CHAPTER 4: AFFECTED ENVIRONMENT

This chapter presents information on the environmental setting in the project area, organized by environmental issue category. The project study area encompasses the geographic area potentially most affected by the project. For most issues involving physical effects, this is the project footprint, or the area that would be disturbed for or replaced by new project facilities. This area includes the proposed downtown extension alignment from the existing Caltrain terminal and storage yard at Fourth and Townsend Streets to the Transbay Terminal, and it also includes the proposed redevelopment area surrounding the Transbay Terminal. Socioeconomic effects may be felt over a larger area.

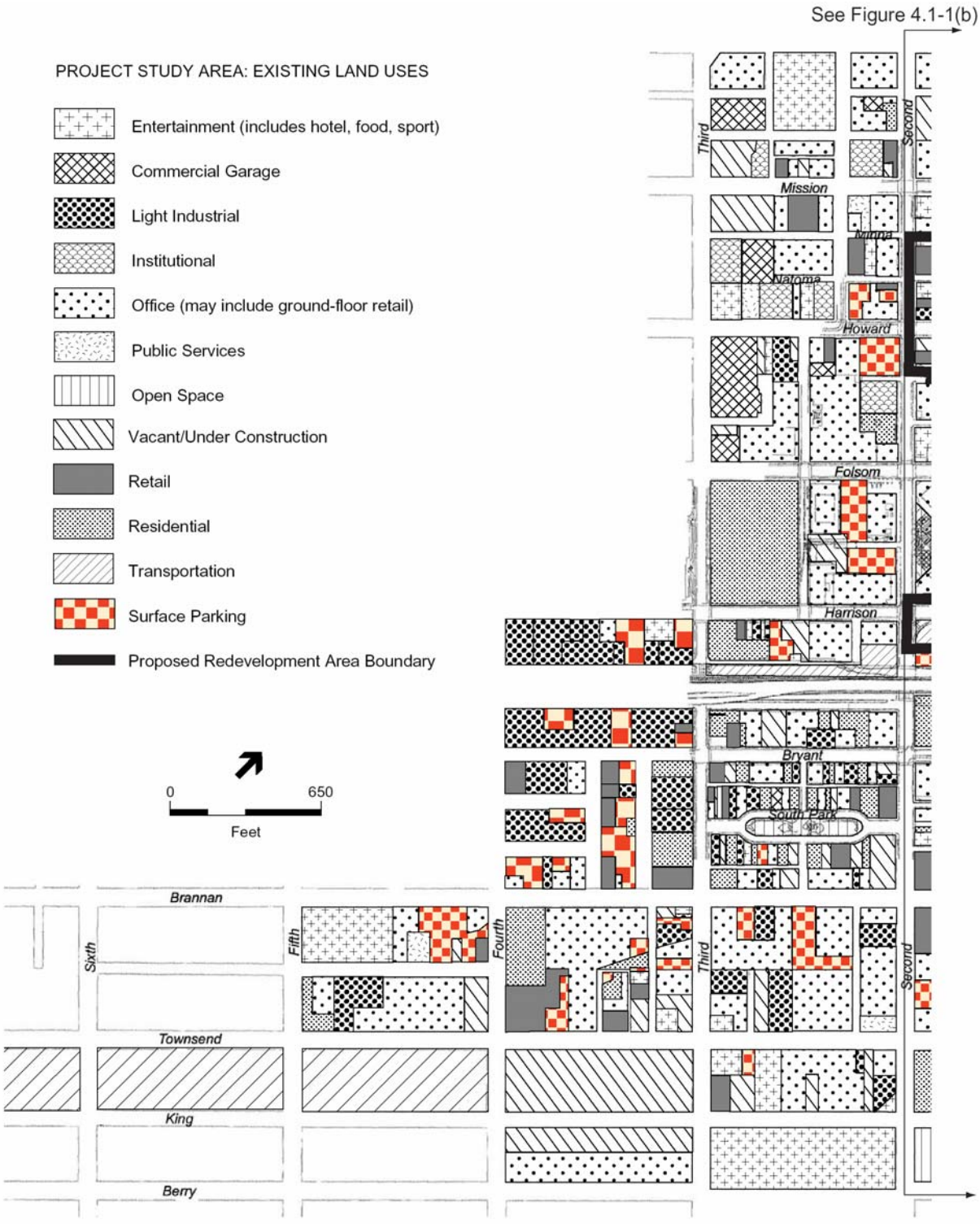
4.1 LAND USE, WIND AND SHADOW

The land use study area, as shown on Figure 4.1-1, includes areas near the Caltrain Downtown Extension Alternative routes as well as the proposed Transbay Redevelopment Area. The study area is bounded by Third, Fourth and Seventh Streets to the west, China Basin to the south, The Embarcadero and Steuart and Spear Streets to the east, and Howard and Market Streets to the north. Boundaries of the proposed Transbay Redevelopment Area (shown on Figure 4.1-1) encompass the Transbay Terminal and its immediate environs, except for some areas immediately south of the Transbay Terminal.

4.1.1 EXISTING LAND USES IN THE PROJECT AREA

The proposed project area contains a mix of light industrial, warehousing/distribution, commercial office, retail, live-work, and residential uses and surface parking lots. Since the 1930s, the area has been dominated by regional transportation facilities associated with the Bay Bridge, including the Bridge structure and approaches, the Terminal Separator Structure (Bay Bridge ramps), the Transbay Terminal and ramp structures that connect to the Bridge, and the Embarcadero Freeway. Due to the 1989 Loma Prieta Earthquake and subsequent demolition of the Terminal Separator Structure and Embarcadero Freeway, there are now a number of remnant and/or irregularly-shaped parcels interspersed throughout the area, most of which are used for surface parking. These parcels are the focus of proposed rezoning from P (Public) to C-3-O (Downtown Office), or to C-3-O (SD) – Downtown Office Special Development and potential development sites.

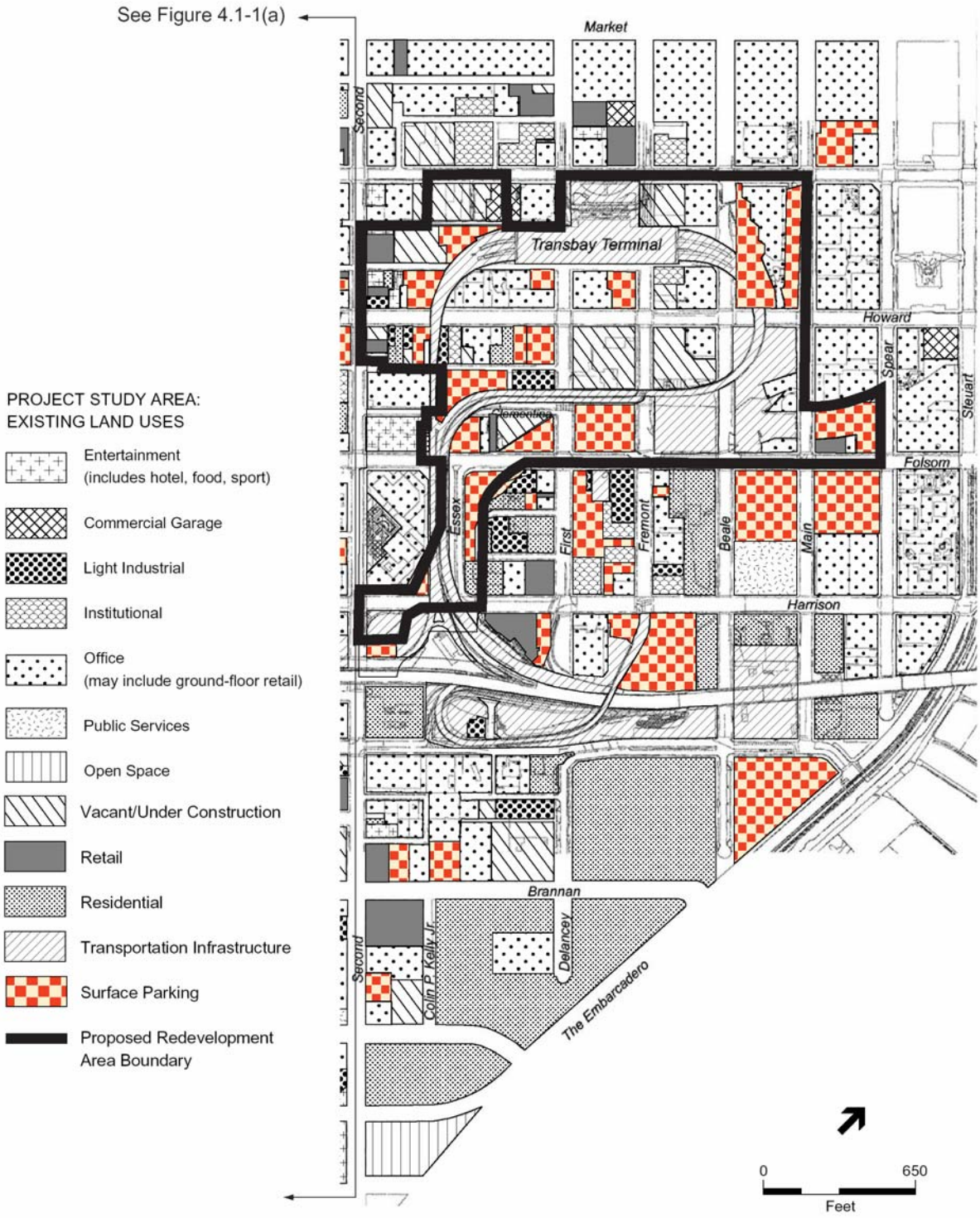
Office use was the predominant land use within the proposed Transbay Redevelopment Area in 1997, occupying about 89 percent of the developed square footage, much of it in high-rise buildings. Industrial uses occupied about four percent of the floor area, with hotel, institutional, retail, and residential uses occupying just under two percent each. Development since 1997 has



Transbay Terminal/Caltrain Downtown Extension / 201050 ■

SOURCE: Parson's Transportation Group, Inc., Environmental Science Associates

Figure 4.1-1(a)
Existing Land Uses



Transbay Terminal/Caltrain Downtown Extension / 201050 ■

SOURCE: Parson's Transportation Group, Inc., Environmental Science Associates

Figure 4.1-1(b)
Existing Land Uses

consisted primarily of high-rise office towers, with some high-rise residential development. The area contains limited publicly accessible open space. Since there are no public parks in the area, the existing open space generally consists of building setbacks and areas between office towers.

Major educational uses include Golden Gate University and the Academy of Art College, both located north and west of the Transbay Terminal. Remaining industrial sites and service uses, such as auto repair shops, are clustered within and near the Transbay Terminal ramps and along First and Fremont Streets south of Folsom Street. Surface parking lots are located along the north side of Folsom Street, beneath the terminal ramps, and at various other locations scattered throughout the area.

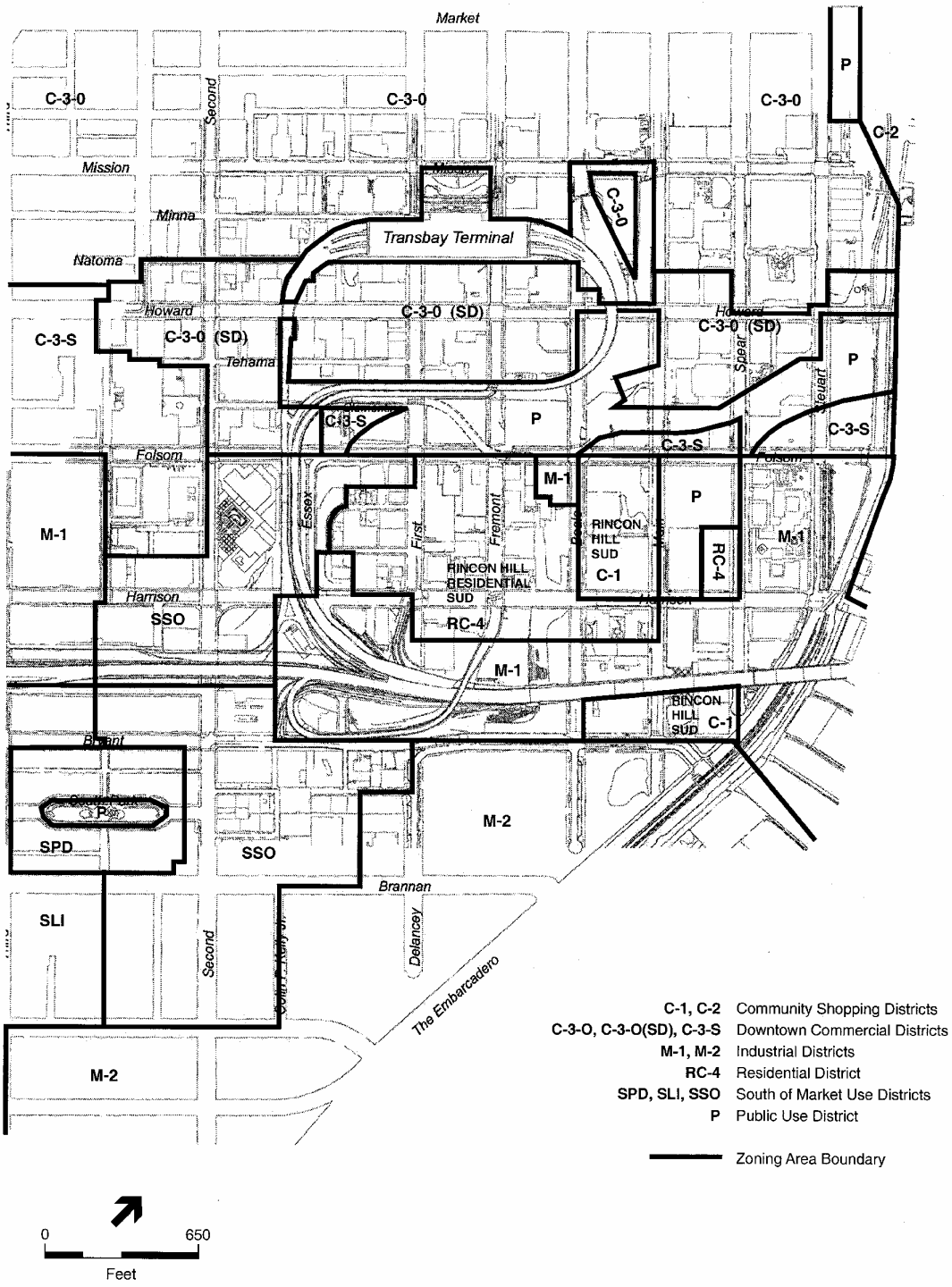
4.1.2 AREA PLANS AND ZONING

Existing plans and policies that affect not only the proposed project area, but also the larger land use study area, include the San Francisco General Plan and its elements, as well as area plans contained within the General Plan. The pertinent area plans include the Downtown Plan, the South of Market Plan, and the Rincon Hill Plan. Other area plans, such as the Northeastern Waterfront Plan, and San Francisco Redevelopment Agency Plans (including the Rincon Point-South Beach Redevelopment Plan, Yerba Buena Center Redevelopment Plan, and Mission Bay North Plan), guide land use in areas contained within the study area. A detailed listing of applicable plans and policies is included in the Technical Memorandum, Consistency with Existing Plans and Policies (ESA, 2001). Existing zoning is varied and reflects the multitude of different land uses found in the study area. Zoning districts in the area are described in Section 4.1.3 and shown on Figure 4.1-2.

4.1.3 NEIGHBORHOODS WITHIN AND ADJACENT TO THE STUDY AREA

This section provides a discussion of existing land uses, applicable plans and zoning regulations, and proposed development in each neighborhood within or adjacent to the study area. Figure 4.1-3 identifies neighborhood boundaries (land use subareas).

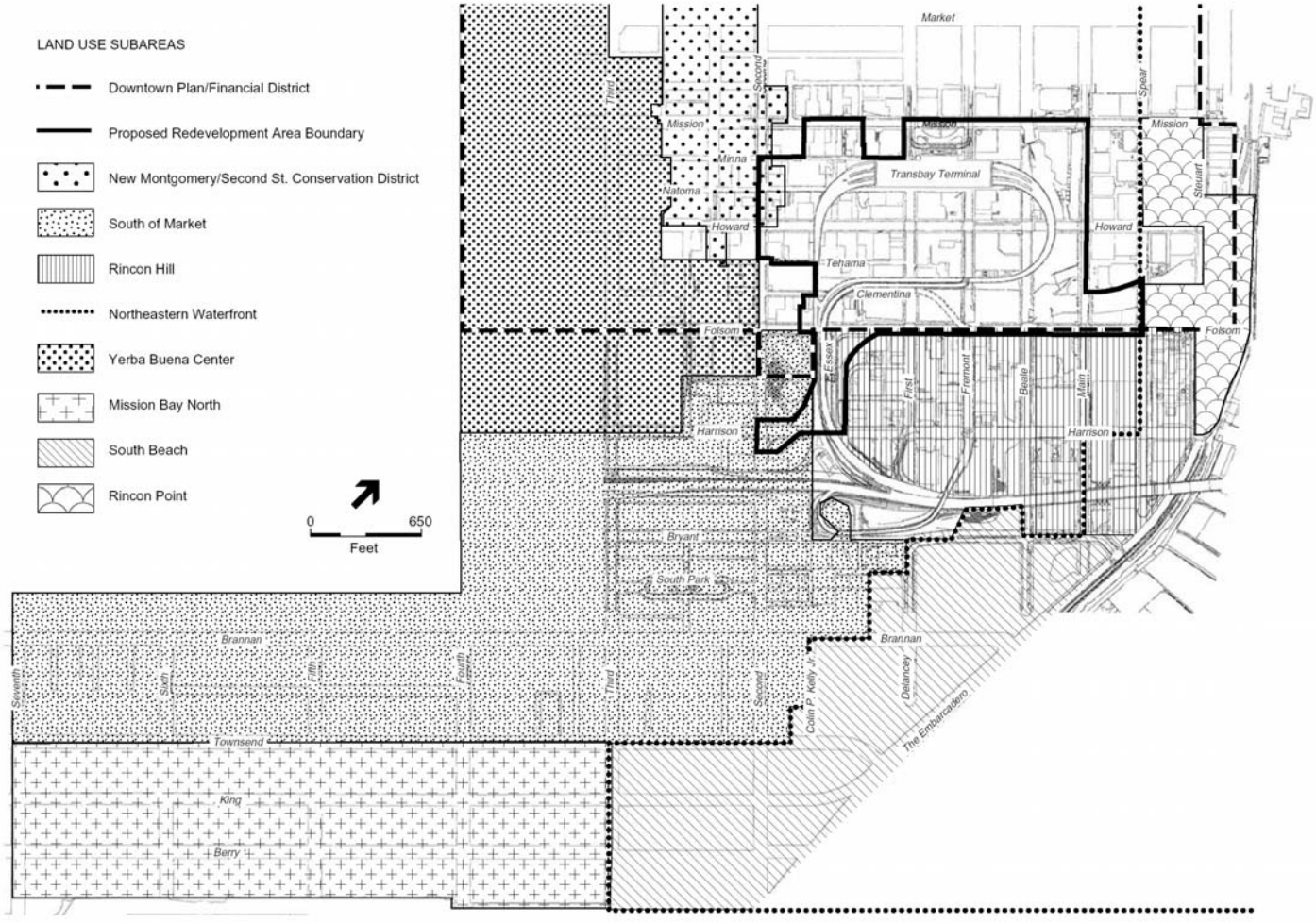
Height and bulk of new development is regulated by height and bulk districts established by the City of San Francisco in order to relate "the height of buildings to important attributes of the City pattern and to the height and character of existing development," and to relate the bulk of buildings to "the prevailing scale of development to avoid an overwhelming or dominating appearance in new construction." (Planning Code Section 251). Height and bulk restrictions are of particular concern in the proposed Transbay Redevelopment Area and are discussed in Section 4.1.3.2, Transbay Terminal Environs. Figure 4.1-4 shows existing height and bulk districts in the area.



