Office of Inspector General

Audit Report

Final Report on the Audit of the Bay Area Rapid Transit District Extension to San Francisco International Airport

Department of Transportation

Report Number: RT-2000-085
Date Issued: April 21, 2000

Memorandum

U.S. Department of Transportation
Office of the Secretary of Transportation
Office of Inspector General

Subject: INFORMATION: Final Report on the Audit of the Bay Area Rapid Transit District Extension to San Francisco International Airport
RT-2000-085

Date: April 21, 2000

Reply To Attn. Of: JA-50

From: Alexis M. Stefani
Assistant Inspector General for Auditing

To: Acting Federal Transit Administrator

This report presents the results of our audit of the Bay Area Rapid Transit District (BART) San Francisco International Airport Extension. An executive summary of the report follows this memorandum. This audit continues a series of Office of Inspector General (OIG) audits of the Department of Transportation's infrastructure mega projects. The OIG defines mega projects as those projects having potential costs of $1 billion and/or a very high level of congressional interest.

The objectives of our audit were to (1) determine current project costs and the reasonableness of cost estimates provided to the Federal Transit Administration for the full funding grant agreement, (2) determine whether BART's revised November 1999 finance plan accurately portrays costs to complete the project, (3) determine whether BART has the financial capacity to construct the project, and (4) assess whether the project will open on schedule. This report also responds to the conference report accompanying the Department of Transportation's Fiscal Year 2000 appropriations, which requires OIG to independently analyze the finance plan and provide its analysis to the House and Senate Committees on Appropriations.

We appreciate the courtesies and cooperation of DOT representatives. This report does not include any recommendations and, as a result, the Federal Transit Administration is not required to provide a response. However, if you have any questions concerning this report, please call me at (202) 366-1992 or Mark Dayton, Acting Deputy Assistant Inspector General for Competition, Rail, Transit, and Special Programs at (202) 366-2001.

Attachment

Executive Summary

Audit of the Bay Area Rapid Transit District Extension to San Francisco International Airport

Federal Transit Administration

Report No. RT-2000-085 April 21,2000

OBJECTIVES

The objectives of our audit were to (1) determine current project costs and the reasonableness of cost estimates provided to the Federal Transit Administration for the full funding grant agreement, (2) determine whether BART's revised November 1999 finance plan accurately portrays costs to complete the project, (3) determine whether BART has the financial capacity to construct the project, and (4) assess whether the project will open on schedule.

BACKGROUND

The Bay Area Rapid Transit District's (BART)[1] extension project will extend rail mass transit service to the San Francisco International Airport and provide additional service in San Mateo County. The San Francisco International Airport agreed to fund the portion of the project located on airport property.[2]

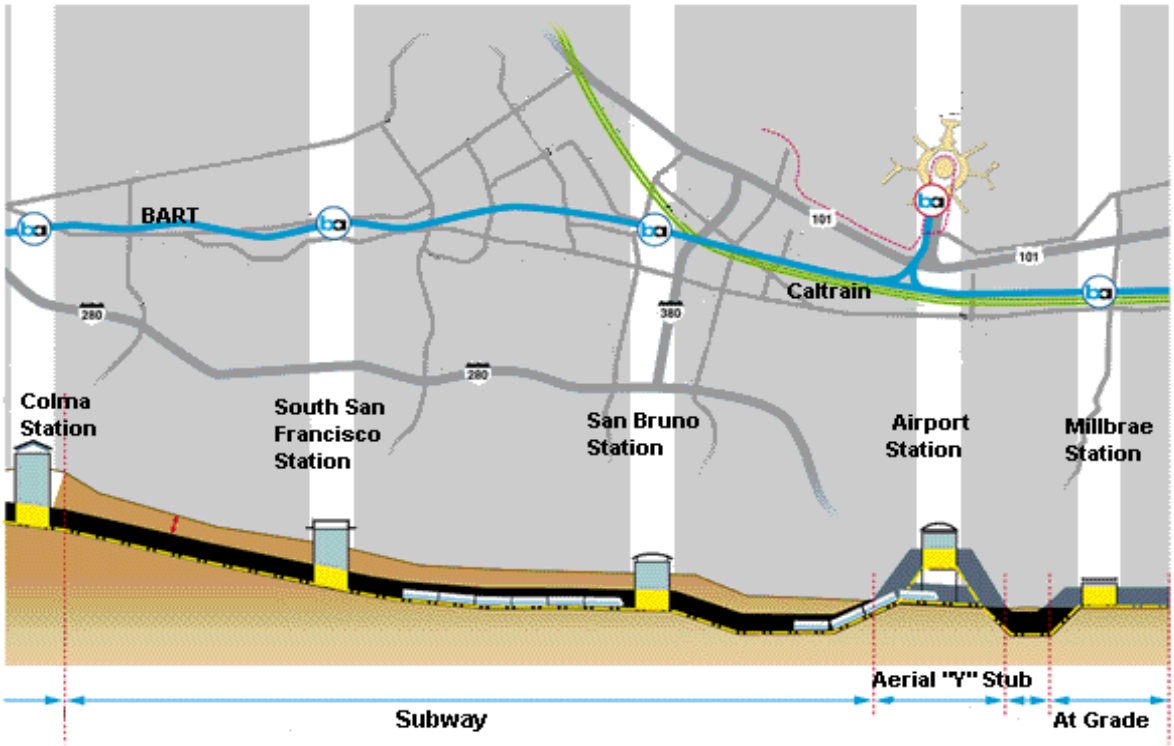
The airport extension project will add 8.7 miles of new track and four new stations to the existing BART system (see Figure 1). The new stations are located at South San Francisco, San Bruno, San Francisco International Airport, and Millbrae, all in San Mateo County. As shown in Figure 1, the mainline track extends from the existing Colma terminus to the planned South San Francisco and San Bruno stations. From the San Bruno station to the Millbrae intermodal station, the track parallels the Caltrain commuter rail line.[3] As the line approaches the airport station from San Bruno, the track diverges into a 1.2-mile "Y-stub" aerial line that extends east into the airport and west out of the airport on to Millbrae, where passengers may transfer between BART and Caltrain.

[1] BART is an independent public transit agency that provides rail transit services in the San Francisco Bay Area.

[2] The OIG reviewed the portion of the project funded by airport revenues in a separate report: Use of Airport Revenue for the Bay Area Rapid Transit District Extension to San Francisco International Airport, (February 18, 1999) Report No. AV-1999-056.

[3] Caltrain is the commuter rail system that provides passenger service between San Jose and San Francisco.

Figure 1. Planned Route for Airport Extension



Source: OIG adaptation of BART airport extension map.

