

**SEDWAY GROUP**

Real Estate and Urban Economics

**BART'S CONTRIBUTIONS TO  
THE BAY AREA:**

**AN UPDATE**

**Prepared for:**

**San Francisco Bay Area Rapid  
Transit District (BART)**

**AUGUST 2004**

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August 13, 2004

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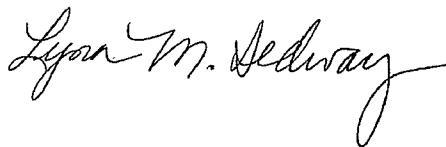
**Re: Update Report on BART's Contributions to the Bay Area**

Dear Mr. Healy:

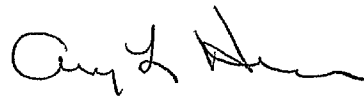
Sedway Group is pleased to present this update of our 1999 regional study of BART's contributions to the San Francisco Bay Area. Our findings show that BART continues to enhance the Bay Area's quality of life and regional economy. BART's impacts and influences have especially grown in the intervening five years relative to air quality, smart growth, and housing affordability.

We were most pleased to work with BART on this most important project, and enjoyed updating and expanding our prior work. We look forward to your review of the report and welcome your comments. Please contact us at your convenience.

Sincerely,



Lynn M. Sedway, CRE  
Executive Managing Director



Amy L. Herman, AICP  
Managing Director

**TABLE OF CONTENTS**

<b>I. EXECUTIVE SUMMARY .....</b>	<b>1</b>
BACKGROUND.....	1
SCOPE AND METHODOLOGY .....	1
SUMMARY OF KEY FINDINGS.....	2
<b>II. QUALITY-OF-LIFE IMPACTS.....</b>	<b>6</b>
EASIER COMMUTES.....	6
PERSONAL COST SAVINGS .....	6
ACCESS TO SHOPPING, ENTERTAINMENT, AND CULTURAL VENUES.....	7
IMPROVED AIR QUALITY.....	8
IMPORTANCE OF MAINTAINING BART SERVICE.....	8
<b>III. REGIONAL COMPETITIVENESS IMPACTS .....</b>	<b>9</b>
SUPERIOR REGIONAL ACCESS AND RIDERSHIP.....	9
BART'S CONTRIBUTION TO BAY AREA BUSINESS ATTRACTION.....	9
REGIONAL EMPLOYMENT CONCENTRATION .....	10
BUSINESS RELIANCE ON BART .....	11
BART ACCESS TO AFFORDABLE HOUSING .....	11
LEVERAGING BART TO WIN ADDITIONAL BAY AREA INVESTMENT.....	12
<b>IV. SMART GROWTH IMPACTS.....</b>	<b>13</b>
SMART GROWTH DEFINITION .....	13
BART CONTRIBUTIONS TO SMART GROWTH .....	14
SMART GROWTH CONTRIBUTION TO HOME OWNERSHIP.....	15
<b>V. DEVELOPMENT IMPACTS .....</b>	<b>16</b>
OFFICE DEVELOPMENT.....	16
RESIDENTIAL DEVELOPMENT.....	17

**ASSUMPTIONS AND LIMITING CONDITIONS****APPENDIX: EXHIBITS**

**LIST OF EXHIBITS**

- Exhibit 1: BART Station Commute Shed Map**
- Exhibit 2: San Francisco Offices Map**
- Exhibit 3: East Bay I-880 Corridor Map**
- Exhibit 4: East Bay I-680 Corridor Map – Walnut Creek**
- Exhibit 5: East Bay I-580 Corridor Map – Dublin/Pleasanton**
- Exhibit 6: San Francisco Office Space Inventory Chart**
- Exhibit 7: San Francisco Average Office Building Size Chart**
- Exhibit 8: East Bay Office Space Inventory Chart**
- Exhibit 9: Average East Bay Office Building Size Chart**

## I. EXECUTIVE SUMMARY

### BACKGROUND

The San Francisco Bay Area Rapid Transit District (BART) will celebrate its 30<sup>th</sup> anniversary of service connecting San Francisco and the East Bay in September of this year. The system first opened in 1972, but transbay service did not make BART a regional system until 1974.

In 1999, Sedway Group prepared a report that demonstrated BART's contributions to the San Francisco Bay Area. The report was in large part a compendium of numerous studies that had been conducted prior to that date regarding BART's impacts. Many of these studies were rigorous academic studies, some conducted in anticipation of BART's 20<sup>th</sup> anniversary. Select information from the 1999 Sedway Group report was included in public affairs documents prepared by BART to demonstrate the value of BART to the region.

Given the relative maturity of the BART system, the pace of academic study has slowed down, with some efforts diverted to assessing the impacts of newer transit systems, which seek to emulate BART's tremendous regional impacts. However, the impacts of BART have continued. For example, the past five years since completion of the last BART economic impact report have been marked by the following:

- the opening of the extension to the San Francisco International Airport;
- the start of detailed planning of the extension of BART to Warm Springs south of Fremont; as well as plans to extend to the South Bay, all following the passage of additional sales tax measures in Alameda and Santa Clara counties;
- the development of thousands of new infill housing units near existing (and planned) BART stations in many of the region's major cities, including Oakland, San Francisco, Berkeley, Concord, Dublin and San Jose;
- plans for rail connections to Eastern Contra Costa County and Alameda County along the Interstate 580 corridor; and
- construction on a planned connection system between BART and Oakland International Airport may begin in 2005.

At the same time as BART has engaged in expansion efforts, the maturity of the core BART system has required BART to engage in major seismic retrofit efforts. Such efforts may require BART to seek voter approval for a seismic retrofit bond issue. Accordingly, BART seeks an update to Sedway Group's 1999 report to demonstrate the continued regional benefits provided by BART.

### SCOPE AND METHODOLOGY

Sedway Group sought to update much of the data in the 1999 report and conducted a literature search to identify studies completed in the intervening five years. As referenced above, few academic studies have since been completed. Instead, many transit-oriented research efforts have been focused on exploring the impacts of systems newer than BART (such as Santa Clara County VTA) as well as the proliferation and benefits of transit-oriented development. Accordingly, Sedway Group sought to update data that were readily available or to conduct independent research on topics similar to those included in the 1999 report. As a result, this study includes quantitative and qualitative impacts on the following subjects:

- quality of life;
- smart growth;
- regional competitiveness; and
- development trends.

A summary of the findings relative to these topics follows.

## SUMMARY OF KEY FINDINGS

Most of BART's contributions and impacts identified in the 1999 report have continued to benefit the region in the early 21st century. While most of these are stable, almost routine contributions, a few have become more important, such as BART's contributions to air quality, smart growth, and housing affordability.

### Quality of Life Impacts

BART contributes significantly to the quality of life in the Bay Area. Highlights of these impacts are as follows:

- **Easier Commutes.** BART facilitates easier commutes for Bay Area residents. Residents who live within three-quarters of a mile of a BART station have historically proven five times more likely to use the system to commute regularly than residents who live farther away. Clearly, BART is the preferred alternative when people otherwise face traffic congestion on the Bay Area's worst commute corridors and limited and expensive parking options in places like San Francisco. BART also facilitates easier commutes for non-users of the BART system, by reducing congestion along the Bay Area's major highways. For all, this ease of commute enhances productivity, reducing stress, and enabling workers to best maximize their working hours. While there are no studies quantifying this effect, the lack of BART would surely impact worker productivity.
- **Personal Cost Savings.** BART riders reap tremendous personal cost savings. A representative East Bay commuter saves up to \$5,500 per year, not including tolls and parking, by choosing to commute via BART rather than with a car. Relative cost savings are reaped by other commuters, as well as people choosing BART for leisure travel purposes.
- **Access to Shopping, Entertainment, and Cultural Venues.** BART access greatly enriches the ability of the regional population to satisfy shopping needs and fill their leisure hours with a wide range of entertainment and cultural opportunities. This access also promotes tourism, with many regional hotel rooms within easy walking distance of a BART station.
- **Improved Air Quality.** BART ridership is associated with significant reduction in vehicle miles traveled and related air pollution. BART usage overall is estimated to eliminate over 27 tons of harmful emissions every day. Such emissions cause global warming, asthma, cancer, and other health concerns. Thus BART ridership minimizes damage to the environment and promotes the personal health of all Bay Area residents.

## Regional Competitiveness Impacts

BART operations greatly enhance the regional competitiveness of the Bay Area. This occurs through strong ridership for work and personal purposes, the attraction and retention of area businesses, the facilitation of regional employment center growth, enhanced access to affordable housing, and the attraction of other funds that originate from outside of the region.

- **Superior Regional Access and Ridership.** BART continues to enjoy the highest level of ridership of any rail transit system in California. Sedway Group estimates that in 2003, with the extension of BART into San Mateo County, ridership averaged 33 rides per market area resident, with a total of 91 million rides. This greatly exceeds the next highest transit system in the state, Los Angeles County MTA, which totaled ridership of 30.7 million. Since opening, BART has carried about 2 billion passengers over 25 billion passenger miles.
- **BART's Contribution to Bay Area Business Attraction.** BART enhances the Bay Area's ability to attract and retain businesses, and thus compete against other major West Coast cities such as Seattle and Los Angeles. Labor depth and quality are among the most important site location criteria for expanding or relocating businesses. BART service expands the Bay Area's labor market potential within a reasonable commute shed by 17 percent. This is a significant enhancement, especially relative to metropolitan areas lacking a comprehensive public transit system.
- **Regional Employment Concentration.** BART service has contributed to dominance of the Bay Area's regional employment centers. Both San Francisco and Oakland have significantly increased their employment bases since the advent of BART service. Much of this has been accomplished through increased public transportation ridership.
- **Business Reliance on BART.** Businesses located within the 1/3-mile walking distance of a BART station benefit the most from BART's commuter service. Yet businesses not located within this radius demonstrably recognize BART's role in maximizing their accessibility to a quality labor pool. Thus many individual businesses or business consortiums support shuttles to and from BART stations. Examples include the Emery Go Round, which recently saw a 24 percent annual increase in ridership, and the shuttle to Bishop Ranch in San Ramon, which ferries more than 1,000 employees to Bishop Ranch daily.
- **BART Access to Affordable Housing.** Not only does BART access deepen the labor pool for the Bay Area's large urban employment centers, it also helps urban employees find affordable housing in a region where housing prices continue to skyrocket. BART's connection to job centers makes it possible for regional workers to become homeowners, facilitating access to cities more distant from the urban cores where housing prices are more affordable, enhancing quality of life. However, BART is also an important planning tool for urban core high density housing as well.
- **Leveraging BART to Win Additional Bay Area Investment.** As it has for the past two decades, BART gives the Bay Area leverage to capture investment from outside the region. As with the SFO Extension, the planned South Bay Extension from Fremont will generate significant state and federal investment in the region, further enhancing the region's competitiveness. For example, since BART began, it has leveraged \$3.1 billion in federal and state capital dollars back into the region, funds that probably would have gone elsewhere absent BART. This is almost three times the Bay Area's original bond issue investment in the system of \$792 million. In today's dollars, replacement value of the system is estimated at about \$15 billion. Thus BART has proven to be a very cost effective investment in enhancing the Bay Area's regional competitiveness.

### Smart Growth Impacts

BART is a leader in the smart growth movement, which strives to promote more livable and functional communities. BART has achieved this through extensive efforts at promoting transit-oriented development, with the communities served by BART as well as individual developers. Highlights of these efforts include the following:

- **Smart Growth Strategies.** The Urban Land Institute has identified smart growth strategies that could have significant impact on future growth patterns in the Bay Area. Among these, infill development, transit-oriented development, mixed-use development, and compact development feature prominently. These are exactly the strategies that BART's station area and transit-oriented development efforts support.
- **BART Contributions to Smart Growth.** In the past five years, BART's smart growth efforts have become more pronounced and the general public has become both more aware and supportive of this type of development. Many new smart growth projects have been built and many more are in planning. Among these are numerous housing projects near existing and planned BART stations, adding thousands of housing units within easy walking distance of BART. Yet additional developments focus on enhancing access to cultural institutions, shopping venues, offices, and hotels. This has resulted, and will continue to result in land use patterns and development trends that preserve our natural resources, greatly enhancing the livability of the Bay Area.
- **New Station Development.** The planned West Dublin/Pleasanton BART station is an exemplar of BART's smart growth impacts. A public/private venture between BART and private parties, this project will consist of a new West Dublin/Pleasanton BART station in the Highway 580 median, along with a bus intermodal facility and pedestrian bridges connecting to property on either side of the freeway planned for hotel, residential, office, and retail development. Station construction for this project is planned to begin in 2005, with the public improvements completed in late 2007.
- **Smart Growth Contribution to Home Ownership.** Because of the excellent service provided by BART and local transit systems, the Bay Area was selected in the late 1990s to receive 25 percent of \$100 million in funds dedicated to Fannie Mae's Location Efficient Mortgage (LEM) pilot program, a program designed to increase the number of households that can afford to buy a home in transit hubs. To date, around 20 LEMs have been issued in the Bay Area, helping households acquire homes in transit-rich neighborhoods. This comprises up to 25 percent of the available funds demonstrating the potential of smart growth principles in the Bay Area.

### Development Impacts

BART has significantly contributed to the form of development in the region as well as enhanced property values. These impacts are most notable among office and residential development, summarized as follows.

- **Office Development.** Following the development of the BART system, office development in the Bay Area's urban cores has intensified. This is most pronounced in San Francisco and Oakland, the region's dominant employment centers, but is also evident in select East Bay locations. Office development has become increasingly concentrated near BART stations in these areas, consistent with prevailing smart growth principles, and buildings are larger than those more distant from BART, concentrating employment density and facilitating local spin off benefits like support for downtown retail and associated local sales tax benefits.



- **Residential Development.** Past studies have demonstrated positive residential value impacts in the Bay Area associated with proximity to a rail transit station. The results of the latest Bay Area Poll conducted by the Bay Area Council, with 25 percent of respondents rating transportation the single largest problem facing the region, surpassed only by the economy, explains why this is the case. Current analysis regarding rental housing suggests that the residential value impacts of BART persist. This analysis indicates that a significant amount of new rental housing development occurs within walking distance of BART. Additional analysis conducted for this study regarding rental rate premiums in Fremont, Hayward, El Cerrito, and Union City for units proximate to BART indicated that rental rate premiums can approach 37 percent in select communities. This demonstrates the value of BART proximity to residents seeking a high quality of life in the Bay Area.
- **Transit Availability Affordability Impacts.** BART proximity conveys benefits that enhance housing affordability. Research cited in the previous study indicated that homes/condominiums without parking sold for about 12 to 13 percent less than ones with off-street parking, suggesting that the presence of BART and other transit modes makes it possible for households to live in a home without parking and still enjoy a level of regional access that would otherwise not be possible without an automobile. More recent research relative to units sold in San Francisco indicates that condominium units without dedicated parking can sell for at a 10 to 21 percent discount relative to units with parking. This implies that parking requirements in communities served by BART can be reduced in order to make more efficient use of land and increase housing affordability. Thus the presence of BART can directly enhance housing affordability, increasing opportunities for home ownership in one of the nation's highest cost housing markets.

#### **Importance of Maintaining BART Service**

The preceding findings demonstrate just some of the significant positive impacts contributed by BART to the San Francisco Bay Area. Without BART, many of these impacts would not be realized. A major earthquake on the Hayward and/or San Andreas faults is inevitable – a matter of when, not if. Thus it is crucial that BART implement the seismic retrofit program that was developed in the aftermath of the 1989 Loma Prieta Earthquake, pursuant to a significant investment of BART funds. Clearly, disruption of BART service when the inevitable earthquake occurs would dramatically impact regional quality of life, job productivity, and the entire Bay Area economy.

## II. QUALITY-OF-LIFE IMPACTS

The provision of BART service results in many quality-of-life impacts for Bay Area residents. Among these are easier work commutes, personal cost savings, access to shopping, entertainment and cultural venues, and improved air quality. This chapter presents select findings relative to these impacts.

### EASIER COMMUTES

~~Past studies have found that Bay Area residents living within three-quarters of a mile of a BART station are five times more likely to use the system to commute regularly than residents who live farther away, even though residents in most BART-served areas have relatively the same level of access to automobiles as residents in areas more distant from a BART station. Sedway Group estimates that about 113,000 office jobs have been added to San Francisco within 1/3 mile of Downtown San Francisco BART stations and another 16,400 office jobs have been added to Oakland within 1/3 mile of the Downtown Oakland BART stations since the 1970s. Many of these jobs could not have been accommodated without BART access, as BART is the preferred public transportation alternative for people facing traffic congestion on the Bay Area's worst commute corridors and limited and/or expensive parking options in regional employment centers like San Francisco and Oakland.~~

A recent study conducted by a University of California at Berkeley Ph.D. strongly demonstrates BART's commute-related benefits, by estimating the traffic impacts of BART service on the Highway 24 Corridor, extending from the East Bay to Downtown Oakland. This study, based on 2003 data, estimated that in the absence of BART, commute trip delays along the Highway 24 Corridor would increase by 40 to 50 minutes on average. Maximum delays could even increase up to an hour during the most acute time of the peak commute, with the commute period extending up to six hours under this scenario.<sup>1</sup> These findings indicate that BART service results in personal time savings for many commuters, who can choose to devote that time for personal or work purposes, both enhancing quality of life and job productivity.

These commute impacts also benefit non-users of BART. By reducing congestion on the Bay Area's major highways, BART enhances the travel time of non-users who require the use of their automobile. For all, this ease of commute enhances productivity, reducing stress and enabling workers to best maximize their working hours. While there are no studies quantifying this effect, the lack of BART would surely impact worker productivity.

### PERSONAL COST SAVINGS

In addition to time savings, BART also offers commuters significant personal cost savings. A January 2004 study conducted for BART by the Institute for Local Self Reliance documented the personal cost savings associated with commuting on BART instead of by automobile. The findings were based on a typical East Bay commuter taking BART to downtown San Francisco instead of driving a mid-size car 40 miles round trip. The most dramatic finding from the study indicated that the typical East Bay commuter could realize up to \$5,500 in economic savings per year.<sup>2</sup> This savings takes into consideration the cost of gasoline, car maintenance, tire replacement, oil change, and depreciation. It is a conservative figure

<sup>1</sup> "Traffic Impact Analysis: Absence of BART Service on Highway 24 Corridor," Jorge Laval, Ph.D.

<sup>2</sup> "Saving Money, Energy and Environment on BART," Institute for Local Self Reliance, January 2004, page 4.

in that it does not factor in the cost of bridge tolls or the cost of parking, which can be high in downtown locations such as Oakland and certainly San Francisco.

While based on a San Francisco-oriented commute, the cost savings findings are relative and would apply to any automobile versus BART trips, adjusted of course for mileage and road conditions. Thus regardless of location, there are significant personal cost savings associated with using BART versus automobile for a daily commute.

### **ACCESS TO SHOPPING, ENTERTAINMENT, AND CULTURAL VENUES**

BART provides access to myriad shopping centers, entertainment venues, and other cultural centers throughout the Bay Area. In addition, the opening of BART service to the San Francisco Peninsula in June 2003 ushered in an era of greater travel accessibility for Bay Area public transit users, with two of the region's three international airports now accessible by BART (e.g., Oakland and San Francisco).

BART provides direct access to several of the Bay Area's largest shopping centers, including Bay Fair Mall in San Leandro, Tanforan Shopping Center in San Bruno, and the Union Square Shopping District in San Francisco. This access enhances the shopping opportunities for the many Bay Area residents who lack access to a car, for cost or personal reasons. Directly accessible by BART is the San Francisco Shopping Centre, whose current expansion will include the second largest Bloomingdale's store in the United States in a 1.5- million-square-foot regional shopping mall. With limited parking in downtown San Francisco near the center, BART undoubtedly played a major role in the project's approval and feasibility, greatly enhancing regional shopping opportunities. This center will also include a needed grocery store, which local residents can readily access via BART.

The Bay Area also offers premier entertainment and cultural opportunities, many of which are readily accessible via BART. Countless venues in San Francisco and other regional locations are directly accessible by BART or by BART supplemented by an additional transit mode. These venues enable the region's population to experience a rich array of leisure time opportunities. Using BART for transportation purposes avoids the stress that inevitably accompanies driving in the Bay Area, enhancing the overall leisure time experience. Some of the cultural, arts, entertainment, and recreational venues readily accessible via BART include the following:

- **Airport Access:** BART now serves the San Francisco Airport directly, and continues to serve the Oakland Airport via the convenient AirBart service from the Coliseum Station.
- **Shopping Districts/Centers:** Bay Fair; Tanforan; Union Square; San Francisco Centre; Castro Valley Village; Oakland Chinatown; Downtown Millbrae; Downtown Oakland; El Cerrito Plaza; Embarcadero Center; Bay Street in Emeryville. Overall, BART serves over 3,000 retail outlets according to a survey done several years ago by a transit shopper magazine.
- **Cultural Arts:** San Francisco Opera, Symphony, and Ballet; Berkeley Repertory Theatre; Curran Theatre; Golden Gate Theatre; Metreon; Orpheum Theatre; San Francisco Museum of Modern Art; Yerba Buena Center
- **Arenas/Auditoriums:** Oakland Coliseum and Arena; SBC Park; Henry J. Kaiser Arena; Bill Graham Civic Auditorium; Oakland Convention Center; Moscone Center; The Chronicle Pavilion in Concord
- **Special Events/Festivals:** Carnival; Gay, Lesbian, Bisexual, Transgender Pride Parade; Bay to Breakers; Chinese New Year Celebration and Parade; Shakespeare Festival in Orinda; Alameda County Fair

BART also provides direct access to many Bay Area Civic Centers, including San Francisco, Oakland, and Berkeley, facilitating civic needs and obligations of residents throughout the region. Moreover, BART access benefits not only regional residents. With nearly 13,000 hotel rooms within a quarter mile

of BART in San Francisco alone, regional tourists can easily use BART to access many of its most popular attractions.

In short, the preceding list, which is by no means exhaustive, demonstrates how BART access greatly enriches the ability of the regional population to satisfy shopping needs and fill their leisure hours with a wide range of entertainment and cultural opportunities as well as promotes tourism.

### **IMPROVED AIR QUALITY**

BART ridership, whether for commute or personal/leisure purposes, is associated with significant reduction in vehicle miles traveled and related air pollution. The Bay Area Quality Management District estimated that in 2003, BART ridership reduced estimated organic gases and nitrogen oxide emissions by nearly 5 tons a day. These pollutants are of particular importance in the Bay Area, as they are key components in ground-level ozone creation, the region's most prevalent air quality problem. When combined with the reduction of about 22 tons of carbon monoxide emissions per day, BART usage eliminates over 27 tons of harmful emissions each day. Such emissions cause global warming, asthma, cancer, and other health concerns. Thus each commuter choosing BART over an automobile for commute purposes is minimizing damage to the environment, their personal health, and society's health in general. In addition, the reduced emissions enable the region to avoid the loss of federal funds that could come with a failure to meet federal standards.