SOURCE: Parson's Transportation Group, Inc., Environmental Science Associates

Transbay Terminal/Caltrain Downtown Extension / 201050 ■

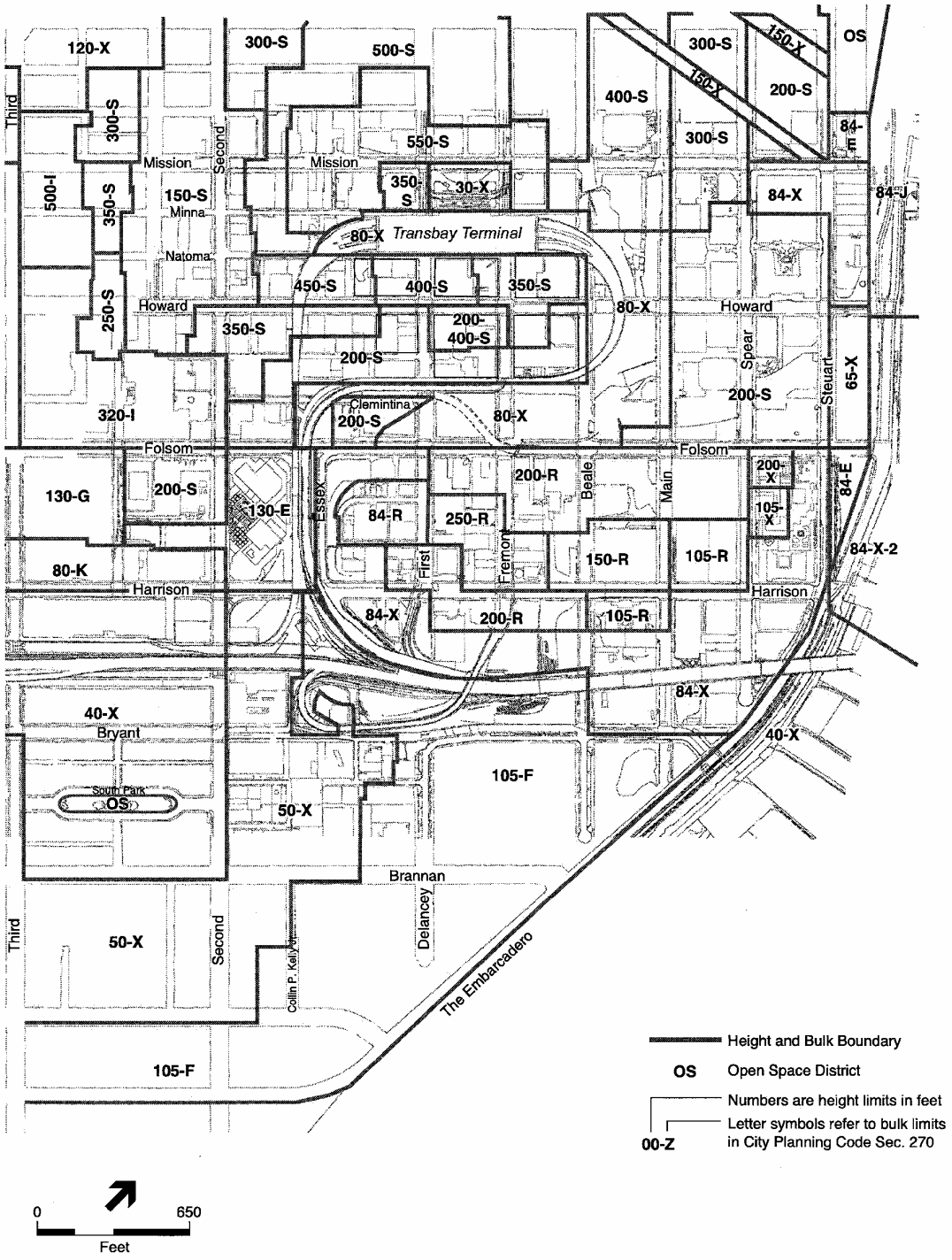
Figure 4.1-2
Existing Zoning



SOURCE: Parson's Transportation Group, Inc., Environmental Science Associates

Transbay Terminal/Caltrain Downtown Extension / 201050 ■

Figure 4.1-3
Land Use Subareas



SOURCE: Parson's Transportation Group, Inc., Environmental Science Associates

Transbay Terminal/Caltrain Downtown Extension / 201050 ■

Figure 4.1-4
Existing Height and Bulk Districts

4.1.3.1 Financial District

The Financial District, historically located north of Market Street, is composed of high-rise office buildings, most with ground floor retail. As described in the Downtown Plan (an Area Plan contained within the General Plan), the Financial District spills across Market Street south as far as Folsom Street. Along Spear and Main Streets, high-rise office buildings extend south nearly to Folsom Street. Thus, all of the project development north of Folsom Street *would* fall within the Downtown Plan's Financial District.

Between Market and Howard Streets, the Second Street corridor is characterized by historic office buildings of 100 feet or less in height with ground floor retail. These structures make up the New Montgomery/Second Street Conservation District of the Downtown Plan. Most of these are unreinforced masonry structures, several of which have been seismically upgraded, and are noted for architectural merit. Some older industrial buildings between Market and Folsom Streets have been converted to retail, office and residential uses. Warehouse buildings are being used for office buildings, factory outlets, live-work spaces, and media studios. Residential uses are located in converted commercial buildings and above the ground floor of commercial uses.

Recent development projects include new office buildings at 101 Second Street (at Mission Street), 199 Fremont Street (at Howard Street), One Second Street, and 631 Folsom Street. Another office building, the Gap headquarters, has been constructed immediately adjacent to the study area, at Folsom and Spear Streets. Recently completed residential (including live-work) projects include 370 Beale Street and a residential tower on Natoma Street near Second Street.

The Second Street corridor can be divided into two smaller subareas: contemporary offices and historic structures. The first subarea has several office buildings that were constructed in the 1970s and 1980s. These buildings, located between Folsom and Bryant Streets, have ground floor retail space and are typically 200 feet, or less, in height. Recently constructed buildings in the Second Street corridor include a 143-foot-tall office tower at 201 Second Street, the 180-foot Marriott Courtyard Hotel at 299 Second Street, the CNET building at 261 Second Street, and a residential mid-rise at 246 Second Street between Tehama and Clementina Streets. The second subarea, the New Montgomery-Second Street Conservation District, is described in Section 4.16.6.4.

A large portion of the Financial District is zoned C-3-O (Downtown Office), including the blocks south of Market Street, roughly to Minna Street. The C-3-O district is characterized by the intensity and compactness of its development, which permits face-to-face business contacts and offers the convenience of traveling by foot. Just south of this area is the C-3-O (SD) zoning district – Downtown Office Special Development – which is an area created to direct unused development potential, such as the transfer of development rights, near the downtown core. The C-S-3 District, which is located west of the study area near Third Street, accommodates functions such as wholesaling, printing, business services, and parking. This district has for the most part been underdeveloped.

Recently approved development in the Financial District includes the following:

- An office development at 524 Howard Street, approved in early 1999;
- The Foundry Square project, an office development consisting of four separate office structures at the intersection of First and Howard Streets, currently under construction;
- An addition of 60,000 square feet of office space to an existing office building at One Market Street;
- A 700,000 square foot office development at 554 Mission Street;
- A 24-story, 253,000-square foot office development with ground-floor retail at 535 Mission Street;
- Demolition of existing four-story warehouse building and construction of a seven-story office building at 235 Second Street;
- A 40,000-square foot office building at 272 Main Street;
- A 579,034-square foot office building at 555-569 Mission Street;
- Vertical addition of mezzanine and fourth story to an existing three-story building providing office and light industrial uses at 38-44 Tehama Street;
- A seven-story building to house mechanical, electrical, and data equipment at 57 Jessie Street;
- A 20-story, 200-foot tall mixed-use (commercial and residential) building at 48 Tehama Street;
- A 10-story, 45,800 square foot office building with ground-floor retail on the site of an existing surface parking lot at 201 Second Street;
- Construction of a seven-story, 95-foot tall office building with 24,435 square feet of office use at 69 Clementina Street;
- A two-story vertical addition to an existing three-story office building at 55 Natoma Street;
- A 10-story office building with ground-floor retail at 35 Hawthorne Street;
- 33 new live work or condominium units at 530-534 Folsom Street;
- 24 residential and eight live/work units on a vacant lot currently used for parking at 19 Clementina Street;
- 185 residential units in a 16-story-over-basement, 150-foot tall building on a lot currently used for surface parking at 199 New Montgomery Street;
- An eight-level, primarily short-term parking garage with 425 spaces at the San Francisco Museum of Modern Art;
- Three-story vertical addition to an existing nine-story parking garage at 51 Third Street;
- A 200-room hotel with ground-floor retail space at Mission and Steuart Streets;
- Improvements to the Embarcadero Music Concourse.
- *A 605-foot high-rise on the south side of Mission Street between Fremont and Beale Streets. 301 Mission Street was approved for development by the San Francisco Planning Commission on July 31, 2003. As approved, the 301 Mission Street project has been modified to be more compatible with the Second-to-Main alignment, which was selected as the Caltrain Extension Component of the Locally Preferred Alternative in March 2003.*

4.1.3.2 Transbay Terminal Environs

The existing Transbay Terminal is located in the Financial District and is bounded by Mission Street to the north, First Street (and slightly beyond toward Second Street) to the west, Natoma Street to the south, and Fremont Street to the east, with bus ramps that form an elevated loop connecting to the Bay Bridge to the south. The Transbay Terminal site is zoned for Public Use. The blocks encircled by the existing terminal and ramps currently are less intensely developed than other portions of the study area north of Clementina Street; however, recent project approvals by the Planning Commission would change the area. Industrial and service uses are generally located in one- to six-story buildings that front the alleys of Natoma, Tehama and Clementina Streets. Some of these buildings have been converted to office and some to residential use. Although buildings in the Terminal environs are typically less than six stories, the area includes four high-rise office buildings located at 100 First Street, 201 Mission Street, 301 Howard Street, and 199 Fremont Street. The latter two are the only high-rises inside the Terminal loop ramps, while others have been approved at 524 Howard Street, 545 Mission Street, 555 Mission Street, 575 Mission Street, and Foundry Square at First and Howard Streets. *The* 605-foot high-rise on the south side of Mission Street between Fremont and Beale Streets *has been approved for development by the San Francisco Planning Commission.* This area also has a noticeable amount of vacant land. Between Howard and Folsom Streets, there are a number of surface parking lots on remnant and/or irregularly shaped parcels that became vacant after the 1989 earthquake and subsequent demolition of the Terminal Separator Structure.

The proposed Transbay Redevelopment Area contains various height and bulk districts. The lowest building heights are established by the 30-X district located at the corner of First and Mission Streets; the tallest building heights have been established in a 400-S district on Assessor's Block 3718. The tallest buildings in the Transbay Terminal environs are in a 550-S district between First and Second Streets on Mission Street, which is outside the proposed Transbay Redevelopment Area. Figure 4.1-4 and Table 4.1-1 identify the existing zoning and height and bulk districts for the proposed Transbay Redevelopment Area.

4.1.3.3 Rincon Hill

Rincon Hill, bounded by Essex and Folsom Streets, The Embarcadero, the Bay Bridge, and portions of Bryant Street, contains 55 acres of land, subdivided into over 70 parcels. Rincon Hill borders the proposed Transbay Redevelopment Area on the south along Folsom Street. Buildings in the area are typically less than four stories high. Rincon Hill was San Francisco's first well-to-do residential neighborhood, but it has been a warehouse and distribution area since the latter third of the 19th Century. Industrial and commercial buildings dominate the area, although there are also residential uses. Vacant or underutilized parcels are interspersed throughout Rincon Hill. Within the last decade, encouraged by the Rincon Hill Plan, there has been an increase in the construction of residential space. New residential projects have been constructed at 388 Beale Street (Avalon Towers), 403 Main (Portside Condominiums) and live-work projects along Folsom Street and First Street and Guy Place.

The San Francisco Planning Code established a special use district for Rincon Hill to protect the existing environment and to further the goals and policies contained in the Rincon Hill Plan. The intent is to convert an outmoded industrial area to a unique mixed-use neighborhood close to downtown.

Table 4.1-1: Existing Zoning in the Proposed Transbay Redevelopment Area

Assessor's Block	Block Bounded by	Zoning Districts	Height/Bulk Districts
3718	Mission, Main, Howard, and Beale Streets	P, C-3-0, C-3-0 (SD)	80-X, 80X / 400S
3720	Mission, Fremont, Howard, and First Streets	P	30-X / 80-X
3736	Howard, First, Folsom, and Second Streets	P	80-X / 200-S
3737	Howard, Fremont, Folsom, and First Streets	P, C-3-0 (SD)	80-X
3738	Howard, Beale, Folsom, and Fremont Streets	P	80-X
3739	Howard, Main, Folsom, and Beale Streets	P, C-3-0, C-3-0 (SD), C-3-S	80-X, 90-X, 200-S
3740	Howard, Spear, Folsom, and Main Streets	P, C-3-S	40-X, 200-S
3749	Folsom, First, Harrison, and Second Streets	M-1	84-X
3764	Harrison, Rincon, Bryant, and Second Streets	P	50-X

Zoning Districts:
C-3-0: Downtown commercial office
C-3-0 (SD): Downtown commercial office (special development)
C-3-S: Downtown support
M-1: Light industrial
P: Public use
S: See Planning Code Section 270(d) or refer to Height and Bulk maps 1H, 2H and 7H of the Zoning Map.

Source: San Francisco Planning Department and Heller Manus Architects, June 2001

4.1.3.4 South of Market

The South of Market Area (SOMA) is generally bounded by Mission Street to the north, Townsend Street to the south, South Van Ness Avenue to the west and Second Street to the east. SOMA borders on the proposed Transbay Redevelopment Area to the east at Second Street, but does not overlap it. It was originally established as a well-to-do neighborhood during the mid-1850s, but was completely destroyed by the earthquake and fire of 1906. SOMA was subsequently rebuilt as a warehouse and working-class residential district. SOMA is now dominated by light industrial manufacturing and office uses, although pockets of post-1906 earthquake housing exist and substantial amounts of residential development – mainly in the form of live-work lofts – have been constructed within recent years. There are also cultural uses, generally clustered around the Yerba Buena Center, and entertainment uses along Folsom and Eleventh Streets.

Zoning in SOMA is characterized by service and light industrial land uses. The SSO (Service Secondary Office) and SLI (Service Light Industry) zoning districts are located south of the C-3-S district, extending to Townsend Street. Residential Enclave Districts (RED) encompass

the clusters of low-scale, medium density, predominantly residential neighborhoods located along the narrow side streets of the South of Market SLR district. Within these predominantly residential enclaves lie a number of vacant parcels, parking lots and other properties in open storage use.

4.1.3.5 Yerba Buena Center

Yerba Buena Center is an 87-acre redevelopment area within the SOMA District that extends from Market Street on the north to Harrison Street on the south, and from Second Street on the east to the west along Fourth Street. The boundaries of the Yerba Buena Center lie to the west of the proposed Transbay Redevelopment Area, and their boundaries do not overlap. Uses within the Yerba Buena Center include the San Francisco Museum of Modern Art, the Moscone Convention Center, and the Sony Metreon, as well as gardens, retail, recreation, amusement, entertainment, parking, and a substantial amount of housing.

4.1.3.6 South Park

South Park is a mixed-use neighborhood bounded by Bryant Street to the north, Brannan Street to the south, Third Street to the west, and Second Street to the east. South Park is within the SOMA Area Plan, but would not be part of the Transbay Redevelopment Area. South Park was San Francisco's first master-planned upscale residential neighborhood, but it was completely destroyed in the earthquake and fire of 1906. Rebuilt to generally reflect what existed prior to the earthquake, it is now a mixed-use neighborhood surrounding a grassy open space. Office and commercial uses are prevalent, and residential uses are interspersed throughout. Zoning controls in South Park are guided by Planning Code Section 814, intended to "preserve the scale, density and mix of commercial and residential activities within this unique neighborhood."

4.1.3.7 Northeastern Waterfront

The Northeastern Waterfront Planning Area is south and east of the proposed Transbay Redevelopment Area and extends from Aquatic Park to China Basin. This planning area contains four subareas, two of which – the Ferry Building Subarea and the South Beach Subarea – are directly adjacent to the study area for the present project. The Ferry Building Subarea surrounds the Ferry Building and contains a newly constructed open space plaza directly in front of the Ferry Building. The Ferry Building Subarea is linked to the South Beach Subarea by the waterfront promenade along The Embarcadero. Since the 1980s, the South Beach Subarea has been transforming into a new residential and commercial mixed-use neighborhood, which still retains some of its industrial and maritime flavor. The extension of the N-Judah Muni-Metro light rail line from Embarcadero Station provides a direct link to the downtown area. New mid-rise residential structures and a 45,000-seat baseball park (Pacific Bell Park) were recently constructed. This area contains a considerable amount of land zoned for manufacturing uses.

4.1.3.8 Mission Bay North

Mission Bay, under the jurisdiction of the San Francisco Redevelopment Agency, is divided into two redevelopment project areas: Mission Bay North and South. Mission Bay North borders on the study area and is bounded by Third Street, Townsend Street, Mission Creek, and Seventh Street. This area contains a portion of the Caltrain yard, as well as land uses that are in transition from their historical transportation and industrial functions. Construction of residential units, office space, retail, and public open space has begun in this area. The San Francisco Redevelopment Agency established land use controls regulating development of blocks encompassing and surrounding the Caltrain rail yard. The blocks that contain the Caltrain terminus and related spur alignments have been zoned MB-O, in order to be developed with large floor plan and smaller structures for office uses.

4.1.4 EXISTING WIND CONDITIONS

Wind tunnel testing was performed to characterize existing wind conditions throughout the proposed redevelopment area and to provide a baseline for comparison with wind conditions that would result from potential development. The tests used the methodology of Planning Code Section 148. The results of the wind tunnel test, as documented in the Wind Test Technical Memorandum, are summarized in Section 5.1.2. Existing wind speeds were measured at sixty-one locations within the Transbay Redevelopment Area, where speeds are moderate to windy. Wind speeds, expressed as speeds that are exceeded 10 percent of the time, range from three mph to 11 mph; the average of these wind speeds is 5.5 miles per hour (mph). The highest wind speed of 11 mph occurs on the south side of Harrison Street at Second Street. All 61 points tested meet the Planning Code's pedestrian-comfort criterion value of 11 mph. The Planning Code's wind hazard criterion is currently not exceeded at any of the tested locations. A description of conditions in the four wind test subareas within the proposed Transbay Redevelopment Area is provided below.

- **Adjacent to or near the Transbay Terminal Building.** Existing wind speeds are low, ranging from four to seven miles per hour.
- **Area bounded by Mission, Main, Folsom, and Beale Streets.** Existing wind speeds in this area are also low, ranging from three to six miles per hour.
- **Adjacent to Folsom Street.** Existing wind speeds are moderate to windy, ranging from three to ten miles per hour.
- **Adjacent to or near Essex Street.** Existing wind speeds are moderate to windy, ranging from five to 11 miles per hour.

4.1.5 SHADOW

The City of San Francisco Planning Code Section 295 generally prohibits new buildings that would cause substantial new shadow on open space under the jurisdiction of the San Francisco Recreation and Park Commission between one hour after sunrise and one hour before sunset, at any time of the year. Sections 146 and 147 of the Planning Code protect sunlight access to streets and sidewalks and provide for reduction of shadows on public and publicly accessible open spaces within the C-3 districts (the largest section of the plan area). The project would have an adverse impact if it would result in substantial new shadow on public open space under the jurisdiction of the Recreation and Park Commission during these hours.

