CHAPTER 2: DESCRIPTION OF THE PROJECT ALTERNATIVES

The proposed project has three major components:

- A new, multi-modal Transbay Terminal on the site of the present Transbay Terminal;
- Extension of Caltrain commuter rail service from its current San Francisco terminus at Fourth and Townsend Streets to a new underground terminus underneath the proposed new Transbay Terminal; and
- Establishment of a Redevelopment Area Plan with related development projects, including transit-oriented development in the vicinity of the new multi-modal Transbay Terminal.

Other subordinate components of the project include a temporary bus terminal facility to be used during construction of the new Transbay Terminal; a new, permanent off-site bus storage/layover facility; reconstructed bus ramps leading to the new Transbay Terminal; and a redesigned Caltrain storage yard. Figure 1.2-1 (in Chapter 1) shows the project location.

As described in this chapter, alternatives and options are under consideration for major project components. Section 2.1 describes the No-Project Alternative. Section 2.2 describes proposed project components, alternatives, and build options under consideration. Section 2.3 describes project component alternatives previously considered but subsequently withdrawn from consideration along with the reasons for their withdrawal.

2.1 NO-PROJECT ALTERNATIVE

The No-Project Alternative consists of existing Caltrain service with funded improvements, other committed bus, rail, and roadway improvements, a BART extension to the San Francisco International Airport, and proposed development in downtown San Francisco in the 2020 horizon year [1]. This is the No-Project Alternative under CEQA and the baseline alternative for purposes of NEPA.

Under the No-Project Alternative, the San Francisco Redevelopment Agency would not develop or implement a Redevelopment Plan for the Transbay Redevelopment Area. The publicly-owned properties would not be transferred to the Transbay Joint Powers Authority, but likely would be developed or sold for development by the state. This development would occur in the

[1] The horizon year of 2020 was chosen because it is the horizon year for the current (not-updated) MTC regional model as well as for the San Francisco land use projections, on which ridership forecasts are based.

absence of a Redevelopment Plan most likely under existing zoning designations and local land use controls.

2.1.1 CALTRAIN OPERATIONS AND CAPITAL IMPROVEMENTS UNDER THE NO-PROJECT ALTERNATIVE

Caltrain trains consist of diesel-hauled, bi-level "gallery" cars that provide peak period service in both northbound and southbound directions between Gilroy and San Francisco. A total of 80 daily trains operate over the Peninsula Commute Joint Powers Board (JPB)-owned, northern portion of the route between San Jose and San Francisco. Caltrain operates four trains northbound in the morning and four trains southbound in the evening over the southern portion of the Corridor from San Jose to Gilroy, which is owned by the Union Pacific Railroad (UPRR).

JPB has programmed service increases to over 114 daily trains in the San Francisco to San Jose segment and over 20 daily trains in the San Jose to Gilroy segment within the next 10 years, including additional track, signal, station, and terminal capacity improvements to provide for the increased levels of service. JPB anticipates operating 170 daily trains in the 2020 horizon year.

JPB has programmed a series of rehabilitation improvements, enhancements and additions to the existing system that would provide an improved level of service. The following Caltrain facilities will exist at the completion of these projects, consistent with the Caltrain Rapid Rail Study adopted by the JPB in 1998:

- Rehabilitation of the Existing System – long-term repairs, reconstruction and modernization of the existing tracks, signals, bridges, stations, rolling stock and other systems.
- Enhancements and Capacity Improvements – additions and betterments to the rail system, including additional tracks; enhanced signal and communications systems, cab signals, Automatic Train Stop (ATS), and fiber optics; new stations; new shops; buildings and support facilities; vehicular and pedestrian grade separations; and new rolling stock. Also included in this category are grade crossing and station closures and consolidations.
- Increased Caltrain Express service consisting of 20 additional trains per day with an approximate 45-minute travel time between San Francisco and San Jose.
- A variety of passenger station improvements to permit simpler ticketing arrangements and create improved station amenities.

Signal system modernization improvements include a new Centralized Train Control (CTC) system, reverse signaling capabilities, additional train crossovers, and state-of-the-art active warning devices. The CTC would be operated from a new Central Equipment Maintenance and Operations Facility at the Lenzen Maintenance Facility in San Jose, and the existing Operations Center near Diridon Station in San Jose would be phased out.

Track and associated passenger platform improvements at the new Millbrae Intermodal facility are being constructed to improve the interface of the BART extension to San Francisco Airport with Caltrain at the Millbrae Intermodal Station (see Section 1.4.2).

The No-Project Alternative also includes electrification of the entire Caltrain line from Gilroy to its present San Francisco terminus at Fourth and Townsend Streets. The Caltrain Electrification Program would provide for the conversion from diesel-hauled to electric-hauled trains and would require the installation of some 150 to 170 single track miles of overhead contact system (OCS) for the distribution of electrical power to the electric rolling stock. Electric rolling stock would consist of locomotives or electrical multiple unit (EMU) cars. The OCS would be powered from a 25 kV, 60 Hz, single-phase, alternating current (ac) supply system that would require the installation of two or three traction power substations, one or two switching stations, and nine or ten paralleling stations. This power supply and distribution system and voltage are compatible with the requirements of high-speed rail, and therefore will accommodate future development of high-speed rail in the Caltrain corridor without major overhaul of the new electrification facilities. The Caltrain Electrification Program is being evaluated by the JPB in a separate environmental document.

Electrification of the Caltrain line is scheduled to be implemented by 2006. It is currently programmed under Track 1 of the 2001 Regional Transportation Plan (RTP), and will be funded entirely from local sources. The environmental review process for this program is expected to be completed by the end of 2003, and it is assumed that the Electrification Program would be in place prior to implementation of the Caltrain Downtown Extension component of the present project.

Should electrification not be implemented in advance of the Downtown Extension, however, the extension could still be implemented using dual-mode (diesel-electric) locomotives. Dual-mode locomotives would enable Caltrain service to switch from diesel powered to electric powered propulsion before entering downtown San Francisco. A more detailed discussion of this propulsion option is provided in the 1997 *Draft EIS/EIR for the Caltrain Downtown Extension.* Should this option be necessary, the purchase of dual-mode locomotives would need to be added to the project costs for the Downtown Extension component. These potential costs are estimated to be $235 million in 2002 dollars for 34 locomotives.

2.1.2 MUNI FACILITIES AND RELATED BUS SERVICE UNDER THE NO-PROJECT ALTERNATIVE

The No-Project Alternative includes all current San Francisco Municipal Railway (Muni) service at existing levels plus the following major planned, ongoing, or constructed projects:

- S-Castro-Embarcadero Shuttle – new eastbound and westbound service between the Castro and Embarcadero stations;

- Third Street Light Rail project – extension of Muni Metro light rail service south from its current terminus at Fourth and Townsend Streets. The Third Street Light Rail line will cross

the Fourth Street Bridge and run along Third Street and Bayshore Boulevard, ending at the Bayshore Caltrain Station in Visitacion Valley; and

- Central Subway – extension of Third Street light rail service northward from King Street along Third Street, entering a new central subway near Bryant Street, crossing beneath Market Street and running under Geary and Stockton Street to Stockton and Clay Streets.

The Third Street Light Rail project is under construction and is scheduled to be opened for service in 2004. The Central Subway project is scheduled to be constructed by 2015 but is not presently funded. Muni and the San Francisco County Transportation Authority are actively pursuing funding, and the project is included in the No-Project Alternative in anticipation of funding being included in the 2001 Regional Transportation Plan in time for the Central Subway to be completed within the horizon year for the present project. Other planned, ongoing, or completed service changes and improvements included in the No-Project Alternative are summarized in Table 2.1-1.

2.1.3 BAY AREA RAPID TRANSIT SYSTEM (BART)

The San Francisco Bay Area Rapid Transit District (BART) is currently constructing an extension to San Francisco International Airport that will also interface with Caltrain and SamTrans bus services at the new Millbrae Intermodal Station. Programmed to be completed in the winter of 2002, this service is assumed to be in place under the No-Project Alternative.

2.1.4 SAN MATEO COUNTY TRANSIT SYSTEM (SAMTRANS)

In August 1999, SamTrans introduced a variety of changes to improve the efficiency of its core system. The changes reallocated service from areas of little demand to areas of greater demand. In many instances, routes were consolidated to increase service efficiency and permit increased frequency.