### **IMPORTANCE OF MAINTAINING BART SERVICE**

A major earthquake on the Hayward and/or San Andreas faults is inevitable – a matter of when, not if. Disruption of BART service when this happens would dramatically impact regional quality of life and job productivity. It would be hard to overstate the importance of BART to the regional economy in the aftermath of the 1989 Loma Prieta Quake. With the month-long Bay Bridge closure that followed the 1989 Loma Prieta earthquake, BART carried 75 percent of transbay commuters, up from 35 percent before the bridge closure. BART helped avert a major economic disruption tied to transbay commuters. Accordingly, BART has invested heavily in recent years to develop a seismic retrofit program that is designed to minimize any chance that BART's operations would be disrupted for any significant period of time during the next major quake. While BART has financed the planning for this important work out of its existing budget, the magnitude of the retrofit project will require voter approval of a critically important bond issue that will be on the ballot in November.

### III. REGIONAL COMPETITIVENESS IMPACTS

BART's operations greatly enhance the regional competitiveness of the Bay Area. This occurs through strong ridership for work and personal purposes; the attraction and retention of area businesses, especially through expansion of the labor pool; the facilitation of regional employment center employment growth; the enhanced access to affordable housing; and the attraction of other funds that originate outside of the region.

#### **SUPERIOR REGIONAL ACCESS AND RIDERSHIP**

BART provides a strong regional public transportation resource, which enhances the Bay Area's competitiveness as an economic center. This is demonstrated by BART's continued achievement of the highest level of ridership per market area resident of any system in the state, which totaled 91 million rides in fiscal year 2004. This high ridership level within the market area is an indication of BART's importance to the Bay Area. The "market area" in this case is defined as cities that are directly served by the transit system.<sup>3</sup> During fiscal year 2004, BART's market area included approximately 2.73 million people who made an average of 33 trips per year on the system.<sup>4</sup>

Within California, total BART ridership in 2003 greatly exceeded any other commuter rail system. Total ridership on other systems in the state were as follows:<sup>5</sup>

- Los Angeles County MTA, 30.7 million
- San Diego Trolley, 25.4 million
- Sacramento Regional Transit District, 8.5 million (fiscal year 2002)
- Caltrain, 7.6 million
- Santa Clara Valley Transportation Authority, 5.5 million

BART's strong ridership demonstrates the regional reach of the system and strong reliance on the system for commute as well as personal use, unparalleled among other transit systems in the state. Since opening, BART has carried about 2 billion passengers over 25 billion passenger miles. BART's ridership also rivals major transportation systems in other regions competitive with the Bay Area. For example, Sound Transit ridership in Seattle only totaled 267,000 in 2003. While the Dallas Area Rapid Transit achieved a much higher 17.0 million riders, this level is still substantially below the standard achieved by BART.

#### **BART'S CONTRIBUTION TO BAY AREA BUSINESS ATTRACTION**

BART enhances the Bay Area's ability to attract and retain businesses, and thus compete against other major West Coast cities such as Seattle and Los Angeles. Among corporate site locators, depth and quality of labor is one of the most important site location criteria for expanding or relocating businesses.

<sup>3</sup> This includes all cities with a BART station, which is conservative as BART attracts riders from many additional surrounding cities and beyond.

<sup>4</sup> This market area population figure averages the population figures for 2003 and 2004 to correspond with the 2004 fiscal year, resulting in an estimate of 2.73 million. This calculation is based on an estimated 91 million rides during fiscal year 2004.

<sup>5</sup> Sources include the American Public Transportation Association and transit system websites. Data are for 2003 unless otherwise stated.

This is the case almost regardless of the nature of the business seeking a business location, such as corporate headquarters, back office operation, or manufacturing facility. Labor availability is calculated primarily by determining the number of potential workers within a reasonable commute time, or commute shed, of potential sites, the size of which varies by location. In the Bay Area, businesses often look at the labor pool within a 60-minute commute shed.

BART expands the labor pool of many Bay Area job centers because BART travel is faster and more efficient than automobile travel for congested commute corridors, thus adding geographic depth to the region's pool of potential employees. Because labor availability is a key factor in business attraction and retention, BART is a very important factor in the Bay Area economy. Sedway Group reviewed comparative population data for cities in the San Francisco Bay Area within a 60-minute commute shed of downtown San Francisco and for cities outside a 60-minute drive time whose residents could access San Francisco within 60 minutes using BART (e.g., a maximum of 50 minutes on BART and a 10-minute commute to the nearest BART station). As shown in Exhibit 1, the Alameda County cities of Pleasanton and Fremont, and the Contra Costa County cities of Concord and Walnut Creek would be outside of San Francisco's range if not for BART.

According to population estimates prepared by Claritas, a national provider of demographic and business data, there are almost 3.0 million people located within a 60-minute driving commute of downtown San Francisco. ~~BART access allows 621,302 additional residents to access downtown San Francisco in the same amount of time, expanding the labor pool by 17 percent.~~ Similar figures would pertain to the downtown Oakland labor pool as well.

Other regions that compete with the Bay Area for economic development and do not have rail transit systems of the size and quality of BART are at a disadvantage. Seattle, Los Angeles-Long Beach, Houston, Dallas, and Vancouver represent regions that compete with the Bay Area for business and have inferior transit systems. Thus, BART, in combination with other amenities and strong locational criteria, contributes to the Bay Area's competitive edge in attracting new businesses over other major U.S. metropolitan areas.

## REGIONAL EMPLOYMENT CONCENTRATION

This expansion of the labor pool is borne out by actual commute pattern data. In 1970, before BART transbay service was established, Alameda and Contra Costa county residents comprised 12.3 percent of the San Francisco labor force. These are the two counties with the most comprehensive BART access to San Francisco. According to U.S. Census Bureau data compiled by the Metropolitan Transportation Commission, this percentage has steadily increased over time, rising to 17.5 percent in 1980, 19.7 percent in 1990, and 20.9 percent in 2000. In the meantime, the share of population from within San Francisco dropped, from 62.6 percent in 1970 to 55.6 percent in 2000.

While the total number of San Francisco resident workers increased over the 1970 to 2000 time period, the increase was modest, at only 14 percent. ~~In contrast, the percent of workers from Alameda and Contra Costa County increased by 218 percent.~~ While Alameda and Contra Costa county workers commuting into San Francisco use many modes of transportation, BART's penetration into these counties and strong ridership clearly indicates that ~~BART is a strong contributor to the growth in San Francisco's economic base.~~ Without these employees, growth within San Francisco's office sector would have been more constrained, limiting San Francisco's ability to become the economic center of the region and limiting employment opportunities for the region's labor force.

In like manner, Downtown Oakland has also experienced an increase in transit commuting. According to findings prepared by the Metropolitan Transportation Commission (MTC), Downtown Oakland is the second largest transit commute market in the Bay Area. From just 1990 to 2000 MTC reports that there

was a 45 percent increase in the total number of transit commuters working in Downtown Oakland. This compared to an 18 percent increase in San Francisco. Thus Oakland is becoming increasingly attractive as a work location to transit commuters.

### **BUSINESS RELIANCE ON BART**

Businesses not located immediately adjacent to a BART station nevertheless recognize the importance of BART as an economical and environmentally sound means of transportation for employees. For example, ridership on East Bay BART shuttles, supported by individual businesses or a consortium of businesses, has risen steadily in recent years. The Emery Go Round, which connects BART riders to corporate centers, retail districts, hotels, and schools in Emeryville, saw a 24 percent usage increase in March 2004 over the previous March. Annual boardings in 2003 totaled 775,000; in first quarter 2004, average daily boardings totaled 2,892 during the week, 958 on Saturday, and 250 on Sunday. Thus recreational as well as business users are taking advantage of this shuttle. In like manner, users of the shuttle buses connecting the Walnut Creek and Dublin/Pleasanton BART stations to Bishop Ranch in San Ramon has risen steadily over time. Organizers of that program indicate that more than 1,000 employees at Bishop Ranch ride BART to work everyday. Hence area employers recognize the importance of BART as a primary means of transportation to maximize their accessibility to a quality labor pool.

### **BART ACCESS TO AFFORDABLE HOUSING**

Not only does BART access deepen the labor pool for the Bay Area's large urban employment centers, it also helps urban employees find affordable housing in a region where housing prices continue to skyrocket. As shown in the table below, BART access to employment makes it possible for regional workers to become homeowners, since the housing prices closer to San Francisco (cities on the left) tend to be too expensive for many households, far outpacing the regional median of \$506,000. More affordable housing prices can be found in cities like Fremont, Hayward, and Concord (cities on the right), where BART access allows workers to reach their jobs in a reasonable commute time.

**Median Home Prices in Bay Area Cities, May 2004**

City	Number of Sales	Median Price	City	Number of Sales	Median Price
Alameda	75	\$551,000	Fremont	422	\$518,500
Berkeley	70	\$649,250	Hayward	249	\$433,000
Burlingame	51	\$960,000	Newark	75	\$460,000
Lafayette	46	\$845,000	Livermore	210	\$506,250
San Carlos	42	\$715,000	Concord	232	\$400,000
San Francisco	735	\$640,000	Pittsburg	166	\$350,000
San Mateo	174	\$647,500	Martinez	99	\$422,000
San Rafael	103	\$675,000	Union City	146	\$465,250

Sources: DataQuick, and Sedway Group.

Thus BART enhances quality of life by enabling regional workers to achieve home ownership while minimizing time spent commuting to work as well as regional attractions. BART is also an important planning tool for urban core high density housing as well.

**LEVERAGING BART TO WIN ADDITIONAL BAY AREA INVESTMENT**

The Bay Area regularly leverages its investment in BART to win other funds that originate outside of the region. This infusion of outside funding represents a net gain to the local economy that the Bay Area would otherwise not realize. Two recent examples of this leveraging include the revitalization of Center Street in Berkeley and the extension of BART to the San Francisco International Airport in San Mateo County. The same is true of the planned BART extension from Fremont to San Jose and Santa Clara.

Since BART began, it has leveraged \$3.1 billion in federal and state capital dollars back into the region, funds that probably would have gone elsewhere absent BART. This is almost three times the Bay Area's original bond issue investment in the system of \$792 million. In today's dollars, replacement value of the system is estimated at about \$15 billion. Thus BART has proven to be a very cost effective investment in enhancing the Bay Area's regional competitiveness.



## IV. SMART GROWTH IMPACTS

In addition to BART enhancing the regional competitiveness of the Bay Area, BART is a leader in the smart growth movement, which strives to promote more livable and functional communities. BART has achieved this through extensive efforts at promoting transit-oriented development, with the communities served by BART as well as individual developers. Many of these efforts are documented below, demonstrating BART's continued contributions to enhancing the livability of the Bay Area.

### SMART GROWTH DEFINITION

Smart Growth is a movement to foster responsible land use patterns, growth, and development that serves the economy, community, and environment. A recent Urban Land Institute (ULI) publication for the San Francisco Bay Area indicates that smart growth principles involve the concept of promoting more livable and functional communities (Smart Growth in the San Francisco Bay Area: Effective Local Approaches, June 2003). This publication suggests that advocates define smart growth communities as environments that:

- enhance mobility for all residents, not just those with automobiles, as they carry out daily tasks, such as traveling to work or school, shopping, and maintaining community ties;
- accommodate the need for new housing, employment growth, and population increase by making the most efficient use of urban land;
- preserve and protect important open space and species habitat;
- are respectful of the needs of neighboring jurisdictions and the region as a whole; and
- make the carrying out of smart growth practices by developers, lenders, builders, and other interested parties as simple and streamlined as possible.<sup>6</sup>

The ULI publication further identifies smart growth strategies that, if implemented, would have significant impact on future growth patterns in the Bay Area. These strategies are:

- infill development
- transit-oriented development
- inclusionary housing
- mixed-use development
- adaptive reuse
- jobs-housing balance
- compact development<sup>7</sup>

Even people who may not desire the type of compact, pedestrian-oriented, mixed-use neighborhoods that are advocated by smart growth principles can appreciate potential benefits of such policies. While a smart growth neighborhood may not be everyone's ideal, smart growth neighborhoods that are well-served by BART and other transit systems can serve as magnets for new development. By focusing new development near transit and existing infrastructure, it will be easier to preserve open space and species habitat elsewhere in the region.

<sup>6</sup> Smart Growth in the San Francisco Bay Area: Effective Local Approaches, Urban Land Institute, June 2003, page 2.

<sup>7</sup> Ibid, page 3.

## BART CONTRIBUTIONS TO SMART GROWTH

In the 1999 report it was stated "Most Bay Area communities have not yet adopted smart growth land use policies that help focus development around transit. Consequently, BART station areas to date have not served as focal points for much of the region's development." However, in the past five years that has changed. The understanding and appreciation of the importance of smart growth land use practices have increased dramatically. Bay Area communities are now among the leaders in this movement, to a large extent as a result of the BART system, which is the primary facilitator of smart growth in the Bay Area. The general public has become both more aware and more supportive of this type of development.

The overall level of development in the Bay Area is not demonstrably different than it would have been without BART. However, more compact development is made possible by the high-volume service of BART, creating a less sprawling region than would be the case if all development were auto-oriented. This more compact style of development is a key principle of smart growth. The development of thousands of new housing units in the region's major cities is the most obvious manifestation of this trend. Many new smart growth projects have been built and many more are in planning. Among these are numerous new "infill" housing projects in Berkeley, Concord, Dublin, Oakland, San Francisco and San Jose that are near existing and planned BART stations. Taken together, these projects have added thousands of units within easy walking distance of these stations.

BART increasingly works closely with the communities served by BART to promote smart growth, especially with regard to transit-oriented development. Moreover, communities have become increasingly aware of the benefits of BART proximity to new development, with many leading the charge toward such development, including the formulation of supportive land use policies. Examples of transit-oriented development are now prevalent throughout the BART system. Today, cities served by BART have adopted land use specific plans, strategic plans, and station area plans for 26 out of 43 BART stations. Many of the new plans were begun before the 1999 report and are now coming to fruition.

Perhaps the largest and most locally-driven example is the Fruitvale BART Transit Village, which is a mixed-use development built on 24 acres of land surrounding the BART Station, including the 10.43-acre BART surface parking lots. This project, which opened only this year, was developed as a public-private partnership by the Fruitvale Development Corporation, a support corporation of the Unity Council. BART was actively involved in the partnership. The Transit Village features a number of amenities including a commercial/retail shopping area, a large pedestrian plaza while providing comprehensive community services ranging from a state-of-the-art healthcare facility to a child care center. In addition, the Fruitvale Village will house the Unity Council's Headquarters, a public library, several community organizations, a computer technology center, a seniors' center, and 47 units of housing.<sup>8</sup>

Many other examples of transit-oriented development now abound throughout the BART system, with more in progress, as well as projects readily accessible to BART. Other recent examples, completed or actively under development, include the following:

- the renovated Swan's Market building in downtown Oakland;
- the award-winning high density residential Gaia Building in downtown Berkeley;
- the well-respected Arts District in Berkeley, including expansion of the Berkeley Repertory Theater;
- an award-winning affordable housing project in Castro Valley;
- a mixed-use hotel, theater, and office project in Daly City;

<sup>8</sup> Transit Village website of the Unity Council.

- a "Smart Transit" mixed residential and commercial project in Fremont;
- retail and for-sale transit-oriented housing units in Hayward;
- the "Small Town Downtown" project in Lafayette, a mixed-use housing, retail and office development;
- senior housing development, mixed-use commercial office and single-family homes in San Leandro;
- additional affordable and market-rate (including luxury) housing development at or near many stations, including Oakland Coliseum, Colma, Concord, Richmond, and West Oakland; and
- A new West Dublin/Pleasanton BART station surrounded by hotel, residential, office, and retail uses, developed by a private party pursuant to a public/private joint venture with BART.

This information indicates that BART, through partnerships with local communities, as well as individual developers, are actively engaged in promoting smart growth principles in the Bay Area. This has resulted, and will continue to result in land use patterns and development trends that preserve our natural resources, greatly enhancing the livability of the Bay Area.

### **SMART GROWTH CONTRIBUTION TO HOME OWNERSHIP**

A step toward increasing smart growth's role in the Bay Area and enhancing competitiveness was made in the late 1990s by Fannie Mae, a mortgage lending arm of the federal government. Because residents of areas that are well-served by transit spend less of their income on automobile ownership and maintenance costs, Fannie Mae initiated a mortgage pilot program designed to increase the number of households that can afford to buy a home in transit hubs. The loans offered as part of the project are known as Location Efficient Mortgages. Under the program's unique mortgage qualification formulas, borrowers purchasing homes near efficient public transit are allowed to add dollars saved on automobile maintenance and upkeep onto their qualifying income. This is an important difference from standard mortgage qualification practices, which favor homebuying in outlying locations where homes are cheaper but transportation costs are higher. Factoring both home and transportation costs into the equation serves to equalize the homebuying potential of households in transit-rich and transit-poor locations.

Nationally, \$100 million was dedicated to the program in the demonstration phase. The Bay Area, known throughout the country for its BART service, received 25 percent of national program funding. There are three other locations in the country with Location Efficient Mortgage programs – Seattle, Los Angeles, and Chicago. To date, around 20 LEMs have been issued in the Bay Area, helping households acquire homes in transit-rich neighborhoods. Unfortunately, because LEMs are a federal program, they are subject to a federal maximum mortgage limitation, which is \$300,700. For the Bay Area, this is a low limitation, with borrowers needing to make a down payment equivalent to the difference between the home price and the maximum available mortgage. Thus its applicability to the Bay Area is perhaps limited, although even at 20 LEMs up to 25 percent of the available funds have been successfully used to support transit-oriented home ownership, demonstrating the potential of smart growth principles in the Bay Area.

## V. DEVELOPMENT IMPACTS

BART has significantly contributed to the form of development in the region as well as enhanced property values. These impacts are most notable among office and residential development. This chapter reviews findings relevant to these land uses, including a review of how BART proximity influences the pattern of development.

### OFFICE DEVELOPMENT

Drawing upon the methodology of a previous study by UC Berkeley's Institute of Urban and Regional Development entitled "BART@20: BART Access and Office Building Performance," Sedway Group analyzed BART's impact on office development in the Bay Area. To test the conclusions put forth in that study, which found that BART had a significant impact on nodes of office development in San Francisco, contributing to the regional prominence of San Francisco, Sedway Group evaluated development trends in cities with BART service. This evaluation was conducted through detailed analysis of a comprehensive database of all office buildings in San Francisco and Oakland, as well as the more suburban cities of Walnut Creek, Pleasant Hill, Concord, Richmond, Moraga, Lafayette, Berkeley, and others. The database included building location, size, and year built. The locations of all the office buildings included in the database are depicted on Exhibits 2, 3, 4, and 5.<sup>9</sup>

Consistent with the findings of the previous study, Sedway Group found that office development in San Francisco has significantly benefited from BART, whereas office development in Alameda and Contra Costa counties (referred to collectively as the East Bay) has been less impacted by BART.

Sedway Group analyzed development trends for three periods:

- the years up to and including the 1962 voter approval of bonds to fund BART construction;
- the years of 1963 to 1974, during which BART was under construction; and
- 1975 onward.

By analyzing these periods, the study was able to track the influence of BART over time. BART's influence was found to be significant both after the system's completion (1975) and even during its construction period (1963 to 1974). During the construction period, many real estate developers were aware of route alignments and began to focus their development efforts in the areas that would be served by BART.

### Trends in San Francisco

As shown in Exhibit 6, the inventory of office space within 1/3 mile (i.e., walking distance) of BART's four downtown San Francisco stations more than doubled space more distant from BART. This has not always been the case. When BART was approved in 1962, about 59 percent of San Francisco office space was within 1/3 mile of the four sites now housing BART stations. Since 1963, development near BART stations has increased dramatically, comprising 77 percent of total office construction in that period. Today, seventy percent of office space in downtown San Francisco is within 1/3 mile of a BART station.

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<sup>9</sup> The database was obtained from CB Richard Ellis, Sedway Group's parent company. Due to data limitations, the database does not include buildings in communities south of San Leandro.

There was very little office development in San Francisco during the 1990's, but 17 buildings have been constructed or renovated since 1999, totaling over 4.5 million square feet. Of that new space, 82 percent is within 1/3 mile of a BART station. This demonstrates that BART has a strong role in shaping San Francisco's compact urban form, consistent with prevailing smart growth principles. It should be noted that San Francisco's MUNI service contributes to this growth as well.

Not only has development been increasingly concentrated near BART stations in downtown San Francisco since BART was approved, but the buildings near BART are much larger than those not near a BART station. Office buildings with BART access are on average twice the size of other office buildings, as shown in Exhibit 7. Prior to 1963, buildings in what would become the BART station areas were about 25 percent larger than buildings located elsewhere. Since then, the average building in a BART station area is 134 percent larger than the average building located elsewhere.

The larger office building sizes near BART results in concentrating employment density near BART. There is a very significant benefit to the City of San Francisco from this concentration, as workers in dense urban areas have greater workday retail expenditures than workers in more suburban locations. Sedway Group estimates that the BART proximate office space houses about 207,000 workers. Since office workers spent about \$3,500 per year on retail purchases in 2002, BART-oriented office space generated \$724 million in annual sales from workers alone.<sup>10</sup> About half those dollars are spent on lunches, while 14 percent are spent after work. In 2002, taxable sales in San Francisco totaled \$8.64 billion. Thus office worker spending in just the BART proximate buildings accounted for 8.4 percent of all taxable sales in San Francisco. This benefits retailers in San Francisco as well as the City of San Francisco, which garnered an estimated \$7.2 million in sales tax revenue for the General Fund related to office worker spending (pursuant to 1.0 percent sales tax accruing to the General Fund). An additional \$7.2 million accrued to special districts in San Francisco, primarily for transit and educational purposes.

### **Trends in the East Bay**

Comparable office development analysis was conducted for the East Bay during the same time periods as analyzed for San Francisco (see Exhibits 8 and 9). BART has also benefited office development near BART stations there. Most notably, buildings near BART in the East Bay tend to be larger because of leaner parking requirements afforded by BART. Yet the office development impacts of BART are not as pronounced in the East Bay as in San Francisco, in large part because suburban markets are more dispersed and have a more residential character. This residential character, however, provides fertile ground for testing BART's residential impacts, which are notable. These impacts are explored in the following section.

### **RESIDENTIAL DEVELOPMENT**

Over the years, several studies have demonstrated the premium value of residential properties proximate to rail transit stations. Sedway Group's 1999 BART economic impact study cited reports whose results clearly indicated that BART provided a positive impact on the value of single-family homes, condominiums, and apartments in the Bay Area. Though the Bay Area economy has changed significantly since the original study, the importance of transportation has not -- the most recent Bay Area Poll ranked transportation as the second largest problem facing the Bay Area, surpassed only by the economy. Sedway Group found no recent data regarding BART's impacts on single-family home or

<sup>10</sup> This figure is based upon figures reported by the International Council of Shopping Centers, updated to 2003 by Sedway Group.

condominium values, but did obtain and analyze data on apartment projects in select BART-served cities.

### **Value Impact Findings**

The 1999 study cited many academic studies that demonstrated positive residential value impacts in the Bay Area associated with proximity to a rail transit station. For single-family homes, the studies indicated that home values in Alameda and Contra Costa counties increased with proximity to a BART station. This premium averaged about 4 to 5 percent for homes near BART relative to homes located about three miles from the same BART station. The premium was even higher relative to homes located further from the BART station. The studies reviewed in the 1999 report also indicated rent premiums associated with rental housing, ranging from a low of 12 to 15 percent to a high of 26 to 40 percent for select BART-oriented developments relative to other community developments.