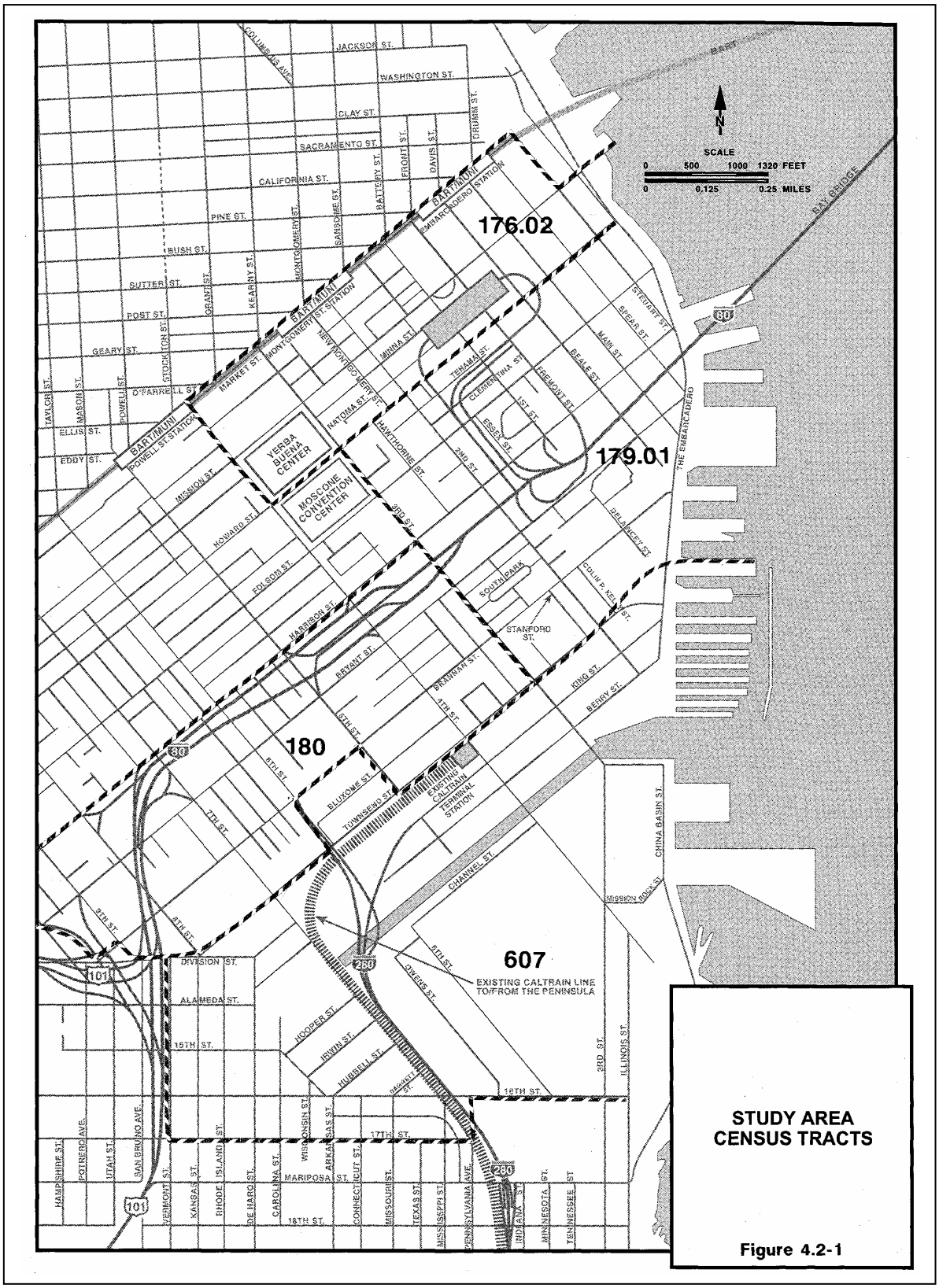
4.2 SOCIOECONOMIC CHARACTERISTICS

Study area socioeconomic character is described in terms of population, employment, housing, income, age, education, and racial composition. The area is experiencing rapid changes in population, housing, and local business activity. Data from the U.S. Census 2000 will be released over the next two years and will be incorporated into this document as it becomes available. Information from the 1990 census has been updated using Association of Bay Area Governments (ABAG) and Metropolitan Transportation Commission (MTC) data.

The project area is included within four census tracts covering the area from south of Market Street to Sixteenth and Seventeenth Streets and from the Bay to Vermont and Eleventh Streets. These tracts are shown in Figure 4.2-1. Each tract consists of two TAZs (MTC Traffic Analysis Zones) except for Tract 607, which includes three TAZs. All information presented herein is at the tract level; the more detailed TAZ data were analyzed when drawing conclusions about the spatial distribution of activity. Tract 607 includes the Fourth and Townsend station. The Caltrain Downtown Extension component would traverse Tract 179.01 and a portion of Tract 176.02 where the Transbay Terminal is located. The tail track would be located in Tract 179.01.

The U.S. Census 2000 estimated the study area total population to be 8,903, with a household population of 6,588 in 4,243 households. This represents a substantial growth over the 1990 population of 4,250 and 1,825 households. As shown in Table 4.2-1, the area now includes about 1.15 percent of the total estimated San Francisco population of 776,733, while in 1990, the area represented 0.6 percent of the population of 723,960. Household growth has been slightly greater than population growth. Housing is almost entirely multi-family, with 98 percent of all residential units containing two or more dwelling units. Household size in the area is about 1.6 persons, smaller than the 2.3 person average for the city as a whole.

As shown in Table 4.2-2, the area provided an estimated 132,714 jobs in 2000, representing about 21 percent of total city employment. Census Tract 176.02 contains just under 55 percent of the jobs in the study area.



STUDY AREA CENSUS TRACTS

Figure 4.2-1

The median income of area households in 1989 ranged from approximately $21,000 (Tract 180) to $41,500 (Tract 179.01). The percentage of residents below the federal poverty level was 12.4 in 1990, approximately the citywide average (see Table 4.2-3).

Table 4.2-1: Project Area Population and Households in 2000

Census Tract	Total Population	Population in Households[1]	Total Households	Persons per Household
176.02	534	342	257	1.3
179.01	5,408	4,792	3,249	1.5
180	2,285	914	494	1.9
607	676	540	243	2.2
Project Area Total:	**8,903**	**6,588**	**4,243**	**1.6**
San Francisco:	**776,733**	**756,976**	**329,700**	**2.3**
Project Area as % of City:	1.15%	.87%	1.28%	

1 The discrepancy between total population and population in households is due to the number of individuals living in group quarters.

Source: U.S. Census 2000

Table 4.2-2: Project Area Jobs and Employment Status of Residents in 2000

Census Tract	Project Area Jobs	Employed Residents
176.02	72,645	2,543
179.01	32,594	4,783
180	18,018	1,031
607	9,457	926
Project Area Total:	**132,714**	**9,283**
San Francisco:	**634,430**	**444,851**
Project Area as % of City:	20.92%	2.09%

Source: San Francisco Planning Department, 2000; U.S. Census 2000; U.S. Census 1990

Table 4.2-3: Project Area Household Income and Poverty Status in 1989

Census Tract	Median Household Income ($1989)	Percent Below Poverty Level
176.02	$35,125	7.9%
179.01	$41,465	8.9%
180	$20,724	31.2%
607	$37,000	0.0%
Project Area Total	**$20,724 - $37,000**	**12.4%**

Note: Information will be updated once the U.S. Census 2000 data regarding income levels becomes available.

Source: U.S. Census 1990

Auto ownership within the study area is slightly less than for the city as a whole (0.7 autos per household compared with 1.3 citywide; see Table 4.2-4). This likely reflects the small household size and center-city location of the study area, but it points to a potential for high transit usage, similar to or even greater than that of San Francisco residents generally.

Table 4.2-4: Auto Availability of Project Area Households in 2000

Census Tract	Average Autos per Household	"0" Auto Households	%	"1" Auto Households	%	"2" or More Auto Households	%	Total Households	%
176.02	0.6	215	28.3	296	13.9	16	1.8	1,952	100
179.01	0.9	260	34.2	1302	61	734	80.3	3,596	100
180	0.6	275	36.2	215	10.1	215	23.5	1,121	100
607	0.9	10	1.32	71	3.3	31	3.4	1,019	100
Project Area Total	**0.7**	**760**	**20**	**2,135**	**56.1**	**914**	**24**	**7,688**	**100**
San Francisco:	**1.2**	**88,827**	**28.2**	**127,474**	**40.4**	**99,288**	**31.5**	**315,546**	**100**
Project Area as % of City:		0.86%		1.67%		0.92%		2.44%	

Note: Estimate prepared as part of demographic database for regional transportation modeling process.

Source: Metropolitan Transportation Commission, Forecasts for Regional Transportation Plan, 2000.

In 2000, the median age of study area residents ranged from 34 (Tract 180) to 37 (Tracts 607 and 176.02), below the city median of 37 years. The percentages of the very young (less than 16 years) and elderly (62 years or older) were both below the city averages, reflecting the working-age population of the study area (see Table 4.2-5). Over 87 percent of study area residents were high school graduates and 38 percent were college graduates, while the percentages for San Francisco are 78 percent and 35 percent, respectively. Similar to income and employment, educational attainment is highest in the eastern portion of the study area, where about 50 percent of the residents have at least one college degree.

Approximately 67 percent of area residents are white/Caucasian, which includes individuals of Hispanic origin. This is higher than the citywide average of about 54 percent. On the other hand, over 20 percent of study area residents are Black/African American, compared with 11 percent citywide. Approximately 34 percent of all area residents were members of minority groups, which may also include Hispanics, compared with about 46 percent citywide. The racial make-up of the study area is shown in Table 4.2-6.

Table 4.2-5: Age and Education of Project Area Residents in 2000

Census Tract	Median Age	Population by Age Group						Educational Attainment[1]	
		Under 16	%	16-61	%	62 & Over	%	% H.S. Grad.	% Col. Grad.
176.02	37.3	10	1.9	506	94.8	18	3.4	90.0	60.0
179.01	35.0	177	3.3	4,985	92.2	246	4.5	94.8	47.8
180	34.0	84	3.7	2,128	93.1	73	3.2	71.1	13.3
607	36.7	62	9.2	521	77.0	93	13.8	100.0	33.7
Project Area Total	**34.0 – 37.3**	**333**	**3.7**	**8,140**	**91.4**	**430**	**4.8**	**87.3**	**37.7**
San Francisco: Project Area as % of City	**36.5**	**100,150** 0.33%	**12.9**	**552,889** 1.47%	**71.2**	**123,694** 0.35%	**15.9**	**78.0**	**35.0**

[1] Information will be updated once the U.S. Census 2000 data regarding education levels becomes available.

Source: U.S. Census 2000; U.S. Census 1990

Table 4.2-6: Race of Persons in Project Area in 2000

Census Tract	Total Population		White		Black/African Amer.	
	Number	%	Number	%	Number	%
176.02	534	100	321	60.1	87	16.3
179.01	5,408	100	3,640	67.3	448	8.3
180	2,285	100	1,046	45.8	670	29.3
607	676	100	381	56.4	72	10.7
Project Area Total:	**8,903**	**100**	**5,388**	**60.5**	**871**	**9.78**
San Francisco: Project Area as % of City:	**776,733** 1.14%	**100**	**385,728** 1.4%	**49.7%**	**60,515** .112%	**7.8**

Census Tract	Amer.Indian/ Alaska Native		Asian/Pac. Islander		Other		Hispanic Origin*	
	Number	%	Number	%	Number	%	Number	%
176.02	2	0.3	82	15.4	42	7.9	56	10.5
179.01	20	0.4	897	16.6	403	7.5	353	6.5
180	27	1.2	256	11.2	286	12.5	421	18.4
607	8	1.9	164	24.3	51	7.5	47	7.0
Project Area Total:	**57**	**0.6**	**1,399**	**15.7**	**782**	**8.8**	**877**	**9.9**
San Francisco: Project Area as % of City:	**3,458** 0.07%	**0.45**	**243,409** 0.18%	**31.3**	**83,623** .101%	**10.8**	**109,504** .113%	**14.1**

* Included in other racial categories

Source: U.S. Census 2000

4.3 COMMUNITY FACILITIES AND SERVICES

Figure 4.3-1 depicts a variety of community facilities in relation to the project study area, including police and fire safety services, medical facilities, parks and other recreational facilities, schools, and churches.

4.3.1 PUBLIC AND COMMUNITY FACILITIES

The U.S. Postal Service maintains two facilities in the study area: a local post office at 460 Brannan Street and a processing and distribution center at Folsom and Main Streets.

Medical/social welfare facilities include the Seafarers Medical Center, a non-profit clinic at 40 Lansing Street, and the Delancey Street housing complex at Delancey and Brannan Streets on The Embarcadero. Operated by the non-profit Delancey Street Foundation, this four-story complex serves individuals recovering from alcohol and drug-related or other social problems and includes offices of the foundation's moving and transportation company and a restaurant.

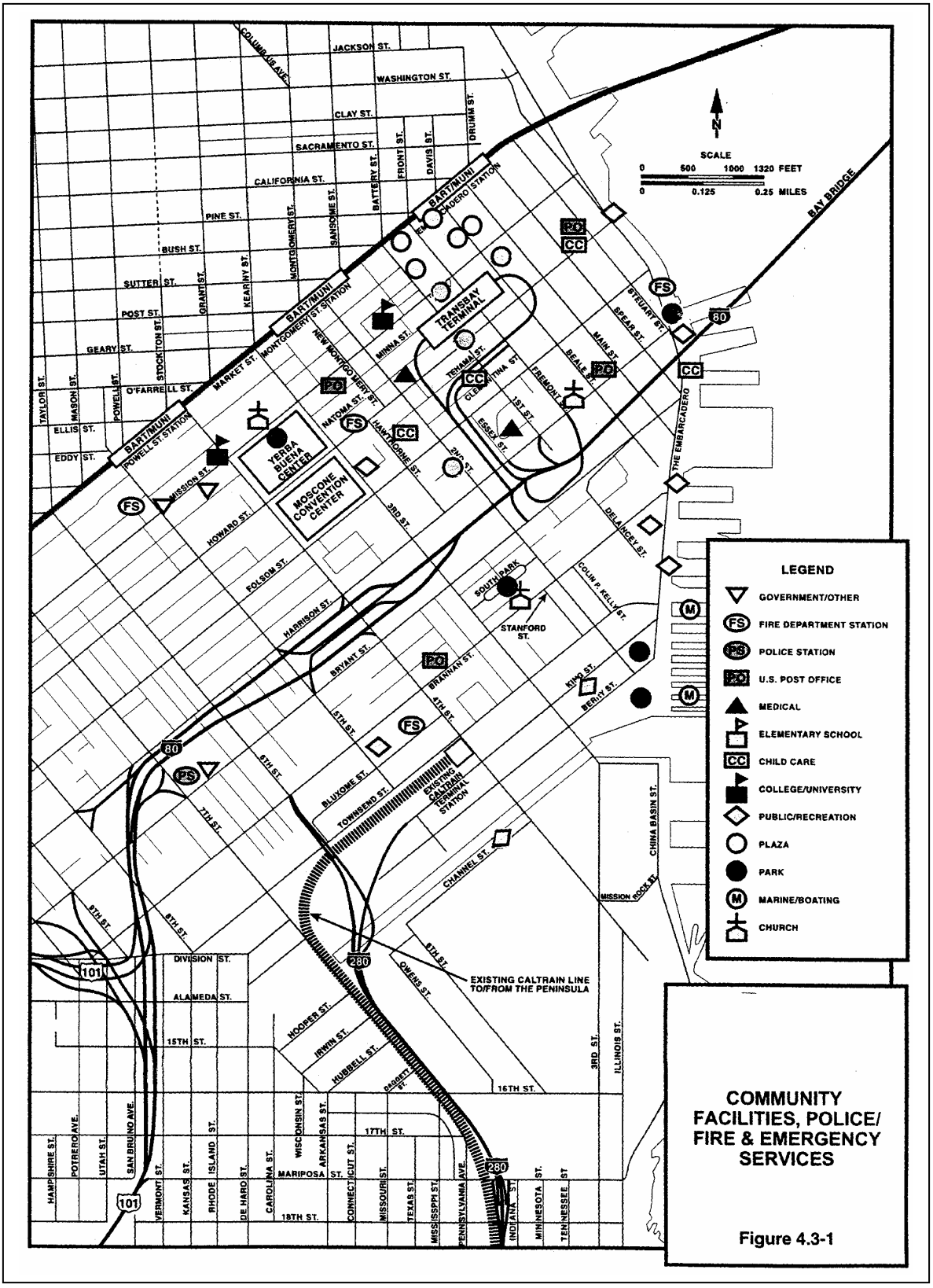
Five child care centers are located within the project study area: Discovery Treehouse Educational Center at 220 Spear Street; Healthy Environmental Child Development Center at 95 Hawthorne Street; Kinderhaven Children's Center at 474 The Embarcadero; South of Market Child Care Inc. at 366 Clementina Street; and PG&E building at Mission and Beale.

Parklands, schools and religious institutions are discussed in Section 4.4.

4.3.2 SAFETY AND EMERGENCY SERVICES

4.3.2.1 Police

The San Francisco City Police Department is responsible for general law enforcement in the study area, with both auto and foot patrols daily. The Police Department's Southern Station, located at 850 Bryant Street, provides police protection services to the study area. The Southern Police District is bounded by the Bay on the east, China Basin Channel on the south, Market Street on the north, and Duboce, Thirteenth, and Division Streets on the west. The district also includes the area bounded by Vermont, Sixteenth, and DeHaro Streets. Approximately 120 officers serve this district, and approximately five percent (six officers) are assigned to the proposed Transbay Redevelopment Area.


SCALE
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LEGEND
GOVERNMENT/OTHER
FIRE DEPARTMENT STATION
POLICE STATION
U.S. POST OFFICE
MEDICAL
ELEMENTARY SCHOOL
CHILD CARE
COLLEGE/UNIVERSITY
PUBLIC/RECREATION
PLAZA
PARK
MARINE/BOATING
CHURCH
EXISTING CALTRAIN LINE TO/FROM THE PENINSULA
COMMUNITY FACILITIES, POLICE/ FIRE & EMERGENCY SERVICES
Figure 4.3-1

In 2000, approximately 7,374 incidents – about 17 percent of the citywide total of Part I criminal incidents, which include violent crimes such as homicides, burglaries, and assaults – were reported in the Southern District. The average response time (measured from the time the call is received to the time officers arrive on the scene) for the Southern District is approximately five minutes for Priority A calls (life-threatening situations, severe assaults and crimes in progress) and about 15 minutes for Priority B calls (urgent situations where the crime has already occurred), which is about the same as citywide response times.

In addition to the local police force, the California Highway Patrol (CHP) has legal jurisdiction over the Transbay Terminal building and provides law enforcement officers to patrol the interior and the sidewalks surrounding the structure. Other security and enforcement agencies with jurisdiction in or near the study area include Amtrak, whose security officers police Caltrain vehicles and patrol Caltrain station and parking areas, and Bay Area Rapid Transit (BART) police who patrol the Embarcadero and Montgomery BART stations within the study area. AC Transit and Golden Gate Transit also have security personnel to monitor their facilities in the Transbay Terminal.

4.3.2.2 Fire and Emergency Medical Services

The San Francisco Fire Department provides fire suppression and prevention services as well as first response to medical emergencies. There are two fire stations within the study area: Station 1, located at 676 Howard Street, has fifteen personnel and is equipped with one engine (pumper), one (ladder) truck, one heavy rescue squad, and one ambulance; Station 8, at 36 Bluxome Street, has thirteen personnel, including a Battalion Chief, and is equipped with one engine, one truck, one hosetender, and one ambulance. Five other stations staffed with from six to fourteen personnel each and equipped with a total of five engines, two trucks, and five ambulances, are located nearby. Station 2, at 1340 Powell Street, has eleven personnel, including a Battalion Chief, and is equipped with one engine and one truck. Station 13, at 530 Sansome Street, has fourteen personnel, including a Division Chief and a Rescue Captain, and is equipped with one engine, one truck, and one ambulance. Station 29, at 299 Vermont Street, has six personnel and is equipped with one engine and one ambulance. Station 35/Fireboats, at Pier 22 ½ has eight personnel and is equipped with one engine, one ambulance, and two fireboats. Station 36, at 109 Oak Street, has six personnel, including a Battalion Chief, and is equipped with one engine, as well as the Department's Hazardous Materials Unit. A new fire station with one engine and an ambulance has recently been proposed to be located in the northeastern portion of the Mission Bay area, although the actual location is as yet unspecified.

