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REPORT BY THE
Comptroller General
OF THE UNITED STATES

Better Administration Of Capital Grants Could Reduce Unnecessary Expenditures On Mass Transit Projects

Because it has not adequately monitored grants, the Federal Government spent at least \$8 million at the Massachusetts Bay Transportation Authority with minimum benefits and may incur an additional \$6-million unnecessary cost. More timely action on the part of the Urban Mass Transportation Administration could have prevented (1) the construction of a rapid transit track that is only partly used, (2) a costly delay in purchasing automatic train control equipment, and (3) the purchase of three expensive, unused boilers.

GAO proposes several recommendations to improve capital grant administration for mass transit projects.



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COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON D.C. 20548

B-204182

The Honorable Elliott H. Levitas
Chairman, Subcommittee on Investigations
and Oversight
Committee on Public Works and
Transportation
House of Representatives

Dear Mr. Chairman:

This report summarizes the results of our review of selected capital grants awarded to the Massachusetts Bay Transportation Authority. We reviewed the grants to determine how well the Urban Mass Transportation Administration was monitoring them and if Federal dollars were being spent prudently and with maximum effect. The report discusses the need for better monitoring of capital grants and recommends that the Urban Mass Transportation Administration make a number of improvements.

We are addressing this report to you because the subcommittee has expressed an interest in this issue. Copies are being sent to the Director, Office of Management and Budget; the Secretary of Transportation; interested congressional committees; and other parties.

Sincerely yours,

A handwritten signature in cursive script that reads "Charles A. Bowler".

Comptroller General
of the United States

D I G E S T

To help solve mass transit problems, the Department of Transportation's Urban Mass Transportation Administration (UMTA) provides financial assistance to the Nation's local transportation authorities for capital projects and operating assistance. One of these authorities, the Massachusetts Bay Transit Authority, received more than \$1.8 billion in capital grants from fiscal year 1965 through 1981. The authority is one of eight transit authorities nationwide with heavy rail, rapid transit capability.

GAO reviewed six capital grants awarded to the authority to see how well UMTA is administering the grants and whether Federal funds were being spent prudently and with maximum effect, as required by UMTA regulations. GAO was advised by a key UMTA official that monitoring problems identified at the authority existed in other UMTA regions. GAO found that UMTA (1) did not adequately monitor grant projects in accordance with its management guidelines and operating manual and (2) did not have guidance on third-party funding for UMTA-supported projects. As a result of these shortcomings:

--\$2.3 million was spent to construct a rapid transit track that is not being fully used. (See p. 10.)

--\$5.6 million was spent to purchase and install power equipment that will not be used. (See p. 16.)

Accordingly, about \$8 million of Federal funds was expended with only minimal benefits to the authority. Furthermore, delays have occurred in acquiring automatic train control equipment which could increase equipment cost by about \$6 million. In addition, \$43 million was expected from third parties to help finance a project of street reconstruction for access to rail stations. The third-party funds have not been obtained and

may not be forthcoming. As a result, the authority will have to scale down the project or ask UMTA for additional funds. (See pp. 14 and 30.)

UMTA's CAPITAL ASSISTANCE PROGRAM

Under the Urban Mass Transportation Act of 1964, as amended, and the Federal-Aid Highway Act, as amended, UMTA provides capital assistance for either 80 or 85 percent of eligible project costs for mass transit projects. Grantees are responsible for day-to-day administration of grant projects, but UMTA has overall responsibility for ensuring that funds supporting the projects are spent prudently and with maximum effect. To meet this responsibility, UMTA monitors grants through procedures based on Office of Management and Budget guidelines. Generally, these procedures require grantees to submit quarterly progress reports to UMTA and UMTA to make periodic onsite visits to construction projects and perform engineering inspections.

