	<b>A (F)</b>	<b>6.7 (&gt;50)</b>	<b>A (F)</b>	<b>6.6 (&gt;50)</b>	<b>A (F)</b>	<b>6.7 (&gt;50)</b>	<b>A (F)</b>	<b>6.7 (&gt;50)</b>	<b>A (F)</b>	<b>6.7 (&gt;50)</b>	<b>A (F)</b>
		PM	<b>4.0 (&gt;50)</b>	<b>A (F)</b>	<b>4.0 (&gt;50)</b>	<b>A (F)</b>	<b>4.0 (&gt;50)</b>	<b>A (F)</b>	<b>4.0 (&gt;50)</b>	<b>A (F)</b>	<b>4.0 (&gt;50)</b>	<b>A (F)</b>	<b>4.0 (&gt;50)</b>	<b>A (F)</b>
		WE	<b>15.0 (&gt;50)</b>	<b>B (F)</b>	<b>15.0 (&gt;50)</b>	<b>B (F)</b>	<b>15.2 (&gt;50)</b>	<b>C (F)</b>	<b>15.0 (&gt;50)</b>	<b>B (F)</b>	<b>15.0 (&gt;50)</b>	<b>B (F)</b>	<b>15.0 (&gt;50)</b>	<b>B (F)</b>
20 Taylor Street/Beach Street	Signal	AM	11.1	B	11.1	B	11.3	B	11.1	B	11.1	B	11.2	B
		PM	12.8	B	12.8	B	12.9	B	12.8	B	12.8	B	12.9	B
		WE	13.1	B	13.1	B	14.3	B	12.8	B	13.5	B	13.9	B
21 Stockton Street/Beach Street	Signal	AM	20.4	C	20.9	C	20.0	B	20.3	C	20.3	C	20.4	C
		PM	20.1	C	20.2	C	20.1	C	19.6	B	19.8	B	20.0	B
		WE	21.2	C	21.3	C	21.2	C	19.9	B	20.4	C	20.8	C
22 Grant Street/Beach Street/The Embarcadero	Signal	AM	14.3	B	14.3	B	14.4	B	14.1	B	14.2	B	14.2	B
		PM	19.1	B	19.1	B	19.2	B	18.9	B	18.9	B	19.0	B
		WE	35.5	D	35.7	D	37.2	D	33.6	C	34.2	C	34.5	C
23 Leavenworth Street/Columbus Street/North Point Street	Signal	AM	17.0	B	17.0	B	16.7	B	17.0	B	16.9	B	16.8	B
		PM	17.9	B	17.9	B	17.7	B	18.0	B	17.9	B	17.8	B
		WE	15.0	B	15.0	B	14.8	B	15.1	B	15.0	B	14.9	B
24 Taylor Street/North Point Street	Signal	AM	14.8	B	14.8	B	15.2	B	14.7	B	14.9	B	15.2	B
		PM	15.4	B	15.4	B	16.2	B	15.2	B	15.5	B	16.0	B
		WE	12.5	B	12.5	B	13.2	B	12.7	B	12.9	B	12.9	B
25 Powell Street/North Point Street	Signal	AM	17.0	B	17.0	B	17.2	B	17.6	B	17.2	B	16.9	B
		PM	14.4	B	14.4	B	14.3	B	13.8	B	14.0	B	14.1	B
		WE	13.2	B	13.3	B	13.2	B	12.8	B	13.2	B	13.2	B

Study Intersection	Traffic Control	Peak Hour	No Action Alternative/NEPA Baseline		Pier 31½		Pier 41		Lower Fort Mason (No F-Market Line or Shuttle)		Lower Fort Mason (F-Market Line)		Lower Fort Mason (Shuttle)	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
26 Stockton Street/North Point Street	Signal	AM	12.1	B	12.2	B	12.3	B	11.7	B	11.8	B	11.9	B
		PM	10.1	B	10.1	B	10.1	B	9.9	A	9.9	A	9.9	A
		WE	12.1	B	12.2	B	12.3	B	11.6	B	11.7	B	11.8	B
27 Kearny Street/The Embarcadero/North Point Street	Signal	AM	48.6	D	48.7	D	48.9	D	48.5	D	48.5	D	48.6	D
		PM	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>	<b>77.7</b>	<b>E</b>	<b>78.5</b>	<b>E</b>	<b>79.6</b>	<b>E</b>
		WE	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>
28 Hyde Street/Bay Street	Signal	AM	7.0	A	7.0	A	7.3	A	6.8	A	6.9	A	7.0	A
		PM	5.2	A	5.2	A	5.4	A	5.2	A	5.2	A	5.3	A
		WE	5.7	A	5.7	A	5.9	A	5.8	A	5.9	A	5.8	A
29 Columbus Avenue/Jones Street/Bay Street	Signal	AM	13.0	B	13.0	B	13.1	B	13.4	B	13.4	B	13.5	B
		PM	17.8	B	17.8	B	18.1	B	17.9	B	17.9	B	18.1	B
		WE	14.0	B	14.0	B	13.9	B	14.7	B	14.6	B	14.5	B
30 Taylor Street/Bay Street	Signal	AM	10.3	B	10.3	B	10.7	B	9.3	A	9.5	A	9.8	A
		PM	6.4	A	6.4	A	7.1	A	6.4	A	6.6	A	6.8	A
		WE	12.2	B	12.1	B	12.3	B	11.8	B	11.9	B	12.0	B
31 Powell Street/Bay Street	Signal	AM	13.8	B	13.9	B	13.9	B	13.0	B	13.2	B	13.4	B
		PM	9.6	A	9.8	A	9.6	A	9.2	A	9.4	A	9.5	A
		WE	12.1	B	12.1	B	12.1	B	11.9	B	12.0	B	12.0	B
32 Stockton Street/Bay Street	Signal	AM	13.5	B	13.5	B	13.5	B	13.2	B	13.2	B	13.3	B
		PM	7.4	A	7.5	A	7.5	A	7.2	A	7.3	A	7.3	A
		WE	11.6	B	11.7	B	11.7	B	11.4	B	11.5	B	11.5	B
33 Kearny Street/Bay Street	Signal	AM	6.5	A	6.6	A	6.5	A	6.4	A	6.4	A	6.4	A
		PM	11.9	B	11.9	B	11.9	B	12.0	B	12.0	B	11.9	B
		WE	7.5	A	7.5	A	7.5	A	7.5	A	7.5	A	7.5	A
34 The Embarcadero/Bay Street	Signal	AM	17.6	B	17.7	B	17.5	B	17.3	B	17.3	B	17.4	B
		PM	16.3	B	16.3	B	16.3	B	16.3	B	16.4	B	16.3	B
		WE	15.4	B	15.4	B	15.4	B	15.3	B	15.3	B	15.4	B
35 The Embarcadero/Sansome Street/Chestnut Street	Signal	AM	10.1	B	10.2	B	10.3	B	9.3	A	9.5	A	9.9	A
		PM	19.1	B	19.2	B	19.1	B	19.0	B	19.1	B	19.1	B
		WE	15.5	B	15.6	B	15.5	B	14.7	B	14.8	B	14.9	B
36 The Embarcadero/Battery Street/Lombard Street	Signal	AM	14.0	B	14.0	B	13.9	B	13.9	B	13.9	B	13.9	B
		PM	29.0	C	29.2	C	28.3	C	28.1	C	28.1	C	28.2	C
		WE	13.6	B	13.6	B	13.8	B	13.4	B	13.5	B	13.6	B
37 The Embarcadero/Green Street	Signal	AM	10.0	A	10.0	A	10.0	A	10.0	A	10.0	A	10.0	A
		PM	11.9	B	11.9	B	11.9	B	11.8	B	11.8	B	11.9	B
		WE	6.0	A	6.0	A	6.0	A	5.9	A	5.9	A	5.9	A
38 Sansome Street/Broadway	Signal	AM	<b>59.8</b>	<b>E</b>	<b>60.4</b>	<b>E</b>	54.3	D	54.2	D	54.4	D	54.6	D
		PM	14.9	B	15.0	B	14.4	B	14.5	B	14.5	B	14.5	B
		WE	10.7	B	10.7	B	10.4	B	10.3	B	10.3	B	10.3	B

Study Intersection	Traffic Control	Peak Hour	No Action Alternative/NEPA Baseline		Pier 31½		Pier 41		Lower Fort Mason (No F-Market Line or Shuttle)		Lower Fort Mason (F-Market Line)		Lower Fort Mason (Shuttle)	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
39 Battery Street/Broadway	Signal	AM	27.9	C	28.1	C	27.6	C	27.1	C	27.5	C	27.8	C
		PM	21.1	C	21.2	C	20.7	C	20.8	C	20.8	C	20.9	C
		WE	17.8	B	17.8	B	18.0	B	18.0	B	18.0	B	18.0	B
40 The Embarcadero/Broadway	Signal	AM	25.4	C	25.4	C	25.4	C	25.6	C	25.6	C	25.5	C
		PM	22.4	C	22.4	C	22.3	C	22.2	C	22.3	C	22.4	C
		WE	17.1	B	17.1	B	17.1	B	17.1	B	17.1	B	17.1	B
41 Powell Street/Beach Street	Signal	AM	7.1	A	6.9	A	7.0	A	5.8	A	6.2	A	6.6	A
		PM	14.8	B	14.7	B	14.8	B	15.0	B	15.1	B	15.0	B
		WE	14.1	B	14.1	B	14.0	B	13.8	B	14.0	B	14.0	B

Note:  
**Bold** text indicates intersections exceeding the City's established threshold (LOS D) for acceptable operations."



TABLE 23. LONG-TERM CUMULATIVE CONDITIONS (YEAR 2035)—INTERSECTION LOS

Study Intersection	Traffic Control	Peak Hour	NEPA Baseline/No Action Alternative		Pier 31½		Pier 41		Lower Fort Mason (No F-Market Line or Shuttle)		Lower Fort Mason (F-Market Line)		Lower Fort Mason (Shuttle)	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1 Mason Street/Marina Boulevard/Yacht Road/Lyon Street	Signal	AM	39.5	D	39.6	D	42.1	D	39.9	D	39.7	D	39.6	D
		PM	43.6	D	43.5	D	43.2	D	43.5	D	43.5	D	43.6	D
		WE	<b>61.3</b>	<b>E</b>	<b>61.3</b>	<b>E</b>	<b>60.4</b>	<b>E</b>	<b>61.0</b>	<b>E</b>	<b>61.1</b>	<b>E</b>	<b>61.2</b>	<b>E</b>
2 Divisadero Street/Marina Boulevard	AWSC	AM	>50 (>50)	<b>F (F)</b>	>50 (>50)	<b>F (F)</b>	>50 (>50)	<b>F (F)</b>	>50 (>50)	<b>F (F)</b>	>50 (>50)	<b>F (F)</b>	>50 (>50)	<b>F (F)</b>
		PM	>50 (>50)	<b>F (F)</b>	>50 (>50)	<b>F (F)</b>	>50 (>50)	<b>F (F)</b>	>50 (>50)	<b>F (F)</b>	>50 (>50)	<b>F (F)</b>	>50 (>50)	<b>F (F)</b>
		WE	<b>40.4 (&gt;50)</b>	<b>E (F)</b>	<b>40.6 (&gt;50)</b>	<b>E (F)</b>	<b>45.6 (&gt;50)</b>	<b>E (F)</b>	<b>44.3 (&gt;50)</b>	<b>E (F)</b>	<b>43.7 (&gt;50)</b>	<b>E (F)</b>	<b>43.5 (&gt;50)</b>	<b>E (F)</b>
3 Scott Street/Cervantes Boulevard/Marina Boulevard	Signal	AM	>80	<b>F</b>	>80	<b>F</b>	>80	<b>F</b>	>80	<b>F</b>	>80	<b>F</b>	>80	<b>F</b>
		PM	11.0	B	11.0	B	11.1	B	11.1	B	11.1	B	11.1	B
		WE	19.1	B	19.1	B	19.8	B	20.0	B	19.8	B	19.8	B
4 Fillmore Street/Marina Boulevard	Signal	AM	6.7	A	6.8	A	8.6	A	8.6	A	8.6	A	8.4	A
		PM	10.3	B	10.3	B	10.4	B	10.6	B	10.5	B	10.5	B
		WE	8.5	A	8.5	A	8.5	A	9.0	A	8.8	A	8.7	A
5 Webster Street/Marina Boulevard	AWSC	AM	>50 (>50)	<b>F (F)</b>	>50 (>50)	<b>F (F)</b>	>50 (>50)	<b>F (F)</b>	>50 (>50)	<b>F (F)</b>	>50 (>50)	<b>F (F)</b>	>50 (>50)	<b>F (F)</b>
		PM	<b>40.8 (&gt;50)</b>	<b>E (F)</b>	<b>41.0 (&gt;50)</b>	<b>E (F)</b>	<b>44.2 (&gt;50)</b>	<b>E (F)</b>	>50 (>50)	<b>F (F)</b>	<b>50 (&gt;50)</b>	<b>E (F)</b>	<b>47.3 (&gt;50)</b>	<b>E (F)</b>
		WE	18.5 (19.8)	C (C)	18.6 (19.9)	C (C)	20.2 (21.7)	C (C)	26.7 (29.4)	D (D)	24.1 (26.3)	C (D)	23.0 (25.1)	C (D)
6 Buchanan Street/Marina Boulevard/Beach Street	Signal	AM	21.7	C	21.8	C	22.6	C	23.8	C	24.0	C	24.1	C
		PM	8.5	A	8.5	A	8.5	A	9.6	A	9.6	A	9.5	A
		WE	12.5	B	12.5	B	12.9	B	18.8	B	17.0	B	16.5	B
7 Laguna Street/Marina Boulevard	Signal	AM	5.1	A	5.1	A	5.4	A	4.3	A	4.3	A	4.4	A
		PM	0.9	A	0.9	A	0.9	A	1.0	A	1.0	A	1.0	A
		WE	2.7	A	2.7	A	2.8	A	2.9	A	2.8	A	2.8	A
8 Fillmore Street/Bay Street/Cervantes Boulevard	Signal	AM	24.4	C	24.4	C	24.4	C	24.6	C	24.6	C	24.5	C
		PM	32.3	C	32.3	C	32.3	C	32.6	C	32.6	C	32.6	C
		WE	30.1	C	30.1	C	30.1	C	32.6	C	31.6	C	31.4	C
9 Laguna Street/Bay Street	Signal	AM	>80	<b>F</b>	>80	<b>F</b>	>80	<b>F</b>	>80	<b>F</b>	>80	<b>F</b>	>80	<b>F</b>
		PM	>80	<b>F</b>	>80	<b>F</b>	>80	<b>F</b>	>80	<b>F</b>	>80	<b>F</b>	>80	<b>F</b>
		WE	>80	<b>F</b>	>80	<b>F</b>	>80	<b>F</b>	>80	<b>F</b>	>80	<b>F</b>	>80	<b>F</b>
10 Franklin Street/Bay Street	Signal	AM	25.1	C	25.2	C	25.9	C	26.3	C	27.2	C	27.5	C
		PM	16.3	B	16.5	B	16.8	B	17.8	B	17.5	B	17.4	B
		WE	21.6	C	21.9	C	23.2	C	24.6	C	24.6	C	24.2	C
11 Van Ness Avenue/Bay Street	Signal	AM	13.7	B	13.7	B	13.9	B	14.8	B	14.3	B	14.0	B
		PM	16.1	B	16.0	B	16.1	B	15.8	B	15.9	B	15.9	B
		WE	12.1	B	12.1	B	12.4	B	12.8	B	12.2	B	12.5	B
12 Divisadero Street/Lombard Street	Signal	AM	<b>56.0</b>	<b>E</b>	<b>56.2</b>	<b>E</b>	<b>58.1</b>	<b>E</b>	53.3	D	53.5	D	53.7	D
		PM	54.4	D	54.6	D	<b>56.0</b>	<b>E</b>	55.0	D	54.7	D	54.4	D
		WE	40.8	D	40.8	D	41.0	D	45.3	D	44.2	D	44.0	D