The Fire Department uses both the low-pressure hydrant system and the high-pressure hydrant Auxiliary Water Supply System (AWSS) for fire fighting within the Transbay Redevelopment Area and the Caltrain storage yard properties. The AWSS provides an independent secondary source of water exclusively for fire fighting and is just inland of The Embarcadero. Covering the entire study area and vicinity, the AWSS system also includes two additional, back-up emergency water supplies: a Portable Water Supply System that can duplicate the underground

high-pressure system above ground, and a system of underground cisterns. There are five underground cisterns located within the study area, totaling 334,000 gallons of water storage capacity, one at Howard and Beale Streets, one at Howard and First Streets, one at Folsom and First Streets, one at Second and Folsom Streets, and one at First and Harrison Streets. The water mains that serve the area are in satisfactory condition and both the water supply and pressure are considered adequate for fire fighting purposes. The Fire Department has no planned water supply improvements to the AWSS; however, Mayor Willie Brown recently proposed a budget of approximately $180 million for a major upgrade to the City's water system for the fiscal year (2001-02), which, if implemented, should improve the low-pressure system.

Incidents involving known hazardous materials are handled by the Fire Department's Hazardous Materials Unit (Haz Mat 1), which is made up of members from Engine Company 36, located at 109 Oak Street, and backed by Rescue Unit and Battalion 2 members. The San Francisco Fire Code (as well as the San Francisco Health Code) establishes a system for permitting and monitoring the use and disposal of hazardous materials.

Emergency medical services in San Francisco are provided by Fire Department ambulances, which are complemented by Fire Department Rescue Units, and engines and trucks with "first response" capability. Ambulance Zone 1, the busiest of all eight San Francisco Zones, spans the study area, which represents nearly one fourth of the zone. Zone 1 extends from Van Ness Avenue on the west, Townsend Street on the south, and The Embarcadero on the northeast.

4.3.2.3 Disaster Preparedness

The San Francisco Mayor's Office of Emergency Services plans and coordinates emergency services in the event of a natural disaster. The City's Disaster Preparedness Plan divides the City into 10 districts. The Transbay Terminal and the Transbay Redevelopment Area are in District Three – South of Market Southern Waterfront. The designated fire station in the area is Battalion Station 8, located at 38 Bluxome Street. The designated first aid shelter is the South of Market Health Center located at 551 Minna Street. A staging area for the district has yet to be designated.

4.3.2.4 Solid Waste Management

Solid waste throughout the City is collected by Golden Gate Disposal Company and Sunset Scavenger Company, both subsidiaries of Norcal Waste Systems, Inc. Waste is transported to a transfer station at the San Francisco-Brisbane border, where it is hauled by the Sanitary Fill Company to the Altamont Landfill northeast of Livermore in Alameda County. San Francisco has a contract for disposal of all of its solid waste, up to a total of 15 million tons, at the Altamont Landfill until approximately 2010, the year at which the tonnage limit is expected to be reached, depending on changes in the rates of waste generation and diversion. At the beginning of 2001, about 6.4 million tons of contracted capacity remained at Altamont. Once the tonnage limit at Altamont has been reached, the City would likely contract with the Altamont Landfill or another nearby landfill for additional disposal capacity.

Approximately 42 percent of San Francisco's solid waste stream was diverted in 1999. Since the majority of waste produced is in the commercial and industrial sectors, much of the City's ability to reach the State mandated (AB 939) 50 percent diversion goal will rely on the reduction and diversion of commercial and industrial waste. Various conservation activities, such as recycling and public outreach programs, are in progress that may further reduce the volumes going to landfill.

4.4 PARKLANDS, SCHOOLS AND RELIGIONS INSTITUTIONS

4.4.1 PARKLANDS AND RECREATIONAL FACILITIES

Although the largely developed study area is notable for lack of publicly accessible open space and parks within its boundaries, the area does include public parks, a municipal marina, public waterfront areas, and several public plazas, as shown on Figure 4.3-1. South Park, described below, is the only open space within the study area under the jurisdiction of the San Francisco Recreation and Park Department. However, the Recreation and Park Department publicly provides and maintains open space near the study area including the South of Market Recreation Center, located on Sixth Street at Folsom Street, and Justin Herman Plaza at the foot of Market Street at The Embarcadero.

South Park, encircled by South Park Avenue between Second and Third Streets, is an approximately one-acre, wooded neighborhood park with pedestrian sidewalks and benches and a children's play area. South Beach Park is an approximately three-acre city park located along The Embarcadero between King Street and China Basin. South Beach Park adjoins the South Beach Harbor, a 690-boat berth marina for small boats. Mission Creek Park is approximately 15 acres, with portions bordering the north and south edges of China Basin Channel. The park is being developed as part of the Mission Bay North Redevelopment Plan. Rincon Point Park is approximately three acres located along The Embarcadero at Folsom Street, developed as part of the Rincon Point Redevelopment Plan. With the reconstruction of The Embarcadero roadway between Market and King Streets, improvements have been made along the Bay that provide increased public access and a continuous pedestrian walkway (Herb Caen Way) between South Beach Harbor, Market Street, and points north.

To the south and west of South Beach Harbor is China Basin, a channel extending from San Francisco Bay inland to just east of Seventh Street and I-280. The basin provides berths for sailboats, houseboats, and other moderately sized craft in the channel area west of Fourth Street. Along the south bank of the basin, just outside of the project area, is a linear community park with a pedestrian way and community garden plots.

Within the commercial office district in the vicinity of the Transbay Terminal are a number of privately developed plazas open to the public. Some are at street level; others are elevated and accessible by stairs or escalators.

Recreational facilities near the Caltrain Station at Fourth and Townsend include San Francisco Tennis Club at 645 Fifth Street and Pacific Bell Park, a 45,000-seat baseball stadium on King Street between Second and Third Streets.

4.4.2 SCHOOLS

No public or private schools (grades K-12) are located in the study area. Secondary-level private schools and colleges located within the study area include Golden Gate University's main campus, which is located on Mission Street, between First, Second, and Stevenson Streets. The campus includes administrative offices, classrooms, meeting facilities, and auditoriums. Approximately 5,000 full-and part-time undergraduate and graduate students attend. The Academy of Art College has academic facilities within the study area at 79 New Montgomery and Mission Street, and 180 New Montgomery and Howard Street. Heald College has facility locations at Fremont and Mission Streets and on Howard Street near Third Street. The San Francisco Institute of Architecture (SFIA), a recently formed graduate school in architecture, has a new facility at 555 Howard Street, between First and Second Streets that includes exhibit gallery space, a library, seminar rooms, computer rooms, workshop space, and a design studio. These community facilities are shown on Figure 4.3-1.

4.4.3 RELIGIOUS INSTITUTIONS

There is one religious institution in the study area, Apostleship of the Sea at 399 Fremont Street (at Harrison), which also provides temporary housing. The Grand Oriente Filipino Masonic Temple is located at 95 Jack London Street, south of South Park between Second and Third Streets. This religious institution is shown on Figure 4.3-1.

4.5 FISCAL/ECONOMIC CHARACTERISTICS

Existing residential and nonresidential privately-owned properties within the study area currently generate revenues to the City and County of San Francisco through direct and indirect taxation. These revenues include property taxes, payroll taxes, retail sales taxes, parking taxes, and other less significant taxes, such as utility taxes. Tax revenues associated with the properties to be acquired for the Transbay Terminal/Caltrain Downtown Extension/Redevelopment Project are estimated in Section 5.6, Fiscal and Economic Impacts, which also includes an estimate of property acquisition costs.

Total revenues for the City and County of San Francisco in Fiscal Year 1999-2000 were approximately $2.5 billion, including $1.4 billion in tax revenues. Property taxes, which accounted for an estimated $544 million of the total revenues, are levied on the assessed value for all privately-owned property. The property tax rate for Fiscal Year 1999-2000 was 1.129 percent. Of the collected property tax, approximately 75 percent was allocated to the City and County of San Francisco's general fund; the remaining 25 percent of property tax revenues accrued to debt service and special revenue funds.

Business taxes accounted for approximately $268 million of Fiscal Year 1999-2000 revenues. At the time, business taxes paid by individual businesses were based on the payroll tax or a gross receipts tax, whichever netted the larger tax amount. The payroll tax was levied on payroll expenses of persons or associates doing business in San Francisco, while the business tax was a gross receipts tax on all business activities performed by persons or associates in San Francisco. Subsequently, business tax payments in the City and County of San Francisco were changed to be solely based on the payroll tax.

In Fiscal Year 1999-2000, the City and County of San Francisco's revenues included $547 million in "other local taxes, " which largely included sales taxes. The total sales tax rate in San Francisco in Fiscal Year 1999-2000 was 8.25 percent. Of this amount, the City and County of San Francisco received 1.25 percent (i.e., 1.00 percent to the City and 0.25 percent to the County). In San Francisco another 1.0 percent is levied and apportioned among the San Francisco County Transportation Authority, the San Francisco Educational Finance Authority, and the San Francisco Public Finance Authority.

Other major revenue sources for San Francisco in Fiscal Year 1999-2000 were intergovernmental transfers ($805 million), charges for services ($186 million), rents and concessions ($72 million), and interest and investment income ($47 million).

4.6 AIR QUALITY

This section describes regional, state, and federal air pollutant standards and presents information regarding existing air quality in the project area and vicinity.

4.6.1 FEDERAL, STATE, AND LOCAL AIR QUALITY STANDARDS

The Federal Clean Air Act of 1970 resulted in the adoption of federal air pollutant standards, known as National Ambient Air Quality Standards (NAAQS), for pollutants including carbon monoxide (CO), ozone (O_3), sulfur oxides (SO_x), nitrogen oxides (NO_x), and particulate matter less than 10 microns in diameter (PM_{10}), and fine particulate matter ($PM_{2.5}$). Areas exceeding federal NAAQS are identified and designated as nonattainment areas. The state air pollutant standards are known as the California Ambient Air Quality Standards (CAAQS), and are generally more stringent than the NAAQS. Federal and state standards are shown in Table 4.6-1.

Existing compliance (i.e., area "attainment") with the NAAQS and CAAQS for criteria pollutants is discussed below, along with existing pollutant concentrations.

Table 4.6-1: Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	National Standard	California Standard
Ozone	1 hour 8 hour	0.12 ppm* 0.08 ppm	0.09 ppm N/A
Carbon Monoxide	1 hour 8 hour	35 ppm 9 ppm	20 ppm 9.0 ppm
Nitrogen Oxides	1 hour annual	--- 0.053 ppm	0.25 ppm ---
Sulfur Dioxide	1 hour 24 hour annual	--- 365 μ g /m^3 80 μg /m^3	0.25 ppm 0.04 ppm ---
Suspended Particulates (PM_{10})	24 hour annual	150 μg/m^3 50 μg/m^3	50 μg/m^3 30 μg/m^3
Particulate Matter - Fine ($PM_{2.5}$)	24 hour annual	65 μg/m^3 15 μg/m^3	----------

* ppm = parts per million; μg/m^3 = micrograms per cubic meter

Source: California Air Resources Board, 1999.

The project site is within the San Francisco Bay Area Air Basin (BAAB), which comprises the nine-county Bay Area. Air quality in the BAAB is regulated primarily by the Bay Area Air Quality Management District (BAAQMD), which is responsible for regulating stationary source emissions and submitting federally- and state-required documentation to the California Air Resources Board (ARB). The ARB regulates mobile source emissions and is responsible for reviewing state-required documentation submitted by regional agencies such as the BAAQMD, and for submitting federally-required documents to the United States Environmental Protection Agency (US EPA).

Regionally, BAAQMD has standards for project-related air contaminant emissions levels that it considers significant. These standards, expressed in terms of pounds per day, are presented in Table 4.6-2.

Table 4.6-2: BAAQMD Thresholds for Project-Related Contaminant Emissions

Pollutant	Pounds per Day From Project Operations
Reactive Organic Gas	80
Nitrogen Oxides	80
PM_{10}	80

Source: Bay Area Air Quality Management District, BAAQMD CEQA Guideline, Table 3, pg. 15, April 1996.

4.6.2 EXISTING AIR QUALITY AND REGIONAL ATTAINMENT STATUS

The transport and concentration of air pollutants are influenced by three principal meteorological factors: wind direction, wind speed, and atmospheric stability. The San Francisco Bay Area is in a large basin enclosed by hills that open into valleys. This topography creates the potential to trap and accumulate air pollutants and combines with variable weather conditions, airflow, and wind speeds to cause differing air pollution concentrations.

Existing air quality conditions in the study area are reflected by measurements taken at BAAQMD monitoring stations. The nearest monitoring station is the Arkansas Street monitoring station in San Francisco, located at 10 Arkansas Street, near Potrero Hill. Table 4.6-3 presents five years of data at this station to demonstrate pollution trends. The table also indicates federal and state standards for these pollutants, and where these pollutant standards have been exceeded.

According to BAAQMD, the BAAB is in attainment with national standards for carbon monoxide, nitrogen dioxide, sulfur dioxide, and annual PM10. It is designated non-attainment for ozone, and unclassified for PM2.5 and 24-hour PM10. With respect to California standards, the BAAB has attainment status for carbon monoxide, nitrogen dioxide, and sulfur dioxide. It is designated non-attainment for ozone and PM10.

The Bay Area experienced no days over the federal ozone standard in 1997, eight days in 1998, three days in 1999, and three days in 2000. This pattern can be attributed to differences in the number and severity of episodes of “ozone conducive” weather from one year to another. Even though there has been steady progress in reducing total volatile organic compounds (VOC) and NOx emissions in the Bay Area, the reductions have not been enough to prevent exceedences of the ozone standards under all meteorological conditions. The BAAQMD, the Metropolitan Transportation Commission (MTC), and the Association of Bay Area Governments (ABAG) recently prepared the Bay Area 2001 Ozone Attainment Plan. This plan is a revision to the Bay Area part of California's plan to achieve the national ozone standard. The plan was prepared in response to EPA's Federal Register notice of March 30, 2001 proposing to partially approve and partially disapprove the Bay Area's 1999 Ozone Attainment Plan. At a public hearing on October 24, 2001, the MTC and ABAG boards adopted the Plan and subsequently submitted it to the ARB. The ARB approved the 2001 Ozone Attainment Plan on November 1, 2001 and forwarded the Plan to the US EPA for review and approval.

Table 4.6-3: Air Quality Standards, Ambient Measurements and Violations, Arkansas Street, San Francisco

Pollutant	State Standard	Federal Standard	Year	Maximum Level	Violation Days
Ozone 1 hour	0.09 ppm	0.12 ppm	1996	0.07	0/0
			1997	0.07	0/0
			1998	0.05	0/0
			1999	0.08	0/0
			2000	0.06	0/0
Particulates (PM_{10}) 24 hours	50 $\mu g/m^3$	150 $\mu g/m^3$	1996	70.9	2/0
			1997	81.0	3/0
			1998	52.4	1/0
			1999	77.9	6/0
			2000	63.2	2/0
Carbon Monoxide 8 hour	9.1 ppm	9.5 ppm	1996	3.8	0/0
			1997	3.5	0/0
			1998	4.0	0/0
			1999	3.7	0/0
			2000	3.2	0/0
Nitrogen Oxides	25 ppm – 1 hr	0.05 ppm – annual	1996	0.08	0/0
			1997	0.07	0/0
			1998	0.08	0/0
			1999	0.10	0/0
			2000	0.07	0/0
Sulfur Dioxide	0.05 ppm – 1 hr	0.14 ppm – 24 hr	1996	0.008	0/0
			1997	0.007	0/0
			1998	0.005	0/0
			1999	0.007	0/0
			2000	0.008	0/0

Notes:
ppm = parts per million
$\mu g/m^3$ = micrograms per cubic meter
Violation days = number of days exceeding State or federal standard
Source: California Air Resources Board, Air Quality Data, 1996-2000.

4.6.3 REGULATORY SETTING

As amended in 1990, the federal Clean Air Act provides the current framework for air conformity. The Clean Air Act defines conformity to mean:

> "Conformity to an implementation plan's purpose of eliminating or reducing the severity and number of violations of the national ambient air quality standards and achieving expeditious attainment of such standards . . ."

Section 176 of the Clean Air Act specifies that no federal agency may approve, support, or fund an activity that does not conform to the applicable implementation plan. In late 1993, the EPA promulgated final rules for determining conformity of transportation plans, programs, and

projects. These final rules, contained in 40 CFR 93A (Code of Federal Regulations), govern the conformity assessment for the proposed project.

The BAAQMD, in coordination with the MTC and ABAG, is responsible for preparing air quality plans pursuant to the Federal and California Clean Air Acts. Under the Federal Clean Air Act, State Implementation Plans (SIPs) are required for areas that are designated as non-attainment for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, or inhaleable particulate matters. For the BAAB, a SIP is required for ozone since the region is currently designated as a federal non-attainment area for ozone. As discussed previously, the most current SIP is called the Bay Area 2001 Ozone Attainment Plan, which was adopted by the MTC, ABAG, and BAAQMD in October 2001. ARB adopted this Plan in November 2001, and EPA approved the associated emissions budget in February 2002.

Whereas the SIP is prepared pursuant to the Federal Clean Air Act, the Bay Area Clean Air Plan (CAP) is prepared to meet the requirements of the California Clean Air Act. The CAP is the region's plan for reducing ground-level ozone. The CAP identifies how the BAAB would meet the state ozone standard by its attainment date. The 2000 CAP focuses on identifying and implementing control measures that would reduce ozone. It was adopted by the BAAQMD in December 2000.

The MTC is responsible for *ensuring* that the Bay Area Regional Transportation Improvement Program (TIP) and Regional Transportation Plan (RTP) conform to the SIP. *The 2001 RTP was adopted by MTC in March 2002 following EPA's approval of the Bay Area mobile source emissions budget. The 2003 TIP was adopted by the MTC on January 22, 2003 and was federally approved on February 3, 2003."*

4.7 NOISE AND VIBRATION

4.7.1 EXISTING NOISE ENVIRONMENT

The noise environment of the study area, like that in most urban areas, is dominated by automobile and truck traffic noise, with traffic on the Bay Bridge most pervasive in areas closest to the Bridge. Other noise sources in the project area include small aircraft flyovers and normal community activity.

A noise survey was conducted in July 1995, with one additional noise measurement in November 1996, for the Caltrain San Francisco Downtown Extension Draft EIS/EIR. Additional noise analysis was done in 2001. The original survey documented the existing noise environment in the study area and provided data necessary for accurate estimation of how the noise environment would change under project alternative conditions. Long-term (24-hour) noise monitoring sites were located at residential complexes and the site of a planned residential high-rise. Short-term (30 minutes) measurement sites were located near sensitive receptors

along the proposed alignments and near roadways that are the primary contributors to ambient noise levels.

The data obtained in the 1995-96 noise survey remain valid for the current project. Noise conditions in the corridor have not changed substantially. Supplementary measurements were taken in May and June of 2001. Table 4.7-1 presents results of the 24-hour and short-term surveys, and Figure 4.7-1 indicates the locations of the noise measurement sites.

