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Report to Chairman, Committee on Appropriations, Subcommittee on Transportation and Related Agencies, House of Representatives

February 1998

SURFACE INFRASTRUCTURE

Costs, Financing and Schedules for Large-Dollar Transportation Projects

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United States
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Resources, Community, and
Economic Development Division

February 12, 1998

The Honorable Frank R. Wolf
Chairman, Subcommittee on Transportation
and Related Agencies
Committee on Appropriations
House of Representatives

Dear Mr. Chairman:

Increasing congestion, declining mobility, and deteriorating infrastructure are affecting the performance of surface transportation systems in many of the nation's urban areas. Confronted with these problems, many federal, state, and local agencies are improving and upgrading their highways and mass transit systems and are assisting the private sector in improving transportation facilities. In fiscal year 1998, the federal government will distribute nearly $26 billion to states and localities for the construction and repair of the nation's surface transportation systems. To meet the nation's transportation needs, states and localities are planning or building several large-dollar projects to replace aging infrastructure or build new capacity. These large-dollar projects represent a substantial investment of federal, state, and local transportation funds. In addition, the private sector has begun to participate in the funding of important transportation projects.

As part of your Committee's ongoing review of large-dollar transportation projects, you asked us to review eight projects that will play critical roles in the infrastructure networks of six urban areas in the United States. This report discusses the costs, financing, and schedules for completing these eight transportation projects: the Bay Area Rapid Transit System's extension to the San Francisco Airport, Los Angeles' Red Line subway, Pittsburgh's airport busway, St. Louis MetroLink's extension, Salt Lake City's South Light Rail Transit Line, Boston's Central Artery/Tunnel, Salt Lake City's I-15 reconstruction, and the Alameda Corridor (Los Angeles). In total, the eight projects are expected to cost about $23 billion; the estimated costs of individual projects range from about $11 billion for Boston's Central Artery/Tunnel to $313 million for Salt Lake City's light rail line.

Background

Large-dollar infrastructure projects present several major challenges to federal, state, and local transportation officials. First, they are very costly and require large commitments of public resources that may take several years to garner from federal, state, and local sources. Because of the high

costs of these projects, their financial packages are complex and may include debt financing to cover construction costs. Second, the projects can be technically challenging to construct and require their sponsors to resolve a wide range of social, environmental, land-use, and economic challenges before and during construction. To keep the projects on schedule and within budget, federal and state officials must carefully oversee their development, planning, and construction. At the federal level, the Department of Transportation's Federal Transit Administration and Federal Highway Administration are responsible for approving and overseeing these large-dollar infrastructure projects.

The Federal Transit Administration provided funding for five of the eight projects we reviewed in this report. The agency provided the funds primarily through its "New Starts" program—a program that provides grants to local transit providers for constructing or extending certain types of mass transit systems. After assessing the technical merits of a project and its finance plan, the agency enters into a full funding grant agreement with the project's sponsor. The agreement establishes the terms and conditions for federal participation, including the maximum amount of federal funds for the project. State or local sources provide the remaining funding. While the grant agreement commits the federal government to providing the federal contributions, these contributions are subject to the annual appropriations process. To oversee each project, the agency uses a consultant that assesses the extent to which the grantee meets its contractual obligations. The grantee is responsible for all of the project's cost overruns.

The Federal Highway Administration provided funds for two of the projects we reviewed—Boston's Central Artery/Tunnel and Salt Lake City's I-15 reconstruction. A highway project typically is funded through a state's federal-aid highway apportionment. The federal government generally covers 80 percent of the total cost of a federal-aid project. While the state is typically responsible for planning, selecting, designing, and constructing the project, the Federal Highway Administration ensures that applicable federal laws and regulations are met and approves the expenditure of federal funds. The agency is also responsible for overseeing the eighth project we reviewed—the Alameda Corridor. Funding for this intermodal project will come from several public and private sources. Instead of providing a grant for the Alameda Corridor, as it does to highway and mass transit systems, the Department of Transportation provided a $400 million loan to help finance this project.

Results in Brief

In summary, we found the following:

- In 1997, the Bay Area Rapid Transit system began construction on an 8-mile extension of its existing system to provide transit riders with direct service to the San Francisco International Airport. The transit system estimates that the project will cost $1.167 billion—an estimate that the Federal Transit Administration approved when it signed a full funding grant agreement in June 1997. The transit system will finance the project through contributions from federal, state, and local agencies. Federal funds will provide $750 million, or 64 percent of the project's total cost. Despite the large federal commitment, the transit system's finance plan projects that expenses will exceed revenues during construction and produce annual cash shortfalls that will peak at $184 million in 2001. Accordingly, the transit system has established a short-term borrowing program to address these financing gaps. However, the financing gap may be larger than projected in the transit system's most recent finance plan because the plan assumes higher federal contributions than those specified in the grant agreement. As a result, cash shortfalls could reach almost $290 million, and the transit system may need an additional $29 million to finance these shortfalls. The transit system has established a capital reserve account to meet the additional financing requirements. Whether the current funding of the reserve account is sufficient will depend on the actual rate of expenditure for construction and the revenues flowing into the account. The transit system expects the project to be completed in September 2001. (App. I provides detailed information on this project.)

- Because of severe financial difficulties, in January 1998, the Los Angeles County Metropolitan Transportation Authority (the Authority) suspended construction for at least 6 months on two of the four remaining extensions of the Los Angeles Red Line subway. Several factors have led to the Authority's financial problems. First, an October 1996 consent decree forced the Authority to shift its funding priority from completing the Red Line project to expanding its bus program. The Authority estimates that it will need an additional $1 billion over the next 15 years to comply with the consent decree. In addition, revenues from local sales taxes and funds from federal, state, and local sources have been lower than expected. As a result, the Authority does not have sufficient funds to complete the Red Line and must delay other projects as well. The federal government has agreed to pay $2.8 billion for the project, which is now expected to cost over $6.1 billion. As of November 1997, the Authority had spent about $2 billion in federal funds, including $78 million on the suspended extensions.

However, the project's suspension raises questions about the federal government's future support of the project. The Federal Transit Administration has directed the Authority to develop a realistic recovery plan. The Authority has not set dates for resuming work on the suspended extensions or for completing the recovery plan. (App. II provides detailed information on this project.)

- The Port Authority of Allegheny County, Pennsylvania, is currently building the three components of phase I of the Pittsburgh Airport Busway Project: a 7-mile exclusive busway from the borough of Carnegie to downtown Pittsburgh; a 1.1-mile high-occupancy-vehicle lane through the currently unused Wabash Tunnel; and six park-and-ride lots. The original design included a new bridge and about 2 miles of busway in an area known as the CONRAIL shelf. However, in June 1997, the Port Authority eliminated some segments of the project, including the new bridge, because of cost increases and delays. The Port Authority noted that it could still provide nearly all of the project's initial benefits at the original estimated cost—about $327 million—and ensure the project's completion by 2001. Financing for the project appears sufficient because federal funds, covering 80 percent of the project's costs, are available to the project and state funds, covering the remaining 20 percent, are ensured through state transportation bonds. According to the project's managers, other issues, such as a pending lawsuit are not expected to have a significant impact on the project's costs and schedule. Because the project's scope was reduced, the Federal Transit Administration planned to deobligate $19.4 million that had already been provided to the Port Authority. However, the Conference Report on the 1998 Department of Transportation Appropriations Act directed the Federal Transit Administration not to deobligate these funds. (App. III provides detailed information on this project.)

- The St. Louis MetroLink light rail system began operations in July 1993. When completed in 2001, the 17-mile St. Clair County, Illinois, extension will be the first addition to the MetroLink system and will cost an estimated $339 million. This cost estimate was found reasonable by consultants under contract to the Federal Transit Administration and the Illinois Department of Transportation. The proposed alignment will pass near known archeological remains and through an old railroad right-of-way potentially containing hazardous wastes. Although project officials stated that costs could increase, they believe they have taken sufficient measures to limit any cost growth resulting from these factors. Federal funds will cover $244 million of the project's costs, and local funds

will cover $95 million. But because sufficient revenues will not be available as the project's costs come due, the project will experience cash shortfalls for 4 years, peaking at $92 million in fiscal year 2000. While the project will issue grant anticipation notes—notes that are expected to be repaid with future federal funds—to cover the shortfall, the financing costs of this issuance will increase the project's total cost by about $25 million. The project's original finance plan did not anticipate the need for grant anticipation notes because that plan assumed that higher levels of federal funding would be available in the early years of the project. (App. IV provides detailed information on this project.)

- The Salt Lake City Light Rail Transit project is a 15-mile system that largely parallels Interstate 15, the major north-south highway through the Salt Lake City area, which is also undergoing major improvement. Construction began in 1997, and project officials expect the system will begin operations by March 2000—10 months ahead of schedule and well before the Winter Olympics open in Salt Lake City in 2002. Furthermore, they expect the project to be completed within its $312 million budget. The federal commitment to the project is about $241 million. Many of the project's major contracts have been awarded at amounts lower than expected, allowing project officials to implement a number of enhancements to the system. For example, when additional funds became available, local officials decided to install double tracks along segments where single tracks had been planned. Project officials attribute the low award prices to the competitive local construction environment created, in part, by the highway project. (App. V provides detailed information on the light rail project.)

- The Central Artery/Tunnel project in Boston is one of the most expensive and complex federally assisted highway projects ever undertaken. Scheduled to be completed in 2004, the project will build or reconstruct about 7.5 miles of urban highways (about 160 lane miles), about half of which will be underground. Massachusetts reported that, as of September 30, 1997, the total estimated net cost of the project was $10.8 billion. However, as we reported in July 1997,[1] the total funding needs for the project are $11.6 billion, or about $800 million more than the estimated net cost, because the estimated net cost includes an $800 million credit representing the future receipt of insurance proceeds that, if realized, will not be available until 2017, too late to help pay for the project. State managers have worked to control the costs of the project and are

[1]Transportation Infrastructure: Progress on and Challenges to Central Artery/Tunnel Project's Costs and Financing (GAO/RCED-97-170, July 17, 1997).

continuing to take steps to reduce them. However, unless additional savings can be found, increased construction costs seem likely to push the project's total net cost higher than the current $10.8 billion estimate. Massachusetts' October 1997 finance plan will meet the funding needs of the Central Artery/Tunnel project if its costs remain as forecast and if funding is received as projected. However, the project's funding needs could be larger than projected in the plan because (1) additional costs of some magnitude seem likely and (2) federal funding could be up to $1 billion less than projected. In addition, while the financial markets will ultimately decide the feasibility of one funding strategy—using grant anticipation notes to borrow over $1 billion and repaying that amount with future federal highway funding—the strategy presents several challenges. For example, it relies on borrowing against federal funds that may not be authorized by the Congress until after the next federal highway authorization expires, sometime around 2003. (App. VI provides detailed information on this project.)

- The Interstate 15 (I-15) project in Salt Lake City, Utah, is the largest "design-build" highway project ever undertaken in the United States. The Utah Department of Transportation will reconstruct 17 miles of Interstate highway in and around Salt Lake City, Utah, replacing all existing pavement, widening the road from 6 to 12 lanes, reconstructing several major Interstate highway interchanges, and replacing 137 bridges and other structures. Construction began in April 1997, and the project is scheduled to be completed in July 2001. A substantial portion of the project's $1.6 billion expected cost is covered under one fixed-price contract awarded to a single contractor to both design and construct the project. The project's costs could still grow, however, because the state has agreed with the contractor to assume certain financial risks, such as the possibility that hazardous materials may be discovered in addition to those identified through investigations conducted before the contract was awarded. While the design-build process is relatively new to highway construction and there is little historical information for predicting the magnitude of possible changes in the project's costs, officials in states where design-build contracts have been completed stated that post-award change orders have added from around 2.5 percent to around 8.5 percent to these contracts' costs. Changes of this magnitude, if they were to occur, would add roughly $35 million to $110 million to the I-15 project's costs. The I-15 project is the largest component of Utah's Centennial Highway Fund—a 10-year, $2.6 billion fund for the construction and reconstruction of highways throughout Utah. The state has requested $970 million in federal funding for the I-15 project beyond its expected highway

apportionments as part of a $4.3 billion request for federal funding for transportation projects for the 2002 Winter Olympic Games. Utah expects to receive about half of the requested amount and, as of October 1997, had received about $14 million in federal funds for environmental studies and property acquisition. According to state officials, if additional federal funds are not made available, Utah will complete the project either by raising additional state funds or by reducing or canceling some of the other 39 projects slated to be financed from the Centennial Highway Fund. (App. VII provides detailed information on this project.)

- The Alameda Corridor is a freight rail project designed to improve the movement of goods over 20 miles between the ports of Los Angeles and Long Beach and railyards near downtown Los Angeles. Expected to cost about $2 billion, the project has not yet been fully designed, and limited construction has begun. Its costs may change after contractors submit their bids in 1998 or when project officials finish evaluating the impact of a December 1997 Internal Revenue Service ruling limiting the components of the project that can be financed through tax-exempt revenue bonds. Funding for the project will come primarily from the private sector and will be supplemented by a $400 million federal loan and by grants from the ports and the Los Angeles County Metropolitan Transportation Authority. As of December 1997, project officials had secured about half of the needed funding but face challenges in securing the remainder, including challenges in demonstrating to financial markets that the project is a good credit risk and in obtaining all of the funds committed by the financially strapped Authority. According to the project's ambitious schedule, major construction is to begin in 1999 and to be completed within 3 years, achieving time savings of a year through the use of design-build contracting procedures. However, delays in constructing a 10-mile section of the project in a 30-foot trench could postpone the start of revenue operations, scheduled for 2001. (App. VIII provides detailed information on this project.)

Agency Comments

We provided the Department of Transportation with draft copies of this report for review and comment. We also provided each of the eight projects with a draft copy of the report pages containing information on the project. We met with Department officials—including the Federal Highway Administration's Deputy Administrator—and with high-level officials at each project to obtain their comments. The Department and project officials provided technical and editorial comments to clarify cost, financing, and scheduling issues for each project. Where appropriate, we

incorporated these comments throughout the report. The Alameda Corridor project provided more detailed comments on the project's costs and financing. A discussion of these comments and our response appear in appendix VIII.

Scope and Methodology

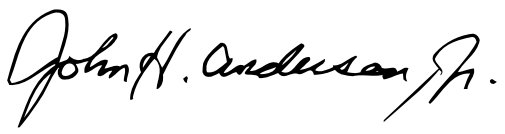
To identify issues surrounding the costs, financing, and schedules of the projects, we reviewed project-specific documents, including environmental impact statements, finance plans, project oversight reports, and construction status reports. We also interviewed federal, state, local, and private-sector officials responsible for planning, designing, constructing, and overseeing the projects. We performed our review from July 1997 through January 1998 in accordance with generally accepted government auditing standards.

The cost estimates for the projects discussed in this report represent the sum of the nominal dollars that will be spent irrespective of the years in which they are spent. Anticipated cost escalation during the construction period is taken into account, but these estimates do not represent present values.

We will send copies of this report to the cognizant congressional committees; the Secretary of Transportation; the Administrator, Federal Highway Administration; the Administrator, Federal Transit Administration; the Administrator, Federal Railroad Administration; and other interested parties. We will make copies available to others upon request.

Please call me at (202) 512-2834 if you or your staff have any questions. Major contributors to this report are listed in appendix IX.

Sincerely yours,



John H. Anderson, Jr.
Director, Transportation Issues

Contents

Figures

Abbreviations

ACTA	Alameda Corridor Transportation Authority
BART	Bay Area Rapid Transit system
BESTEA	Building Efficiency Through Surface Transportation and Equity Act of 1997
DOT	U.S. Department of Transportation
FTA	Federal Transit Administration
FHWA	Federal Highway Administration
FCR	Flexible Congestion Relief
GAO	General Accounting Office
HOV	high-occupancy-vehicle
ISTEA	Intermodal Surface Transportation Efficiency Act
IRS	Internal Revenue Service
MTA	Los Angeles County Metropolitan Transportation Authority
NEXTEA	National Economic Crossroads Transportation Efficiency Act
SAMTRANS	San Mateo County Transit District
TCI	Transit Capital Improvement
TRAX	Transit Express Salt Lake Area Light Rail System
UDOT	Utah Department of Transportation
UTA	Utah Transit Authority

BART Extension to the San Francisco International Airport

The San Francisco Bay Area Rapid Transit system (BART) intends to construct an 8-mile extension of its existing transit line to provide direct service to the San Francisco International Airport. BART estimates that the project will cost $1.167 billion—an estimate the Federal Transit Administration (FTA) approved when it signed a full funding grant agreement with BART in June 1997. Under the grant agreement, BART will finance the project through contributions from federal, state, and local agencies. FTA will contribute $750 million, or 64 percent of the project's total cost. However, BART's finance plan projects that expenses will exceed revenues during construction and produce annual cash shortfalls that will peak at $184 million in 2001. Accordingly, BART has established a short-term borrowing program to address these financing gaps. However, the financing gap may be larger than BART has projected in its most recent finance plan because the plan assumes that the federal contributions will be provided sooner than those specified in the grant agreement. As a result, cash shortfalls could reach almost $290 million, and BART may need an additional $29 million to finance these shortfalls. BART has established a capital reserve account to meet the added financing requirements. Whether the current funding of the reserve account is sufficient will depend on the actual rate of construction expenditures and the revenues flowing into the account from BART sources.