Study Intersection	Traffic Control	Peak Hour	NEPA Baseline/No Action Alternative		Pier 31½		Pier 41		Lower Fort Mason (No F-Market Line or Shuttle)		Lower Fort Mason (F-Market Line)		Lower Fort Mason (Shuttle)	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
13 Fillmore Street/Lombard Street	Signal	AM	45.2	D	45.4	D	47.3	D	43.5	D	43.5	D	43.5	D
		PM	12.5	B	12.5	B	12.6	B	12.5	B	12.5	B	12.4	B
		WE	43.5	D	43.4	D	43.1	D	53.4	D	49.7	D	48.3	D
14 Laguna Street/Lombard Street	Signal	AM	14.8	B	15.0	B	16.7	B	13.2	B	13.3	B	13.4	B
		PM	23.4	C	23.4	C	23.8	C	22.9	C	23.0	C	23.0	C
		WE	20.6	C	20.6	C	20.8	C	20.4	C	20.5	C	20.5	C
15 Franklin Street/Lombard Street	Signal	AM	27.9	C	28.0	C	28.2	C	28.1	C	28.2	C	28.3	C
		PM	30.9	C	31.1	C	32.7	C	29.3	C	29.4	C	29.5	C
		WE	27.1	C	27.2	C	27.6	C	27.2	C	27.3	C	27.4	C
16 Van Ness Avenue/Lombard Street	Signal	AM	40.7	D	41.2	D	45.6	D	36.5	D	36.7	D	37.2	D
		PM	43.1	D	43.4	D	47.7	D	39.6	D	40.2	D	40.2	D
		WE	43.1	D	43.9	D	52.2	D	36.4	D	36.4	D	37.1	D
17 Taylor Street/Jefferson Street	Signal	AM	10.9	B	10.9	B	10.9	B	10.9	B	10.9	B	10.9	B
		PM	14.0	B	14.0	B	13.9	B	13.9	B	13.9	B	13.9	B
		WE	12.2	B	12.2	B	12.2	B	12.2	B	12.2	B	12.2	B
18 Powell Street/Jefferson Street/The Embarcadero	Signal	AM	7.4	A	7.4	A	7.4	A	7.4	A	7.4	A	7.4	A
		PM	16.9	B	16.9	B	16.9	B	16.9	B	16.9	B	16.9	B
		WE	47.1	D	47.1	D	47.1	D	47.1	D	47.1	D	47.1	D
19 Columbus Avenue/Beach Street	SSSC	AM	<b>10.8 (&gt;50)</b>	<b>B (F)</b>	<b>10.8 (&gt;50)</b>	<b>B (F)</b>	<b>10.8 (&gt;50)</b>	<b>B (F)</b>	<b>10.8 (&gt;50)</b>	<b>B (F)</b>	<b>10.8 (&gt;50)</b>	<b>B (F)</b>	<b>10.8 (&gt;50)</b>	<b>B (F)</b>
		PM	<b>4.8 (&gt;50)</b>	<b>A (F)</b>	<b>4.8 (&gt;50)</b>	<b>A (F)</b>	<b>4.9 (&gt;50)</b>	<b>A (F)</b>	<b>4.8 (&gt;50)</b>	<b>A (F)</b>	<b>4.8 (&gt;50)</b>	<b>A (F)</b>	<b>4.8 (&gt;50)</b>	<b>A (F)</b>
		WE	<b>34.8 (&gt;50)</b>	<b>D (F)</b>	<b>34.9 (&gt;50)</b>	<b>D (F)</b>	<b>35.6 (&gt;50)</b>	<b>E (F)</b>	<b>34.6 (&gt;50)</b>	<b>D (F)</b>	<b>34.8 (&gt;50)</b>	<b>D (F)</b>	<b>34.8 (&gt;50)</b>	<b>D (F)</b>
20 Taylor Street/Beach Street	Signal	AM	10.8	B	10.8	B	11.0	B	10.7	B	10.8	B	10.9	B
		PM	23.1	C	23.4	C	22.8	C	21.8	C	22.1	C	22.4	C
		WE	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>
21 Stockton Street/Beach Street	Signal	AM	18.0	B	18.1	B	17.7	B	17.8	B	17.7	B	17.9	B
		PM	25.5	C	25.7	C	25.7	C	23.7	C	24.1	C	24.6	C
		WE	33.8	C	34.5	C	35.7	D	27.5	C	29.5	C	31.0	C
22 Grant Street/Beach Street/The Embarcadero	Signal	AM	15.1	B	15.2	B	15.2	B	15.0	B	15.0	B	15.1	B
		PM	27.3	C	27.4	C	27.7	C	26.8	C	26.8	C	27.0	C
		WE	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>
23 Leavenworth Street/Columbus Street/North Point Street	Signal	AM	13.4	B	13.4	B	13.3	B	13.4	B	13.3	B	13.3	B
		PM	14.4	B	14.4	B	14.3	B	14.5	B	14.4	B	14.4	B
		WE	12.5	B	12.5	B	12.6	B	12.4	B	12.4	B	12.4	B
24 Taylor Street/North Point Street	Signal	AM	13.5	B	13.6	B	14.1	B	13.3	B	13.5	B	13.9	B
		PM	14.5	B	14.6	B	15.5	B	13.9	B	14.4	B	15.1	B
		WE	17.2	B	17.5	B	18.4	B	16.8	B	17.6	B	18.1	B
25 Powell Street/North Point Street	Signal	AM	14.3	B	14.4	B	13.8	B	13.4	B	13.7	B	14.0	B
		PM	17.9	B	18.1	B	17.9	B	17.4	B	17.3	B	17.6	B
		WE	33.1	C	33.1	C	32.6	C	29.4	C	30.4	C	31.7	C

Study Intersection	Traffic Control	Peak Hour	NEPA Baseline/No Action Alternative		Pier 31½		Pier 41		Lower Fort Mason (No F-Market Line or Shuttle)		Lower Fort Mason (F-Market Line)		Lower Fort Mason (Shuttle)	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
26 Stockton Street/North Point Street	Signal	AM	12.0	B	12.1	B	12.2	B	11.9	B	12.1	B	12.1	B
		PM	12.6	B	11.6	B	11.6	B	11.6	B	12.5	B	11.3	B
		WE	10.4	B	10.5	B	11.0	B	9.8	A	10.0	A	9.9	A
27 Kearny Street/The Embarcadero/North Point Street	Signal	AM	<b>55.8</b>	<b>E</b>	<b>55.2</b>	<b>E</b>	<b>55.6</b>	<b>E</b>	<b>55.1</b>	<b>E</b>	54.9	D	<b>55.6</b>	<b>E</b>
		PM	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>
		WE	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>
28 Hyde Street/Bay Street	Signal	AM	6.7	A	6.7	A	7.0	A	5.9	A	6.0	A	6.4	A
		PM	5.8	A	5.7	A	5.9	A	5.8	A	5.8	A	5.8	A
		WE	6.0	A	6.0	A	6.1	A	5.8	A	5.9	A	5.9	A
29 Columbus Avenue/Jones Street/Bay Street	Signal	AM	14.4	B	14.4	B	14.7	B	13.9	B	14.0	B	14.1	B
		PM	17.7	B	17.7	B	18.2	B	17.8	B	17.8	B	18.2	B
		WE	13.5	B	13.5	B	13.4	B	14.7	B	14.5	B	14.3	B
30 Taylor Street/Bay Street	Signal	AM	4.7	A	4.8	A	5.6	A	4.3	A	4.5	A	4.8	A
		PM	8.1	A	8.1	A	9.2	A	7.9	A	8.2	A	8.7	A
		WE	8.2	A	8.1	A	9.3	A	8.0	A	8.3	A	8.6	A
31 Powell Street/Bay Street	Signal	AM	17.9	B	18.1	B	18.5	B	15.8	B	16.1	B	16.7	B
		PM	15.9	B	16.2	B	15.4	B	13.9	B	14.3	B	14.9	B
		WE	11.8	B	11.9	B	11.7	B	11.2	B	11.4	B	11.5	B
32 Stockton Street/Bay Street	Signal	AM	21.4	C	21.8	C	22.3	C	19.3	B	19.2	B	19.6	B
		PM	8.1	A	8.4	A	8.5	A	8.4	A	8.1	A	8.2	A
		WE	10.4	B	10.4	B	10.3	B	10.2	B	10.2	B	10.3	B
33 Kearny Street/Bay Street	Signal	AM	7.2	A	7.2	A	7.3	A	7.6	A	7.5	A	7.4	A
		PM	16.3	B	16.4	B	16.3	B	16.7	B	16.2	B	16.3	B
		WE	8.3	A	8.3	A	8.6	A	8.3	A	8.3	A	8.6	A
34 The Embarcadero/Bay Street	Signal	AM	26.9	C	27.1	C	25.4	C	25.4	C	25.8	C	26.1	C
		PM	14.2	B	14.2	B	14.0	B	14.2	B	14.0	B	14.1	B
		WE	10.3	B	10.3	B	9.7	A	9.4	A	9.4	A	10.0	A
35 The Embarcadero/Sansome Street/Chestnut Street	Signal	AM	20.4	C	20.7	C	20.8	C	18.3	B	18.7	B	19.5	B
		PM	20.8	C	20.9	C	20.4	C	18.9	B	20.0	B	20.0	B
		WE	15.4	B	15.5	B	15.6	B	15.1	B	16.3	B	14.7	B
36 The Embarcadero/Battery Street/Lombard Street	Signal	AM	21.2	C	21.5	C	20.3	C	20.0	B	20.1	C	20.2	C
		PM	<b>73.3</b>	<b>E</b>	<b>73.9</b>	<b>E</b>	<b>72.1</b>	<b>E</b>	<b>69.4</b>	<b>E</b>	<b>69.8</b>	<b>E</b>	<b>70.6</b>	<b>E</b>
		WE	14.7	B	14.7	B	14.8	B	14.3	B	14.4	B	14.5	B
37 The Embarcadero/Green Street	Signal	AM	49.7	D	49.7	D	49.8	D	50.6	D	50.5	D	50.3	D
		PM	25.1	C	25.2	C	24.8	C	23.8	C	24.0	C	24.3	C
		WE	8.5	A	8.6	A	8.5	A	8.4	A	8.4	A	8.5	A
38 Sansome Street/Broadway	Signal	AM	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>
		PM	44.4	D	45.4	D	36.6	D	37.5	D	37.7	D	37.5	D
		WE	12.7	B	12.7	B	12.0	B	11.9	B	11.9	B	12.0	B

Study Intersection	Traffic Control	Peak Hour	NEPA Baseline/No Action Alternative		Pier 31½		Pier 41		Lower Fort Mason (No F-Market Line or Shuttle)		Lower Fort Mason (F-Market Line)		Lower Fort Mason (Shuttle)	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
39 Battery Street/Broadway	Signal	AM	<b>59.6</b>	<b>E</b>	<b>59.8</b>	<b>E</b>	<b>59.0</b>	<b>E</b>	<b>58.5</b>	<b>E</b>	<b>58.8</b>	<b>E</b>	<b>59.2</b>	<b>E</b>
		PM	47.6	D	47.7	D	46.4	D	47.0	D	47.2	D	47.9	D
		WE	17.4	B	17.4	B	17.5	B	17.7	B	17.8	B	17.7	B
40 The Embarcadero/Broadway	Signal	AM	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>
		PM	<b>76.6</b>	<b>E</b>	<b>77.0</b>	<b>E</b>	<b>75.9</b>	<b>E</b>	<b>74.8</b>	<b>E</b>	<b>74.5</b>	<b>E</b>	<b>75.8</b>	<b>E</b>
		WE	19.1	B	19.1	B	19.0	B	19.0	B	19.1	B	19.1	B
41 Powell Street/Beach Street	Signal	AM	6.7	A	6.8	A	6.6	A	6.4	A	6.0	A	6.3	A
		PM	13.6	B	13.5	B	13.5	B	14.0	B	13.8	B	13.6	B
		WE	12.4	B	12.5	B	12.1	B	12.3	B	12.4	B	12.4	B

Note:  
**Bold** text indicates intersections exceeding the City's established threshold (LOS D) for acceptable operations.

Under the Pier 31½ Alternative, the same intersections would operate at unacceptable LOS E or F as under the No Action Alternative. However, traffic volumes would only increase slightly compared to existing conditions because the site is currently generating a substantial number of trips already. The relatively small increases in traffic associated with the third berth would not contribute considerably to intersections already operating at unacceptable levels (i.e., increases to critical movements operating at LOS E or F at these intersections would be less than five percent), nor would they cause any intersections that would operate acceptably under the No Action Alternative to deteriorate to unacceptable levels. Therefore, traffic impacts associated with the Pier 31½ Alternative would be considered **less than significant**.

**Long-Term Cumulative Conditions.** In the longer-term future – year 2035 – traffic conditions in the project study area are projected to get more congested with the combined effect of planned and reasonably-foreseeable development. Compared to the No Action Alternative (year 2035), the long-term effects of the Pier 31½ Alternative are such that the same intersections that are projected to operate at unacceptable conditions under the No Action Alternative would continue to operate at unacceptable conditions. The Pier 31½ Alternative would not cause additional intersections to exceed established LOS thresholds, nor would it contribute considerably to intersections projected to operate at unacceptable conditions in the No Action Alternative. Therefore, long-term cumulative traffic impacts associated with the Pier 31½ Alternative would be considered **less than significant**.

## **Transit**

Similar to traffic conditions, transit impacts are assessed for near-term and long-term cumulative conditions.

**Near-Term Conditions.** Each of the proposed Project alternatives is expected to generate new transit trips. Project transit trips were added to the transit network to evaluate each alternative at established screenlines. Tables 24A through 24C present capacity utilization for near-term conditions under the No Action and all Action Alternatives for the weekday a.m. peak hour, weekday p.m. peak hour, and weekend midday peak hour, respectively. Tables 25A through 25C present similar information for the long-term (year 2035) conditions.

Under the Pier 31½ Alternative, all transit lines serving the study area would operate within the 85 percent capacity utilization threshold in the weekday a.m. peak hour. However, in the weekday p.m. peak hour, the F-Market & Wharves and the Powell-Mason Cable Car would operate above the threshold in the outbound (i.e., away from Pier 31½) direction under both the No Action and the Pier 31½ alternatives. The growth in transit ridership associated with this alternative (compared to the No Action Alternative) would be less than one percent of the capacity of the lines, and therefore, would not be considerable. During the weekend midday peak hour, the F-Market & Wharves would exceed the City's capacity utilization standard in the inbound direction and the Powell-Mason Cable Car would exceed the standard in both directions under both the No Action and Pier 31½ alternatives. Similar to the weekday p.m. peak hour conditions, the Pier 31½ Alternative's increase to transit ridership on these lines would be less than one percent of the total capacity of the lines, and would not be considerable. Therefore, the Pier 31½ Alternative would have a **less than significant** impact on transit capacity.

**TABLE 24A. NEAR-TERM MUNI CAPACITY UTILIZATION ANALYSIS—AM PEAK HOUR**

Line/ Screenline	NEPA Baseline/No Action Alternative (Near-Term)						Action Alternatives (Near-Term)					
	Inbound			Outbound			Inbound			Outbound		
	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization
<b>Pier 31½ Alternative Screenlines</b>												
47 Van Ness	294	378	78%	276	378	73%	301	378	80%	276	378	73%
F-Market & Wharves	289	700	41%	162	627	26%	296	700	42%	162	627	26%
Powell-Mason Cable Car	220	378	58%	92	378	24%	224	378	59%	92	378	24%
8X Bayshore Express	616	752	82%	504	752	67%	621	752	83%	504	752	67%
Total	1,418	2,208	64%	1,034	2,135	48%	1,442	2,208	65%	1,034	2,135	48%
<b>Fisherman’s Wharf Alternative Screenlines</b>												
North/South Screenline	1,070	1,382	77%	1,000	1,382	72%	<b>1,216</b>	<b>1,382</b>	<b>88%</b>	1,000	1,382	72%
Downtown Screenline	855	1,347	63%	553	1,247	44%	1,032	1,347	77%	482	1,247	39%
Waterfront Screenline	289	700	41%	162	627	26%	196	700	28%	162	627	26%
Total	2,213	3,429	65%	1,715	3,256	53%	2,444	3,429	71%	1,643	3,256	50%
<b>Lower Fort Mason Alternative Screenlines—No F-Line Extension or Shuttle Scenario</b>												
North/South Screenline	1,280	1,881	68%	1,094	1,881	58%	1,430	1,881	76%	1,094	1,881	58%
West Screenline	471	693	68%	365	630	58%	503	693	73%	365	630	58%
East Screenline	514	1,118	46%	726	1,291	56%	514	1,118	46%	694	1,291	54%
Total	2,266	3,692	61%	2,184	3,802	57%	2,446	3,692	66%	2,152	3,802	57%
<b>Lower Fort Mason Alternative Screenlines—F-Line Extension Scenario</b>												
North/South Screenline	1,280	1,881	68%	1,094	1,881	58%	1,495	1,881	79%	1,094	1,881	58%
West Screenline	471	693	68%	365	630	58%	511	693	74%	365	630	58%
East Screenline	514	1,118	46%	726	1,291	56%	514	1,118	46%	722	1,291	56%
Total	2,266	3,692	61%	2,184	3,802	57%	2,520	3,692	68%	2,181	3,802	57%
<b>Lower Fort Mason Alternative Screenlines—Shuttle Scenario</b>												
North/South Screenline	1,280	1,881	68%	1,094	1,881	58%	1,430	1,881	76%	1,094	1,881	58%
West Screenline	471	693	68%	365	630	58%	503	693	73%	365	630	58%
East Screenline	514	1,118	46%	726	1,291	56%	514	1,118	46%	694	1,291	54%
Total	2,266	3,692	61%	2,184	3,802	57%	2,446	3,692	66%	2,152	3,802	57%

Notes:

Source: SFMTA 2011

SFMTA typically refers to “inbound” and “outbound” with respect to service to downtown (i.e., inbound routes travel toward Downtown and outbound routes travel away from downtown). However, for purposes of this report, “inbound” and “outbound” refer to the direction of travel relative to the project site.