Sedway Group engaged in exhaustive research to identify academic studies conducted since 1999 regarding BART's impacts on residential property values. This research did not uncover any such studies. However, as the preceding smart growth section indicates, significant new transit-oriented residential development has been occurring in the Bay Area. This alone suggests strong demand for such development, with the likely continuity of transit-oriented value premiums.

### **Role of Transportation**

The results of the latest Bay Area Poll released by the Bay Area Council in December 2003 explains why many Bay Area residents are willing to pay premiums for housing near BART: 25 percent of respondents rated transportation as the single largest problem facing the region, surpassed only by the economy at 33 percent. Fueling the transportation problem, about 40 percent of respondents felt both the highway system and street/road conditions were worsening over the most recent year. However, only 25 percent felt public transportation was worsening. While this latter figure sounds daunting, it is balanced by 21 percent of respondents believing public transportation improved over the past year and 43 percent believing it stayed the same. Notably, among 14 quality of life indicators polled by the Bay Area Council, public transportation lagged only the supply of energy and environmental quality in the highest percentage of respondents indicating stability or improvement.

### **BART Impact on Rental Housing**

To probe the current impact of BART proximity on housing values and the rate of housing development, Sedway Group was able to engage in select research analyzing the effects of BART on multifamily housing development. This involved examining rental housing data in four communities served by BART: Fremont, Hayward, El Cerrito, and Union City. Two notable trends were identified from the research:

- a significant amount of new rental housing development occurs within walking distance (1/3 mile) of BART; and
- rental rate premiums near BART in select communities range from 15 to 37 percent.

The following table summarizes year built, rental rate, and occupancy data in the four surveyed communities with rental housing both near and distant from BART. The results are most pronounced in Fremont and Hayward, the two communities with the largest rental housing stock.

Since 1995, six apartment projects have been built in the City of Fremont. All of them are within one mile of the Fremont BART station, and three of them, including the most recently developed project, are within the 1/3-mile walking distance of the BART station. Occupancies within the 1/3-mile ring are nearly identical to the area outside the ring, despite the fact the newest project in town has not yet

achieved full occupancy. However, rental rates within the 1/3-mile ring are 31 to 37 percent higher on average than rental rates outside it. This very strongly suggests the presence of a premium for BART proximity in Fremont. The premium is likely pronounced in Fremont because the city currently serves as BART's southern terminus in the East Bay.

**Apartments in Select BART-Served Communities, Q1 2004**

City	Number of Complexes	Number of Units	Median Year Built	Average Occupancy	Average Rent Range	
<b>Within 1/3 mile of BART Station</b>						
Fremont	3	964	1998	94.3%	\$1,522	\$1,678
Hayward	5	694	1987	95.0%	\$1,222	\$1,433
El Cerrito	1	135	1992	92.6%	\$1,285	\$1,135
Union City	3	490	1979	94.1%	\$1,119	\$1,135
<b>More than 1/3 mile from BART Station</b>						
Fremont	47	12,950	1972	94.7%	\$1,156	\$1,220
Hayward	33	6,613	1970	94.1%	\$1,062	\$1,120
El Cerrito	1	162	1988	93.8%	\$1,288	\$1,315
Union City	9	1,346	1979	95.2%	\$1,146	\$1,182

Sources: RealFacts, and Sedway Group.

Similar conditions prevail in Hayward, where rents at projects near BART are 15 to 28 percent higher than rents at projects outside the BART station area. While comparable trends are not noted in El Cerrito and Union City, there is generally rental rate parity in these cities and occupancy rates near BART are essentially equivalent to rates more distant from BART. This indicates that the BART proximate units are at least equally attractive to the units lacking such proximity.

The value impacts noted in Fremont and Hayward are likely not pronounced in El Cerrito and Hayward because these cities are not characterized by the same level and rate of rental housing development. Given current trends toward smart growth and transit-oriented development, it is likely that the majority of new rental housing development in these cities will likely be proximate to the BART stations.

**Transit Availability Affordability Impacts**

While BART proximity appears to enhance the value of residential property, it can also convey additional benefits that enhance housing affordability. The 1999 study reviewed an earlier study regarding the impacts of off-street parking spaces on housing affordability in select San Francisco neighborhoods. The results indicated that homes/condominiums without parking sold for about 12 to 13 percent less than homes/condominiums with off-street parking. The conclusion was that the presence of BART and other transit makes it possible for some San Francisco households to live in a home without parking and still enjoy a level of regional access that would otherwise not be possible without an automobile. In this manner, BART proximity expanded the pool of households able to afford Home Ownership.

A similar study conducted by Sedway Group in 2001 indicated comparable results.<sup>11</sup> Using a paired unit analysis for condominiums with and without dedicated parking, Sedway Group's research indicated that units sold in San Francisco without a dedicated parking space sold for at least a 10 percent discount relative to units sold with one parking space. For select unit types, this discount was measured as high as 21 percent on average. The implications of these and the earlier findings suggest that for other communities that are served by BART, parking requirements could be reduced in order to make more efficient use of land and increase the affordability of new housing built within close proximity to a BART

<sup>11</sup> This study was conducted for Union Property Capital, Inc., report dated September 27, 2001.

station. Thus the presence of BART can directly enhance housing affordability, increasing opportunities for home ownership in one the nation's highest cost housing markets.



## **ASSUMPTIONS AND GENERAL LIMITING CONDITIONS**

Sedway Group has made extensive efforts to confirm the accuracy and timeliness of the information contained in this study. Such information was compiled from a variety of sources, including interviews with government officials, review of City and County documents, and other third parties deemed to be reliable. Although Sedway Group believes all information in this study is correct, it does not warrant the accuracy of such information and assumes no responsibility for inaccuracies in the information by third parties. We have no responsibility to update this report for events and circumstances occurring after the date of this report. Further, no guarantee is made as to the possible effect on development of present or future federal, state or local legislation, including any regarding environmental or ecological matters.

The accompanying projections and analyses are based on estimates and assumptions developed in connection with the study. In turn, these assumptions, and their relation to the projections, were developed using currently available economic data and other relevant information. It is the nature of forecasting, however, that some assumptions may not materialize, and unanticipated events and circumstances may occur. Therefore, actual results achieved during the projection period will likely vary from the projections, and some of the variations may be material to the conclusions of the analysis.

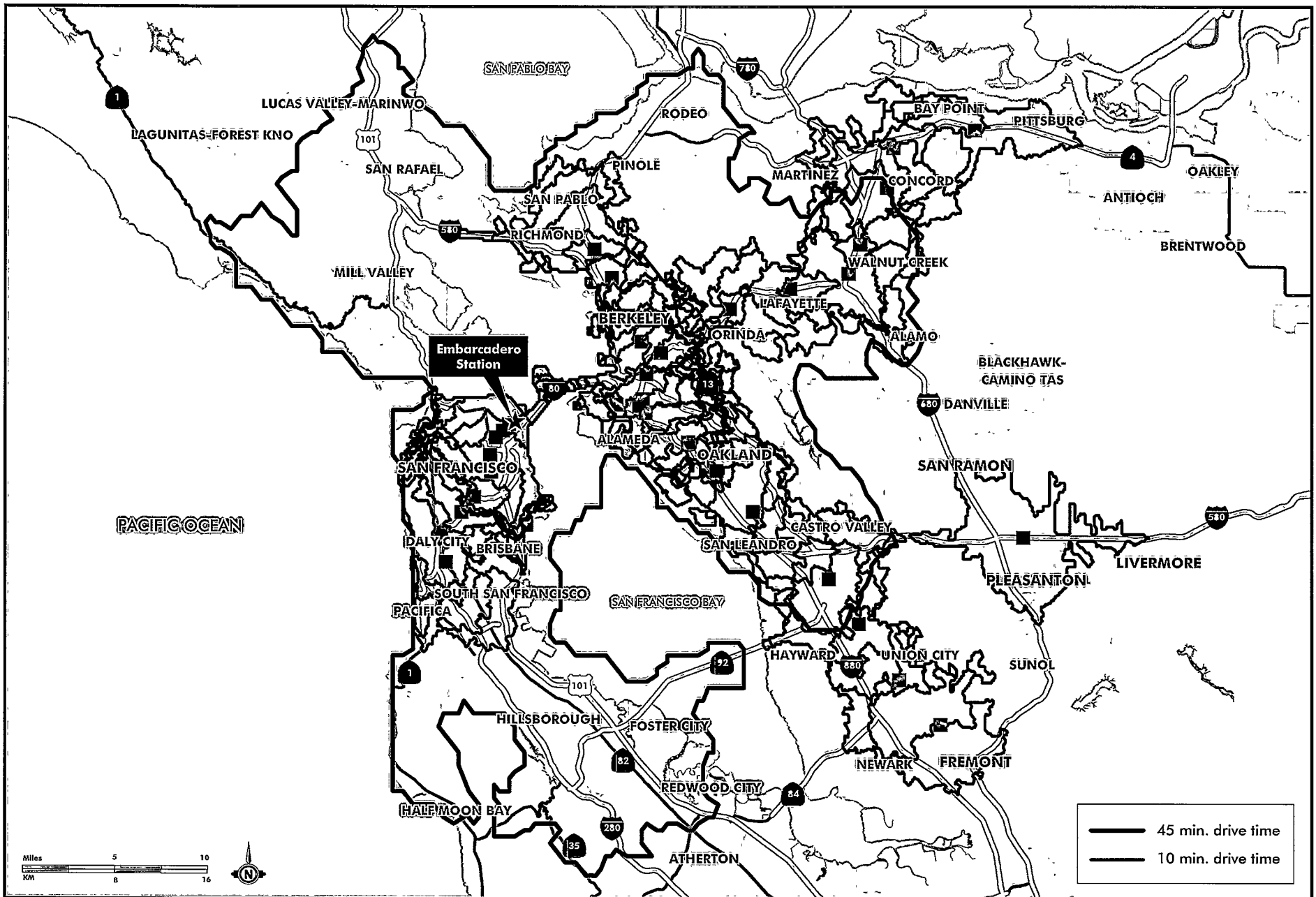
Contractual obligations do not include access to or ownership transfer of any electronic data processing files, programs or models completed directly for or as by-products of this research effort, unless explicitly so agreed as part of the contract.

This report may not be used for any purpose other than that for which it is prepared. Neither all nor any part of the contents of this study shall be disseminated to the public through publication advertising media, public relations, news media, sales media, or any other public means of communication without prior written consent and approval of Sedway Group.

**APPENDIX: EXHIBITS**

# Exhibit 1: BART Station Commute Shed

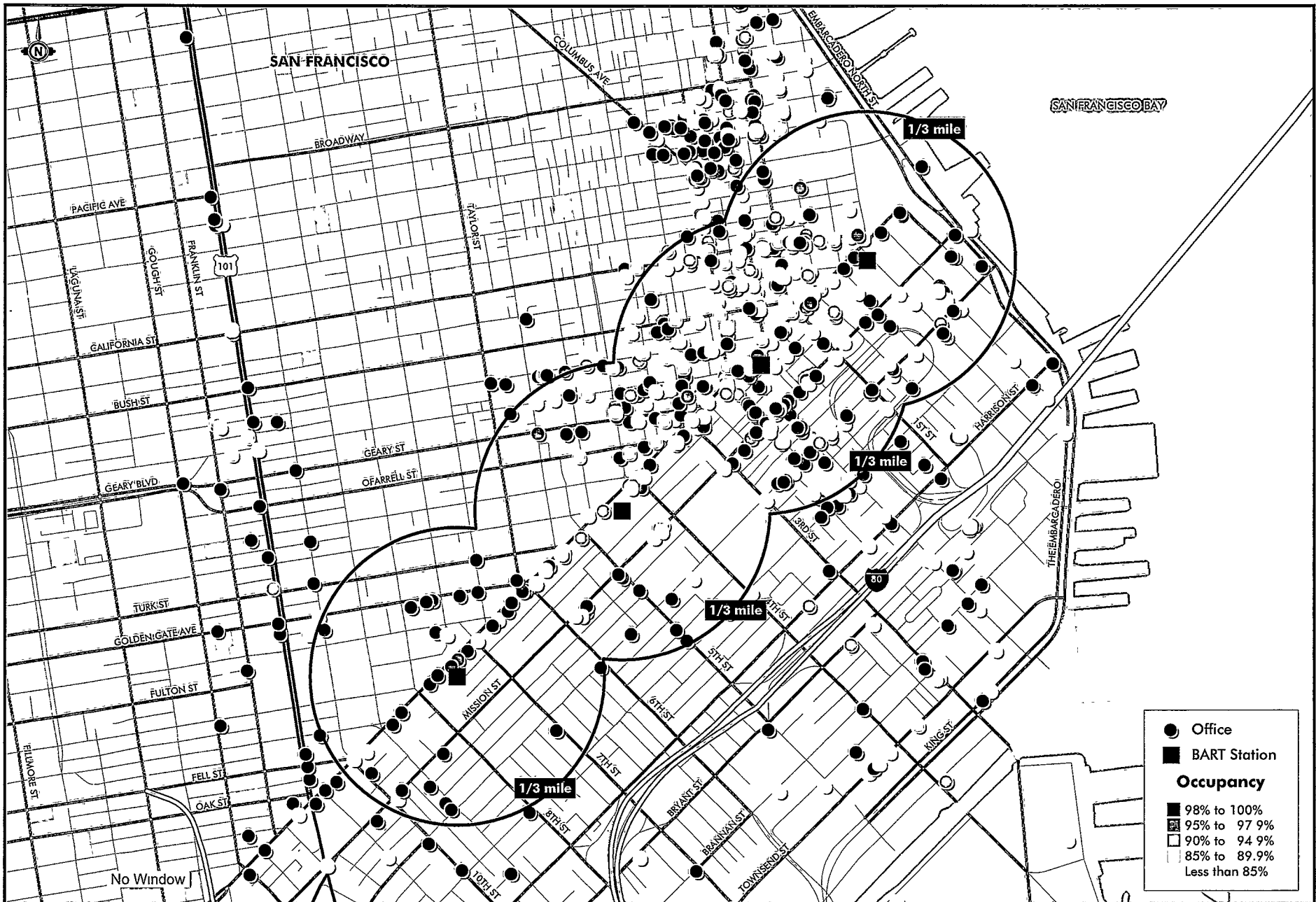
San Francisco, CA



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# Exhibit 2: San Francisco Offices

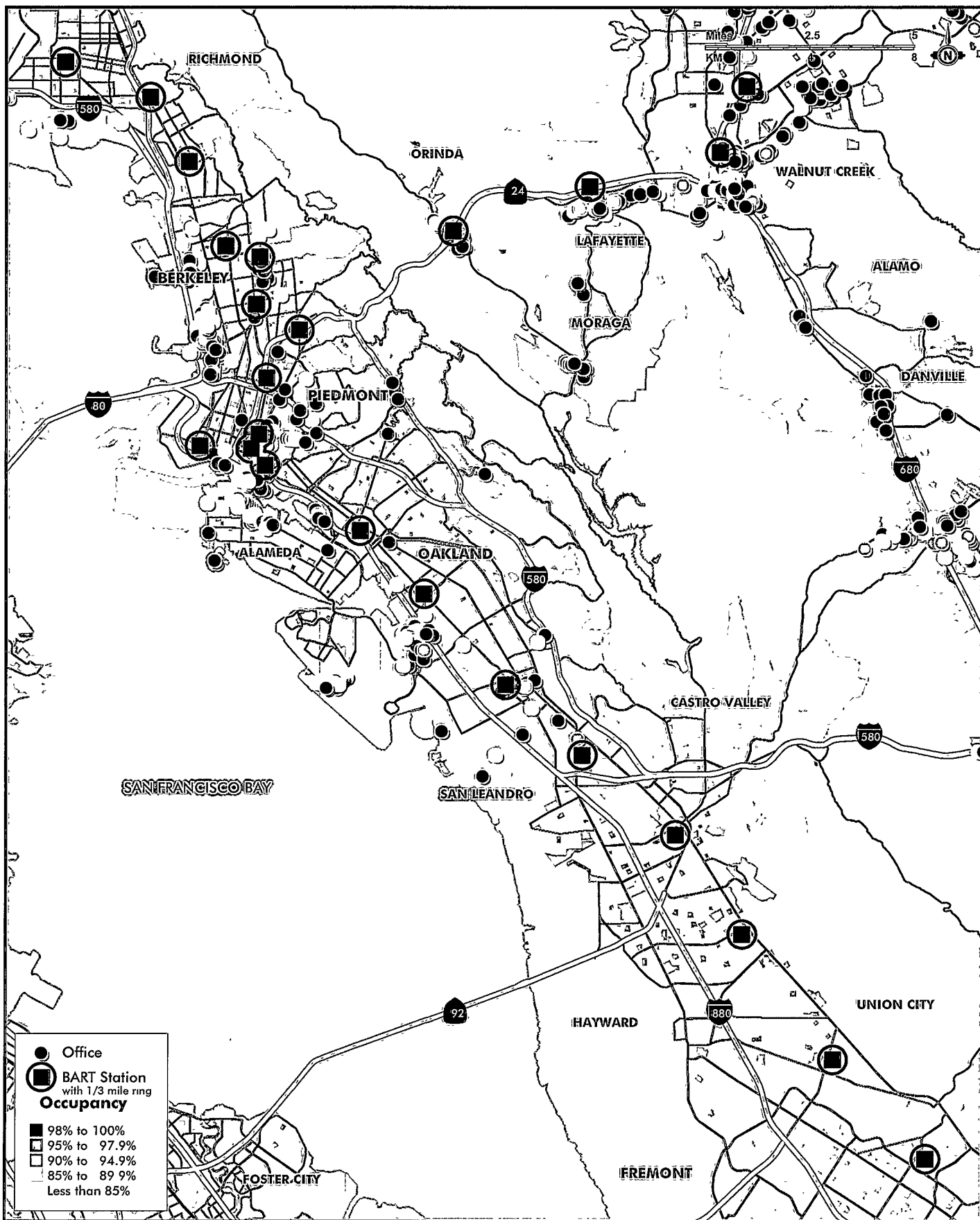
San Francisco, CA



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# Exhibit 3: East Bay I-880 Corridor

Oakland, CA

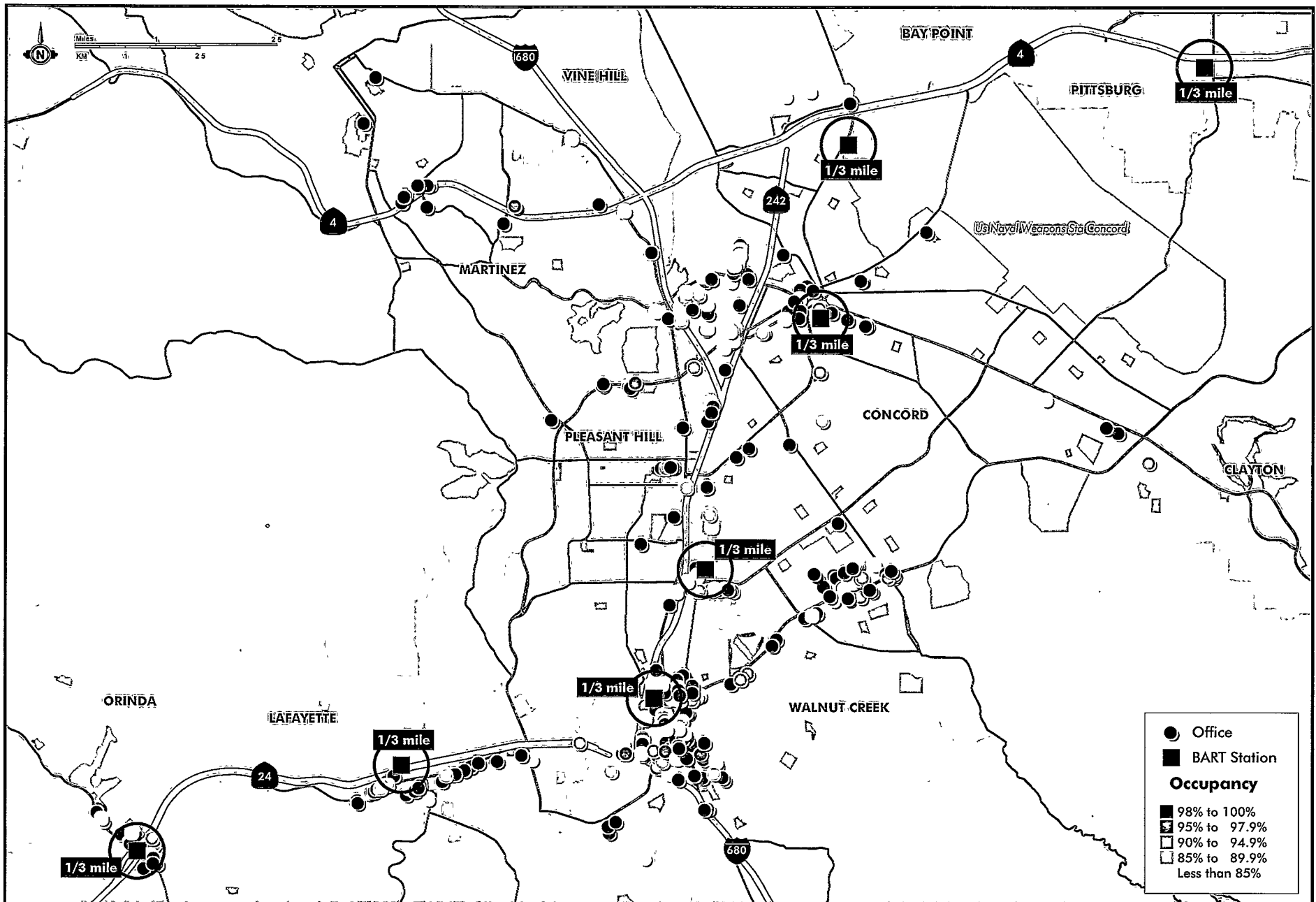


Office  
 BART Station with 1/3 mile ring  
**Occupancy**  
 98% to 100%  
 95% to 97.9%  
 90% to 94.9%  
 85% to 89.9%  
 Less than 85%