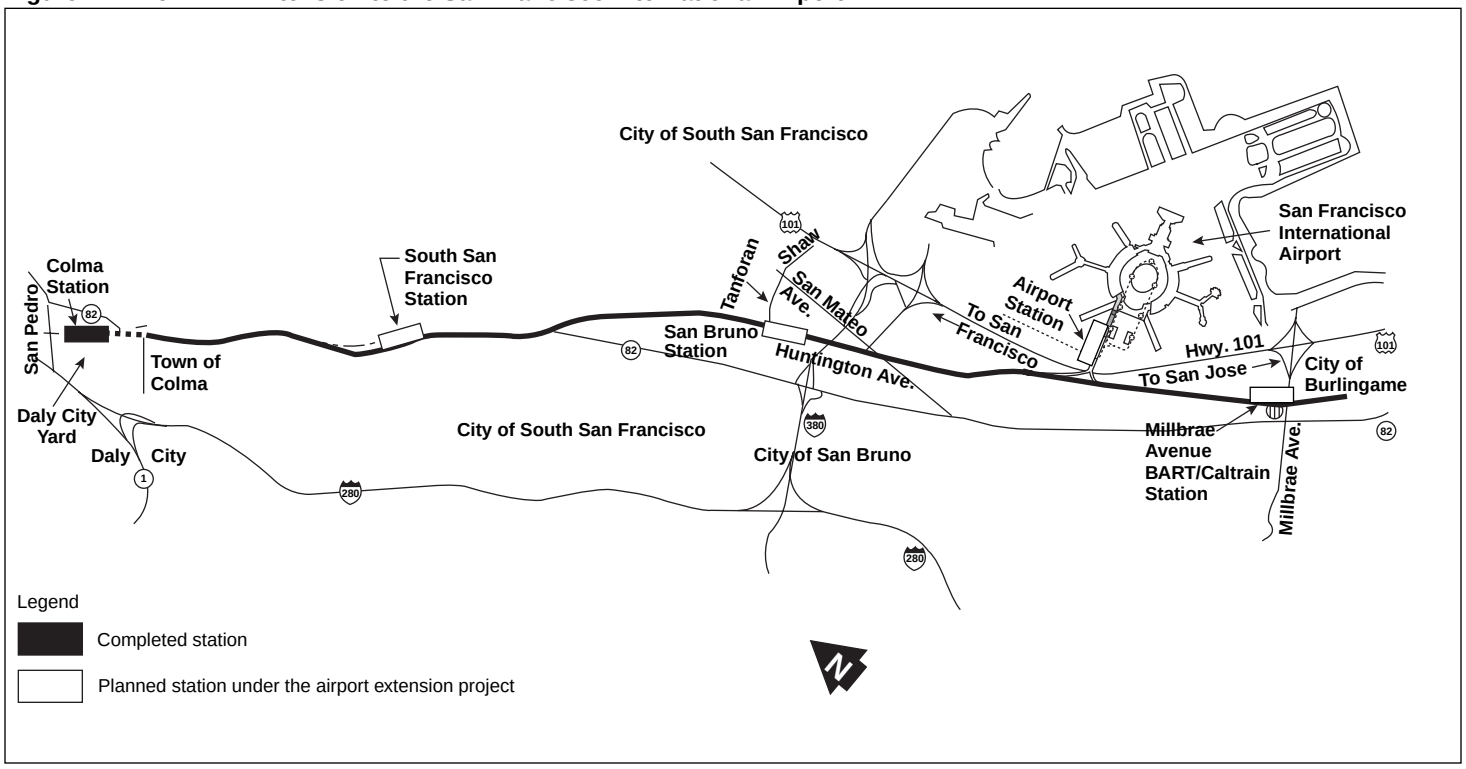
Background

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) authorized $568.5 million for two BART projects—the Colma Station extension[1] and the BART extension to the San Francisco International Airport—and one light rail project in Santa Clara County. ISTEA further directed the Secretary of Transportation to issue a full funding grant agreement to complete the projects, using, if necessary, the full amount of the unobligated balance in the Mass Transit Account of the Highway Trust Fund. Since ISTEA's enactment, the Metropolitan Transportation Commission (the local metropolitan planning organization) and BART have studied numerous alternatives for linking the BART system to the airport. In 1995, BART selected a final design for the project, which calls for about 8 miles of straight mainline track running south from the end of the existing line at the city of Colma to the city of Millbrae, with an incorporated "Y-stub" aerial line diverging from the mainline track and running southeast into the airport and then southwest out of the airport to Millbrae (see fig. I.1). The aerial line would include a transit station adjacent to an international air terminal and would be linked to the airport's light rail system to circulate passengers through the airport. Besides the stations at

[1]This extension, which runs from Daly City to Colma, is complete.

the airport and Millbrae, the project includes stations at South San Francisco and San Bruno.

Figure I.1: The BART Extension to the San Francisco International Airport



Source: GAO's adaption of data from BART.

The overall purpose of the BART airport extension is to help relieve existing and anticipated highway congestion and improve air quality in the region. The traffic on local highways—including Interstate 280, Interstate 380, and Highway 101—regularly exceeds existing capacity. Between 1990 and 2010, the Metropolitan Transportation Commission forecasts a 52-percent increase in traffic to and from the airport. San Francisco International Airport is proceeding with a $2.3 billion expansion and projects an annual increase of 21 million passengers between 1990 and 2006. In addition, the BART extension is one of the key transportation-related antipollution measures for the San Francisco Bay area. In 1996, the governor of California designated the BART airport extension as one of the state's top three transportation priorities.

The BART airport extension is one of four projects selected by FTA to demonstrate innovative contracting procedures. The project will employ design-build contracting. Under the design-build process, a public agency awards a single contract to a private firm for the design, construction, and start-up of a facility.[2] After certifying that the work is complete, the contractor turns the facility over to the agency. This contrasts with the conventional procurement process, under which a public agency is responsible for managing a project from its design through its completion and awards separate contracts for its design and construction. BART intends to award four design-build contracts on the project and anticipates that it will achieve cost and time savings using this process. The design-build bids will be solicited on extensive engineering packages whose designs are typically 30 percent to 50 percent (in some areas, as much as 100 percent) complete and are accompanied by BART's design criteria, specification standards, and drawings. According to the grant agreement, contractors will bid on the design-build packages, and contracts will be awarded to the low bidder. BART anticipates that the use of design-build contracting will allow the extension to open for revenue operations on September 30, 2001, earlier than if BART had used conventional contracting practices.

BART and FTA Have Agreed on a Total Cost of $1.167 Billion, Including Allowances for Contingencies and Inflation

In approving the June 1997 full funding grant agreement, FTA accepted BART's cost estimate of $1.167 billion for the project. This amount includes $113 million in project-related construction that the San Francisco International Airport will undertake. FTA also approved the project's proposed contingency allowance and accepted BART's method of cost escalation.

FTA accepted this baseline cost estimate, noting that it was derived from cost estimates for the individual contracts that will make up the project and reflected appropriate project schedules. FTA will use these baseline costs to monitor BART's compliance with the grant agreement; BART must submit periodic cost reports to FTA. The project's costs are broken out in table I.1. As indicated, the largest of these is for the four design-build construction contracts, which constitute almost half (46 percent) of the project's costs.

[2]For the BART airport extension's four design-build contracts, BART will be responsible for the start-up.

Table I.1: Costs of BART Airport Extension, by Major Items

Dollars in millions

Cost item	Estimated cost	Percentage of total cost
Environmental	$8	0.7
Construction management	108	9.3
BART project management	39	3.3
Insurance	25	2.1
Prerevenue testing	3	0.3
Right-of-way	113	9.7
Vehicles	100	8.6
Site preparation and utility relocation	15	1.3
4 design-build contracts	539	46.2
Project contingency	80	6.9
Financing costs	24	2.1
Airport-related activities	113	9.7
Total	**$1,167**	**100.2**

Note: Percentages do not total 100 because of rounding.

Source: BART project finance plan, April 1997.

The project's budget allows about $131 million, or about 11 percent of the total cost estimate, for contingencies. A general contingency allowance of $80 million may be used to cover increases in costs. In addition, each of the five construction contracts contains a 12-percent allowance for contingencies, totaling $51 million, to cover increases in construction costs. FTA determined that this level of contingency funding was sufficient for grant approval.

To account for inflation, BART's finance plan escalates the cost of each major cost item. The plan escalates construction costs by 11.6 percent, assuming that construction will be half completed in the third quarter of 1999. The plan uses the same rate and method to escalate the costs of four of the seven major nonconstruction activities—construction management, BART management, vehicles, and prerevenue testing. The costs of the other nonconstruction activities, which will be completed earlier in the project, are escalated at lower rates—environmental at 2.4 percent, right-of-way at 5.1 percent, and insurance at 5.1 percent.

While Overall Financing Is Complete, Debt Financing May Exceed Current Estimate

FTA signed a full funding grant agreement on June 30, 1997, committing $750 million in federal funds to the project, an amount covering 64 percent of the project's total $1.167 billion cost. The remaining $417 million will come from state and local sources. BART's finance plan projects cash shortfalls beginning in 1999, when expenses will exceed available revenues. However, these shortfalls will be greater than projected because the finance plan does not reflect the slower pace of federal contributions defined in the full funding grant agreement. To offset the shortfalls, BART may incur an additional $29 million in financing costs.

Capital Financing Will Come From Federal, State, and Local Sources

The $750 million federal commitment includes $113.8 million in federal funds provided for the project through fiscal year 1998 and $636.2 million in New Starts Program funds that remain to be provided. The grant agreement calls for federal funding to rise from $56.4 million in fiscal year 1998 to $100 million in fiscal years 2003 and 2004. Under the grant agreement, the last federal installment of $91 million will be provided in 2005. The grant agreement specifies that this constitutes the total federal commitment and that BART must provide for any additional financing needs.

The remaining $417 million commitment, covering 36 percent of the project's total cost, comes from state and local sources. FTA determined that these sources were sufficiently secure to approve the full funding grant agreement. The largest local contributor is the San Francisco International Airport, which will provide $200 million to the project: $87 million directly to BART for design work, systems procurement, and the installation of track on airport property and $113 million for interrelated activities that the airport will complete. The interrelated activities include, for example, constructing two aerial BART guideway structures into the airport, the BART airport station and ancillary facilities, and enhancements to the airport's International Terminal, such as escalators for BART's riders. FTA excluded the $113 million for airport-funded activities from the full funding grant agreement because these facilities are designed and built directly by the airport. The airport will issue general revenue bonds to support its $200 million contribution.

Other funding comes from a variety of sources. The $108 million state commitment comes from State Transit Capital Improvement (TCI) funds ($58 million), Proposition 116[3] ($10 million), and State Flexible Congestion

[3]In 1990, California voters approved Proposition 116, which allowed the state to sell about $2 billion in general obligation bonds to fund transit projects across the state.

Relief (FCR) funds ($40 million). San Mateo County Transit District's (SAMTRANS) $99 million commitment will come from existing cash reserves. BART will construct the airport extension largely in San Mateo County—south of San Francisco. Because San Mateo County is not in BART's service district, SAMTRANS entered into an agreement with BART under which it will contribute $330 million to various BART projects (including $99 million for the airport extension) in exchange for BART's extending service into the county. Finally, the Metropolitan Transportation Commission will use tolls from the Bay Bridge to finance its $10 million contribution. BART will not directly contribute to the project's capital funding. However, BART may issue commercial paper to pay financing costs if the existing debt financing arrangements do not cover the project's short-term borrowing needs.

Project Will Have Higher Debt Financing Costs

BART's use of design-build contracting is intended to save time by expediting the project's design and construction. However, because these activities will be expedited, the project will incur expenses faster than it will receive funding, requiring BART to borrow funds to fill the gap between revenues and expenses. BART intends to use short-term commercial paper as the borrowing mechanism to fill the gap. BART's April 1997 project finance plan—the most current plan available—assumes a maximum annual cash shortfall of $183.7 million. The short-term borrowing program that BART will use to finance the shortfalls will produce $24 million in financing costs.

However, BART's April 1997 finance plan, which FTA used to approve the full funding grant agreement, assumes that federal funds will be paid out over 6 years, rather than 8 years, as specified in the June 1997 grant agreement. Thus, for example, BART's finance plan assumes federal funding of $110 million to $160 million for fiscal years 2000 to 2003 while the full funding grant agreement provides federal funding of only $80 to $100 million for the same period. Even if the federal government provides the full funding as scheduled in the agreement, which is not certain,[4] BART will need to finance additional cash shortfalls not included in the finance plan. As our analysis in table I.2 shows, these additional financing demands will begin in 1999, and by 2001, BART will have cash shortfalls of $288 million. In addition, because all state and San Mateo County Transit District funds will have been provided to the project before 2001, BART will not be able to close this funding gap by accelerating contributions from

[4]For example, the Congress provided $29.9 million in fiscal year 1998, $26.5 million less than called for in the full funding grant agreement.

these sources. Given the schedule of funding in the full funding grant agreement, if BART's current assumptions hold about interest rates, inflation, and the rate at which the project will incur expenses, the project's total financing cost will be about $53.5 million, more than double the $24 million that BART budgeted in its finance plan. In commenting on a draft of this report, BART's general manager stated that they acknowledge and are planning for higher financing costs, and believe that through aggressive management BART will be able to keep financing costs lower than the $53.5 million we have cited. According to the BART official responsible for developing the finance plan, BART will revise the finance plan on the basis of the schedule of expenditures derived from the first two design-build contracts, which cover most of the project's construction costs. Once BART has better information on the contracts' final costs and the timing of expenses, it will be able to more accurately determine its financing needs. BART anticipates completing this revised plan in March 1998.

Table I.2: Project's Financing Under the June 1997 Full Funding Grant Agreement (Dollars in Thousands)

	Fiscal year									
Revenue	**Through 1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**Total**
Federal	$83,923	$56,395	$74,000	$84,000	$80,000	$80,605	$100,000	$100,000	$91,077	$750,000
State TCI	26,921	31,079	0	0	0	0	0	0	0	58,000
State FCR	5,000	0	10,000	25,000	0	0	0	0	0	40,000
State bonds	0	10,000	0	0	0	0	0	0	0	10,000
Bay Bridge	1,375	3,000	3,000	2,625	0	0	0	0	0	10,000
Airport	4,317	8,395	18,521	29,909	20,614	5,244	0	0	0	87,000
San Mateo	19,700	10,000	69,300	0	0	0	0	0	0	99,000
Total	**$141,236**	**$118,869**	**$174,821**	**$141,534**	**$100,614**	**$85,849**	**$100,000**	**$100,000**	**$91,077**	**$1,054,000**
Expenses	84,084	159,947	199,013	306,115	215,999	64,842	0	0	0	1,030,000
Cumulative revenues	**141,236**	**260,105**	**434,926**	**576,460**	**677,074**	**762,923**	**862,923**	**962,923**	**1,054,000**	
Cumulative expenses	**84,084**	**244,031**	**443,044**	**749,159**	**965,158**	**1,030,000**	**1,030,000**	**1,030,000**	**1,030,000**	
Cumulative balance	**57,152**	**16,074**	**(8,118)**	**(172,699)**	**(288,084)**	**(267,077)**	**(167,077)**	**(67,077)**	**24,000**	
Financing costs	0	0	448	9,527	15,892	14,733	9,217	3,700	0	53,517

Sources: FTA-BART full funding grant agreement, BART project finance plan (Apr. 1997), and GAO's analysis.

As part of its finance plan, BART has established a capital reserve account to pay for costs in excess of the project's $1.167 billion budget. This account can also be used to finance costs in excess of those projected for short-term borrowing. Funding for the account, scheduled to come from several BART revenue streams, will allow BART to issue at least $65 million in bonds, as needed, to offset cash shortfalls.[5] The adequacy of the account ultimately will depend on the size of any cash shortfalls and the costs of debt financing to cover them. Moreover, as previously noted, the reserve account may need an additional $29 million to cover higher financing costs, given current assumptions about federal funding, interest rates, inflation, and expenses.

Major Construction Is Scheduled to Begin in 1998

Construction has begun on the BART airport extension, which is expected to open on September 30, 2001. Table I.3 outlines the schedule for the project's major construction activities, as outlined in the full funding grant agreement.

Table I.3: Schedule for Major Construction Activities

Activity	Date of notice to proceed	Approximate completion date
Project administration	May 1993	September 2001
Third-party contracts	May 1993	September 2001
Acquire right-of-way	June 1997	June 2001
Site preparation/utilities	June 1997	June 2000
Construction contract—line trackwork/systems	September 1997	June 2001
Purchase rail cars	February 1998	October 2000
Construction contract—San Bruno Station	January 1998	September 2001
Construction contract—Millbrae Station	January 1998	September 2001
Construction contract—South San Francisco Station	February 1998	June 2000

Source: FTA-BART full funding grant agreement.

[5]BART expects to receive (1) $2.5 million annually from surcharges at the Daly City station, from which BART could finance $32.5 million in bonds; (2) $3 million to $4 million annually from premium fares at the airport station, from which BART could generate about $32.5 million in bonds; and (3) about $650,000 annually from concessions and advertising at extension stations, as well as possible joint development and parking revenues. BART did not specify the amount in bonds that it could finance through this last revenue stream.

According to the BART's deputy general manager, as of December 15, 1997, BART had awarded the contract for site preparation and utility relocation, had advertised the design-build contract for line, trackwork and systems, was acquiring the right-of-way for the project, and was working to resolve right-of-way issues with cemeteries in the city of Colma. BART expects to award the line, trackwork and systems design-build contract and the Millbrae Station design-build contract by February 1998. Based on the schedule, BART's finance plan shows that the extension will begin revenue operations in September 2001.

Several Other Issues Have Been Resolved

Since we last reported on this project in March 1997, several impediments to the BART project's progress have been resolved:

- Airlines' concerns over using airport funds to help pay for the project have been resolved. As part of an agreement with the airport, BART will pay $2.5 million per year to lease the airport station for 50 years. In addition, BART will give airline employees a 25-percent discount for trips beginning or ending at the airport station. By 2010, this fare reduction will cost BART $1 million in lost revenues annually. BART anticipates that both these expenses could be offset by (1) reducing the surplus anticipated from the airport extension's operations or (2) increasing the fare at the six other stations in San Mateo County by 15 to 20 cents.

- Opposition to the project by a local gambling interest has been resolved. BART, the owner of a gambling facility, and the city of San Francisco have reached an agreement on a new parking lease and ways to mitigate construction-related parking problems at the gambling facility. As of December 17, 1997, the new lease agreement required final approval by the San Francisco Board of Supervisors.

- Local opposition to the BART parking facility at Millbrae led to a referendum intended to limit the number of parking spaces at the end of the BART line. However, the referendum failed in the November 1997 election.

- In September 1997, a strike by BART unions resulted in a labor agreement increasing wages for BART employees. Over time, this agreement will increase BART's systemwide operating costs. However, according to BART's deputy general manager, the cumulative wage increase is within the level BART originally offered the unions, and BART can absorb the increase without jeopardizing its operating budget.

Los Angeles Red Line Project

In January 1998, the Los Angeles Metropolitan Transportation Authority (MTA) decided to suspend construction, for at least 6 months, on two of the four remaining extensions of the Los Angeles Red Line subway while it addresses severe financial difficulties. This decision responded to MTA's financial problems, which are limiting MTA's ability to complete the Red Line and other projects as planned. A number of factors have contributed to its fiscal crisis, including an October 1996 consent decree that forced MTA to shift its funding priority from completing the Red Line to expanding its bus service—a program that MTA estimates will cost about $1 billion through 2013. This revised focus—together with increased costs and shortfalls in federal, state, and local funding for the Red Line—has left MTA with insufficient funds to complete the subway, whose estimated costs now total $6.14 billion. MTA has already spent about $2 billion in federal funds for the Red Line's design and construction. In January 1997, the Federal Transit Administration (FTA) directed MTA to develop a recovery plan that addresses cost and schedule concerns. Whether and to what extent the federal government will continue to support the subway will not be known until the project's managers have completed this plan, which will spell out the federal government's future commitment. MTA has not set dates either for resuming work on the suspended rail projects or for completing the recovery plan.

Background

MTA is responsible for planning, designing, constructing, and managing an integrated transportation network, including an integrated light and heavy rail system for Los Angeles County called the Metro System. The two light rail portions of the system, the Blue and Green Lines, were constructed without federal funds. A Blue Line light rail extension (called the Pasadena Blue Line) was being constructed using state and local funds until the project was suspended in January 1998. Construction of the heavy rail portion of the system, known as the Red Line, is being funded by federal, state, and local sources.

Between 1986 and 1997, MTA signed four full funding grant agreements[1] with FTA to help pay for the final design and construction phases of the Red Line.[2] These agreements commit the federal government to fund

[1]The agreements were signed in 1986, 1990, 1994 and 1997.

[2]The Red Line has been redesigned several times. In 1983, it was 18.6 miles long with 18 stations. In 1988, it was redesigned to 17.3 miles long with 16 stations to avoid areas where methane gas was found. In 1993 and 1994, the system was expanded to include two additional extensions, increasing the total length of the system to 23.4 miles and 22 stations.

$2.8 billion, or about 51 percent, of the Red Line's projected final design and construction costs of $5.5 billion.

The 23.4-mile Red Line project consists of three segments. Segment one—4.4 miles—is in service. Segment two—6.7 miles—is divided into two extensions. The Wilshire extension is in service, and about 92 percent of the Vermont extension has been constructed. Segment three—12.3 miles—is divided into three extensions. As of November 1997, the construction of the North Hollywood extension was 54 percent complete; the final design of the East Side extension was 86 percent complete: and the design of the Mid-City extension was on hold while MTA assessed other alignment options.