2.1.5 ROADWAY AND STREET IMPROVEMENTS

The No-Project Alternative assumes the completion of Caltrans San Francisco Seismic Retrofit projects, as follows:

- Yerba Buena Island Viaduct and tunnel
- West Span of the Bay Bridge (from Yerba Buena Island to the San Francisco Anchorage)
- Elevated West Approach to the Bay Bridge (from the Anchorage to the Fifth Street ramp)
- Elevated Bayshore Viaduct (I-80 from Fourth Street to Sixteenth Street)
- Elevated Central Freeway (US 101 – connects I-80 with Fell and Oak Streets)

Table 2.1-1
Other Muni Service Changes and Improvements
Included in the No-Project Alternative

Service Change	Description	Status	Source
Caltrain Express Bus Service Consolidation (80x / 81x / 82x)	Consolidation of 80x and 82x lines concurrent with the extension of N-Judah to Caltrain Terminal at Fourth and Townsend; consideration to elimination of 81x	Implemented June 1999	Muni SRTP 2000
Ferry Bus Terminal Expansion	Relocation of the Ferry Terminal off-street bus turn-around to new curb-side terminals on the surrounding streets, to allow development of the current bus turn-around area as a hotel, to produce revenue for Muni projects	In process	Muni SRTP 2000
15 – Third Street line	15-Third line to be completely discontinued with implementation of the Third Street Light Rail project in 2004	2004	Muni SRTP 2000
6-Parnassus Downtown Terminal	Downtown terminal for the 6 Parnassus line changed from Ferry Terminal to Transbay Terminal	Implemented March 2000	Muni SRTP 2000
12-Folsom	Extended service hours, days, and frequencies; outbound route moved from Howard Street to Harrison Street (between Embarcadero and 11th Streets); service extended to Embarcadero, connecting with F-Market line at the Ferry Building; 83-Pacific route abandoned, replaced by increased service on 12-Folsom	Implemented February 2001	Revised SOMA Action Plan, 12/5/00
N-Owl Service	Extend N-Owl buses from current inner terminal at Ferry Terminal to the Caltrain Fourth and Townsend terminal, via Embarcadero and King Streets	Implemented February 2001	Revised SOMA Action Plan, 12/5/00
47-Van Ness Motor Coach	47-Van Ness motor coach (originally called line "42W") – New Van Ness corridor line with terminals in eastern Fisherman's Wharf and at the Caltrain Fourth and Townsend terminal.	Implemented Spring 2001	Revised SOMA Action Plan, 12/5/00
10-Townsend	10-Townsend (originally called line 42E) – new line connecting Fisherman's Wharf, the Financial District, Caltrain, SOMA, and Potrero Hill with terminals at Van Ness and North Point. Initial service will be between the northern terminal in Fisherman's Wharf and a temporary southern terminal at Seventh and De Haro.	Implemented Spring 2001	Revised SOMA Action Plan, 12/5/00
9-San Bruno	Additional 9-San Bruno trolley coach service (two additional coaches) between the vicinity of San Francisco General Hospital and the Ferry Terminal on weekdays	Implemented Spring 2001	Revised SOMA Action Plan, 12/5/00
Central Subway	Extension of Third Street light rail service from King Street along Third Street, entering a new central subway near Bryant Street, crossing beneath Market Street and running under Geary and Stockton Streets to Stockton and Clay Street.	To open in 2015	Muni SRTP 2000

Notes: SRTP = Short Range Transit Plan; SOMA = South of Market Area

These projects have all entered or completed construction. Retrofit construction on the Yerba Buena viaduct and tunnel was completed in 2000. Retrofit of the west Bay Bridge span piers is complete. Retrofit of the west span towers and bridge structure is scheduled to be completed by Spring 2003, and the west approach by Spring 2007. The Central Freeway retrofit is scheduled for completion by September 2005.

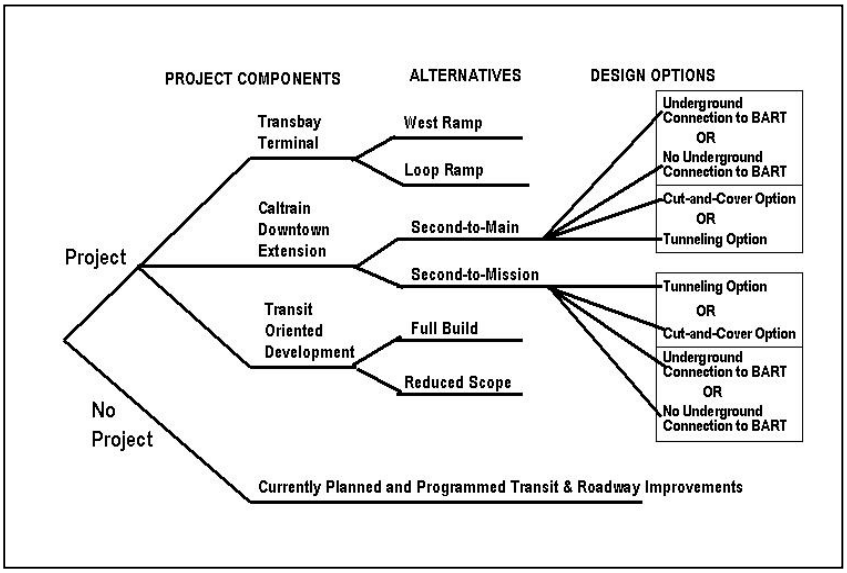
Other roadway and street improvements planned and programmed by the City and County of San Francisco's Department of Parking and Traffic or the Department of Public Works include two projects in the vicinity of the Transbay Terminal/Downtown Caltrain Extension project: striping a transit-only lane along Third Street, and providing a new King Street access roadway at Fifth Street into Mission Bay.

2.2 PROJECT COMPONENTS

The proposed project includes three major components, each with two alternatives, as follow:

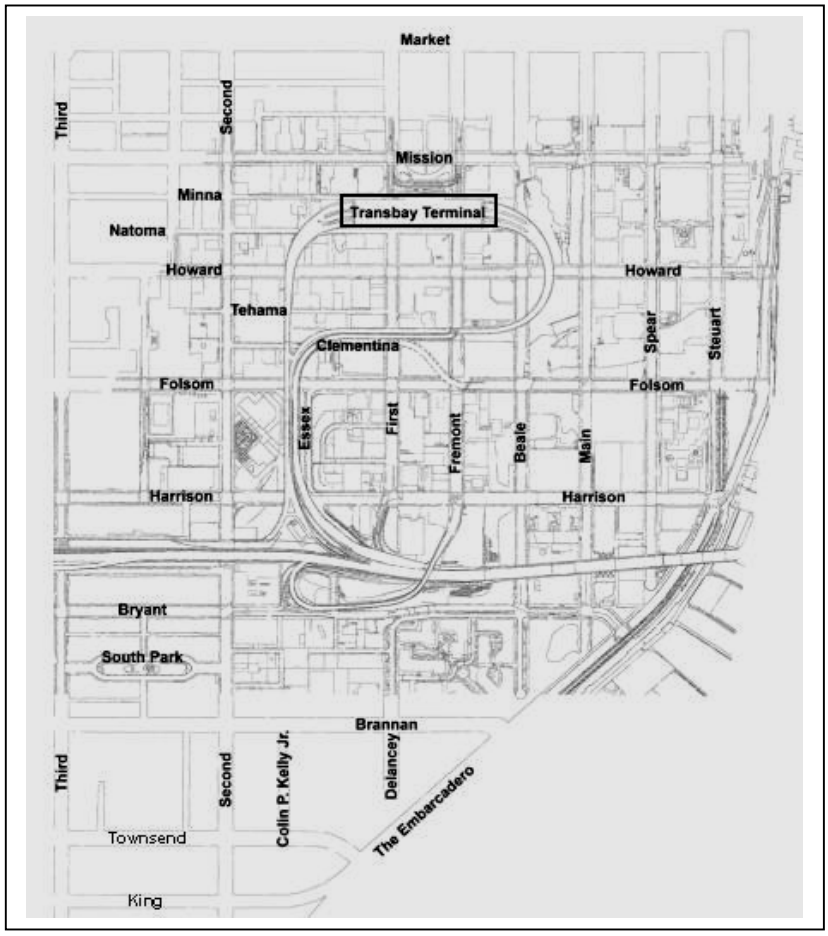
(1) A new Transbay Terminal, to serve as a multi-modal transit/transportation facility that incorporates the principles of sustainability and environmental responsibility at the site of the current Transbay Terminal at First and Mission Streets in downtown San Francisco.
(2) An underground extension of Caltrain commuter rail service from its current San Francisco terminus at Fourth and Townsend Streets to a new underground terminus in the basement of the proposed new Transbay Terminal.
(3) Adoption of a Redevelopment Plan for the Transbay Project Area and related development projects, including transit-oriented development. The plan and related development would permit tax increment financing to assist in financing of the transportation improvements and other redevelopment projects.

Two alternatives are under consideration for each major project components. Other components of the project include a temporary bus terminal facility to be used during construction, a new, permanent off-site bus storage/ layover facility, reconstructed bus ramps leading to the west end of the new Transbay Terminal, and a redesigned Caltrain storage yard. A schematic diagram of the project components, alternatives, and design options is shown on the right.



2.2.1 TRANSBAY TERMINAL ALTERNATIVES

Two alternatives are being studied for a new Transbay Terminal. Under either alternative, a new multi-modal terminal would be located at the same site as the existing terminal at Mission and First Streets (see figure to the right).