MASSACHUSETTS BAY TRANSIT AUTHORITY

UMTA has awarded the authority 69 grants for rail extensions, rolling stock purchases, and rail modernization at a Federal cost of about \$1.8 billion. GAO's review centered on six grants made between 1969 and 1980 to the authority's Orange Line--a 9-mile subway line between Oak Grove and Forest Hills, Massachusetts, and a major powerplant project. These grants represent about 24 percent (\$434 million) of all capital grants awarded to the authority.

UMTA has not adequately monitored its grants to the authority

GAO found that UMTA did not follow its monitoring procedures, primarily because of insufficient staff; that required quarterly progress reports were often incomplete; and that UMTA's analysis of report data was limited or improper. It also found that onsite visits and engineering inspections were not made as often as required and that trip reports were vague and incomplete. Specifically, progress reports that GAO reviewed either did not mention whether the projects conformed to the approved scope and budget or compared actual accomplishments to goals for the period.

Thirty-seven of 44 reports did not contain progress charts, and 43 were vague and contained little information to assess the projects' status. Twenty-six reports were submitted late. Also, project managers made only 42 of 216 required project visits and filed only 2 of 52 required construction reports.

An example of the monitoring problems GAO noted was a 4.75-mile rapid transit track, built for express service at a cost of about \$2.3 million, that has not been used for its intended purpose. Instead, the track is used partly for commuter rail service and partly to test and store railcars occasionally. The entire track cannot be used for commuter rail service because the track crosses two bridges and passes through a tunnel that will not accommodate commuter railcars. Had UMTA project managers visited the project more often, they would have noted that the entire track could not be used and corrective action may have been initiated earlier. (See pp. 10 to 14.)

Insufficient staff hinders effective monitoring

Insufficient staff appears to be the major reason that UMTA's region I office, which has jurisdiction over the authority, did not adequately monitor its capital grants to the authority. The region had two project managers and an assistant to handle about 135 grants and had no criteria on workload size. In addition to monitoring, the project managers had numerous other duties. The Regional Administrator has requested additional staff from UMTA headquarters without success. (See pp. 9 and 10.)

GAO discussed its findings with UMTA's Acting Director, Office of Program Management. He said that the lack of monitoring in region I was not unusual; all regions are understaffed and problems exist in capital projects at other transit authorities. (See p. 50.)

NEED FOR GUIDANCE TO ASSURE ADEQUATE PROJECT FUNDING

UMTA has no guidance on third-party funding and cannot be sure that projects it supports are

adequately funded. GAO noted one authority project for which anticipated third-party funds were not received. As a result, the authority will probably have to reduce the scope of the project or seek additional funds. (See pp. 28 to 32.)

RECOMMENDATIONS

Under present circumstances, it is unlikely that UMTA will be given additional staff to monitor capital grants. One way that Federal monitoring could be increased would be to place greater responsibility for monitoring and project management on grantees. Therefore, GAO recommends that the Secretary of Transportation direct the Administrator of UMTA to:

- Require grantees to include a project monitoring plan as part of the grant application. At a minimum, the plan should include UMTA's requirements for monitoring projects. GAO also recommends that UMTA insist on a minimum level of acceptable performance and that the grantees' performance be tied to future grant awards.
- Until procedures are in place to carry out the above recommendations, redistribute project managers' grant workload by having them concentrate on major grants and monitor minor grants on a sample basis.
- Establish guidelines, for UMTA-supported projects involving external funding, to ensure that sufficient funds will be available to complete projects.

For recommendations on the specific projects GAO reviewed, see page 20.

AGENCY COMMENTS AND GAO'S EVALUATION

The Department of Transportation disagreed with GAO's findings and recommendations to the Secretary. It said that UMTA's monitoring procedures in region I were adequate and that GAO placed too much emphasis upon the quarterly progress reports as a source of information. The Department also said that GAO failed to consider other sources of information that were available and that GAO has presented a distorted picture of grant administration in UMTA's region I.