The day-to-day design activities of the Red Line are managed by an engineering management consultant, while the construction activities are managed by several construction management consultants, all under contract to MTA. FTA approves and oversees expenditures of federal funds for the project and has hired its own project management contractor to help ensure that MTA maintains a reasonable process for successfully designing and constructing the project and to monitor MTA's development and implementation of the project.

Cost Increases and Funding Shortfalls Have Created Serious Financial Problems

As of November 1997, MTA estimated that the total cost of the Red Line project would be $6.14 billion, or about 12 percent above the $5.5 billion estimated in the full funding grant agreements. We reported in May 1996[3] that construction problems, new construction requirements, and enhancements to the project had increased its estimated cost to $5.9 billion. According to MTA officials, estimated cost increases since May 1996 are primarily due to design and construction delays on segment three.

As of November 1997, MTA had obligated about $4.2 billion to the Red Line project: $2.3 billion in federal funds; $403 million in state funds; and $1.5 billion in local funds. Before suspending work on the Eastside and Mid-City extensions, MTA planned to fund $3.1 billion of the Red Line project's $6.14 billion cost with federal funds and the remainder with state and local funds. Most of the federal funds—$2.8 billion—are from FTA's New Starts Program. An additional $280 million is coming from other federal programs, including the Surface Transportation Program (STP)

[3]Los Angeles Red Line: Financing Decisions Could Affect This and Other Los Angeles County Rail Capital Projects (GAO/RCED-96-147, May 14, 1996)

and the Congestion Mitigation and Air Quality Program (CMAQ), that provide states with funds that can be used for transit projects.

As of November 1997, California had committed about $745 million to the project. Of this amount, about $705 million was expected to be provided from state gasoline tax revenues, which are allocated to both highway and transit projects. The remainder of the state's funding is to come from revenues generated from general obligation bonds for rail capital projects.

Local funding for the project—about $2.3 billion—was expected to come from three sources: Los Angeles County, the city of Los Angeles, and assessments levied on properties adjacent to the planned stations.

Table II.1 shows the funding sources for the Red Line as projected at the time of the suspension.

Table II.1: Project's Financing Plan, by Segment, as of November 1997

Dollars in millions

Funding source	Segment one	Segment two	Segment three	Total
Federal (FTA)	**$696**	**$722**	**1,641**	**$3,059**
New Starts	696[a]	667	1,416	2,779
STP/CMAQ	0	55	225	280
Nonfederal match	**754**	**919**	**1,403**	**3,076**
State	214	133	398	745
Local	540	786	1,005	2,331
Total	**$1,450**	**$1,641**	**$3,044**	**$6,135**

[a]MTA used $91 million in urbanized formula funds for completing segment one.

Source: GAO's presentation of data from MTA.

The Red Line Project's Costs Could Continue to Increase

MTA's decision on January 14, 1998, to suspend work for at least 6 months on the Eastside and Mid-City extensions could increase the project's overall costs. For instance, MTA estimates that demobilizing the extensions could cost about $28 million.[4] A tunnel advisory panel told MTA that "completed" design work should have a "shelf life" of 12 to 48 months, depending on the availability of the original design team. Beyond that period, a major redesign of the extensions by a new team would be

[4]Demobilization costs do not cover expenses such as employee severance pay or the costs of preserving and maintaining the sealed design packages. These costs will be considered in MTA's fiscal year 1999 budget.

necessary and could have a significant impact on the project's costs. Furthermore, these extensions have already experienced cost increases and schedule delays. At the time of the suspension, the Eastside extension was scheduled to be completed in 2004, 2 years later than scheduled, and to cost $1.049 billion, or $69 million more than specified in the grant agreements. The Mid-City extension was scheduled to be completed in 2008, 9 years later than scheduled, and to cost $683 million, or $192 million more than agreed. For budgeting purposes, MTA estimated a cost increase of $192 million for the Mid-City extension, which is the cost of one of the alternative alignments being considered. According to MTA officials, the recent decision to further delay these extensions will most likely produce additional cost overruns if and when work is resumed.

Other factors could increase the project's total cost beyond the current $6.14 billion estimate if construction is resumed. For example, because high concentrations of hydrogen sulfide gas were discovered in the tunnel planned for the Mid-City extension, MTA was considering three alternative configurations that would increase the extension's cost by $167 million to $279 million.

Pending lawsuits could also increase costs. As we reported in May 1996, a lawsuit by a construction contractor fired by MTA for poor performance could increase the project's costs because it includes a financial claim against MTA.[5] The contractor is suing for about $120 million for breach of contract and other claims; MTA has a filed a countersuit for fraud and breach of contract. In addition, the family of a man who was killed while working on the subway's construction in February 1997 has filed a lawsuit against MTA for violating safety regulations. MTA officials told us that, in this case, they are insured for a maximum exposure of $2 million. Whether these actions affect the project's costs will depend on the outcome of the lawsuits and the ability of MTA's existing insurance to cover any awards against MTA.

Federal, State, and Local Funding Commitments Have Not Been Fully Realized

We reported in May 1996 that the project had $380 million in federal, state, and local funding commitments that may not be realized. As of November 1997, the Red Line's total funding shortfall had increased to $617 million. At the federal level, the Congress had provided $302 million less than FTA had committed in the grant agreements. Under these grant

[5]All but one lawsuit by owners of retail establishments affected by ground settlement along Hollywood Boulevard were settled by MTA's insurance carrier for a total of $10 million (or 1 percent of the $1 billion claim). In addition, MTA settled the suit by other parties to the bus consent decree, who were seeking to recover their legal expenses. MTA paid their legal fees from last year's budgeted funds.

agreements, the federal government had committed, subject to the annual appropriations process, $2.8 billion for the expected life of the project. The agreements break this total down into yearly amounts. In fiscal years 1995 through 1998, the full amounts identified in the grant agreements were not provided by the Congress, resulting in the funding shortfall. While the grant agreements allow the federal government to provide additional funds later to cover any annual shortfalls, federal budget constraints could make it difficult to make up existing or additional shortfalls in the future. What impact the suspension will have on past federal commitments to the Red Line remains to be seen.

State and local funding shortfalls have also affected the Red Line project. For example, because the California state legislature recently diverted $50 million in funds slated for MTA's bus operations to Los Angeles County health programs, MTA transferred $50 million that had been committed to the Red Line project to the bus program. The state is also withholding $20 million in funds, slated for segment three, until a recovery plan for the project is approved.

Some of MTA's local revenue commitments may not be realized. Although Los Angeles has an agreement with MTA to contribute $200 million toward the completion of segment three, it has provided only $56 million. The city's contributions are, to a large extent, contingent on MTA's achieving certain milestones, such as accelerating the completion of the Mid-City extension by a year and developing a rail line to the San Fernando Valley area. In addition, the agreement with MTA removes the obligation for the city to pay its share of cost overruns on segment two, which includes $62 million toward the repair of a 70-by-70-foot-wide sinkhole that occurred in 1995 on Hollywood Boulevard. Furthermore, MTA does not expect to receive $39 million in estimated revenues from assessments levied on retail properties adjacent to the planned stations for segments two and three because retail property owners oppose the assessment.

MTA Faces Serious Financial Problems

Several other factors are affecting MTA's overall financial condition, further limiting MTA's ability to finance the Red Line project and other transportation projects as planned. First, projected local sales tax revenues that are used to fund a number of MTA's projects, including the Red Line, are significantly lower than expected.[6] For both its annual budget and its long-range plan, MTA used a 7-percent annual growth rate to

[6]Los Angeles County dedicates revenues from its 1-cent sales tax to MTA for existing transit systems and new transit projects in the Los Angeles area. Some funds from the county's dedicated sales tax are returned to the surrounding cities.

project its sales tax revenues. However, actual sales tax revenues have grown at a rate of 3.5 to 5.5 percent over the past few years.[7] A 1997 report by the mayor of Los Angeles states that a more reasonable forecast of growth in MTA's sales tax base would be 4 to 5 percent. According to MTA officials, this significant reduction will result in revenues of about $4.6 billion less than expected through 2013.

Second, in October 1996, the bus riders' union (and others) entered into a consent decree that requires MTA, among other things, to expand its bus service.[8] MTA has made implementing the consent decree its first priority and estimates that doing so will cost it about $1 billion through 2013. Over the next 12 years, MTA also plans to upgrade its aging bus fleet by purchasing more buses and decreasing their average age to 6 years.

Third, as of June 1997, MTA had a cumulative operating deficit of about $98 million. According to MTA officials, since about the end of fiscal year 1992, operating expenses have been exceeding operating revenues. For instance, transit fare revenues have been lower than projected. The 1997 mayor's report estimates that this year's operating deficit could be as high as $58 million. MTA forecasts a $51 million operating deficit but states that it will be mitigated through several revenue enhancements (one-time credits) and efficiencies, such as staff reductions.

Financial problems have forced MTA to make some difficult management decisions, as well as assign priorities to its transportation projects. According to MTA, the North Hollywood extension of segment three will be completed on time but work on the Red Line's Eastside and Mid-City extensions and Pasadena Blue Line are being delayed for at least 6 months. In addition, a portion of the planned expansion of carpool and bus lanes is being delayed for about 2 years. MTA officials told us that getting MTA's fiscal house in order and implementing the consent decree are MTA's top priorities at this time.

[7]Since the sales tax is critical to the bus and the rail construction programs, using a lower forecast could require MTA to scale back its long-range transportation plan.

[8]The agreement, among other things, requires MTA to (1) freeze the bus fare at $1.35 and offer an $11 weekly bus pass for 2 years and (2) add 102 more buses and 50 more limited-service vehicles to the street over the next 2 years.

New Management Is Seeking Stability Through Revised Transportation Plans

Staffing at the executive level at MTA has been extremely unstable. Two chief executive officers (CEO) and two executive officers of construction have left in the last 2 years. MTA has not had a permanent CEO since January 1997. In August 1997, the Los Angeles mayor hired a recognized expert in turning around financially troubled companies, who agreed to remain as acting CEO for up to a year. In the meantime, the search for a permanent CEO has been suspended.

The new acting CEO has made some difficult financial and management decisions in an effort to put MTA on a better financial footing. For instance, in October 1997, he laid off 82 employees and eliminated about 100 vacant positions as a first step in addressing MTA's operating budget deficit. In addition, to reduce operating costs, he recommended, and the MTA board approved, that the contract for transit safety activities be awarded to the Los Angeles Police Department and that MTA's security force be disbanded. It was his recommendation, which the MTA board accepted in January 1998, to finish constructing the Red Line's North Hollywood extension but to suspend work on the Eastside and Mid-City extensions and on the Pasadena Blue Line until MTA is better prepared to follow through on its financial commitments. As a next step, MTA managers are now working with FTA to better match MTA's financial abilities and construction goals.

Over the years, FTA has taken a number of steps to address the impact of MTA's funding shortfalls and management problems on the Red Line project. For instance, after excessive surface settlement occurred on Hollywood Boulevard in the summer of 1994, FTA took action to stop tunneling in that area and suspended federal funding from October 5 to November 10, 1994. In January 1997, FTA again expressed concerns about MTA's ability to manage the Red Line project's construction in light of the escalating costs, delays, and management issues and required MTA to develop a recovery plan for completing segments two and three. As stated earlier, FTA also hired a financial management consultant to review and report on MTA's financial capacity. On the basis of the consultant's and other contractors' reports, FTA rejected MTA's two successive draft recovery plans. FTA said that the plans had "serious deficiencies and questionable assumptions, both technical and financial" and did not demonstrate MTA's ability to continue constructing the Red Line and to comply with the legal and financial obligations set forth in the grant agreements and consent decree. Finally, in August 1997, FTA told MTA that no federal funds could be used for the Eastside extension and no new contracts could be awarded until the plan is approved.

As of November 1997, MTA was working on a more realistic recovery plan. MTA and FTA agreed that the plan will be more a "restructuring of the project" than a "recovery" plan.[9] MTA's recent decision to suspend work on the Eastside and Mid-City extensions and the Pasadena Blue Line will likely delay the approval of both the restructuring plan and MTA's long-range transportation plans. MTA has not set dates either for resuming work on the suspended rail projects or for completing the restructuring and long-range transportation plans.

The Conference Report on the 1998 Department of Transportation Appropriations Act directed GAO and the Department's Inspector General to conduct reviews of the recovery plan after it is approved by FTA and report to the House and Senate Appropriations Committees.

[9]In November 1997, MTA officials told us that MTA's restructuring plan will evaluate their commitments to MTA's transportation projects, including the bus program, the Pasadena Blue Line, and the Alameda Corridor.

Phase I Pittsburgh Airport Busway/Wabash HOV Facility

The Port Authority of Allegheny County, Pennsylvania, is currently building phase I of the Pittsburgh Airport Busway/Wabash HOV Facility, according to a June 1997 recovery plan, which substantially revised the initial scope of the busway project. This project originally consisted of a 7-mile exclusive busway from the borough of Carnegie to downtown Pittsburgh; a 1.1-mile high-occupancy vehicle (HOV) lane through the currently unused Wabash Tunnel; and six park-and-ride lots. Developed in response to a series of cost increases and schedule delays, the recovery plan created a revised design that is to (1) provide nearly all of the benefits of the initial design at the original estimated cost—about $327 million—and (2) allow the project to be completed by 2001, a year earlier than planned. Financing for the revised project appears sufficient because federal funds covering 80 percent of the project's costs—about $257 million—have already been made available to the project and state funding covering the remaining 20 percent is assured through state transportation bonds. Although the Federal Transit Administration (FTA) planned to deobligate $19.4 million in federal funds after the scope of the project was reduced, the Conference Report on the 1998 Department of Transportation Appropriations Act directed FTA not to do so.

Background

The Port Authority of Allegheny County operates a fleet of about 900 buses, making it the 12th largest public transit operator in the United States. It also operates a 25.2-mile light rail system that includes a 1/2-mile, three-stop subway system in downtown Pittsburgh; two inclines—cable-driven railways that transport passengers on gondola-type cars up and down the cliff overlooking Pittsburgh; and two exclusive busways—the South Busway and the Martin Luther King, Jr., East Busway.

The Busway Project Was Selected as the Best Choice to Address a Critical Transportation Need

A 1988-89 multimodal study performed by the Southwestern Pennsylvania Regional Planning Commission recommended that a transit facility be built between downtown Pittsburgh and the new airport, in an area known as the Parkway West corridor, to reduce extensive congestion on the existing parkway. The study recommended that the transit facility be built in phases and that phase I, from downtown Pittsburgh to the borough of Carnegie, be constructed first. After considering numerous alternatives, the Port Authority determined that a busway was the best transportation solution. (The busway is to be a two-lane road dedicated solely to bus traffic leading into and out of the city of Pittsburgh, with access ramps along the route leading to and from surrounding communities. Stations along the busway will accommodate park-and-ride lots, where possible,

and passengers from nearby neighborhoods.) The April 1994 environmental impact statement noted that phase I could be constructed separately, prior to the other phases, and still achieve the transportation benefits needed in the corridor. Phases II and III, which would extend the busway from Carnegie to the airport, have not been programmed.

As originally designed, the phase I busway project was to consist of a 7-mile exclusive busway from the borough of Carnegie to Station Square in the city of Pittsburgh. The busway was to parallel freight train tracks along the southern shores of the Ohio and Monongahela rivers for about 2 miles in an area known as the CONRAIL Shelf. The project also included a 1.1-mile HOV lane through the currently unused Wabash Tunnel and onto a new bridge that was to be constructed over the Monongahela River into downtown Pittsburgh. The busway was to give commuters an alternative to driving and to reduce increasing congestion in the Parkway West corridor. The HOV facility through the Wabash Tunnel was to provide carpool commuters with an alternative route to downtown Pittsburgh.

In June 1994, FTA determined that the project's planning process had satisfied federal requirements related to the project's environmental impact and that the project could proceed into the final design and construction stages. In October 1994, with less than 20 percent of the project designed, FTA executed a full funding grant agreement with the Port Authority that set the project's budget at $326.8 million. Under the grant agreement, revenue operations were to begin in June 1998, and the project was to be completed in December 1999.

Events Increased the Costs of the Project and Delayed Its Schedule

Two years after the full funding grant agreement with FTA was signed, the project's estimated costs had escalated by $188 million to about $515 million, and the project's completion date was extended to 2002. Problems with the placement of the new Monongahela bridge, CONRAIL's construction of a second line of tracks on the "shelf" bordering the river, and higher-than-expected construction bids were primarily responsible for these changes.

Under the original plan, the new Monongahela bridge was to be constructed in the midst of the Station Square complex, requiring the permanent relocation of the Gateway Clipper Fleet—a riverboat tourist operation—downstream but still within the Station Square complex. To facilitate this move, Gateway Clipper bought additional riverfront property rights in the Station Square area. Subsequently, however, the Station

Square complex was sold, and the new owners sought to have the purchase of the additional property rights nullified. As a result, the Port Authority was unable to finalize a relocation agreement with Gateway Clipper, thereby delaying the construction of the new bridge. In addition, the Port Authority was unable to agree with the new owners of Station Square on the terms under which the new bridge would be built over the complex. Consequently, all property acquisition and relocation activities came to a standstill, and progress on the busway project was delayed.

During negotiations over property rights in the Station Square area, the design of the new bridge proceeded, and bids for construction were requested. However, project officials stated that the actual bids were "millions of dollars" more than estimated in the full funding grant agreement. In addition, bids for other portions of the busway project and for the construction of the Wabash and Berry Street tunnels far exceeded the original estimates.

At the same time, the Port Authority was negotiating for the right to use CONRAIL's right-of-way for approximately 2.2 miles along the shelf where the busway would parallel an existing freight line track. However, after the full funding grant agreement was signed, CONRAIL constructed a second track on the shelf, leaving little room for the busway. Had the Port Authority chosen to proceed with its original plan, it would have had to pay to relocate both of CONRAIL's tracks to make room for the busway on the shelf. Also, after the full funding grant agreement was signed, CONRAIL refused to allow track outages and single-track operations during the construction of the busway on the shelf. The Port Authority concluded that this refusal would increase the project's costs because it would not allow construction work to be scheduled systematically and predictably.