Bus ramps would connect directly from the terminal to the Bay Bridge, while an underground rail facility would allow the extension of Caltrain to downtown and provide space for potential future East Bay commuter rail and California's high-speed intercity rail.

With either Transbay Terminal Alternative, facilities would be included for AC Transit, Greyhound, Greyhound Package Express, Muni buses and trolley coaches, Golden Gate Transit basic service buses, taxi service, and easily accessible bicycle storage. SamTrans buses would operate on local streets adjacent to the new terminal. Each alternative would include space for retail and cultural uses. Under current plans, full or partial acquisition of five parcels of land and demolition of five buildings would be required for either Transbay Terminal Alternative and for the Temporary Terminal described in Section 2.2.1.3.

One concept for the terminal would incorporate sustainable design features that would allow the building to use site-specific wind, daylight and shading to reduce the building's energy needs. The design of the roof and exterior walls would facilitate natural ventilation and natural lighting of the interior. Mechanical cooling would be used only for enclosed office areas and data equipment rooms. Photovoltaic panels are proposed on the roof structure to capture solar energy. Rainwater would be captured for maintenance and irrigation of landscaping.

2.2.1.1 Transbay Terminal West Ramp Alternative

Figure 2.2-1 shows the Transbay Terminal West Ramp Alternative, including the locations of bus ramps leading to the terminal and off-site bus storage.

Figure 2.2-1: West Ramp Alternative and Location of Transbay Terminal Components

As developed during the Metropolitan Transportation Commission (MTC) study,[2] conceptual plans for this alternative include a terminal one block (165 feet) wide by three blocks (1,300 feet) long. It would include six levels, with four levels above ground and two below. The currently proposed terminal floor plan is described below.

Train Level: Train platforms would be two levels below grade. The actual location of platforms would vary for the two Caltrain Downtown Extension alternatives. Under either of the Caltrain Downtown Extension alternatives, there would be a direct connection to the train platforms from the Transbay Terminal.

Train Mezzanine Level: A train mezzanine would be one level below the street level – one level above the train platforms. It would accommodate train passenger ticketing services and passenger queuing. Building mechanical systems would also be located on this level.

Street Level: As shown in Figure 2.2-2, the portion of the terminal on street level between Beale and Fremont Streets would accommodate Muni buses and trolley coaches, as well as Golden Gate Transit basic service buses. The west side would include some retail. A lobby for Greyhound/Greyhound Package Express is assumed on the east side of Beale Street.

Concourse Level: The second floor would function as a pedestrian concourse, connecting the various blocks one full story (20 feet) above street level. This area is currently assumed to include 150,000 to 225,000 square feet of retail, entertainment, conference, and educational and cultural space.

AC Transit Level: The third floor (Lower Bus Level) would be 40 feet above street level, and would accommodate the transbay AC Transit commuter operation. It would permit 26 articulated and four standard buses simultaneously to serve arriving and departing passengers. As shown in Figure 2.2-3, Bus Deck 1 would be served by ramps that connect directly to the Bay Bridge. An interior full loop would be provided for bus circulation with two lanes – one through lane and one turnout lane.

Upper Bus Level: The fourth floor (Upper Bus Level) would be 60 feet above street level, and would consist of a partial level on the north side of the building, shown in Figure 2.2-3. It would provide half-loop service with two bus lanes – one through lane and one turnout/parking lane – to bus lines other than AC Transit. This would include Muni service to Treasure Island, paratransit, Greyhound, and private operators. Six bus bays would be included, plus 700 feet of straight curb.

Vertical circulation – escalators and elevators – would be provided between all of the levels for pedestrian/passenger flows. Conceptual plans for this terminal alternative include approximately 200,000 square feet of transit-oriented and retail development and 900,000 square feet of transit

[2] Transbay Terminal Improvement Plan Study, Metropolitan Transportation Commission, 2001.

support and loading areas and mechanical support, yielding a total floor area just over one million square feet.[3]

Figure 2.2- 2: Transbay Terminal Street Level Bus Facilities for Muni and Golden Gate Transit

[3] Possible use of a new Terminal for a transit operator emergency control center has been proposed by the San Francisco Redevelopment Agency and may be evaluated in the future by the Transbay Joint Powers Authority.

Figure 2.2-3: Bus Deck 1 (AC Transit) and Bus Deck 2 (Other Bus Services) West Ramp Alternative

Bus Ramps and Circulation. As shown in Figure 2.2-1, the direct bus ramps would be on the west side of the building, offering dedicated connections between the Bay Bridge and Transbay Terminal Bus levels 1 and 2. These ramps would be in approximately the same position as the existing ramps on the west side of the terminal and paralleling Essex Street. Construction of these ramps would require the acquisition and demolition of one building east of the ramps and south of Howard Street and the removal of a portion of the back of the building east of the ramps and north of Howard Street. Existing bus ramps would need to be demolished and reconstructed to accommodate the new Terminal.

The ramp leading to and coming from the lower bus level would be a two-way ramp, with a single 12-foot lane in each direction. A minimum 20-foot width would be provided to allow vehicles to pass and continue bus service in the event of a vehicle breakdown. The ramp would divide into two at the entrance to the terminal, with an upper level ramp and a lower level ramp. Figure 2.2-4 shows a visual simulation of the stacked ramp configuration across Howard Street. The upper level connection would have one lane functioning as an entrance to the upper bus level. The lower level bus ramp would have two lanes, functioning as both an entrance and an exit for lower bus level. Bus turnaround loops would be provided on each bus level at the east end of the terminal (see Figure 2.2-3). Buses would travel from the upper bus level down an exit ramp inside the terminal to the lower (AC Transit) bus level, and all buses would depart the terminal on the lower bus ramp to the Bay Bridge. At the Bay Bridge approach connection, the ramps would again be divided and stacked. The lower level would provide access to the bridge for eastbound buses leaving the terminal, while the upper level would serve westbound buses coming from the bridge and destined for the terminal. Current conceptual designs would allow for the staging of at least four buses on the ramp at the entrance to the terminal approaching the lower bus level. This configuration, together with the bus ramp storage link (described below) would include a total of 235,000 square feet of ramp area.

SamTrans bus service would operate on Mission Street using all bus stops for passenger alighting, and would terminate on either Mission Street between Fremont and Beale or on Howard Street between Beale and Fremont. After layover, SamTrans buses would load on Fremont, immediately south of the terminal (about 100 feet north of the Howard/Fremont intersection) and would then make stops on Mission Street for passenger boarding.

AC Transit Bus Storage. As shown on Figure 2.2-1 and detailed in Figure 2.2-5, bus storage would be off-site, under the west Bay Bridge approaches between Second and Fourth Streets. AC Transit storage would be at-grade between Second and Third Streets. Two optional conceptual designs have been developed for bus storage at this site. The storage area would accommodate either 42 or 53 buses, depending upon the selected layout for storing of the vehicles. Access to this bus storage area would be via Third Street and a two-way "storage link" ramp that would connect with the Bay Bridge-Transbay Terminal bus ramps. As shown on the conceptual plans (Figure 2.2-6), these storage link ramps would be geometrically complex, with substantial direction changes and areas of maximum grade. It is anticipated that nine buses could be stored on the storage link ramp. The plans include a building to house a lounge and restrooms for the drivers and office space for supervisory personnel.

Figure 2.2- 4: Transbay Terminal West Ramp Alternative -- Visual Simulation of Stacked Ramps at Howard Street

Figure 2.2-5: Transbay Terminal Off-Site Bus Storage

Figure 2.2-6: Transbay Terminal Off-Site Bus Storage Link Ramp

Golden Gate Transit Bus Storage. Golden Gate Transit weekday bus storage would be under the west approaches to the Bay Bridge, between Third and Fourth Streets. Based on current conceptual designs, approximately 140 buses could be accommodated on a paved at-grade lot. The lot could be available for other uses in the evening and on weekends when Golden Gate Transit stores its buses elsewhere.

To minimize the impacts on neighborhood parking near the bus storage lot, a single level parking structure is proposed in the location shown on Figure 2.2-5. This structure, as currently conceived, would provide parking for up to 300 vehicles on two levels.

2.2.1.2 Transbay Terminal Loop Ramp Alternative

Figure 2.2-7 shows the Transbay Terminal Loop Ramp Alternative. This alternative would involve the demolition and reconstruction of both the existing western and eastern bus ramps between the Transbay Terminal and the Bay Bridge. The new Transbay Terminal would be one block wide and three and three-fourths blocks in length. It would include five levels, with two levels above ground and two below. The currently proposed terminal floor plan is described below.

Train Level: Train platforms would be two levels below grade. The actual location of platforms would vary for the two Caltrain Downtown Extension alternatives. Under any of the Caltrain Downtown Extension alternatives, there would be a direct connection to the train platforms from the Transbay Terminal.

Train Mezzanine Level: A train mezzanine would be one level below the street level – one level above the train platforms. It would accommodate train passenger ticketing services and passenger queuing. Building mechanical systems would also be located on this level.