**Bold** text indicates screenlines operating above the 85 percent capacity utilization threshold.

**TABLE 24B. NEAR-TERM MUNI CAPACITY UTILIZATION ANALYSIS—PM PEAK HOUR**

Line/Screenline	NEPA Baseline/No Action Alternative (Near-Term)						Action Alternatives (Near-Term)					
	Inbound			Outbound			Inbound			Outbound		
	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization
<b>Pier 31½ Alternative Screenlines</b>												
47 Van Ness	276	378	73%	258	378	68%	280	378	74%	264	378	70%
F-Market & Wharves	249	700	36%	<b>718</b>	<b>700</b>	<b>103%</b>	252	700	36%	<b>724</b>	<b>700</b>	<b>103%</b>
Powell-Mason Cable Car	356	473	75%	<b>411</b>	<b>473</b>	<b>87%</b>	358	473	76%	<b>415</b>	<b>473</b>	<b>88%</b>
8X Bayshore Express	408	752	54%	416	752	55%	410	752	55%	420	752	56%
Total	1,289	2,303	56%	1,803	2,303	78%	1,301	2,303	56%	1,823	2,303	79%
<b>Fisherman’s Wharf Alternative Screenlines</b>												
North/South Screenline	856	1,382	62%	798	1,382	58%	929	1,382	67%	925	1,382	67%
Downtown Screenline	1,433	2,193	65%	1,556	2,169	72%	1,459	2,193	67%	1,675	2,169	77%
Waterfront Screenline	249	700	36%	<b>718</b>	<b>700</b>	<b>103%</b>	202	700	29%	<b>637</b>	<b>700</b>	<b>91%</b>
Total	2,537	4,275	59%	3,071	4,251	72%	2,590	4,275	61%	3,237	4,251	76%
<b>Lower Fort Mason Alternative Screenlines—No F-Line Extension or Shuttle Scenario</b>												
North/South Screenline	1,111	1,871	59%	1,181	1,871	63%	1,186	1,871	63%	1,311	1,871	70%
West Screenline	282	378	75%	282	378	75%	298	378	79%	310	378	82%
East Screenline	1,423	1,924	74%	909	1,948	47%	1,394	1,924	72%	892	1,948	46%
Total	2,816	4,173	67%	2,371	4,196	57%	2,878	4,173	69%	2,513	4,196	60%
<b>Lower Fort Mason Alternative Screenlines—F-Line Extension Scenario</b>												
North/South Screenline	1,111	1,871	59%	1,181	1,871	63%	1,218	1,871	65%	1,368	1,871	73%
West Screenline	282	378	75%	282	378	75%	1,218	1,871	65%	1,368	1,871	73%
East Screenline	1,423	1,924	74%	909	1,948	47%	302	378	80%	317	378	84%
Total	2,816	4,173	67%	2,371	4,196	57%	1,419	1,924	74%	907	1,948	47%
<b>Lower Fort Mason Alternative Screenlines—Shuttle Scenario</b>												
North/South Screenline	1,111	1,871	59%	1,181	1,871	63%	1,186	1,871	63%	1,311	1,871	70%
West Screenline	282	378	75%	282	378	75%	298	378	79%	310	378	82%
East Screenline	1,423	1,924	74%	909	1,948	47%	1,394	1,924	72%	892	1,948	46%
Total	2,816	4,173	67%	2,371	4,196	57%	2,878	4,173	69%	2,513	4,196	60%

Notes:

Source: SFMTA 2011

SFMTA typically refers to “inbound” and “outbound” with respect to service to downtown (i.e., inbound routes travel toward Downtown and outbound routes travel away from downtown). However, for purposes of this report, “inbound” and “outbound” refer to the direction of travel relative to the project site.

**Bold** text indicates screenlines operating above the 85 percent capacity utilization threshold.

TABLE 24C. NEAR-TERM MUNI CAPACITY UTILIZATION ANALYSIS—WEEKEND MIDDAY PEAK HOUR

Line/Screenline	NEPA Baseline/No Action Alternative (Near-Term)						Action Alternatives (Near-Term)					
	Inbound			Outbound			Inbound			Outbound		
	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization
<b>Pier 31½ Alternative Screenlines</b>												
47 Van Ness	220	378	58%	220	378	58%	226	378	60%	225	378	59%
F-Market & Wharves	<b>803</b>	<b>700</b>	<b>115%</b>	307	700	44%	<b>808</b>	<b>700</b>	<b>115%</b>	311	700	44%
Powell-Mason Cable Car	<b>428</b>	<b>473</b>	<b>90%</b>	<b>428</b>	<b>473</b>	<b>90%</b>	<b>430</b>	<b>473</b>	<b>91%</b>	<b>430</b>	<b>473</b>	<b>91%</b>
8X Bayshore Express	556	705	79%	335	705	48%	559	705	79%	338	705	48%
Total	<b>2,007</b>	<b>2,256</b>	<b>89%</b>	1,290	2,256	57%	<b>2,024</b>	<b>2,256</b>	<b>90%</b>	1,304	2,256	58%
<b>Fisherman’s Wharf Alternative Screenlines</b>												
North/South Screenline	888	1,459	61%	699	1,459	48%	973	1,459	67%	774	1,459	53%
Downtown Screenline	1,160	1,415	82%	1,165	1,415	82%	<b>1,247</b>	<b>1,415</b>	<b>88%</b>	<b>1,231</b>	<b>1,415</b>	<b>87%</b>
Waterfront Screenline	<b>803</b>	<b>700</b>	<b>115%</b>	307	700	44%	<b>738</b>	<b>700</b>	<b>105%</b>	250	700	36%
Total	2,851	3,574	80%	2,171	3,574	61%	2,959	3,574	83%	2,255	3,574	63%
<b>Lower Fort Mason Alternative Screenlines—No F-Line Extension or Shuttle Scenario</b>												
North/South Screenline	825	1,758	47%	923	1,758	53%	900	1,758	51%	988	1,758	56%
West Screenline	202	564	36%	216	564	38%	238	564	42%	248	564	44%
East Screenline	514	1,170	44%	<b>1,005</b>	<b>1,170</b>	<b>86%</b>	490	1,170	42%	978	1,170	84%
Total	1,541	3,492	44%	2,145	3,492	61%	1,628	3,492	47%	2,214	3,492	63%
<b>Lower Fort Mason Alternative Screenlines—F-Line Extension Scenario</b>												
North/South Screenline	825	1,758	47%	923	1,758	53%	1,016	1,758	58%	1,090	1,758	62%
West Screenline	202	564	36%	216	564	38%	264	564	47%	271	564	48%
East Screenline	514	1,170	44%	<b>1,005</b>	<b>1,170</b>	<b>86%</b>	533	1,170	46%	<b>1,027</b>	<b>1,170</b>	<b>88%</b>
Total	1,541	3,492	44%	2,145	3,492	61%	1,813	3,492	52%	2,387	3,492	68%
<b>Lower Fort Mason Alternative Screenlines—Shuttle Scenario</b>												
North/South Screenline	825	1,758	47%	923	1,758	53%	900	1,758	51%	988	1,758	56%
West Screenline	202	564	36%	216	564	38%	238	564	42%	248	564	44%
East Screenline	514	1,170	44%	<b>1,005</b>	<b>1,170</b>	<b>86%</b>	490	1,170	42%	978	1,170	84%
Total	1,541	3,492	44%	2,145	3,492	61%	1,628	3,492	47%	2,214	3,492	63%

Notes:

Source: SFMTA 2011

SFMTA typically refers to “inbound” and “outbound” with respect to service to downtown (i.e., inbound routes travel toward Downtown and outbound routes travel away from downtown). However, for purposes of this report, “inbound” and “outbound” refer to the direction of travel relative to the project site.

**Bold** text indicates screenlines operating above the 85 percent capacity utilization threshold.



**TABLE 25A. LONG-TERM (YEAR 2035) MUNI CAPACITY UTILIZATION ANALYSIS—AM PEAK HOUR**

Line/Screenline	NEPA Baseline/No Action Alternative (Long-Term/Year 2035)						Action Alternatives (Long-Term/Year 2035)					
	Inbound			Outbound			Inbound			Outbound		
	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization
<b>Pier 31½ Alternative Screenlines</b>												
F-Market & Wharves	156	560	28%	129	560	23%	163	560	29%	129	560	23%
Powell-Mason Cable Car	257	378	68%	122	378	32%	262	378	69%	122	378	32%
8X Bayshore Express	1,157	1,504	77%	627	752	83%	1,161	1,504	77%	627	752	83%
E Embarcadero	216	280	77%	69	280	24%	218	280	78%	69	280	24%
11 Downtown Connector	<b>299</b>	<b>315</b>	<b>95%</b>	141	315	45%	<b>306</b>	<b>315</b>	<b>97%</b>	141	315	45%
Total	2,085	3,037	69%	1,088	2,285	48%	2,109	3,037	69%	1,088	2,285	48%
<b>Fisherman’s Wharf Alternative Screenlines</b>												
North/South Screenline	104	252	41%	99	252	39%	<b>274</b>	<b>252</b>	<b>109%</b>	99	252	39%
Downtown Screenline	1,394	1,877	74%	872	1,776	49%	<b>1,666</b>	<b>1,877</b>	<b>89%</b>	800	1,776	45%
Waterfront Screenline	465	840	55%	197	840	23%	414	840	49%	197	840	23%
Total	1,963	2,969	66%	1,168	2,868	41%	2,355	2,969	79%	1,096	2,868	38%
<b>Lower Fort Mason Alternative Screenlines—No F-Line Extension or Shuttle Scenario</b>												
North/South Screenline	<b>2,568</b>	<b>2,359</b>	<b>109%</b>	<b>2,165</b>	<b>2,359</b>	<b>92%</b>	<b>2,741</b>	<b>2,359</b>	<b>116%</b>	<b>2,165</b>	<b>2,359</b>	<b>92%</b>
West Screenline	399	756	53%	545	756	72%	437	756	58%	545	756	72%
East Screenline	736	1,860	40%	1,368	1,961	70%	736	1,860	40%	1,381	1,961	70%
Total	3,703	4,975	74%	4,078	5,075	80%	3,913	4,975	79%	4,091	5,075	81%
<b>Lower Fort Mason Alternative Screenlines—F-Line Extension Scenario</b>												
North/South Screenline	<b>2,568</b>	<b>2,359</b>	<b>109%</b>	<b>2,165</b>	<b>2,359</b>	<b>92%</b>	<b>2,811</b>	<b>2,359</b>	<b>119%</b>	<b>2,165</b>	<b>2,359</b>	<b>92%</b>
West Screenline	399	756	53%	545	756	72%	446	756	59%	545	756	72%
East Screenline	754	1,860	41%	1,380	1,961	70%	754	1,860	41%	1,434	1,961	73%
Total	3,721	4,975	75%	4,090	5,075	81%	4,011	4,975	81%	4,144	5,075	82%
<b>Lower Fort Mason Alternative Screenlines—Shuttle Scenario</b>												
North/South Screenline	<b>2,568</b>	<b>2,359</b>	<b>109%</b>	<b>2,165</b>	<b>2,359</b>	<b>92%</b>	<b>2,741</b>	<b>2,359</b>	<b>116%</b>	<b>2,165</b>	<b>2,359</b>	<b>92%</b>
West Screenline	399	756	53%	545	756	72%	437	756	58%	545	756	72%
East Screenline	736	1,860	40%	1,368	1,961	70%	736	1,860	40%	1,381	1,961	70%
Total	3,703	4,975	74%	4,078	5,075	80%	3,913	4,975	79%	4,091	5,075	81%

Notes:

Source: SFMTA 2011

SFMTA typically refers to “inbound” and “outbound” with respect to service to downtown (i.e., inbound routes travel toward Downtown and outbound routes travel away from downtown). However, for purposes of this report, “inbound” and “outbound” refer to the direction of travel relative to the project site.

**Bold** text indicates screenlines operating above the 85 percent capacity utilization threshold.

**TABLE 25B. LONG-TERM (YEAR 2035) MUNI CAPACITY UTILIZATION ANALYSIS—PM PEAK HOUR**

Line/Screenline	NEPA Baseline/No Action Alternative (Long-Term/Year 2035)						Action Alternatives (Long-Term/Year 2035)					
	Inbound			Outbound			Inbound			Outbound		
	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization
<b>Pier 31½ Alternative Screenlines</b>												
F-Market & Wharves	430	840	51%	<b>1,063</b>	<b>840</b>	<b>127%</b>	434	840	52%	<b>1,070</b>	<b>840</b>	<b>127%</b>
Powell-Mason Cable Car	377	473	80%	<b>947</b>	<b>473</b>	<b>200%</b>	379	473	80%	<b>951</b>	<b>473</b>	<b>201%</b>
8X Bayshore Express	398	752	53%	1,211	1,504	81%	400	752	53%	1,215	1,504	81%
E Embarcadero	80	280	29%	139	280	50%	81	280	29%	140	280	50%
11 Downtown Connector	186	315	59%	<b>367</b>	<b>315</b>	<b>117%</b>	190	315	60%	<b>373</b>	<b>315</b>	<b>118%</b>
Total	1,471	2,660	55%	<b>3,728</b>	<b>3,412</b>	<b>109%</b>	1,483	2,660	56%	<b>3,749</b>	<b>3,412</b>	<b>110%</b>
<b>Fisherman’s Wharf Alternative Screenlines</b>												
North/South Screenline	147	252	58%	93	252	37%	<b>232</b>	<b>252</b>	<b>92%</b>	<b>241</b>	<b>252</b>	<b>96%</b>
Downtown Screenline	1,364	1,730	79%	<b>2,057</b>	<b>1,730</b>	<b>119%</b>	1,438	1,730	83%	<b>2,259</b>	<b>1,730</b>	<b>131%</b>
Waterfront Screenline	557	1,120	50%	<b>1,284</b>	<b>1,120</b>	<b>115%</b>	531	1,120	47%	<b>1,240</b>	<b>1,120</b>	<b>111%</b>
Total	2,068	3,102	67%	<b>3,433</b>	<b>3,102</b>	<b>111%</b>	2,202	3,102	71%	<b>3,740</b>	<b>3,102</b>	<b>121%</b>
<b>Lower Fort Mason Alternative Screenlines—No F-Line Extension or Shuttle Scenario</b>												
North/South Screenline	<b>2,075</b>	<b>2,321</b>	<b>89%</b>	<b>2,307</b>	<b>2,321</b>	<b>99%</b>	<b>2,161</b>	<b>2,321</b>	<b>93%</b>	<b>2,458</b>	<b>2,321</b>	<b>106%</b>
West Screenline	260	420	62%	338	420	81%	279	420	66%	<b>371</b>	<b>420</b>	<b>88%</b>
East Screenline	<b>1,657</b>	<b>1,905</b>	<b>87%</b>	927	1,905	49%	<b>1,669</b>	<b>1,905</b>	<b>88%</b>	934	1,905	49%
Total	<b>3,992</b>	<b>4,646</b>	<b>86%</b>	3,573	4,646	77%	<b>4,109</b>	<b>4,646</b>	<b>88%</b>	3,763	4,646	81%
<b>Lower Fort Mason Alternative Screenlines—F-Line Extension Scenario</b>												
North/South Screenline	<b>2,075</b>	<b>2,321</b>	<b>89%</b>	<b>2,307</b>	<b>2,321</b>	<b>99%</b>	<b>2,196</b>	<b>2,321</b>	<b>95%</b>	<b>2,520</b>	<b>2,321</b>	<b>109%</b>
West Screenline	260	420	62%	338	420	81%	284	420	68%	<b>379</b>	<b>420</b>	<b>90%</b>
East Screenline	<b>1,918</b>	<b>1,905</b>	<b>101%</b>	1,030	1,905	54%	<b>1,965</b>	<b>1,905</b>	<b>103%</b>	1,057	1,905	55%
Total	<b>4,253</b>	<b>4,646</b>	<b>92%</b>	3,675	4,646	79%	<b>4,445</b>	<b>4,646</b>	<b>96%</b>	<b>3,956</b>	<b>4,646</b>	<b>85%</b>
<b>Lower Fort Mason Alternative Screenlines—Shuttle Scenario</b>												
North/South Screenline	<b>2,075</b>	<b>2,321</b>	<b>89%</b>	<b>2,307</b>	<b>2,321</b>	<b>99%</b>	<b>2,161</b>	<b>2,321</b>	<b>93%</b>	<b>2,458</b>	<b>2,321</b>	<b>106%</b>
West Screenline	260	420	62%	338	420	81%	279	420	66%	<b>371</b>	<b>420</b>	<b>88%</b>
East Screenline	<b>1,657</b>	<b>1,905</b>	<b>87%</b>	927	1,905	49%	<b>1,669</b>	<b>1,905</b>	<b>88%</b>	934	1,905	49%
Total	<b>3,992</b>	<b>4,646</b>	<b>86%</b>	3,573	4,646	77%	<b>4,109</b>	<b>4,646</b>	<b>88%</b>	3,763	4,646	81%

Notes:

Source: SFMTA 2011

SFMTA typically refers to “inbound” and “outbound” with respect to service to downtown (i.e., inbound routes travel toward Downtown and outbound routes travel away from downtown). However, for purposes of this report, “inbound” and “outbound” refer to the direction of travel relative to the project site.