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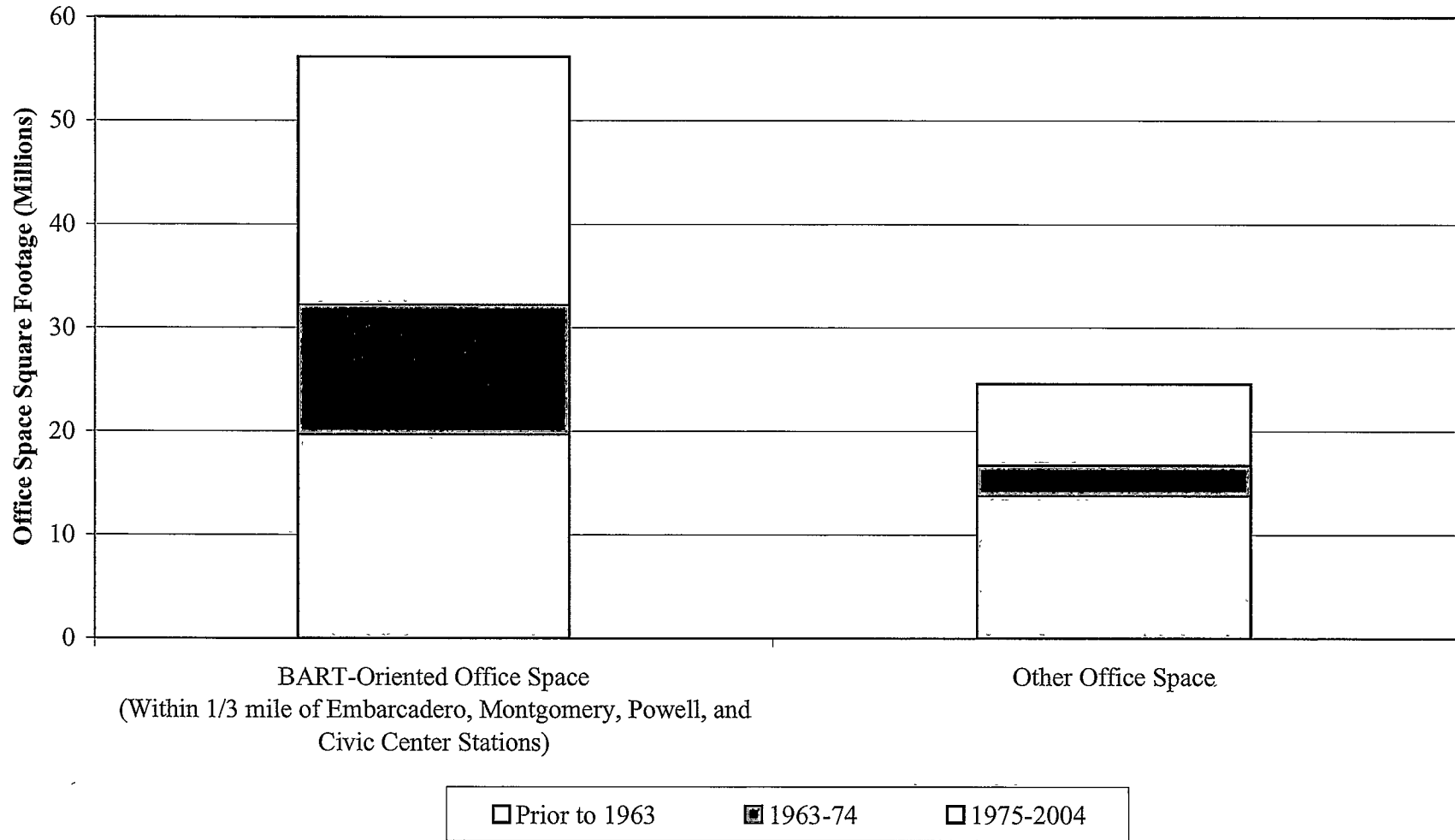
# Exhibit 4: East Bay I-680 Corridor

Walnut Creek, CA



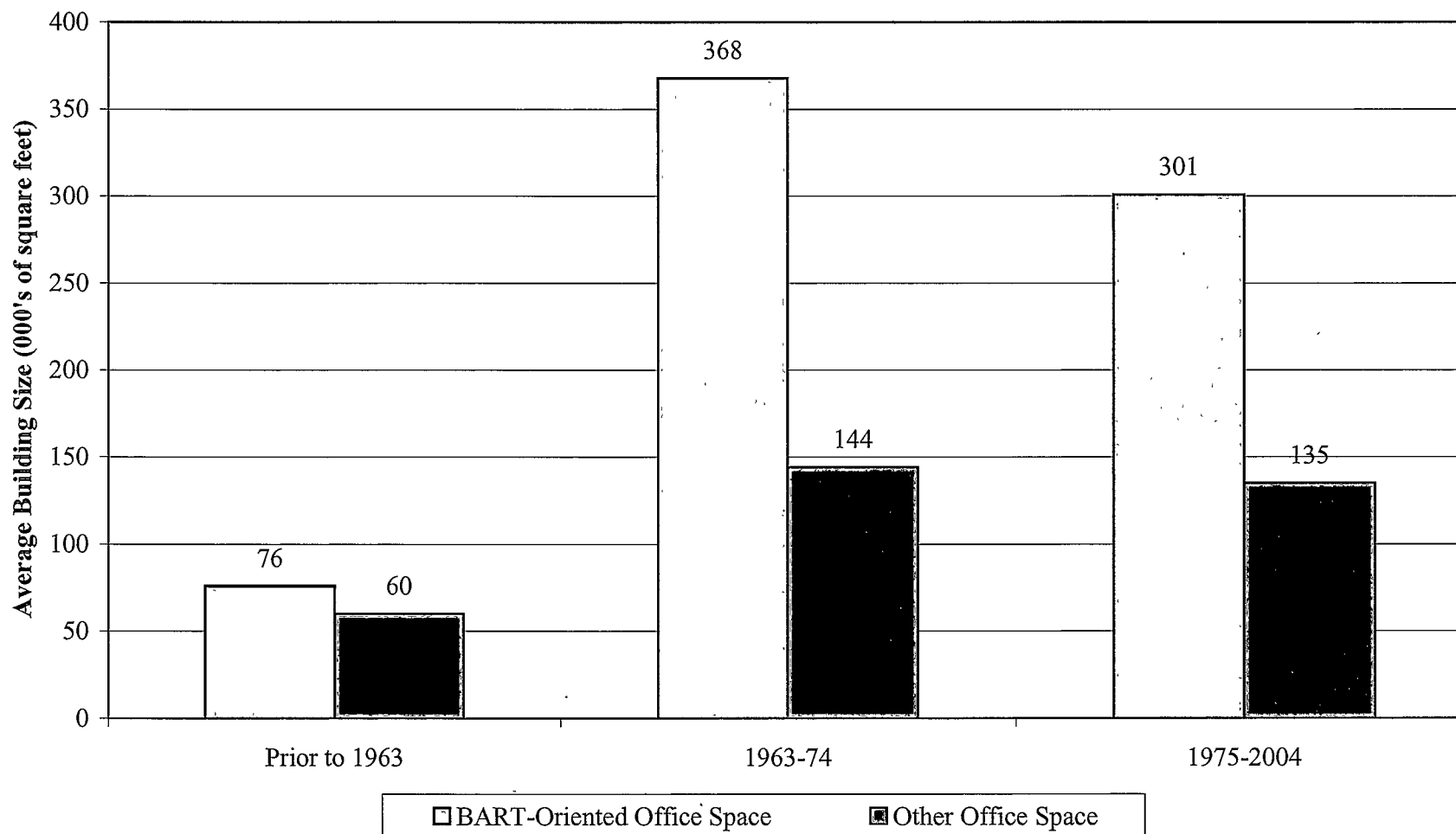
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**EXHIBIT 5  
SAN FRANCISCO OFFICE SPACE INVENTORY**



Sources: Landis and Loutzenheiser, BART@20: BART Access and Office Building Performance, Institute of Urban and Regional Development, University of California at Berkeley; Black's Office Guide 1993; and Sedway Group.

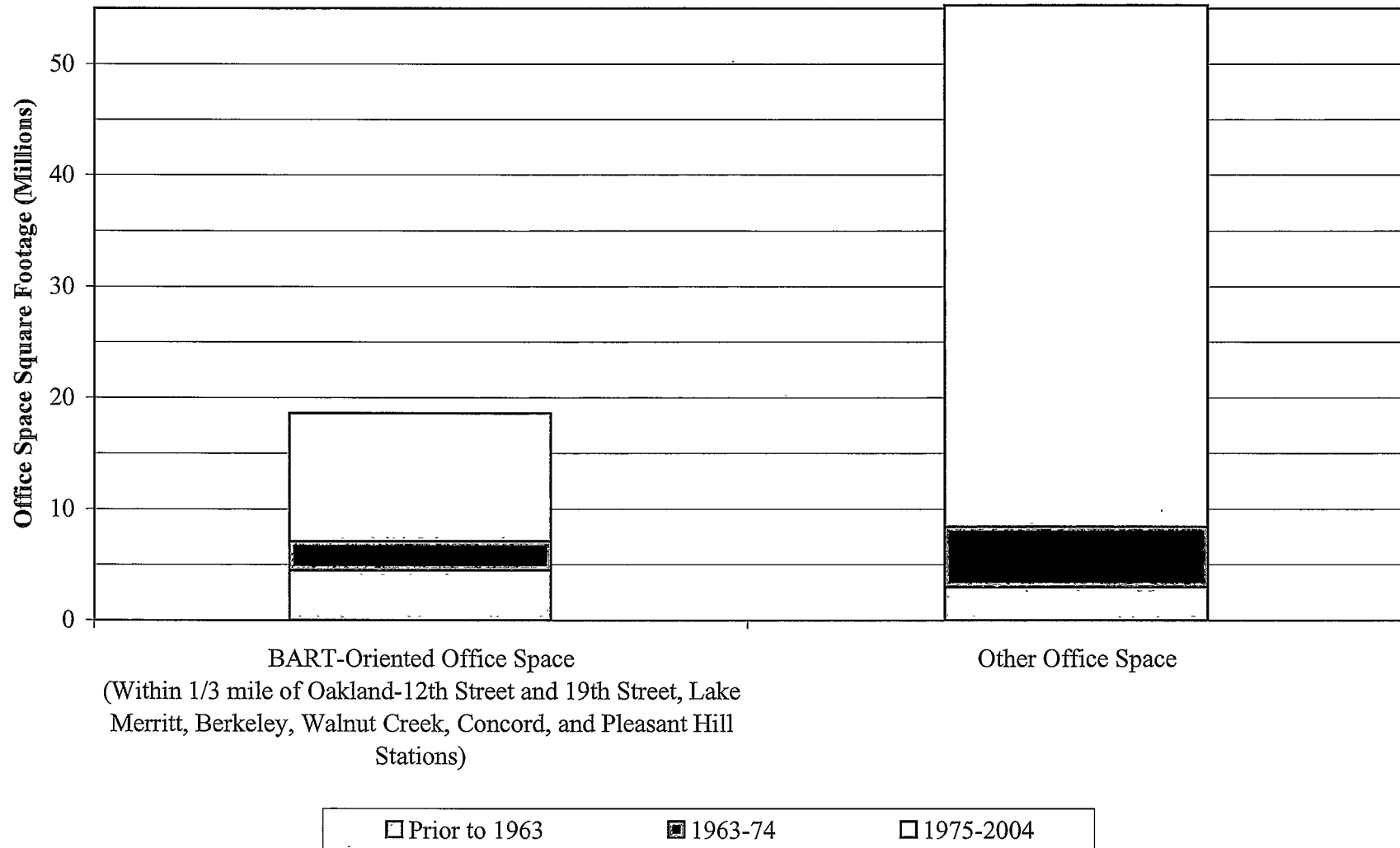
## EXHIBIT 6 SAN FRANCISCO AVERAGE OFFICE BUILDING SIZE



Sources: Landis and Loutzenheiser, BART@20: BART Access and Office Building Performance, Institute of Urban and Regional Development, University of California at Berkeley; Black's Office Guide 1993; and Sedway Group.

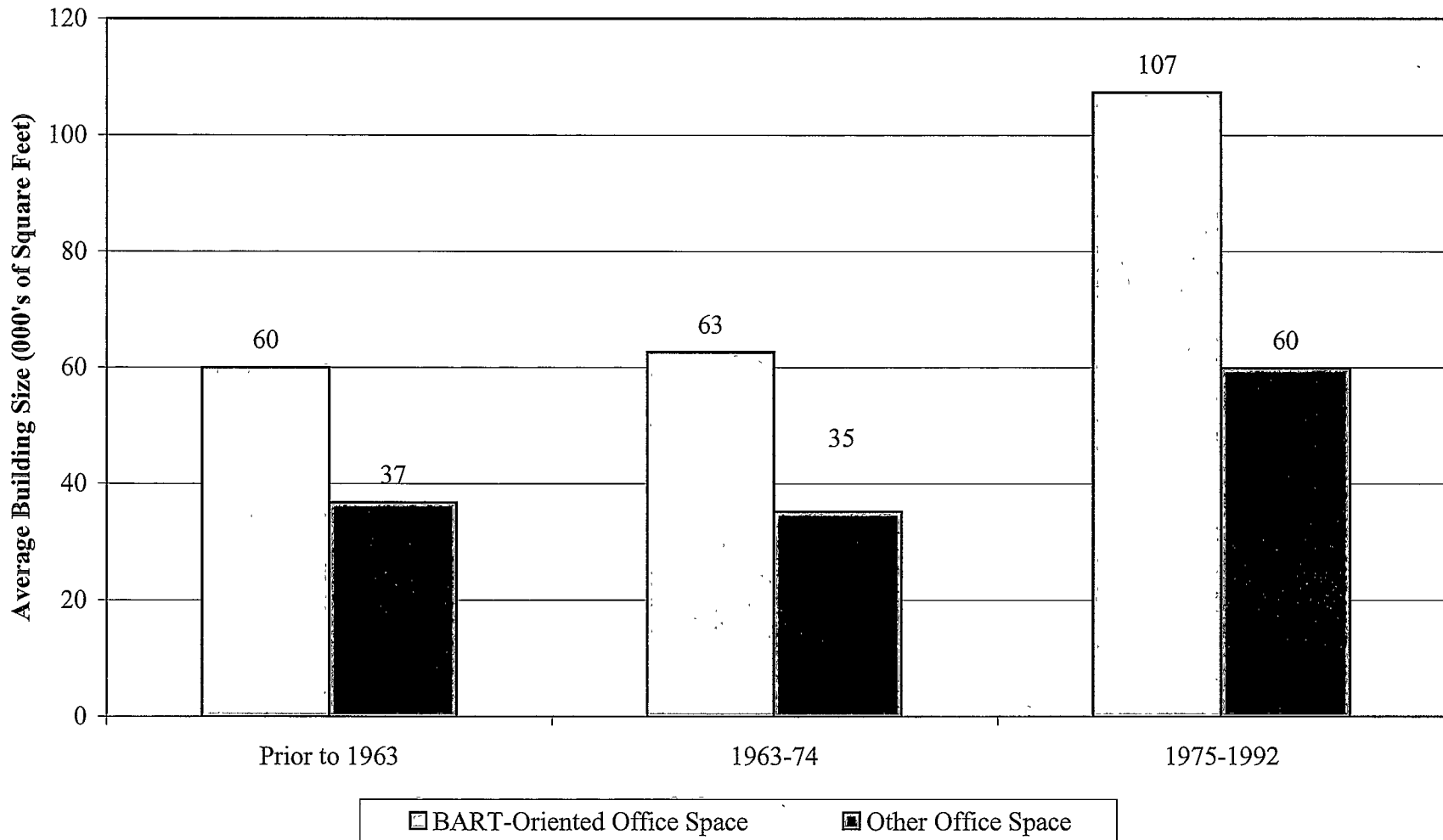


## EXHIBIT 7 EAST BAY OFFICE SPACE INVENTORY



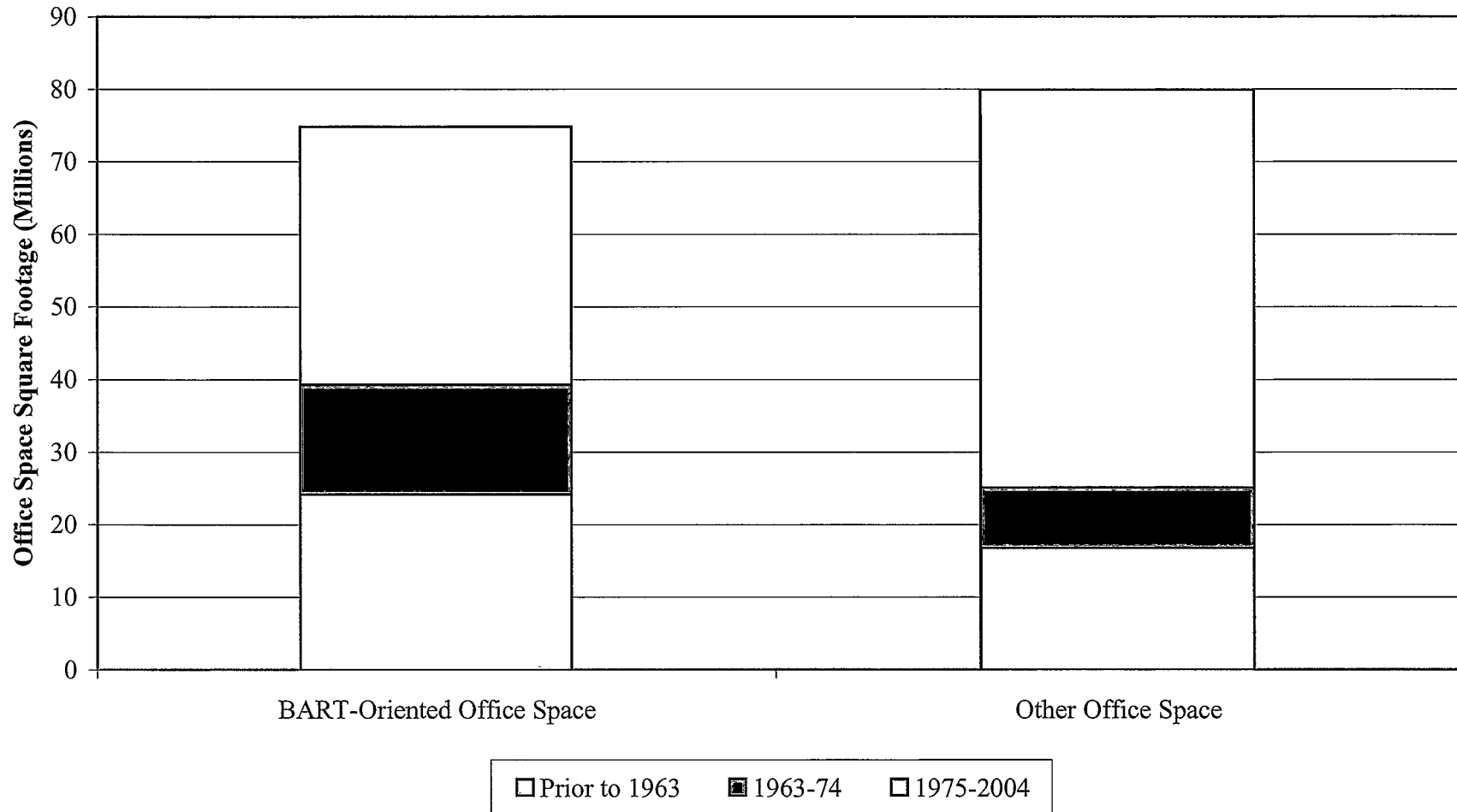
Sources: Landis and Loutzenheiser, BART@20: BART Access and Office Building Performance, Institute of Urban and Regional Development, University of California at Berkeley; Black's Office Guide 1993; and Sedway Group.

## EXHIBIT 8 AVERAGE EAST BAY OFFICE BUILDING SIZE



Sources: Landis and Loutzenheiser, BART@20: BART Access and Office Building Performance, Institute of Urban and Regional Development, University of California at Berkeley; Black's Office Guide 1993; and Sedway Group.

## EXHIBIT 9 AGGREGATE SAN FRANCISCO-EAST BAY OFFICE SPACE INVENTORY



Sources: Landis and Loutzenheiser, BART@20: BART Access and Office Building Performance, Institute of Urban and Regional Development, University of California at Berkeley; Black's Office Guide 1993; and Sedway Group.

505 Montgomery Street, 6th Floor  
San Francisco, CA 94111

415.781.8900  
Fax 415.781.8118

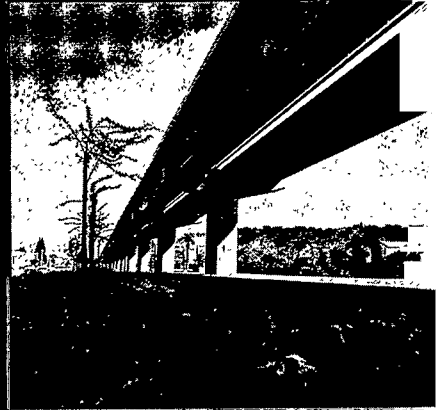
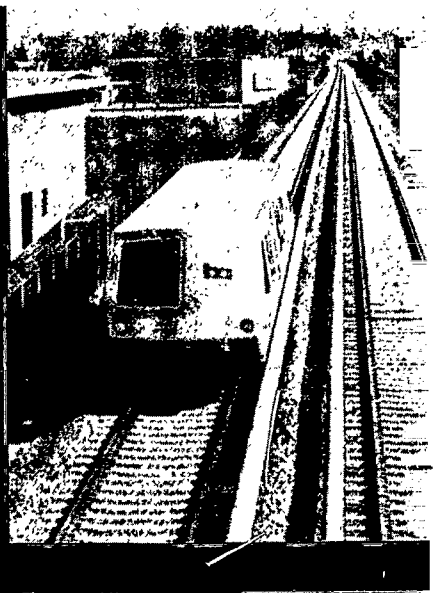
355 South Grand Avenue, Suite 1200  
Los Angeles, CA 90071

213.613.3750  
Fax 213.613.3780

1420 Fifth Avenue, Suite 1700  
Seattle, WA 98101

206.526.3254  
Fax 206.292.6033

# SAN FRANCISCO BAY AREA RAPID TRANSIT SYSTEM



As of December 31, 1970

# 1970: "The Beginning of the End"

It will still be almost a year before the first BART trains will run, and more than two years before the entire system is in operation. Still, 1970 was the "beginning of the end" with construction over the hump and the first deliveries of operating equipment. And 1971 will be a year of putting the pieces together.

Contractors finished basic construction of stations in 1970 and other low bidders took over to complete the finish work — installation of air conditioning, plumbing, lighting, and architectural finish materials on floors, walls and train platforms. On line sections, heavy construction contracts came to an end and contractors got well under way on electrification and rail-laying.

Thus, the big project is moving into its final stages.

1971 will see the passenger stations come to life as contractors add color and chrome. Some 33 of the 38 stations are now in this process, or completed. Trackwork will be largely completed in 1971. The electrification system will be nearly completed, also.

Six vehicles have now been delivered and engineers are testing them intensively. Meanwhile the manufacturer is stepping up production to turn out vehicles at the rate of one a day.

The automatic train control system is being installed and tested and that work will continue throughout 1971 and early 1972.

The fare collection system is in the development stage, with gates and ticket vending machines scheduled for delivery in mid 1971.

This is where we stand now. The racket of concrete vibrators will continue through 1971 and 1972 and even 1973, as the last Muni stations and short sections of line are started and completed. But the new sound of 1971 is the soft *schwoooosh* of trains being checked out on completed sections of line.