GAO believes that the problems found at region I and the authority--a track that is underutilized, a project that faces a major shortfall in funding, and a project that could cost additional millions of dollars to achieve its intended benefits--indicate that UMTA's monitoring has been inadequate. GAO placed considerable emphasis on quarterly progress reports for two reasons: (1) UMTA's own procedures emphasized the importance of the reports and (2) GAO found no other source that could provide documentary evidence of UMTA's monitoring activity. The Department cited other sources of information such as meetings, telephone conversations, and project visits, but most of the data from these sources could not be documented.

While GAO did focus its review on evaluating how well funds were being managed for only a few grants, these grants represented 24 percent of the funds awarded to the authority. Therefore, GAO does not believe the results present a distorted picture of grant administration in region I. Furthermore, despite its disagreements, the Department advised GAO that it is seeking other possible uses for the unused track.

The authority disagreed with GAO's conclusions that poor project planning and management contributed to the problems identified. The authority contends that despite changes beyond its control, overall it has had success in planning for projects and its comprehensive decisionmaking has, on the whole, been levelheaded and judicious. GAO continues to believe, however, that the planning and decisionmaking for the projects discussed in this report could have been much improved.

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ABBREVIATIONS

DOT	Department of Transportation
DPW	Department of Public Works
FHWA	Federal Highway Administration
GAO	General Accounting Office
MBTA	Massachusetts Bay Transportation Authority
OMB	Office of Management and Budget
UMTA	Urban Mass Transportation Administration

CHAPTER 1

INTRODUCTION

To help overcome mass transit problems, the Urban Mass Transportation Administration (UMTA) provides financial assistance to the Nation's local transportation authorities for capital projects and operating assistance. By revitalizing existing systems and building new ones, capital projects restrain growth in operating costs, improve productivity, enable authorities to finance large projects they otherwise would not be able to, and contribute to economic development. Since 1965 UMTA has given the Massachusetts Bay Transportation Authority (MBTA) about \$1.8 billion in capital grants. UMTA's assistance is the major component in MBTA's capital program. With these funds MBTA extended rail service into new areas, purchased rolling stock, modernized and improved commuter rail and existing stations, and constructed new maintenance facilities.

UMTA CAPITAL ASSISTANCE

The Urban Mass Transportation Act of 1964, as amended (49 U.S.C. 1601), and the Federal-Aid Highway Act, as amended (23 U.S.C.), established four programs for UMTA capital assistance-- (1) section 3 discretionary grants or loans, (2) section 5 formula grants, (3) interstate transfer grants, and (4) Federal-aid urban systems grants. Section 3 grants are awarded on a selective basis to assist States and local governments in providing financing for local transportation. Section 5 grants are made for capital and operating assistance. UMTA apportions section 5 funds to urban areas based largely on population density. Interstate transfer grants are made possible by the Federal-Aid Highway Program. Urban areas can decide to build transit facilities in place of nonessential, urban, interstate segments of highways. Federal-aid urban systems funds can be used to support either mass transportation or urban highways in urbanized areas.

Under the Urban Mass Transportation Act of 1964, as amended, UMTA provides capital assistance for 80 percent of eligible project costs for mass transit projects. Under the Federal Highway Act, as amended, UMTA provides 85 percent. Grants are distributed to State and local transportation authorities in response to approved project requests submitted to UMTA regional offices. UMTA regulations require that it ensure that grant funds are spent prudently and with maximum effect.

Funds for the UMTA program are provided annually. For fiscal years 1965-81 total net obligations were over \$20 billion nationwide. The bulk of these funds--about 66 percent--were section 3 grants. Net obligations under UMTA capital programs for fiscal year 1981 totaled more than \$4 billion.