**Bold** text indicates screenlines operating above the 85 percent capacity utilization threshold.

**TABLE 25C. LONG-TERM (YEAR 2035) MUNI CAPACITY UTILIZATION ANALYSIS—WEEKEND MIDDAY PEAK HOUR**

Line/Screenline	NEPA Baseline/No Action Alternative (Long-Term/Year 2035)						Action Alternatives (Long-Term/Year 2035)					
	Inbound			Outbound			Inbound			Outbound		
	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization
<b>Pier 31½ Alternative Screenlines</b>												
F-Market & Wharves	306	840	36%	<b>737</b>	<b>840</b>	<b>88%</b>	311	840	37%	<b>741</b>	<b>840</b>	<b>88%</b>
Powell-Mason Cable Car	<b>453</b>	<b>473</b>	<b>96%</b>	<b>980</b>	<b>473</b>	<b>207%</b>	<b>456</b>	<b>473</b>	<b>96%</b>	<b>983</b>	<b>473</b>	<b>208%</b>
8X Bayshore Express	543	705	77%	840	1,410	60%	546	705	77%	842	1,410	60%
E Embarcadero	58	280	21%	97	280	35%	59	280	21%	98	280	35%
11 Downtown Connector	136	315	43%	254	315	81%	140	315	44%	258	315	82%
Total	1,495	2,613	57%	2,908	3,318	<b>88%</b>	1,512	2,613	58%	<b>2,922</b>	<b>3,318</b>	<b>88%</b>
<b>Fisherman’s Wharf Alternative Screenlines</b>												
North/South Screenline	95	376	25%	81	376	22%	207	376	55%	178	376	47%
Downtown Screenline	1,282	1,730	74%	<b>1,891</b>	<b>1,730</b>	<b>109%</b>	1,429	1,730	83%	<b>2,009</b>	<b>1,730</b>	<b>116%</b>
Waterfront Screenline	429	1,120	38%	890	1,120	79%	392	1,120	35%	858	1,120	77%
Total	1,806	3,226	56%	<b>2,862</b>	<b>3,226</b>	<b>89%</b>	2,027	3,226	63%	<b>3,045</b>	<b>3,226</b>	<b>94%</b>
<b>Lower Fort Mason Alternative Screenlines—No F-Line Extension or Shuttle Scenario</b>												
North/South Screenline	1,580	1,946	81%	<b>1,765</b>	<b>1,946</b>	<b>91%</b>	1,669	1,946	86%	<b>1,844</b>	<b>1,946</b>	<b>95%</b>
West Screenline	196	564	35%	278	564	49%	239	564	42%	315	564	56%
East Screenline	1,035	1,905	54%	570	1,905	30%	1,035	1,905	54%	570	1,905	30%
Total	2,811	4,415	64%	2,614	4,415	59%	2,943	4,415	67%	2,729	4,415	62%
<b>Lower Fort Mason Alternative Screenlines—F-Line Extension Scenario</b>												
North/South Screenline	1,580	1,946	81%	<b>1,765</b>	<b>1,946</b>	<b>91%</b>	<b>1,796</b>	<b>1,946</b>	<b>92%</b>	<b>1,955</b>	<b>1,946</b>	<b>100%</b>
West Screenline	196	564	35%	278	564	49%	270	564	48%	343	564	61%
East Screenline	1,216	1,905	64%	642	1,905	34%	1,275	1,905	67%	710	1,905	37%
Total	2,992	4,415	68%	2,685	4,415	61%	3,341	4,415	76%	3,007	4,415	68%
<b>Lower Fort Mason Alternative Screenlines—Shuttle Scenario</b>												
North/South Screenline	1,580	1,946	81%	<b>1,765</b>	<b>1,946</b>	<b>91%</b>	<b>1,669</b>	<b>1,946</b>	<b>86%</b>	<b>1,844</b>	<b>1,946</b>	<b>95%</b>
West Screenline	196	564	35%	278	564	49%	239	564	42%	315	564	56%
East Screenline	1,035	1,905	54%	570	1,905	30%	1,035	1,905	54%	570	1,905	30%
Total	2,811	4,415	64%	2,614	4,415	59%	2,943	4,415	67%	2,729	4,415	62%

Notes:

Source: SFMTA 2011

SFMTA typically refers to “inbound” and “outbound” with respect to service to downtown (i.e., inbound routes travel toward Downtown and outbound routes travel away from downtown). However, for purposes of this report, “inbound” and “outbound” refer to the direction of travel relative to the project site.

**Bold** text indicates screenlines operating above the 85 percent capacity utilization threshold.

**Long Term Cumulative Conditions.** In the long-term cumulative conditions, the combination of changes to planned transit service in the study area and overall growth in transit ridership associated with these changes, as well as increased development in the area, will contribute to increased transit utilization. In the a.m. peak hour in the inbound direction and the p.m. peak hour in the outbound direction, the 11 Downtown Connector (a new route that will be established as part of the TEP) is forecast to exceed the 85 percent capacity utilization threshold under the No Action Alternative in the inbound direction in the a.m. peak hour and the outbound direction in the p.m. peak hour. The Pier 31½ Alternative would exacerbate this unacceptable condition by increasing ridership on this route in the inbound and outbound directions by more than one percent of its capacity. This would be considered a **significant impact**.

*Mitigation Measure 1*—The SFMTA routinely monitors and adjusts its transit service to respond to changing demands and travel patterns over time. While it may be likely that SFMTA would adjust transit service in response to this alternative such that impacts to transit capacity utilization would be reduced, the Park Service cannot guarantee that this would occur. Thus, the Park Service should consider operating a supplemental shuttle service connecting key Park destinations with major hotel and regional transit connections. This would reduce the project’s impacts on transit service. However, the details of such a system, including its effectiveness and costs, would require further coordination, planning, and outreach, and therefore, it cannot be guaranteed at this time. Therefore, the impact is considered to remain **significant with mitigation**.

All other lines would operate within the 85 percent capacity utilization threshold and the Pier 31½ Alternative would have a **less than significant** impact on those lines.

Although the Pier 31½ Alternative would have a significant long-term impact to one transit line, the impact would be isolated to just one transit line out of five that serve the Project site for the a.m. and p.m. peak periods. The transit network as a whole operates with excess capacity and still performs well to serve the site despite the Project impact. Transit users inconvenienced by the crowding may shift to other options, including using alternate transit lines, walking, bicycling, taxi, or driving. Therefore, although the impact would be significant, in the context of the overall transit system, the impact of the Pier 31½ Alternative on transit as a whole would be relatively minor.

## **Bicycle Facilities**

The Pier 31½ Alternative is expected to generate new bicycle trips. Cyclists have access to multiple routes on both roadways and shared use paths. Since many of the major bicycle facilities are shared-use paths, changes in bicycle and pedestrian activity levels directly affect one another. Specifically, pedestrian walkway LOS results presented in this report are also somewhat indicative of bicycle conditions.

Under the Pier 31½ Alternative, bicycling would largely remain similar to the No Action Alternative, except that a modest increase in visitorship associated with the third berth would result in a commensurately moderate increase in cycling to the site. However, as noted earlier, bicycle infrastructure in the Pier 31½ area is relatively good, with both Class I and II facilities serving the project site. On busy weekend days, particularly in the summer or when weather is warm and sunny, the Embarcadero is quite crowded with pedestrians and bicyclists, increasing conflicts between the two. However, the decision to establish a more permanent home at Pier 31½ is not likely to increase these conflicts substantially, and the Pier 31½ Alternative’s impacts to bicycle circulation would be considered **less than significant**.

## **Pedestrian Facilities**

The proposed Project is expected to generate new pedestrian trips. Table 16 summarized estimated person trip generation by mode. For the Pier 31½ Alternative, all trip types require walking at least a short distance to the site except for tour bus and taxi trips, which are assumed to be dropped off curbside or within the site. Table 26 presents pedestrian LOS based on both intersection delay and crosswalk space based on the resulting forecast of pedestrian trips for the No Action Alternative and each Action Alternative. Table 27 presents pedestrian LOS for walkways.

The Pier 31½ Alternative is projected to add approximately 85 pedestrians to the study area during the weekday p.m. peak hour, which is the analysis period that experiences the greatest pedestrian demand. These additional pedestrian trips are associated with the increases in visitor levels brought about by the proposed third berth. Since implementation of the Project at this location represents a net increase in visitation over current use of the same facility (because much of the existing demand for the facility is reflected in the No Action Alternative/Baseline counts), the change in pedestrian activity due to this alternative is slight when compared to other alternatives. It is likely that some of the new pedestrian traffic would use crosswalks at the intersections of Embarcadero/Bay Street, Embarcadero/Chestnut Street/Sansome Street, and Embarcadero/Lombard Street/Battery Street to travel between the embarkation site and nearby parking facilities, transit stops, or other destinations. Project pedestrian trips were assigned to crosswalks based on local knowledge, area land uses, and other transportation facilities (e.g., transit, parking facilities, etc.).

This alternative is estimated to add approximately 100 net new pedestrian trips to the Embarcadero Promenade near Pier 31½ during the weekend midday peak hour, which is the most congested analysis period. However, even with the additional pedestrian trips, the walkway operates at an acceptable LOS.

Overall, implementation of the Pier 31½ Alternative would have a **less than significant** impact on pedestrian circulation.

**TABLE 26. NEAR-TERM CONDITIONS—PEDESTRIAN LOS (INTERSECTION DELAY AND CROSSWALK SPACE)**

Intersection	Crosswalk Location	NEPA Baseline/No Action Alternative (Near-Term)						Action Alternatives (Near-Term)					
		Weekday a.m. Peak Hour		Weekday p.m. Peak Hour		Weekend Peak Hour		Weekday a.m. Peak Hour		Weekday p.m. Peak Hour		Weekend Peak Hour	
		Delay LOS	Space LOS	Delay LOS	Space LOS	Delay LOS	Space LOS	Delay LOS	Space LOS	Delay LOS	Space LOS	Delay LOS	Space LOS
<b>Pier 31½</b>													
<b>Embarcadero / Bay Street</b>	North (Embarcadero)	7 / A	>60 / A	7 / A	>60 / A	7 / A	>60 / A	7 / A	>60 / A	7 / A	>60 / A	7 / A	>60 / A
	West (Bay)	23 / C	>60 / A	23 / C	>60 / A	23 / C	>60 / A	23 / C	>60 / A	23 / C	>60 / A	23 / C	>60 / A
<b>Embarcadero / Chestnut Street / Sansome Street</b>	South (Embarcadero)	22 / C	>60 / A	22 / C	>60 / A	22 / C	>60 / A	22 / C	>60 / A	22 / C	>60 / A	22 / C	>60 / A
	West (Chestnut)	16 / B	>60 / A	16 / B	>60 / A	16 / B	>60 / A	16 / B	>60 / A	16 / B	>60 / A	16 / B	>60 / A
	West (Sansome)	7 / A	>60 / A	7 / A	>60 / A	7 / A	>60 / A	7 / A	>60 / A	7 / A	>60 / A	7 / A	>60 / A
<b>Embarcadero / Lombard Street / Battery Street</b>	North (Embarcadero)	18 / B	>60 / A	18 / B	>60 / A	18 / B	>60 / A	18 / B	>60 / A	18 / B	>60 / A	18 / B	>60 / A
	West (Lombard)	20 / B	>60 / A	20 / B	>60 / A	20 / B	>60 / A	20 / B	>60 / A	20 / B	>60 / A	20 / B	>60 / A
	West (Battery)	25 / C	>60 / A	25 / C	>60 / A	25 / C	>60 / A	25 / C	>60 / A	25 / C	>60 / A	25 / C	>60 / A
<b>Pier 41</b>													
<b>Taylor Street / Jefferson Street</b>	North (Taylor)	12 / B	>60 / A	14 / B	37 / C	11 / B	18 / D	12 / B	54 / B	14 / B	26 / C	11 / B	<b>12 / E</b>
	South (Taylor)	12 / B	>60 / A	14 / B	44 / B	11 / B	25 / C	12 / B	>60 / A	14 / B	30 / C	11 / B	18 / D
	East (Jefferson)	12 / B	>60 / A	14 / B	>60 / A	12 / B	43 / B	12 / B	>60 / A	14 / B	43 / B	12 / B	21 / D
	West (Jefferson)	12 / B	>60 / A	14 / B	>60 / A	12 / B	>60 / A	12 / B	>60 / A	14 / B	43 / B	12 / B	25 / C

ENVIRONMENTAL CONSEQUENCES

Intersection	Crosswalk Location	NEPA Baseline/No Action Alternative (Near-Term)						Action Alternatives (Near-Term)					
		Weekday a.m. Peak Hour		Weekday p.m. Peak Hour		Weekend Peak Hour		Weekday a.m. Peak Hour		Weekday p.m. Peak Hour		Weekend Peak Hour	
		Delay LOS	Space LOS	Delay LOS	Space LOS	Delay LOS	Space LOS	Delay LOS	Space LOS	Delay LOS	Space LOS	Delay LOS	Space LOS
<b>Powell Street / Jefferson Street</b>	North (Embarcadero)	14 / B	>60 / A	21 / C	<b>12 / E</b>	21 / C	<b>6 / F</b>	14 / B	39 / C	21 / C	<b>9 / E</b>	21 / C	<b>5 / F</b>
	South (Powell)	14 / B	>60 / A	21 / C	54 / B	21 / C	59 / B	14 / B	>60 / A	21 / C	24 / D	21 / C	21 / D
	East (Embarcadero)	14 / B	>60 / A	21 / C	46 / B	21 / C	32 / C	14 / B	29 / C	21 / C	17 / D	21 / C	<b>12 / E</b>
	West (Jefferson)	14 / B	>60 / A	21 / C	36 / C	21 / C	36 / C	14 / B	51 / B	21 / C	17 / D	21 / C	<b>14 / E</b>
<b>Lower Fort Mason (No F Line or Shuttle)</b>													
<b>Laguna Street / Beach Street</b>	South (Laguna)	26 / C	>60 / A	26 / C	>60 / A	12 / B	>60 / A	26 / C	33 / C	26 / C	22 / D	12 / B	21 / D
	West (Beach)	26 / C	>60 / A	26 / C	>60 / A	12 / B	>60 / A	26 / C	31 / C	26 / C	21 / D	12 / B	223 / D
<b>Buchanan Street / Beach Street – Marina Boulevard</b>	North (driveway)	6 / A	>60 / A	6 / A	>60 / A	9 / A	57 / B	6 / A	>60 / A	6 / A	>60 / A	9 / A	28 / C
	South (Buchanan)	6 / A	>60 / A	6 / A	>60 / A	9 / A	>60 / A	6 / A	>60 / A	6 / A	>60 / A	9 / A	>60 / A
	East (Marina)	25 / C	>60 / A	25 / C	>60 / A	12 / B	>60 / A	25 / C	37 / C	25 / C	26 / C	12 / B	28 / C
<b>Lower Fort Mason (F Line)</b>													
<b>Laguna Street / Beach Street</b>	South (Laguna)	26 / C	>60 / A	26 / C	>60 / A	12 / B	>60 / A	26 / C	47 / B	26 / C	31 / C	12 / B	29 / C
	West (Beach)	26 / C	>60 / A	26 / C	>60 / A	12 / B	>60 / A	26 / C	44 / B	26 / C	31 / C	12 / B	32 / C