Street Level: As shown in Figure 2.2-2, the portion of the terminal on street level between Beale and Fremont Streets would accommodate Muni buses and trolley coaches, as well as Golden Gate Transit basic service buses. The west side would include some retail. A lobby for Greyhound/Greyhound Package Express is assumed on the east side of Beale Street.

Concourse Level: The second floor would function as a pedestrian concourse, connecting the various blocks one full story (20 feet) above street level. This area would include 150,000 to 225,000 square feet of retail, entertainment, conference, and educational and cultural space.

Bus Level The third floor would be 40 feet above street level, and would accommodate AC Transit and all other bus operators. There would be 51 bus bays, served by three one-way bus lanes. The elevated transit loop would be in the same general location as the existing Transbay Terminal bus ramps and would connect directly to the Bay Bridge. Buses would enter the terminal from the east and exit to the west.

Figure 2.2-7: Transbay Terminal Loop Ramp Alternative

Vertical circulation – escalators and elevators – would be provided between all of the levels for pedestrian/passenger flows. Bus operations for the Transbay Terminal Loop Ramp Alternative would be very similar to the current facility, with AC Transit and other bus operators operating on the second floor, and with buses entering from the east and exiting to the west. Muni and Golden Gate Transit operations would be moved to between Beale and Fremont Streets at street level, as described for the Transbay Terminal West Ramp Alternative.

Preliminary plans for this terminal alternative include approximately 175,000 square feet of transit-oriented and retail development and 750,000 square feet of transit support and loading areas and mechanical support, yielding a total floor area just under one million square feet.[4]

Bus Ramps and Circulation. The Transbay Terminal Loop Ramp Alternative would involve the demolition and construction of new bus ramp structures, providing for a full one-way loop of bus circulation through the Transbay Terminal with direct connections to the Bay Bridge on both the east and west sides of the terminal (See Figure 2.2-7). A total of 380,000 square feet of ramp area would be provided. Construction of these ramps would require the acquisition and demolition of one building east of the ramps and south of Howard Street and the removal of a portion of the back of the building east of the ramps and north of Howard Street. SamTrans bus operations would be as described for the West Ramp Alternative.

Bus Storage. The Loop Ramp Alternative would allow for approximately 120 standard 40-foot buses to be stored on the eastern bus ramps, with the remaining bus storage off-site at one or both bus storage sites described under the West Ramp Alternative.

2.2.1.3 Transbay Terminal Construction

Temporary Bus Facilities. During construction of the new Transbay Terminal, two temporary surface terminals would be built. A temporary terminal for Greyhound buses would be located on Folsom Street between Fremont and Beale Streets. As shown in Figure 2.2-8, a temporary terminal for AC Transit buses would be located on the block bounded by Beale, Howard, Main, and Folsom Streets. A minimum of 16 saw-tooth bus spaces for AC Transit and eight bus spaces for Greyhound buses would be provided, based on preliminary plans. Amenities would be minimal and would include ticketing for AC Transit and Greyhound, restrooms, and sheltered waiting areas. Access to all operational areas would meet the requirements of the Americans with Disabilities Act.

Golden Gate Transit currently uses the Howard/Main site for bus storage, so a new site would need to be identified for Golden Gate Transit bus storage during operation of the temporary terminal facility. Muni operations would be located on the curbs surrounding the temporary terminal block, with four drop-off bays (two of them trolley-ready) and four pick-up bays (all

[4] Possible use of a new Terminal for a transit operator emergency control center has been proposed by the San Francisco Redevelopment Agency and may be evaluated in the future by the Transbay Joint Powers Authority.

trolley-ready).

Figure 2.2-8: Layout of Temporary Bus Terminal

Contra-flow lanes would be designed along Beale and Folsom Streets to accommodate right-hand drop-off and boarding for Muni. Golden Gate Transit would be allocated three bays on the curb with an additional four to five layover spaces on the north side of Folsom Street between Fremont and Beale Streets. During operation of the temporary terminal, SamTrans express bus service would operate via Mission, Beale, Folsom and Main Streets to an endpoint on Beale Street between Howard and Folsom, or as an alternative, on Main Street between Folsom and Howard. Buses would alight passengers at all bus stops prior to the endpoint. Leaving the endpoint, buses would be in service and stop at all bus stops for passenger boarding.

A grade-separated temporary bus ramp to the Bay Bridge is proposed to serve the temporary terminals. The temporary ramp would be developed from the current Caltrans plans for a new off-ramp from the Bay Bridge to Fremont and Folsom Streets. For either Transbay Terminal Alternative, a temporary bus-only ramp would be constructed as a continuation of the Fremont Street I-80 off ramp (see Figures 2.2-1 and 2.2-7) to the temporary terminal site. The ramp would continue east from the Fremont auto ramp and cross over both Fremont and Beale Streets, and then curve to the south to entering the temporary terminal at-grade (see Figure 2.2-8). Construction of the new Transbay Terminal facilities would be staged to allow for development of the new terminal and ramps at approximately the same locations as the old terminal and ramps. Before commencement of construction of the new terminal and ramps, the following conditions are assumed:

- Caltrans would have completed construction of the proposed off-ramp from the Bay Bridge to Fremont and Folsom Streets.

- The existing Transbay Terminal access ramp over Fremont and Beale Streets would be removed

Construction would be phased to first construct the temporary terminals, with all associated infrastructure, and the temporary ramp between the temporary terminals and the Bay Bridge. This would enable bus operations to proceed unimpeded during construction. Upon completion of the temporary terminals and ramp, all bus operations would be removed from the existing Transbay Terminal. The existing terminal and access ramps would be demolished. Construction of the new terminal and access ramps would then commence in one large construction area.

2.2.1.4 Transbay Terminal Capital Costs

Current estimates for the two Transbay Terminal Alternatives are shown in Table 2.2-1. Total cost for the West Ramp Alternative is estimated at $1.02 billion. The Loop Ramp alternative is estimated to cost $1.19 billion. These estimates include the cost of a train-ready basement, ramp development, the off-site bus storage facility, the temporary terminal, and the mid-point estimate for real estate.

Table 2.2-1
Transbay Terminal Capital Cost Estimates
(Start of Construction – Millions of Dollars)

Cost Component	West Ramp Alternative			Loop Ramp Alternative		
	Hard Costs [1]	Soft Costs [2]	Total	Hard Costs [1]	Soft Costs [2]	Total
Temporary Terminal	$15.5	$6.5	**$22.0**	$15.5	$6.5	**$22.0**
Temporary Ramps	$10.7	$3.5	**$14.2**	$10.7	$3.5	**$14.2**
Permanent Ramps	$125.0	$28.0	**$153.0**	$258.0	$57.8	**$315.8**
Permanent Terminal	$620.0	$175.0	**$795.0**	$620.0	$175.0	**$795.0**
Bus Storage	$15.0	$8.0	**$23.0**	$15.0	$8.0	**$23.0**
Real Estate			**$12.9 to $18.3**			**$12.9 to $18.3**
Total [3]	**$801.8**	**$221.0**	**$1,022.8**	**$934.8**	**$250.8**	**$1,185.6**

Notes:

[1] Hard costs include construction labor and materials.

[2] Soft costs include such costs as design/engineering, insurance, mitigation, contingency, and escalation based on a start of construction for temporary facilities of October 2002.

Other qualifications and assumptions apply, including coordination with Caltrans during the retrofit of the Western Approach and bus ramp retrofit projects.

[3] Total assumes mid-point of real estate estimate

Source: MTC, SMWM, Oppenheim/Lewis, Sedway Group, Parsons, 2001

2.2.2 CALTRAIN DOWNTOWN EXTENSION ALTERNATIVES

The Caltrain Downtown Extension Component consists of an extension of Caltrain from the present San Francisco terminus (and storage yard) at Fourth and Townsend Streets to an underground terminal on the site of the present San Francisco Transbay Terminal at First and Mission Streets, a distance of some 1.3 miles. The extension would consist of two to four tracks branching to several additional tracks into the basement of the proposed new Transbay Terminal.

Two Caltrain Extension alternatives are under consideration (1) Second-to-Main, and (2) Second-to-Mission. Figures 2.2-9 through 2.2-17 show the plan and profiles for the Second-to-Main Street Alternative. Figures 2.2-9 through 2.2-13 and 2.2-18 through 2.2-21 show the plan and profiles for the Second-to-Mission Street Alternative.

The extension would include reconstruction of the current storage yard at Fourth and Townsend, with provision of three surface platforms and six tracks on the southern portion of the existing facility near Fourth and King Streets and the addition of a new underground Caltrain station on the northern portion near Townsend and Fourth Streets.

The Caltrain Extension project would begin just north of Sixteenth Street, where additional tracks and sidings would be added as the alignment approaches the Fourth and Townsend location. Four Caltrain tracks are proposed to cross an extension of Common Street to the West.[5] From this location, the easternmost track would turn east into a reconstructed surface portion of the Fourth and Townsend storage facility and station. This track would then branch into six tracks leading to three surface platforms terminating at the current Fourth and Townsend Station (see Figure 2.2-12).