MBTA

MBTA, which serves 79 cities and towns, is a political subdivision of the Commonwealth of Massachusetts and is managed by a general manager and a Governor-appointed board of directors, one of whom serves as chairman. The general manager, chairman, and directors submit MBTA's annual operating budget to an advisory board made up of the chief elected officials of the 79 communities. The general manager and board of directors make all policy decisions and decide what level of service to provide. The cost to operate MBTA in excess of income is shared by Federal, State, and local governments in proportions of about 10, 40, and 50 percent, respectively. MBTA's annual capital budget is approved by its board of directors and the State Executive Office of Transportation and Construction. MBTA's operating and capital budgets in 1981 were about \$347 and \$318 million, respectively.

As a public transportation system, MBTA is charged with providing transit service to the Boston standard metropolitan statistical area. This area covers about 1,038 square miles with a population of 2.6 million.

Bus and commuter rail systems

MBTA has about 1,129 electrical and regular buses to service 726 miles in bus routes. Except for about eight routes designated as "express," the buses generally act as feeders for MBTA's rapid transit and streetcar lines. Through subsidy agreements with the Boston and Maine Railroad, MBTA operates a commuter rail service that has 259 miles of tracks to points north, south, and west of Boston.

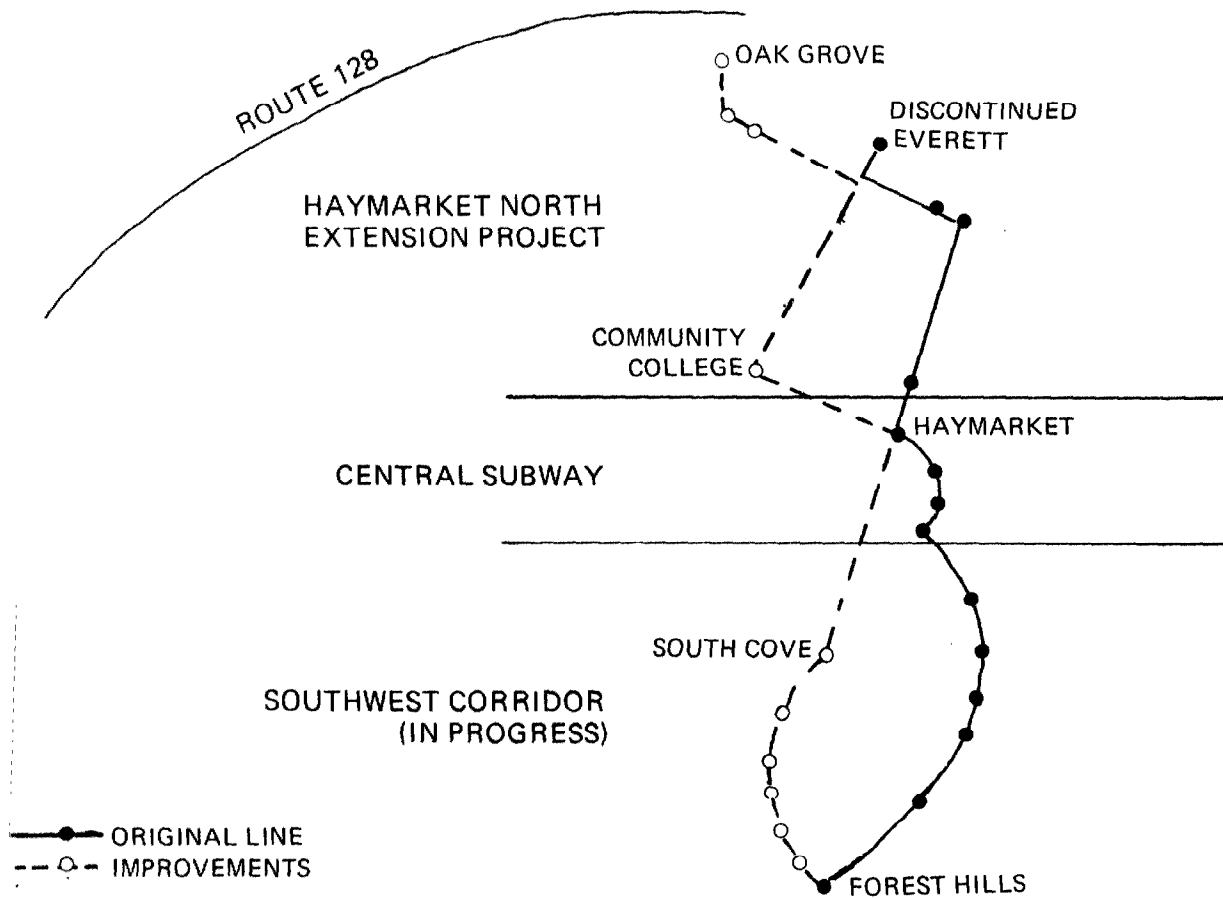
Rapid transit

In terms of volume of people carried, the heart of the MBTA system is the rapid transit and subway network. The network has four subway routes; three are served by rapid transit lines, the fourth by streetcars. These routes are color coded by MBTA as follows:

Orange Line.....Oak Grove-Forest Hills route
Red Line.....Cambridge-Braintree route
Blue Line.....East Boston route
Green Line.....Streetcar routes

This report primarily discusses capital grants made to relocate and extend the Orange Line. As depicted on page 3, the line runs north-south for about 11 miles between Oak Grove and Forest Hills. It has three segments--Haymarket North Extension, Central Subway, and Southwest Corridor Relocation.

MBTA ORANGE LINE IMPROVEMENTS



OBJECTIVE, SCOPE, AND METHODOLOGY

The objective of this review was to see how well UMTA was monitoring capital grants awarded to MBTA and to determine if Federal assistance was being spent prudently and with maximum effect. By analyzing selected capital grants, we intended to identify opportunities to improve UMTA's ability to oversee the use of Federal funds. The review was made according to our current "Standards for Audit of Governmental Organizations, Programs, Activities, and Functions."