A Recovery Plan Was Initiated to Control the Project's Costs and Schedule

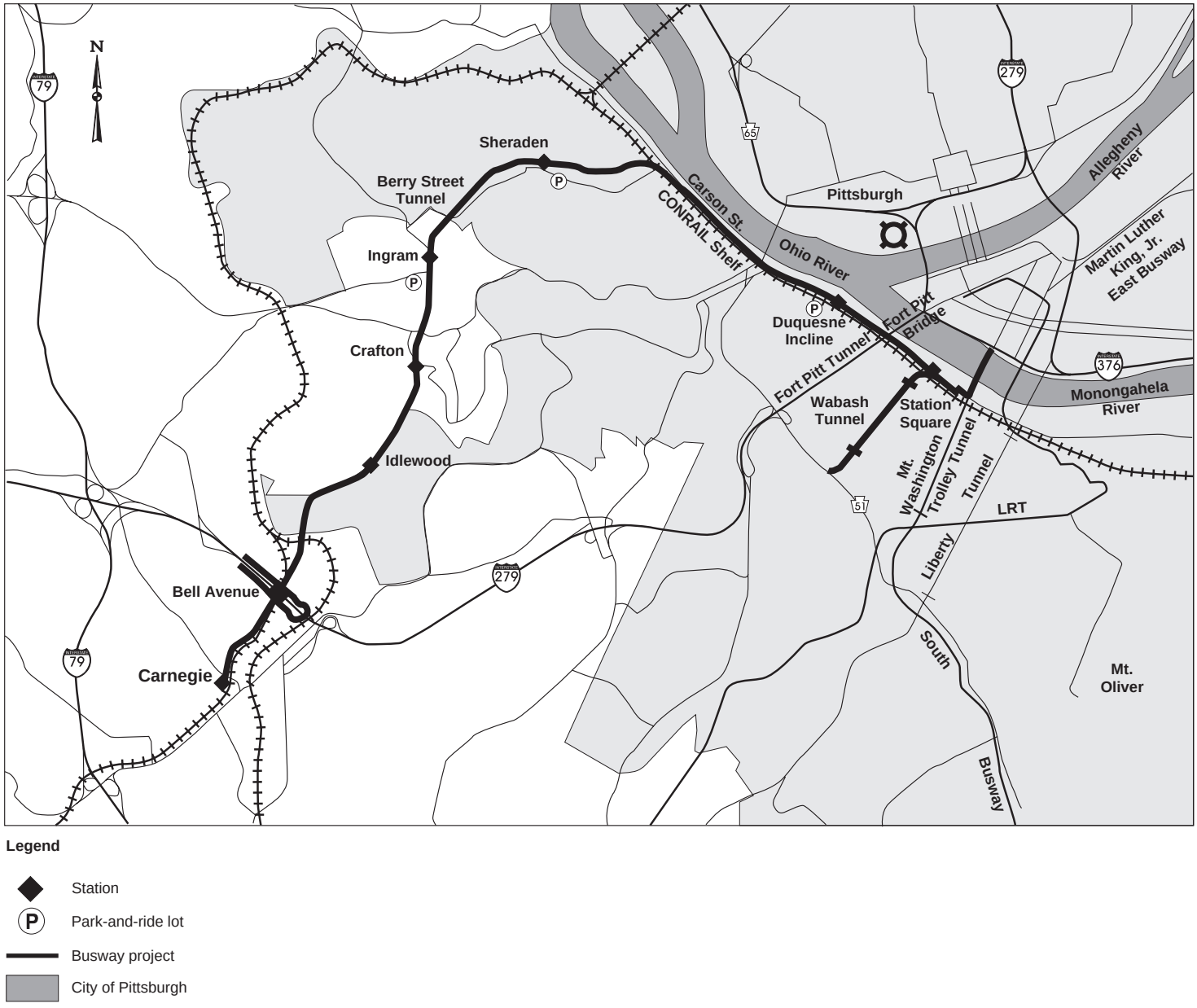
In December 1996, when the project's estimated costs had reached about $515 million, the Administrator of FTA directed the Port Authority to develop a recovery plan to address cost and schedule problems. The Administrator also asked the Port Authority to detail the steps it planned to take to implement the project and to mitigate the risks associated with the revised plan. Over the next several months, the Port Authority revised the project's construction strategy so that the project could be completed at the original cost, earlier than planned in the current schedule, and still achieve most of the original transit benefits. The recovery plan was completed in June 1997.

The recovery plan that the Port Authority issued to FTA contained three major changes in scope. First, it removed the busway from the CONRAIL Shelf and provided a new connection to Carson Street, which runs parallel to, but below, the shelf. This change not only obviated the need to move the recently constructed track and the original CONRAIL track to make room for the busway but also reduced the long-term costs of maintaining the shelf, which the Port Authority would have incurred. Because Carson Street is, and will remain, a facility for mixed traffic use, the state and city will be responsible for its maintenance.

The recovery plan also deferred construction of the new bridge across the Monongahela River. The cost to construct this bridge had reached $125 million. Furthermore, the problems in obtaining the needed rights-of-way along the Station Square waterfront had postponed the bridge's construction for so long that the project could not have been completed until at least 2002. In addition, a majority of the current Allegheny County commissioners and various community and business interests opposed the planned location of the new bridge. Consequently, the Port Authority decided to defer the construction of a new bridge and to have the busway and HOV facility use the existing bridges.

Finally, the recovery plan called for connecting the Wabash Tunnel to Carson Street and provided for HOV traffic to use an existing bridge with the buses and other mixed use traffic. Under the original plan, the tunnel would have carried HOV traffic directly onto the new bridge across the Monongahela River into downtown Pittsburgh. Port Authority officials believe that planned improvements to existing bridges will still allow the original design's transit benefits to be achieved. See figure III.1 for the project's current scope.

Figure III.1: Current Scope of the Pittsburgh Airport Busway



Source: Port Authority of Allegheny County.

Transit Benefits Remain; Project's Costs Return to Original Estimate

According to the Port Authority's recovery plan, the average travel time from the borough of Carnegie to downtown Pittsburgh during the morning rush hour is 39 minutes. The project's original plan would have reduced the average travel time by over 27 minutes to about 11.5 minutes. The recovery plan indicates that once the busway project has been completed, travel time during this period should be about 12.6 minutes. Likewise, Port Authority officials note that evening travel times will be reduced under the revised project, but not as much as expected under the original plan. Project officials believe, however, that the marginally longer expected travel time under the current plan is justified by the approximately $188 million reduction in the project's costs.

According to Port Authority officials, the cost to carry out the recovery plan is estimated at $326.8 million, the same amount originally estimated in the full funding grant agreement signed with FTA in 1994. In addition, environmental studies, which FTA required for the revised project, will cost about $98,000, according to Port Authority officials. However, these studies will be funded separately, and they are not to increase the total cost of the project.

The project's scheduled completion date is December 2001. As of October 31, 1997, the project was 72 percent designed and 31 percent constructed.

Funding for the Project Appears Secure

The federal government is providing 80 percent of the funds for the Pittsburgh busway project, or $256.8 million, while the state government is providing 20 percent, or $70 million. Table III.1 identifies the sections of the Intermodal Surface Transportation and Efficiency Act (ISTEA) of 1991 that authorized, and the programs that provided, federal funds to the project.

Table III.1: Sources of Federal Funds for the Busway Project

Dollars in millions

ISTEA section/federal program	Amount
Section 5309; New Starts	$136.0
Section 5309; Bus Projects	18.9
Section 1108; Priority Intermodal Projects	9.6
Section 1069; Miscellaneous Highway Projects	15.8
Section 1008; Congestion Mitigation and Air Quality Improvement[a]	76.5
Total	**$256.8**

[a]Flexible highway funds under ISTEA.

The full funding grant agreement, signed in October 1994, included a federal commitment of $121 million in New Starts Program funding. However, the agreement also stipulated that if the funds authorized by section 1069 of ISTEA for the project were not appropriated, the Port Authority could seek additional funds to cover the shortfall through an amendment to the full funding grant agreement. To date, an additional $15 million in New Starts funding has been provided to the project as a result.

After the Port Authority revised the scope of the project and deleted two costly elements—the construction of the busway along the CONRAIL Shelf and the construction of the new bridge over the Monongahela River—FTA proposed to reduce the federal share of the project's funding. Specifically FTA said that it planned to deobligate $19.4 million of the New Starts funds that had not yet been disbursed. This amount was commensurate with the reduced contribution of funds to the project from the New Starts Program.[1] However, the conference report on the 1998 Department of Transportation Appropriations Act directed FTA not to deobligate the funds.

The entire $70 million in state funding comes from the Port Authority's share of Pennsylvania's transportation bonds. To date, approximately $25.8 million of these funds has been made available to the project. The Port Authority incurs no debt service obligation because these funds are from bonds issued at the state level. According to Port Authority officials, the remaining state funds for the project are guaranteed but will not be made available until federal resources are expended. This action is in

[1]While the total federal share of the Pittsburgh busway project is about 80 percent, the New Starts funding ($121 million under the full funding grant agreement) represents about 37 percent.

accordance with the full funding grant agreement's concurrence with the Port Authority's request for deferred local share.

Uncertainties Remain, but the Revised Project Faces Fewer Risks Than the Original Project

Although some uncertainties remain, the revised busway project faces fewer design risks than the original project. Furthermore, other uncertainties—including the outcomes of actual construction bids and a pending lawsuit—are unlikely to delay the project's completion within budget and on time, according to Port Authority officials. FTA is monitoring the project's costs and progress.

The revised busway project faces fewer design risks than the original project because it is smaller in scope and much farther along in the design process—72 percent designed, compared with 17 percent when the original full funding grant agreement was signed in 1994. According to Port Authority officials, the original project's cost overruns and schedule delays—particularly those associated with CONRAIL's laying of a second track and with obtaining rights-of-way for the proposed new bridge—could have been avoided, or at least mitigated, if the agreement had been entered into later in the design process. Although the ongoing environmental assessment could disclose unanticipated problems, Port Authority officials believe that, given its reduced scope, the revised project is less likely than the original project to encounter environmental problems. In addition, as of October 31, 1997, engineering construction estimates were about $20 million less than budgeted. And even if the actual bids for the remaining contracts do exceed the estimates, the officials said, contingency funds could, to some degree, cover the difference.

Port Authority officials do not expect an ongoing lawsuit—filed over the condemnation of a property along a portion of the busway from Carnegie—to directly affect the project. Port Authority officials said that an adverse ruling was possible but should have no impact on the project's costs because contingency funds are available.

FTA has controls in place to ensure that federal funds are used properly and efficiently to complete the recovery plan. The agency is completing a triennial review of the Port Authority that found no major deficiencies or weaknesses. In addition, FTA's Philadelphia Regional Office receives quarterly progress and status reports from the Port Authority, which allow FTA to compare the project's budgeted and actual costs and planned and actual progress. FTA has also assigned a project management oversight

contractor to monitor the Port Authority's implementation of a project management plan and quality assurance/quality control program. This contractor further assists FTA in overseeing the design and construction of the project and provides FTA with monthly reports on the project's status. Additionally, the contractor helped FTA assess the Port Authority's recovery plan.

St. Clair Extension of the St. Louis MetroLink System

Scheduled to be completed in 2001, the St. Clair extension will be the first addition to the St. Louis MetroLink light rail system since the system began operating in July 1993. This 17.4-mile segment will cost an estimated $339 million to complete. Consultants under contract to the Federal Transit Administration (FTA) and the Illinois Department of Transportation considered this estimate reasonable. The proposed alignment will pass near known archeological remains and through an old railroad right-of-way potentially containing hazardous wastes. Although project officials stated that costs could increase, they believe that they have taken sufficient measures to limit any cost growth resulting from these factors. Federal New Starts Program funds will cover $244 million of the project's costs, and local funds will cover the remaining $95 million. Because the federal funds will not be available as early as planned and will therefore not be on hand when the project's costs come due, the project's management will issue grant anticipation notes to cover the temporary shortfall. The cost of financing the notes will add $25 million to the total cost of the project. Although the extension is expected to be completed on schedule, funding has not yet been secured for an additional 8.6-mile segment that would extend the St. Clair line to Illinois' new Mid-America Airport.

Background

The St. Louis MetroLink light rail system currently consists of 17 miles of primarily double track running electrically powered cars from Lambert-St. Louis International, the region's chief airport, through downtown St. Louis and across the Mississippi River to East St. Louis, Illinois. The system is owned and operated by the Bi-State Development Agency, the primary transit agency in the St. Louis metropolitan area. Currently, MetroLink serves 19 stations, including those near the University of Missouri-St. Louis, a museum and zoo complex, Busch stadium, and the central business district.

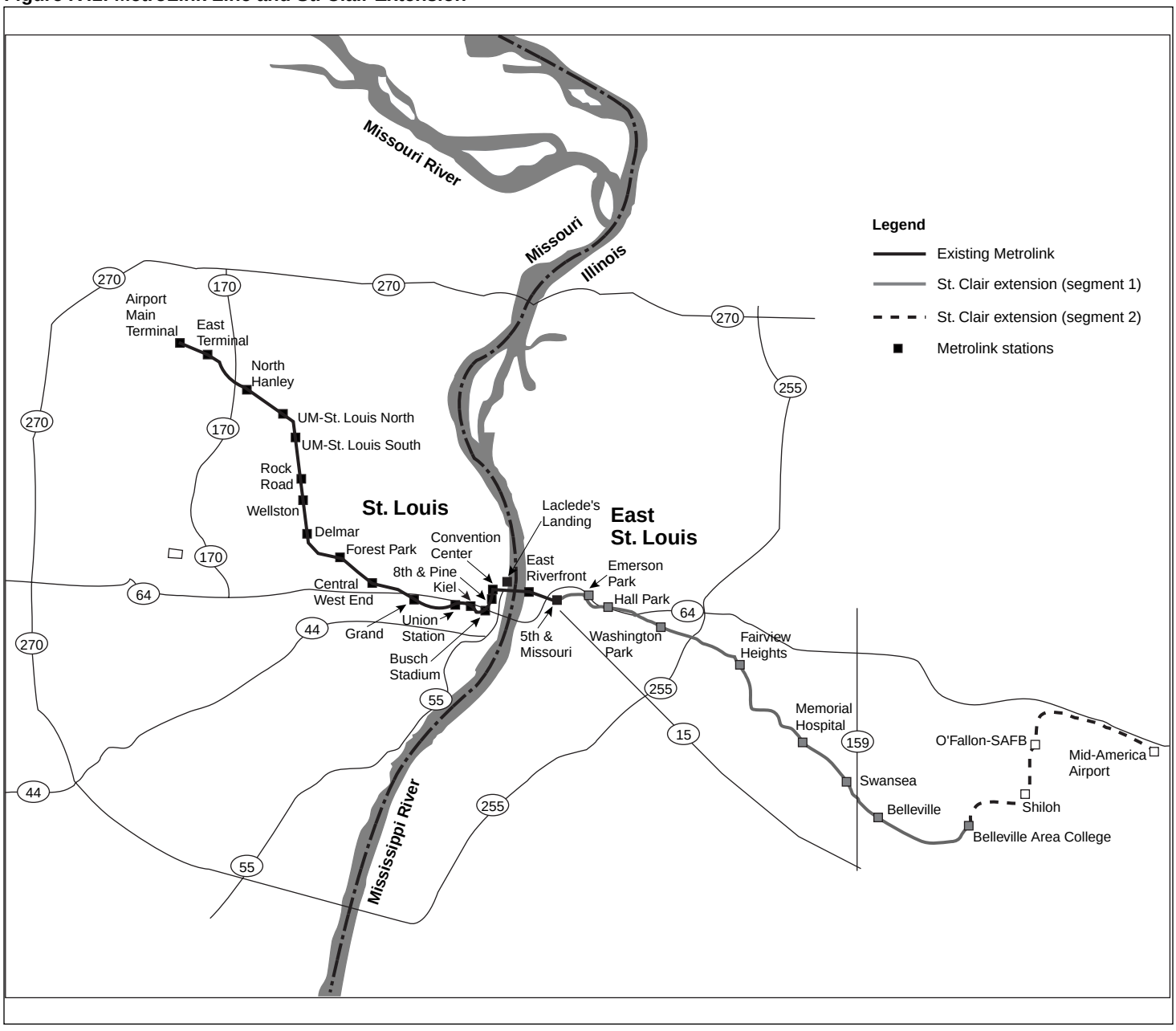
As originally planned, the St. Clair extension would have added 26 miles to MetroLink. But because of federal funding limitations, the project was divided into two segments, and only the first segment was funded. According to its sponsors, the project is needed to reduce congestion on St. Clair County's main transportation corridors, particularly on two Mississippi River bridges during the morning and evening rush hours.

The St. Clair extension will start at the eastern terminus of the MetroLink system—the 5th and Missouri Station in East St. Louis—and will run for 17.4 miles in an easterly to southeasterly direction to Belleville Area

College, serving eight new stations. Besides the track and stations, the project will include 15-20 new vehicles, 3,500 new parking spaces, and 41 new bus bays at stations. Construction is scheduled to begin in the spring of 1998, and operations are to start on or before September 30, 2001.

The second segment was planned to continue for another 8.6 miles beyond Belleville Area College to the new Mid-America Airport. It would have served three additional stations. Local officials are now seeking funds to complete the second segment of the extension. Figure IV.1 depicts the existing MetroLink line and the two segments of the proposed St. Clair extension.

Figure IV.1: MetroLink Line and St. Clair Extension



Source: GAO's adaptation of a map from the Bi-State Development Agency.

Capital Cost Estimates Are Considered Reasonable but Are Subject to Some Uncertainties

The estimated capital cost of building the St. Clair extension (17.4 miles) is $339.2 million. This estimate is based on current engineering costs, actual costs of constructing the initial MetroLink line, adjusted for inflation, and provides for contingencies. However, the extension is subject to some risks that could increase its costs.

Table IV.1 breaks down the cost estimate as of September 1997 for the St. Clair extension, showing construction costs (79 percent) and other project management costs (21 percent), as well as allowances for contingencies, which are 14 percent of the estimated construction and project management costs.

Table IV.1: Capital Costs for the St. Clair Extension

Dollars in thousands

Cost element	Base cost plus adjustment for inflation	Contingency allowance	Total cost
Construction and equipment[a]	$234,803	$30,334	$265,138
Project management and real estate[b]	62,339	11,633	74,032
Total cost	**$297,203**	**$41,967**	**$339,170**

[a]Covers elements such as trackwork, utility relocation, alignment construction, and station construction and systems installation.

[b]Covers supporting expenses such as right-of-way purchase, construction insurance, and project administration.

Source: Bi-State Development Agency.

Estimates for most of the project's construction and equipment costs (e.g., for trackwork, transit vehicles, and stations) are based on current engineering cost estimates and were validated using the actual construction costs for the original MetroLink. Estimates for the project's management costs (e.g., for designing the project and soliciting and procuring construction contracts) are calculated as a percentage of each construction element. According to the final environmental impact statement, the real estate costs and related legal and administrative costs were estimated by an independent appraiser. The cost estimates were increased by 3 percent to cover increases from inflation occurring during the life of the project. Finally, the contingency allowances were added to the estimated costs to provide for unanticipated work that may prove necessary during the design and construction of the project. The contingency allowances vary with the uncertainties associated with each

cost element, from a low allowance (10 percent) for the cost of the transit vehicles (comparable to those recently purchased for the MetroLink line) to a high allowance (100 percent) for acquiring the real estate for the project.

Costs Compare Favorably With Those of Recent Projects

Experts reviewing the project's cost estimates have judged them reasonable. According to a consultant hired by the Illinois Department of Transportation, the cost estimates were prepared using state-of-the-art engineering techniques and compare favorably with the costs of other light rail transit systems recently built throughout the United States. The consultant found, for example, that the average cost of building the line—39 percent of the project's total cost—compared favorably with the average cost of building the lines—40.5 percent—for five recently built projects.[1] Furthermore, according to both the consultant and the project's engineers, the total cost estimate may be conservative because the extension is not as complicated to construct as the original MetroLink line, which required laying track through old tunnels and on a historic bridge spanning the Mississippi River. Finally, a management consultant for FTA, who is monitoring the project, stated that the cost estimates and associated contingency allowances are reasonable.

As of October 1997, the project's total estimated capital cost had not exceeded the amount included in the project's full funding grant agreement, approved in October 1996. Bi-State officials told us that as the project proceeds through the design phase, any increases on one aspect of its design will be offset by decreases in another aspect. For example, the cost of adding a bridge to the line between Washington Park and Memorial Hospital was offset by a reduction in the cost of other components—utility lines were not relocated, grade crossings were eliminated, and allowances for contingencies were reduced. To help Bi-State meet its cost goals, cities have also provided funds to pay for desired modifications to their stations.