Table 4.7-1: Summary of Noise Survey Results

Location	Type	Start		Results (dBA)	
		Date	Time	L_{dn}	L_{eq}
LT1: Bayside Village	24-hour	7/24/95	11:00	72	--
LT2: Bay Crest Residential	24-hour	7/24/95	12:00	76	--
LT3: Delancey Street	24-hour	7/25/95	13:00	71	--
LT4: South Beach Marina	24-hour	7/25/95	14:00	64	--
LT5: Oriental Warehouse	24-hour	7/26/95	15:00	67	--
LT6: Townsend Street	24-hour	6/18/01	08:00	76	--
ST1: Parking Lot near Bayside Village	30-minute	7/25/95	16:52	72*	69
ST2: South Beach Marina	30-minute	7/26/95	10:08	67*	64
ST3: Bayside Village, Bryant Street	30-minute	7/26/95	16:56	71*	68
ST4: Parking Lot, Planned Residential (Century Development)	30-minute	7/26/95	18:18	60*	57
ST5: Bay Crest Residential, Beale Street	30-minute	7/27/95	14:05	75*	72
ST6: Residential between Folsom and Harrison, Essex Street side	60-minute	11/4/96	15:50	68*	65
ST 7: Parking lot south of existing Caltrain Station and yard	30-minute	6/18/01	11:51	71*	69
ST 7: Parking lot south of existing Caltrain Station and yard	30-minute	6/19/01	07:43	71*	67

* L_{dn} at short-term sites estimated as L_{eq} + 3 dBA.

Source: Harris Miller Miller & Hanson, August 2001.

The results are typical for an urban area and are presented in terms of the L_{eq} (Equivalent Sound Level), which is the standard measure for traffic noise, and L_{dn} (Day-Night Equivalent Sound Level), which is a good representation of community noise levels.[1]

[1] L_{eq} is a measure of noise exposure over time, which is referred to as "equivalent" since it is equivalent to the level of a steady sound which, over a referenced duration and location, has the same A-weighted sound energy as fluctuating sound. Durations of one hour and one day are commonly used. L_{dn} is a measure of noise exposure over a 24-hour period, with an adjustment for nighttime noise to account for people being more sensitive to nighttime noises. Both measurements are presented here in terms of dBA, or A-weighted decibels, which are logarithmic units of measurement filtered to approximate human hearing.

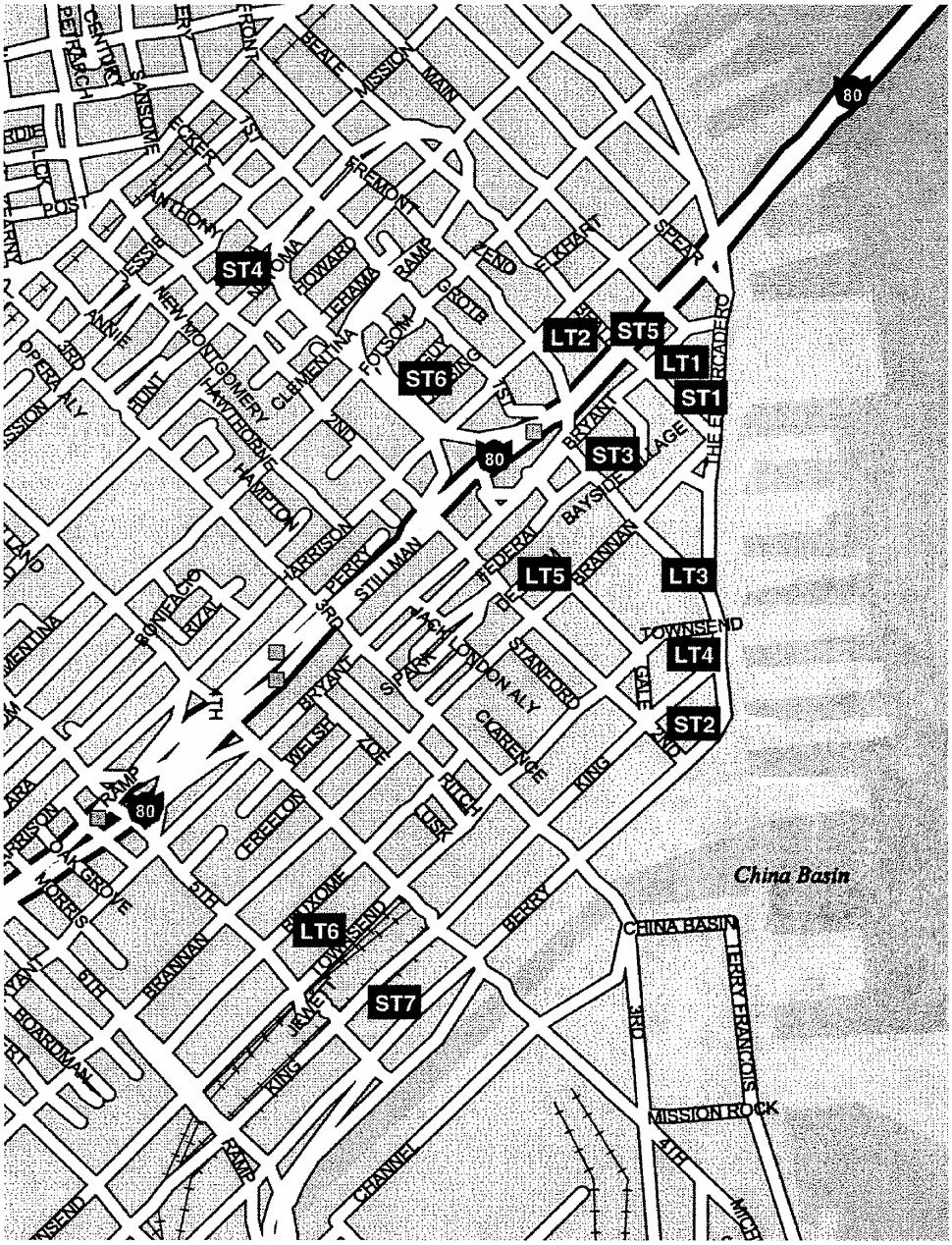


Figure 4.7-1: Noise Monitoring Locations

To account for most people being more sensitive to noise during nighttime hours, the calculation of L_{dn} includes a weighting factor for noise that occurs between the hours of 10 PM and 7 AM. The effect of this weighting factor is that a noise event, such as a loud truck, that occurs during the nighttime is equivalent to ten of the same events during daytime hours.

As shown in Table 4.7-1, existing L_{dn} measurements in the study area range from 60 to 76 dBA. The highest noise levels were measured at sites directly exposed to the Bay Bridge traffic. The lowest levels of noise exposure were measured at the South Beach Marina Apartments and at the site for the Century development. The South Beach Marina site was completely shielded from the bridge. Although the Century Development site is just south of Mission Street near several high traffic volume streets where L_{dn} would normally range between 65 to 70 dBA or higher, the noise levels are relatively low due to the shielding effect of large buildings around the site.

4.7.2 EXISTING VIBRATION

Ambient vibration measurements were performed as part of the 1995 noise survey and were taken simultaneously with the noise measurements at the five short-term measurement sites. Supplemental vibration measurements were taken in May and June of 2001 to further define the vibration propagation characteristics along the Second Street corridor, and to characterize the response of representative buildings to ground-borne vibration. The major existing sources of ground-borne vibration are traffic on local streets, particularly large buses and trucks, mechanical equipment associated with buildings, and existing Caltrain and Muni operations. Figure 4.7-2 indicates the locations of the vibration propagation test sites. Table 4.7-2 presents results of the vibration survey in terms of the range of route mean square (RMS) vibration velocity expressed in decibels (VdB in this analysis).[2] The normal threshold of human perception of vibration is around 65 VdB, and most people find levels up to 75 to 80 VdB acceptable for residential land uses as long as the vibration happens only intermittently. Typical levels of vibration measured in the study area were in the 40 to 50 VdB range, with the highest level at 58. This indicates that existing ground-borne vibration in the study area is almost always below the threshold of human perception.

The highest levels of ambient ground-borne vibration were measured at the Clock Tower building at Bryant and Second Streets. Both exterior and interior vibration was measured. The exterior location was on the sidewalk relatively close to the street. Even at this location, the highest vibration levels were only slightly above what can be perceived by most humans.

[2] RMS (root-mean-square) amplitude represents the average energy over a short time interval; typically one second is used to evaluate human responses to vibration. RMS is considered the best available measure of potential human annoyance from ground vibration; it differs from peak particle velocity (PPV), which is used to define the thresholds for potential building damage from construction vibration. PPV represents the maximum instantaneous peak in the velocity of an object's vibratory motion. VdB is used in this analysis to denote decibels.

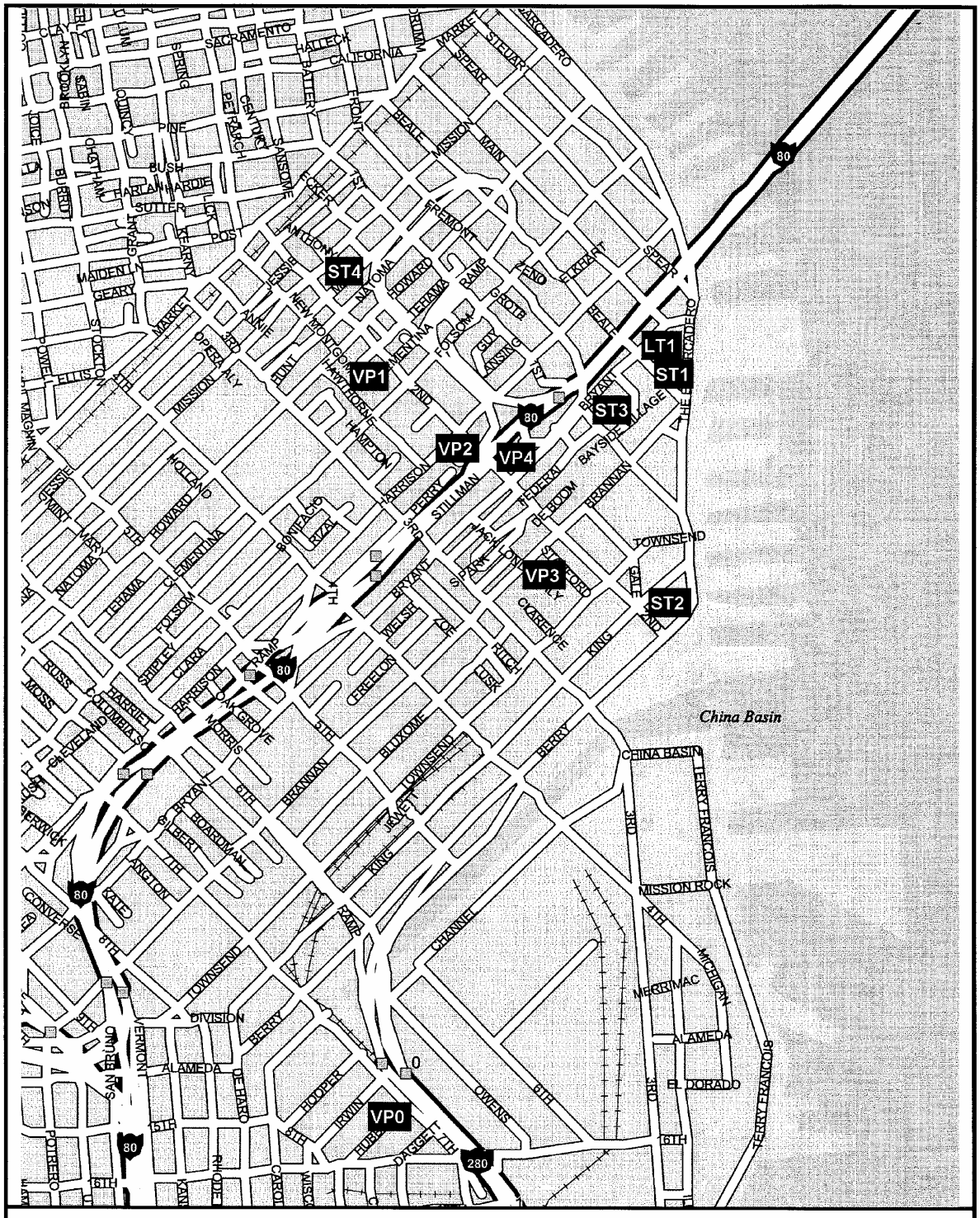


Figure 4.7-2: Vibration Propagation Test Sites

In addition to the measurements of ambient vibration, vibration propagation tests were performed to characterize how local geologic conditions affect vibration propagation in the study area. The vibration propagation tests performed for the study area used a weight dropped onto a load cell to cause a ground vibration pulse. The impact force of the weight was measured with the load cell, and accelerometers were used to measure the vibration pulse at distances from 25 to 200 feet away.

Table 4.7-2: Summary of Ambient Vibration Results

Measurement Site [1]	Location	Typical Background Vibration (VdB) [2]	Vibration Sources
V1 (ST1 on Figure 4.7-1)	Parking Lot near Bayside Village	35-40	Buses and trucks
V2 (ST2 on Figure 4.7-1)	South Beach Marina	35-40	Buses and trucks
V3 (ST3 on Figure 4.7-1)	Bayside Village, Bryant Street	40-50	Cars into building, trucks, traffic on Bay Bridge
V4 (ST4 on Figure 4.7-1)	Parking Lot (planned Century residential development)	35-40	Cars
V5 (ST5 on Figure 4.7-1)	Bay Crest Residential, Beale Street	40-43	Trucks, traffic on Bay Bridge, cars
V6 (VP2 on Figure 4.7-2)	Harrison Street Parking Lot	36-40	Trucks, traffic on Bay Bridge, cars
V7 (VP4 on Figure 4.7-2)	Second St. & Bryant (Clock Tower building, exterior)	55-65	Trucks, traffic on Bay Bridge, cars, people on sidewalk
V8 (VP4 on Figure 4.7-2)	Second St. & Bryant (Clock Tower building, interior)	50-60	Trucks, traffic on Bay Bridge, cars

Vibration measurements at V1 through V5 were taken in conjunction with short-term (ST) noise measurements. Vibration measurements at sites V6 through V8 coincided with vibration propagation (VP) tests.

Vibration levels are in terms of RMS vibration velocity in decibels with a reference quantity of 1 μin./sec.

Source: Harris Miller Miller & Hanson, August 2001.

A test of existing Caltrain vibration was also conducted at the intersection of Hubbell and Seventh Streets. The results of this test were used to develop a force density curve that is representative of the existing commuter rail equipment. The results of the vibration propagation tests in combination with the train vibration tests were used to estimate future ground-borne vibration levels from train operations along the proposed Townsend and Second Street corridors. Locations of vibration propagation testing sites are described in Table 4.7-3 and shown on Figure 4.7-2.

Table 4.7-3: Vibration Propagation Measurement Sites

Site #	Description
VP0	Hubbell and Seventh Street (existing train vibration). Both train vibration and transfer mobility were measured at this site. The information was used to develop a force density curve that is representative of the existing commuter rail equipment. The vibration measurements at this site were used to characterize the ground-borne vibration along Townsend before the subway structure would be founded in bedrock.
VP1	Marine Firefighter's Union Building, 240 Second Street (outdoor-to-indoor test). The test at this location represents the high-rise apartment building at 246 Second Street, and the Marriott Hotel under construction across from the Marine Firefighter's Union Building.
VP2	Parking lot adjacent to 400 Harrison Street (outdoor vibration propagation). Near the I-80 overpass at Second Street, this site represents the single family homes between Bryant Street and Brannan Street, west of Second Street. An accelerometer was placed on a landing at the rear of 400 Harrison Street, to provide an estimate of the ground-to-foundation coupling loss between a building and the ground.
VP3	Private parking lot on Brannon Street near Stanford Street (outdoor vibration propagation). This site represents the apartment building on Townsend Street, near the current layover facility. An accelerometer was placed on the foundation of the nearby Pac-Bell garage to provide an estimate of the ground-to-foundation couple loss.
VP4	Clock Tower residential buildings (outdoor-to-indoor vibration test). This site represents the outdoor-to-indoor vibration propagation at the Clock Tower Apartments.

Source: Harris Miller Miller & Hanson, August 2001.

4.8 GEOLOGY AND SEISMICITY

This section describes the geology of the project area and the susceptibility of site soils to seismically induced hazards.

4.8.1 GEOLOGIC SETTING

The project area, and the San Francisco Peninsula in general, is located in the Coast Ranges geomorphic province, although the dominant northwesterly trend of ridges and valleys characteristic of the Coast Ranges is somewhat obscured within the City of San Francisco, except for features such as Russian and Telegraph Hills. The regional topography is characterized by relatively rugged hills formed by Jurassic- to Cretaceous-aged bedrock, surrounded by low flat-lying areas that are underlain by Quaternary sedimentary deposits. Bedrock consists of highly deformed and fractured sedimentary rocks of the Franciscan assemblage. Locally, Franciscan bedrock contains large through-going shear zones such as the City College and Fort Point --Potrero Hill -- Hunters Point shear zones.

From a geotechnical standpoint, the study corridor is divided into two general areas: the portions of the study area that are located bayward of the historic shoreline, and portions of the study area

on the land side of that line. The portions of the study area that are bayward of the historic (c. 1848) shoreline represent areas reclaimed by filling former marshes and estuaries of the Bay, and include the former Yerba Buena Cove, South Beach, and Mission Bay. (See Figure 4.8-1.) Today these areas include much of the Financial District, South of Market, and Mission Bay areas of San Francisco. Soils in these areas are generally characterized by the presence of soft and compressible Bay Mud, under the surficial fill placed when these areas were reclaimed in the late 1800s and early 1900s. The depth of these sediments varies substantially depending on the position of the area of interest relative to the old shoreline. Fill materials also vary, and may include clay, dune sand, rubble, building demolition debris, buried ships, and other materials.

The portion of the project area that is inland from the historic shoreline is underlain by Franciscan bedrock at the surface or at shallow depths, although Bay Mud extends landward of the 1848 shoreline near the Transbay Terminal and in the southern portion of the project area between Third and Seventh Streets in areas of former marshlands. Quaternary sediments overlie bedrock throughout the project area except for Rincon Hill, which is the only surface exposure of Franciscan bedrock in the project area. Bedrock is less than 10 feet below ground surface near Townsend and Second Streets.