Intersection	Crosswalk Location	NEPA Baseline/No Action Alternative (Near-Term)						Action Alternatives (Near-Term)					
		Weekday a.m. Peak Hour		Weekday p.m. Peak Hour		Weekend Peak Hour		Weekday a.m. Peak Hour		Weekday p.m. Peak Hour		Weekend Peak Hour	
		Delay LOS	Space LOS	Delay LOS	Space LOS	Delay LOS	Space LOS	Delay LOS	Space LOS	Delay LOS	Space LOS	Delay LOS	Space LOS
<b>Buchanan Street / Beach Street – Marina Boulevard</b>	North (driveway)	6 / A	>60 / A	6 / A	>60 / A	9 / A	57 / B	6 / A	>60 / A	6 / A	>60 / A	9 / A	34 / C
	South (Buchanan)	6 / A	>60 / A	6 / A	>60 / A	9 / A	>60 / A	6 / A	>60 / A	6 / A	>60 / A	9 / A	>60 / A
	East (Marina)	25 / C	>60 / A	25 / C	>60 / A	12 / B	>60 / A	25 / C	52 / B	25 / C	36 / C	12 / B	39 / C
<b>Lower Fort Mason (Shuttle)</b>													
<b>Laguna Street / Beach Street</b>	South (Laguna)	26 / C	>60 / A	26 / C	>60 / A	12 / B	>60 / A	26 / C	55 / B	26 / C	36 / C	12 / B	31 / C
	West (Beach)	26 / C	>60 / A	26 / C	>60 / A	12 / B	>60 / A	26 / C	51 / B	26 / C	36 / C	12 / B	35 / C
<b>Buchanan Street / Beach Street – Marina Boulevard</b>	North (driveway)	6 / A	>60 / A	6 / A	>60 / A	9 / A	57 / B	6 / A	>60 / A	6 / A	>60 / A	9 / A	36 / C
	South (Buchanan)	6 / A	>60 / A	6 / A	>60 / A	9 / A	>60 / A	6 / A	>60 / A	6 / A	>60 / A	9 / A	>60 / A
	East (Marina)	25 / C	>60 / A	25 / C	>60 / A	12 / B	>60 / A	25 / C	>60 / A	25 / C	42 / B	12 / B	43 / B

Notes:

**Bold** indicates pedestrian LOS beyond established threshold.



**TABLE 27. NEAR-TERM CONDITIONS—PEDESTRIAN LOS (WALKWAYS)**

Analysis Location and Day of Week	NEPA Baseline/No Action Alternative (Near-Term)			Action Alternatives (Near-Term)		
	Hourly Flow Volumes / LOS			Hourly Flow Volumes / LOS		
	Weekday a.m. Peak Hour	Weekday p.m. Peak Hour	Weekend Midday Peak Hour	Weekday a.m. Peak Hour	Weekday p.m. Peak Hour	Weekend Midday Peak Hour
<b>Pier 31½ Alternative - Embarcadero Promenade (between Bay and Chestnut streets); 18 foot walkway</b>						
Volume/LOS	834 / B	777 / B	1,711 / C	906 / B	876 / B	1,846 / C
<b>Pier 41 Alternative - Embarcadero Promenade (east of Taylor Street); 12 foot walkway</b>						
Volume/LOS	611 / C	817 / C	1,692 / D	1,247 / C	1,692 / D	<b>2,885 / E</b>
<b>Lower Fort Mason Alternatives (All)—Bay Trail west of Fort Mason Pier 4; 12 foot walkway</b>						
Volume/LOS	218 / A	241 / A	380 / C	854 / C	1,116 / C	1,573 / D

Note:

**Bold** indicates pedestrian LOS beyond established threshold.

## **Parking Facilities**

The proposed Project is expected to increase parking demand. Tables 28 and 29 present parking utilization with implementation of the Project for weekday and weekend conditions, respectively.

Both off-street and on-street parking demand near Pier 31½ is greater during the week than on the weekends. As described above, since implementation of the Project at this location represents a relatively modest increase in visitation over baseline conditions at the existing site, the change in parking utilization between the No Action/Baseline conditions and the Pier 31½ Alternative is slight when compared to other alternatives.

On weekdays, between 12:00 and 6:00 p.m., on-street parking utilization is expected to exceed the 95 percent utilization threshold under both the No Action and the Pier 31 Alternative. However, overall parking utilization in the area (including on- and off-street parking) would remain below the established threshold. This alternative is forecast to increase peak demand by less than ten parking spaces on weekdays and weekends at any given time between 9:00 a.m. and 6:00 p.m.

Although on-street parking in the area is expected to be fully utilized during the week, when on-street parking supply reaches capacity, drivers will seek out off-street facilities where parking vacancy is sufficient to support demand. Because the total parking supply is sufficient to meet project demand, the Project's impacts to parking are considered **less than significant**.

**TABLE 28. NEAR-TERM PARKING SUPPLY AND OCCUPANCY (WEEKDAY)**

Embarkation Site / Parking Area	Supply	NEPA Baseline/No Action Alternative (Near-Term)								Action Alternatives (Near-Term)							
		Occupancy				Parking Utilization				Occupancy				Parking Utilization			
		9-12	12-3	3-6	6-9	9-12	12-3	3-6	6-9	9-12	12-3	3-6	6-9	9-12	12-3	3-6	6-9
<b>Pier 31½</b>																	
Off-Street	1,126	674	748	613	296	60%	66%	54%	26%	681	755	620	299	60%	67%	55%	27%
On-Street	687	562	<b>707</b>	<b>651</b>	438	82%	<b>103%</b>	<b>95%</b>	64%	563	<b>708</b>	<b>652</b>	438	82%	<b>103%</b>	<b>95%</b>	64%
<b>Total</b>	1,813	1,236	1,455	1,264	734	68%	80%	70%	40%	1,244	1,463	1,272	737	69%	81%	70%	41%
<b>Pier 41 (Fisherman’s Wharf)</b>																	
Off-Street	3,325	1,025	1,730	1,713	1,195	31%	52%	52%	36%	1,146	1,851	1,834	1,243	34%	56%	55%	37%
On-Street	2,886	1,500	1,905	1,760	-	52%	66%	61%	-	1,532	1,937	1,792	-	53%	67%	62%	-
<b>Total</b>	6,211	2,525	3,632	3,473	-	41%	59%	56%	-	2,678	3,785	3,626	-	43%	61%	58%	-
<b>Lower Fort Mason – No F-Line or Shuttle</b>																	
Fort Mason Area	3,770	2,293	2,456	2,751	2,584	61%	65%	73%	69%	2,505	2,668	2,963	2,669	66%	71%	79%	71%
<b>Lower Fort Mason – F-Line</b>																	
Fort Mason Area	3,770	2,293	2,456	2,751	2,584	61%	65%	73%	69%	2,469	2,632	2,927	2,654	65%	70%	78%	70%
Other Area (Fisherman’s Wharf)	3,325	1,025	1,730	1,713	1,195	31%	52%	52%	36%	1,056	1,761	1,744	1,207	32%	53%	52%	36%
<b>Lower Fort Mason – Shuttle</b>																	
Fort Mason Area	3,770	2,293	2,456	2,751	2,584	61%	65%	73%	69%	2,431	2,594	2,889	2,639	64%	69%	77%	70%
Other Area (Fisherman’s Wharf)	3,325	1,025	1,730	1,713	1,195	31%	52%	52%	36%	1,113	1,818	1,801	1,230	33%	55%	54%	37%

Notes:  
**Bold** indicates parking utilization rate beyond established threshold.

**TABLE 29. NEAR-TERM PARKING SUPPLY AND OCCUPANCY (SATURDAY)**

Embarkation Site / Parking Area	Supply	NEPA Baseline/No Action Alternative (Near-Term)								Action Alternatives (Near-Term)							
		Occupancy				Parking Utilization				Occupancy				Parking Utilization			
		9-12	12-3	3-6	6-9	9-12	12-3	3-6	6-9	9-12	12-3	3-6	6-9	9-12	12-3	3-6	6-9
<b>Pier 31½</b>																	
Off-Street	1,126	307	536	678	501	27%	48%	60%	44%	314	543	685	504	28%	48%	61%	45%
On-Street	687	205	265	294	321	30%	39%	43%	47%	206	266	295	322	30%	39%	43%	47%
<b>Total</b>	1,813	512	801	972	822	28%	44%	54%	45%	520	809	980	825	29%	45%	54%	46%
<b>Pier 41 (Fisherman's Wharf)</b>																	
Off-Street	3,325	916	1,970	2,630	2,209	28%	59%	79%	66%	1,075	2,129	2,789	2,273	32%	64%	84%	68%
On-Street	2,886	1,732	2,597	2,597	-	60%	90%	90%	-	1,765	2,630	2,630	-	61%	91%	91%	-
<b>Total</b>	6,211	2,648	4,567	5,227	-	43%	74%	84%	-	2,840	4,759	5,419	-	46%	77%	87%	-
<b>Lower Fort Mason – No F Line or Shuttle</b>																	
Fort Mason Area	3,770	2,777	3,330	3,501	2,982	74%	88%	93%	79%	3,023	<b>3,576</b>	<b>3,747</b>	3,080	80%	<b>95%</b>	<b>99%</b>	82%
<b>Lower Fort Mason – F Line</b>																	
Fort Mason Area	3,770	2,777	3,330	3,501	2,982	74%	88%	93%	79%	2,956	3,509	<b>3,680</b>	3,053	78%	93%	<b>98%</b>	81%
Other Area (Fisherman's Wharf)	3,325	916	1,970	2,630	2,209	28%	59%	79%	66%	979	2,033	2,693	2,234	29%	61%	81%	67%
<b>Lower Fort Mason – Shuttle</b>																	
Fort Mason Area	3,770	2,777	3,330	3,501	2,982	74%	88%	93%	79%	2,934	3,487	<b>3,658</b>	3,045	78%	92%	<b>97%</b>	81%
Other Area (Fisherman's Wharf)	3,325	916	1,970	2,630	2,209	28%	59%	79%	66%	1,020	2,074	2,734	2,251	31%	62%	82%	68%

Notes:

**Bold** indicates parking utilization rate beyond established threshold.

## Construction

Detailed construction plans for the Pier 31½ Alternative have not yet been finalized. However, it is anticipated that the Pier 31½ Alternative would be similar to other recent construction activities along the northern San Francisco waterfront, including the Exploratorium at Pier 15, in terms of disruption levels and duration. Construction-related activities would generally occur Monday through Friday, between 7:00 a.m. and 4:00 p.m. Construction is not anticipated to regularly occur on weekends or major legal holidays, but may occur on an as-needed basis.

Construction staging would occur primarily within the Project site and on barges in the water adjacent to the Project site. Pedestrian circulation would be maintained along The Embarcadero throughout the construction process. The Park Service does not anticipate the need to close auto lanes or bicycle lanes on The Embarcadero, given the amount of staging area on the Project site. However, if a need does arise, the closure would likely be short-term. If traffic, bicycle, parking, or sidewalk closures are needed, they would be coordinated with the City in order to minimize the effects on local circulation. In general, lane and sidewalk closures are subject to review and approval by the Department of Public Works (DPW) and the SFMTA.

During construction, there would be a number of construction-related trucks into and out of the site. The trip distribution and mode split of construction workers are speculative to forecast. However, it is anticipated that the addition of the worker-related vehicle- or transit-trips would not substantially affect transportation conditions, as increases on local intersections or the transit network would be relatively small in relation to existing traffic levels and would be temporary in nature.

Construction workers who drive to the site would cause a temporary increase in parking demand and a decrease in supply. Construction workers would need to park either on-street or in parking facilities that currently have availability during the day. However, parking shortfalls would be temporary and would likely be similar to or lower than those associated with the Pier 31½ Alternative.

Under the Pier 31½ Alternative, this construction will occur simultaneously with and adjacent to operation of the existing embarkation facility, which may increase conflicts with pedestrians and visitors to the site. As noted above, detailed construction plans have not yet been prepared, but the Park Service will work to ensure that safe staging areas for visitors are provided and maintained at all times.

Therefore, the proposed Project's construction impacts were determined to be **less than significant**.

## PIER 41 ALTERNATIVE

### Intersection Traffic

**Near-Term Conditions.** Under the Pier 41 Alternative, traffic currently associated with the Pier 31½ site would shift to the Pier 41 site, in addition to anticipated growth in visitor levels. The same intersections would operate at unacceptable LOS E or F as under the No Action Alternative, except for the intersection of Sansome Street/Broadway.

Currently, the intersection of **Sansome Street/Broadway** operates at LOS E in the weekday a.m. peak hour. With the Pier 41 Alternative, traffic currently associated with the Pier 31½ site would

shift to Pier 41, reducing traffic volumes at this intersection such that it would improve to acceptable LOS D in the a.m. peak hour. This is considered a **beneficial impact** associated with the Pier 41 Alternative.

The Pier 41 Alternative would cause the all-way stop controlled intersection of **Webster Street/Marina Boulevard** to deteriorate from LOS D to LOS E in the a.m. peak hour. However, the volumes do not meet the peak hour traffic signal warrant criteria, and therefore, the impact would be considered **less than significant**.

The Pier 41 Alternative would not contribute considerably to other intersections already operating at unacceptable levels (i.e., increases to critical movements operating at LOS E or F at these intersections would be less than 5 percent), nor would it cause any intersections that would operate acceptably under the No Action Alternative to deteriorate to unacceptable levels. Therefore, traffic impacts at other locations would be **less than significant**.

**Long-Term Cumulative Conditions.** In the longer-term, traffic volumes are generally projected to increase over near-term conditions. Although the Pier 41 Alternative will contribute traffic to a number of intersections that are projected to operate at unacceptable LOS in the long-term No Action Alternative, the increases are not projected to be cumulatively considerable, with one exception.

However, the Pier 41 Alternative would cause the intersection of **Divisadero Street/Lombard Street** to deteriorate from acceptable LOS D in the p.m. peak hour to unacceptable LOS E. This would be considered a **significant impact**. (The intersection is projected to operate at unacceptable LOS E in the a.m. peak hour under the No Action and the Pier 41 Alternative).

Mitigation measures that generally increase auto capacity are typically in conflict with the City's Transit-First policy because of their negative effects to transit service and pedestrian and bicycle circulation, all of which are prioritized over auto circulation and capacity. Therefore, even if the Park Service had the ability to implement auto capacity enhancements to mitigate the Pier 41 Alternative's long-term impacts to the intersection of Divisadero Street/Lombard Street, those enhancements would likely be inconsistent with City policy, and are thus generally considered infeasible.

Instead, implementation of Mitigation Measure 1, as described above, would reduce the Pier 41 Alternative's auto mode share and could reduce the effect of auto traffic at this study intersection. However, its details and relative effectiveness are uncertain at this point, and the cumulative impacts are considered **significant**.

All other intersections are either projected to operate acceptably, or the Pier 41 Alternative is not projected to contribute cumulatively considerable volumes at these locations. Therefore, cumulative impacts to other intersection locations are considered **less than significant**.

The significant impact identified above is isolated to one study intersection and is not an indication of how the vehicular network would function as a whole. The heightened delay at the intersection may cause some inconvenience and may cause drivers to divert to a less congested route, using the street network more efficiently. It may also cause drivers to switch to other modes of transportation, such as transit. Overall, although significant in the context of a specific intersection, the impact of the Pier 41 Alternative under long-term cumulative conditions on overall vehicular network performance would be considered minor.

## Transit

**Near-Term Conditions.** In the a.m. peak hour under the Pier 41 Alternative, ridership on the North/South screenline in the inbound (i.e., toward Pier 41) direction would increase from 77 percent occupancy to 88 percent occupancy. This would be a **significant impact**.

Mitigation Measure 1, as described above, may reduce the transit impacts associated with the Pier 41 Alternative. However, the details of such a system require further coordination, planning, and outreach, and therefore, it cannot be guaranteed at this time. Therefore, the impact is considered to remain **significant**.

All other screenlines would operate within acceptable levels during the a.m. peak hour with the Pier 41 Alternative.

In the p.m. peak hour under the Pier 41 Alternative, the Waterfront screenline, in the outbound direction, would exceed the 85 percent capacity utilization standard under the No Action and the Pier 41 Alternative. The Pier 41 Alternative would reduce capacity utilization on this screenline by relocating some existing trips to Pier 3½ to Pier 41; however, the screenline would still exceed the 85 percent threshold. Because all other screenlines would operate within acceptable levels, and the Pier 41 Alternative would reduce ridership on the over-capacity Waterfront screenline, but not to within acceptable levels, the Pier 41 Alternative would have a **less than significant** impact on transit in the p.m. peak hour.