Initially, we identified all capital grants UMTA awarded in region I. Because of the number of grants, we narrowed the focus of the review to selected grants awarded to MBTA. The following table shows the number, type, and amount of UMTA capital grants to MBTA from fiscal years 1965 through 1981.

<u>Type</u>	<u>Number</u>	<u>Amount</u>
		(millions)
Section 3	56	\$ 746.5
Interstate transfer	10	1,054.7
Section 5	<u>3</u>	<u>20.8</u>
Total	<u>69</u>	<u>\$1,822.0</u>

The 69 capital grants constitute too small a universe to statistically sample and project results. The Orange and Red Line capital projects through fiscal year 1981 received nearly 58 percent of all funds awarded to MBTA for capital projects. We selected the new car purchase for the Orange Line and a major power project for examination. In addition, we examined the Orange Line's rail extension and relocation projects. The four projects included four section 3 and two interstate transfer grants. The relocation of the southwest portion of the Orange Line, when completed, will be the single largest construction project undertaken in Boston's history. As of fiscal year 1981, grant funds awarded to Orange Line extension and relocation projects represent about 24 percent (\$434 million) of all capital grant funds awarded to MBTA.

Our work was done at UMTA's headquarters in Washington, D.C., and the UMTA regional and MBTA offices in Cambridge and Boston, Massachusetts. In addition, we visited Federal, State, and city offices in Boston that dealt with mass transit and highways, including the Federal Highway Administration, the State Executive Office of Transportation and Construction, the Department of Public Works, and the Boston Department of Traffic and Parking. We examined the progress reports that MBTA submitted to UMTA and UMTA's trip and construction inspection reports for (1) completeness, (2) timeliness, (3) conformity to project scope and budget, and (4) depth of UMTA's analysis. We also examined grants between UMTA and MBTA and related MBTA grant files in detail to determine compliance with the contracts' provisions on depth of reporting, adherence to work schedules, and reporting on an exception basis. In addition, we looked at some regional monitoring practices regarding the handling of progress reports and onsite visits. Also, we reviewed UMTA files on a major power project. This project is discussed in a Department of Transportation (DOT) Office of Inspector General July 1981 report on MBTA's procurement and contract administration practices. Where appropriate, we incorporated the Inspector General's findings into our report.