Uncertainties Could Increase Costs

Although cost estimates have been refined throughout the project's design—now 90 percent complete—previously undetected hazardous materials or undiscovered archeological resources may be found, or inflation may be higher than projected, during the final design and construction. Project officials stated that although uncertainties could increase the project's costs, they had taken steps such as changing the

[1]The projects were in Los Angeles, Pittsburgh, Portland, Sacramento, and San Jose.

project's alignment to avoid known archeological sites and completing detailed archeological surveys to identify any potential problems.

Ten miles of the 17.4-mile extension will be constructed on an abandoned railroad right-of-way. Officials acknowledge that this land has the potential to contain hazardous waste because such waste was dumped along the right-of-way. The final environmental impact statement found various types of hazardous waste along the project's alignment, including a leaking underground storage tank, asbestos and lead-based paint in buildings to be demolished, and household debris. Subsequent site investigations and sampling found not only asbestos and lead but also arsenic. Although sampling for hazardous waste has been completed, demolition and construction have not begun. Local project officials stated that they plan to sign a contract for about $1.2 million for completing demolition and mitigating identified hazardous wastes. This is in line with the $1.3 million estimate made early in the project's design. If hazardous waste is found in greater quantities than projected, the costs of mitigation or removal could exceed the contracted amount.

In addition, the extension will pass near the site of an ancient Native American settlement that was once the most sophisticated human settlement north of Mexico. Over 100 large earthen mounds were built in the area for daily activities, religious ceremonies, and burial. Some of these mounds, known as the East St. Louis Bottoms Mound Group, are of primary archeological concern to Illinois preservation officials. Although the current alignment avoids known archaeological sites, the final analysis or actual construction could identify some archeological resources that need to be preserved, potentially increasing the project's costs.

The project's use of a 3-percent cost escalation factor for inflation is based on the current costs published in the Engineering Cost Record and on engineers' experience. The accuracy of this estimate will be tested in the spring and summer of 1998, when construction contracts are let, and will depend on how much major construction work is taking place at the time. According to Bi-State and St. Clair County officials, determining a cost escalation factor can be risky. However officials believe that given the current economic conditions, the 3-percent adjustment will be adequate to cover increases in the project's estimated costs.

Changes in the Federal Funding Schedule Will Increase Local Financing Costs

The St. Clair extension will be paid for with a combination of federal and local funds. However, because sufficient revenues will not be available as the project's costs come due, the project's management will issue grant anticipation notes to cover the deficit. According to the most recent cash flow analysis, this issuance will result in about $25 million in short-term financing costs.

FTA Will Provide the Bulk of the Project's Financing

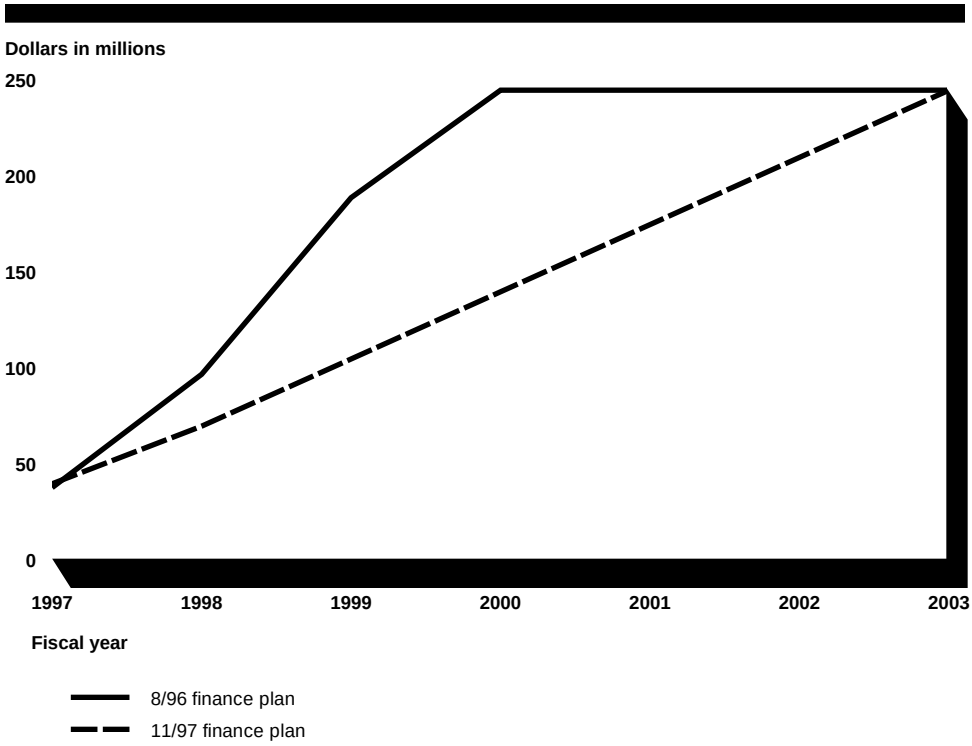
In October 1996, FTA and the Bi-State Development Agency signed a full funding grant agreement stipulating that the $339 million cost of the St. Clair extension project will be paid for with a combination of federal and local funds. According to the agreement, the federal government will provide $244 million, or 72 percent of the project's capital costs. These funds, subject to the annual appropriations process, are to be provided over 7 years, beginning in fiscal year 1996 and ending in 2002. The full funding grant agreement further states that the remaining $95 million—or 28 percent of the project's capital costs—will come from local sources.

The St. Clair County Transit District, a local mass transit taxing body that currently contracts with the Bi-State Development Agency to provide bus service in the county, will provide the local share. Most of the district's revenue for the extension comes from two county sales taxes: a 1/2-cent tax dedicated to the capital and operating costs of the St. Clair extension and a 1/4-cent tax dedicated to transit services in the county. In fiscal year 1996, these two sources provided revenues of about $14 million. The Illinois Department of Transportation originally planned to contribute to the project. However, the state will not contribute because the state legislature did not approve the bonding authority necessary to support state mass transit capital assistance.

Issuing Notes to Bridge Funding Gap Will Raise Short-Term Financing Costs

Recent changes in assumptions about the federal funding schedule necessitated changes in the extension's financial plan. Whereas the original financial plan assumed that the entire federal share ($244 million) would be provided before the end of fiscal year 2000, the revised September financial plan assumes that only $140 million will be provided through the end of that year and the balance by the end of fiscal year 2003. According to a Bi-State Development Agency official, this change was made because amounts provided through the annual appropriations process are expected to be provided later than scheduled in the full funding grant agreement. Figure IV.2 compares the federal funding assumptions underlying the original and the revised financial plans.

Figure IV.2: Estimate of Cumulative Federal Funds Under the Original and Revised Financial Plans



Source: GAO's analysis of data from Bi-State Development Agency and St. Clair County Transit District.

Primarily because of the new assumptions about the availability of federal funds, the revised financial plan shows that sufficient funds will not be available to cover the project's costs as they come due. The project will have cash shortfalls between 1999 and 2002, peaking at $92 million in 2000. As a result, the project's management will issue grant anticipation notes[2] valued at $117.6 million. According to the revised financial plan, summarized in table IV.2, the costs of financing these notes will be about $25 million and will be paid by the district. These financing costs will raise the project's total costs to $364 million—a 7-percent increase over the original financial plan's projections. The notes will serve as a bridge loan,

[2]The Bi-State Development Agency will also issue long-term debt, but this was anticipated in the original financing plan.

which will be paid off when sufficient revenues become available.[3] A Bi-State official said that the agency plans to issue the notes in May 1998.

Table IV.2: Revised Financial Plan, September 1997

Dollars in thousands

	Fiscal year							
Revenues	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**Total**
Federal share	**$39,708**	**$30,000**	**$35,000**	**$35,000**	**$35,000**	**$35,000**	**$34,223**	**$243,931**
Local share								
1/2-cent county tax	18,901	10,156	11,095	10,198	5,273	1,086	0	56,709
1/4-cent county tax	3,216	4,371	4,608	4,508	4,695	5,123	4,219	30,740
Other local funds	0	0	2,153	2,349	2,349	979	0	7,830
Long-term bonds	0	23,825	1,318	22	0	0	0	
Total revenues	**61,825**	**68,352**	**54,174**	**52,077**	**47,317**	**42,188**	**38,442**	**364,375**
Costs	**(11,201)**	**(56,503)**	**(169,144)**	**(91,622)**	**(9,998)**	**(703)**	**0**	**(339,171)**
Annual balance	**50,624**	**11,849**	**(114,970)**	**(39,545)**	**37,319**	**41,485**	**38,442**	
Cumulative balance	**50,624**	**62,473**	**(52,497)**	**(92,042)**	**(54,723)**	**(13,328)**	**25,204**	
Grant anticipation notes	0	117,575	0	0	0	0	0	117,575
Grant anticipation note principal repayment	0	0	0	0	(37,155)	(39,145)	(41,275)	(117,575)
Grant anticipation note financing costs	0	(2,380)	(3,367)	(6,391)	(6,391)	(4,404)	(2,270)	(25,203)
Revised balance	$50,624	$177,668	$59,331	$13,395	$7,168	$5,104	0	

Note: Totals may not add because of rounding. The grant anticipation notes' financing costs are reduced by $6.123 million to reflect the interest earned on the balance of these funds in 1998 and 1999.

Source: GAO's analysis of data from Bi-State Development Agency and St. Clair County Transit District.

The Project Is on Schedule

The project's design is about 90 percent complete. Construction is scheduled to begin in the spring of 1998, and local officials expect revenue service to begin in May 2001. Two steps remain before construction can start—finishing the project's design and obtaining a wetlands permit. Other activities, such as archeological preservation and the remaining

[3]Bi-State officials told us that they had used similar instruments in the past—revenue anticipation notes—to fund transit operations in anticipation of state or federal operating assistance. The several revenue anticipation note issues ranged between $10.5 million and $19.5 million. According to a representative of the underwriter, Paine Webber, having the county sales tax as a revenue base enhances the notes' marketability.

right-of-way acquisition can occur during construction. Table IV.3 shows the project's milestones and their actual or estimated completion dates.

Table IV.3: Project's Milestones and Completion Dates

Milestone	Completion date
Final environmental impact statement	Aug. 1996[a]
Record of decision	Sept. 1996[a]
60 percent design	Oct. 1997[a]
90 percent design	Jan. 1998
Wetlands permit	Feb. 1998
100 percent design	Mar. 1998
Archeological review and mitigation completed	May 1998
Right-of-way obtained	Oct. 1998
All contracts awarded	Oct. 1999
Construction completed	Dec. 2000
Testing/start-up	Apr. 2001
Service started	May 2001

[a]Completed actions.

Source: Bi-State Development Agency.

The full funding grant agreement between FTA and Bi-State provides for revenue service to begin on or before September 30, 2001. The project's local managers plan to begin revenue service in May 2001. This 4-month leeway should help the project meet the full funding grant agreement's September date if construction faces any delays.

Although the project is still on schedule to begin operating in May 2001, the design of the Illinois maintenance facility has been delayed because, according to FTA's contractor, the project's management decided to select an alternative site for the facility. The originally selected site relied on property owned by a freight railroad. According to the project's management, the railroad was unwilling to sell the property at a reasonable price; therefore, extra time was needed to find a suitable alternative site. FTA's contractor said that the facility should still be completed in time to meet the May 2001 operation date.

Funding for the Extension's Second Segment Is Uncertain

Local officials are seeking federal or state funding for the second segment of the St. Clair extension. According to Bi-State officials, this $88 million project will not be feasible unless the state government can pay a significant portion of its costs. Currently, neither federal nor state financial assistance is certain.

For the second segment of the St. Clair extension to receive federal funding, the Bi-State Development Agency would have to apply for an amendment to the full funding grant agreement, which currently applies only to the first segment. An Illinois state official said that such an application might encounter resistance from supporters of another high-priority light rail project, the Cross-County corridor extension, planned for development in the city of St. Louis and St. Louis County, Missouri.[4] Supporters of this project expect to receive New Starts Program funding early in the next decade and believe that additional federal funds for the second segment of the St. Clair extension could delay their federal funding.

According to an Illinois Department of Transportation official, the state may issue a grant covering between 50 and 100 percent of the cost of the second St. Clair segment. In part, such a large share would compensate for the state's not having contributed to the first segment. However, such state assistance is not assured because the legislature has yet to approve a bond issue to support mass transit capital assistance grants.

[4]Altogether, nine transportation corridors could be served by MetroLink extensions, according to a 1991 systems analysis developed by St. Louis-area transportation planners.

Salt Lake City South Light Rail Transit

Project officials expect the Salt Lake City South Light Rail Transit system to be completed within budget, ahead of the original schedule. Many of the major contracts for the $312.5 million project have been awarded at amounts lower than expected, allowing for the implementation of several enhancements to the system. According to project officials, the 15-mile system will begin operations by March 2000—10 months ahead of schedule and well before the opening of the 2002 Winter Olympic Games in Salt Lake City.

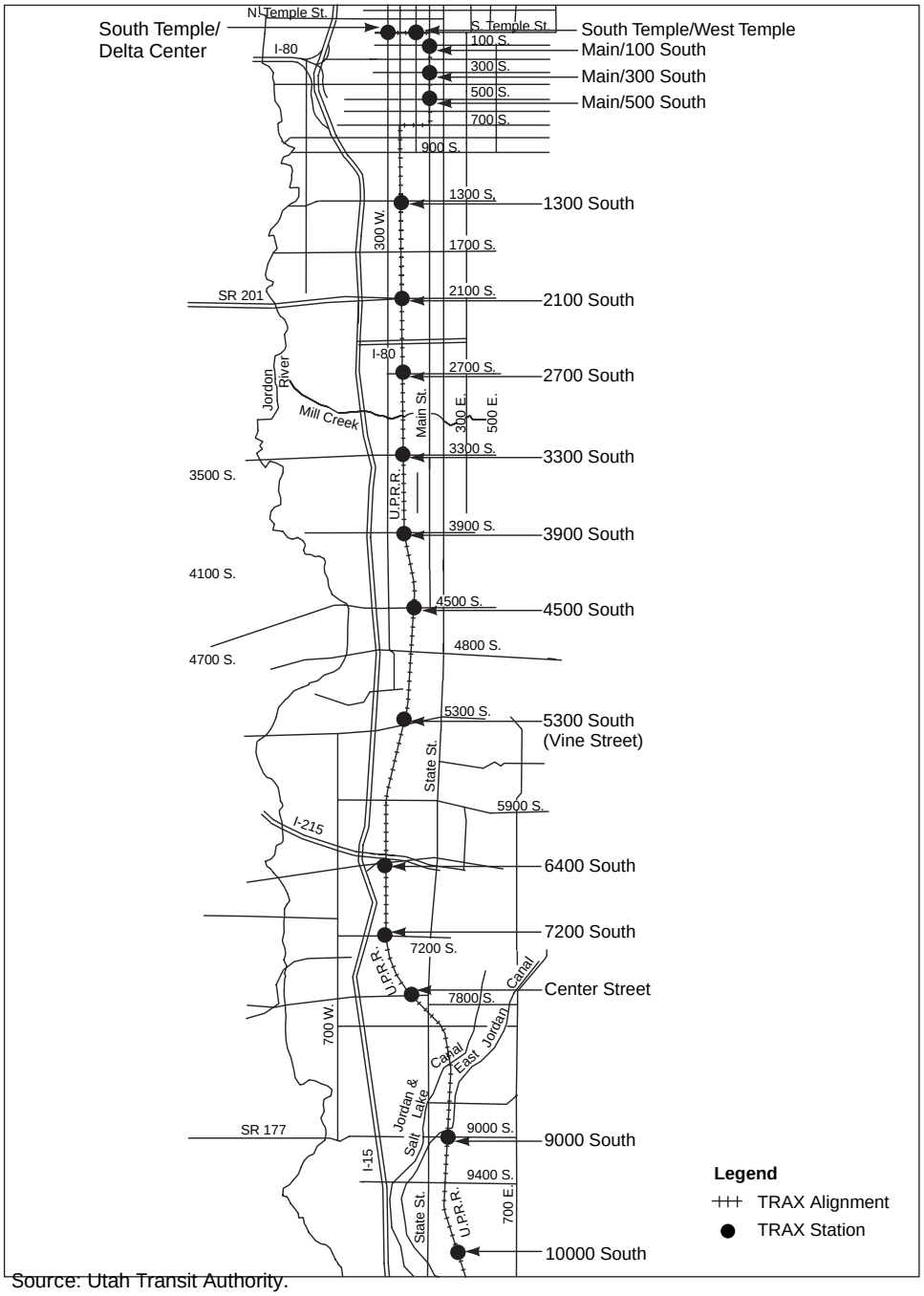
Background

A local transportation planning process for Salt Lake County, begun in 1982, determined that the north-south Interstate 15 (I-15)/State Street Corridor in Salt Lake County warranted major capital investment in both its transit and its highway systems. The resulting transit capital project is the $312.5 million, 15-mile Transit Express Salt Lake Area Light Rail System, known as "TRAX" (see fig. V.1.). TRAX's principal objective is to provide capacity improvements in the corridor, especially during peak commuting periods.

TRAX will largely parallel I-15, the major north-south highway that is also being improved as a result of the same local planning process (see app. VII), from the northern end of downtown Salt Lake City through the downtown and the southern suburbs. TRAX service will be coordinated with bus service and be connected to an east-west light rail line currently under consideration.

Initially, the 15-mile TRAX system will serve 17 passenger stations—5 downtown and 12 in the southern suburbs. Within the downtown area, TRAX will operate on city streets within the established speed limit (currently 25 miles per hour); south of downtown, TRAX will operate on an existing railroad right-of-way at a maximum speed of 55 miles per hour. Except for two bridges in the southern suburbs, the entire system is double-tracked. These bridges may be upgraded to become double-tracked in the future if funds become available.

Figure V.1: Map of the Salt Lake City South Light Rail Transit System



Source: Utah Transit Authority.

Contracts' Costs Were Lower Than Expected, Allowing for Enhancements

As of December 31, 1997, the project's total estimated cost had not changed from the $312.5 million[1] projected in the August 1995 full funding grant agreement. As of that date, the total planned obligations for the project's tasks were $273 million; the balance of the project's costs are for financing ($25 million) and reserves ($14.6 million). Table V.1 shows the planned breakdown of obligations for tasks and other cost elements.

Table V.1: Breakdown of Project's Planned Costs, as of December 31, 1997

Dollars in millions

Cost element	Planned cost
Tasks	
Project management and administration	$14.8
Final design and engineering	12.5
Construction management	5.2
Railroad right-of-way	18.5
Real estate	15.5
Construction	131.7
Procurement	71.1
Start-up and testing	3.5
Subtotal for tasks	**$272.9**
Reserve	5.6
Local match reserve	9.0
Financing	25.0
Total cost	**$312.5**

Source: Utah Transit Authority TRAX Executive Summary Report, December 1997

According to Utah Transit Authority (UTA) officials, bids and award amounts for many of the TRAX contracts were lower than budgeted. UTA officials attribute those differences to the competitive construction environment created, in part, by the I-15 highway project. UTA was able to use the difference between the budgeted and the actual bid prices to enhance some aspects of the system. For example, UTA was able to upgrade single-tracked segments of the system to double-tracked segments and to enhance the communications system throughout the project.[2] UTA routinely reports to the Federal Transit Administration (FTA)

[1]This amount does not include about $8.8 million spent by the Utah Transit Authority for preliminary engineering costs or $22 million in project-related investments made by Salt Lake City.

[2]UTA officials were not able to provide the costs of these enhancements because they are not readily distinguishable. Some of the enhancement work was added to existing contracts, and some was incorporated into new bid packages. Additionally, some of the enhancements eliminated the need for other investments, such as mechanisms to move trains between single and double tracks.

on its contracts' status and costs, and FTA reviewed and approved each TRAX enhancement funded with contract savings.