In the weekend midday peak hour, the Pier 41 Alternative would cause the Downtown screenline to exceed the City's capacity utilization threshold in both the inbound and outbound directions. This would be a **significant impact**.

Implementation of Mitigation Measure 1, as described above, would reduce the project's impact on transit service. However, the implementation details of Mitigation Measure 1 require further coordination, planning, and outreach, and therefore it cannot be guaranteed at this time. Therefore, this impact to the Downtown screenline in the weekend midday peak hour is considered to remain **significant**.

With the Pier 41 Alternative ridership on the Waterfront screenline would decrease in the inbound direction from an unacceptable 115 percent capacity utilization under the No Action Alternative to 105 percent capacity utilization. All other screenlines would operate within the 85 percent capacity utilization threshold. Because all other screenlines would operate within acceptable levels and the Pier 41 Alternative would reduce ridership on the over-capacity Waterfront screenline, but not to within acceptable levels, the Pier 41 would have a **less than significant** impact on the North/South and Waterfront screenlines in the weekend midday peak hour.

The significant impacts above were identified for one out of three transit screenlines, each in the a.m. peak hour and the weekend midday peak hour. In both cases, the transit screenlines would exceed the 85 percent threshold, but would operate below 100 percent capacity, indicating that, although it may be uncomfortable, adequate capacity does exist to physically accommodate all forecasted demand. Transit users inconvenienced by the crowding may accept less comfortable conditions, or shift to other options, including using alternate transit lines, walking, bicycling, or taxi. Therefore, because the Pier 41 Alternative would not cause any screenlines to exceed 100 percent capacity, the overall significant impact of the Pier 41 Alternative on transit under near-term conditions would be considered minor.

**Long-Term Cumulative Conditions.** In the long-term, the Pier 41 Alternative would cause the following screenlines that are projected to operate within the 85 percent capacity utilization threshold under the No Action Alternative to exceed the threshold:

- North/South Screenline (a.m. Peak Hour: Inbound Direction, p.m. Peak Hour: Inbound and Outbound Direction)
- Downtown Screenline (a.m. Peak Hour: Inbound Direction)

Further, the Pier 41 Alternative would increase ridership by more than one percent of the capacity of the following screenlines projected to operate above the 85 percent capacity utilization threshold under the No Action Alternative:

- Downtown Screenline (p.m. Peak Hour: Outbound Direction, Weekend Midday Peak Hour: Outbound Direction)

These would be considered cumulatively **significant impacts** associated with the Pier 41 Alternative.

As with the near-term transit impacts, implementation of Mitigation Measure 1, as described above, would reduce the Project's impact on transit service. However, the implementation details of Mitigation Measure 1 require further coordination, planning, and outreach, and therefore, it cannot be guaranteed at this time. Therefore, these impacts to the screenlines are considered to remain **significant**.

All other transit screenlines would operate acceptably within the 85 percent capacity utilization threshold or the Pier 41 Alternative would not contribute considerably to unacceptable operations and impacts to other screenlines would therefore be considered **less than significant**.

The significant impacts identified above would either cause some screenlines to exceed 100 percent of their capacity or substantially worsen crowding on screenlines projected to exceed 100 percent capacity utilization without the Project. This means that the impact would not just be a less comfortable ride, but riders would not physically be able to get on the desired transit lines and would be forced to either wait until a less crowded vehicle arrived (i.e., delay their trip) or switch modes. Therefore, the impact of the Pier 41 Alternative under long term cumulative transit conditions would be considered major.

## **Bicycle Facilities**

Under the Pier 41 Alternative, the relocation of the embarkation site from Pier 31½ to Pier 41 would increase the overall number of visitors to the Fisherman's Wharf area, which would increase bicycling. However, similar to the Pier 31½ Alternative, the Fisherman's Wharf area is relatively well-served by bicycle infrastructure. The Class II bicycle lane provided along the Embarcadero (as part of Route 5) currently terminates at North Point Street. However, the Class I portion of the Embarcadero, which also is part of the San Francisco Bay Trail, continues until Pier 41, providing a continuous Class I connection between this site and Downtown San Francisco. Relocating the embarkation facility from Pier 31½ to Pier 41 may increase conflicts between pedestrians and bicyclists in the vicinity of Pier 41; however, the area provides good bicycle infrastructure, and the impacts would be considered **less than significant**.



## Pedestrian Facilities

The area surrounding Pier 41 is a major tourist area of San Francisco, and thus, experiences very high pedestrian volumes. The Pier 41 Alternative is projected to add up to 1,509 pedestrians to study area intersections during the weekday p.m. peak hour, which is the analysis period that experiences the greatest pedestrian demand. It is likely that some of the Project pedestrian traffic will use crosswalks at the intersections of Taylor Street/Jefferson Street and Powell Street/Jefferson Street to travel to and from the embarkation site. Project pedestrian trips were assigned to crosswalks based on local knowledge, area land uses, and other transportation facilities (e.g., transit, parking facilities, etc.).

As shown in Table 26, the addition of Project trips to study crosswalks would degrade conditions at four locations to an unacceptable level:

- Taylor Street/Jefferson Street (north crosswalk, crossing Jefferson Street)—weekend midday peak hour (LOS E)
- Powell Street/Jefferson Street (north crosswalk, crossing Embarcadero)—weekday p.m. peak hour (LOS E) and weekend midday peak hour (LOS F)
- Powell Street/Jefferson Street (east crosswalk, crossing Embarcadero) – weekend midday peak hour (LOS E)
- Powell Street/Jefferson Street (west crosswalk, crossing Jefferson) – weekend midday peak hour (LOS E)

The project’s increases in pedestrian traffic at these crossing locations would be considered a **significant impact**.

**Mitigation Measure 2.** The Park Service should work with the City of San Francisco to identify and fund pedestrian capacity and safety improvements for the intersections of Taylor Street/Jefferson Street and Powell Street/Jefferson Street to improve pedestrian conditions in the area. Because these improvements would need to be constructed in cooperation with the City of San Francisco DPW and SFMTA, their implementation cannot be guaranteed. Thus, the feasibility of this mitigation measure is uncertain, and the impacts would be considered **significant**.

As shown in Table 27, the Pier 41 Alternative would also create congestion along the Embarcadero Promenade, just east of Taylor Street in front of the proposed embarkation facility associated with visitor arrivals and departures, as well as queuing. Specifically, these increases would degrade the promenade from LOS D during the weekend midday peak hour to LOS E. This is a **significant impact**.

**Mitigation Measure 3.** The final design for the Pier 41 Alternative would include dedicated queuing areas for arriving visitors and clear wayfinding signage so that visitors do not linger in the middle of the promenade, blocking access and circulation for other pedestrians. While these measures will decrease the conflicts with other pedestrians, it is uncertain whether they will be fully effective in improving LOS to acceptable levels, and therefore, the impact would be considered **significant**.

The weekend midday peak hour has the highest impact, with three crosswalks impacted at the same intersection. The pedestrian network as a whole would likely still perform reasonably well despite the Project impact. Further, given that the embarkation facility operated at Pier 41 for many years, conditions would not likely be substantially worse than was previously the case. Pedestrians inconvenienced by the crowding may shift to the crossing at other intersections,

including the other study intersection which has excess capacity. Therefore, the impact of the Pier 41 Alternative on the pedestrian network as a whole would be considered minor.

### **Parking Facilities**

Both off-street and on-street parking demand near Pier 41 is greater on the weekend than during the week except for off-street facilities during the 9:00 a.m. to 12:00 p.m. time period. As presented in the With Project Travel Demand Section, this alternative is forecast to require up to 153 and 192 parking spaces on weekdays and weekends, respectively. Off-street, on-street, and the combined total parking supply are expected to be sufficient to support Project demand during all analysis periods. This alternative would also reduce the parking demand in the area surrounding Pier 31½. Overall, the Pier 41 Alternative would have a **less than significant** impact on parking.

### **Construction**

Detailed construction plans for the Pier 41 Alternative have not yet been finalized. However, similar to the Pier 31½ Alternative, it is anticipated that the Pier 41 Alternative would be similar to other recent construction activities along the northern San Francisco waterfront, including the Exploratorium at Pier 15, in terms of disruption levels and duration. Construction related activities would generally occur Monday through Friday, between 7:00 a.m. and 4:00 p.m. Construction is not anticipated to regularly occur on weekends or major legal holidays, but may occur on an as-needed basis.

Construction staging would occur primarily within the Project site and on barges in the water adjacent to the Project site. Pedestrian circulation would be maintained along The Embarcadero throughout the construction process. The Park Service does not anticipate the need to close auto lanes or bicycle lanes on The Embarcadero, given the amount of staging area on the Project site. However, if a need does arise, the closure would likely be short-term. If traffic, bicycle, parking, or sidewalk closures are needed, they would be coordinated with the City in order to minimize the effects on local circulation. In general, lane and sidewalk closures are subject to review and approval by the DPW and the SFMTA.

During construction, there would be a number of construction-related trucks into and out of the site. The trip distribution and mode split of construction workers are speculative to forecast. However, it is anticipated that the addition of the worker-related vehicle- or transit-trips would not substantially affect transportation conditions, as increases on local intersections or the transit network would be relatively small in relation to existing traffic levels and would be temporary in nature.

Construction workers who drive to the site would cause a temporary increase in parking demand and a decrease in supply. Construction workers would need to park either on-street or in parking facilities that currently have availability during the day. However, parking shortfalls would be temporary and would likely be substantially less than those associated with buildout of the Pier 41 Alternative.

Under the Pier 41 Alternative, this construction would occur simultaneously with and adjacent to a major tourism area with very high levels of pedestrians and bicycles, which may increase conflicts with pedestrians and visitors to the site. As noted above, detailed construction plans

have not yet been prepared, but the Park Service will work to ensure that safe staging areas for visitors are provided and maintained at all times.

Therefore, the proposed Project's construction impacts were determined to be **less than significant**.

## **LOWER FORT MASON ALTERNATIVE - NO F-MARKET LINE EXTENSION OR SHUTTLE SCENARIO**

### **Intersection Traffic**

**Near Term Conditions.** Three different scenarios were evaluated for the Lower Fort Mason Alternative. The first scenario essentially retains the current transportation system in the area. Under the Lower Fort Mason Alternative with no F-Market Extension, traffic currently associated with the Pier 31½ site would shift to the Lower Fort Mason site, in addition to anticipated growth in visitor levels. The same intersections would operate at unacceptable LOS E or F as under the No Action Alternative, with two exceptions.

Currently, the intersection of **Kearny Street/The Embarcadero/North Point Street** operates at LOS F in the weekday p.m. and weekend midday peak hours. With any of the Lower Fort Mason Alternatives, traffic currently associated with the Pier 31½ site would shift to the Lower Fort Mason area, reducing traffic volumes at this intersection such that it would continue to operate at LOS F in the weekend midday peak hour but would improve from LOS F to LOS E in the weekday p.m. peak hour. This is considered a **beneficial impact** associated with the Lower Fort Mason Alternative - No F-Market Line Extension or Shuttle Scenario.

In addition, currently, the intersection of **Sansome Street/Broadway** operates at LOS E in the weekday a.m. peak hour. With the Lower Fort Mason Alternative - No F-Market Line Extension or Shuttle Scenario, traffic currently associated with the Pier 31½ site would shift to Lower Fort Mason, reducing traffic volumes at this intersection such that it would improve to acceptable LOS D in the a.m. peak hour. This is considered a **beneficial impact** associated with the Lower Fort Mason Alternative - No F-Market Line Extension or Shuttle Scenario.

The Lower Fort Mason Alternative - No F-Market Line Extension or Shuttle Scenario would cause the all-way stop controlled intersection of **Webster Street/Marina Boulevard** to deteriorate from LOS D to LOS E in the a.m. peak hour. However, the volumes do not meet the peak hour traffic signal warrant criteria, and therefore, the impact would be considered **less than significant**.

The Lower Fort Mason Alternative - No F-Market Line Extension or Shuttle Scenario would not contribute considerably to other intersections already operating at unacceptable levels (i.e., increases to critical movements operating at LOS E or F at these intersections would be less than five percent), nor would it cause any intersections that would operate acceptably under the No Action Alternative to deteriorate to unacceptable levels. Therefore, traffic impacts at other locations would be **less than significant**.

**Long-Term Cumulative Conditions.** In the longer-term, traffic volumes are generally projected to increase over near-term conditions. Although the Lower Fort Mason Alternative - No F-Market Line Extension or Shuttle Scenario will contribute traffic to a number of intersections that are projected to operate at unacceptable LOS in the long-term No Action Alternative, the increases are not projected to be cumulatively considerable, with one exception.

However, the Lower Fort Mason Alternative - No F-Market Line Extension or Shuttle Scenario would contribute a considerable volume to critical movements operating at unacceptable LOS at the intersection of **Laguna Street/Bay Street**, which is projected to operate at unacceptable LOS F under the No Action and Lower Fort Mason - No F-Market Line Extension or Shuttle Scenario alternatives.

Mitigation measures that generally increase auto capacity are typically in conflict with the City's Transit-First policy because of their negative effects to transit service and pedestrian and bicycle circulation, all of which are prioritized over auto circulation and capacity. Therefore, even if the Park Service had the ability to implement auto capacity enhancements to mitigate the Lower Fort Mason Alternative - No F-Market Line Extension or Shuttle Scenario long-term impacts to the intersection of Laguna Street/Bay Street, those enhancements would likely be inconsistent with City policy, and are thus generally considered infeasible.

Instead, implementation of Mitigation Measure 1, as described above, would reduce the Lower Fort Mason Alternative - No F-Market Line Extension or Shuttle Scenario auto mode share and could reduce the effect of auto traffic at this study intersection. However, its details and relative effectiveness are uncertain at this point and the cumulative impacts are considered **significant**.

All other intersections are either projected to operate acceptably or the Lower Fort Mason Alternative - No F-Market Line Extension or Shuttle Scenario is not projected to contribute cumulatively considerable volumes at these locations. Therefore, cumulative impacts to other intersection locations are considered **less than significant**.

The significant impact identified above is isolated to one study intersection. The vehicular network would not be drastically affected by the Project, as a whole. Additionally, on a regional scale, the significant impact is somewhat offset by the beneficial impacts at other locations, and reflects the fact that congestion would be shifted from near the current embarkation facility to the Fort Mason area. The heightened delay at the intersection may cause some inconvenience and cause drivers to divert to a less congested route, using the street network more efficiently. It may also cause drivers to switch to other modes of transportation. Overall, the impact of the Lower Fort Mason Alternative - No F-Market Line Extension or Shuttle Scenario under long term cumulative conditions on overall vehicular network performance would be considered minor.

## **Transit**

**Near Term Conditions.** Under the Lower Fort Mason Alternative - No F-Market Line Extension or Shuttle Scenario, all transit lines would operate within the City's capacity utilization threshold during all study periods. Therefore, this alternative would have a **less than significant** impact on transit capacity utilization.

**Long-Term Cumulative Conditions.** In the long-term, the Lower Fort Mason Alternative - No F-Market Line Extension or Shuttle Scenario would cause the following screenlines that are projected to operate within the 85 percent capacity utilization threshold under the No Action Alternative to exceed the threshold:

- West Screenline (p.m. Peak Hour: Outbound Direction)

Further, the Lower Fort Mason Alternative - No F-Market Line Extension or Shuttle Scenario would increase ridership by more than one percent of the capacity of the following screenlines

projected to operate above the 85 percent capacity utilization threshold under the No Action Alternative:

- North/South Screenline (a.m. Peak Hour: Inbound Direction, p.m. Peak Hour: Inbound and Outbound Direction, Weekend Midday Peak Hour: Outbound Direction)

As with the near-term transit impacts, implementation of Mitigation Measure 1, as described above, would reduce the Project's impact on transit service. However, the implementation details of Mitigation Measure 1 require further coordination, planning, and outreach, and therefore it cannot be guaranteed at this time. Therefore, these impacts to the transit screenlines are considered to remain **significant**.

All other transit screenlines would operate acceptably within the 85 percent capacity utilization threshold or the Lower Fort Mason Alternative - No F-Market Line Extension or Shuttle Scenario would not contribute considerably to unacceptable operations and impacts to other screenlines would therefore be considered **less than significant**.

The impacts identified above contribute significant ridership to capacity utilization of two of three screenlines in the p.m. peak period. Specifically, this alternative would either cause some screenlines to exceed 100 percent capacity utilization or would substantially increase capacity utilization on screenlines projected to operate above 100 percent utilization without the Project, meaning that riders would either have to wait for a less-crowded vehicle (i.e., delay their trip) or switch to other modes. Therefore, the impact of the Lower Fort Mason Alternative - No F-Market Line Extension or Shuttle Scenario under long term cumulative conditions would be considered major.