We did not attempt to determine the extent of project monitoring in other UMTA regional offices. However, we discussed the results of our review with UMTA's Acting Director of the Office of Program Management, who said that inadequate monitoring is a problem in all of UMTA's regional offices.

CHAPTER 2

UMTA NEEDS TO IMPROVE ITS

MONITORING OF CAPITAL GRANTS

UMTA failed to monitor adequately several capital grant projects it awarded to MBTA and, as a result, failed to identify problems in time to take corrective action--action that may have avoided the expenditure of \$8 million in Federal funds that has had minimum benefit. We found that UMTA is not complying fully with its monitoring procedures concerning onsite visits, trip reports, and analysis of data on project status. Lack of sufficient staff seems to be the reason for UMTA's incomplete monitoring of the MBTA projects--a problem that UMTA officials acknowledged. Regional and headquarters staff have requested additional help but without success.

MBTA, as the grantee, also contributed to problems we noted at several projects. We found that MBTA managers could improve their project coordination and management.

INADEQUATE UMTA PROJECT MONITORING

UMTA project managers did not fully comply with their management guidelines and operating manual. They did not always make site visits, prepare the necessary reports, or analyze progress reports and other data to determine the status of projects. This was evidenced by a detailed examination of problems found at three MBTA projects and a look at UMTA's regional monitoring practices.

Office of Management and Budget and UMTA monitoring procedures

UMTA's procedures for monitoring grants are based on Office of Management and Budget (OMB) Circular A-102, revised--Uniform Requirements for Assistance to State and Local Governments. These procedures place the responsibility on grantees for managing the day-to-day operations of grant-supported projects. UMTA's responsibility is to ensure that funds supporting these projects are used prudently and with maximum effect.

UMTA incorporated the procedures on monitoring and reporting performance from the OMB circular in its internal procedures and its external operating manual. Generally, these procedures include quarterly progress reports and onsite visits and engineering inspections. Quarterly progress reports are required on all projects and are to be prepared at the close of each calendar quarter until all work has been completed and equipment delivered and accepted. The reports are important in providing an audit trail of expenditures and activities, and payments may be withheld if they are not received by their due date. High risk or problem grantees may be required to submit additional material. Onsite visits and engineering inspections are made by regional project managers and the Headquarters Field Engineering Branch

of the Division of Project Management. If the procedures are followed, UMTA project managers should be knowledgeable about their projects' status.

Quarterly progress reports

UMTA's procedures require (1) narrative descriptions of the work performed during the quarter and any difficulties or delays encountered, (2) a schedule of planned activities during the next quarter and any anticipated difficulties or delays, (3) a statement on whether the project is conforming to its planned scope and is on schedule, and if not, what steps are being taken to bring it back on schedule, and (4) photographs. The UMTA official reviewing each report should sign and date it to indicate the review. After the review is completed the report should be filed in the appropriate project file. Between progress reports, events may occur that have a significant impact on the project. In such cases, the grantee should inform the appropriate UMTA program office in writing within 3 days.

A review of UMTA's files on MBTA's Haymarket North and Southwest Corridor projects showed that they contained 44 of the required 45 reports. However, the 44 reports were incomplete. For example, none mentioned whether the projects conformed to the approved scope and budget or compared actual accomplishments to goals for the period. Ten did mention the percentage of project completion, but only 7 contained progress charts. One of the 44 reports had no narrative description, and the other 43 were vague and contained little information to assess the project's status. Seventeen reports did mention difficulties and delays, but these dealt mostly with delivery and weather. Additionally, 26 of the 44 reports were submitted late. Following are examples of vague and incomplete narrative description sections in the progress reports we examined.