In November 1999, BART provided FTA with its final version of a proposed amendment to the June 1997 grant agreement for the airport extension project. The proposed amendment (1) increases the project budget by $316 million; (2) establishes a capital reserve account capable of providing up to $27 million, if needed, in excess of the revised budget; (3) substitutes a $70 million shop and yard improvement program for new vehicles budgeted to cost $100 million; and (4) extends the project's revenue operation date by 9 months to July 1, 2002. FTA is reviewing BART's proposed amendment.

RESULTS IN BRIEF

BART's proposed November 1999 amendment to FTA's grant agreement includes an updated finance plan for the airport extension project. BART's revised finance plan estimates the airport extension project will cost $1.483 billion; $316 million more than the estimate included in FTA's June 1997 grant agreement for the project. BART attributes the increase to market conditions and additional scope requirements. While these factors contributed significantly to cost increases after the project began, BART's original budget for the 1997 grant agreement should have been $50 million higher to reflect $32 million for underestimated project costs and $18 million for critical items not included in the original cost estimates.

In our opinion, the revised finance plan accurately portrays costs to complete the project and the manner in which BART expects to finance the project. We found that the finance plan includes a reasonable, supportable budget for the airport extension project. Much of the November 1999 budget is based on actual costs for its major construction contracts, all of which have been awarded for the project. Also, work is well on its way to meeting the revised revenue operation date, which is 9 months later than originally planned, and changes to construction contracts are within budgeted contingencies. Furthermore, budgets for third party contracts and project administration may offer opportunities for reductions that would be available to offset overruns in other areas, if necessary.

In addition, BART has the financial capacity to construct the airport extension project. Specifically, BART has (1) obtained commitments for all the Federal, state, and local funds needed to complete the project and (2) secured financing to fund shortfalls between the project's cash flow and the receipt of Federal funds. BART will use state and local commitments to fund the entire $316 million increase in the project budget, leaving the Federal commitment unchanged at $750 million.

BART has proposed extending the opening of the airport extension project by 9 months to July 1, 2002 because congressional concerns delayed FTA's grant agreement which, in turn, delayed BART contracts. Also, the project's contract for line, trackwork, and systems is 43 days behind schedule and additional delays, though minimal, could occur if the schedule cannot be accelerated.

Table 1 below summarizes the cost, schedule, and funding for the airport extension project.

Table 1. Project Statistics[1]

	BART Estimate for Grant Agreement	Current BART Project Estimate
Miles of Track	8.7 miles	8.7 miles
Estimated Project Costs	**$1.167 billion**	**$1.483 billion**
Scheduled Completion Date	**September 2001**	**July 2002**
Cumulative Expenditures[2]		$555 million
Funding Sources		
Federal	$750 million	$750 million
State Agencies	108 million	152 million
Local	309 million	581 million
Total Project Funding	**$1.167 billion**	**$1.483 billion**

[1]Dollar amounts rounded to the nearest million and expenditures are for BART facilities only through December 1999.

[2]Cumulative expenditures provided by BART.

BART requested that FTA amend its 1997 full funding grant agreement to include the renovation and expansion of its maintenance shops and vehicle repair facilities in lieu of purchasing 28 vehicles originally estimated to cost $100 million. According to BART, this change will reduce out-of-service vehicles, allowing BART to provide service on the airport extension with the existing vehicle fleet. BART estimates the project will cost $70 million, a $30 million reduction that will offset cost increases in other areas of the BART budget.

MANAGEMENT POSITION AND OIG COMMENTS

We discussed the results of our observations with FTA and BART officials and, where appropriate, included their comments in this report.

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CHAPTER 1. INTRODUCTION

Background

The Bay Area Rapid Transit District's (BART) San Francisco International Airport Extension project is designed to extend rail transit service to the expanding San Francisco International Airport and provide additional service in San Mateo County. Extending BART to the San Francisco International Airport has been the subject of numerous studies that examined the need for a transit project that would reduce highway congestion, improve air quality, and provide direct rail transit service to the San Francisco Airport.[1] Beginning in March 1992, the proposed airport extension plan underwent several modifications before settling on the current design in November 1995.

Under the current design, the extension project adds 8.7 miles of new track and four new stations in San Mateo County to the existing BART system. The new stations are located at South San Francisco, San Bruno, the San Francisco International Airport, and Millbrae. The mainline track extends from the existing Colma terminus to the planned South San Francisco and San Bruno stations. From the San Bruno station to the Millbrae intermodal station, the track parallels the Caltrain commuter rail line. As the line approaches the airport station from San Bruno, the track diverges into a 1.2-mile "Y-stub" aerial line that extends east into the airport and west out of the airport on to Millbrae, where passengers may transfer between BART and Caltrain.

In May 1996, BART submitted its application for a full funding grant agreement to fund the San Francisco Airport Extension with the Federal Transit Administration (FTA). The application requested New Starts funds totaling $694.5 million. Previously, FTA provided $84 million

The full funding grant agreement established the Federal Government's funding commitment to BART contingent on future budget authority. It is an agreement between the Federal Transit Administration and BART that includes an estimate of the project cost and construction schedule, as well as all funding sources committed to the project.

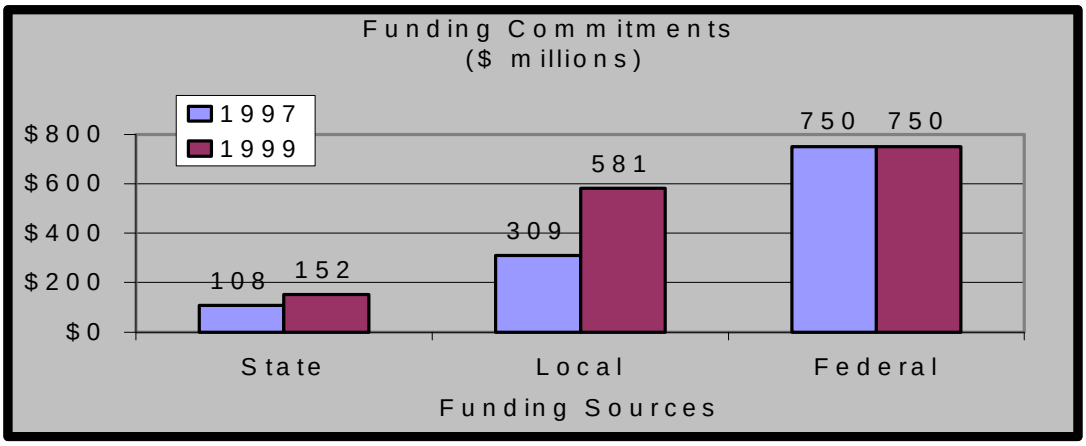
[1] In October 1972, BART published the San Francisco International Airport Access Project, which examined various BART alignments to the airport. In the mid-1980s, the Metropolitan Transportation Commission conducted a peninsula mass transit study that compared alignments and travel modes from San Francisco to San Jose.

in New Starts funds for environmental impact studies and preliminary engineering estimates.[2] In June 1997, FTA awarded a grant agreement for the extension project after BART satisfied congressional concerns about project costs, Federal funds to support the project, the use of airport revenue, and environmental requirements.