As of December 31, 1997, UTA had obligated $190.8 million, or about 70 percent of the project's total $273 million task budget. This obligation amount is $68.8 million, or about 27 percent, less than planned for the project at this point in its construction schedule. According to UTA officials, the majority of the $68.8 million obligation underrun occurred because contracts were awarded for amounts lower than anticipated; in addition, about $15 million in obligations planned for November were not made.

As of December 31, 1997, UTA had expended $89.2 million—33 percent of the $273 million task budget. These expenditures are $11.5 million (12 percent) less than the amount projected for this date in the expenditure plan. Between December 1997 and November 1998, UTA is projected to expend about $150 million, almost twice the amount already expended.

Pace of Construction Will Require Some Short-Term Borrowing

The Intermodal Surface Transportation Efficiency Act (ISTEA) required FTA to enter into a full funding grant agreement with UTA, which includes $131 million in federal transit New Starts Program funds for the initial segment of the TRAX project. In August 1995, FTA and UTA signed an agreement committing the federal government to fund no more than 80 percent of the project's actual net costs or no more than $241.4 million, whichever is lower.[3] The full funding grant agreement states that, in addition to the $131 million authorized by ISTEA and the $12.5 million that FTA provided to TRAX before entering into the full funding grant agreement, FTA intends to obtain $97.5 million for TRAX for fiscal years 1998 through 2000 under the legislation reauthorizing ISTEA. Through fiscal year 1997, TRAX had been provided a total of $70.8 million of the $241.4 million, $12.5 million of which predated the full funding grant agreement. The 1998 Department of Transportation Appropriations Act provided $63 million for TRAX; $10 million of ISTEA's authorization for TRAX has yet to be provided.

As of December 31, 1997, UTA had received a total of $58.3 million in federal funds—including about $46 million from the amount committed in the full funding grant agreement and $12.5 million received under a previous FTA grant for acquiring a railroad right-of-way. UTA anticipates

[3]According to UTA officials, FTA attributes the $9 million difference between $241 million and 80 percent of $312.5 million ($250 million) to a calculation error. FTA may address this error by changing the maximum federal funding commitment to $250 million.

that over the next few months it will draw down most of the available remaining federal funds as the expenditure rate increases.

Local funds for the construction of TRAX are projected to total $71 million.[4] These funds are to come from bond proceeds, as well as from cash that UTA has on hand. In October 1997, UTA issued $27.7 million in sales tax and transportation revenue bonds, which generated $24.8 million for the project's construction. As of October 15, 1997, UTA had expended $20 million on construction from its cash on hand, had set aside an additional $17 million in cash, and planned to expend $9.3 million in the future from its cash reserves.

Additionally, during the second quarter of fiscal year 1998, UTA plans to issue $50 million to $75 million in grant anticipation notes or bonds backed by the expectation that it will receive federal funds in fiscal years 1999 and 2000 as specified in the full funding grant agreement. These bonds are to address the cash-flow shortage that is expected to occur as UTA continues to construct TRAX and pay its contractors before federal funds are available for reimbursement. Federal funds will be used to repay the bonds, assuming TRAX is funded as planned.

Operations Are Expected to Begin Ahead of Schedule

The full finding grant agreement commits UTA to begin TRAX service to the general public no later than December 31, 2000, the same date currently shown on UTA's official master schedule. However, UTA projects that TRAX service will begin in March 2000—10 months ahead of schedule. Although some delays have been noted with individual contracts, UTA does not expect any of these to delay the system's completion.

Construction of the light rail system began in June 1997 and, as of November 1997, was under way in the downtown and suburban portions of the system. A downtown segment and station were completed in early November. Test tracks are being installed and are scheduled to be ready for operation by April 21, 1998; the first TRAX vehicle is currently scheduled to arrive on March 1, 1998.

At this stage in construction, environmental problems could still arise and slow the completion of the project, as well as increase its costs. For example, excavation for the stations along the southern portion of the system will take place near the existing freight railroad track, where

[4]Or $62.5 million if FTA corrects its calculation error and provides a total of $250 million for the project.

hazardous materials—a potential legacy of freight operations—may be found. The project is not scheduled to be completed to the point that these risks are eliminated until September 30, 1999.

The Central Artery/Tunnel Project

The Central Artery/Tunnel project is one of the most expensive, and in many ways, the most complex federally assisted highway project ever undertaken. As we have reported in a series of reports and testimonies, state managers have worked to control the costs of the project and are taking steps to reduce them. However, the state is not meeting its aggressive cost containment goals and, unless further savings can be found, construction cost increases seem likely to push the project's total net cost higher than the current $10.8 billion estimate.

Massachusetts' October 1997 project finance plan will meet the funding needs of the Central Artery/Tunnel project if costs remain as forecast and if funding is received as projected. However, the project's funding needs could be larger than projected in the state's finance plan because (1) additional costs of some magnitude seem likely and (2) federal funding could be nearly $1 billion less than projected, according to the multiyear highway bills pending in the Congress. In addition, for this project, the use of grant anticipation notes to borrow against future federal funding presents challenges.

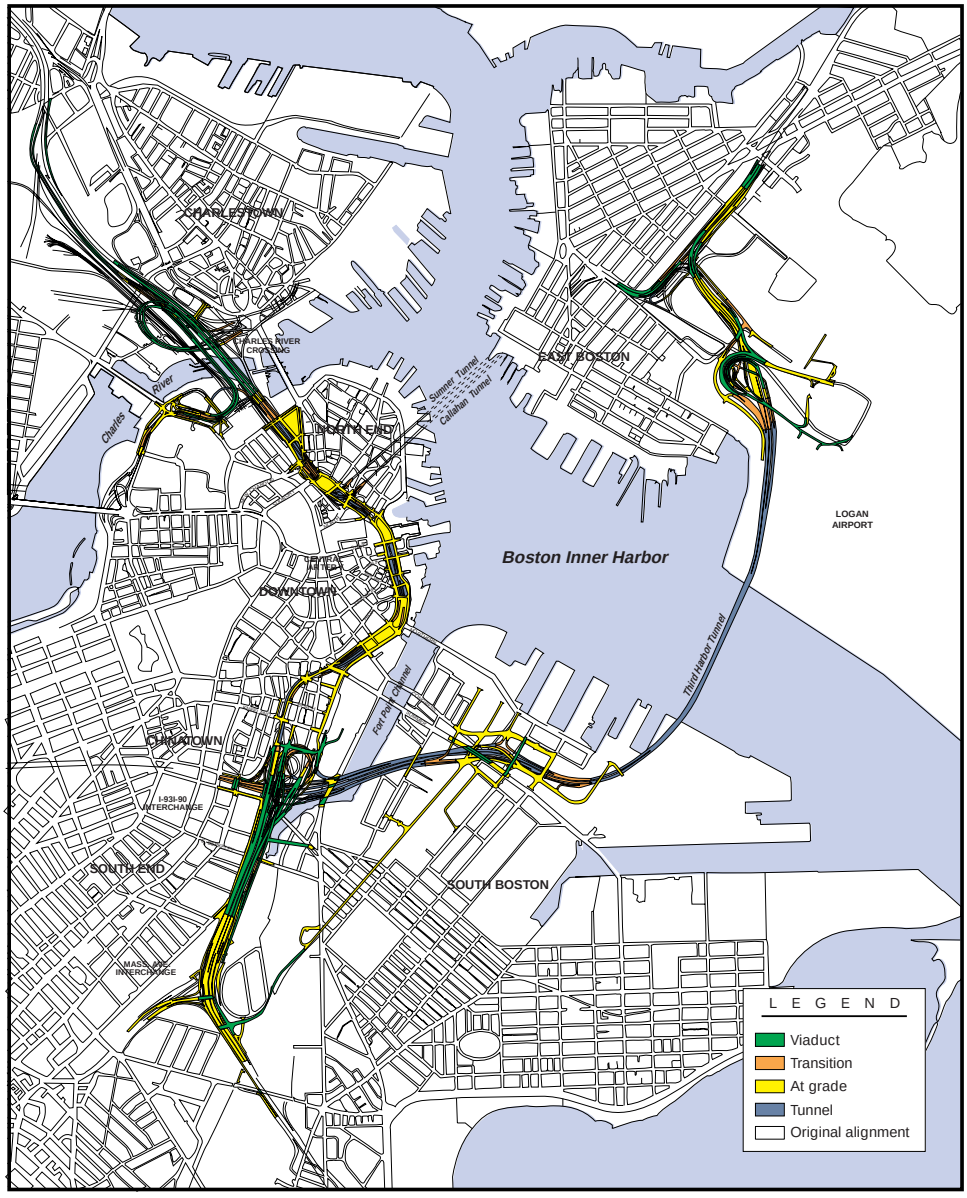
Background

The Central Artery/Tunnel project will substantially complete the federal Interstate Highway System. It will link air, sea, rail, bus, and subway facilities and will, according to the project's managers, support sustained economic growth and environmental benefits. The project is managed by the Massachusetts Turnpike Authority. Its day-to-day design and construction activities are managed by a management consultant—a joint venture of Bechtel/Parsons Brinckerhoff—under contract with the state.

The Central Artery/Tunnel project will build or reconstruct about 7.5 miles of urban highways (about 160 lane miles)—about half of them underground. As figure VI.1 shows, it will (1) extend route I-90 east, mostly in tunnels, through South Boston, under Boston Harbor (through the Ted Williams Tunnel), and to East Boston and Logan International Airport; (2) replace the Central Artery—an elevated portion of I-93 through downtown Boston—with an underground roadway; and (3) replace the I-93 bridge over the Charles River. The project entails numerous and complex construction challenges in tunneling under densely populated downtown Boston. For example, the project will burrow close to buildings and subway tunnels, often with only a few feet to spare. Construction plans include underpinning the existing elevated Central Artery so that this structure continues to carry traffic—as well as supporting the railroad

tracks leading into the city's main train station—while underground highways are built directly below.

Figure VI.1: Map of the Central Artery/Tunnel Project



Source: Central Artery/Tunnel project office.

Status of Cost and Schedule

Massachusetts reported that as of September 30, 1997, the total estimated net cost of the Central Artery/Tunnel project was $10.8 billion. A total of $6 billion, including $4.9 billion in federal funds and $1.1 billion in state funds, has already been obligated for the project. As we reported in July 1997, the total funding needs for the project are $11.6 billion, about $800 million more than the project's cost estimate.[1] This is because the $10.8 billion cost estimate includes a credit to the cost of the project of about $800 million, which represents the future receipt of insurance proceeds. However, these proceeds, if realized, will not be available until 2017, well after the project's completion; therefore, they cannot be used to help pay for the project.[2] The project's obligations and remaining funding needs are shown in table VI.1.

Table VI.1: Central Artery/Tunnel Project's Obligations, Funding Needs, and Cost, as of September 30, 1997

Dollars in billions

Obligations, funding needs, and cost	Amount
Obligations through September 30, 1997	$6.0
Remaining obligations through fiscal year 2005	$5.6
Total funding needs	**$11.6**
Insurance proceeds in 2017	($0.8)
Total net cost	**$10.8**

Source: GAO's analysis of state data.

Construction began in 1991, and the project achieved its first major milestone when the Ted Williams Tunnel opened to commercial traffic in 1995 and to passenger vehicles on a limited basis in 1996. As of September 30, 1997, the project's final design was 94 percent complete and was scheduled to be substantially complete by mid-1998. As of the same date, construction was 32 percent complete and most of the remaining 30 construction contracts were planned to be awarded by 2001. The project is scheduled to open to traffic in stages—the permanent connections of I-90 to the Ted Williams Tunnel in December 2001, the northbound Central Artery in July 2002, and the southbound Central Artery in May 2003. The

[1]Transportation Infrastructure: Progress on and Challenges to Central Artery/Tunnel Project's Costs and Financing (GAO/RCED-97-170, July 17, 1997).

[2]The insurance proceeds are estimated savings that result from, among other things, a better-than-expected safety record and lower-than-expected accident claims on the project. Most of the estimated insurance savings are attributable to anticipated refunds that, along with other insurance-related funds, will earn interest until all claims are paid, at which time these remaining funds will be returned to the state. Project officials estimate that this will occur in 2017—13 years after construction is completed. According to project officials, the industry's standard practice is to assume that claims are paid over a 13-year period after the project is completed.

entire project is scheduled to be substantially complete in December 2004. As of September 30, 1997, Massachusetts reported that the project was meeting all of its milestones except that the opening of the southbound Central Artery was 3 months behind schedule.[3] Project officials attributed this projected delay to the additional construction time needed when the project's plans to incorporate an existing tunnel into the underground Central Artery were revised in response to concerns raised by the Federal Highway Administration (FHWA). Officials stated that this delay, if it occurs, will not delay the overall project's substantial completion in 2004.

Construction Cost Increases Could Raise Total Costs and Funding Needs

The Central Artery/Tunnel project's total net cost and funding needs have remained relatively constant in the 6 months since we reported on them in July 1997.[4] Cost increases, such as a $15 million increase in property acquisition costs, were substantially offset by corresponding savings, such as a $22 million reduction in the estimated cost of police details at construction sites. The largest of the increases reported during this period was around $50 million in the estimates of construction contracts being designed. The largest cost savings reported during this period to maintain the project's total cost was a $130 million reduction in the estimated cost of future construction contracts.

The estimated savings on future contracts was achieved by reducing the assumed rate of annual inflation from 3.35 percent to 2.35 percent, a reduction justified by recent inflation trends in the Boston area, according to state and FHWA officials. However, recent contract awards suggest that these savings may not be realized. The state awarded three construction contracts after reducing its cost estimate on future construction contracts when we completed our review; each exceeded the state's estimates, adding about $74 million to the cost of the project. Therefore, while a variety of factors can influence the price of contracts and contractors do not traditionally reveal their assumptions about future inflation, some portion of the savings attributable to the revised inflation assumption may have been lost already. FHWA and state officials believe the lower inflation assumptions will prove to be correct, and they attributed the higher costs to factors such as the complexity of the work and changing market conditions, which resulted in less competition for the contracts than anticipated.

[3]The southbound portion is currently projected to open in August 2003 instead of its scheduled opening date of May 2003. Previously, the scheduled opening date was October 2002; it was changed on June 30, 1997. Project officials told us that the southbound segment has been behind schedule since early 1995.

[4]Our July 1997 report used March 1997 cost data; this report uses September 1997 data.

Massachusetts has established aggressive goals to contain and control the project's construction costs; however, as we last reported in July 1997, the state is not meeting those goals. In 1995, the state established an overall goal of holding the costs of changes to the project's construction contracts to 10.7 percent or less of the contracts' estimated bid prices. This overall goal was based on two assumptions: (1) holding cost growth on contracts awarded after November 1994 to an average of 7 percent of the awarded bid price and (2) holding cost growth on contracts awarded through November 1994 to about 25 percent of the awarded bid price—the average rate of growth in contract costs at that time.[5] Cost increases above these goals have occurred on contracts awarded both before and after November 1994, as shown in table VI.2.

Table VI.2: Percentage Increase in Costs on Awarded Construction Contracts for the Central Artery/Tunnel Project, as of September 30, 1997

Dollars in millions

Awarded contracts	Number of contracts	Cumulative awarded contract price	Goal for cost growth (in percent)	Cost growth (in percent)
Contracts awarded through November 1994	36	$1,108	25.0	28.4
Contracts awarded after November 1994	42	$3,863	7.0	9.6
All awarded contracts	**78**	**$4,970**	**10.7**	**13.8**

Source: GAO's analysis of state data.

The 13.8-percent growth in the costs of the project's awarded contracts represents an improvement over the 17.4-percent growth we reported in July 1997. However it may not be indicative of a downward trend because it includes a large number of contracts that have not been in effect for very long. Of the 42 contracts awarded since November 1994 and shown in table VI.2, 18, representing $2.8 billion of the $3.9 billion in contracts, are less than 25 percent complete. Cost growth for contracts that are further along tends to be greater than the cost growth that is reflected in the average for all contracts. For example, the cost growth for contracts that are more than 50 percent complete is 14.1 percent, compared with the

[5]State and FHWA officials believe that the cost performance of contracts issued after November 1994 is a more meaningful indicator of the effect of cost containment efforts than the cost performance of contracts issued before that date because the state did not have a formal cost containment program in effect until 1995.

9.6 percent for all contracts awarded after November 1994, as shown in table VI.3.

Table VI.3: Rate of Cost Growth on Contracts Awarded After November 1994, by Percentage of Contract Completed

Dollars in millions

Percentage of contract completed	Number of contracts	Cumulative awarded contract price (percent of total awarded)	Rate of cost growth (in percent)
Less than 25%	18	$2,783 (72%)	7.4
25 to 50%	4	602 (16%)	16.5
More than 50%	20	478 (12%)	14.1
Total	**42**	**$3,863 (100%)**	**9.6**

Source: GAO's analysis of state data.

While we cannot predict the total increase in the costs of all the project's construction contracts, we believe that meeting the goals set in 1995 and avoiding increases in the cost of the project will be difficult. To prevent further increases in the project's construction costs, Massachusetts must not only meet but beat its cost containment goals. For example, assuming that awarded construction contracts experienced no further cost growth, the 30 unawarded contracts could only grow by less than 1 percent to meet the cost containment goal of 10.7 percent. If on the other hand, the costs of these unawarded contracts and of the contracts awarded after November 1994 experienced the same 14.1 to 16.5 percent cost growth as the awarded contracts that are 25 percent or more complete, the cost of the project would increase by about $270 million to $400 million.

In July 1997, we reported that the state's goals form the basis for the state's cost estimate and finance plan. We recommended that the state decouple its cost containment goals from the project's cost estimate and revise that estimate to more closely reflect the state's actual experience with its cost containment program. State officials, however, believe that the existing goals are essential to provide designers and contractors with an incentive to control contract changes and restrict cost growth. Even so, state officials agreed that the project has ambitious cost containment goals for construction that will be difficult to meet.

Massachusetts is continuing to take steps to lower costs. For example, it is examining the remaining unawarded construction contracts, whose costs total $1.5 billion, and, according to the project director, hopes to reduce their scope by 10 percent and achieve $150 million in savings. In addition, the state plans to open negotiations with the utility companies, railroads, and others who work on the project under contract to reduce the costs of their work by between $16 million and $32 million. The state is also reducing the project's administrative costs. According to project officials, Bechtel/Parsons Brinckerhoff will reduce its staff by 5 percent by March 1998 to save around $10 million, and the state is seeking further reductions in the costs of its contract with Bechtel/Parsons Brinckerhoff to save an additional $40 million.

State's Estimate Does Not Include the Cost of Borrowing

The Central Artery/Tunnel project's cost estimate does not include the costs of borrowing. The state issues bonds to finance its share of most of its transportation projects and, according to state officials, traditionally does not include the costs of this borrowing as part of its cost estimates for projects. Cost-estimating practices vary widely among the states, and FHWA has no standards or requirements for the states to follow in preparing cost estimates for projects. However, the Massachusetts Department of Administration and Finance recently calculated that the borrowing costs for grant anticipation notes and for other short-term borrowing associated with the project would be $776 million. In addition, the Massachusetts Turnpike Authority incurred interest costs when it issued $1.76 billion in bonds in September 1997 to, among other things, contribute $700 million to the project.