These tracks would not continue to the new Transbay Terminal but would terminate at the Fourth and Townsend Street Station. Platforms would be provided between these tracks for limited Caltrain service including, for example, special ballpark trains or non-electrified trains that could arrive from Dumbarton or from areas south of Gilroy, e.g., Monterey. The three westernmost tracks (closest to Seventh Street) at Common Street would begin to descend at approximately Berry Street and would curve east to a new underground station with a center platform near Fourth and Townsend Streets. These three tracks would lead to a new underground station at Fourth and Townsend, with two tracks serving a center-platform station (see Figures 2.2-12). An additional fourth track coming from the East would pass north of these three tracks and the new underground platform. This fourth track would head to the west (toward Seventh Street) and would branch into five depressed storage tracks to be located to the south of Townsend Street between the new station platform and Seventh Street.

The four tracks passing the Fourth and Townsend underground station would merge into two tracks under Townsend Street near Fourth Street. The alignment would then continue east under Townsend Street in a cut-and-cover tunnel configuration. It would then curve north at about Clarence Place just east of Third Street in a cut-and-cover configuration. For the current cut-and-cover option, eleven parcels with ten buildings would need to be acquired and demolished for this 1,100-foot long curve with 716- and 736-foot radii curves from Townsend to Second and Brannan Streets. (These buildings would remain for the tunneling option described below in Section 2.2.2.3.) The alignment would continue as a cut-and-cover section under Second Street for approximately 2,055 feet.

As described below, two alternatives are under consideration from Howard Street north: (1) Second-to-Main, and (2) Second-to-Mission.

2.2.2.1 Second-to-Main Caltrain Extension Alternative

As the Second-to-Main Caltrain Extension Alternative approaches Howard Street along Second Street, it would curve 90 degrees northeasterly, along an approximately 970-foot long curve with

[5] The extension of Common Street across the Caltrain right-of-way was included in the Mission Bay Subsequent Environmental Impact Report (SEIR). A Notice of Determination was posted for this SEIR on November 3, 1998. The California Public Utilities Commission approved the new at-grade crossing on May 18, 2000 as a replacement for two crossing that were closed at Berry and King Streets in the Mission Bay development. The new Common Street crossing is therefore assumed as part of the No-Project Alternative for this Transbay Terminal/Caltrain Downtown Extension/Redevelopment Project EIS/EIR.

track curve radii of 498 to 545 feet into the basement of the new Transbay Terminal. Under current plans, eighteen parcels of land with eleven buildings would need to be acquired and demolished for this curve into the Terminal.

The terminal station would have six tracks and three platforms and would include approximately 2,000 feet of additional tracks (called tail tracks) in a cut-and-cover section leading from the east end of the new Terminal. These tracks would curve 90 degrees south along 498-foot to 521-foot radius curves to Main Street and continue underneath Main Street to south of Folsom Street. The tracks would be used for temporary train storage, improving the operating efficiency of Caltrain service. Trains would not be required to be stored at Fourth and Townsend, but rather could be staged near the terminal to be brought quickly into service. This would minimize costly "deadheading" – the movement of trains that are not in revenue service. As shown on Figures 2.2-16 and 2.2-17, the tail tracks would also allow for a 1,300-foot platform between the two center tracks. This platform length is the current design standard for high-speed trains under consideration in California. The tracks could also be extended as a separate, independent project at some time in the future, to a San Francisco-to-Oakland cross-bay alignment for commuter rail and/or high-speed trains.

This alternative would include a design option for a pedestrian connection underneath Fremont Street to the BART Embarcadero Station. The pedestrian connection would be below grade level and approximately 800 feet long.

2.2.2.2 Second-to-Mission Caltrain Extension Alternative

The Second-to-Mission Alternative would follow the same alignment as the Second-to-Main Alternative up to Second and Howard Streets. At that point, it would provide a different configuration for the underground station in the Transbay Terminal and for the tail tracks leading out of the terminal.

As this alignment approaches Howard Street, rather than running parallel to the Terminal's long axis, this alignment would curve northeasterly at about Tehama Street, along a 1,432-foot radius curve for approximately 700 feet, cutting diagonally under the new terminal and exiting out under Mission Street headed towards The Embarcadero. The southernmost track would branch into four tracks leading to and serving two center platforms directly under the Transbay Terminal. These four tracks would terminate at the eastern end of the Terminal.

The two northernmost tracks would continue on an angle to Mission Boulevard and would serve two 600-foot side platforms to the north of the Transbay Terminal. These two tracks would continue to two 1,400-foot tail tracks under Mission Street ending just east of The Embarcadero. Under current plan, twenty parcels of land and 13 buildings would need to be acquired and demolished for this alternative. The tail tracks for this alignment would be used in a manner similar to the uses described above for the Second-to-Main Alternative, and could be extended as a separate, independent project at some time in the future to a San Francisco-to-Oakland cross-bay alignment for commuter rail and/or high-speed trains.

As with the Second-to-Main Alternative, this alternative would include a design option for a pedestrian connection underneath Fremont Street to the BART Embarcadero Station. The pedestrian connection would be below grade level and approximately 800 feet long.

2.2.2.3 Caltrain Extension Tunneling Option

Use of tunneling rather than cut-and-cover trenching was also evaluated for constructing the Caltrain Downtown Extension Alternative. Given the geology along the Caltrain Extension alignments, tunneling appears to be feasible only for that portion of the alignments between Townsend Street and Folsom Boulevard. This optional construction technique would involve the underpinning (additional support) of the buildings on the curve between Townsend and Second Streets.

Geology for this portion of the alignments is characterized as fractured rock. This geology is not suited for standard tunnel boring machines, so a highly specialized tunneling technique known as the "stacked drift" approach was evaluated. This approach, although more costly than most tunneling approaches, was selected to virtually eliminate the risk of tunnel collapse.

Given that the proposed construction technique for tunneling has an extremely low likelihood of collapse or tunnel failure and given that buildings would be underpinned prior to construction, the buildings under which the tunnel would pass would not need to be vacated during the construction period.

2.2.2.4 Accommodation of High-Speed Rail

As shown on the plans and described in this section, the curves along the Caltrain Extension Alternatives all have radii greater than 493 feet, which is the minimum design curve radius for existing European (French and German) high-speed train equipment.[6] This minimum radius requirement was a critical factor for the placement of Caltrain alignment alternatives under Second Street. Specifically, the Second Street alignment allows for curves with radii greater than 493 feet leading from Second Street into the Transbay Terminal for both Caltrain Alternatives.

2.2.2.5 Caltrain Capital Costs

Tables 2.2-2 through 2.2-5 present a summary of capital cost estimates for the two Caltrain Extension Alternatives and the optional tunneling approaches. As shown, the extension costs range from $844.3 million for the Second-to-Main Alternative/tunnel option to $912.9 million for the Second-to-Mission/cut-and-cover option.

[6] Letter dated October 5, 2000 from Dan Leavitt, Deputy Director of the California High Speed Rail Authority to Maria Ayerdi, Transportation Policy Advisor, Office of the Mayor, City and County of San Francisco.

Table 2.2-2
Second-to-Main Alternative – Cut-and-Cover Construction
Capital Cost Estimate (Millions of Dollars)

Demolition: Existing yard buildings and downtown buildings	**$4.6**
Subway/Depressed Section Improvements: Subway excavation, shoring system, drainage, ventilation, fire/life/safety	**$312.6**
Roadway/Utility Improvements: Utilities relocation, traffic control, street improvements, Sixth Street foundations, temporary decking	**$51.2**
Trackwork: Track and special track work	**$17.4**
Systems: Signal, communications, traction power & OCS	**$15.0**
Station Improvements: Fourth & Townsend (subsurface), Fourth & Townsend (surface) & Transbay Terminal	**$11.4**
Environmental Mitigation: Hazardous Materials, Vibration	**$25.1**
CONSTRUCTION TOTAL	**$437.3**
Design, CM and Owner Costs (25%)	**$109.4**
Contingency Allowance (25%)	**$109.4**
Project Reserve (10%)	**$43.7**
TOTAL PROJECT COST - End of 2001	**$699.8**
2004 Inflation Adjustment (8%)	**$56.0**
Right-of-way acquisition, relocation, resale (net loss)	**$121.0 to $128.0**
TOTAL PROJECT COST (Start Construction at Beginning of 2004) [1]	**$880.3**

Note:

[1] Total assumes mid-point of real estate costs

The optional underground pedestrian connection from the train mezzanine to The Embarcadero BART Station is estimated to cost $45.3 million.