FTA's grant committed New Starts funds totaling $666 million, raising the total Federal commitment to $750 million of the project's estimated costs of $1.167 billion. However, FTA's grant agreement stipulated that the $666 million was contingent on future budget authority. For the project's remaining $417 million, BART obtained commitments totaling $108 million from state sources and $309 million from local sources.

Project costs have increased since FTA awarded its grant agreement. In November 1999, BART provided FTA with a proposed amendment to the grant, including a revised finance plan with an estimated project cost of $1.483 billion. BART obtained commitments to fund the $316 million increase from state and local funds. The project now includes Federal funds totaling $750 million, state funds totaling $152 million, and local funds totaling $581 million. Originally, FTA's commitment was 64 percent of the estimated project costs. Today, FTA's share is about 51 percent of the estimated project costs. The figure below compares funding commitments.

Figure 2. Funding Commitments: 1997 vs. 1999



BART has an agreement with the San Francisco International Airport concerning the portion of the project that is to be constructed and funded by the airport.

[2] Section 3032 of the Intermodal Surface Transportation Equity Act (ISTEA) directed FTA to approve the construction of the locally preferred alternative for the BART San Francisco International Airport Extension. This section also mandated that FTA award a grant to BART to conduct preliminary engineering and to complete an environmental impact statement on the locally preferred alternative. It also required that FTA award a multi-year grant agreement to BART for the construction of the airport extension.

Under this agreement, the airport will provide up to $200 million from airport revenues to construct on-airport facilities and operating systems. Of the $200 million, the airport agreed to contribute $113 million for fixed facilities, such as guideways to support tracks from BART to the airport and structures connecting the airport station to the international terminal, and $87 million for BART operating systems, including automatic train control, traction power, and communications.

Objectives, Scope, and Methodology

The objectives of our audit were to (1) determine current project costs and the reasonableness of cost estimates provided to the Federal Transit Administration for the full funding grant agreement, (2) determine whether BART's revised November 1999 finance plan accurately portrays costs to complete the project, (3) determine whether BART has the financial capacity to construct the project, and (4) assess whether the project will open on schedule.

We conducted our audit between November 1998 and January 2000. During the latter part of our audit, we revised our objectives to consider a conference report accompanying Fiscal Year 2000 appropriations for the airport extension project. The conference report states:

> …none of the funds provided in this Act for the San Francisco BART extension to the airport project shall be available until (1) the project sponsor produces a finance plan that clearly delineates the full costs to complete the project, as identified by the project management oversight contractor, and the manner in which the sponsor expects to pay those costs; (2) the FTA conducts a final review and accepts the plan and certifies to the House and Senate Committees on Appropriations that the fiscal management of the project meets or exceeds accepted U.S. Government standards; (3) the General Accounting Office and the Department of Transportation's Inspector General conduct an independent analysis of the plans and provide such analysis to the House and Senate Committees on Appropriations within 60 days of FTA accepting the plan; and (4) the House and Senate Committees on Appropriations have concluded their review of the analysis within 60 days of the transmittal of the analysis to the Committees.

We analyzed financial records; project schedules; project management oversight consulting reports; environmental impact statements; Federal, state, and local funding agreements; and other supporting documents. We evaluated the reliability and reasonableness of supporting data through detailed analysis of the

documents and discussions with project management staff and oversight consultants as well as Federal, state, and local officials. We interviewed BART technical and professional staff; FTA officials; FTA construction and management oversight consultants; and officials from state and local funding sources, such as the California Transportation Commission (CTC), the Metropolitan Transportation Commission (MTC), and the San Mateo County Transit District (SamTrans).[3]

We performed our audit in accordance with the Government Auditing Standards of the Comptroller General of the United States.

Prior Audit Coverage

In February 1999, the Office of Inspector General (OIG) reported on the use of airport revenue for the BART extension to the San Francisco International Airport.[4] At that time, we found the August 1998 proposed cost allocation plan for project operating systems did not reasonably prorate costs to the airport. The allocation plan was based on outdated engineering estimates rather than actual contract bid amounts. In addition, the proposed cost allocation plan for operating systems included ineligible costs totaling $2.6 million. We also found the Federal Aviation Administration (FAA) needed to actively monitor the use of airport revenue for the project. Consequently, we recommended that FAA:

1. Review the cost allocation for project operating systems within 30 days of the report to ensure costs are reasonably prorated to the airport, and advise the airport not to approve the plan unless it used contract bid amounts, not engineering estimates, to allocate costs.

2. Advise BART and the airport that costs to construct bulk supply power substations off airport property, to provide power feeds to these substations, and to procure spare parts not used during systems integration and testing are not eligible uses of airport revenue.

3. Establish a system to review project expenditures on a periodic basis to ensure airport revenue is used only for eligible costs.

4. Direct the airport to require its independent auditor to review and provide an

[3] CTC sets priorities and allocates funds for highway and transit projects under the State Transportation Improvement Program; MTC is the regional planning agency for the San Francisco Bay Area; and SamTrans is the public transit district for San Mateo County.

[4] Office of Inspector General Report No. AV-1999-056, Use of Airport Revenue for the Bay Area Rapid Transit District Extension to San Francisco International Airport, (February 18, 1999).

opinion on use of airport revenue in the annual audit, commencing with the airport Fiscal Year ended June 30, 1998.

In response to our recommendations, FAA advised the airport not to approve the proposed operating system cost allocation plan. BART subsequently submitted a revised cost allocation plan to FAA. Also, FAA is monitoring the airport's Operating and Financial Summary and the Financial Governmental Payment Report to determine whether the airport is using airport revenue in accordance with the revenue use policy. Furthermore, FAA plans to request that the airport be audited as a major program in its single audit and to withhold final payment subject to final audit verification. FAA is working with BART to determine the eligibility of costs to construct bulk supply power substations on nonairport property, to provide power feeds to these substations, and to procure spare parts not used during systems integration and testing.

CHAPTER 2. REVISED FINANCE PLAN ACCURATELY REPRESENTS CHANGES IN COST ESTIMATES

In November 1999, BART provided FTA with an updated finance plan, including a revised project budget, for the San Francisco International Airport Extension Project. The revised budget estimates the extension will cost $1.483 billion: $316 million more than the estimates included in FTA's June 1997 grant agreement for the extension (see Table 2).