Funding Needs May Be Greater Than Projected in the State's Finance Plan

Massachusetts' October 1997 finance plan will meet the funding needs of the Central Artery/Tunnel project if costs remain as forecast and if funding is received as projected. However, as discussed earlier, further cost increases of some magnitude seem likely. In addition, the project's funding needs could be larger than projected in the state's finance plan because the estimated level of federal funding is greater in the plan than in the multiyear highway bills pending in the Congress. Furthermore, the use of grant anticipation notes, particularly on the scale contemplated by the plan, presents challenges.

Under the state's current cost estimate, completing the project will require $5.6 billion in additional obligations through fiscal year 2005. Nearly all of these obligations—$5.3 billion—will be required in the next 5 years,

through federal fiscal year 2002. Massachusetts' finance plan assumes that $2 billion in federal funds will be available to the project during the peak construction period through fiscal year 2002, and $2.9 billion through fiscal year 2005. While the amount of federal funding Massachusetts can expect will not be known until the Congress reauthorizes the Intermodal Surface Transportation Efficiency Act (ISTEA), Massachusetts' finance plan assumes that federal funding will be the same as projected in the administration's proposed National Economic Crossroads Transportation Efficiency Act (NEXTEA). However NEXTEA would provide more federal funding to Massachusetts than either of the two pending bills—the Building Efficiency Through Surface Transportation and Equity Act of 1997 (BESTEA) in the House and the ISTEA II authorization bill in the Senate. As table VI.4 shows, passage of BESTEA would create additional funding needs of at least $144 million. Passage of the Senate legislation would create additional funding needs of nearly $1 billion.

Table VI.4: Federal Funding for the Central Artery/Tunnel Project Under Other Federal Funding Scenarios

Dollars in millions

Proposal	Federal funding to the project, fiscal years 1998-2005	Additional funding needed to equal NEXTEA's funding
NEXTEA	$2,931	
House BESTEA (Introduced)	$2,619	$312
House BESTEA (Amended by Committee)	$2,783	$144
Senate ISTEA II	$1,980	$949

Note: The figures above are from FHWA's analysis of the apportionment levels to the states under NEXTEA and the average annual apportionment levels to the states under the other reauthorization proposals. It also reflects Massachusetts' planning assumption that 71 percent of the federal funds Massachusetts receives will be used for the Central Artery/Tunnel project through fiscal year 2002, and 50 percent thereafter. The House Transportation and Infrastructure Committee adopted an amendment to BESTEA, H.R. 2400, but a bill has not been reported to the floor.

Because federal funding, even under NEXTEA, is projected to be insufficient to meet the project's financing needs, Massachusetts plans to use other state sources including the following:

- About $900 million in state bond funds will be used to match federal funds and pay for parts of the project that are not eligible for federal funding or for which federal funding was not sought.

- The Massachusetts Turnpike Authority will provide $700 million, required by 1997 state legislation and financed by the sale of $1.76 billion in revenue bonds in September 1997.

- The Massachusetts Port Authority will provide $200 million, also specified in state legislation, and implemented through a July 1997 memorandum of understanding with the state.[6] Under this agreement, the Authority will, after completing a schedule of payments, assume ownership of portions of the project being constructed at Logan International Airport. The legislation and the agreement also require the Authority and the state to jointly study the feasibility of having the Authority contribute an additional $100 million to the project.

- Grant anticipation notes will be issued to provide $1.5 billion. The state legislature authorized the issuance of $1 billion in anticipation of federal funding, and the state plans to issue the first notes in the spring of 1998. State officials plan to seek additional authority from the legislature to issue more of these notes.

  According to Massachusetts' estimates, after 2002, the project will require only $334 million in new obligations, and available funding will exceed needs. Massachusetts plans to begin repaying the grant anticipation notes in 2003 and to use one-half of the federal highway apportionments it receives between fiscal year 2003 and fiscal year 2009 to meet the project's remaining expenses and to repay the notes.

  As we reported in 1997, there is limited precedent for the use of grant anticipation notes, particularly in amounts of this magnitude. While the financial markets will ultimately determine the feasibility of selling grant anticipation notes in the amount envisioned, challenges remain to be overcome. For example, although Massachusetts plans to use federal funds through 2009 to repay the notes, the Congress is unlikely to enact reauthorizing legislation for more than 6 years, which would provide the state with federal funding authorizations through 2003. The state would then be borrowing against federal funds that had not yet been authorized.

[6]Under the memorandum of understanding that the state signed with the Massachusetts Port Authority, $105 million of the $200 million payment will be made in 2003—after the peak construction period when the funds are needed. To ensure that funding is available when needed, the state plans to issue bond anticipation notes and borrow against this expected payment. The state also expects to issue bond anticipation notes for the payment of a $400 million contribution from the Massachusetts Turnpike Authority, also expected in 2003, and authorized by state legislation enacted in 1995.

The state's finance plan does not specify how additional needs will be met if costs increase or funding is less than predicted. In July 1997, we recommended that FHWA require Massachusetts to include a contingency plan in its next finance plan to cover these possibilities. FHWA stated that it believes such a plan is premature until the level of future federal funding for Massachusetts is known. According to FHWA, the state will be required to prepare another finance plan after the federal highway program is reauthorized. Massachusetts' October 1997 finance plan responds to our recommendation by indicating that the state is exploring options for securing additional state funding, if needed, and that it will address those needs at the appropriate time.

Interstate 15 Reconstruction Project, Salt Lake City, Utah

At an estimated cost of $1.59 billion, the Interstate 15 (I-15) reconstruction project in Salt Lake City, Utah, is the largest "design-build" highway project ever undertaken in the United States. A substantial portion of the project's costs are covered under one fixed-price contract that was awarded in March 1997 to a single contractor to both design and construct the project. As a result, many of the risks of cost growth associated with a traditional highway project, such as increases that occur during the detailed design process, have been minimized. Nevertheless, costs could still grow because the state and the contractor have each agreed to assume certain financial risks. The design-build process is relatively new to the highway construction industry—there are few completed projects, and little historical information is available to predict possible changes to the cost of the project. Officials in states where design-build contracts have been completed stated that post-award change orders increased the costs of these contracts by around 2.5 percent to around 8.5 percent. Changes of this magnitude, if they occurred, would add roughly $35 million to $110 million to the cost of the I-15 project.

While the Utah Department of Transportation (UDOT) is seeking federal funds, it is prepared to complete the project using state funds if necessary. As of October 1997, around $14 million in federal funds had been obligated for the project, mostly for environmental studies and property acquisition. The I-15 project is the largest component of Utah's Centennial Highway Fund—a 10-year, $2.6 billion fund for the construction and reconstruction of highways throughout Utah, financed through the state's general revenues, earmarked increases in the state's gasoline tax and vehicle registration fees, and other sources. The state has requested $970 million in federal funding for the project beyond its expected highway apportionments and has planned on receiving about half that amount. State officials said that if additional federal funds are not made available, Utah will complete the project either by raising additional state funds or by reducing or canceling some of the other 39 projects slated to be financed from the Centennial Highway Fund.

Background

The I-15 reconstruction project, first proposed in 1992, will reconstruct around 17 miles of Interstate highway in and around Salt Lake City, Utah. The project will replace all existing pavement, widen the road from 6 to 12 lanes, reconstruct several major Interstate highway interchanges, replace 137 bridges and other structures, and equip the corridor with an advanced traffic management system. According to UDOT, traffic congestion, outdated safety and design features, pavement and bridge deterioration,

and other factors combined to require the complete reconstruction of the highway. State and Federal Highway Administration (FHWA) officials told us that the project is critical to both the transportation infrastructure of the Salt Lake City area and the city's and state's ability to host the Winter Olympic Games in 2002.

The I-15 project is the largest design-build highway project ever attempted in the United States. Whereas a traditional highway project is fully designed by the state or its contractors and the design plans are then provided to prospective contractors who prepare proposals for building the project, a design-build project is both designed and built by the same contractor. Although the state identifies a desired end result and minimum design criteria, prospective contractors prepare proposals for both the design and construction phases of the project. While the design-build approach is becoming more common in other industries, it has not yet been used extensively on highway or transit projects in the United States.

Status of Cost and Schedule

As of October 1997, Utah estimated the cost of the I-15 project at $1.59 billion. This estimate consists of the $1.3 billion bid price of the design-build contract, plus costs incurred outside the contract, such as the cost of acquiring needed property. The estimated cost of the I-15 project is shown in table VII.1.

Table VII.1: Estimated Cost of the I-15 Project as of October 1997

Dollars in millions

Cost item	Estimate
Design-build contract and options	$1,325
Award fees	50
Property acquisition	45
Program management and insurance	52
Other costs[a]	118
Total	**$1,590**

[a]These cover the acquisition of a traffic management system ($40 million), parallel street projects on the I-15 alignment ($39 million), and other costs that are not part of the design-build contract.

Source: GAO's analysis of UDOT's data.

Around $14 million in federal funds had been obligated for the project as of October 1997, mostly for environmental studies and property acquisition that preceded the award of the design-build contract. The design-build contract was approved by FHWA and awarded under

federal-aid advance construction provisions. These provisions allow the state to seek federal reimbursement for expenses associated with the design-build contract at a later date.

The project is scheduled to be completed in July 2001 and, as of October 1997, was meeting its schedule. FHWA approved the use of a design-build contract for the I-15 project in June 1996, and UDOT awarded a contract to Wasatch Constructors to design and construct the project in March 1997. The contractor began work in April 1997, beginning the design effort as well as the construction of some elements that were already fully designed.

Most of the Project's Costs Are Under Contract, but Some Risks Remain

Most of the project's estimated costs—nearly $1.4 billion of the $1.59 billion—are covered under the design-build contract, giving a significant measure of stability to these costs. Furthermore, having a single contractor responsible for both designing and constructing the project could help to avoid potentially costly conflicts that can occur between separate design and construction contractors. Similarly, according to state officials, having a single contractor responsible for construction along the entire corridor eliminates conflicts that can occur between separate construction contractors working on adjacent areas.

The cost of the project could still grow, however, because under UDOT's agreement with the contractor, the state has assumed certain financial risks. For example, while the contractor is financially responsible for any design defects, differences between the final and the proposed design, and problems in constructing the project as designed, the state is responsible for, among other things, the accuracy of the initial geotechnical (soil) and hazardous materials investigations, which were conducted before the contract's award. Should actual conditions found during the design process differ from the conditions described in the state's report, UDOT would bear the additional costs of any necessary design or construction changes. According to the project manager, as of October 1997, the contractor had submitted two claims for additional fees as the result of differing on-site conditions, including one for which the contractor was seeking an additional $2 million.

Because the design-build process is relatively new to the highway construction industry, there are few completed projects, and therefore there is little historical information for predicting the magnitude of possible changes to the cost of the project. However, should such changes

occur, UDOT has provided little room in its budget for contingencies. According to UDOT officials, the state's strategy is to achieve savings through value engineering and other means in order to build a contingency fund as the project progresses. In states where design-build contracts have been used, experience has been mixed. According to California officials, the final cost of the San Joaquin Hills Corridor, a $778 million toll road, was 2.2 percent above the contract award price. In Florida, the Blackwater Bridge, virtually destroyed in a hurricane, was rebuilt at a cost of about $33 million, experiencing post award change orders that totaled 8.5 percent. Changes similar to these would add roughly $35 million to $110 million to the costs of the I-15 project.

State Is Seeking Federal Financing but Will Use State Funds If Necessary

The I-15 reconstruction project is being funded by Utah's Centennial Highway Fund. Established in March 1997, the fund is expected to support a 10-year, $2.6 billion plan for constructing and reconstructing highways throughout Utah.[1] As of October 1997, 40 projects were slated to be financed from the fund, of which the I-15 reconstruction project was by far the largest. These Centennial Highway Fund projects are in addition to those that are funded through the state's regular federal-aid highway program and listed as part of Utah's State Transportation Improvement Program.

The state will raise over $2 billion for Centennial Highway Fund projects. To accomplish this, over a 10-year period, UDOT is planning on sources that include

- a contribution of about $1 billion from the state's General Fund, starting with an $85 million contribution in state fiscal year 1999, to be increased by $5 million each year, and concluding with a $125 million contribution in 2007 and
- a contribution of around $800 million from the state's transportation fund, to be funded by a 5-cent increase in the state's gasoline tax, an increase in vehicle registration fees, and a transfer of other revenues authorized in 1997 and earmarked by state law for the fund.

In addition, the state plans to issue about $600 million in general obligation bonds. Utah issued $340 million of these bonds in June and August 1997.

[1]In addition to the $2.6 billion, the fund carries a balance of $110 million provided by the state to UDOT in July 1996 to cover initial expenses, including the costs of awarding the design-build contract.

Besides state sources, UDOT assumes that the Centennial Highway Fund will receive federal funds. In February 1997, Utah requested $4.3 billion in federal funding for the state's transportation needs in support of the 2002 Winter Olympic Games, including $970 million for the I-15 project. However, the state has been more conservative in its planning for the Centennial Highway Fund and is assuming that it will receive $450 million from the federal government for the project. The state further assumes that its allocation of federal funds for the project will be in addition to its apportionments under successor legislation to the Intermodal Surface Transportation Efficiency Act (ISTEA) and that it will obligate these funds over a 6-year period between 1998 and 2003. According to UDOT's executive director, if Utah does not receive a special allocation for the 2002 Winter Olympic Games but receives more funding under ISTEA's successor legislation that it did under ISTEA, it will consider committing the additional funding to the Centennial Highway Fund.

As of January 1998, no additional federal contribution for the project had been secured. Utah officials stated that if no special or additional federal funding is received, UDOT will continue to fund the I-15 project either by raising additional state funds or by reducing or canceling some of the other 39 projects slated to be financed from the Centennial Highway Fund.

While future federal funding remains uncertain until the Congress reauthorizes ISTEA, Utah may be able to realize most or all of its plans under both the administration's proposed reauthorization and the multiyear authorizations pending in the Congress. To obtain $450 million in federal funds by the end of 2003, Utah would have to receive an annual increase in its federal apportionment of $75 million or more. Under the administration's proposed National Economic Crossroads Transportation Efficiency Act (NEXTEA), the House's Building Efficiency Through Surface Transportation and Equity Act of 1997 (BESTEA), and the Senate's ISTEA II, Utah would receive increased funding ranging from $46 million to $80 million a year, as indicated in table VII.2. In addition, a number of provisions in these bills could benefit Utah. For example, BESTEA contains a provision allowing the Secretary to direct discretionary and other federal highway funds to a state hosting the Olympic Games.

Table VII:2: Federal Highway Funding for Utah Under Various Reauthorization Proposals

Legislation/proposal	Average annual funding level	Increase over ISTEA's funding levels
ISTEA	$128.3	
NEXTEA	$174.9	$46.6
House BESTEA	$208.6	$80.3
Senate ISTEA II	$190.4	$62.1

Source: GAO's analysis of FHWA's data.

As of October 1997, the Centennial Highway Fund faced a projected deficit of around $245 million in state fiscal year 1999, which begins in July 1998. This deficit was projected even if Utah secured $450 million in federal funds between now and 2003; however, the deficit was projected to be $62 million greater in state fiscal year 1999 if these federal funds were not received. State officials told us in October 1997 that this deficit would require them to seek additional funding from the state legislature in early 1998.

The Alameda Corridor

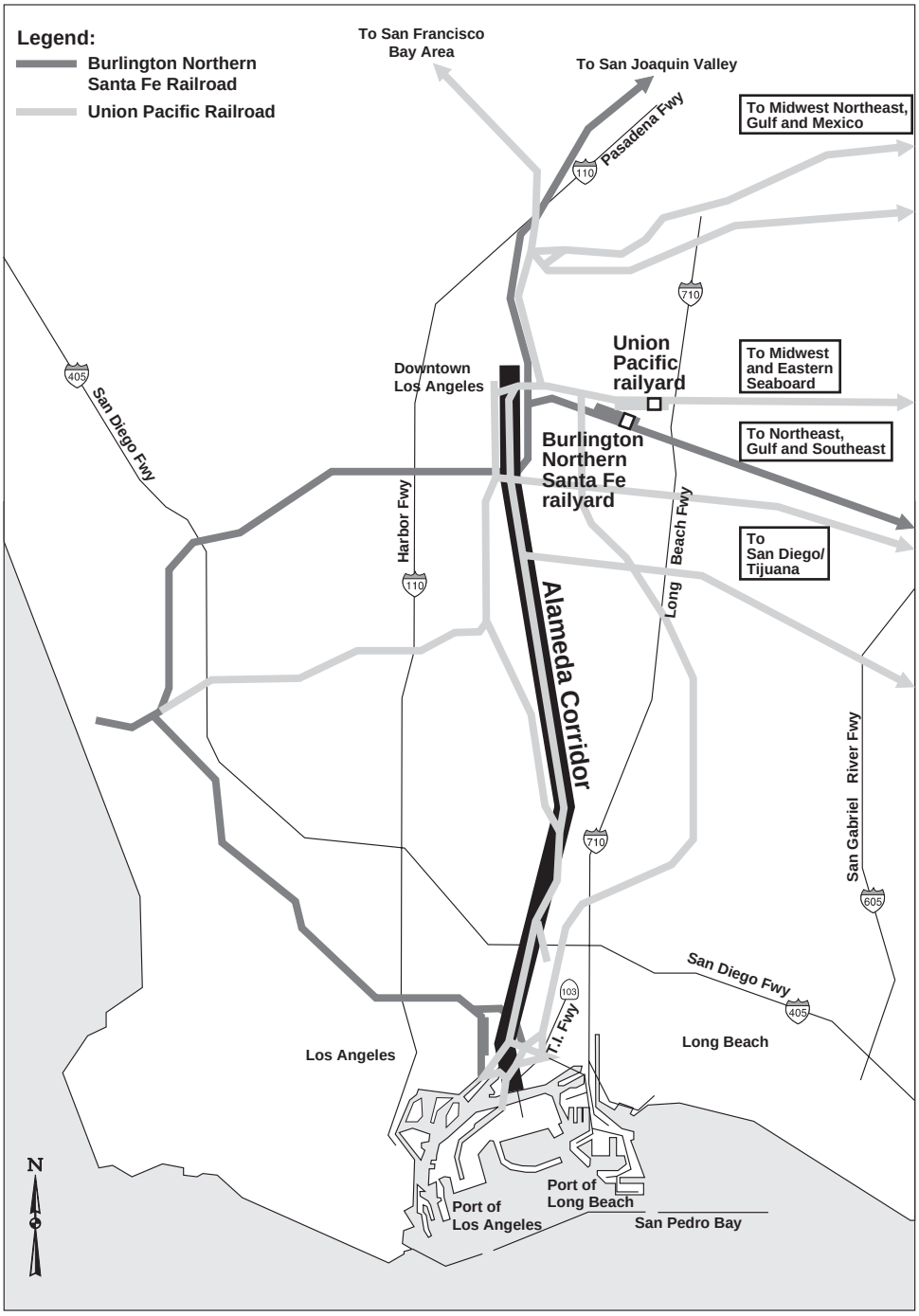
The Alameda Corridor project differs from other large-dollar transportation projects discussed in this report in three important ways: It is primarily a freight rail project; it relies heavily on private funds for its financing; and it received a loan rather than a grant from the federal government. The project is designed to improve the movement of goods between the ports of Los Angeles and Long Beach and railyards near downtown Los Angeles. Expected to cost about $2 billion, this 20-mile dedicated rail link—which includes a 10-mile section of the project in a 30 foot deep trench—has not yet been fully designed, and limited construction has begun. The project's cost estimates could change after contractors submit their construction bids on the trench section and after project officials finish evaluating a December 1997 Internal Revenue Service (IRS) ruling limiting the components of the project that can be financed through tax-exempt revenue bonds. Funding for the project will come primarily from the private sector, a $400 million federal loan, and grants from the two ports and the Los Angeles County Metropolitan Transportation Authority (MTA). As of December 1997, project officials had secured about half of the project's total funding but were facing challenges in securing the remainder. Specifically, they must demonstrate to financial markets that the project is a good credit risk and obtain all of the funds committed by a financially strapped MTA. According to the project's ambitious schedule, major construction is to begin in 1999 and to be completed within 3 years, achieving time savings of 1 year through the use of design-build contracting procedures. However, delays in constructing the trench could postpone the start of revenue operations, scheduled for 2001.