Source: Parsons Transportation Group, Sedway Group, 2001

Table 2.2-3
Second-to-Main Alternative – Optional Tunneling Construction From Townsend to Folsom
Capital Cost Estimate (Millions of Dollars)

Demolition: Existing yard buildings and downtown buildings	**$3.4**
Tunnel/Depressed Section Improvements: Tunnel/Subway excavation, shoring system, drainage, ventilation, fire/life/safety	**$352.8**
Roadway/Utility Improvements: Utilities relocation, traffic control, street improvements, Sixth Street foundations, temporary decking	**$34.9**
Trackwork: Track and special track work	**$17.4**
Systems: Signal, communications, traction power & OCS	**$15.0**
Station Improvements: Fourth & Townsend (subsurface), Fourth & Townsend (surface) & Transbay Terminal	**$11.4**
Environmental Mitigation: Hazardous Materials, Vibration	**$20.3**
CONSTRUCTION TOTAL	**$455.2**
Design, CM and Owner Costs (25%)	**$113.8**
Contingency Allowance (25%)	**$113.8**
Project Reserve (10%)	**$45.5**
TOTAL PROJECT COST - End of 2001	**$728.3**
2004 Inflation Adjustment (8%)	**$58.3**
Right-of-way acquisition, relocation, resale (net loss)	**$55.6 to $59.8**
TOTAL PROJECT COST (Start Construction at Beginning of 2004) [1]	**$844.3**

Note:

[1] Total assumes mid-point of real estate costs

The optional underground pedestrian connection from the train mezzanine to The Embarcadero BART Station is estimated to cost $45.3 million.

Source: Parsons Transportation Group, Sedway Group, 2001

Table 2.2-4
Second-to-Mission Alternative - Cut-and-Cover Construction
Capital Cost Estimate (Millions of Dollars)

Demolition: Existing yard buildings and downtown buildings	**$5.6**
Subway/Depressed Section Improvements: Subway excavation, shoring system, drainage, ventilation, fire/life/safety	**$317.6**
Roadway/Utility Improvements: Utilities relocation, traffic control, street improvements, Sixth Street foundations, temporary decking	**$56.5**
Trackwork: Track and special track work	**$17.4**
Systems: Signal, communications, traction power & OCS	**$15.0**
Station Improvements: Fourth & Townsend (subsurface), Fourth & Townsend (surface) & Transbay Terminal	**$11.4**
Environmental Mitigation: Hazardous Materials, Vibration	**$27.2**
CONSTRUCTION TOTAL	**$450.7**
Design, CM and Owner Costs (25%)	**$112.7**
Contingency Allowance (25%)	**$112.7**
Project Reserve (10%)	**$45.1**
TOTAL PROJECT COST - End of 2001	**$721.2**
2004 Inflation Adjustment (8%)	**$57.7**
Right-of-way acquisition, relocation, resale (net loss)	**$130.4 to $137.6**
TOTAL PROJECT COST (Start Construction at Beginning of 2004) [1]	**$912.9**

Note:

[1] Total assumes mid-point of real estate costs

The optional underground pedestrian connection from the train mezzanine to The Embarcadero BART Station is estimated to cost $45.3 million.

Source: Parsons Transportation Group, Sedway Group, 2001

Table 2.2-5
Second-to-Mission Alternative -- Optional Tunneling Construction from Townsend to Folsom
Capital Cost Estimate (Millions of Dollars)

Demolition: Existing yard buildings and downtown buildings	**$4.4**
Tunnel/Depressed Section Improvements: Tunnel/Subway excavation, shoring system, drainage, ventilation, fire/life/safety	**$356.7**
Roadway/Utility Improvements: Utilities relocation, traffic control, street improvements, Sixth Street foundations, temporary decking	**$40.2**
Trackwork: Track and special track work	**$17.4**
Systems: Signal, communications, traction power & OCS	**$15.0**
Station Improvements: Fourth & Townsend (subsurface), Fourth & Townsend (surface) & Transbay Terminal	**$11.4**
Environmental Mitigation: Hazardous Materials, Vibration	**$22.3**
CONSTRUCTION TOTAL	**$467.4**
Design, CM and Owner Costs (25%)	**$116.9**
Contingency Allowance (25%)	**$116.9**
Project Reserve (10%)	**$46.7**
TOTAL PROJECT COST - End of 2001	**$747.9**
2004 Inflation Adjustment (8%)	**$59.8**
Right-of-way acquisition, relocation, resale (net loss)	**$65.7 to $69.9**
TOTAL PROJECT COST (Start Construction at Beginning of 2004) [1]	**$875.5**

Note:

[1] Total assumes mid-point of real estate costs

The optional underground pedestrian connection from the train mezzanine to The Embarcadero BART Station is estimated to cost $45.3 million.

Source: Parsons Transportation Group, Sedway Group, 2001

2.2.2.5 Caltrain Operating Scenario Assumptions

For purposes of this EIS/EIR, it is assumed that Caltrain would operate 170 trains daily in the horizon year of 2020. Table 2.2-6 shows the operating assumptions used for analysis of ridership and operating costs.

Table 2.2-6
Caltrain Operating Assumptions (Year 2020)

Time of Day	Type of Service (Per hour one-way)			Trains Per Hour (One way)	Trains Per Day (One-way)	Trains Per Day (Two-way)
	Local	Limited	Express			
Early am 4 – 6 am	2		1	3	6	12
Peak 6-9 am & 4-7 pm	2	2	2	6	36	72
Off Peak 9 am to 4 pm	2		2	4	28	56
Night 7 pm to midnight	2		1	3	15	30
					Total	170

Source: Peninsula Corridor Joint Powers Board, 2001

2.2.3 PROPOSED TRANSBAY REDEVELOPMENT PLAN AREA

A plan for the redevelopment of the greater Transbay Terminal area has been a long-standing goal of the City and County of San Francisco, which entered into the redevelopment implementation process in December 1994 when the Board of Supervisors adopted a formal redevelopment survey area. A Citizen's Advisory Committee was formed which, along with local and regional agencies, has assisted the Redevelopment Agency in defining the redevelopment area. Additional planning and consensus building during the 1997 environmental process for the Caltrain Extension and the 2000 Terminal Study has resulted in the currently proposed redevelopment area that is an integral part of the creation of a new Transbay Terminal and the extension of Caltrain.

Any of the project alternatives would require adoption of a redevelopment plan, new zoning and design guidelines, and a capital improvement plan. Several documents are expected to be prepared to develop these plans. This EIS/EIR document initiates but does not complete development of the plan. Documents to be prepared by Fall 2002 fall into three categories: (1) Redevelopment Plan to be adopted by the Redevelopment Commission and Board of Supervisors and signed by the Mayor, (2) a Design for Development to be approved by the Redevelopment

Commission and Planning Commission, and (3) Planning Code and zoning map amendments. Redevelopment plan adoption documents include a Redevelopment Plan, a Preliminary Report, and a Final Report. Both the Preliminary Report and the Final Report will include all documents required per California Community Redevelopment Law for a redevelopment plan adoption.

Plan preparation will include the following activities: (1) analysis of the blight conditions in the area, (2) review of the financial feasibility of the entire project, (3) preparation of tax increment revenue projections for the area, and (4) evaluation of approaches for disposition and development of property within the Redevelopment Area. The Redevelopment Plan will be adopted by the San Francisco Redevelopment Commission and the San Francisco Board of Supervisors.

A Design for Development document will provide new land use or zoning designations and design guidelines to facilitate the desired joint development. It will include proposed land uses and design guidelines. It may also include a capital improvement program and design guidelines for public projects in the area, such as the Folsom Boulevard and mid-block pedestrian crossings. The Design for Development would be approved (not adopted) by the San Francisco Redevelopment Agency (SFRA) Commission and the San Francisco Planning Commission.

2.2.3.1 Transit-Oriented and Other Redevelopment in the Transbay Terminal Area

Two development scenarios are being evaluated for the Redevelopment Plan Area, as described below. Assumed development levels for the "full build" and "reduced scope" development alternatives are shown in Table 2.2-7 and on Figure 2.2-22. The scenarios are not actual proposals but a representation of the range of reasonable development that could occur. Within the overall redevelopment plan, actual development proposals would be defined and evaluated in subsequent steps of the redevelopment process.

Transit-oriented development in the vicinity of the Transbay Terminal would provide a mix of residential and commercial development adjoining a major multi-modal transportation facility. Revenues from the sale or lease of the land plus proceeds based on tax-increment from development on the properties in the Redevelopment Area would be used to defray a portion of the costs for the new Transbay Terminal and Caltrain Downtown Extension. Publicly-owned properties proposed for possible development are shown in Figure 2.2-22.

The adoption of a Redevelopment Plan for the area in the general vicinity of the proposed new Transbay Terminal is proposed to aid in the revitalization and enhancement of the Terminal area and to facilitate related development and financing of the transportation improvements and other redevelopment projects, including office, retail, hotel, and residential development. Transbay Redevelopment Project Area boundaries are shown in Figure 2.2-22.