### **Bicycle Facilities**

Under the Lower Fort Mason alternatives, the relocation of the embarkation site from Pier 31½ to Lower Fort Mason would increase the number of visitors bicycling to Lower Fort Mason compared to existing conditions. There is relatively good bicycle infrastructure in the area, as the Bay Trail travels on McDowell Avenue (which is closed to cars except for emergency vehicles) through Upper Fort Mason, touching down at the intersection of Beach Street and Laguna Avenue, near the entrance to Lower Fort Mason.

As noted earlier, there are currently a considerable number of bicyclists traveling through this area, making a popular loop from Fisherman's Wharf, along the waterfront to the Golden Gate Bridge, and across the bridge to Sausalito, returning to San Francisco via ferry. This high volume of cyclists has created some substantial conflicts at the intersection of Beach Street and Laguna Avenue, where cyclists and pedestrians converge in a relatively small, 7-foot landing area. The combination of large volumes of people waiting in a relatively small space and bicycles traveling downhill at generally higher speeds, creates the potential for increased collisions as well as a generally uncomfortable experience for all users. Relocating the Alcatraz Embarkation Facility to Lower Fort Mason would likely increase the number of cyclists and pedestrians at this location, which may be a hazard. This would be considered a **significant impact**.

**Mitigation Measure 4.** Improvements to the bicycle and pedestrian facilities at the intersection of Laguna Street/Beach Street should be incorporated as part of the final design for the Lower Fort Mason Alternative to increase space for cyclists and pedestrians at this congested location. However, these improvements would likely need to be constructed in cooperation with the City

of San Francisco DPW and SFMTA, and thus, their implementation cannot be guaranteed. Thus, the feasibility of this mitigation measure is uncertain and the impacts would be considered **significant**.

The impact identified above on bicycling conditions is isolated to one intersection. This location is not representative of the Bay Trail within San Francisco or the San Francisco bicycle network as a whole. Although this alternative would increase usage of this facility, the site represents an existing deficiency, and not a substantial change to bicycle safety in the Lower Fort Mason area as a whole. Therefore, because this alternative would be increasing usage at an existing deficiency and not creating a new safety problem, the impact of the Lower Fort Mason Alternative - No F-Market Line Extension or Shuttle Scenario would be considered moderate.

### **Pedestrian Facilities**

The Lower Fort Mason Alternative - No F-Market Line Extension or Shuttle Scenario is projected to add up to 1,490 pedestrians to study area intersections during the weekday p.m. peak hour, which is the analysis period that experiences the greatest pedestrian demand. It is likely that some of the Project pedestrian traffic will use crosswalks at the intersections of Laguna Street/Beach Street and Buchanan Street/Beach Street–Marina Boulevard to travel to and from the embarkation site. Project pedestrian trips were conservatively assigned to crosswalks based on local knowledge, area land uses, and other transportation facilities (e.g., transit, parking facilities, etc.). As shown in Table 26, the addition of Project trips to study crosswalks does not degrade conditions to an unacceptable level.

As shown in Table 27, this alternative is estimated to increase pedestrian volumes the Bay Trail near Pier 4 during the weekend mid-day peak hour, which is the most congested analysis period. However, even with the additional pedestrian trips, the walkway operates at an acceptable LOS.

Therefore, the Lower Fort Mason Alternative - No F-Market Line Extension or Shuttle Scenario is expected to have a **less than significant** impact.

### **Parking Facilities**

Both off-street and on-street parking demand near Fort Mason is generally greater on the weekend than during the week. As presented in the With Project Travel Demand Section, this alternative is forecast to require up to 212 and 246 parking spaces on weekdays and weekends, respectively.

The Fort Mason area parking supply consists of multiple parking types and areas: SFMTA-managed public off-street parking garages (approximately 320 spaces); on-street unmetered parking (approximately 1,990 spaces); off-street surface parking lots at Marina Green (approximately 670 spaces); off-street surface parking lot at Lower Fort Mason (approximately 440 spaces); and, off-street surface parking lots at Upper Fort Mason (approximately 350 spaces). The existing conditions analysis concluded that individual parking facilities are already heavily used on weekends. Specifically, the Lower Fort Mason parking lot is more than 100 percent occupied between 12:00 and 6:00 p.m., Upper Fort Mason is more than 100 percent occupied between 3:00 and 6:00 p.m., and on-street parking is near or at 95 percent utilization between 12:00 and 9:00 p.m. In contrast, the surface lot in Marina Green is less utilized and is likely the location where Project-related vehicles would find parking, unless restrictions are enacted to control the type of parking at the lot.

However, with the implementation of the Lower Fort Mason Alternative - No F-Market Line Extension or Shuttle Scenario, overall parking utilization in the area is expected to exceed the threshold (95 percent utilization) during the following two analysis periods: weekend 12:00 to 3:00 p.m. and weekend 3:00 to 6:00 p.m. The total parking supply in the Fort Mason area is insufficient to meet project demand and still achieve parking utilization below 95 percent; therefore, the Lower Fort Mason Alternative - No F-Market Line Extension or Shuttle Scenario would result in a **significant impact** to parking supply.

**Mitigation Measure 5.** Implementation of a transit connection between Fisherman's Wharf and Lower Fort Mason would reduce the number of vehicles attempting to park in the Fort Mason area by providing an incentive to use transit, as well as taking advantage of large parking structures near the Fisherman's Wharf area. The transit connection could either be in the form of extension of the F-Market & Wharves historic streetcar line or through an independent shuttle. The shuttle would generally operate at approximately the same service hours as ferry service to or from Alcatraz (approximately between 8:30 a.m. and 9:30 p.m. during peak seasons, with shorter hours during off-peak seasons). Preliminary analysis suggests that the shuttle would cost, on average, \$1.1 million per year, or less than \$1 per Alcatraz visitor, if the cost were added to the cost of a ticket. Both the shuttle and F-Market & Wharves extension options are analyzed as Project alternatives in the subsequent sections. Implementation of either of these transit connection options would reduce the project's contribution to parking demand, and parking demand would return to within acceptable levels during the weekend midday period between 12:00 and 3:00 p.m. Parking supply during the 3:00 to 6:00 p.m. period would remain above acceptable levels, although it would be lower than conditions without this mitigation measure. Because the overall parking demand would remain above 95 percent of supply for at least part of the weekend peak period, the impact would remain **significant**.

Additional mitigation measures, such as constructing new parking facilities would be inconsistent with the City of San Francisco's Transit-First Policy, as well as potentially inconsistent with the Park Service's goals regarding encouraging multi-modal access to park sites, and were therefore not considered feasible.

Since the significant impact identified above was analyzed for the entire area parking supply, it would be difficult for drivers to find reasonable parking alternatives in the entire area. Therefore, the impact of the Lower Fort Mason Alternative - No F-Market Line Extension or Shuttle Scenario would be considered major.

## **Construction**

Detailed construction plans for the Lower Fort Mason Alternative - No F-Market Line Extension or Shuttle Scenario have not yet been finalized. However, it is anticipated that the Lower Fort Mason Alternative - No F-Market Line Extension or Shuttle Scenario would be similar to other recent construction activities along the northern San Francisco waterfront, including the Exploratorium at Pier 15, in terms of disruption levels and duration. Construction related activities would generally occur Monday through Friday, between 7:00 a.m. and 4:00 p.m. Construction is not anticipated to regularly occur on weekends or major legal holidays, but may occur on an as-needed basis.

Construction staging would primarily occur within the Lower Fort Mason area and on barges in the water adjacent to the Project site. Pedestrian circulation would be largely unaffected. The Park Service does not anticipate the need to close auto lanes, sidewalks, or bicycle lanes on public right of way given the amount of staging area within Lower Fort Mason. However, if a need does

arise, the closure would likely be short-term. If traffic, bicycle, parking, or sidewalk closures are needed, they would be coordinated with the City in order to minimize the effects on local circulation. In general, lane and sidewalk closures are subject to review and approval by the DPW and the SFMTA.

During construction, there would be a number of construction-related trucks into and out of the site. The trip distribution and mode split of construction workers are speculative to forecast. However, it is anticipated that the addition of the worker-related vehicle- or transit-trips would not substantially affect transportation conditions, as increases on local intersections or the transit network would be relatively small in relation to existing traffic levels and would be temporary in nature.

Construction workers who drive to the site would cause a temporary increase in parking demand and a decrease in supply. Construction workers would need to park either on-street or in parking facilities that currently have availability during the day. However, parking shortfalls would be temporary and would likely be substantially less than those associated with buildout of the Lower Fort Mason Alternative - No F-Market Line Extension or Shuttle Scenario.

Therefore, the proposed Project's construction impacts were determined to be **less than significant**.

## **LOWER FORT MASON ALTERNATIVE - F-MARKET LINE EXTENSION ONLY SCENARIO**

The second potential scenario for the Lower Fort Mason Alternative - F-Market Line Extension Only Scenario would involve relocating the embarkation facility to Lower Fort Mason and extending the F-Market & Wharves historic streetcar line into Fort Mason.

### **Intersection Traffic**

**Near-Term Conditions.** Traffic conditions under the Lower Fort Mason Alternative - F-Market Line Extension Only Scenario would be similar to the Lower Fort Mason Alternative - No F-Market Line Extension or Shuttle Scenario. Specifically, this alternative would have a **beneficial impact** at the intersections of **Kearny Street/The Embarcadero/North Point Street** in the weekday p.m. and weekend midday peak hours and the intersection of **Sansome Street/Broadway** in the weekday a.m. peak hour.

The Lower Fort Mason Alternative - F-Market Line Extension Only Scenario would cause the all-way stop controlled intersection of **Webster Street/Marina Boulevard** to deteriorate from LOS D to LOS E in the a.m. peak hour. However, the volumes do not meet the peak hour traffic signal warrant criteria and therefore the impact would be considered **less than significant**.

The Lower Fort Mason Alternative - F-Market Line Extension Only Scenario would not contribute considerably to other intersections already operating at unacceptable levels (i.e., increases to critical movements operating at LOS E or F at these intersections would be less than 5 percent), nor would it cause any intersections that would operate acceptably under the No Action Alternative to deteriorate to unacceptable levels. Therefore, traffic impacts at other locations would be **less than significant**.



**Long Term Cumulative Conditions.** Long-term traffic conditions under the Lower Fort Mason Alternative - F-Market Line Extension Only Scenario would be similar to the Lower Fort Mason Alternative - No F-Market Line Extension or Shuttle Scenario. Specifically, this alternative would have a **significant impact** at the intersection of **Laguna Street/Bay Street** in the weekday p.m. peak hour.

As described for the Lower Fort Mason Alternative - F-Market Line Extension Only Scenario, mitigation measures that generally increase auto capacity are typically in conflict with the City's Transit-First policy because of their negative effects to transit service, pedestrian, and bicycle circulation, all of which are prioritized over auto circulation and capacity. Therefore, even if the Park Service had the ability to implement auto capacity enhancements to mitigate the Lower Fort Mason Alternative - F-Market Line Extension Only Scenario long-term impacts to the intersection of Laguna Street/Bay Street, those enhancements would likely be inconsistent with City policy, and are thus generally considered infeasible.

Instead, implementation of Mitigation Measure 1, as described above, would reduce the Lower Fort Mason Alternative - F-Market Line Extension Only Scenario auto mode share and could reduce the effect of auto traffic at this study intersection. However, its details and relative effectiveness are uncertain at this point, and the cumulative impacts are considered **significant**.

The Lower Fort Mason Alternative - F-Market Line Extension Only Scenario would not contribute considerably to other intersections already operating at unacceptable levels (i.e., increases to critical movements operating at LOS E or F at these intersections would be less than five percent), nor would it cause any intersections that would operate acceptably under the No Action Alternative to deteriorate to unacceptable levels. Therefore, long-term cumulative traffic impacts at other locations would be **less than significant**.

The significant impact identified above is isolated to one study intersection. The vehicular network would not be drastically affected by the project, as a whole. Additionally, on a regional scale, the significant impact is somewhat offset by the beneficial impacts at other locations, and reflects the fact that congestion would be shifted from near the current embarkation facility to the Fort Mason area. The heightened delay at the intersection may cause some inconvenience and may cause drivers to divert to a less congested route, using the street network more efficiently. It may also cause drivers to switch to other modes of transportation. Overall, the impact of the Lower Fort Mason Alternative - No F-Market Line Extension or Shuttle Scenario under long term cumulative conditions on overall vehicular network performance would be considered minor.

## **Transit Impacts**

**Near Term Conditions.** Under the Lower Fort Mason Alternative - F-Market Line Extension Only Scenario, all screenlines would operate within the utilization threshold in the weekday a.m. and p.m. peak hours. Therefore, the Lower Fort Mason Alternative - F-Market Line Extension Only Scenario would have a **less than significant impact** to transit service during the weekday a.m. and p.m. peak hours.

The East Screenline would exceed the City's capacity utilization threshold during the weekend midday peak hour. The proposed Project would exacerbate crowding on this screenline, which would be a **significant impact**.

Implementation of Mitigation Measure 1, as described above, would reduce the project's impact on transit service. However, the implementation details of Mitigation Measure 1 require further coordination, planning, and outreach, and therefore, it cannot be guaranteed at this time. Therefore, this impact is considered to remain **significant**.

The significant impact identified above is isolated to just one transit screenline out of three that serve the Project site for the p.m. peak period. The transit network as a whole operates with excess capacity and still performs well to serve the site despite the Project impact. Transit users inconvenienced by the crowding may shift to other options, including using alternate transit lines, walking, bicycling, or taxi. Therefore, under near term conditions, the impact of the Lower Fort Mason Alternative - F-Market Line Extension Only Scenario on transit as a whole would be considered minor.

**Long Term Conditions.** In the long-term, the Lower Fort Mason Alternative - F-Market Line Extension Only Scenario would cause the following screenlines that are projected to operate within the 85 percent capacity utilization threshold under the No Action Alternative to exceed the threshold:

- North/South Screenline (Weekend Midday Peak Hour: Inbound Direction)
- West Screenline (p.m. Peak Hour: Outbound Direction)

Further, the Lower Fort Mason Alternative - F-Market Line Extension Only Scenario would increase ridership by more than one percent of the capacity of the following screenlines projected to operate above the 85 percent capacity utilization threshold under the No Action Alternative:

- North/South Screenline (a.m. Peak Hour: Inbound Direction, p.m. Peak Hour: Inbound and Outbound Direction, Weekend Midday Peak Hour: Outbound Direction)
- East Screenline (p.m. Peak Hour: Inbound Direction)

These would be considered cumulatively **significant impacts** associated with the Lower Fort Mason Alternative - F-Market Line Extension Only Scenario.

As with the near-term transit impacts, implementation of Mitigation Measure 1, as described above, would reduce the project's impact on transit service. However, the implementation details of Mitigation Measure 1 require further coordination, planning, and outreach, and therefore it cannot be guaranteed at this time. Therefore, these impacts to the transit screenlines are considered to remain **significant**.

All other transit screenlines would operate acceptably within the 85 percent capacity utilization threshold or the Lower Fort Mason Alternative - No F-Market Line Extension or Shuttle Scenario would not contribute considerably to unacceptable operations and impacts to other screenlines would therefore be considered **less than significant**.

The impacts identified above contribute significant ridership to capacity utilization of two of three screenlines in the p.m. peak period. Specifically, this alternative would either cause some screenlines to exceed 100 percent capacity utilization or would substantially increase capacity utilization on screenlines projected to operate above 100 percent utilization without the Project, meaning that riders would either have to wait for a less-crowded vehicle (i.e., delay their trip) or would have to switch to other modes. Therefore, the impact of the Lower Fort Mason Alternative - F-Market Line Extension Only Scenario under long term cumulative conditions would be considered major.

## **Bicycle Facilities**

Impacts to bicycle circulation as a result of the Lower Fort Mason Alternative - F-Market Line Extension Only Scenario would be similar to those associated with the No F-Market Line Extension or Shuttle scenarios. Mitigation Measure 4 would still be required, but because its implementation cannot be guaranteed, the impacts to bicycle circulation would be considered **significant**.

The impact identified above on bicycling conditions is isolated to one intersection. This location is not representative of the Bay Trail within San Francisco or the San Francisco bicycle network as a whole. Although this alternative would increase usage of this facility, the site represents an existing deficiency, and not a substantial change to bicycle safety in the Lower Fort Mason area as a whole. Therefore, because this alternative would be increasing usage at an existing deficiency and not creating a new safety problem, the impact of the Lower Fort Mason Alternative - F-Market Line Extension Only Scenario would be considered moderate.