Table 2. Comparison of FTA Full Funding Grant Agreement to Current BART Cost Estimates ($ millions)

Line Item	Estimated Costs		
	1997	1999	Difference
BART Construction Contracts			
1. Site Preparation	15.0	12.0	(3.0)
2. Line, Trackwork, and Systems	410.0	558.3	148.3
3. Millbrae Station	61.0	76.3	15.3
4. San Bruno Station	35.0	48.8	13.8
5. South San Francisco Station	33.0	51.5	18.5
Shop Improvements	0	70.0	70.0
Systems Procurement	0	24.8	24.8
Vehicle Acquisition	100.0	0.0	(100.0)
Third Party Contracts	116.0	179.0	63.0
Insurance	25.0	27.0	2.0
Force Account	3.0	10.0	7.0
Right-of-way	113.0	187.4	74.4
Finance	24.0	60.5	36.5
Project Administration	39.0	54.6	15.6
Project Contingency	80.0	Distributed[1]	(80.0)
Airport Facilities Construction	113.0	123.0	10.0
TOTAL	**$1,167.0**	**$1,483.2**	**$316.2**

[1] FTA's 1997 grant agreement included $80 million for contingencies to cover unanticipated cost increases. In 1998, BART applied the entire $80 million to the contract for line, trackwork, and systems and the contract for the Millbrae station. BART's November 1999 budget provided an additional $78.1 million in contingencies for eight line items and these amounts are included in the 1999 cost estimates for those eight line items.

Factors Contributing to Changes in Costs

In December 1999, FTA's project management oversight consultant (PMOC) for BART capital projects recommended that FTA accept BART's revised budget for the extension project. We analyzed BART's revised finance plan, the PMOC's assessment of the budget, and supporting documentation for FTA's 1997 grant to determine why costs estimates changed. While difficult to determine the precise reason for some of the changes, we generally attributed changes to (1) unanticipated market conditions; (2) changes to scope, including underestimated and unrecognized costs; and (3) additional contingencies (see Table 3).

Table 3. Factors Contributing to Changes in Cost Estimates

Changes to Cost Estimates ($ millions)		Contributing Factors		
Line Item	**Total**	**Market**	**Scope**	**Contingencies**
BART Construction Contracts				
1. Site Preparation	(3.0)		(3.0)	
2. Line, Trackwork, and Systems	148.3	87.9	32.1	28.3
3. Millbrae Station	15.3	9.5		5.8
4. San Bruno Station	13.8	10.5		3.3
5. South San Francisco Station	18.5	17.9	(2.9)	3.5
Shop Improvements	70.0		70.0	
Systems Procurement	24.8		23.0	1.8
Vehicle Acquisition	(100.0)		(100.0)	
Third Party Contracts	63.0		63.0	
Insurance	2.0		2.0	
Force Account	7.0		7.0	
Rights-of-Way	74.4	15.5	50.0	8.9
Finance	36.5		18.6	17.9
Project Administration	15.6		15.6	
Subtotal	**$386.2**	**$141.3**	**$175.4**	**$69.5**
Less Contingencies	**(80.0)**	**(80.0)**[1]		
Airport Facilities Construction	10.0		**1.4**	8.6
Total	**$316.2**	**$61.3**	**$176.8**	**$78.1**[2]

[1] Market conditions and scope changes increased the cost of the line, trackwork, and systems contract and the Millbrae station contract by $116 million and $9.5 million, respectively. BART applied the entire $80 million contingency established in the June 1997 grant agreement to these contracts. For our analysis, we show BART used the $80 million contingency to offset increases caused by market conditions.

[2] BART's November 1999 budget includes $78.1 million for contingencies: $69.5 million for work controlled by BART and $8.6 million for work controlled by the San Francisco International Airport.

Market Conditions Increased Costs

Market conditions in the Bay Area resulted in construction bids and real estate costs that were $141 million higher than those anticipated when FTA awarded its grant agreement in June 1997 for the airport extension. The economic impact of an unanticipated increase in metropolitan area construction work was particularly evident in BART's contract for line, trackwork, and systems and in BART's three contracts for stations and parking. Originally expected to cost $539 million, BART awarded the four contracts for $690 million, a $151 million increase over the engineering estimates used to develop costs included in the grant agreement. According to FTA's PMOC, nearly $126 million of this increase was due to market conditions. Also, the PMOC determined that property acquisition costs increased more than $15 million because of growth in property values.

According to BART officials, private sector investment drove up bids for new construction in California, particularly in the Bay Area, along with public sector demands to comply with seismic retrofit standards, which competed for scarce contractor resources. During the mid-1990s, California experienced an increase in construction activity to address structural integrity concerns following two major earthquakes, Loma Prieta in 1989 and Northridge in 1994.[5] These events prompted an extensive program of emergency reconstruction followed by a comprehensive seismic retrofit of major transportation and public facilities. As a result, contractor bids on public works projects - from 1996 through 1998 - were much higher than engineering estimates.

In April 1997, BART submitted its 1997 Capital and Operating Finance Plan, including cost estimates for the grant agreement; in June 1997, FTA executed the grant agreement; and in November 1997, BART received bids for the line, trackwork, and systems contract. We used the California Department of Transportation (Caltrans) Highway Construction Index, the Federal Highway Administration (FHWA) Composite Index, and the Engineering News Record (ENR) Building Construction Index to evaluate California construction market conditions for this 8-month period.[6] According to the ENR and FHWA indices, California construction costs increased by 3.3 percent and 6 percent, respectively. However, the Caltrans index registered a 43 percent increase. We chose the Caltrans index as a proxy for construction market conditions in California because this index breaks out construction components in greater detail than the FHWA and ENR indices.

[5] Office of Inspector General Report No. R9-FH-7-002 California Bridge Seismic Retrofit Program, Federal Highway Administration Region 9, (November 7, 1996).

[6] The Caltrans and FHWA indices are derived from labor and material costs needed to build a section of highway. The ENR index represents general construction costs for a wide range of projects including public facilities like the BART station buildings.

The Caltrans index suggests that demand conditions resulting from heightened construction activity, rather than material shortages, were responsible for cost increases. The index includes seven major items (excavation and six materials such as cement and concrete) used in transit and highway projects. Although five of the seven items increased during the 8-month period, only excavation costs rose substantially--by 131 percent. Based on our analysis, we agree that market conditions contributed to higher-than-forecasted construction costs for the extension project.

FTA's PMOC reviewed projected property acquisition costs for the extension project. The review disclosed that projected acquisition costs increased more than $15 million as a result of growth in property values in the Bay Area real estate market.

BART Underestimated Some Costs in its Original Budget

While agreeing that market conditions contributed to higher construction costs, we also found that BART underestimated project costs by at least $32 million in its final estimate for the 1997 grant agreement. Our analysis disclosed that, based on available information, BART should have increased its estimate by $13 million for right-of-way acquisitions, $11.4 million for construction management oversight services, $2 million for force account work, $4.2 million for computer systems modifications, and $1.4 million for automatic fare collection systems.

Right-of-way Acquisitions. Right-of-way costs include property acquisitions, relocation and appraisal services, lease expenses for the project administration building and field office, utilities, and removal of hazardous materials. BART's May 1996 application for the grant agreement included $126 million for right-of-way, which was consistent with a July 1996 presentation that BART made to its Board of Directors. However, BART's final estimate for the approved grant agreement totaled $113 million, a $13 million decrease.