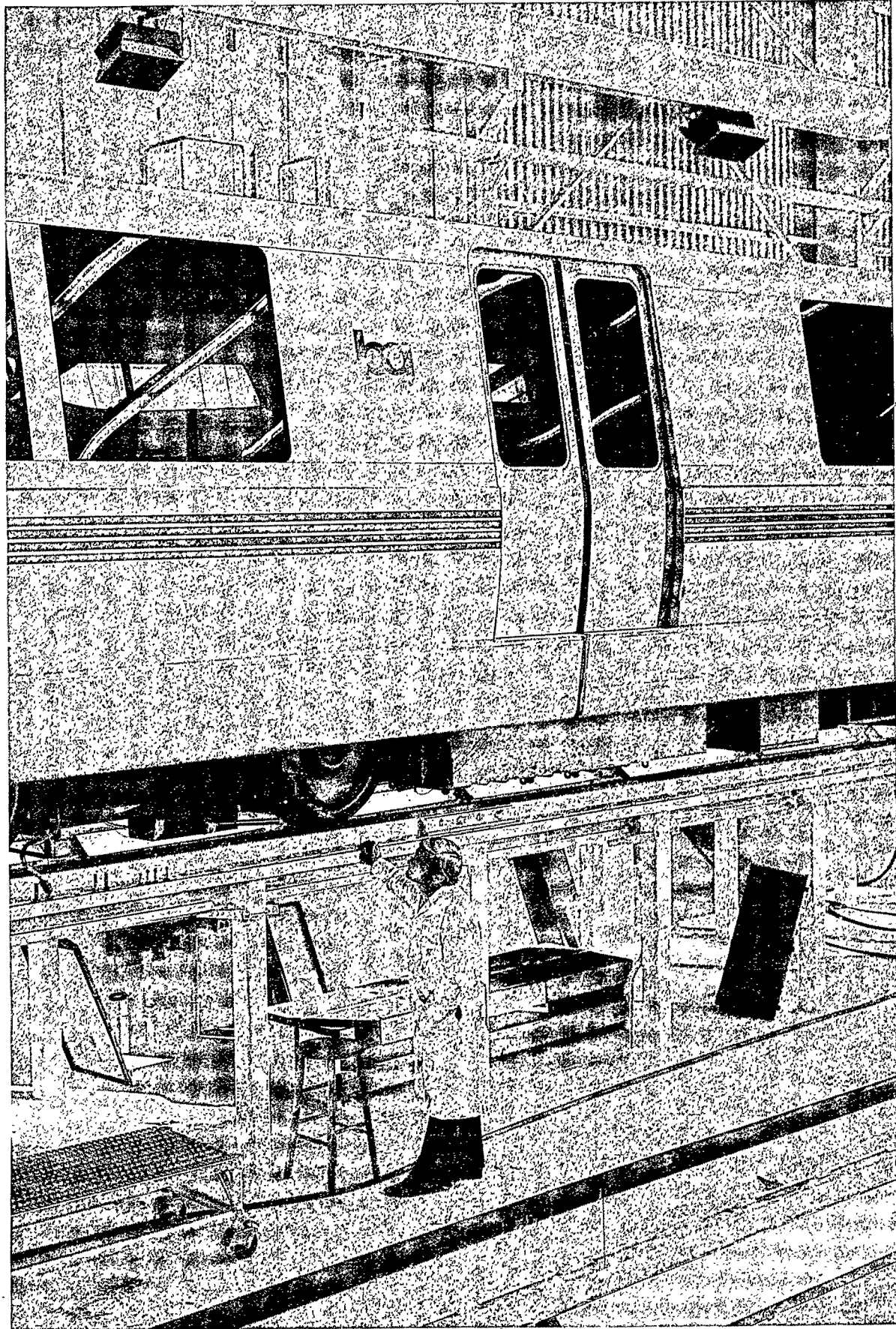
Right: First BART train delivered in 1970.

A year ago, Market Street belonged to the construction men. Now the streets have been repaved and returned to the people. Only a partially finished subway entrance indicates the BART line 75 feet below.



## STATUS

Engineering . . . . .	95% complete
Construction . . . . .	69% complete
Over-all . . . . .	72% complete



# STATUES REEPORT

# HIGHLIGHTS OF 1970

**\$135.5 million expended on construction, engineering, and equipment . . . First five prototype vehicles delivered and check-out started . . . Trans-Bay Tube completed . . . Third-rail energizing completed on 19 miles of the Southern Alameda Line . . . Contracts let for construction of first four parking lots . . . Last contract started for subway tunnelling . . . BART administration building past the half-way mark toward completion . . . Hayward shop and train yard completed . . . Largest aerial station (MacArthur) completed . . . Contract let for finishing platforms of seven stations . . . About 2,000 men on construction payrolls at year-end . . . BART personnel begin training in car maintenance.**

# LOOKING AT 1971

**More than 60 vehicles expected by fall . . . Start-up of first passenger operations, on the A-Line . . . Contract lettings for construction to total \$26 million . . . Completion of finish work on 20 stations . . . Systemwide installation of electronic train destination signs . . . Hiring and training of 900 operating and maintenance personnel, including 200 station agents and train attendants . . . Contract letting for Daly City Station . . . Contract letting for Ferry Building Plaza . . . Contract letting for 15 parking lots . . . 12 contract lettings for landscaping.**



# Construction and procurement scoreboard

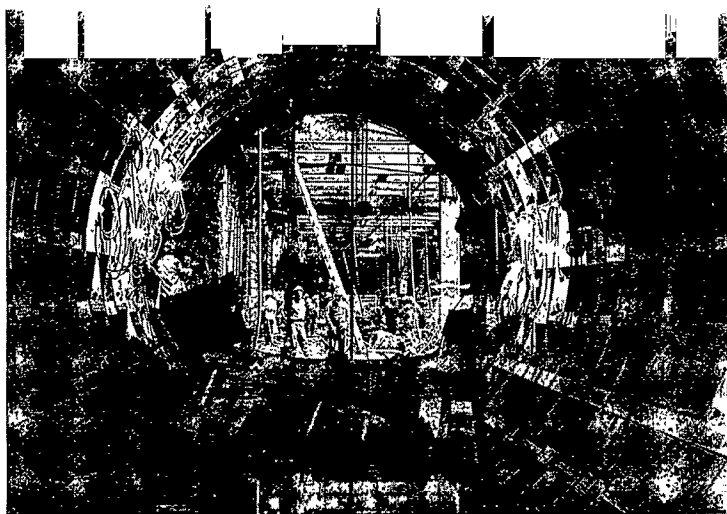
In 1970, contractors completed \$96 million worth of work on BART equipment and lines and stations — aerial, subway and at-grade. Some \$577 million worth of such work has now been completed out of a total of \$779 million budgeted. Most of the balance is under way.

The Berkeley Hills Tunnel is complete. The Trans-Bay Tube is complete. Tunnelling of the subway systems under San Francisco, Oakland and Berkeley is substantially complete. Almost all of the aerial lines, about 25 miles, are complete.

The major line work items remaining are at the extremities of the BART routes and the Muni lines in Outer Market. These will probably not be awarded until 1972.

At year-end 1970, the construction and procurement effort can be pictured in three statistics:

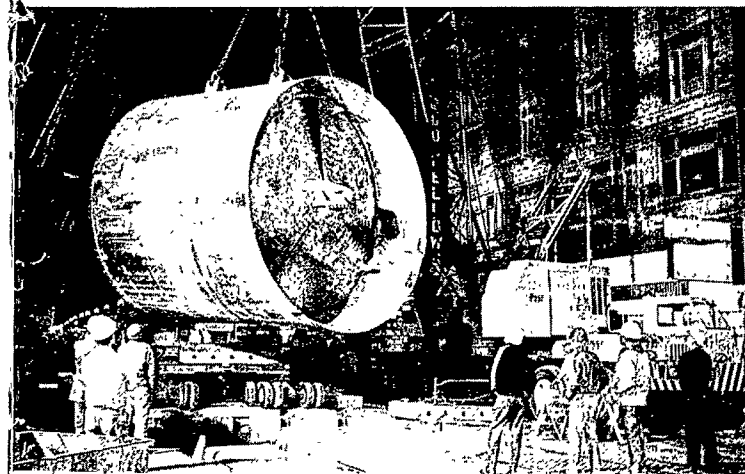
Contracts completed . . . .	108 . . . .	worth \$479 million
Contracts under way . . . .	87 . . . .	worth \$392 million
Contracts to be let . . . . .	67 . . . .	worth \$ 89 million



Subway tunnel meets subway station.



Steel men wrestle heavy re-bars into place for underground station.



The "business end" of a tunnelling machine is lifted out of service after boring section of subway under San Francisco.

# Finish contracts awarded for



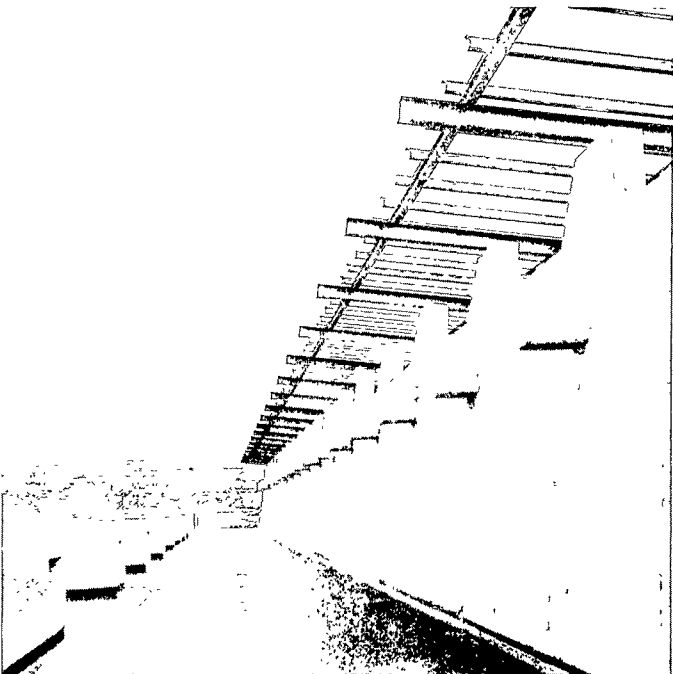
Workmen on aerial station.

There will be 38 passenger stations on the BART System — subway, aerial and surface. Four of these will be built solely for Muni passengers, on the Outer Market Street line, and three of these will not be awarded for several years. On other BART stations, this was a year of transition.

Contractors completed or advanced basic structural construction of 13 stations and BART awarded 22 additional contracts for finish work.

Some of these stations are massive underground structures — two blocks long, the entire width of the street and sidewalks above, built of heavy steel and concrete members.

Finish contractors are now applying permanent floor and wall materials and installing heating and ventilation, plumbing, and lighting, handrails, and other furniture.



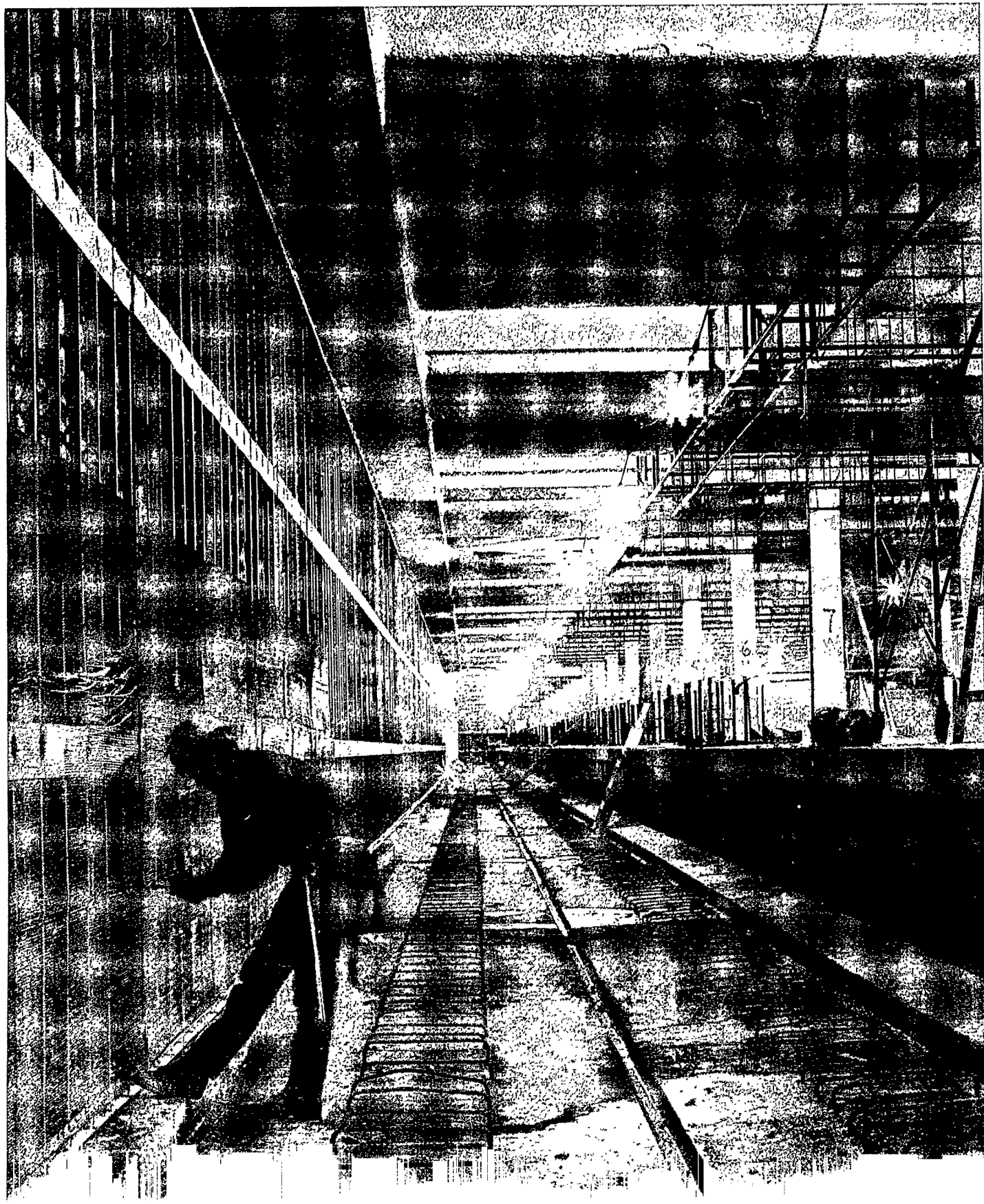
Balboa Station—a study in contrasts. Massive, rough formed concrete walls and beams and roof of lightweight, transparent panels.



Finishing train platform.

Right: Workman prepares subway station wall for architectural finish.

## 22 passenger stations in 1970





Checking noise level of BART train.

The first BART car was delivered in the fall of 1970 under a contract with the Rohr Corporation to furnish 250 of the vehicles at a cost of \$66.7 million.

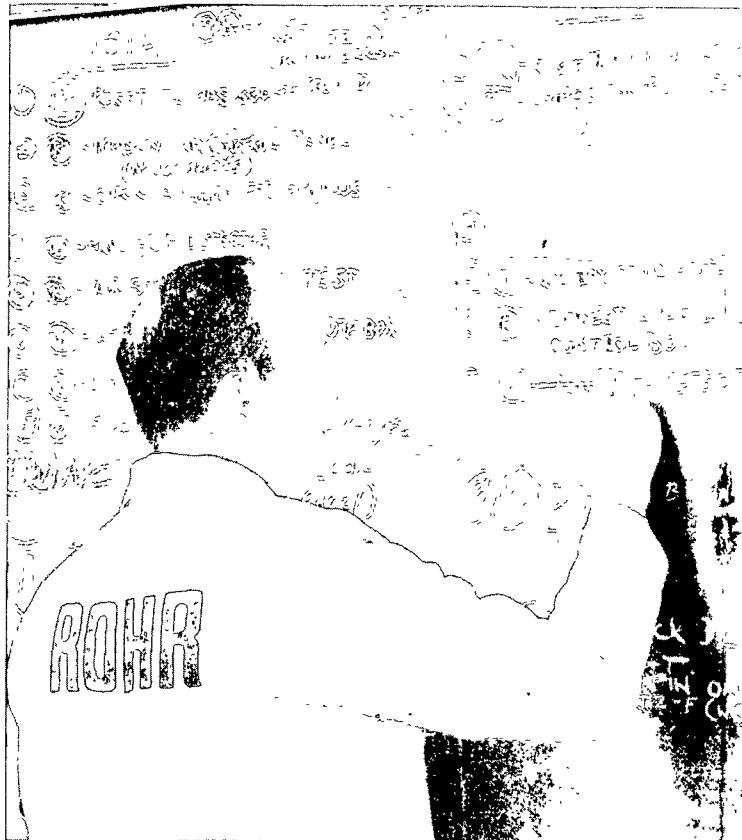
As this goes to print, six cars are in the BART yard being checked out. The manufacturer has subcontracted electrical motors, trucks, brakes, air conditioning, seats, wheels and axles, couplers and electrical systems, and set up an assembly line capable of turning out one car per day.

As cars are received throughout 1971, PBTB and BART engineers will put them through a long check list, testing their capabilities by instrument and actual test operation.

The BART train will provide commuters with the fastest, most comfortable ride in the U. S. Travelling at speeds of up to 80 miles per hour, BART trains will average 45-50 miles per hour including station stops. The vehicle has been designed to contemporary standards for esthetics. It will provide extra-wide, upholstered seats, an air-comfort system, carpeted floor, wide view windows, indirect lighting and colorful interior design.

## Testing the vehicle

Each vehicle gets a series of performance tests.



# Installing automatic train controls

1970 saw the installation of train controls along the A and K lines and intensive testing of system components. Engineers used two rolling laboratory cars to check out equipment which Westinghouse Electric Corporation designed under an initial contract for \$26.4 million.

PBTB wrote specifications for the sophisticated system after 18 months of testing four different concepts on a specially constructed 4.4-mile-long Test Track.

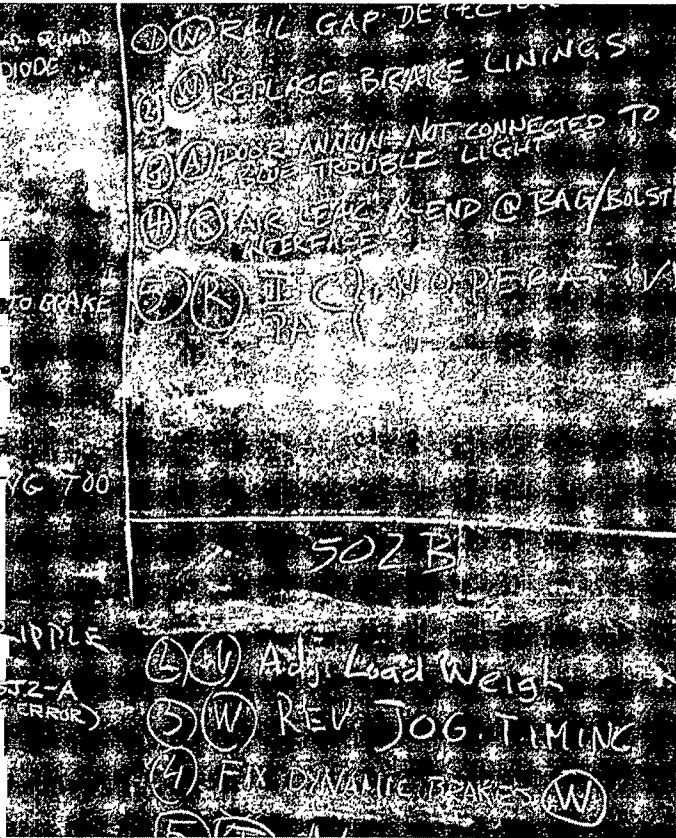
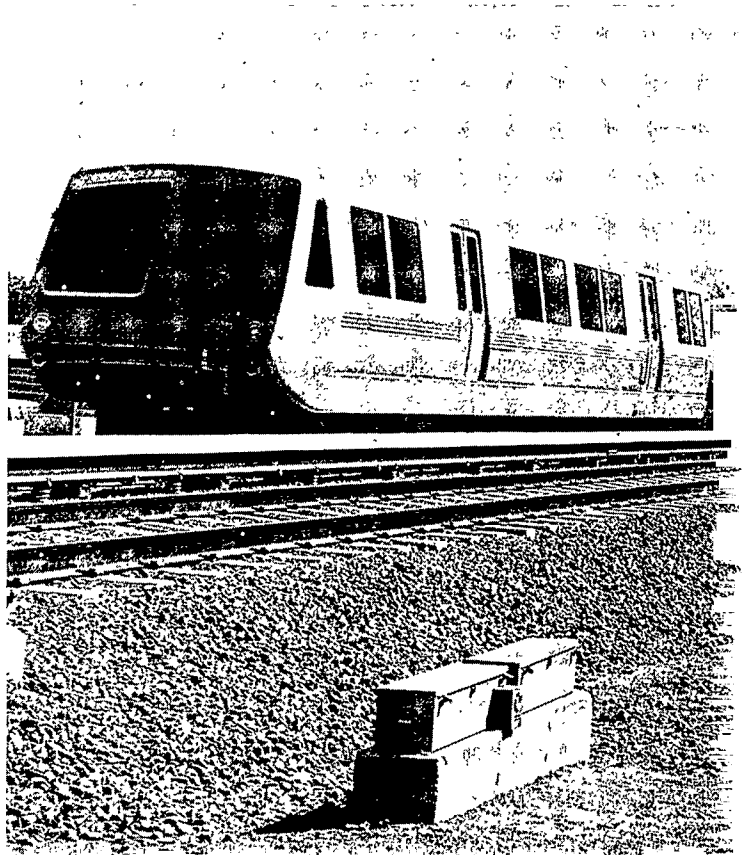
When completed, the scheme will operate all trains on the BART network remotely and through a central computer. Automation will eliminate the hazards of conventional manual operation and bring a new dimension of efficiency and safety to rapid transit operations.

In 1971, engineers will continue field testing.



PBTB engineer checks the wiring for central control system.

Wayside controls: integral part of automatic train operation system.



Trouble-shooting the new BART car.

# Enough power for a city of 250,000

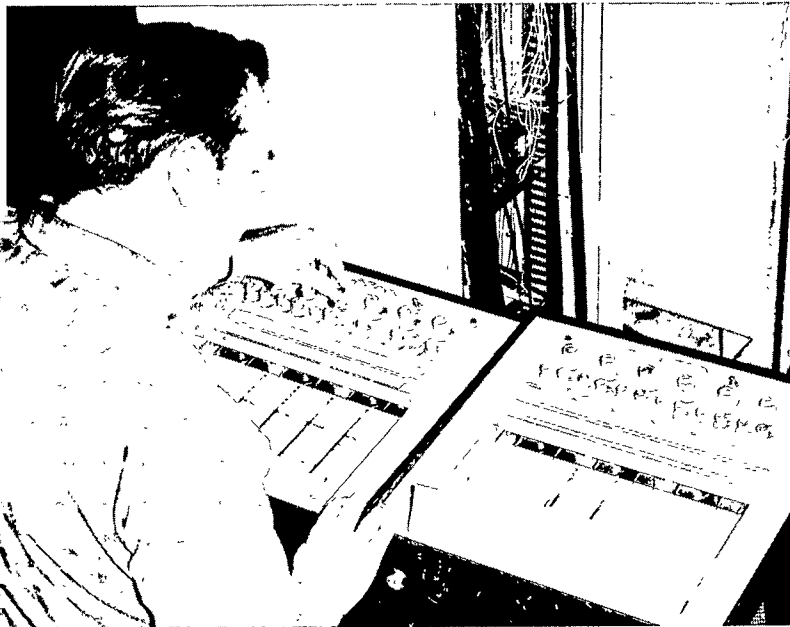
At year-end five contractors had brought their electrification contracts to 33 to 100 percent completion.

The work calls for installation of steel contact rail throughout the System and construction of 38 substations. PBTB engineers are supervising and testing components as they are installed.