Table 2.2-7
Levels of Redevelopment (Gross Square Feet, GSF)
Full Build and Reduced Scope

Proposed Uses	Block Numbers									Total
	3718	3720	3736	3737	3738	3739	3740	3749	3764	(GSF)
Residential										
Full Build	0	0	611,910	1,068,210	1,170,450	1,758,375	637,020	234,325	121,520	5,601,810
(No. of D.U.)			(510)	(890)	(975)	(1,465)	(531)	(195)	(101)	(4,667)
Reduced Scope	0	0	712,800	760,290	875,160	878,400	697,400	131,075	60,760	4,115,885
(No. of D.U.)			(594)	(634)	(729)	(732)	(581)	(109)	(51)	(3,430)
Office										
Full Build	787,230	0	0	0	0	397,360	0	0	0	1,184,590
Reduced Scope	0	0	0	0	0	0	0	0	0	0
Hotel										
Full Build	0	475,600	0	0	0	0	0	0	0	475,600
Reduced Scope	0	350,000	0	0	0	0	0	0	0	350,000
Retail										
Full Build	61,205	11,600	29,985	38,690	50,050	98,935	30,780	25,475	8,680	355,400
Reduced Scope	0	12,000	30,800	38,715	57,860	58,400	34,900	18,725	8,680	260,080
Total										
Full Build	**848,435**	**487,200**	**641,895**	**1,106,900**	**1,220,500**	**2,254,670**	**667,800**	**259,800**	**130,200**	**7,617,400**
Reduced Scope	**0**	**362,000**	**743,600**	**799,005**	**933,020**	**936,800**	**732,300**	**149,800**	**69,440**	**4,725,965**

Source: San Francisco Redevelopment Agency, San Francisco Planning Department

Figure 2.2-22: Development Levels Assumed for Full Build and Reduced Scope Redevelopment Alternatives and Proposed Redevelopment Area Boundary

Full Build Development Scenario. As shown on Table 2.2-7, the "full build" development scenario assumes about 7.6 million square feet (sq. ft.) of residential/office/retail/hotel development, including approximately 5.6 million sq. ft. of residential development (4,700 residential units including affordable housing), 1.2 million sq. ft. of office development, 475,000 sq. ft. of hotel development, and 355,000 sq. ft. of retail development.

Reduced Scope Development Scenario. As shown on Table 2.2-7, the **"**reduced scope" development scenario assumes a lesser amount of commercial and retail development and is weighted more toward housing. It assumes approximately 4.7 million sq. ft. of residential/office/retail/hotel development, including 4.1 million sq. ft. of residential (about 3,400 dwelling units), 350,000 sq. ft. of hotel development, and 260,000 sq. ft. of retail development. No office development is assumed for this Alternative.

2.3 ALTERNATIVES CONSIDERED AND WITHDRAWN

Various alternatives and design options for the different components of the proposed project were considered and subsequently withdrawn from further consideration based on their inability to satisfy the project purpose and need, operational constraints, potential environmental impacts, lack of cost-effectiveness, engineering feasibility, and other factors. These alternatives and the reasons they were withdrawn from further consideration are described below for the Transbay Terminal and the Caltrain Downtown Extension. Previous planning efforts for a Transbay Redevelopment Area Plan are discussed in Section 2.2.3.

2.3.1 TRANSBAY TERMINAL ALTERNATIVES CONSIDERED AND WITHDRAWN

As part of the study by the Metropolitan Transportation Commission (MTC), the Transbay Terminal Improvement Plan evaluated three alternative replacement terminal site configurations and a terminal renovation alternative based on the following criteria:

- Engineering issues
- Transit operations criteria
- Terminal operations criteria
- Terminal and transit operations cost analysis
- Joint development potential
- Urban design issues
- Overall project costs and revenues

The terminal replacement alternatives were named after Dickens novels and consisted of Our Mutual Friend, Great Expectations, and A Tale of Two Cities. The conceptualization and evaluation of these three terminal alternatives continued for 24 months. Alternatives were screened with input from the Transbay Terminal Plan Panel. Based on this screening, the Transbay Terminal Plan Executive Committee (consisting of staff and policy board

representatives from AC Transit, the City and County of San Francisco, the JPB, Caltrans, and MTC) selected the Transbay Terminal West Ramp Alternative ("Great Expectations") described above in Section 2.2.1.1. To assure that a full range of alternatives is evaluated, this EIS also includes the Loop Ramp Alternative described in Section 2.2.1.2, which is based on the MTC Study's "Our Mutual Friend" option.

2.3.1.1. Renovation of the Existing Transbay Terminal Building and Associated Structures

Renovating the existing Transbay Terminal building and its associated structures would produce a facility that would be most similar to the existing Transbay Terminal. It would be the least expensive of the terminal improvement alternatives that were considered within the Transbay Terminal Improvement Plan study. It offers no other benefits in comparison with the replacement alternatives, however.

Retaining the existing terminal building would not meet the project objectives. It would preclude most opportunities for improved space utilization, passenger circulation, signage, security, and safety. It would not accommodate the underground rail options – either a Caltrain extension or high-speed rail – and would require construction of new elevated rail structures. Although the existing Terminal, retrofitted to withstand a maximum credible earthquake, could accommodate a Caltrain Extension above-ground, such a strengthening would render the building impractical for multiple uses, including retail or commercial space. It therefore offers very limited potential for revenue-generating joint development within the terminal and would keep in place the elevated ramp structures that cross 10 city streets, which has contributed to the continued deterioration and underutilization of land in the Transbay Terminal area. For these reasons, and following review and concurrence by the Transbay Terminal Improvement Plan Panel and Executive Committee, the Renovation Alternative was withdrawn from further consideration.

2.3.1.2 New Bus Terminal at Main/Beale Site

In February 1999, the San Francisco Board of Supervisors passed a resolution repealing its prior endorsement of the Main/Beale site for a new terminal and urging the "City and County of San Francisco to work expeditiously with AC Transit, the Metropolitan Transportation Commission (MTC) and Caltrans to retain AC Transit regional bus service at the current Transbay Terminal site." AC Transit supported this action noting that the Main/Beale site would not provide the level of transit service that could be provided at the current terminal site and it would be farther from the employment locations of AC Transit's current riders. This site would not address project objectives to modernize the Transbay Terminal and improve its service. Withdrawal of the Main/Beal site was also consistent with the provisions of Proposition H, which calls for a multi-modal facility at the current Transbay Terminal site.

2.3.1.3 A Tale of Two Cities Terminal at Transbay Terminal Site

The Tale of Two Cities terminal alternative was the most costly of the alternatives considered by the Transbay Terminal Improvement study. It offered substantial room for expansion of bus operations and would have accommodated the full 2020 bus program projected by terminal bus operators. It provided clear passenger circulation within the terminal structure and integrated retail and passenger circulation advantageously. Both AC Transit and rail services would have been vertically separated from Muni services by only one level, thus facilitating intermodal transfers.

The Tale of Two Cities terminal alternative did not meet the project objective to revitalize the Transbay Terminal area as well as the other terminal configurations. The extended footprint of this large facility did not contribute to improved utilization of land in the Transbay Terminal area and created long distances between modes for passengers circulating within the terminal. The facility also would have had elevated ramps crossing 10 city streets, which would have contributed to the continued "blight" in the area. The greatest negative with this alternative, however, was that the huge scale of the terminal facility and its integrated joint development led to costs almost twice these of the other two replacement alternatives. For these reasons, and following review and concurrence by the Transbay Terminal Improvement Plan Panel and Executive Committee, the Tale of Two Cities Alternative was withdrawn from further consideration.

2.3.2 CALTRAIN DOWNTOWN EXTENSION ALTERNATIVES CONSIDERED AND WITHDRAWN

Multiple Caltrain Downtown Extension alternatives and design options were considered and subsequently withdrawn from further consideration based on engineering feasibility, potential environmental impacts, operational constraints, or inability to meet the project purpose and need. These Caltrain Extension alternatives and the reasons they were withdrawn from further consideration are described in the following sections and are shown on Figure 2.3-1.

2.3.2.1 Caltrain Downtown Extension Draft EIS/EIR (1997) Alignment

The Caltrain Extension alignment shown in the 1997 San Francisco Downtown Extension Project Draft EIS/EIR would follow Townsend Street and would curve north just east of Third Street and follow a tunnel alignment under Rincon Hill to Essex Street. It would be in a subway configuration under the alignment of the existing west bus ramps and follow the curve under the existing bus ramps into the basement of the new Transbay Terminal (see Figure 2.3-1, Alignment 1). It would not meet the project purpose to enable direct access to downtown San Francisco for future high-speed rail service. Its curve into the Transbay Terminal would have a 395-foot radius, which would not accommodate the high-speed steel-wheel-on-rail equipment currently in use in Europe and under consideration by the California High-Speed Rail Authority for implementation in California, including a station in downtown San Francisco.