In our opinion, the $13 million adjustment was not consistent with information BART developed. For example, in a November 1996 executive decision memorandum, BART estimated that utility work with Pacific Gas & Electric (PG&E) would total $17 million. However, BART included only $5 million in its final estimate for utility work, leading us to conclude that BART underestimated the cost of utility work by $12 million. BART's revised November 1999 estimate includes $21 million for PG&E services and other utility work, such as relocating water mains and installing fiber optics.

Construction Management Oversight Services. BART receives consulting services under contracts with Daniel, Mann, Johnson, and Mendenhall for line, trackwork, and systems; O'Brien Krietzberg Associates for stations and parking

facilities; and Morrison Knudsen/Centennial for BART airport facilities contracts. In 1996, BART requested proposals for construction management oversight services. At that time, BART estimated the services would cost between $46 million and $56 million. However, the 1997 grant agreement included only $33.5 million for consulting services. Thereafter, the negotiated contracts for these services totaled $44.9 million, an $11.4 million increase over the grant agreement.

Force Account. BART established a force account to cover costs for training, safety certification, integrated systems testing, and verification and acceptance of results by BART staff. In August 1996, BART's force account work plan estimated this work would total $5 million. BART's final estimate for the 1997 grant agreement included $3 million for force account work, leading us to conclude that BART underestimated force account costs by at least $2 million. BART's November 1999 estimate includes $10 million for force account work.

Computer System Modifications. The 1997 grant agreement did not include the full cost of modifying the existing computer systems to ensure compatibility with the new airport extension. BART's estimate for this work ($1.4 million) did not include 10 additional computer systems projects that were needed to ensure systems compatibility.[7] BART's November 1999 estimate includes $5.6 million for engineering needed to ensure compatible systems. Therefore, BART underestimated the costs of computer systems modifications by $4.2 million.

Automatic Fare Collection System. BART's November 1999 estimates include $10 million for an automatic fare collection system, even though the 1997 grant agreement included $8.6 million for fare collection in the scope of the station and parking facilities contracts. BART agrees it did not fully develop estimated costs of this item for the grant agreement and underestimated the cost of this item by at least $1.4 million.

Estimates for Grant Agreement Did Not Include Some Items

In addition to underestimating some project costs, BART did not include critical items (bulk supply power substations and train identification systems) valued at $17.9 million in its final estimates for the grant agreement. Currently, these items are included in BART's revised November 1999 budget for the extension project.

Bulk Supply Power Substations. In a November 1996 executive decision memorandum, BART officials recognized they needed to construct bulk supply power substations at the proposed Millbrae and San Bruno stations. However,

[7] This included the systems used for data acquisition and control of the subway's operating systems, such as heat, air conditioning and ventilation; train information monitors on the platforms; fire or gas alarms; lighting; closed circuit TV cameras; and train communications.

these substations were not included in the 1997 grant agreement. BART officials gave two explanations for the omission. First, BART prepared the memorandum after submitting its 1996 grant application. Any revisions to the budget included in the grant application would have restarted the review cycle and resulted in additional delays and higher costs. Second, BART officials considered the substations as an operating cost at the time of the grant agreement, rather than a part of the extension's capital project budget.

BART's November 1996 memorandum clearly shows it planned to construct the substations for the Millbrae and San Bruno stations. In our opinion, BART should have incorporated the cost of these substations in its revised April 1997 project budget, before signing the June 1997 grant agreement. BART later added $12.5 million to its capital budget and to the line, trackwork, and systems contract for the two power substations. BART used its own funds to pay for the increase.

Train Identification System. BART's November 1999 estimate added $5.4 million for a train identification system, which entails modifying hardware and software for the entire BART system to ensure compatibility with the airport extension. BART's existing system uses a two-digit code to identify train destinations. The new extension requires a three-digit identification code. Therefore, the modification--which results from adding four stations to the existing BART system--should have been included in BART's final estimate for the grant agreement.

Shop and Yard Improvements Substituted for More Expensive Vehicle Acquisition Program

The full funding grant agreement includes $100 million to purchase 28 new rail transit cars. However, BART has requested that the grant be amended to renovate and expand its maintenance shops and vehicle repair facilities in lieu of purchasing the vehicles. According to BART, this change will reduce out-of-service vehicles, allowing BART to provide service on the extension with the existing vehicle fleet. BART estimates the project will cost $70 million, a $30 million reduction that will offset cost increases in other areas of the BART budget.

In 1996, we raised concerns about inefficient operating, repair, maintenance, overhaul, improvement, and retirement and replacement practices resulting from our audits of eight rail transit agencies.[8] In 1997, BART began an extensive analysis of shop productivity and yard configurations. In February 1999, this analysis resulted in proposed changes to BART's Fleet Management Plan. FTA's PMOC reviewed the analyses and supporting documentation for the plan,

[8] Office of Inspector General Report No. R4-FT-6-027, Useful Life of Rail Cars Summary Report Federal Transit Administration, (March 19, 1996).

observed the configuration and operation of yards and shops, and met with BART staff and consultants to discuss the results of its review and observations. BART subsequently adjusted the queuing model used to forecast vehicle maintenance to account for additional factors that are likely to affect fleet availability, such as parts and labor availability.

BART's shop renovation and expansion plan is part of an ongoing capital improvement program for the entire BART system, which includes renovating older cars; renovating and replacing control and communications systems; and adding advanced automatic train controls. Successful implementation of the entire plan may enable BART to reduce the number of cars out of service, provide faster train services, and increase the life cycle of its existing fleet.

The PMOC recommended that FTA accept BART's August 20, 1999 revision to the Fleet Management Plan because the proposed shop and yard improvements coupled with other service modifications are likely to meet vehicle requirements for the airport extension and obviate the need to purchase additional vehicles. Based on the PMOC's recommendation, we anticipate that FTA will approve the scope change--shop improvements instead of vehicle acquisitions--included in BART's November 1999 proposed amendment to the extension project's grant agreement.

CHAPTER 3. BART HAS A REASONABLE, SUPPORTABLE PROJECT BUDGET

BART has a reasonable, supportable budget for the airport extension project. We found (1) much of the November 1999 budget is based on actual costs for its major construction contracts, all of which have been awarded for the project; (2) work is well on its way to meeting the revised revenue operation date of July 1, 2002; and (3) changes to construction contracts are within estimated budget contingencies. Also, revised budgets for third party contracts and project administration may offer opportunities for reductions that could be used to offset overruns in other areas of BART's budget, if necessary. Furthermore, the budget includes adequate contingencies for finance costs.