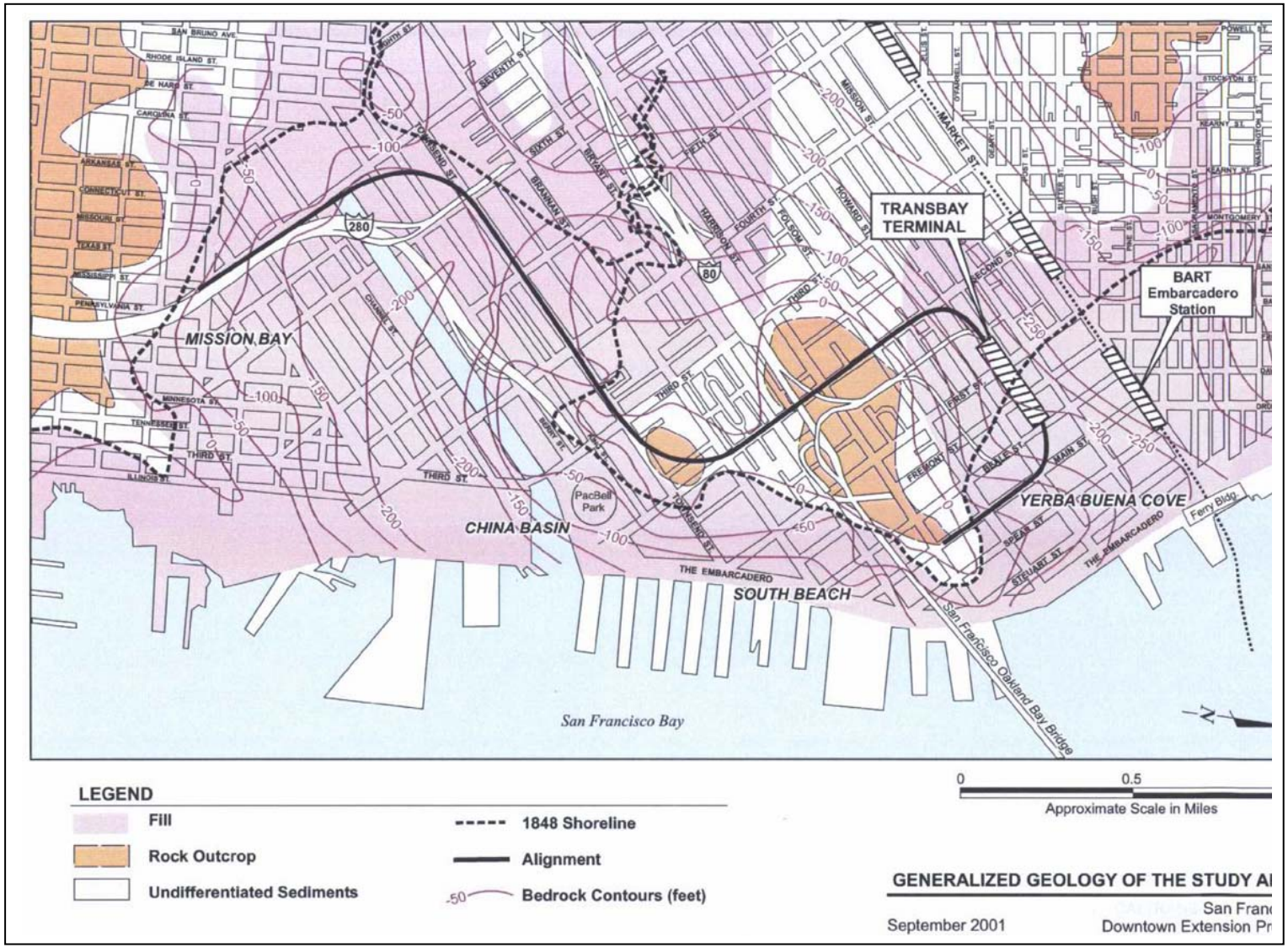
Groundwater is between Seven and 10 feet below ground surface in the flat-lying portions of the project area, which corresponds to elevations of -3 to -10 feet relative to City and County of San Francisco Datum (8.6 feet above mean sea level).

4.8.2 SEISMIC SETTING

The project area is seismically active, and ground shaking from earthquakes occurs periodically. Active faults in the Bay Area are illustrated in Figure 4.8-2.

The San Andreas and Hayward faults have the highest slip rates and are the most active of any faults in the Bay Area. The San Andreas Fault, which is approximately 8.5 miles west of the project site, was the source of the 1906 magnitude 8.2 earthquake and the 1989 magnitude 7.1 (Loma Prieta) earthquake. The Hayward Fault, which lies approximately nine miles east of the project site, was the source of the 1836 and 1868 magnitude 6.8 earthquakes. The Calaveras Fault, which is approximately 22 miles east of the project site, was the source of a 1911 magnitude 6 earthquake and a 1984 magnitude 6.2 earthquake.

Other important earthquake sources that are capable of producing large magnitude earthquakes are the San Gregorio, Rodgers Creek, and Greenville fault zones.


TRANSBAY TERMINAL
BART Embarcadero Station
MISSION BAY
CHINA BASIN
YERBA BUENA COVE
SOUTH BEACH
PacBell Park
Ferry Bldg
San Francisco Bay
San Francisco Oakland Bay Bridge
MARKET ST.
THIRD ST.
THE EMBARCADERO
LEGEND
Fill
Rock Outcrop
Undifferentiated Sediments
1848 Shoreline
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0
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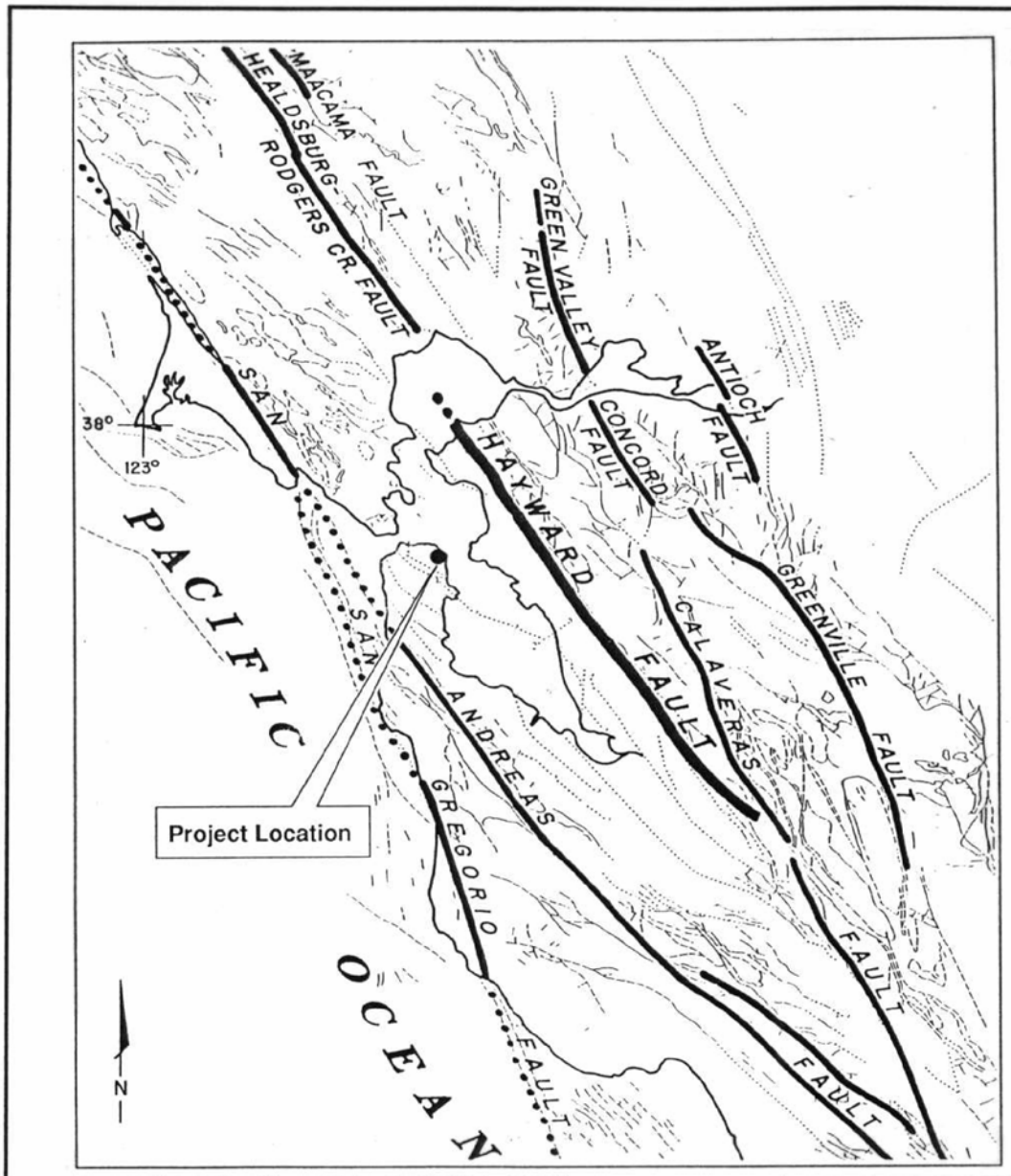


Source: California Division of Mines and Geology, Special Publication 78 (1987)

LOCATIONS OF ACTIVE FAULTS IN THE SAN FRANCISCO BAY AREA

Figure 4.8-2

4-38

No known faults cross the project alignment; however the faults shown in Figure 4.8-2 may subject the study area to strong ground shaking. Estimates of peak ground acceleration from an earthquake on the San Andreas or Hayward fault within the study area range from 0.2g to 0.5g. Ground failure hazards during an earthquake can include settlement and liquefaction. During the 1989 Loma Prieta earthquake, ground deformation in the project area consisted of settlement, ground cracking, and/or sand boils. These features were observed between Beale Street and The Embarcadero from Market to Harrison Streets, and from Fourth to Ninth Streets between Mission and King Streets.

4.9 VEGETATION AND WILDLIFE

Portions of the project area lie within reclaimed areas formed by filling former marshes and estuaries of San Francisco Bay, including Mission Bay, South Beach and Yerba Buena Cove. Except for South Park and landscaping associated with recent residential developments in the South Beach/Steamboat Point area, the vicinity of the proposed project is generally paved with concrete and asphalt. No sizable natural habitat for biological plant, animal, or bird species remains.

Although the project area lies adjacent to the San Francisco Bay, all construction would occur outside the Bay Conservation and Development Commission's 100-foot "shoreline band," and no project alternatives would require filling of or construction within wetlands or Bay waters or affect water quality. No effects on San Francisco Bay bird species are anticipated.

These findings are consistent with the previous environmental studies conducted in the area, including the March 1997 Draft EIS/EIR for the Caltrain Downtown Extension Project, and the Draft EIS/EIR for Alternatives to Replacement of the Embarcadero Freeway and the Terminal Separator Structure, published by the City of San Francisco, Caltrans, and the Federal Highway Administration in 1995. Both these studies addressed an area similar to the present project area. The U.S. Fish and Wildlife Service indicated that no adverse effects on endangered species of wildlife and plants or their habitats are expected from the proposed improvements. A copy of the Service's August 10, 2001, letter is provided in Appendix D.

4.10 WETLANDS

The present China Basin Channel is not a naturally occurring tidal creek but the remains of the former Mission Bay. The entire site, like the project area in general, has been altered through extensive urban development or landscaping. No wetlands remain.

4.11 WATER RESOURCES

4.11.1 GROUND WATER RESOURCES

The occurrence of groundwater in the project area is related to the nature of shallow soil and bedrock. In the fill areas (see Figure 4.17-1 for the location of fill areas and the historic shoreline.), groundwater occurs at depths of two to ten feet below ground surface, and the elevation of groundwater corresponds with the level of San Francisco Bay. In areas underlain by alluvial soils and shallow bedrock, which generally correspond to the higher elevations in the project area, groundwater is typically found at depths greater than 20 to 30 feet.

Groundwater occurring within fill soils in the project area is expected to be shallow and, therefore, susceptible to contamination from past industrial land use, placement of contaminated fill material, and releases from underground storage tanks (USTs). Groundwater quality may be further degraded by seawater intrusion along The Embarcadero waterfront. The presence of chemical constituents such as petroleum hydrocarbons and chlorides may affect how water generated during construction dewatering will be handled and disposed. The City and County of San Francisco and the California Regional Water Quality Control Board do not consider water in this area suitable for potable supplies, but consider it potentially suitable for industrial purposes, although no known uses are reported within the project area.

The quality of the groundwater in the fill soils is generally poor. Brackish conditions exist in most of the project area due to the proximity of the Bay, where tidal fluctuations are generally in the range of six feet. Seawater intrusion resulting from tidal fluctuations has been known to occur several hundred feet from the Bay and tidal channels (e.g., China Basin Channel). The presence of chlorides in the groundwater can restrict the discharge of dewatering effluent to the City's combined sewer system because of chloride content limits imposed by the San Francisco Department of Public Works (DPW), which operates the sewage treatment plant.

Groundwater encountered in the fill areas of the alignment may contain varying concentrations of petroleum hydrocarbon contaminants, primarily because the South of Market area contains one of the highest densities of USTs in the City (see discussion of Hazardous Wastes, Section 4.17). Hydrocarbon contamination may affect dewatering programs, possibly requiring treatment of pumped groundwater prior to discharge to the storm sewers. Although polynuclear aromatic hydrocarbons (PAH) and lead are present in the fill soils, groundwater has not typically been affected by these contaminants.

4.11.2 SURFACE WATER RESOURCES

The relative density of impermeable surfaces within the project area is on the order of 95 percent. Most of the area is completely paved and developed and no surface water bodies exist with the exception of China Basin Channel and San Francisco Bay. All stormwater runoff

in the project area is captured by the City's combined sewer system, with one exception: storm sewers along the bayward portion of The Embarcadero discharge directly to the Bay.

The sewer system is served by an 18-foot by 18-foot box sewer, which runs along The Embarcadero, King, and Berry Streets to a pump station at Berry and Seventh Streets. From the pump station, the water is transported to a sewage treatment plant near Phelps and Jerrold Streets. Data on water quality were not available for the project area; however, due to the heavily urbanized nature of the project area, runoff water quality is expected to be poor.

4.12 FLOODPLAINS

The City and County of San Francisco does not participate in the Federal Emergency Management Agency's floodplain identification program, and no floodplains have been identified within San Francisco.

4.13 COASTAL ZONE

The McAteer-Petris Act of 1965, as amended, grants the San Francisco Bay Conservation and Development Commission (BCDC) permit authority over San Francisco Bay and over lands located within 100 feet of the Bay shoreline. BCDC's management plan for the San Francisco Bay, The San Francisco Bay Plan, has been certified by the Federal Department of Commerce as the Coastal Zone Management Program for the San Francisco Bay Segment of the California Coastal Zone Management Program pursuant to the Federal Coastal Zone Management Act (CZMA). Under the CZMA, federal projects and local projects that use federal funding or require federal approval must, to the maximum extent practicable, be consistent with a state's coastal management program if the project would affect the coastal zone, and BCDC's authority may extend inland more than 100 feet.

The Second-to-Mission Alternative is the closest alignment to BCDC's jurisdiction. The alignment terminates at Mission Street and The Embarcadero and is approximately 190 feet (63 yards) from the shoreline. The alignment would not have any effects on shoreline access or water quality. No formal finding of consistency with the Coastal Zone Management Plan (i.e., the San Francisco Bay Plan) would therefore be required.

4.14 UTILITIES

The San Francisco Department of Public Works maintains a combined storm drain and sanitary sewer system in the Transbay Terminal, Caltrain Downtown Extension, and redevelopment area. Sewer types include vitrified clay pipe (VCP); older iron/steel pipe (ISP); very old brick collector sewers; medium-sized reinforced concrete interceptor sewers, and large reinforced concrete consolidation sewers that carry sewage and storm water from downtown to the

Southeast Treatment Plant. Sewers range in size from eight inch VCP to seven feet circular concrete.

The San Francisco Water Department maintains an interconnected grid of service lines throughout the area, and the San Francisco Fire Department maintains a second parallel system of auxiliary water lines exclusively for supplying fire hydrants (with potable water) and with provision for supplying salt water from the Bay for fire fighting. Water lines are primarily cast iron and range in size from two to 30-inches.

The City and County of San Francisco owns and operates the Hetch Hetchy water and power hydroelectric generating facilities that provide power to San Francisco via Pacific Gas and Electric Company's (PG&E) electrical transmission and distribution system. Electricity service is provided primarily from underground reinforced concrete vaults through a network of buried conduit and duct banks. PG&E maintains older, low-pressure cast iron natural gas lines from four to 16 inches in diameter, as well as new, high-pressure plastic lines from two to four inches in diameter.

Communication networks interlace the area. Most communication equipment is owned and operated by Pacific Bell and routed underground, similar to electrical service.

4.15 ELECTROMAGNETIC FIELDS

Electromagnetic fields (EMF) are associated with electromagnetic radiation, which is energy in the form of photons. Radiation energy travels and spreads as it goes and has many natural and human-made sources. The electromagnetic spectrum, the scientific name given to radiation energy, includes light, radio waves, and x-rays, among other energy forms. For purposes of describing the EMF setting for the proposed project and, in Chapter 5, the EMF effects of the proposed project, human-made sources of radiation energy and associated EMF are relevant.

The commonly known human-made sources of EMF are from electrical systems such as electronics, telecommunications, electric motors, and other electrically powered devices. The radiation from these sources is invisible, non-ionizing, and low frequency. Generally, in most living environments, the level of such radiation plus background natural sources of EMF is low and not considered hazardous. However, under extreme conditions, EMF can become intense, and hazards include shock and burn. Such conditions are nevertheless rare. The more pertinent concern over EMF exposure is the potential insidious biological and health effects to individuals as the number of EMF-generating activities increases. As more sources of EMF are introduced, the extent and level of human exposure increases. The potential biological and health effects are under much study and intense debate.

Another concern over EMF generation is the potential interference to other electromagnetic systems that can result when new or more intense sources of radiation are introduced into the environment. These effects are better understood and well documented. Electromagnetic

interference (EMI) may include the interruption, obstruction, or other degradation in the effective performance of electronics and electrical equipment. Depending upon the critical nature of this equipment, the effects can have serious consequences for the health and safety of individuals. Perhaps of less concern, but nonetheless important, is that the efficiency of affected systems may be reduced.

As the name implies, EMF has electrical and magnetic field components. With respect to electrical systems, electric fields result from the strength of the electric charge (voltage) while magnetic fields result from the motion of the charge. Direct current (DC) produces stronger EMFs than alternating current (AC). Electric field strength is measured in units of volts per meter (V/m) and is greater the higher the voltage. Field strength deteriorates rapidly with distance from the source. Magnetic field strength has several units of measure; the most commonly used are milligauss (mG) and the microTesla (mT). Ten milligauss equal one microTesla. Magnetic fields also deteriorate with distance but readily pass through most objects. Magnetic fields are typically the radiation of concern when evaluating EMFs. Consequently, EMF strength is measured in terms of milligauss.

Although modern society increasingly relies on electromagnetic systems, strong EMF fields are not associated with the normal living and working environment. Examples of EMF intensities from human activities include the following:

Overhead power transmission line:	32 to 57 mG (range of exposure to utility workers)
Household appliances:	8 to 165 mG (at a distance of 27 cm, or 12 inches)
Computer video display:	2 to 4 mG (at 35 cm, or 16 inches)
Rail vehicle (electrically powered)	400 mg (at 110 cm, or 43 inches from the vehicle floor) to 1,500 mG (at floor level)[3]

For comparison, in the natural environment apart from human activity, the earth's static magnetic field varies from 300 mG at the equator to over 600 mG at the magnetic poles.

The area of the Transbay Terminal/Caltrain Downtown Extension/Redevelopment Project is a moderate- to high-density urban environment with considerable commercial activity. As such, it contains numerous sources of EMFs. A major PGE substation exists at Fremont and Folsom Streets, and several telecommunications switching stations exist near Main and Spear and Harrison and Folsom Streets.

Sources of electromagnetic radiation would appear to be increasing with densification and development of the area, although the effects on EMF levels are indeterminate without historic data. Many modern appliances, electronics and communications systems have been improved to reduce electromagnetic radiation/EMF levels.

[3] Safety of High Speed Guided Ground Transportation Systems, EMF Exposure Environments Summary Reports, Federal Railroad Administration, August 1993.

The project area contains no known sources of high-level radiation or severe EMF exposures to the general public. EMF exposures, although common, are low-level.

4.16 HISTORIC AND CULTURAL RESOURCES

Potential historical and archaeological resources in the project area have been identified and evaluated in accordance with applicable regulations and guidelines. This section reports on the identification of such resources.

4.16.1 REGULATORY SETTING

Section 106 of the National Historic Preservation Act of 1966 requires federal agencies to take into account the effects of their activities and programs on historic properties. Section 110 of the Act lays out affirmative agency responsibilities with respect to historic properties and establishes the National Register of Historic Places (NRHP) for identifying and listing historic properties of importance to the nation, the states, and local communities.

Guidelines for implementing Section 106 requirements are promulgated by the Advisory Council on Historic Preservation (ACHP) in "Protection of Historic Properties" (36 CFR Part 800). These guidelines require agencies to comply also with other federal laws related to historic preservation, including the National Environmental Policy Act of 1969; the Archaeological and Historic Preservation Act of 1979; and Executive Order 11593 (1971), addressing "Protection and Enhancement of the Cultural Environment." Other agency-specific legislation requires consideration of the impacts of federal actions on cultural resources. Transportation projects must comply with the provisions of Section 4(f) of the Department of Transportation Act of 1966.