"Activities and Accomplishments Haymarket North Extension Project No. MA-03-0005

"One contract was let a retaining wall in Medford, Massachusetts, for an amount not to exceed 12,832 Dollars. This contract has been completed and final payment was made during reporting period."

* * * * *

"Force Account Agreement with the Boston and Maine Railroad

"All work under force account agreements with the Boston and Maine Railroad has been completed. Final payments have been made.

"Contract HN-411 is finalized and final payment has been made. Settlement of contractors' claims for HN-302 and HN-302A are pending. Contractors claim on HN-300 has been settled and final payment has been made."

* * * * *

"Contract #011-100-Fire Alarm System-
Wellington Shop

"Work began on this project during the week of March 21, 1977. Contract time has been extended and all work is done with the exception of Punch list items. \$94,637.000."

UMTA's files on MBTA's New Car Purchase and Immediate Need Power projects had similar deficiencies. None of the 19 immediate needs reports, for example, contained percentage of project completion, estimated project completion dates, or data or charts comparing proposed to actual rates of progress.

Perhaps most significant was the limited UMTA analysis of the reports or any corrective action to improve reporting performance. A review of reports and project applications would have shown significant lapses between milestones. For example, the project manager for the Haymarket North Extension project would have known that, 5 years after circuitry had been installed in the tracks for an automatic train control system, MBTA had yet to acquire the system. Despite the vagueness and incompleteness of MBTA's progress reports, UMTA did not require MBTA to furnish additional information on the status of its major construction projects.

Two project managers told us that they did not have enough time to analyze progress reports. One manager, with whom we discussed the results of our review, said that he did not have time to analyze the projects' progress reports as well as he would have liked to. He also stated that his method of review was to "subjectively evaluate reports." If the reports appeared reasonable, he took no action. He reacted to progress reports rather than analyzed them. He agreed with us that many of the progress reports were vague. However, he did not request grantees, such as MBTA, to improve their reporting performance since he regarded the missing data as a minor problem and concentrated on other matters he considered more important.

During our field work, in April 1981, UMTA region I completed a study of progress reports. Its findings showed that the quarterly narrative sections were either not being submitted or were being submitted late. UMTA warned local transit authorities that if progress reports were not submitted on time or did not contain more information, then the processing of grant payments might be withheld.

Construction inspection and trip reports

Onsite visits and construction inspections serve to assure that (1) reports submitted to UMTA are accurate, (2) the project is sufficiently staffed, (3) adequate technical inspection and supervision of all work is done by qualified personnel, (4) work is on schedule and within the project scope, and (5) payroll and other records are properly maintained.

The regional procedure for onsite visits is for project managers to prepare an engineering inspection and trip report and submit them to the regional administrator. After the administrator's review, a copy of the report is placed in the project files and project managers' reading files. UMTA procedures suggest that project managers make onsite visits periodically, but region I project manager position duties "require" such visits. In one position description, two visits per year per project are required. Using the position descriptions and UMTA's guidelines as criteria, we estimate that the four project files--Haymarket North, Southwest Corridor, New Car Purchases, and Immediate Needs Power--should have contained 52 construction engineering and/or trip reports. We found that the files had no construction engineering reports and only two projects--Haymarket North and Southwest Corridor--contained trip reports. These files contained five and two trip reports, respectively. The most recent trip report for Haymarket North was dated 1974.

The few trip reports we found were vague and incomplete. None, for example, mentioned if the project was adequately staffed or supervised, addressed the issue of whether technical inspection and supervision of all work in progress had been provided by qualified professionals, or addressed the requirement that necessary records be properly maintained. Also, no evidence existed that UMTA project managers had used the visits to determine the accuracy of the progress reports. Had region I project managers made more visits, they might have more readily resolved the problems at MBTA. For example, had the Haymarket North Extension project manager visited the site more often, he would have known that 2.25 miles of one of the three tracks was not being used for its intended purpose.