Construction Contracts. Construction represents 65 percent ($965 million) of the revised November 1999 budget for the extension project. BART and the San Francisco International Airport have awarded all major construction contracts for the project, and work is progressing towards a revenue operation date of July 1, 2002. Through the end of January 2000, BART's contract for site preparation was complete; the contract for line, trackwork, and systems was nearly one-half complete; and contracts for the three stations (Millbrae, San Bruno, and South San Francisco) under BART control were at various stages of completion (see Table 4).

Table 4. Status of BART Construction Contracts

Contract	Percentage of Completion
Site Preparation	100.0
Line, Trackwork, and Systems	46.4
Millbrae Station	50.3
San Bruno Station	18.7
South San Francisco Station	4.0

Source: BART

Also, construction at the San Francisco International Airport was progressing as scheduled. Through the end of January 2000, construction of the cross-over at U.S. Highway 101 was about 90 percent complete, construction of the BART connection to the Air/Tran guideway was about 70 percent complete, and construction of on-airport facilities was 68 percent complete.

The work for the line, trackwork, and systems as well as the Millbrae, San Bruno and South San Francisco stations is being done under "design-build" contracts. Design-build procurement refers to a process whereby a public agency awards a single master contract to a private firm for both final design and construction of a

project. According to BART's project management staff, design-build procurements reduce the likelihood of change orders that might otherwise significantly increase project costs.

Change orders are within budgeted contingencies for line, trackwork, and systems and the three BART stations. BART's November 1999 budget contains $40.9 million in contingencies for these contracts. Through January 2000, change orders totaled about $15 million, including $8 million for pending change orders (see Table 5).

Table 5. Status of Construction Contingencies

	Contingencies ($ millions)	
Contract	**Budget**	**Options/Changes**
Line, Trackwork, and Systems	28.3	13.4
Millbrae Station	5.8	1.6
San Bruno Station	3.3	0.0
South San Francisco Station	3.5	0.0
Totals	**$40.9**	**$15.0**

Source: BART

Third Party Contracts, Insurance, Project Administration, and Force Account Work. The PMOC concluded that the revised budget for third party contracts,[9] insurance, project administration, and force account work is adequate and does not warrant contingencies. Together, these items represent 18 percent ($271 million) of the revised November 1999 budget for the extension project. Through our analysis of financial projections BART developed through December 1999, we observed that BART's budget for project administration, third party contracts, and insurance includes $23.3 million for 6 to 14 months beyond the revenue service date. We concur with the PMOC that the budgets for third party contracts and project administration offer opportunities for reductions that could, if necessary, be used to offset overruns in other areas of BART's proposed budget.

Right-of-Way. This item represents nearly 13 percent ($187 million) of the revised November 1999 budget for the extension project. The budget includes an additional $50 million to compensate for what the PMOC identified as serious underestimates of requirements for city agreements, utility work, real estate services, and hazardous materials removal. Also, the revised budget includes $15.5 million for growth experienced in real estate costs and an $8.9 million contingency to accommodate additional unknown factors. Because BART

[9] Third party contracts include engineering services, design support during construction, construction oversight, and other agreements (legal services, community relations, quality assurances/systems safety, environmental, and other general services).

controls 128 of the 138 parcels required for the project and most other costs have been determined, these changes are adequate for this part of the revised budget.

Finance. Finance costs are an important part of BART's budget for the extension project. BART estimates for finance costs increased from $24 million in June 1997 to $60.5 million, including a $17.9 million contingency, in November 1999 as a result of negative cashflows caused by increased construction costs and lower than planned Federal appropriations. The negative cashflows, which totaled $81 million in June 1999, are projected to peak at $259 million in May 2002.

We confirmed that BART has a $300 million letter of credit to fund shortfalls between the project's cashflow and the receipt of Federal funds. The interest rate for the letter of credit is variable, based on the prevailing tax exempt commercial paper rate. BART used a 3.725 rate (the average rate for the last 6 years) to develop its baseline budget for finances. FTA's financial management oversight consultant for the extension project found the 3.725 rate is slightly higher than recently traded commercial paper. The consultant replicated the project's cash flow and determined that, all other factors held constant, the finance cost contingency is more than ample to accommodate interest rate risk.

CHAPTER 4. BART HAS THE FINANCIAL CAPACITY TO CONSTRUCT THE PROJECT

BART has the financial capacity to construct the airport extension project. To this end, BART has (1) obtained commitments for the Federal, state, and local funds needed to complete the project and (2) secured financing to fund shortfalls between the project's cash flow and the receipt of Federal funds. Also, BART will use state and local commitments to fund the entire $316 million increase in the project budget, leaving the Federal commitment unchanged at $750 million. In 1997, FTA's commitment was 64 percent of estimated project costs. Today, FTA's share is 51 percent of estimated project costs.

Funding Commitments are Adequate to Pay for Project

In December 1999, FTA's PMOC concurred with BART that the proposed November 1999 budget of $1.483 billion, with an additional capital reserve account (CAPRA) of up to $27 million, is adequate to construct the extension project. BART has a two-part finance plan to fund the project, reflecting the uncertainty of the need to fund the CAPRA. While the primary finance plan uses a combination of Federal, state, and local funds to finance the project, the CAPRA plan relies on parking revenues. If needed, BART will use the CAPRA to supplement contingencies incorporated in the primary finance plan.

We confirmed that BART has commitments for the Federal, state, and local funds needed to construct the extension project. In June 1997, FTA committed $750 million for the extension project which, at that time, was estimated to cost $1.167 billion. FTA's commitment includes $84 million in previously awarded funds and $666 million to be distributed contingent on future budget authority. BART secured the remaining $417 million from state and local sources. When project estimates rose to $1.483 billion, BART obtained commitments to fund the entire increase, $316 million, from state and local sources.

The $316 million funding includes $44 million from the California Transportation Commission and $272 million from local sources. Local sources include BART's Capital Reserve Account; the San Mateo County Flood Control District; BART's Capital Improvement Program; and a memorandum of understanding between BART, MTC, and SamTrans (see Table 6).[10]

[10] The California Transportation Commission sets priorities and allocates funds for highway and transit projects under the State Transportation Improvement Program. The Metropolitan Transportation Commission is the regional planning agency for the San Francisco Bay Area. The SamTrans is the public transit district for San Mateo County.