The State of California references cultural resources in the California Environmental Quality Act (CEQA—Public Resources Code (PRC) Division 13, Sections 21000-21178); archaeological and historical resources are specifically treated under Sections 21083.2 and 21084.1, respectively. California PRC 5020.1 through 5024.6 (effective 1992) creates the California Register of Historical Resources and sets forth requirements for protection of historic cultural resources.

The City and County of San Francisco has two sections of its Planning Code that deal specifically with the preservation of historic resources. Article 10 created the Landmarks Preservation Advisory Board and deals with the designation of landmarks and historic districts throughout the City. Article 11 deals with the preservation of historic buildings and creation of historic districts within the C-3 Districts (generally the downtown or central business district of San Francisco). The Landmarks Preservation Advisory Board makes recommendations to the Planning Department and Commission on the designation of landmarks and districts as well as the appropriateness of changes to historic buildings under the protection of Article 10 and permits to alter under Article 11. The City-designated structures and districts in Articles 10 and

11 are presumed historic resources under the California Environmental Quality Act (CEQA) as they are on a local register. In addition, resources listed or determined eligible for listing in the California Register of Historic Resources or in the Nation Register of Historic Places (NRHP) are also considered historic resources under CEQA.

4.16.2 ARCHAEOLOGICAL AREA OF POTENTIAL EFFECTS

An Area of Potential Effects (APE) for archaeological resources was delineated by FTA in consultation with the State Historic Preservation Officer (SHPO). This APE was defined as the extent of proposed construction for the project (i.e., the project "footprint"). The locations of project components are shown in Chapter 2. Figures 2.2-1 and 2.2-7 identify the location of the Transbay Terminal component, Figures 2.2-9 through 2.2-2*1* identify the Caltrain Downtown Extension alignment, and Figure 2.2-2*2* identifies the locations of Redevelopment properties.

4.16.3 HISTORIC ARCHITECTURAL AREA OF POTENTIAL EFFECTS

An APE for historic architectural resources was also delineated by FTA in consultation with the State Historic Preservation Officer (SHPO). The APE was defined to take into account the potential impacts associated with different project components. The APE also overlaps with several previous investigations. One previous survey, by architectural historian Michael Corbett, was conducted for an earlier proposal for the Caltrain portion of this project. The major difference between the present APE and the Corbett survey area is the inclusion of more buildings and structures at the west side of Second Street from Brannan to Folsom Streets, as well as both sides of Second Street between Folsom Street and roughly Natoma Street.

4.16.4 HISTORIC PROPERTIES SURVEY REPORT

A Historic Architectural Survey Report (HASR) and Historic Property Survey Report (HPSR), which identify and summarize potentially eligible historic and cultural resources within the APE, were prepared and submitted to the SHPO. The SHPO concurred in the determinations of eligibility on May 23, 2002. A copy of the SHPO's letter of concurrence is included in Appendix D. The following sections summarize information and National Register eligibility determinations contained in the HASR and HPSR; they also include available information regarding designations and eligibility at the local and State level.

4.16.5 ARCHAEOLOGICAL RESOURCES

Research for archaeological resources was conducted in 2001, and included review of historical maps and written sources, and a review of archaeological and historic site listings from the Historical Resources Information System Northwest Information Center at Sonoma State

University. There have been a relatively large number of archaeological studies conducted in the project vicinity in the past decade, including Caltrans' SF-480 Terminal Separation Rebuild Project (1993), the City of San Francisco's Alternatives to Replacement of the Embarcadero Freeway and the Terminal Separator Project (1995), and the Peninsula Corridor JPB's Archaeological Resources Investigations of the Caltrain San Francisco Downtown Extension Project (1996). These studies and others were reviewed as part of the current study. An Archeological Report (AR) was prepared in support of the HPSR.

The entire APE is covered by buildings and pavement, and the precise location, integrity and research potential of any archaeological resources that are present cannot be determined without subsurface excavation. The significance of an archaeological site is typically based on its potential to provide information important in prehistory or history, not on any intrinsic value in terms of style, materials, form of construction, or association with specific persons or events. Archaeological resources encountered before or during project construction would be evaluated in accordance with an Archaeological Research Design and Treatment Plan as described in Chapter 5.

4.16.5.1 Prehistoric Archaeology

Although five prehistoric archaeological sites have been recorded within approximately one mile of the APE, no known prehistoric archaeological sites are documented within the APE. Unidentified sites may exist, and it is possible to predict in general terms where such sites are likely to occur on the basis of prehistoric-period landscapes.

Prehistoric archaeological remains in the APE may include, but are not limited to, lithic materials, shells and bone beads, bone tools, heat-altered rock, dietary remains, locally darkened soil (midden), and micro-constituents (e.g., charcoal or fish remains). These remains are likely to be contained within two general property types: residential and non-residential sites. Both types may be eligible for listing in the NRHP.

Although it is impossible to determine where important archaeological remains are located without extensive fieldwork, it is possible to make general statements about the relative archaeological sensitivity of the project area. Because the proposed Transbay Redevelopment Area has the same prehistoric dune sand and bay margin environment as the location of a known prehistoric archaeological site, it is considered to have very high archaeological sensitivity. Geologic investigations conducted for the San Francisco-Oakland Bay Bridge Project indicate that Holocene-age deposits are present west of Second Street, and that these terrestrial landform deposits have a maximum thickness of nearly eight meters (25 feet) and may extend to a maximum depth of approximately 15 meters (50 feet). These deposits are less than 10,000 years old, which is within the range of known human occupation in California. The area along Second Street therefore has high archaeological sensitivity for prehistoric sites. More research is necessary for the area along Townsend Street, which appears to be under the former Mission Bay. If similar results are forthcoming, these deeply buried deposits may contain prehistoric

sites. For purposes of the present study, the entire length of the tunnel alignment can be considered highly sensitive for prehistoric architectural resources.

4.16.5.2 Historic Archaeology

Nineteen known or potential historic-era archaeological sites have been identified within or immediately adjacent to the project alternative alignments. Cultural remains from historic periods are likely to occur within the APE, and historic periods within the study area have been defined as follows: Spanish Period, 1769-1822; Mexican Period, 1822-1848; Early American Period, 1848-1868; the Metropolis of the West/Southern Pacific Railroad Era, 1868-1906; and Post-Earthquake San Francisco, 1906-1950. Historical research suggests that examples of the following historic-period archaeological types may be present within the project area:

- Domestic occupation sites –May consist of hollow features (wells, cisterns, garbage pits) and may occur in association with residences, schools, or other places where people lived.
- Domestic architecture – The remains of residences and domestic outbuildings.
- Commercial sites – Refuse caches and sheet deposits of refuse and fill, similar to resource types that occur on domestic sites, may also be expected on commercial sites.
- Institutional sites – These sites represent organizations established to promote a certain objective, and include schools, hospitals, asylums, prisons, churches, etc.
- Industrial Structures/Architecture – Archaeological remains of buildings and structures that housed or aided various industrial processes.
- Industrial features – Evidence of industrial processes themselves, as distinct from the buildings in which these processes were housed.
- Storage yards and warehouses – Storage facilities are unlikely to be NRHP-eligible themselves, but may protect earlier cultural strata that do have research potential.
- Buried ships – Remains of abandoned sailing vessels may have been left in the former Yerba Buena Cove when the cove was filled.
- Wharves – Archaeological remains of projecting wharves may be present on portions of the project area that straddled the shoreline at one time.
- Landfills – Both purposeful and inadvertent fill may be present.
- Gold Rush Period Sites – the scarcity of sites in San Francisco from the 1849-1853 Gold Rush era, and the subsequent depression (1853-1859) make any such deposit potentially eligible to the NRHP, as are historic sites that pre-date the Gold Rush.

Areas of high historic archaeological sensitivity include the Transbay Redevelopment Area, the Second-to-Main Alternative alignment, and the Second-to-Mission Alternative alignment – particularly those portions that are not within historic roadways. Portions of the alternative alignments that pass under existing/historic roadways – for example Second and Townsend Streets – are likely to be less sensitive than where the project crosses historically developed blocks.

4.16.6 HISTORIC ARCHITECTURAL RESOURCES

A Historic Architectural Survey Report (HASR) was prepared for this project and is summarized herein. Historical surveys that have previously been conducted in the vicinity of the proposed project were compiled and then supplemented with original field surveys and research where necessary. These previous studies include: Caltrans' San Francisco Bay Bridge Request for Determination of Eligibility (1983), Caltrans' I-280 Transfer Concept Program (1983), the City of San Francisco's South End Historic District (1990), the Embarcadero Freeway and Terminal Separator Structure HASR (1994), the Caltrain Downtown Extension HPSR (1996), and the National Register Nomination for Second and Howard Historic District (1999). The compilation of existing inventories, as well as original research and field investigations were conducted in 2001. Research was performed in various records of the San Francisco Planning Department, and information was also collected from the San Francisco Architectural Heritage (SFAH), the San Francisco Public Library, the California State Library in San Francisco, and at the Sacramento Public Library. A record search was conducted at the Northwest Information Center (at Sonoma State University), and the results of the record search were confirmed and updated.

There are more than 120 buildings within the APE. Of these, 85 were evaluated for eligibility for listing on the National Register of Historic Places (NRHP) because they were built in 1956 or earlier. As a result of this and previous studies, 39 of these properties have been determined eligible or appear to be eligible for listing on the *NRHP either individually or as a contributor to a historic property or district.* These properties are presented in Table 4.16-1 and are subject to Section 106 procedures and consultation described in the regulatory framework discussion above. Detailed descriptions for all potentially eligible properties are provided in the HASR. Chapter 5 of this EIS/EIR provides a description of each eligible *property* that would be affected by the proposed project.

Table 4.16-1 also shows the historic status assigned by the City and County of San Francisco Planning Department. If the resource is listed in Article 10, the table indicates whether the structure is a City Landmark, or, if the building is located in one of the City-designated historic districts such as the South End, the table indicates if the building is considered *contributing* (C), *contributing*-altered (CA), or non-*contributing* (NC). Resources that have historic status under Article 11 could be located within the boundaries of a City-designated historic Conservation District such as the New Montgomery-Second Street. These resources are classified into one of five categories. Categories I and II are considered significant buildings, while Categories *III* and IV are designated as *Contributing* Buildings. Category V buildings are neither significant nor *contributing* and are considered unrated.

Table 4.16-1: Historic Architectural Properties within the APE Listed on, or Determined Eligible for, the National Register

Building Address, Assessors Parcel No., or Bridge No.	*Date Constructed*	*NR Status*	*City Status (if any)*	*Notes*
Properties in the Transbay Terminal Area				
Upper Deck Approaches Bridge #34-116F	*1936*	*1*		*The SF-Oakland Bay Bridge, its approach structures, bus ramps (loop), and other elements were listed on the National Register of Historic Places on August 13, 2001.*
Upper Deck Approaches Bridge #34-118L	*1936*	*1*		
Upper Deck Approaches Bridge #34-118R	*1936*	*1*		
Transbay Terminal Loop ramp #34-119Y	*1936*	*1*		
Harrison Street Overcrossing #34-120Y	*1936*	*1*		
425 Mission Street (Transbay Terminal) 3719-003, 3720-001, 3721-006	*1939*	*1*		*The Transbay Terminal is a contributing element of the SF-Oakland Bay Bridge, which was listed on the National Register of Historic Places on August 13, 2001*
Properties in the Second and Howard Streets Area				
149 Second Street 3721-049	*1908*	*1D*	*Article 11 Category IV*	*These six buildings located on Second and Howard Streets are contributing elements of the Second and Howard Streets District, which was listed on the National Register in 1999.*
163 Second Street 3721-048	*1907*	*1D*	*Article 11 Category IV*	
165-173 Second Street 3721-025	*1906*	*1D*	*Article 11 Category IV*	
191 Second Street 3721-022	*1907*	*1D*	*Article 11 Category V*	*The four buildings with addresses on Second Street are also located within the City of San Francisco's New Montgomery-Second Street Conservation District. (The two buildings with Howard Street addresses are located outside the conservation district boundaries.)*
580-586 Howard Street 3721-092 through 106	*1906*	*1D*		
589-91 Howard Street 3736-098	*1906-1907*	*1D*	*Article 11 Category V*	

Table 4.16-1: Historic Architectural Properties within the APE Listed on, or Determined Eligible for, the National Register

Building Address, Assessors Parcel No., or Bridge No.	*Date Constructed*	*NR Status*	*City Status (if any)*	*Notes*
Properties in the Second and Townsend Streets Area				
301-21 Brannan Street 3788-037	*1909*	*3D*	*C*	*Unless otherwise noted, the buildings on Brannan, Second, South Park, and Townsend Streets are contributing elements of the Rincon Point/South Beach Historic Warehouse-Industrial District. This district was found to appear to be eligible for the National Register through a 1983 survey conducted by Caltrans. In those cases where OHP has concurred with those findings, the NRHP status is "2."* *All of these buildings are also located within the City of San Francisco's South End Historic District, established in 1990.*
461-67 Second St. 3764-071 through 197	*1909-38*	*2D2*	*C*	
500 Second Street 3775-001	*1919*	*3D*	*C*	
512 Second Street 3775-002	*1909*	*3D*	*C*	
522-524 Second Street 3775-004	*1923*	*3D*	*C*	
525 Second Street 3774-123 through 132	*1906*	*3D*	*C*	
543-545 Second Street 3774-064 and 065	*1907*	*3D*	*NC*	
544 Second Street 3775-005	*1922*	*3D*	*C*	
555-559 Second Street 3774-045	*1913*	*3D*	*C*	
563 Second Street 3774-044	*1907*	*3D*	*C*	
580 Second Street 3775-008	*1912*	*3D*	*C*	
599 Second Street 3774-031	*1923*	*3D*	*C*	
601-15 Second Street 3789-008	*1909*	*3D*	*C*	
625-35 Second Street 3789-007	*1905*	*2D2*	*C*	
634 Second Street (aka 35 Stanford Court) 3788-038	*1920*	*3D*	*C*	
640 Second Street 3788-002	*1926*	*2S2*	*C*	
650 Second Street 3788-049 through 073	*1922*	*2S2*	*C*	
670-80 Second Street 3788-043, 3788-044	*1913*	*2S2 (670), 3D (680)*	*C*	
1 South Park 3775-007	*1910*	*3D*	*C*	

Table 4.16-1: Historic Architectural Properties within the APE Listed on, or Determined Eligible for, the National Register

Building Address, Assessors Parcel No., or Bridge No.	*Date Constructed*	*NR Status*	*City Status (if any)*	*Notes*
130 Townsend Street 3788-008	*1910*	*3D*	*CA*	
136 Townsend Street 3788-009	*1902*	*3D*	*C*	
144-46 Townsend Street 3788-009A	*1922*	*3D*	*C*	
148-54 Townsend Street 3788-010	*1922*	*3D*	*C*	
162-164 Townsend Street 3788-081	*1919*	*3D*	*C*	
166-78 Townsend Street 3788-012	*1910*	*3D*	*C*	
180 Townsend Street 3788-013	*1921*	*3D*		
350-60 Townsend Street 3786-015	*1906*	*2S2*		*This building is individually eligible for the NRHP.*

Notes: National Register Status codes are as follows:

1D – Listed on the National Register as a contributor to a district or multi-resource property.
1S -- Separately Listed on the National Register.
2 – Determined eligible for National Register in a formal process.
2S1 -- Determined Eligible for Listing by the Keeper of the Register.
2S2 -- Determined Eligible for Listing by Consensus of the SHPO and a Federal Agency.
2D2 – Determined eligible as a contributor by consensus determination.
3D -- Contributor to a District that Appears Eligible. SHPO has yet to concur.

4.16.6.1 Transbay Terminal

The Transbay Terminal at 425 Mission Street occupies land extending from Mission Street on the north to Natoma Street on the south. The terminal building crosses Fremont Street on the east and First Street on the west. It is an 870-foot long flat slab with a 230-foot long central pavilion. The construction is reinforced concrete faced with California granite. Designed by Timothy Pfleuger, Arthur Brown, Jr., and John J. Donovan, consulting architects, and built in 1939, the Transbay Terminal was the functional successor to the Ferry Building. When electric trains began arriving over the Bay Bridge, use of the Ferry Building dropped to almost nothing overnight, and the Transbay Terminal took over as the primary gateway to the city[4].

[4] Caltrans, 1995.

Caltrans reports identify the introduction of electric train services on the Bay Bridge as causing the rapid decline in ferry use and the corresponding decline of the Ferry Building as a transportation hub. In addition, there was also a modal shift from public transit to private automobile use with the opening of the Bay and Golden Gate Bridges, which also contributed to the almost total loss of ferry patronage. During this era, the Transbay Terminal became the primary transit gateway into the city.

It should be noted that as congestion on the Bay and Golden Gate Bridges has increased, the Ferry Building reclaimed some of its historic importance as a transportation terminal. Current plans anticipate 33,000 to 40,000 weekday daily passengers on commuter ferry boats by 2020. (Water Transit Authority Implementation and Operations Plan, Section 2).

The Transbay Terminal is a contributing element of the San Francisco - Oakland Bay Bridge, which was listed in the NRHP in August 2001. Its present owner is the California Department of Transportation. Its current use is for commuter and inter- and intra-regional bus transportation.

The Transbay Terminal retains integrity with respect to exterior elevations, areas, and building materials; configuration of interior space; site; and the ramps that connect the building to the San Francisco - Oakland Bay Bridge. (The loop ramp is a component of the Bay Bridge, and it retains integrity as a bridge-related element.) The terminal building has remained in transportation use since it was constructed. Losses and compromises of integrity have occurred with modernization of elements such as doors, the new Greyhound passenger facility, and building materials; and seismic retrofit of various components to meet current earthquake safety standards.[5] The terminal requires substantial additional reconstruction to meet building and seismic codes and standards.

4.16.6.2 Transbay Terminal Loop Ramp

The Transbay Terminal Ramp structure consists of a 3,439-foot loop ramp connecting the San Francisco - Oakland Bay Bridge west span with the Transbay Terminal building. The loop ramp constitutes two of the six approach spans that remain from the original Bay Bridge project.[6] It is constructed of riveted steel girders on concrete and steel bents. A concrete slab and box girder bridge on slab wall piers carries the Transbay Terminal Ramp over Harrison Street. This loop ramp was originally designed to carry trolley trains from the bridge to the terminal; the tracks were removed as electrified trains gave way to buses in the late 1950s. The terminal loop ramp currently serves bus traffic exclusively and is used for midday storage of transit buses. It is a contributing element of the San Francisco - Oakland Bay Bridge *property, which is listed on the NRHP*.

[5] Caltrans, 1995.

[6] Caltrans, 1983.