## **Pedestrian Facilities**

The Lower Fort Mason Alternative - F-Market Line Extension Only Scenario is projected to add up to 1,035 pedestrians (approximately 30 percent fewer than the No F-Line or Shuttle scenario) to study area intersections during the weekday p.m. peak hour, which is the analysis period that experiences the greatest pedestrian demand. The reason this alternative generates fewer pedestrian trips is because the extension of the F-Market & Wharves streetcar line brings visitors into the project site without them having to cross any study intersections near the site.

For those pedestrians that do travel to the site, it is likely that some of the Project pedestrian traffic will use crosswalks at the intersections of Laguna Street/Beach Street and Buchanan Street/Beach Street–Marina Boulevard to travel to and from the embarkation site. Project pedestrian trips were assigned to crosswalks based on local knowledge, area land uses, and other transportation facilities (e.g., transit, parking facilities, etc.). The addition of Project trips to study crosswalks does not degrade conditions to an unacceptable level.

This alternative is also projected to add new pedestrian trips to the Bay Trail near Pier 4 during the weekend mid-day peak hour, which is the most congested analysis period. However, even with the additional pedestrian trips, the walkway operates at an acceptable LOS.

Therefore, this alternative's impacts to pedestrian circulation are considered **less than significant**.

## **Parking Facilities**

Both off-street and on-street parking demand near Fort Mason is generally greater on the weekend than during the week. Compared to the Lower Fort Mason Alternative - No F-Market Line Extension or Shuttle Scenario, parking demand in the Fort Mason area is reduced under the Lower Fort Mason Alternative - F-Market Line Extension Only Scenario by providing a direct transit connection, in this case, the F-Line extension, between Fort Mason and Fisherman's Wharf. This alternative assumes that some vehicles will park near Fisherman's Wharf and use the F-Line to access the Project at Lower Fort Mason. Although this alternative is an improvement over the Lower Fort Mason Alternative - No F-Market Line Extension or Shuttle Scenario, parking utilization is still expected to exceed the threshold (95 percent utilization) during the

weekend 3:00 to 6:00 p.m. analysis period. The total parking supply in the Fort Mason area is insufficient to meet project demand and still achieve parking utilization below 95 percent; therefore, the Lower Fort Mason Alternative - F-Market Line Extension Only Scenario results in a **significant impact** to parking in the Lower Fort Mason area. The total parking supply proximate to Fisherman's Wharf is sufficient to meet project demand associated with this alternative.

As discussed earlier, no feasible mitigation measures were identified to reduce the effect of increased parking on the Lower Fort Mason area under conditions with the F-Line. Therefore the impacts are considered **significant**.

Since the significant impact identified above was analyzed for the entire area parking supply, it would be difficult for drivers to find reasonable parking alternatives throughout the area. Therefore, the impact of the Lower Fort Mason Alternative - F-Market Line Extension Only Scenario would be considered major.

### **Construction Impacts**

Construction impacts associated with the Lower Fort Mason Alternative - F-Market Line Extension Only Scenario would be nearly identical to the Lower Fort Mason Alternative - No F-Market Line or Shuttle Scenario. The primary difference would be the construction effects of the extension of the F-Market line extension itself; however that project has already been approved as a separate project and the environmental impacts associated with its construction have already been identified, and are not directly associated with this alternative. The construction impacts associated with this alternative are considered **less than significant**.

### **LOWER FORT MASON ALTERNATIVE (SHUTTLE ONLY)**

The third potential scenario for the Lower Fort Mason Alternative would involve relocating the embarkation facility to Lower Fort Mason and instead of (or prior to) extending the F-Market & Wharves historic streetcar line into Fort Mason, operating a dedicated shuttle service between Fisherman's Wharf and Lower Fort Mason. This would encourage drivers to park in the larger parking garages near Fisherman's Wharf and use the shuttle to access Lower Fort Mason.

### **Intersection Traffic**

**Near-Term Conditions.** Traffic conditions under the Lower Fort Mason Alternative - Shuttle Only Scenario would be similar to the Lower Fort Mason Alternative - No F-Market Line Extension or Shuttle Scenario. Specifically, this alternative would have a **beneficial impact** at the intersections of **Kearny Street/The Embarcadero/North Point Street** in the weekday p.m. and weekend midday peak hours and the intersection of **Sansome Street/Broadway** in the weekday a.m. peak hour.

The Lower Fort Mason Alternative - Shuttle Only Scenario would cause the all-way stop controlled intersection of **Webster Street/Marina Boulevard** to deteriorate from LOS D to LOS E in the a.m. peak hour. However, the volumes do not meet the peak hour traffic signal warrant criteria and therefore the impact would be considered **less than significant**.

The Lower Fort Mason Alternative - Shuttle Only Scenario would not contribute considerably to other intersections already operating at unacceptable levels (i.e., increases to critical movements operating at LOS E or F at these intersections would be less than five percent), nor would it cause any intersections that would operate acceptably under the No Action Alternative to deteriorate to unacceptable levels. Therefore, traffic impacts at other locations would be **less than significant**.

**Long Term Cumulative Conditions.** Long-term traffic conditions under the Lower Fort Mason Alternative - Shuttle Only Scenario would be similar to the Lower Fort Mason Alternative - No F-Market Line Extension or Shuttle Scenario. Specifically, this Alternative would have a **significant impact** at the intersection of **Laguna Street/Bay Street** in the weekday p.m. peak hour.

As described for the Lower Fort Mason Alternative - No F-Market Line Extension or Shuttle Scenario, mitigation measures that generally increase auto capacity are typically in conflict with the City's Transit-First policy because of their negative effects to transit service and pedestrian and bicycle circulation, all of which are prioritized over auto circulation and capacity. Therefore, even if the Park Service had the ability to implement auto capacity enhancements to mitigate the Lower Fort Mason Alternative - Shuttle Only Scenario long-term impacts to the intersection of Laguna Street/Bay Street, those enhancements would likely be inconsistent with City of San Francisco policy, and are thus generally considered infeasible.

Instead, implementation of Mitigation Measure 1, as described above, would reduce the Lower Fort Mason Alternative - Shuttle Only Scenario auto mode share and could reduce the effect of auto traffic at this study intersection. However, its details and relative effectiveness are uncertain at this point, and the cumulative impacts are considered **significant**.

The Lower Fort Mason Alternative - Shuttle Only Scenario would not contribute considerably to other intersections already operating at unacceptable levels (i.e., increases to critical movements operating at LOS E or F at these intersections would be less than five percent), nor would it cause any intersections that would operate acceptably under the No Action Alternative to deteriorate to unacceptable levels. Therefore, long-term cumulative traffic impacts at other locations would be **less than significant**.

The significant impact identified above is isolated to one study intersection. The vehicular network would not be drastically affected by the project, as a whole. Additionally, on a regional scale, the significant impact is somewhat offset by the beneficial impacts at other locations, and reflects the fact that congestion would be shifted from near the current embarkation facility to the Fort Mason area. The heightened delay at the intersection may cause some inconvenience and cause drivers to divert to a less congested route, using the street network more efficiently. It may also cause drivers to switch to other modes of transportation. Overall, the impact of the Lower Fort Mason Alternative - No F-Market Line Extension or Shuttle Scenario under long term cumulative conditions on overall vehicular network performance would be considered minor.

## **Transit**

Under the Lower Fort Mason Alternative - Shuttle Only Scenario all transit lines would operate within the City's capacity utilization threshold during all study periods. Therefore, this alternative would have a **less than significant impact** on transit capacity utilization.

**Long Term Cumulative Conditions.** In the long-term, the Lower Fort Mason Alternative - Shuttle Only Scenario would cause the following screenlines that are projected to operate within

the 85 percent capacity utilization threshold under the No Action Alternative to exceed the threshold:

- North/South Screenline (Weekend Midday Peak Hour: Inbound Direction)
- West Screenline (p.m. Peak Hour: Outbound Direction)

Further, the Lower Fort Mason Alternative - Shuttle Only Scenario would increase ridership by more than one percent of the capacity of the following screenlines projected to operate above the 85 percent capacity utilization threshold under the No Action Alternative:

- North/South Screenline (a.m. Peak Hour: Inbound Direction, p.m. Peak Hour: Inbound and Outbound Direction, Weekend Midday Peak Hour: Outbound Direction)

These would be considered cumulatively **significant impacts** associated with the Lower Fort Mason Alternative - Shuttle Only Scenario.

As with the near-term transit impacts, implementation of Mitigation Measure 1, as described above, would reduce the Project's impact on transit service. However, the implementation details of Mitigation Measure 1 would require further coordination, planning, and outreach, and therefore it cannot be guaranteed at this time. Therefore, these impacts to the transit screenlines are considered to remain **significant**.

All other transit screenlines would operate acceptably within the 85 percent capacity utilization threshold or the Lower Fort Mason Alternative - Shuttle Only Scenario would not contribute considerably to unacceptable operations, and impacts to other screenlines would therefore be considered **less than significant**.

The impacts identified above contribute significant ridership to capacity utilization of two of three screenlines in the p.m. peak period. Specifically, this alternative would either cause some screenlines to exceed 100 percent capacity utilization or would substantially increase capacity utilization on screenlines projected to operate above 100 percent utilization without the Project, meaning that riders would either have to wait for a less crowded vehicle (i.e., delay their trip) or would have to switch to other modes. Therefore, the impact of the Lower Fort Mason Alternative - Shuttle Only Scenario under long-term cumulative conditions would be considered major.

## **Bicycle Facilities**

Impacts to bicycle circulation as a result of the Lower Fort Mason Alternative with a shuttle would be similar to those associated with the Lower Fort Mason Alternative -No F-Market Line Extension or Shuttle Scenario. Mitigation Measure 4 would still be required, but because its implementation cannot be guaranteed, the impacts to bicycle circulation would be considered **significant**.

The impact identified above on bicycling conditions is isolated to one intersection. This location is not representative of the Bay Trail within San Francisco or the San Francisco bicycle network as a whole. Although this alternative would increase usage of this facility, the site represents an existing deficiency, and not a substantial change to bicycle safety in the Lower Fort Mason area as a whole. Therefore, because this alternative would be increasing usage at an existing deficiency

and not creating a new safety problem, the impact of the Lower Fort Mason Alternative - Shuttle Only Scenario would be considered moderate.

### **Pedestrian Facilities**

The Lower Fort Mason Alternative - Shuttle Only Scenario is projected to add up to 878 pedestrians (approximately 40 percent fewer than the No F-Line or Shuttle Alternative) to study area intersections during the weekday p.m. peak hour, which is the analysis period that experiences the greatest pedestrian demand. It is likely that some of the Project pedestrian traffic will use crosswalks at the intersections of Laguna Street/Beach Street and Buchanan Street/Beach Street–Marina Boulevard to travel to and from the embarkation site. Project pedestrian trips were assigned to crosswalks based on local knowledge, area land uses, and other transportation facilities (e.g., transit, parking facilities, etc.). The addition of Project trips to study crosswalks does not degrade conditions to an unacceptable level.

This alternative is also forecasted to add new pedestrian trips to the Bay Trail near Pier 4 during the weekend midday peak hour, which is the most congested analysis period. However, even with the additional pedestrian trips, the walkway operates at an acceptable LOS.

Therefore, this alternative's impacts to pedestrian circulation are considered **less than significant**.

### **Parking Facilities**

As presented in the With Project Travel Demand Section, this alternative is forecast to increase parking demand in the Fort Mason area. Compared to the Lower Fort Mason Alternative - No F-Market Line Extension or Shuttle Scenario, parking demand in the Fort Mason area is reduced under the Lower Fort Mason Alternative - Shuttle Only Scenario by providing a direct shuttle connection between Fort Mason and Fisherman's Wharf. This alternative assumes that a number of vehicles will park near Fisherman's Wharf and use the shuttle to access the Project at Lower Fort Mason. Although this alternative is an improvement over both the Lower Fort Mason Alternative - No F-Market Line Extension or Shuttle Scenario and Lower Fort Mason Alternative - F-Market Line Extension Only Scenario, parking utilization is still expected to exceed the threshold (95 percent utilization) during the weekend 3:00 to 6:00 p.m. analysis period. The total parking supply in the Fort Mason area is insufficient to meet project demand and still achieve parking utilization below 95 percent; therefore, the Lower Fort Mason Alternative - Shuttle Only Scenario results in a **significant impact** to parking in the Lower Fort Mason area. The total parking supply proximate to Fisherman's Wharf is sufficient to meet project demand associated with this alternative.

As discussed earlier, no feasible mitigation measures were identified to reduce the effect of increased parking on the Lower Fort Mason area. Therefore the impacts are considered **significant**.

Since the significant impact identified above was analyzed for the entire area parking supply, it would be difficult for drivers to find reasonable parking alternatives throughout the area. Therefore, the impact of the Lower Fort Mason Alternative - Shuttle Only Scenario would be considered major.

**Construction Impacts**

Construction impacts associated with the Lower Fort Mason Alternative - Shuttle Only Scenario would be nearly identical to the Lower Fort Mason Alternative - No F-Market Line or Shuttle Scenario. The primary difference would be the construction effects of the extension of the F-Market line extension itself; however, that extension has already been approved as a separate project, and the environmental impacts associated with its construction have already been identified, and are not directly associated with this alternative. The construction impacts associated with this alternative are considered **less than significant**.

**SUMMARY**

Table 30 summarizes the impact findings for each of the Project alternatives as compared to the No Action Alternative. Mitigation Measures 1 through 5 have been identified throughout this report as likely candidates to reduce the severity of the Project’s impacts. However, many of them require cooperation and approval from other agencies and cannot be guaranteed, and therefore, the impacts remain significant unless those measures can be implemented.

**TABLE 30. SUMMARY OF IMPACT FINDINGS**

Impact Area	Pier 31½ Alternative	Pier 41 Alternative	Lower Fort Mason Alternative - No F-Market Line Extension or Shuttle Scenario	Lower Fort Mason Alternative - F-Market Line Extension Only Scenario	Lower Fort Mason Alternative - Shuttle Only Scenario
Intersection Traffic (Near Term)	Less Than Significant	Beneficial/Less Than Significant	Beneficial/Less Than Significant	Beneficial/Less Than Significant	Beneficial/Less Than Significant
Intersection Traffic (Long Term)	Less Than Significant	<b><u>Significant</u></b>	<b><u>Significant</u></b>	<b><u>Significant</u></b>	<b><u>Significant</u></b>
Transit (Near Term)	Less Than Significant	<b><u>Significant</u></b>	Less Than Significant	<b><u>Significant</u></b>	Less Than Significant
Transit (Long Term)	<b><u>Significant</u></b>	<b><u>Significant</u></b>	<b><u>Significant</u></b>	<b><u>Significant</u></b>	<b><u>Significant</u></b>
Bicycle Facilities	Less Than Significant	Less Than Significant	<b><u>Significant</u></b>	<b><u>Significant</u></b>	<b><u>Significant</u></b>
Pedestrian Facilities	Less Than Significant	<b><u>Significant</u></b>	Less Than Significant	Less Than Significant	Less Than Significant
Parking Facilities	Less Than Significant	Less Than Significant	<b><u>Significant</u></b>	<b><u>Significant</u></b>	<b><u>Significant</u></b>
Construction	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant



## REFERENCES

### City and County of San Francisco

- 2002 City of San Francisco Transportation Impact Analysis Guidelines for Environmental Review (Planning Department)
- 2009 Bicycle Plan (SFMTA)
- 2010a San Francisco General Plan – Transportation Element (Planning Department)
- 2010b Northeast Embarcadero Study (Planning Department)
- 2011a 34<sup>th</sup> America’s Cup and James R. Herman Cruise Terminal and Northeast Wharf Plaza Final Environmental Impact Report (Certified December 2011) (Planning Department)
- 2011b Draft Fisherman’s Wharf Public Realm Plan (Planning Department)
- 2011c SFPark Program (SFMTA)
- 2013 Transit Effectiveness Project Draft Environmental Impact Report (Planning Department)

### NPS (National Park Service)

- 2011 Draft Environmental Impact Statement for the Extension of F-Line Streetcar Service to Fort Mason Center

### ORCA (ORCA Consultants)

- 2011 Draft Alcatraz Island Embarkation Facility Space Planning Model-Results, included as Appendix A in the Draft Alcatraz Ferry Embarkation and Education Site Feasibility Study (URS, 2011)
- 2012 America’s Cup 34 – Spectator Sites on NPS Properties Visitation Estimates and Level of Service Assessment

### Port of San Francisco

- 2011 Draft Embarcadero Promenade Design Criteria

### TRB (Transportation Research Board)

- 2000 Highway Capacity Manual

### URS

- 2011 Draft Alcatraz Ferry Embarkation and Education Site Feasibility Study

### Water Emergency Transportation Authority (WETA)

- 2003 Implementation and Operations Plan





As the nation's principal conservation agency, the Department of the Interior has the responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.