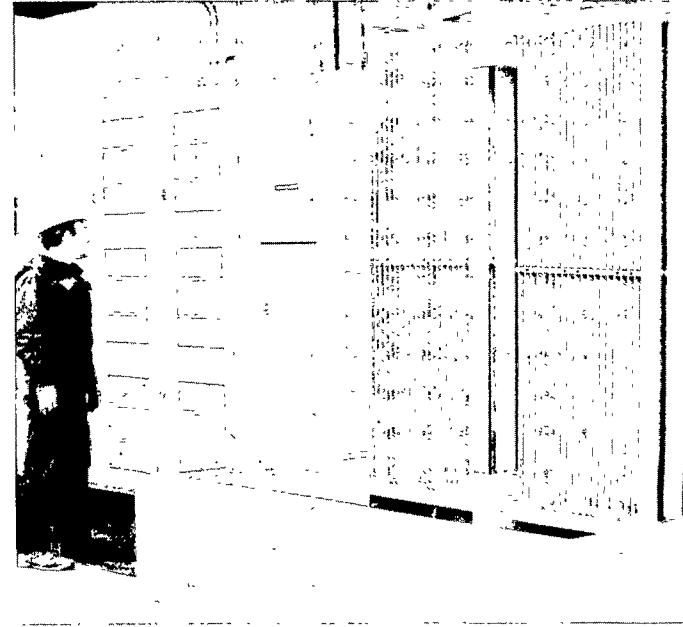
BART's power demand is equivalent to that of a city of 250,000 residents. Just as critical, the power supply and distribution network must be capable of providing tremendous surges of energy during the two rush-hours of operation. Cost of electrification is estimated at \$40 million.



Electrician installs conduit in Richmond Station.



Engineer checks installation in substation.



Typical completed power substation.

## Electronic ticket-processing system

BART's fare collection system will be unique in a number of ways: 1) It will be self-service, with patrons purchasing their own tickets from vending machines; 2) It will permit a graduated-fare system, under which riders will pay only for the distance they travel; 3) It will permit patrons to purchase multiple-ride tickets worth from 25 cents to \$20; and 4) It will feature a system

of entrance and exit gates which will electronically process a commuter's ticket, deducting the cost of each ride and imprinting the remaining value on the face.

IBM's contract calls for manufacture of 251 gates, 101 vendors, 124 money changers and other devices.

Engineers are producing prototype models, testing them, and readying production facilities.

# Laying steel rail in quarter-mile lengths

In 1970, work proceeded under five contracts for BART trackwork. These contracts called for construction of concrete levelling beds and installation of steel and polyethylene fastener pads, as well as the laying of rail. The rail is being placed in lengths a quarter of a mile long, to eliminate as many joints as possible.

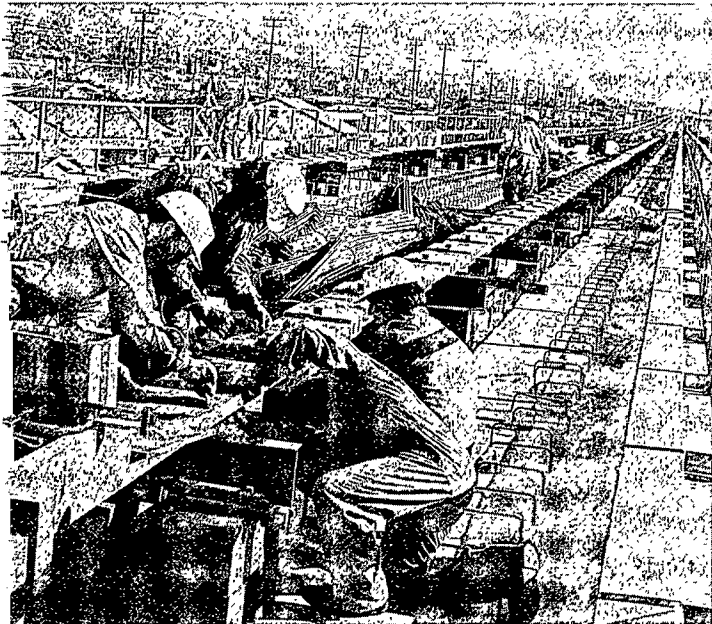
Because the BART System is wide-gauge, contractors were required to design and build special construction rigs (including locomotives for pulling rail trains).

1970 saw rail placed through the Berkeley Hills Tunnel and the Trans-Bay Tube, on 25 miles of aerial structure and on subway lines in both Oakland and San Francisco.

The current contracts cover 70 of the 75-mile System.

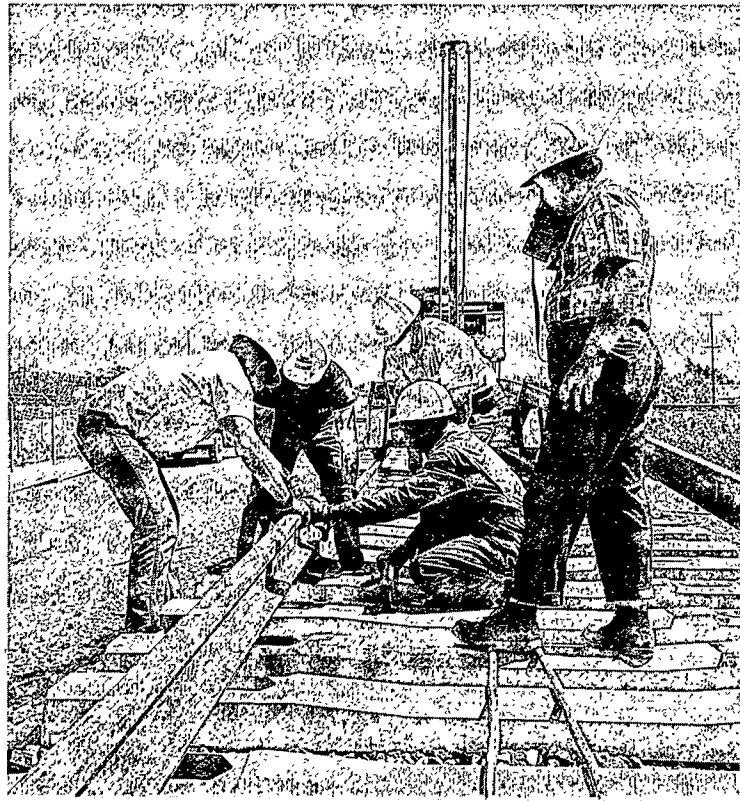


Fastening rail to the 535-pound concrete ties.



BART track switches will slide on teflon-coated steel plate. Here, workmen prepare a cross-over tie bar assembly.

Joining two lengths of rail nearly a quarter mile long. The foreman communicates with the hoist operator by two-way radio.



# Major contracts under way

<i>Contractor</i>	<i>Type of Work</i>	<i>Amount</i>
Pacific M. G. C.	Station	\$1,224,000
Sollit Construction	Station	1,213,000
Northwest Construction	Station	1,258,000
Arntz Bros. .	Station	1,322,870
C. Overaa & Co.	Station	942,700
Wheatley Jacobsen	Station	1,149,000
S. J. Amoroso	Station	1,389,925
Perini	Station Finish	2,385,000
Perini	Station Finish	2,325,000
Williams & Burrow	Station Finish	1,353,000
Rothschild-Raffin	Station	1,348,500
Rothschild-Raffin	Admin. Bldg.	2,837,500
Ralph Larsen & Son	Station Finish	1,298,000
Ralph Larsen & Son	Station Finish	1,298,000
Northwest Const. Co.	Station Finish	1,295,000
Northwest Const. Co.	Station Finish	1,295,000
Ralph Larsen & Son	Station	1,407,500
Ralph Larsen & Son	Station	1,407,500
Rothschild & Raffin	Earthwork & Structures	4,032,126
Rothschild & Raffin	Station	2,046,640
J. F. Shea & Co.	Sta. Shell	4,330,802
Christensen & Foster	Station	2,369,000
Rothschild & Raffin	Station	1,183,600
Rothschild & Raffin	Station Finish	3,058,000
Rothschild & Raffin	Station Finish	3,036,000
Delaware Vianini-Memco	Tunnel	10,467,311
Christensen & Foster	Station Finish	3,028,000
Peter Kiewit Sons	Subway	10,731,854
Fruin-Colnon-Dravo	Subway	10,967,444
Morrison-Knudsen	Subway	11,230,000
Newbery Electric	Power	737,925
Midland Electric	Power	2,863,014
Midland Electric	Power	652,368
Newbery Electric	Power	2,008,371
American Construction	Power	3,140,125
Westinghouse	Train Control	28,800,000
Philco-Ford	Yard Control	1,629,000
Wisner-Becker	Station Commun.	290,291
Wisner-Becker	Yard Control	2,258,283
Lectriks Inc.	Station Commun.	595,926
Amoroso Const. Co.	Parking Lots	1,951,189
Dravo Const. Co.	Trackwork	6,895,893
Dravo-Ball-Granite	Trackwork	8,573,000
William Smith	Trackwork	1,512,747
William Smith	Trackwork	5,815,260
Westinghouse	Escalators	2,103,831
Westinghouse	Escalators	2,313,000
Montgomery	Escalators	1,750,617
U.S. Elevator Corp.	Elevator	297,888
Armor Elevator	Elevator	1,114,741
IBM	Fare Collection	5,450,000



## Labor agreement pays off

Work stoppages have amounted to less than 1/2 of 1 percent on the BART project, thanks to an unusual labor agreement between BART and more than 80 construction unions in the Bay Area.

PBTB helped to develop the program which forestalled disputes of the kind which often stymie construction jobs. Under an umbrella agreement no project can be stopped until all grievance machinery has been exhausted, with only three exceptions. They are: Non-payment of proper wages and fringe benefits, termination of a contract, and violation of hiring hall practices.

Because of the concurrence in the agreement by both labor and contractors, the work stoppage rate on the BART system has been only 5 man-hours per 1,000, or less than one-third of the national average of 18.

Christensen & Foster	Platform Finish	356,000
Nelson Neon	Signs	248,370
Stewart Warner	Destination Signs	743,400
Ralph Larsen & Son	Agents Booths	519,913
Federal Pacific Elect.	Switchgear	2,832,000
General Elect.	Sub-Station Equip.	5,824,000
Kaiser Aluminum	Contact Rail	8,485,000
Federal Pacific Elect.	Switchgear	420,000
Various contractors	Elect. Maint. Equip.	313,000
Various contractors	Shop Equip.	1,692,000
Various contractors	Maint-of-way Equip.	3,104,000
Rohr Corp.	Vehicles	78,285,000

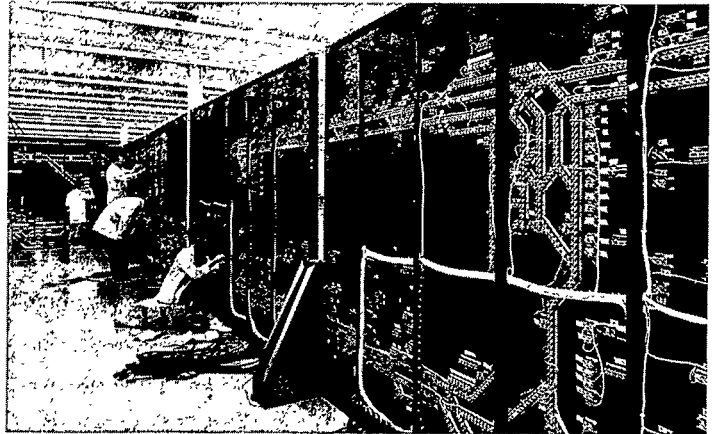
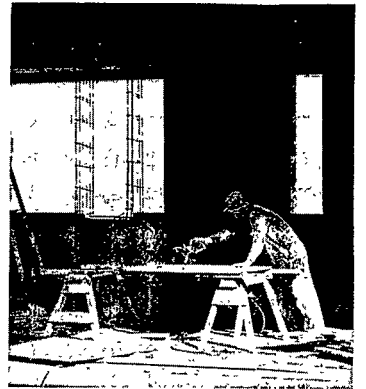
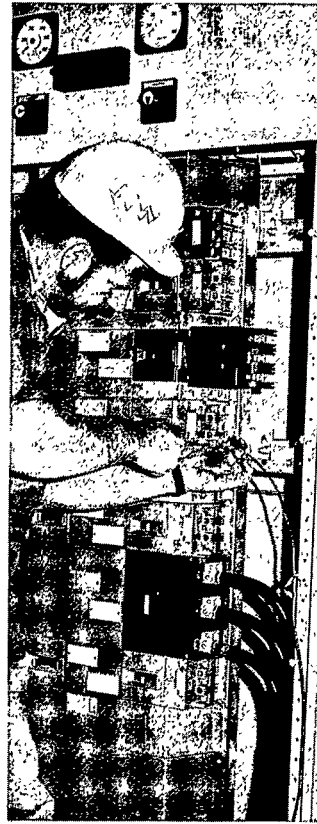
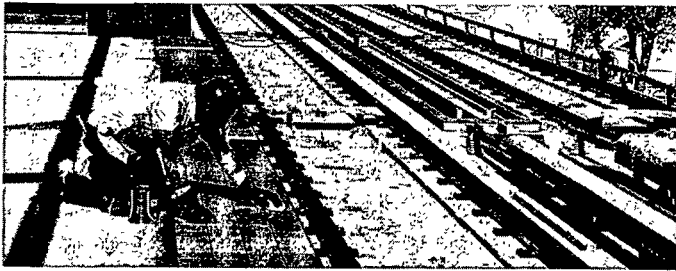


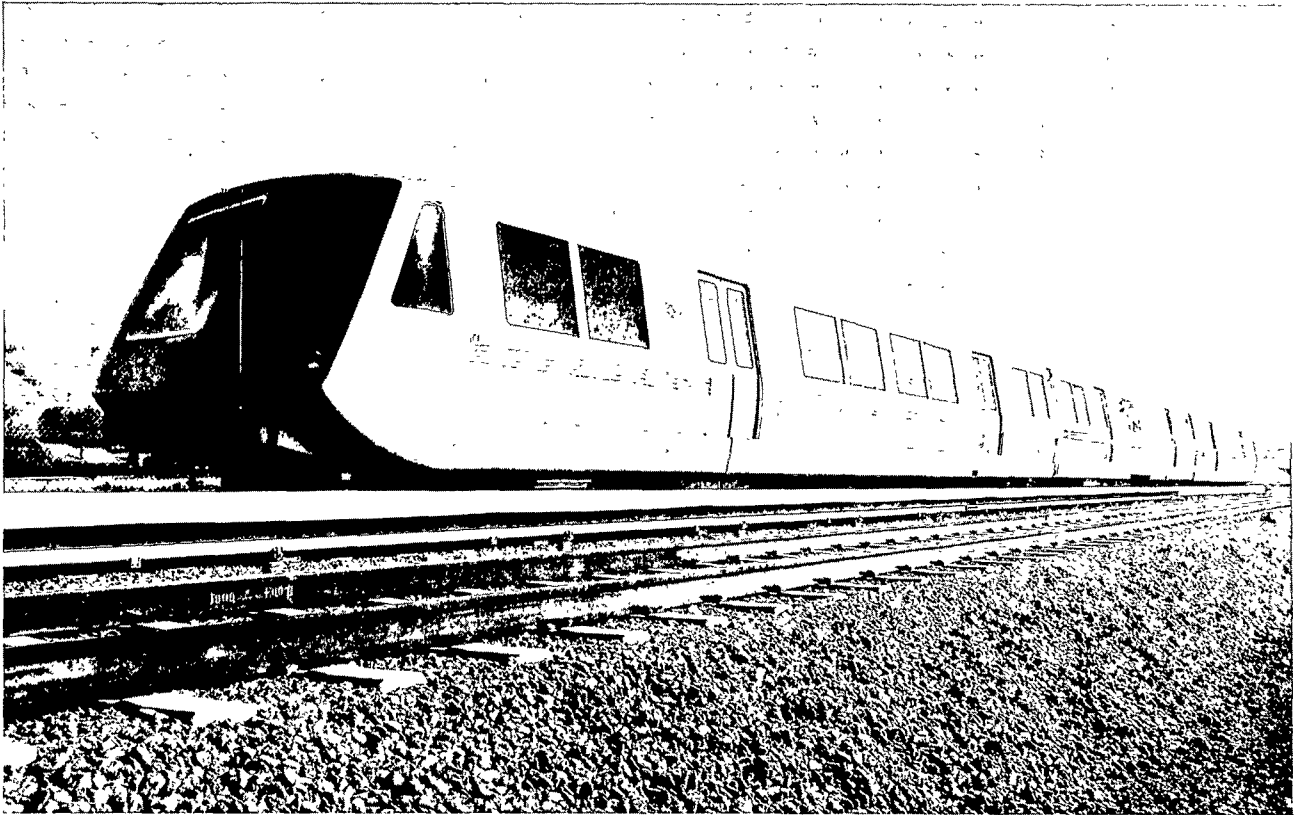
## Exceptional cost control

An analysis of more than \$577 million worth of construction completed thus far reveals that over-runs are amounting to only 3½ percent. This is the amount of money paid to contractors over their low bids for unforeseen work.

The 3½ percent over-runs on the BART project is exceptionally low, considering the newness of much of the work, the strictness of the specifications, and the increasing cost of inflation. It compares with the 7 percent of the industry generally.

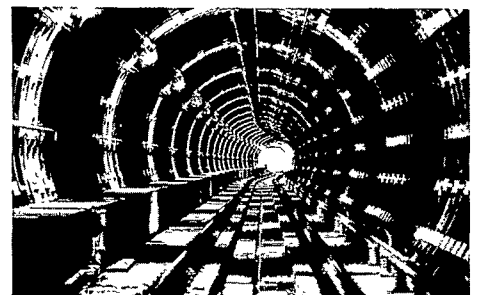
BART General Manager B. R. Stokes has commended both the PBTB construction managers and contractors for their efficiency.





## **Time table for BART start-up**

<b>Trains begin to run on the A-Line, South Hayward to MacArthur Station in Oakland</b>	<b>Late 1971</b>
<b>Trains begin to run from South Hayward to Fremont Station</b>	<b>Late 1971</b>
<b>Opening of C-Line from Pleasant Hill to downtown Oakland</b>	<b>Early 1972</b>
<b>Opening of R-line from Richmond to downtown Oakland</b>	<b>Early 1972</b>
<b>First trains across the Bay from downtown Oakland to San Francisco</b>	<b>Late 1972</b>
<b>Extension of traffic to the ends of two lines, Daly City and Concord stations</b>	<b>Late 1972</b>



Something about:

## San Francisco Bay Area Rapid Transit District



**James Doherty,**  
BART President



**B. R. Stokes,**  
BART General Manager

The San Francisco Bay Area Rapid Transit District was created by the California State Legislature in 1957, to plan, finance, design, build and operate a rapid transit system for the Bay Area.

The District has been authorized to finance the System through a variety of means—bond issues based on property and sales taxes and future revenues, surplus revenue from the Bay toll crossings, and federal grants for research and development.

BART policy is established by a 12-member Board of Directors and is administered by a general manager and staff of more than 200.

---

## Parsons Brinckerhoff • Tudor • Bechtel

### BOARD OF CONTROL    Left to right:

**John P. Buehler (chairman), Vice President,**  
Bechtel Corporation

**Walter S. Douglas, Senior Partner,**  
Parsons, Brinckerhoff, Quade & Douglas

**Louis W. Riggs, President,**  
Tudor Engineering Company



---

### STAFF MANAGEMENT

Below:



**William Bugge,**  
Project Director



**John Asmus,**  
Manager, Engineering



**Edward Peterson,**  
Manager, Construction



**Tallie Maule,**  
Manager, Architecture



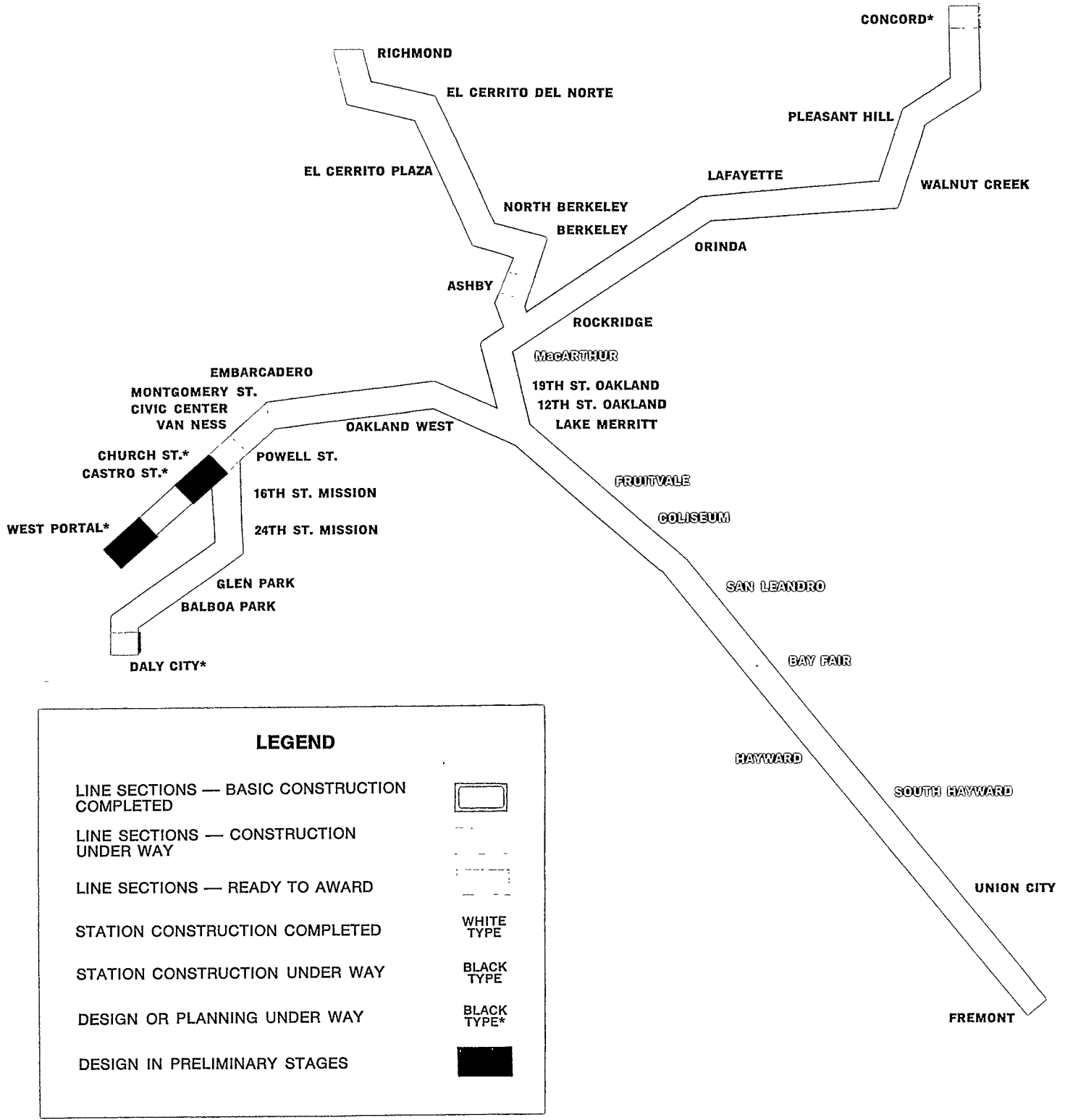
**John Chambers,**  
Manager, Project Services

Parsons Brinckerhoff-Tudor-Bechtel was retained by the District in 1962 to conduct research and development for the BART System, to assume responsibility for design and to manage construction.