4.16.6.3 Rincon Point/South Beach Historic Industrial Warehouse District

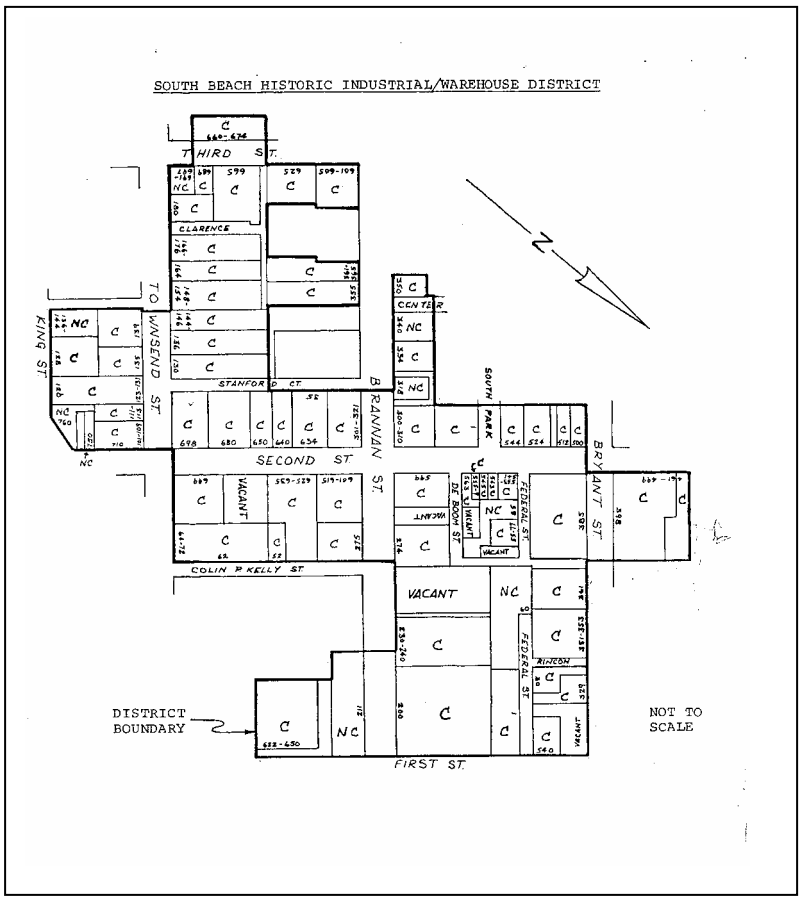
The Rincon Point/South Beach Historic Warehouse Industrial District is a NRHP-eligible district that was developed beginning in the 1850s and 1860s, when landfill efforts and warehouse construction changed the physical appearance of the "point" and "beach" forever. This district contains the greatest concentration of *historic* architectural resources within the project vicinity. The district was identified as appearing eligible for the National Register in 1983, based on research completed by Caltrans historians for the I-280 Transfer Concept Project. That research found that the district appeared eligible under all four National Register criteria. About 60 buildings within the district have been identified as contributing to the district's significance. About eight of these buildings date from before the 1906 earthquake, with several from the mid-1800s. The OHP Historic Property Data File shows a determination of eligibility for the district dated March 19, 1997 (suggesting that OHP has concurred with Caltrans eligibility finding); however, most of the individual buildings are still shown simply as “appears eligible,” or NRHP status.

The 1983 inventory and evaluation form states that the district appeared to be eligible under National Register criteria A, B, C, and D, at the state level of significance. The following is an excerpt from the significance statement included on that form:

> Development of the Rincon Point/South Beach area began in the 1850s and 1860s as an answer to economic pressures resulting from the Gold Rush. As sea trade expanded and San Francisco developed into the leading port on the West Coast, both areas developed to serve warehousing needs of the burgeoning state. During the Civil War, the mining riches of the Sierra Nevada and Comstock were handled through the port to help fund the Union cause. The same area saw great numbers of Chinese enter California, seeking employment in the new land. After the turn of the century and following the 1906 earthquake and fire which devastated large areas of San Francisco, the Rincon Point/South Beach areas became mixed in nature: apartments and hotels appeared among the family businesses, light industry and more traditional warehouses. As a result of efforts to improve the appearance of the port for the 1915 Panama Pacific International Exposition, Mediterranean style pier bulkheads were erected to provide a formal entrance from the Bay to the city.
>
> By the end of the 1860s, increased landfill activities had seen streets cut and graded and hills leveled to provide shoreline fill. Steamboat Point, adjacent to South Beach, was filled until it precluded further shipbuilding activities there, and South Beach also began to develop as a warehousing district. Early facilities included the San Francisco and Pacific Gas Company at Second and King Streets, and the Pacific Mail Steam Ship Company, this latter including warehouses, shops and wharves. Still standing today is one of the company’s warehouses, the Oriental (1867). Though the Oriental Warehouse’s associated dock no longer exists, this building remains important in history as San Francisco’s reputed principal shipping point for Sierra Nevada and Comstock gold, and as the point of entry for large numbers of Chinese.
>
> Construction of a new seawall during the period 1878 to 1924 permitted further development of warehouses, dry docks, shipyards and other industries in this area, as a readily accessible outlet to ocean and coastal shipping was provided. Evidence of the period of development from 1880

to 1915 may still be seen, though many of the warehouses from this period have been destroyed. Those remaining structures, however, still afford a picture of the area's general appearance during this important period. Rebuilding activities following the 1906 earthquake and fire altered the character of the area somewhat with the inclusion of hotels and apartments, though re-establishing warehousing and light industrial activities.[7]

The Rincon Point/South Beach Historic Warehouse-Industrial District, as well as other resources within the APE, have been designated locally and/or are eligible for or listed on the California Register of Historic Resources.[8]



[7] John Snyder, "Rincon Point/South Beach Historic Warehouse-Industrial District," Caltrans Architectural Inventory/Evaluation Form, prepared July 22, 1983, copy on file with Northwest Information Center, Sonoma State University.

[8] The California Register of Historic Resources was created in 1992 (AB 2881, Frazee), and Section 5024.1 of the Public Resources Code states that the California Register shall include "California properties formally determined eligible for, or listed in, the National Register of Historic Resources," State Historical Landmarks No. 770 and higher, as well as other State Historical Landmarks and Points of historical interest reviewed and included by the State Historical Resources Commission, and may include other resources of specified types, "if nominated for listing . . . and determined to be significant by the Commission," and resources listed as significant in historical resource survey under certain conditions.

4.16.6.4 New Montgomery-Second Street Conservation District (City of San Francisco)

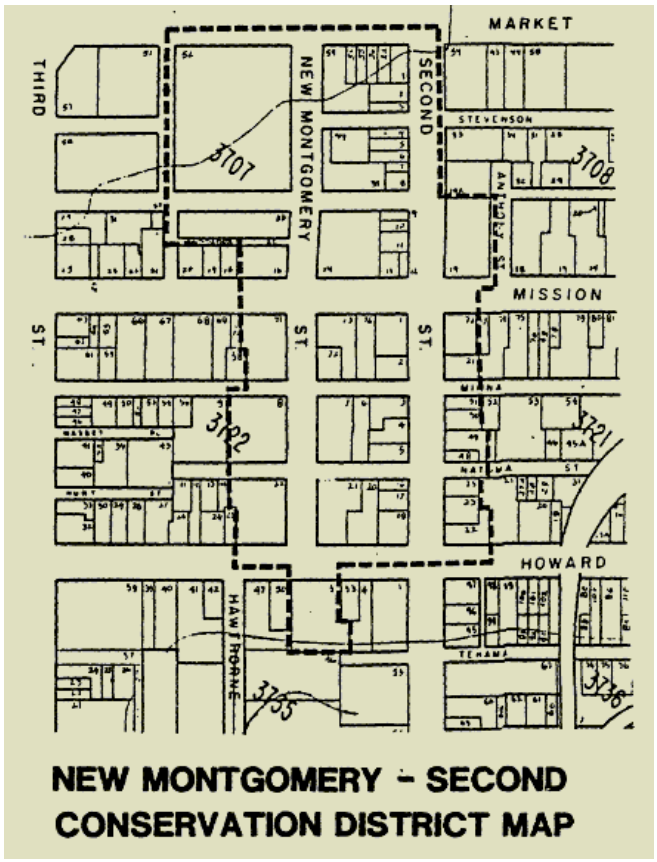
The Board of Supervisors of the City and County of San Francisco approved the formation of the New Montgomery-Second Street Conservation District in 1985, because the area "possesses concentrations of buildings that together create a sub-area of architectural and environmental quality and importance which contributes to the beauty and attractiveness of the City."[9] The location and boundaries of the New Montgomery-Second Street Conservation District were established on a map filed with the Clerk of the Board of Supervisors at that time.[10]

The characteristics of the New Montgomery-Second Street Conservation District that justify this designation include its history, architectural character, and visual and functional unity. The Planning Department also recognized the district's dynamic continuity and the benefits it offers to the city in general as well as to residents. The following is an excerpt from Appendix F, Article 11, San Francisco City Planning Code:

> **History of the District.** This corridor forms one of the earliest attempts to extend the uses of the financial and retail districts to the South of Market area. Since Montgomery Street was the most important commercial street in the 1870's, New Montgomery Street was planned as a southern extension from Market Street to the Bay. Opposition from landowners south of Howard Street, however, prevented the street from reaching its original bayside destination. William Ralston, who was instrumental in the development of the new street, built the Grand Hotel and later the Palace Hotel at its Market Street intersection. A wall of large hotels on Market Street actually hindered the growth of New Montgomery Street and few retail stores and offices ventured south of Market Street. The unusually wide width of Market Street acted as a barrier between areas to the north and south for many years.
>
> A small number of office buildings were built on New Montgomery Street as far south as Atom Alley (now Natoma Street) after the fire. Many buildings were completed in 1907, and most of the street assumed its present character by 1914. At 74 New Montgomery Street, the Call newspaper established its first headquarters. A noteworthy addition to the streetscape was the Pacific Telephone and Telegraph Building. At the time of its completion in 1925, it was the largest building on the West Coast devoted to the exclusive use of one firm. Until the 1960's, the office district on New Montgomery Street was the furthest extension of the financial district into the South of Market area. More characteristic were warehouses and businesses that supported the nearby office district. For example, the Furniture Exchange at the northwest corner of New Montgomery and Howard Streets, completed in 1920, was oriented to other wholesale and showroom uses along Howard Street.

[9] Added Ord. 414-85, App. 9/17/85. See Section 1103 of Article 11, San Francisco City Planning Code.
[10] Map under File 223-84-4, Added Ord. 414-85, App. 9/17/85.

One block to the east, Second Street had a different history from New Montgomery Street. The future of Second Street as an extension of the downtown depended upon the southward extension of the street through the hill south of Howard Street. At one time there was even a proposal to extend Second Street north in order to connect with Montgomery Street. The decision to extend Montgomery Street south rather than Second Street north due to the high cost of the Second Street Cut, however, discouraged retail and office growth on the street. As a result, by the 1880's Second Street was established as a wholesaling rather than retail or office area. In the 1920's, Second Street contained a wide mixture of office support services. These included printers, binderies, a saddlery, a wholesale pharmaceutical outlet, and a variety of other retail stores and smaller offices. Industrial uses were commonly located on the alleyways such as Minna and Natoma and on Second Street, south of Howard Street.



NEW MONTGOMERY - SECOND CONSERVATION DISTRICT MAP

Basic Nature of the District. New Montgomery Street is characterized by large buildings that often occupy an entire section of a block defined by streets and alleys or a major portion of these sub-blocks. The buildings are of a variety of heights, but the heights of most of the buildings range from five to eight stories. Second Street is characterized by smaller, less architecturally significant buildings, but, because of their continuous streetwall, they form a more coherent streetscape. Without some sort of protection for the less significant buildings, the quality of the district would be lost due to pressure from the expanding office core.

Architectural Character. Although the scale and size of the structures on New Montgomery Street are somewhat monumental, the area remains attractive for pedestrians. The street has a number of outstanding buildings concentrated on New Montgomery, such as the Palace Hotel, the Pacific Telephone tower, and the Sharon Building. The styles range from the Gothic skyscraper massing and Art Deco detailing of the Pacific Telephone and Telegraph Building to the Renaissance Palazzo style of the Palace Hotel. The primary building materials are earth tone bricks, stone or terra cotta, with ornamental details executed in a variety of materials including terra cotta, metal, stucco and stone.

Second Street has a smaller, more intimate scale. While on New Montgomery Street, buildings typically occupy an entire subblock, on Second Street, three or four small

buildings will occupy the same area. The buildings are generally mixed-use office and retail structures, three to five stories in height, with Renaissance-influenced ornament.

The two streets are unified by several elements, including an architectural vocabulary that draws from similar historical sources, similar materials, scale, fenestration, color, stylistic origins, texture, and ornament.

Uniqueness and Location. The District is located close to the central core of the financial district and is adjacent to an area projected for the future expansion. It is one of the few architecturally significant areas remaining largely intact in the South of Market area.

Visual and Functional Unity. The District has a varied character ranging from the small and intimate on the alley streets to a more monumental scale on New Montgomery. In spite of this wide range, the district forms a coherent entity due to the buildings' common architectural vocabulary and the rhythm of building masses created by the District's intersecting alleys.

Dynamic Continuity. The District is an active part of the downtown area, and after some years of neglect is undergoing reinvestment, which is visible in the rehabilitation of the Pacific Telephone Building, and the repair and rehabilitation of other buildings in the District.

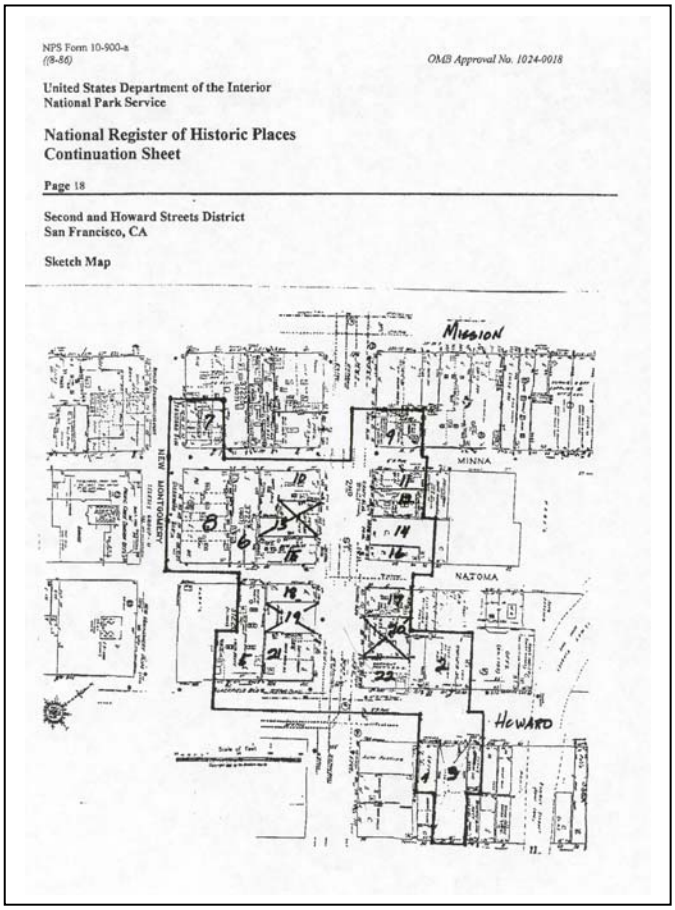
Benefits to the City and Its Residents. The District is a microcosm of twentieth century commercial architecture, ranging from low-level speculative office blocks to the City's premier hotels and executive offices of the time. The District now houses a variety of uses from inexpensive restaurants and support commercial uses, such as printers, to executive offices. The area retains a comfortable human scale, which will become increasingly important as neighboring areas of the South of Market become more densely developed. [11]

4.16.6.5 Second and Howard Streets District (National Register of Historic Places)

The Second and Howard Streets District is a National Register historic district that is almost entirely surrounded by the City of San Francisco's New Montgomery-Second Street Conservation District. The Second and Howard Streets District was evaluated in 1998 by Anne Bloomfield. Ms. Bloomfield submitted a *NHRP* Registration Form for the district to the California Office of Historic Preservation (OHP) in October 1998, OHP certified the district in June 1999, and the district was listed on the *NRHP* on July 28, 1999.[12]

[11] Added Ord. 414-85, App. 9/17/85. See, San Francisco City Planning Code, Article 11, Appendix F, http://www.ci.sf.ca.us/planning/.

[12] Anne Bloomfield, "Second and Howard Streets District," National Register of Historic Places Registration Form, prepared October 3, 1998, certified June 15, 1999, copy on file with Northwest Information Center, Sonoma State University; NPS, National Register Information System (NRIS), "Second and Howard Streets District," listing date July 28, 1999, as accessed at http://www.cr.nps.gov/nr/research/nris.htm.


NPS Form 10-900-a
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OMB Approval No. 1024-0018

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

Page 18

Second and Howard Streets District
San Francisco, CA

Sketch Map

The Second and Howard Streets District has been determined eligible for the National Register of Historic Places at the local level of significance, under Criterion C, architecture, in the context of San Francisco's rebuilding after the great earthquake and fire of 1906. The district has a remarkable continuity of building type, scale, and style. Over 90 percent of the buildings contribute to the feeling of a district. All the contributing buildings were constructed [between] 1906 and 1912, the district's period of significance. All are masonry structures, half of them clad in brick, two in terra cotta (now painted), and the rest in stucco. All are Commercial Style with limited Renaissance-Baroque ornament. Ground floors are commercial and therefore, by design and practice, frequently altered to suit commercial needs. Upper floors most often are lofts. The area was built principally for services to the construction industry, perhaps the reason why it was built up so quickly after the 1906 earthquake and fire. The scale and modesty of the buildings demonstrates their intended uses as different from the city's main office sector to the north crossing Mission and Market Streets and to the west along New Montgomery Street. They are also different from the industrial sector to the east and south. Services to the construction industry used to continue westerly from New Montgomery, near the Builders' Exchange, a membership and mail boxes organization that in 1910 was located at 180 Jessie Street west of New Montgomery and Mission Streets. However, hardly any of the buildings housing that part of this service industry still exist. The 1910 classified directory shows the Second and Howard Streets District as headquarters for a plumbing supply house, nine electrical businesses, a terra cotta works (N. Clark & Sons), several engineers, metallurgists, a blueprint service, an asbestos supplier (Johns-Manville), a sheet metal works, chemists, and printers. The area of significance is architecture; significant dates are 1906, 1907, 1908, 1909, and 1912, the years of construction of the various buildings. The two non-contributing buildings [144-54 Second Street and 168 Second Street] have been altered significantly. The district retains a remarkable integrity in contrast to all the city's modern changes.[13]

[13] Anne Bloomfield, "Second and Howard Streets District," National Register of Historic Places Registration Form, prepared October 3, 1998, certified June 15, 1999, copy on file with Northwest Information Center, Sonoma State University.

4.16.6.6 The South End Historic District (City of San Francisco)

The San Francisco Board of Supervisors established the South End Historic District in 1990 because of its "special character and special historical, architectural and aesthetic interest and value [that] constitutes a distinct section of the City."[14] The location and boundaries of the South End Historic District were on a map filed with the Clerk of the Board of Supervisors under File No. 115-90-3.[15] The following is an excerpt from Appendix I, Article 10, San Francisco City Planning Code, beginning with the historic context of the district:

> For decades after the 1849 Gold Rush, San Francisco was the principal seaport and connection with the outside world for California and the West Coast. San Francisco's expansion and transformation into one of the most important cities in North America is attributable to the eminence of its port that, because of its sheltered location and deep water, became one of the best-suited on the Pacific Ocean.
>
> The development of warehouses over a 120-year period along the southern waterfront provides a benchmark from which to view architectural and technological responses to the rapid changes of growing industrial nation state and city. The interdependence of architecture and history can be seen from a look at the evolution of warehouse forms along the southern waterfront. Unlike most other areas of the San Francisco waterfront, the South End district contains an extraordinary concentration of buildings from almost every period of San Francisco's maritime history. Several street fronts—such as Second, Third and Townsend—are characterized by solid walls of brick and reinforced concrete warehouses. With this harmony of scale and materials, the South End Historic District is clearly a visually recognizable place.
>
> One-story warehouses were common in the nineteenth century but rare in the early twentieth due to the increasing cost of land. Two of the oldest warehouses in the historic district are one story in height: Hooper's Warehouse (1874) and the California Warehouse (1882). Their horizontal orientation is accentuated through the use of strong cornice lines with decorative brick patterns. Multi-story buildings have been more common along the southern waterfront since the turn of the century. After 1906, almost all new warehouses were constructed to be at least three stories in height, and several warehouses on Second and Townsend Streets reached six stories. The invention of the forklift in the 1930s eliminated advantages that multi-story buildings enjoyed over single-story structures. Since 1945, almost all warehouses constructed in the United States have been one story in height. Many multi-story warehouses and industrial buildings have been converted to other uses or are vacant because they have become obsolete for most warehouse or industrial functions.

[14] Added by Ord. 104-90, App. 3/23/90. See Section 1001, Article 10, City Planning Code.

[15] Added by Ord. 104-90, App. 3/23/90.