Figure 2.3-1: Caltrain Extension Alternatives Considered and Withdrawn

Given its inability to accommodate high-speed rail, this alignment was withdrawn from consideration. A critical project purpose is to provide a multi-modal transit facility that accommodates bus, paratransit, Greyhound, Caltrain, and high-speed rail service. As noted above, the curves for the Caltrain Extension Alternatives described in Section 2.2.2 would accommodate the existing European high-speed rail equipment.

2.3.2.2 Essex Street Stub-End Alignment

In response to the curve radii problems associated with the 1997 Caltrain Alignment, a new alignment was reviewed that would also tunnel under Rincon Hill and under the existing Transbay Terminal western ramps. Rather than curve into the basement of the Transbay Terminal, however, this alignment would include a train station that would be oriented perpendicular to and the west of the Transbay Terminal, with the northern end of this train station at Minna Street (see Figure 2.3-1, Alignment 2). This alignment would eliminate the tight curve leading into the Transbay Terminal and would enable the use of high-speed train equipment.

This alternative was included in the Notice of Preparation and Notice of Intent to Prepare this EIS/EIR, but has since been withdrawn from consideration. During the public scoping process, the public noted several problems associated with this alignment. These public comments and issues contributed to the withdrawal of this alignment. First, the train platforms would not be directly under the multimodal transit facility, so internal passenger circulation and the ease of transfer from one mode to another would be substantially compromised. Second, the orientation would not allow for trains to pass through the station. That is, the trains would not be able to enter one end and exit at the other end of the station to a storage track. For the stub-end station, trains would pull into the station and would need to reverse direction to leave the station. This would substantially reduce train operating efficiency and would not meet the project purpose to substantially improve Caltrain service to downtown San Francisco.

As described above, the two Caltrain Extension Alternatives under consideration in this EIS/EIR include tail tracks coming out of the east end of the train station. These trail tracks would allow for train storage and servicing, resulting in improved train operating efficiency. For example, trains would not need to be moved back to the Fourth and Townsend storage yard for storage and staging, but rather would be ready to be moved to a train platform from the tail track once a train vacated the platform; this train move would not block the train that is leaving the station. Finally, the tail tracks would allow for potential extension of commuter and high-speed rail service across the bay to Oakland, as a separate project.

2.3.2.3 Other Caltrain Extension Alternatives Evaluated in 1997

As part of the 1997 Draft EIS/EIR analysis, five alignment options applying different construction techniques for different segments were considered for an alternative to extend Caltrain to an underground station at Market and Beale Streets or at the Transbay Terminal. A

detailed description of these alternatives and their characteristics is provided in the *Design Options Screening Report, Caltrain San Francisco Downtown Extension Project,* Peninsula Corridor Joint Powers Board, 1995.

Under the first option, the Caltrain Extension would have diverted from the existing Caltrain tracks at about Seventh and Berry Streets, travel subsurface along the south side of Townsend Street, curve beneath the southbound lanes of The Embarcadero roadway, and then travel northward along and under Beale Street to a proposed underground station at Market Street (see Figure 2.3-1, Alignment 3). Cut-and-cover and soft-ground tunneling techniques were investigated to evaluate engineering feasibility and minimize disruptions at the surface. Both a short-tunnel option with a portal between Fifth and Sixth Streets and a long-tunnel option with a portal at Seventh Street were considered. Differing alignment options for the final segment entering an underground train station at Market and Beale Streets were also considered.

The second alignment option would have followed the same route along Seventh and Townsend, using subway and/or cut-and-cover construction techniques. From this point, the alignment would have descended, curving northeasterly, in a mined tunnel under Rincon Hill. Under Beale Street, the tunnel would ascend and continue, using cut-and-cover techniques, to the proposed underground train station, with alignment variations according to the different train station configurations (see Figure 2.3-1, Alignment 4).

A third alignment would follow the King Street right-of-way rather than Townsend Street for the eastward segment. It would travel east on King to The Embarcadero, and continue northeastward in cut-and-cover tunnel subsurface along The Embarcadero right-of-way to Beale Street. It would then travel northward to an underground train station at Market and Beale (see Figure 2.3-1, Alignment 4).

A fourth alignment would follow the King Street right-of-way in cut-and-cover tunnel, curve northeasterly east of Fourth Street, transition to a mined tunnel at approximately Third and King Streets, and then continue to an underground train station at Market and Beale (see Figure 2.3-1, Alignment 5).

The fifth option would follow along King Street for the westernmost segment from about Seventh and Berry Streets to the Embarcadero (see Figure 2.3-1, Alignments 7 and 8). This alignment would be capable of being combined with the remaining portions of any of the Transbay Terminal or Market and Beale Streets terminal alignments described above.

The alignments along Beale Street leading from The Embarcadero would pass near the Bay Bridge anchorage, raising issues regarding the effects of cut-and-cover construction on this major structure. The alignments using cut-and-cover construction down King or Townsend Street and The Embarcadero would introduce potentially substantial noise, traffic, air quality and other environmental impacts during construction within the South Beach neighborhood and elsewhere along The Embarcadero. This is an area that has experienced prolonged disruption from prior construction of The Embarcadero roadway and Muni Metro Extension projects. The

King Street Alignment would also introduce traffic and other environmental impacts for the new baseball park at King and Second Streets.

Extending the line north of Mission Street all the way to Market Street would have been costly, given that at least two train levels would have been needed, resulting in a deep excavation between older, historic buildings, and given the existence of subsurface structures (e.g., subsurface parking) in this part of the Beale Street right-of-way. Similarly, expanding the proposed Caltrain terminal to six tracks to accommodate future high-speed rail would cost more at the Market/ Beale Street location than at the Transbay Terminal. Finally, these alternatives would again introduce a stub-end station, reducing train operating efficiency (as described above in Section 2.3.2.2) and would not meet the project purpose to substantially improve Caltrain service to downtown San Francisco.

Because of the additional capital and operating costs and the reduced operating efficiencies for this alternative compared to the alternatives defined herein and the major issues at the proposed train station site, the Caltrain Extension Alternative to the Market and Beale Street Terminal was withdrawn from further consideration.

The King Street alignment segment was withdrawn from consideration because it would have caused severe traffic disruptions during construction, e.g., baseball games at Pacific Bell Park. Moreover, construction of this alignment would have meant tearing up the newly constructed southbound lanes of King Street and would have been complicated by a large box sewer line located adjacent to this alignment.

The Caltrain terminal at Market and Beale Streets was ultimately withdrawn from further consideration because of the narrow right-of-way available on Beale Street, requiring construction of a multi-level train station between two historic structures.

2.3.2.4 Alignment along Brannan Street for the Westernmost Segment of the Caltrain Extension

This alignment would follow Brannan Street rather than Townsend Street or King Street for the first segment of the Caltrain Extension from about Seventh and Berry Streets to The Embarcadero (see Figure 2.3-1, Alignment 9). The Brannan Street alignment portion was capable of being combined with the remaining portions of any of the Transbay Terminal or Market and Beale Streets terminal alignments. It was withdrawn from further consideration because the alignment would have passed on the surface in front of the Sixth Street off-ramp for I-280 and would have traveled along the densely developed Brannan Street adversely affecting traffic operations.

2.3.2.5 Alignment From Essex Street Passing at an Angle Under the Transbay Terminal Site at First Street

This alignment would follow the Essex Street tunnel alignment with a cut-and-cover section north of Folsom Street passing at an angle under the center (near First Street) of the new Transbay Terminal (see Figure 2.3-1, Alignment 10). It was withdrawn from further consideration because of the impacts that this long tunnel would have on real estate above the alignment, including the need for substantial property acquisitions, including both existing development and development currently under construction between Folsom and Mission Streets on both sides of First Street.

2.3.2.6 Alignment Tunneling under Rincon Hill to a Tunnel and Terminal Station Directly Under the First Street Right-of-Way

This alignment would generally follow the Essex Street tunnel alignment under Rincon Hill, but the tunnel would angle more to the east to meet the First Street right-of-way (see Figure 2.3-1, Alignment 11). A two-or three-level train station would then be constructed under the First Street right-of-way south of a new Transbay Terminal. This multi-level train terminal would require a transition of the train tracks from a one-level to a "stacked" configuration, which would need to occur to the south of the train terminal station. There is insufficient length to make such a transition under the Townsend Street right-of-way, and it is not advisable, from a tunnel construction safety or tunneling cost perspective, to build such a transition in the tunnel portion under Rincon Hill. This alternative was therefore withdrawn from further consideration.

2.3.3 CALTRAIN STORAGE YARD LOCATED IN BRISBANE

An alternative to the Fourth and Townsend location proposed for a Caltrain midday storage and layover yard was a site at the former Bayshore Yard in Brisbane. This potential yard site was withdrawn from further consideration because of its distance from the proposed new Caltrain terminal. "Deadhead" time (the amount of time the train would be operated out of revenue service) would have been at least three and one-half times greater than the time to the current Caltrain facility, adding substantially to Caltrain operating costs and adversely affecting the ability to operate efficient and safe train service at anticipated levels of service.