Included in this over-all assignment are: All lines and stations, the train, automatic train control, fare collection, electrification, the Trans-Bay Tube, and other components of the \$1.3-billion System.

The joint venture is managed by a three-man Board of Control. Design and construction management is administered by a project director.

# STATUS OF BAY AREA RAPID TRANSIT SYSTEM



**PARSONS BRINCKERHOFF-TUDOR-BECHTEL / 814 MISSION ST. / SAN FRANCISCO 94103**  
**General Engineering Consultants to the San Francisco Bay Area Rapid Transit District**

**BART**  
**lob**

**SYMBOL MANUAL**



**SUNDBERG · FERAR**  
INDUSTRIAL DESIGNERS

June 7, 1971

Mr. B. R. Stokes  
General Manager  
Bay Area Rapid Transit District  
800 Madison Street  
Oakland, California 94607

Re: BART Symbol Manual

Dear Mr. Stokes:

In accordance with our contract we are pleased to transmit to you a detailed manual covering present and possible future uses of the adopted BART symbol -- the lower case ba.

In final design, the lower case ba with the capital letters BART in the upper right-hand corner represent a strong new symbol which will certainly become an internationally known and respected transit mark.

We suggest that you make widespread distribution of this manual, both within your organization and to outside agencies and individuals who might have reason to apply the mark. Because of the precision of the overlapping b and a and because of the need for the mark to be placed in a rectangle in certain applications, we strongly suggest that you exercise great control over all mark applications, both hardware and non-hardware.

It has been a pleasure to refine such a strong new transit symbol.

Very truly yours,

SUNDBERG-FERAR, INC.

Carl W. Sundberg  
President

cc: G. L. McDonald  
cc: R. A. Heck

/dh

## PURPOSE

The purpose of this manual is to set forth a system for the use of the BART System Symbol. It is important that the Bay Area Rapid Transit District project a consistent image to the public it serves. For this to take place all those persons employing the symbol must follow and reinforce the directions set forth in this manual.

### THE BART SYSTEM LOGO & SYMBOL

The BART mark, be it in color or in black and white, must be well-delineated, bold and unambiguous to the reader, viewer or patron.

The mark's principal function is to serve the general public by identifying District staff, equipment and facilities of interest to the general public.

Wherever the public needs no reminding of the District's presence (e. g. , station interiors), the mark is superfluous, obtrusive and undesirable.

The mark should not be in close proximity to other graphics.



THE SYMBOL	Page
A. Two color against white	1
B. Two color against other than white	2
C. One color usage	3
D. Alternate one color usage	4
E. Special tool stamp usage	5
F. Incorrect usage	6

#### COLOR STANDARDS

#### REPRODUCTION ART

A. Grid scale symbol	1
B. Grid scale symbol with background shape	2
C. Color separation of symbol	3

#### STATIONERY AND FORMS

A. Symbol and type relationship	1
B. Stationery	2
C. Typists guide to stationery	3
D. Envelope and calling card	4
E. Examples of typical forms	5-6
F. News release	7
G. Seal	8
H. Poster and map application	9
I. Map application	10

SIGNAGE

Page

- |  |   |
|--|---|
| A. Station identification (minor sign) | 1 |
| B. Combined use                        | 2 |
| C. Building identification             | 3 |

VEHICLE IDENTIFICATION

- |                  |   |
|------------------|---|
| A. Car and truck | 1 |
| B. Transit car   | 2 |

UNIFORM IDENTIFICATION

- |             |   |
|-------------|---|
| A. Patch    | 1 |
| B. Badge    | 2 |
| C. Hard hat | 3 |



## TWO COLOR SYMBOL

The symbol for the Bay Area Rapid Transit District as illustrated above is designed to be used in two colors on a white background, or in black on a white background. If used on any color other than white, then it should be used in the controlled white shape as shown on page #2 of this section.

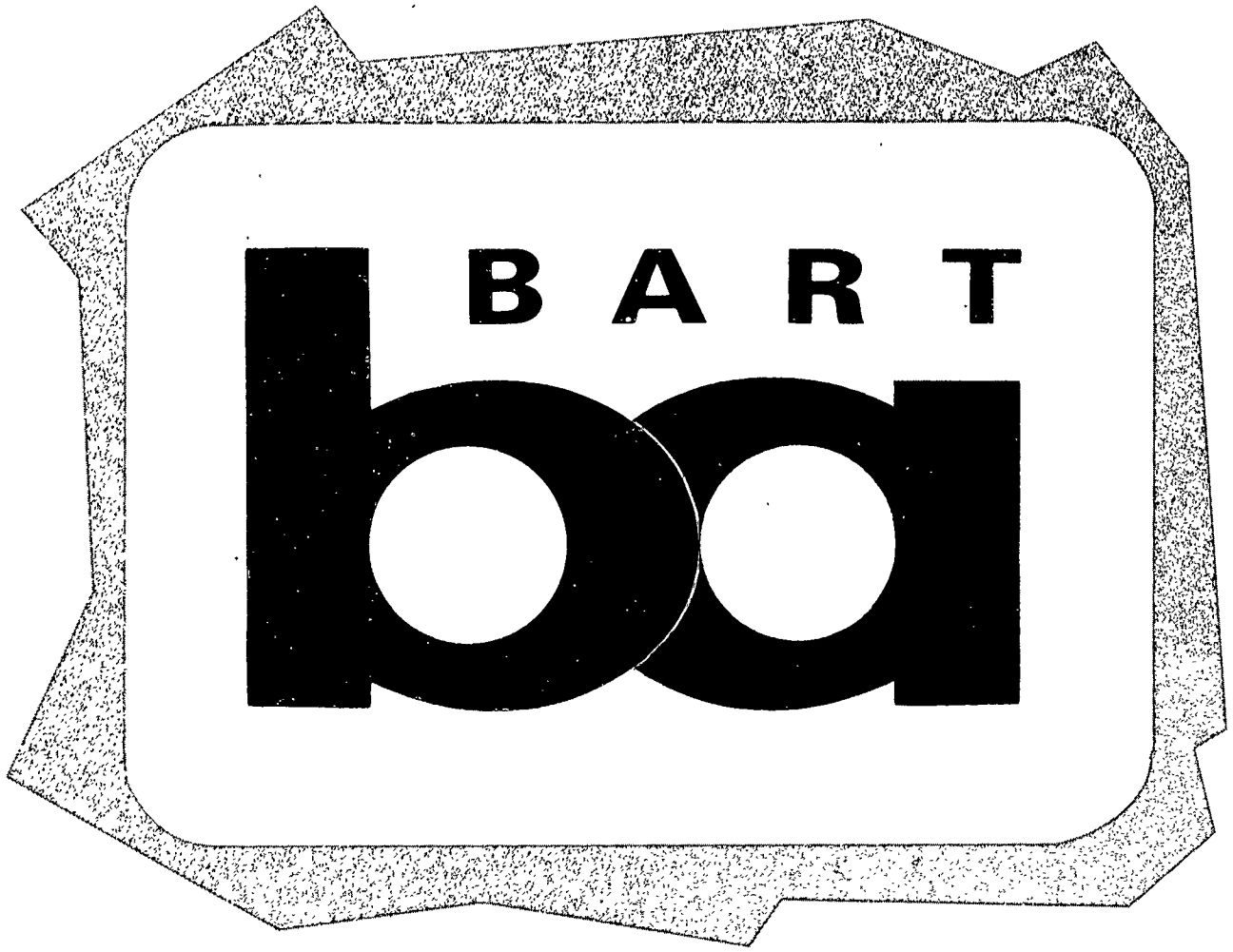
## EXCEPTION

The two color symbol may, in special cases such as the transit car or identification badges, be used on a silver background without the background shape.

**BART**  
**bo**

## TWO COLORS ON OTHER THAN WHITE

Whenever the symbol is used against any color other than white, the white background shape should be used as illustrated to separate the symbol from background color. Use of the shape is also recommended in signage or display applications where the symbol is suspended in space.



## ONE COLOR USAGE

The symbol may be reproduced in black and white on a white background in which case the "a" or lighter area is reproduced in a 55% tone of black. When used on any other than white background the white shape, as illustrated in this section of this manual on page #2, should be used.



**BART**  
**lob**

ALTERNATE ONE COLOR USAGE

The symbol may be used as shown with the "a" being reproduced in outline instead of the 55% tone of grey. This version is not preferred.

**lob** **BART**

## TOOL IDENTIFICATION

In applications where the symbol must be stamped into metal for identification purposes such as tool stamps it may be used in the form shown. This is the only way in which the symbol may be used in outline form.

BART  
bart

## INCORRECT USAGE

The examples illustrated show forms in which the symbol should not be used.

1. Two color symbol on other than white background without background shape.
2. Entire symbol reproduced in outline. The only exception is the tool stamp.
3. Entire symbol reproduced in one solid color.
4. Colors reversed.
5. Combination of outline and color.



COLOR STANDARDS





**COLOR STANDARD**

The color reference numbers below refer to the Container Corporation of America Color Harmony Manual.

Container Corporation of America  
645 North Michigan Avenue  
Chicago, Illinois 60611

**B A R T**  
**b**

All applications other than stationery and printed forms

13 1/2 pn

Stationery and printed forms

Black

In all instances the lower case "b" and "BART" will be the same color.

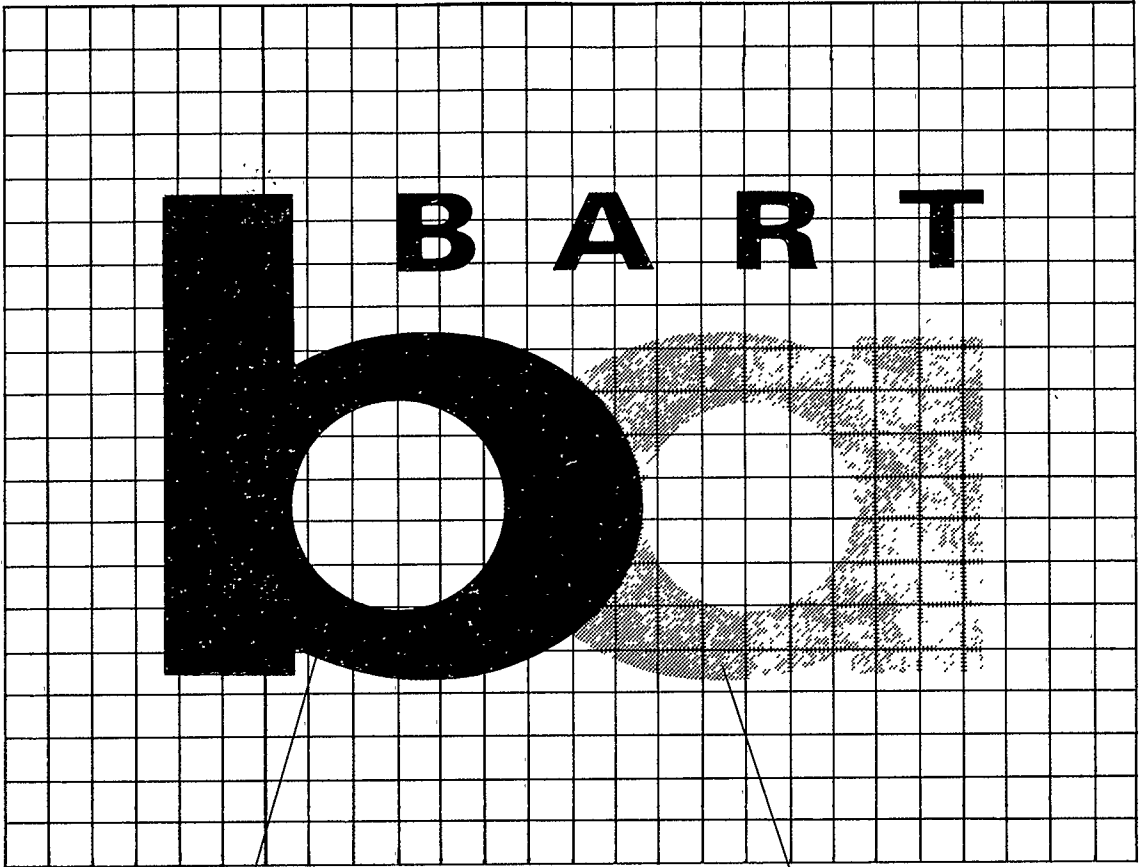
**a**

In all applications other than black and white

14 na

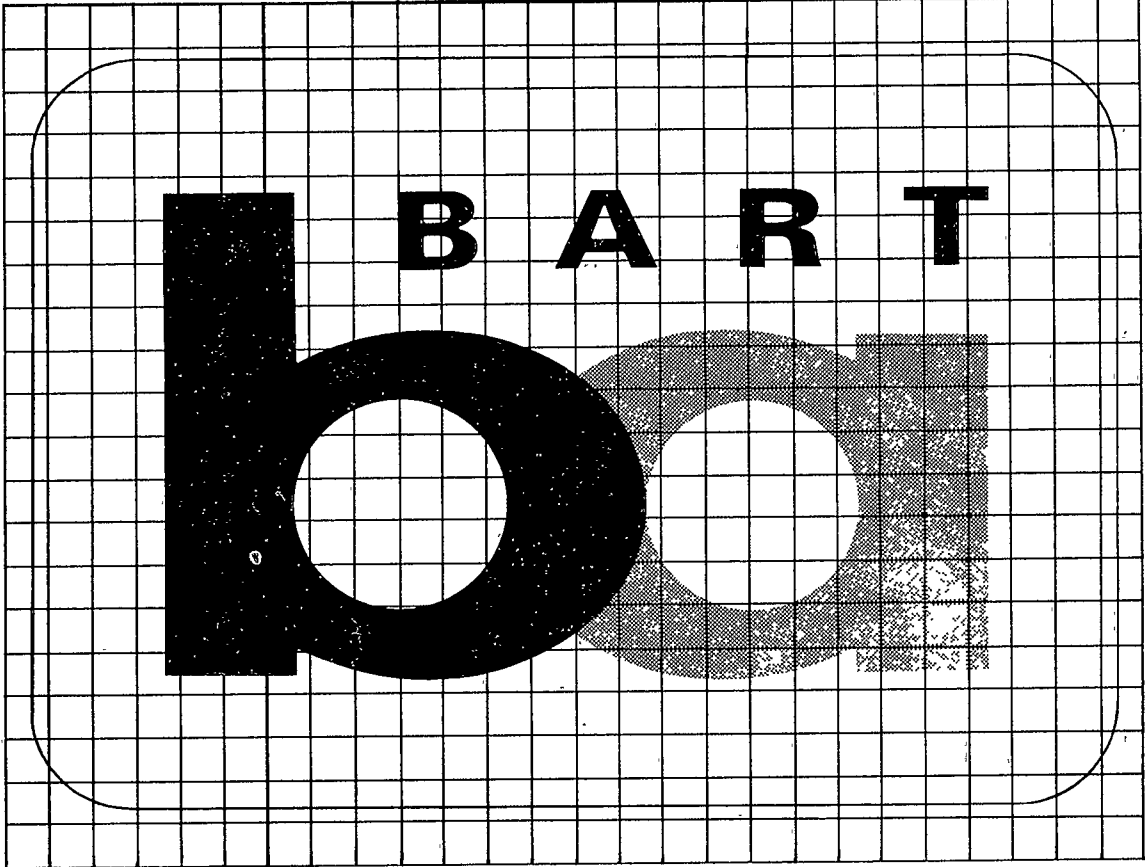
In special applications, such as building plaques, the symbol may be reproduced in bronze or aluminum. The "b" and "BART" being bright finish and the "a" in brushed finish.





SOLID BLACK

55% TONE OF BLACK



**b B A R T**

**a**



## TYPOGRAPHY

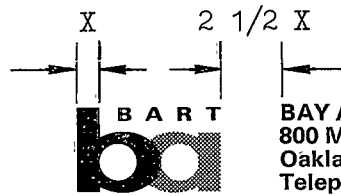
The symbol when used in conjunction with the system title and address as in stationery or any printed forms should be used as indicated on the following pages.

The system name is in UNIVÉRS #65 upper case and the address is in both upper and lower case.

## SYMBOL AND TYPE RELATIONSHIPS

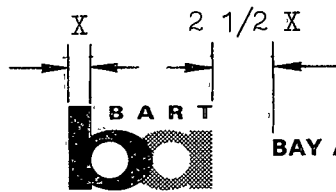
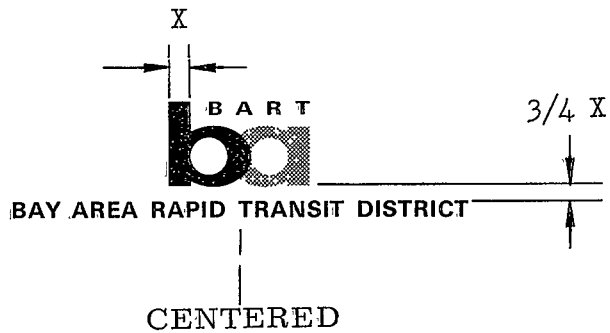
Illustrated are the forms in which the symbol should be used in conjunction with the system title and address.





**BAY AREA RAPID TRANSIT DISTRICT**  
 800 Madison Street  
 Oakland, California 94607  
 Telephone 465-4100

FOR USE WITH FULL ADDRESS



**BAY AREA RAPID TRANSIT DISTRICT** ——— **CENTERED**

FOR USE WITHOUT ADDRESS



**BAY AREA RAPID TRANSIT DISTRICT**  
800 Madison Street  
Oakland, California 94607  
Telephone 465-4100

**JAMES P. DOHERTY**  
PRESIDENT

**GEORGE M. SILLIMAN**  
VICE PRESIDENT

**B. R. STOKES**  
GENERAL MANAGER

DIRECTORS

**ALAMEDA COUNTY**

ARNOLD C ANDERSON

RICHARD O CLARK

H R LANGE

GEORGE M SILLIMAN

**CONTRA COSTA  
COUNTY**

NELLO J BIANCO

JAMES P DOHERTY

STANLEY T GRDYK

JOSEPH S SILVA

**SAN FRANCISCO  
COUNTY**

WILLIAM C. BLAKE

WILLIAM H CHESTER

GARLAND D GRAVES

WILLIAM M REEDY



BAY AREA RAPID TRANSIT DISTRICT  
800 Madison Street  
Oakland, California 94607  
Telephone 465-4100

JAMES P. DOHERTY  
PRESIDENT

June 7, 1971

GEORGE M. SILLIMAN  
VICE PRESIDENT

Mr. B. R. Stokes  
General Manager  
Bay Area Rapid Transit District  
800 Madison Street  
Oakland, California 94607

B. R. STOKES  
GENERAL MANAGER

Re: BART Symbol Manual

DIRECTORS

Dear Mr. Stokes:

ALAMEDA COUNTY

ARNOLD C. ANDERSON  
RICHARD O. CLARK  
H R. LANGE

In accordance with our contract we are pleased to transmit to you a detailed manual covering present and possible future uses of the adopted BART symbol -- the lower case ba.

GEORGE M SILLIMAN

In final design, the lower case ba with the capital letters BART in the upper right-hand corner represent a strong new symbol which will certainly become an internationally known and respected transit mark.

CONTRA COSTA  
COUNTY

NELLO J. BIANCO  
JAMES P DOHERTY  
STANLEY T GRDYK  
JOSEPH S. SILVA

We suggest that you make widespread distribution of this manual, both within your organization and to outside agencies and individuals who might have reason to apply the mark. Because of the precision of the overlapping b and a and because of the need for the mark to be placed in a rectangle in certain applications, we strongly suggest that you exercise great control over all mark applications, both hardware and non-hardware.

SAN FRANCISCO  
COUNTY

WILLIAM C BLAKE  
WILLIAM H CHESTER  
GARLAND D GRAVES  
WILLIAM M REEDY

Very truly yours,

BAY AREA RAPID TRANSIT DISTRICT

John R. Thornton  
Director of Sales

cc: R. A. Heck

/dh



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800 Madison Street  
Oakland, California 94607  
Telephone 465-4100



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Oakland, California 94607  
Telephone 465-4100

**KAY SPRINGER JAYNES**  
PUBLIC RELATIONS ASSISTANT

EMPLOYEE NAME	SOCIAL SECURITY NO.	POSITION	SHIFT
C.C.	LOC	P.P.	DATE
DATE	POSITION CODE	PAY CODE	HOURS
			AMOUNT
<b>BART</b> BAY AREA RAPID TRANSIT DISTRICT			
THE TIME CLAIMED IS CORRECT			
EMPLOYEE			
TIMEKEEPER			
SUPERVISOR			
TOTAL REGULAR JOB STRAIGHT TIME HOURS			00
FORM 0108			<b>TOTALS</b>

No. 1643

**BART** BAY AREA RAPID TRANSIT DISTRICT  
800 Madison Street  
Oakland, California 94607  
Telephone 465-4100

**MATERIAL RECEIVING REPORT**

Purchase Contract No. \_\_\_\_\_ Date \_\_\_\_\_ The date MRR prepared \_\_\_\_\_

Shipper's Name Supplier or Vendor City and State material received from \_\_\_\_\_

Delivering Carrier Transportation Co. & Truck Number F O B Point \_\_\_\_\_

Railway Line Co. & Rail Car Number Waybill No. If available

Condition of Shipment Good Order  Damaged  Over, Short or Damaged Report No. If OS&D is required

Remarks In your own words report any broken packing crates --  
If receiving machinery or equipment, note any oil leaks etc.