Table 6. Funding Commitments: June 1997 vs. November 1999 ($ thousands)

Funding Sources	1997	1999	Difference
Federal Funds	**$750,000**	**$750,000**	**0**
State Funds			
CTC Transit Capital Improvement	58,000	56,000	(2,000)
CTC Flexible Congestion Relief	40,000	40,000	0
CTC Proposition 116	10,000	10,000	0
CTC Petroleum Violation Escrow	0	2,000	2,000
CTC Memorandum of Understanding			
- Economic Contingency Reserve		33,000	33,000
- Transportation Interregional Program		11,000	11,000
Subtotal	**$108,000**	**$152,000**	**$44,000**
Local Funds			
MTC West Bay Bridge Tolls	10,000	10,000	0
San Mateo Match	99,000	99,000	0
BART Capital Reserve Account	0	79,200	79,200
San Mateo County Flood Control District	0	2,000	2,000
BART Capital Improvement Program	0	52,500	52,500
Local Memorandum of Understanding			
- BART	0	50,000	50,000
- MTC	0	16,500	16,500
- SamTrans	0	72,000	72,000
San Francisco International Airport	200,000	200,000	0
Subtotal	**$309,000**	**$581,200**	**$272,200**
TOTAL	**$1,167,000**	**$1,483,200**	**$316,200**

BART has agreed, if the need arises, to make an additional $27 million available to the project by imposing parking fees at the extension's new stations. However, BART may be able to reallocate contingencies from other line items, such as interest costs, before it imposes parking fees.

Bridge Financing Covers Cash Shortfalls

By the end of Fiscal Year 2000 (June 2000 for the State of California), BART expects to have received nearly $822 million of the funds committed to the extension project. Thereafter, receivables include $533 million in Federal funds, $18 million in state funds, and $110 million in local funds (see Table 7).

Table 7. Flow Of Project Funds ($ thousands)

Funding Source	Total	Through June 2000	After June 2000
Federal Funds	**$750,000**	**$217,199**	**$532,801**
State Funds			
CTC Transit Capital Improvement	56,000	56,000	0
CTC Flexible Congestion Relief	40,000	40,000	0
CTC Proposition 116	10,000	10,000	0
CTC Petroleum Violation Escrow	2,000	2,000	0
CTC Memorandum of Understanding			
- Economic Contingency Reserve	33,000	14,568	18,432
- Transportation Interregional Programs	11,000	11,000	0
Subtotal	**$152,000**	**$133,568**	**$18,432**
Local Funds			
MTC West Bay Bridge Tolls	10,000	10,000	0
San Mateo Match	99,000	99,000	0
BART Capital Reserve Account	79,200	32,100	47,100
San Mateo County Flood Control District	2,000	1,400	600
BART Capital Improvement Program	52,500	50,540	1,960
Local Memorandum of Understanding			
- BART	50,000	50,000	0
- MTC	16,500	16,500	0
- SamTrans	72,000	72,000	0
San Francisco International Airport[1]	200,000	139,441	60,559
Subtotal	**$581,200**	**$470,981**	**$110,219**
TOTAL	**$1,483,200**	**$821,748**	**$661,452**

[1]The San Francisco International Airport is contributing $200 million to the extension project; $123 million for facilities on airport property and $77 million for BART facilities. Through June 2000, the airport expects to have contributed $16.4 million of the $77 million for BART operating systems.

Nonetheless, estimated expenses exceed expected revenues for the project over the short-term. These shortfalls totaled $81 million in June 1999 and are projected to peak at $259 million in May 2002 (see Table 8). BART attributes this condition to increased construction bids and lower-than-planned Federal appropriations.

We compared BART's approved funding and actual funding schedule and found that in Federal Fiscal Years 1998 and 1999, Federal appropriations and

disbursements were nearly 47 percent less each year than anticipated under the grant agreement. BART's $81.4 million cashflow shortfall for Fiscal Year 1999 would have been reduced to approximately $20 million if it had received Federal funding at the levels included in the grant agreement for Fiscal Years 1998 and 1999. Federal appropriations for Fiscal Year 2000 will be about $20 million or 24 percent less than originally scheduled in FTA's grant agreement (see Exhibit B).

To finance the project's cash shortfalls, BART obtained a $60 million loan from MTC and obtained a $300 million letter of credit for a commercial paper program administered by Morgan Guaranty Trust Company of New York. The interest rate for the letter of credit is variable, based on the prevailing tax-exempt commercial paper rate. In addition, BART is paying an annual fee (0.4 percent) for the letter of credit, which is backed by Federal appropriations. BART will repay both loans as it receives Federal appropriations.

Table 8. BART Airport Extension Cashflow Schedule as of December 31,1999 ($ thousands)

	FY 1997[1]	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	Total
Funding Sources											
FTA Section 3	$83,923	$29,803	$0	$103,472	$80,000	$80,605	$100,000	$100,000	$91,966	$80,230	$750,000
State and Local	23,300	63,263	123,959	331,027	44,992	71,100	12,559	0	0	(60,000)	610,200
Total Funding[2]	**$107,223**	**$93,066**	**$123,959**	**$434,499**	**$124,992**	**$151,705**	**$112,559**	**$100,000**	**$91,966**	**$20,230**	**$1,360,199**
Project Expenses	$76,388	$63,794	$265,481	$333,978	$315,065	$144,459	$64,841	$35,695	$0	$17,342	$1,317,043
Finance Costs[3]	0	0	0	4,029	5,896	9,230	9,166	7,771	5,186	1,879	43,157
Total Expenses	**$76,388**	**$63,794**	**$265,481**	**$338,007**	**$320,961**	**$153,689**	**$74,007**	**$43,466**	**$5,186**	**$19,221**	**$1,360,200**
Cumulative Revenues	$107,223	$200,289	$324,249	$758,748	$883,740	$1,035,445	$1,148,004	$1,248,004	$1,339,970	$1,360,200	
Cumulative Expenses	$76,388	$140,182	$405,663	$743,670	$1,064,631	$1,218,320	$1,292,327	$1,335,793	$1,340,979	$1,360,200	
Maximum Cumulative Deficit			**($81,415)**	**($93,785)**	**($240,889)**	**($258,897)**	**($238,352)**	**($185,444)**	**($92,975)**	**($2,888)**	

Source: OIG adaptation of BART cashflow schedule. Numbers are rounded to the nearest one thousand.

[1]BART's cashflow schedule includes total funding and total expenses up through Fiscal Year 1997.

[2]Total project funding and expenses do not reflect the additional $123 million committed to the project by the San Francisco International Airport for the construction of on-airport facilities.

[3]Finance costs are calculated using an interest rate of 3.725 percent per year on a quarterly basis.

CHAPTER 5. BART EXPECTS TO MEET REVISED REVENUE OPERATION DATE

BART's proposed amendment to the grant agreement extends the opening of the airport extension to July 1, 2002, 9 months after the September 30, 2001 opening date established in FTA's 1997 grant agreement. Congressional concerns delayed FTA's grant agreement which, in turn, delayed award of BART contracts. Also, the project's most critical contract (line, trackwork, and systems) is now 43 working days behind schedule. If BART and the contractor do not take action to reduce this negative float, the extension is projected to open July 10, 2002. Nonetheless, FTA's project management oversight consultant believes that BART and the contractor can implement sufficient measures to meet the projected opening date of July 1, 2002 or sooner.