Background

The Alameda Corridor is designed to improve the movement of freight between the ports of Los Angeles and Long Beach and railroad switchyards near downtown Los Angeles. It will consolidate freight traffic along 90 miles of street-level track on four separate rail lines into a single double-tracked 20-mile corridor, half of which will run 30 feet below street level in a trench. Currently, bottlenecks on the four separate lines limit trains to average speeds of 10 to 20 miles per hour, stall highway traffic, and create air pollution. When trains begin operating in the Corridor in 2001, they are expected to move faster—averaging about 40 miles per hour—and to carry more freight. The planned operations are expected to decrease shipping time and more readily accommodate growing volumes of cargo, about 50 percent of which comes from out of state. In addition, by reducing or eliminating train traffic at almost 200 rail-street intersections between downtown Los Angeles and the ports, the Corridor

is expected to reduce traffic delays by 90 percent, reduce rail crossing accidents, and lower emissions from idling trains, cars, and trucks. Figure VIII.1 shows the location of the corridor.

Figure VIII.1: Map of the Alameda Corridor



Source: Alameda Corridor Transportation Authority.

The right-of-way for the Corridor is publicly owned by the two ports as quasi-independent departments of the cities of Los Angeles and Long Beach. The project is administered by the Alameda Corridor Transportation Authority (ACTA), whose 10-member staff handles cost, financing, scheduling, and management issues and works with government and industry groups that have a stake in the Corridor. The 85-person Alameda Corridor Engineering Team—an engineering company consortium—handles the Corridor's design and provides program management and construction oversight.

Project's Estimated Short- and Long-Term Costs Are Uncertain

ACTA estimates that the Alameda Corridor project will cost about $2 billion to complete. This is an estimate based on a 20-percent design level; less than 5 percent of the project has been constructed. The estimate could change when contractors' bids for the trench are submitted in July 1998. Although ACTA has taken actions to control cost increases during construction, it is too early to assess the impact of these actions. A recent IRS ruling on revenue bonds may increase the project's long-term financing costs.

Trench Construction Could Increase Short-Term Costs

According to ACTA officials, the trench is expected to be the most expensive segment of the Corridor, costing about $700 million, or about one-third of project's total estimated cost. The trench responds to requests made during the environmental review process by the six cities along the corridor; the cities favored this design as a means of reducing the trains' visibility and noise, minimizing right-of-way acquisition, and increasing safety. When constructed, the trench will be 10 miles long, about 30 feet deep, and 50 feet wide. As figure VIII.2 shows, it will be spanned by bridges for pedestrians and vehicles at street crossings. A portion of Alameda Street will overhang the trench for 3 miles where the right-of-way is too narrow to accommodate the Corridor's full width. In this section, the street will run above the rail line in a partially covered trench.

Figure VIII.2: Illustration of the Alameda Corridor Trench

Source: Alameda Corridor Transportation Authority.

The trench will require vertical walls whose construction is expected to cost about $350 million. Although ACTA officials consider the trench less costly than a tunnel, they are encouraging potential contractors to propose innovative methods in order to reduce the costs of constructing the walls while keeping Alameda Street open to traffic during construction. The Corridor's remaining 10 miles will be at street level.

Other issues associated with constructing the trench may increase the project's costs. For example, the trench will be built in an industrialized area where, according to a railroad official, many utility lines are buried. Relocating these lines could be costly, as could any delays in relocating them. Clearing hazardous wastes from the trench area could also increase the project's costs. According to the Corridor's 1996 environmental impact statement, 46 high-priority hazardous materials sites were located within 400 feet of the Corridor.[1] Removing underground water from the trench, if necessary, and managing traffic along Alameda Street and its cross streets could further increase the project's total cost.

[1]According to ACTA, the railroads are obligated to share in the costs of hazardous waste cleanup.

ACTA's Actions May Help Limit Construction Cost Increases

To cover potential construction cost increases, ACTA has established contingency reserves that, as of December 1997, totaled about $221 million, according to ACTA officials. These funds are intended to cover construction risks, a general reserve, and financing and legal contingencies. While the complete terms of the project's construction contracts will not be available until the fall of 1998, it is unclear whether these reserves are adequate to cover potential future increases in the project's costs.

To further control the project's costs, ACTA hired a controller and has begun to install an accounting system that will be fully operational by February 1998. U.S. Department of Transportation (DOT) and California state officials have been working with ACTA to ensure that the accounting system will track costs and trigger actions if costs exceed a predetermined level for a segment of the project. Tracking costs and expenditures can help provide early warning of cost escalation. The controller will review the budget with ACTA's board each quarter to analyze cost trends, determine reasons for cost growth, and assess the project's overall financial condition.

IRS Ruling on Revenue Bonds May Affect Long-Term Financing Costs

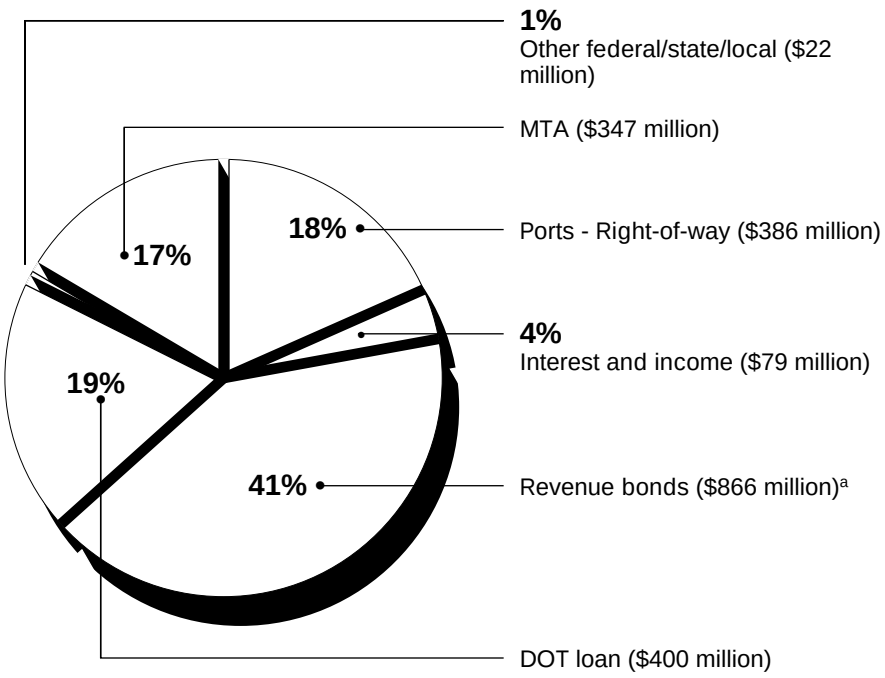
A December 1997 IRS ruling on the tax-exempt status of the Corridor's revenue bonds set out the types of construction activities that were for public purposes, such as highway overpasses, and therefore could be financed through tax-exempt revenue bonds. The remaining activities were for private, commercial purposes and were ineligible for tax-exempt financing. When issuing tax-exempt revenue bonds, the project will save on long-term financing costs, since it can pay bond investors a lower interest rate. In contrast, the taxable bonds will require higher interest rates to attract investors and will result in larger payments over the life of the project. As a result, the long-term costs of issuing the $866 million in revenue bonds as planned could increase as the project's use of taxable bonds increases. Project officials are evaluating the IRS ruling to determine the mix of tax-exempt and taxable bonds to be issued. The officials indicate that they expect final agreements with the Corridor's users to strengthen the project's revenue stream enough to offset the costs associated with an increased use of taxable bonds.

The Project's Financing Is Incomplete

Funding for the approximately $2 billion project will come from a variety of sources. As figure VIII.3 shows, the current financial plan calls for the private sector to supply the largest part of the funds by purchasing

revenue bonds. The federal government, the two ports, and MTA are also contributing substantially to the project.

Figure VIII.3: Funding Sources, by Amount and Percentage



[a]Bonds in the amount of $866 million are to be issued. They are to cover financing costs and $785 million in construction costs.

Source: GAO's presentation of data from ACTA.

As of December 1997, ACTA had secured commitments for about $1 billion, or about 48 percent of the required funding. This amount consists of

- $400 million from a federal loan;
- $386 million from the ports to purchase the rights-of-way for the project;
- $128 million from MTA, including $13 million already spent and $115 million in a commitment to pass state transportation improvement funds through to the project; and

- $101 million from expected interest revenue and other state and local sources.

According to ACTA officials, the project will use the federal loan for the project's engineering, design, and construction. If revenues from the completed project are sufficient, the project will repay the federal loan by 2031—$1.6 billion in principal and interest. The interest rates on the federal loan will be 6.5 percent during construction—until about 2001—and 6.8 percent for 30 years from the scheduled completion date—or until about 2031. These interest rates are based on the 10-year and 30-year Treasury rates, respectively.

Two major pieces of the project's funding are less secure, and they make up the remaining 52 percent of the total funding. According to the project's financial plan, this funding will consist of

- $866 million or more from revenue bonds that ACTA plans to issue in late 1998 and
- $218 million from MTA. MTA currently plans to raise $68 million of this amount by issuing revenue bonds backed by countywide sales taxes. According to MTA and ACTA officials, current plans are for MTA to request the remaining $150 million from state funds.

The Project Must Meet Several Financing Challenges

ACTA faces several challenges in obtaining the remaining 52 percent of the project's funding. These challenges include issuing revenue bonds on favorable terms, obtaining the funds committed by MTA when MTA is facing a severe financial crisis (see app. II), and working within the constraints imposed by the terms of the $400 million federal loan.

Challenges in Issuing Revenue Bonds

Before ACTA can issue the revenue bonds on favorable terms, it will need to demonstrate that the project, when completed, will generate enough revenue to pay for the bonds, according to a rating agency official. The rating agencies will evaluate the adequacy of the project's revenue on the basis of the fees to be paid by the railroads and the ports and the estimated cargo traffic. The rating agencies will also consider the impact of IRS' ruling on ACTA, the adequacy of the project's budgeting for contingencies, and ACTA's ability to manage the project. Project officials are confident that they can satisfy the rating agencies and obtain a favorable rating.

To help demonstrate that revenues will be predictable and sufficient when the Corridor opens to traffic, the railroads and ports signed a memorandum of understanding in December 1994. They agreed that the loans and bonds for the project would be repaid with fees and funds—60 percent from railroad user fees and 40 percent from port sources. A railroad official stated that the user fees established for the railroads in the memorandum of understanding are realistic and sustainable. The Corridor's revenue structure will be renegotiated and finalized in an operating agreement that is expected to be signed in April 1998.

Projections of cargo traffic and revenue indicate that the project will generate enough revenue to support the bond issuance. The projections—done by firms such as Wharton Econometrics, Paine Webber, and Goldman Sachs—have generally been conservative and have forecast continuing growth, according to officials we interviewed from the project, the railroads, and academia. On the basis of these projections, project officials estimate that the completed project will produce enough revenue to support a bond issuance of as much as $1.2 billion. Thus, ACTA officials believe that the projected revenue will be more than adequate to support the proposed $866 million bond issuance.

The bond-rating agencies need additional information before they can assess the impact of IRS' ruling on ACTA and the adequacy of ACTA's contingency funds. Because the balance between taxable and tax-exempt bonds will influence the project's long-term financing costs, the rating agencies will need to review the mix of bonds in the complete bond issuance package. ACTA is currently determining this mix. The adequacy of the project's contingency funds is also important to the rating agencies because, as a Moody's Investors Service official noted, these funds cushion the financial impact of delays or unanticipated cost increases. After July 1998, when the project is scheduled to receive bids on its costliest part—the middle trench section—the rating agencies will be in a better position to assess the adequacy of the $221 million budgeted for contingencies. Project officials believe that this amount will be adequate.

Finally, the rating agencies will evaluate ACTA's ability to choose, manage, and oversee contractors. They will also assess ACTA's and the general contractor's ability to manage a job of this scale. A transportation expert whom we contacted believed that the ports' experience in building large infrastructure projects will help instill confidence in the project's success. ACTA officials told us that they are confident that the revenue bonds to be

sold in the fall of 1998 will receive a good rating because international trade through the ports provides a stable source of revenue to repay the bonds.

Challenges in Obtaining Funds From MTA

On October 31, 1997, MTA signed an agreement with ACTA reconfirming its commitment to provide the balance of the funds it has promised to the project—$218 million out of a total of $347 million. To meet its commitment, an MTA official stated in February 1998, MTA will borrow $68 million using countywide sales tax revenue bonds and request state funds for the remaining $150 million. This contrasts with MTA's October 1997 agreement with ACTA, which noted MTA's plan to fund the entire $218 million using sales tax revenue bonds. The MTA official noted that the sources of funding remain open and may change again over the next few months.

The October 1997 agreement provides that MTA funds will be made available to ACTA starting in 1999. MTA officials are expecting delays in the project, which could allow them to contribute MTA funds later, when actually needed to pay for construction. However, if the project meets its schedule, MTA could have difficulty in providing its funding when needed. The financial difficulties that could affect MTA's ability to borrow funds and to pay for the project on time are discussed in appendix II. Because delays in MTA's funding could create cash flow problems for ACTA, particularly in light of the project's condensed design-build construction schedule, the bond rating agencies will likely consider MTA's ability to borrow as a factor when rating the project's revenue bonds.

Federal Loan Provides Benefits With Repayment Risks

Some of the loan's provisions will make it easier for the project to repay its obligations should problems arise, but other provisions increase the risk that the government could lose the entire cost of the loan should revenues fall short. According to a rating agency official, the $400 million federal loan provides the project with important financial support that the bond markets will look upon favorably. The loan gives ACTA flexibility in the timing of repayment should the project's schedule slip. For example, if fees paid by the Corridor's users are less than anticipated and revenues fall short, the project may defer federal loan repayments with interest accumulating. This provision could prevent ACTA from defaulting on the loan.

However, under the loan agreement, ACTA cannot issue more than $1 billion in revenue bonds that are to be paid ahead of the federal loan. Recent financial models indicate that ACTA will issue $866 million in

revenue bonds. In case of a revenue shortfall or default, the repayment of up to $1 billion in revenue bonds will have priority over the repayment of the federal loan. This provision may help the project obtain more favorable bond ratings from the rating agencies and more favorable interest rates on its borrowing, but it makes repaying the federal loan more risky in the event of revenue shortfalls. In addition, the provision could constrain ACTA's financing options if the project's costs prove higher than expected. For example, if construction bids are higher than anticipated, the project's short- and long-term costs would increase and ACTA might need to issue more bonds than planned to keep the project on schedule.

The Project's Schedule Is Ambitious

According to ACTA and federal and local transportation officials, the project has an ambitious schedule, and many tasks must be completed before construction of the trench can start in February 1999. Staying on schedule will be challenging, both before and after construction begins.

Table VIII.1 summarizes the tasks that must be completed in 1998. If contractors' bids prove higher than anticipated and ACTA needs either to raise more money or negotiate with bidders to achieve needed savings, it will have very little time to do so. Any delays in completing the tasks summarized in the table could affect the amount or the terms of the bond issuance, the revenue to be derived from user fees to repay the federal loan and the bonds, and the project's total cost.

Table VIII.1: Key Tasks to Be Completed Before Construction Can Begin

Target date	Action
January 1998	ACTA solicits construction bids from six prequalified contractors
April 1998	ACTA signs an operating agreement with the railroads
May 1998	ACTA completes memorandums of agreement with the six cities along the Corridor
July 1998	Contractors submit construction proposals on the trench section
July to September 1998	ACTA evaluates contractors' proposals
August to October 1998	Rating agencies rate ACTA's bonds
September 1998	ACTA chooses a contractor to build the trench
November 1998	ACTA issues revenue bonds
February 1999	Construction of the trench begins

Source: GAO's presentation of data from ACTA.

The project's schedule faces additional challenges after construction begins. First, the time savings from design-build contracting, expected to be 1 year, could be less dramatic than anticipated. As discussed in appendix VII, this innovative approach is intended to save time over conventional contracting by awarding one contract to a design-build firm rather than separate contracts to a design firm and a construction firm. Hence, this approach allows the single contractor to design and build concurrently rather than sequentially. The planned time savings could strengthen investors' confidence in the project's financial viability, improve the prospects for a favorable interest rate on the project's revenue bonds, generate user fee revenues sooner, and avoid potentially inflationary increases in construction costs. However, actual experience with design-build contracting for large transportation projects is limited, particularly for a project as large and complex as the Alameda Corridor. Moreover, problems in relocating utility lines, clearing hazardous waste, or removing underground water could delay construction, as could delays in completing the project's financing. Finally, delays could occur if communities along the Corridor do not issue construction permits on schedule or demand additional economic development funds to mitigate the effects of construction. To preclude such delays, ACTA is negotiating a separate memorandum of understanding with each of the six Corridor cities to expedite their approval of permits and address their preferences in scheduling. These memorandums would also obtain cities' agreement

not to sue the project and to release the project from future liability claims in exchange for financial settlements and assistance in minimizing disruptions from construction.

Agency Comments

We provided a draft of this report to the General Manager of the Alameda County Transportation Authority and to the U.S. Department of Transportation. ACTA officials noted two key concerns. First, they said the report should note that ACTA officials believe—on the basis of financial models and preliminary ratings of "no lower than investment grade" from Standard and Poor's and Moody's—that the project's funding package is solid; ACTA officials are confident that the project can issue $866 million in revenue bonds and that the revenue bonds will receive a good rating. Second, ACTA officials stated that the report should reflect that MTA is prepared to fulfill its obligation and commitment to ACTA and that funding from this source should be regarded as firm. They indicated that MTA's funding commitment to ACTA is legally binding and enforceable and said that MTA has in good faith made budgetary adjustments to ensure that these funds will be provided to ACTA when needed.

Regarding ACTA's first concern, we did not include information on Moody's letter to ACTA or Standard and Poor's private credit opinion because these were not public credit ratings; instead, they provided early indications that there was no information at the time that would prevent ACTA from eventually getting an investment grade rating. Both Moody's and Standard and Poor's officials told us that their final ratings will not be made until shortly before the bonds are issued next fall and that they will be contingent on a number of actions that will have been accomplished at that time, including the completion of the operating agreement. Regarding ACTA's second concern, we do note in this report that MTA has signed an agreement regarding funding for ACTA. However, we believe that a portion of MTA's funding commitment to the Corridor should be characterized as less secure than other components of the project's funding, particularly when compared with secure funding sources such as the federal loan and the ports' already completed purchase of the railroad right-of-way. As detailed in the Los Angeles Red Line section of this report, MTA faces severe financial difficulties due to a number of factors, continues to struggle with these difficulties, and has not yet completed a restructuring plan acceptable to the Federal Transit Administration.

DOT officials, in commenting on the report, stated that the federal loan should be more strongly characterized as favorable to the project's

financing. We made changes to the report to reflect this concern. Both ACTA and DOT officials provided additional editorial and clarifying changes that we incorporated into the text of the report.

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