ITEM	QUANTITY RECEIVED	DESCRIPTION OF ITEMS	CHECKED	OVER	SHORT	DAMAGED
1	How Many	GIVE A BRIEF BUT THOROUGH DESCRIPTION OF ITEM OR ITEMS RECEIVED, NOTE THE SERIAL NUMBER, MANUFACTURER MODEL OR TYPE: OR ANY IMPORTANT MIGHT BE USED TO DESCRIBE THIS ITEM IN WITH WHAT WAS	How Many			
2						

**BART** BAY AREA RAPID TRANSIT DISTRICT  
800 Madison Street  
Oakland, California 94607  
Telephone 465-4100

ORIGINAL

MAIL INVOICES IN DUPLICATE TO ABOVE ADDRESS  
ATTN ACCOUNTING DIVISION

SHOW THIS NUMBER ON ALL INVOICES SHIPPING PAPERS AND CONTAINERS

**PURCHASE ORDER**

CONTRACT NO. OR AGREEMENT REF. DEPT. REC. NO. ACCOUNT NO. DATE NUMBER

SUPPLIER DELIVER TO ↓

00073  
BARTCO BUSINESS FORMS  
OAKLAND CALIF.

FORM NO. C 11

**BART** BAY AREA RAPID TRANSIT DISTRICT  
800 Madison Street  
Oakland, California 94607  
Telephone 465-4100

**INVOICE**

DATE \_\_\_\_\_

REFERENCE NUMBER \_\_\_\_\_

INVOICE NO. \_\_\_\_\_  
(PLEASE REFER TO INV. NO. WHEN MAKING INQUIRIES)

**BART** BAY AREA RAPID TRANSIT DISTRICT  
800 Madison Street  
Oakland, California 94607  
Telephone 465-4100  
*Return and Forwarding Postage Guaranteed*

---

**BART** BAY AREA RAPID TRANSIT DISTRICT  
800 Madison Street  
Oakland, California 94607  
Telephone 465-4100  
*Return and Forwarding Postage Guaranteed*

**BART** BAY AREA RAPID TRANSIT DISTRICT  
800 Madison Street  
Oakland, California 94607  
Telephone 465-4100

**GENERAL FUND WARRANT CHECK** N<sup>o</sup> 10704 11-24 1210

DATE CHECK NO. AMOUNT

PAY TO THE ORDER OF

★

424 CALIFORNIA STREET  
WELLS FARGO BANK  
SAN FRANCISCO CALIFORNIA

⑆ 210 0024 900 1 58 1024 ⑆

DATE	REFERENCE	AMOUNT

PLEASE DETACH THIS REMITTANCE ADVICE BEFORE DEPOSITING CHECK

THE ATTACHED CHECK IS IN PAYMENT OF THE ITEMS LISTED ABOVE



BAY AREA RAPID TRANSIT DISTRICT  
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CONTROL INFORMATION

JOB NAME		JOB NO
DATE SUBMITTED	DATE DUE	DATE RETURNED
SOURCE		CARD TYPE

BATCH CONTROL CARD

CONTROL TOTAL (COL 46-55)	BATCH NO (COL 77-79)	(COL 80)
		8

Form 6003 (Rev. 4/65)  
Formerly Form C-12



BAY AREA RAPID TRANSIT DISTRICT

AUTHORIZED DELEGATION TO APPROVE INVOICES AND CHECK REQUESTS

SECTION A - IDENTITY OF AUTHORIZED SIGNATURE

Authority is Delegated to Approve  
Invoices and Check Requests as follows:

Department	Name
Position	

SECTION B - SPECIFIC AUTHORIZATION

Type of Expenditure

NOTE: APPROVALS UNDER THIS DELEGATION MUST BE  
OTHERWISE SPECIFIED, FOR ONLY INVOICE A

SECTION C - DEPARTMENT MANAGER'S APPROVAL

Department or Function
Effective Date

Special Instructions

1. Fill out Sections A, B, C.
2. Define each authorization carefully. Must include dollar limitation. Example: "Check Request for up to \$1000."
3. Fill out one (1) form for each delegate.
4. Prepare in triplicate: Original to Controller, 1 copy for Department file.

**NEWS RELEASE**



BAY AREA RAPID TRANSIT DISTRICT  
800 Madison Street  
Oakland, California 94607  
Telephone 465-4100

G L McDONALD  
PUBLIC RELATIONS



**BLUE CROSS®  
HEALTH PLAN**



**BAY AREA RAPID TRANSIT DISTRICT**  
800 Madison Street  
Oakland, California 94607  
Telephone 465-4100

G. L. McDONALD  
PUBLIC RELATIONS



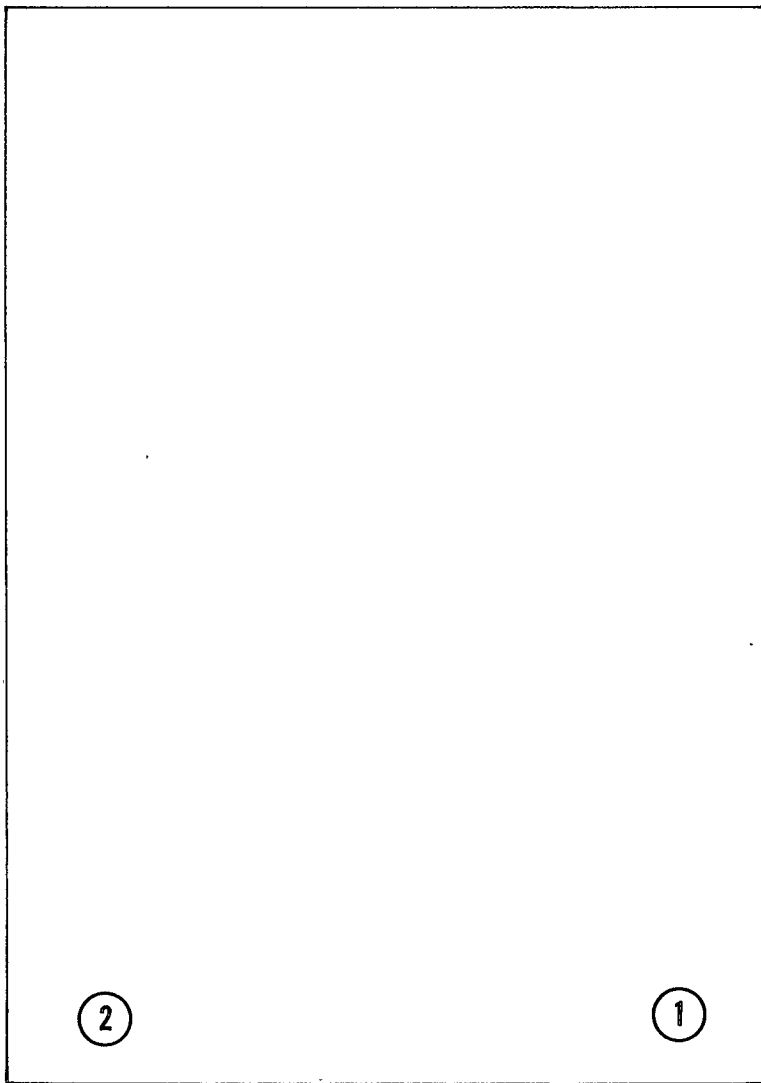


## POSTER AND MAP APPLICATION OF SYMBOL

The symbol should be used as shown on maps and posters. Exact location is not specified because of the variation of formats, but the symbol should be isolated from any other graphic elements and should stand by itself.

#1 Preferred location

#2 Alternate location



SIGNAGE



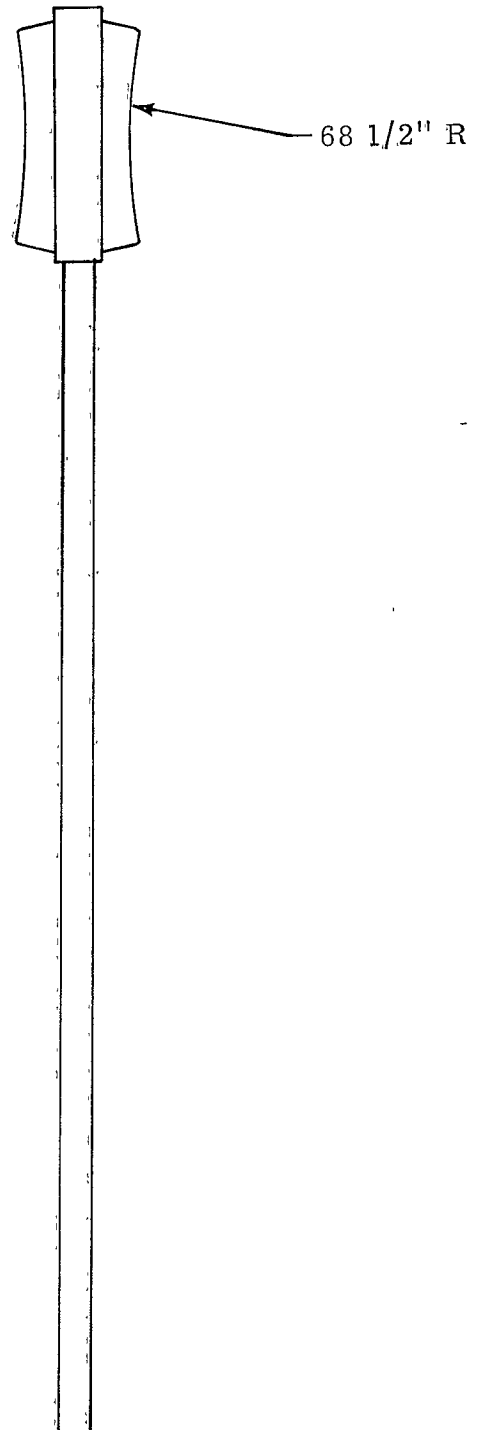
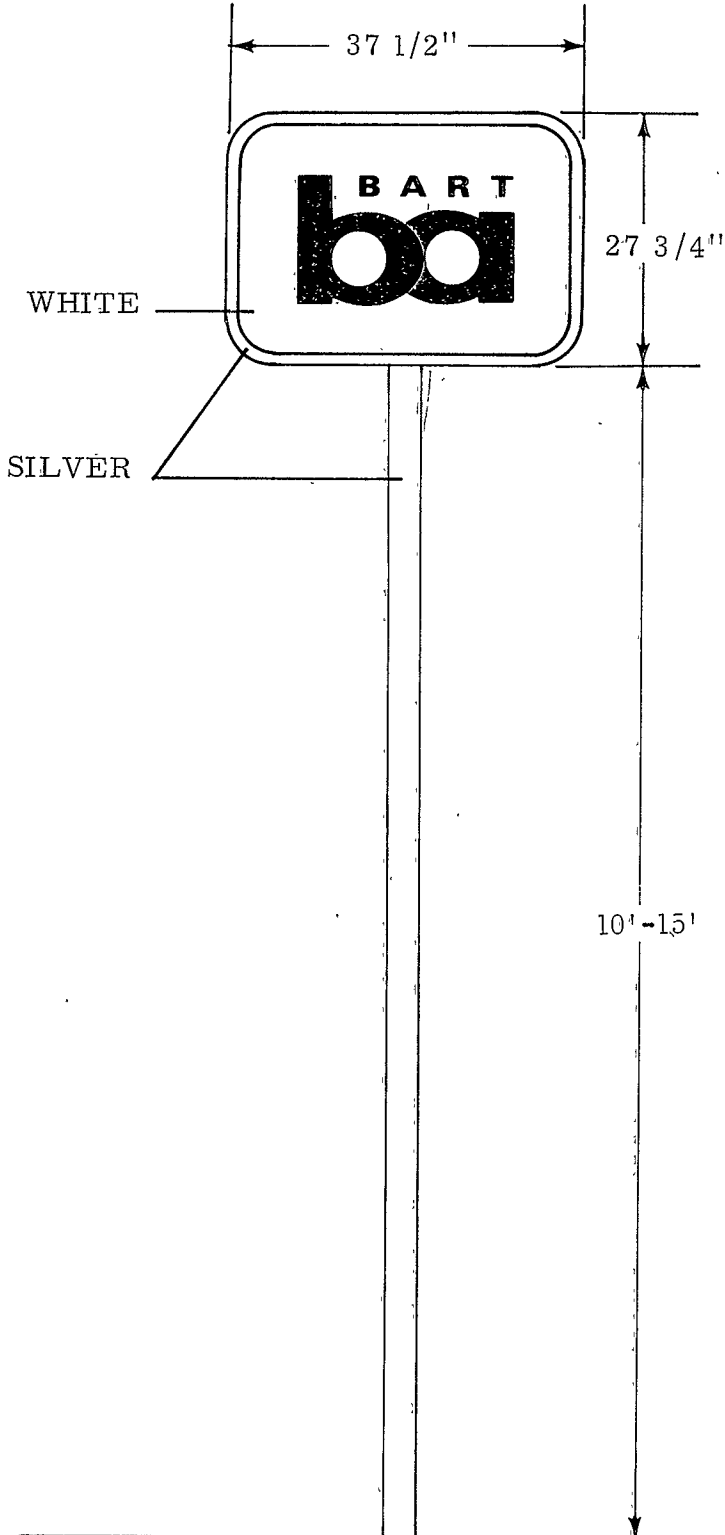
## SIGNAGE

The following pages illustrate the approved sign styles for the system symbol.

The purpose of these signs is to identify and guide the passenger to the BART station.

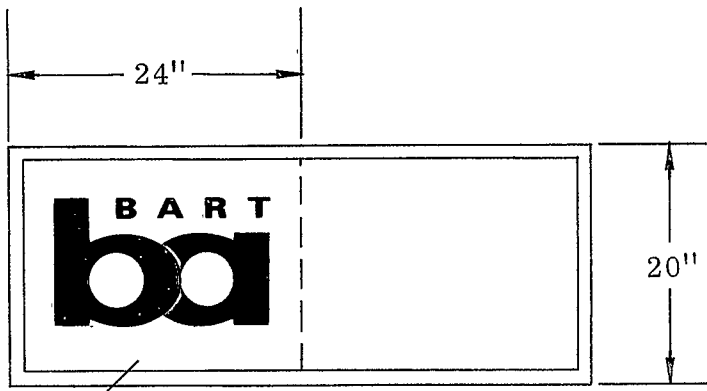
STATION IDENTIFICATION SIGN (MINOR)

The minor sign is designed to be used to define and identify station entrances to passengers in the immediate vicinity.



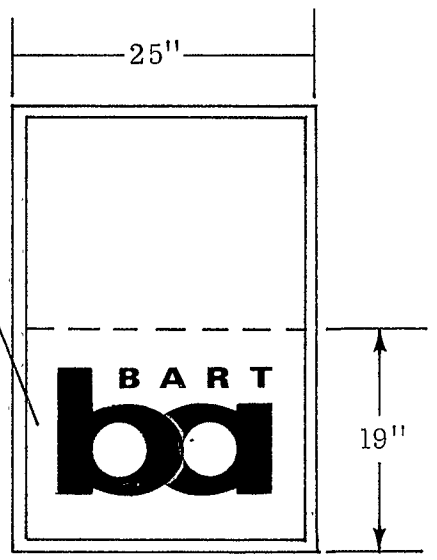
STATION IDENTIFICATION (COMBINED USE)

When the symbol is used in conjunction with another symbol or message on a sign not illustrated in this manual it should have its own field or background of white as illustrated.



HORIZONTAL FORMAT

WHITE FIELD

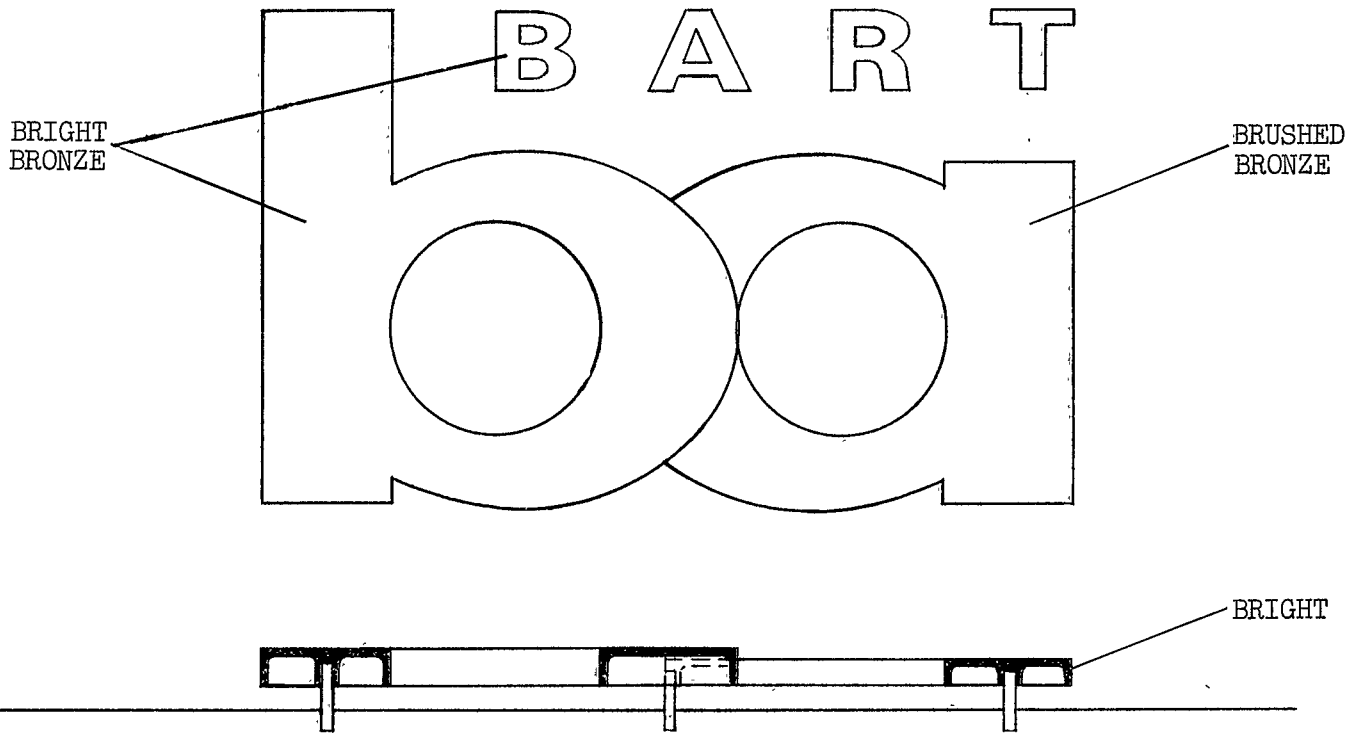


VERTICAL FORMAT

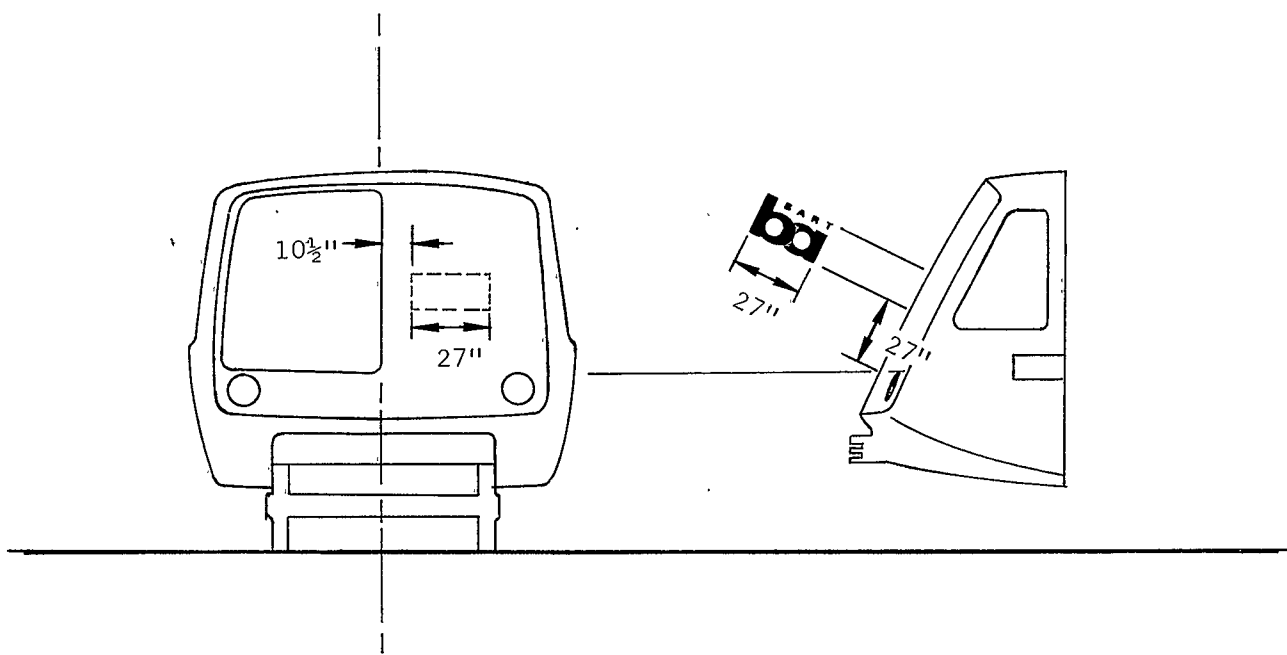


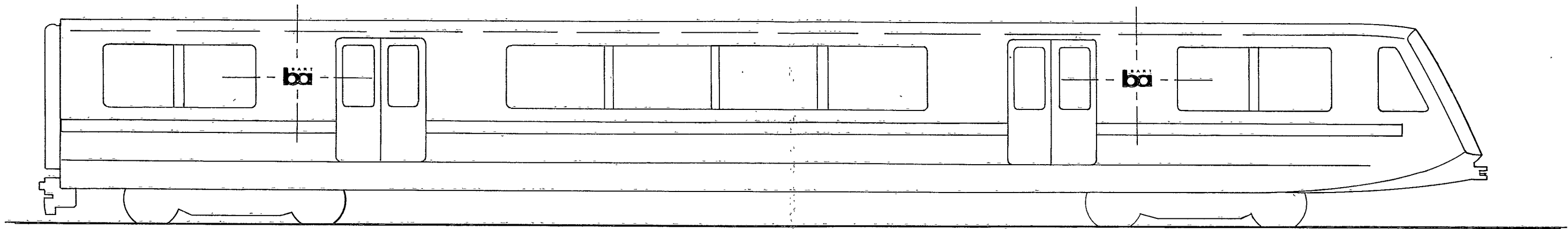
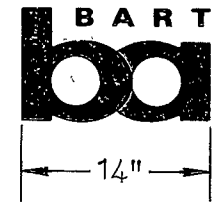
## BUILDING PLAQUE

The building identification plaque is designed to be used as required to identify the buildings other than stations related to the system.

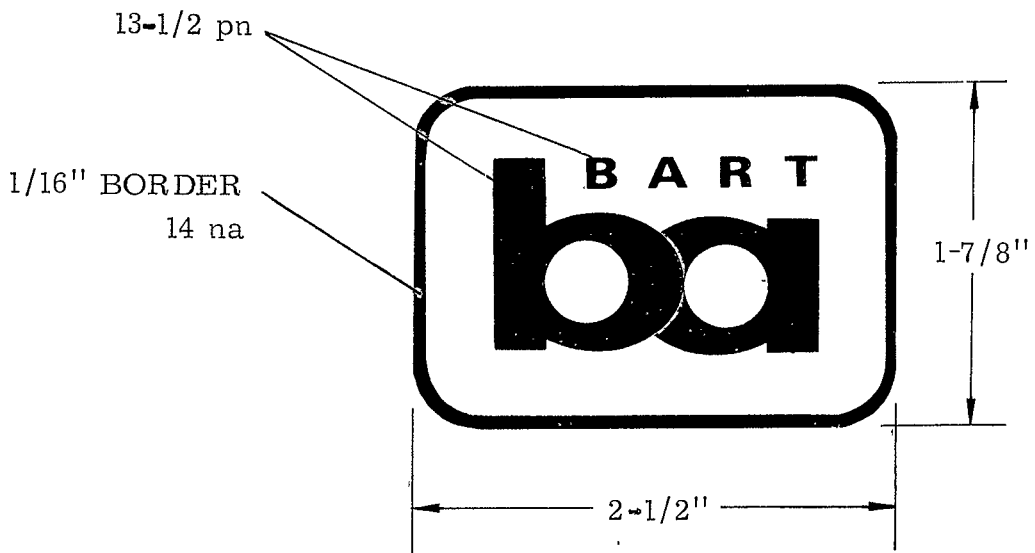


VEHICLE IDENT.









LOCATION:

1/4" ABOVE & CENTERED ON  
THE LEFT BREAST POCKET