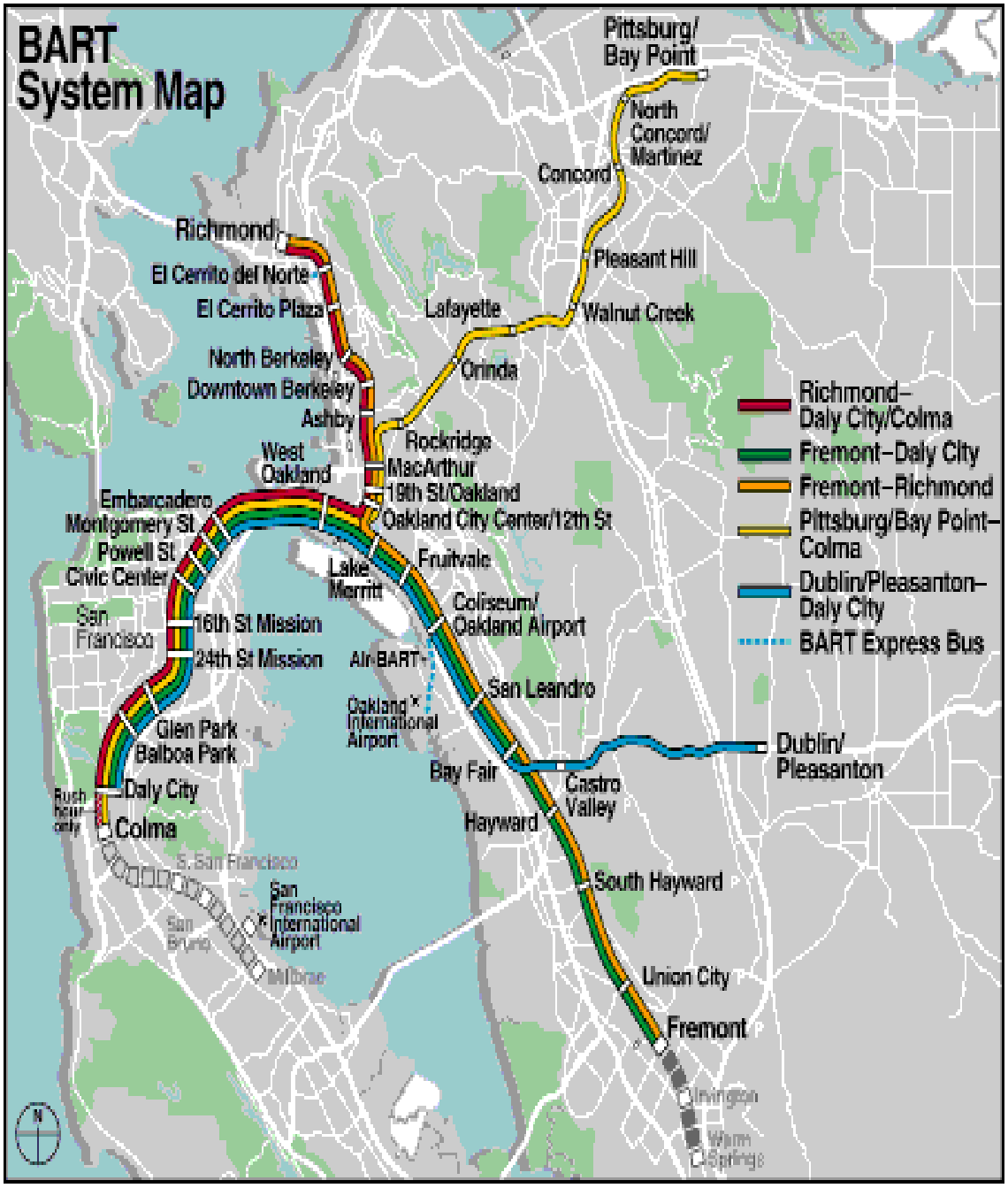
BART submitted its grant application to FTA in May 1996. At that time, BART anticipated it would begin to acquire property, award the site preparation contract, and begin the bid and award process for utility relocation work by September 1996. In addition, BART had planned to award the construction contract for line, trackwork, and systems in January 1997. However, congressional concerns about project costs and financing, the amount of Federal funding needed to support the project, use of airport revenue, and environmental requirements caused FTA to delay awarding the grant agreement until June 1997. Because of delays in awarding the grant agreement, FTA extended the revenue operation date established in the grant agreement by 3 months, from September 30, 2001 to December 31, 2001.

BART issued the notice to proceed for the line, trackwork, and systems contract in May 1998. This contract establishes the critical path for the entire project. The notice to proceed established February 12, 2002 as the contract completion date. BART has extended the revenue operation date to July 1, 2002 to incorporate an additional 10 weeks for pre-revenue testing and safety certifications and 2 months of contingency to cover any unforeseen events.

BART and its oversight consultant for the line, trackwork, and systems contract monitor progress against construction schedules. In September 1999, the consultant determined the contract was 57 working days behind schedule. Since then, BART and the consultant found the contractor could resequence a few tasks to reduce the 57-day negative float to 43 days, resulting in a projected revenue operation date of July 10, 2002. However, BART and the contractor have identified and are evaluating measures, such as additional crews, to reduce the 43 day negative float. BART and the contractor have not yet implemented any significant recovery measures.

EXHIBITS

Exhibit A. BART System Map



Source: The Bay Area Rapid Transit District

Exhibit B. Schedule of Federal Appropriations

Federal Appropriations			
Fiscal Year	**Appropriations**		**Difference**
	Full Funding Grant Agreement Schedule	**Actual**	
1993	$22,500,000	$22,500,000	$0
1994	0	0	0
1995	33,000,000	33,000,000	0
1996	0	0	0
1997	28,423,180	28,423,180	0
1998	56,394,669	29,803,294	(26,591,375)
1999	74,000,000	39,702,110	(34,297,890)
Subtotal	**$214,317,849**	**$153,428,584**	**($60,889,265)**
		Projected	
2000	$84,000,000	$63,770,116	($20,229,884)
2001	80,000,000		
2002	80,605,331		
2003	100,000,000		
2004	100,000,000		
2005	91,076,820		
2006	0		
Subtotal	**$535,682,151**		
TOTAL	**$750,000,000**		

Exhibit C. Major Contributors to This Report

THE FOLLOWING ARE THE MAJOR CONTRIBUTORS TO THIS REPORT.

Name	Title
Washington D.C. Headquarters	
Mark Dayton	Acting Deputy Assistant Inspector General for Competition, Rail, Transit, and Special Programs
Leslie Smith	Program Director
Olivia Parker	Project Manager
Rodolfo Perez	Engineering Consultant
Dallas-Ft. Worth Regional Office	
Mark Peet	Auditor
San Francisco Regional Office	
Terri Ahuruonye	Auditor
James Kane	Auditor
Seattle Regional Office	
James Diecker	Project Manager
Diane Brattain	Auditor
Gloria Echols	Auditor