Region I monitoring practices

In addition to the projects we reviewed in detail, we looked briefly at the region's general practices for project monitoring. According to OMB and UMTA procedures, project managers are to use progress reports to assess a project's status by reviewing and analyzing the data submitted to them. We found that project managers were not properly analyzing the reports and using them to identify problem areas.

Regional practice for onsite visits, as noted above, is for project managers to prepare a construction inspection and/or trip report and, after the administrator's review, place a copy of the report in the project files and the project managers' reading files. We reviewed the project managers' reading files and found only 10 trip reports. Despite the lack of reports, project managers claimed to have made more visits than the files indicated. They reconstructed the number of times they visited a project in 1980 from their personal calendars and travel vouchers. Although the calendars or vouchers indicated a visit was made, there is no way to determine the purpose. According to the reconstructed schedule, project managers made 42 visits to transit authorities with both large and small capital projects. According to their position descriptions, they should have made about 216 visits. The project managers did tell us that in some cases they would have been able to review more than one project during a visit. Because they had not documented their visits, we were unable to determine how often this occurred. We believe that the projects we reviewed in detail were so large and complex that a full day's visit would have been necessary.

Insufficient staff hinders effective monitoring

Insufficient staff appears to be the major reason that UMTA region I did not adequately monitor its capital grants. When the region was established in the summer of 1972, one person was assigned to manage capital grants. Since 1978, the staff has increased to three; however, the third person is used as a part-time assistant. Also, one of the two full-time project managers is the director of the region's office of project management. In 1979 the region's workload increased significantly when UMTA headquarters gave it responsibility for processing and awarding capital grants. Since that time region I has made capital grants totaling \$283 million, \$319 million, and \$306 million, respectively, in fiscal years 1979, 1980, and 1981.

The region's two project managers as of April 1981 were responsible for monitoring 135 grants. UMTA's share of project cost for 70 of them (or about 52 percent) was over \$1 million each. The region has no criteria on the size of a project manager's workload. We noted that in addition to monitoring grants, project managers had numerous other duties, including advising transit assistance personnel on construction and procurement matters. They review, approve, or resolve construction and procurement plans, protests by bidders, grantee labor agreements, real estate transactions, and third-party contracts. They also respond to audit reports and furnish technical advice to grantees.

The regional administrator said that the size of the project management staff has not kept pace with the workload. He and the previous administrator requested additional staff on two occasions but were unsuccessful. In his request, he indicated

that the staff did not have the necessary time to review projects and make periodic onsite visits. He noted further that the cost of an additional staff member would be more than offset by expected construction cost savings.

We discussed our findings with the UMTA headquarters Acting Director of the Office of Program Management. He said that the lack of monitoring in region I was not unusual. He noted that all regions have problems in monitoring because of understaffing and that problems exist in capital projects in at least two other transit authorities. He also repeatedly requested additional staff but without success. For example, in 1979 his staff completed a plan to improve management and monitoring of UMTA-supported capital projects. The plan showed that his office, for major projects alone, would need an additional six to eight engineers. The acting director informed us that he finally had been instructed not to submit any more requests for additional personnel since it was unlikely that he would get them. After our review, region I's Project Management Division Director advised us that in July 1981 the region hired an additional staff member and the person is used by the division, on a part-time basis, to manage grants in New Hampshire and Vermont and MBTA labor agreements.

WEAKNESSES IN MBTA MANAGEMENT OF CONSTRUCTION PROJECTS

As stated above, UMTA relies on the grantee for the day-to-day management of construction projects. At MBTA, we examined two major projects in detail and found problems involving management indecisiveness and lack of coordination. In addition, the Office of Inspector General examined one project in detail and briefly examined other projects and found similar problems.

Examples of the weaknesses we noted in MBTA management and coordination--which have resulted in the unnecessary expenditure of millions of dollars--include (1) the construction of a track that is not being fully used, (2) costly delays in acquiring automatic train control equipment, and (3) the purchase and installation of power equipment that will not be used.

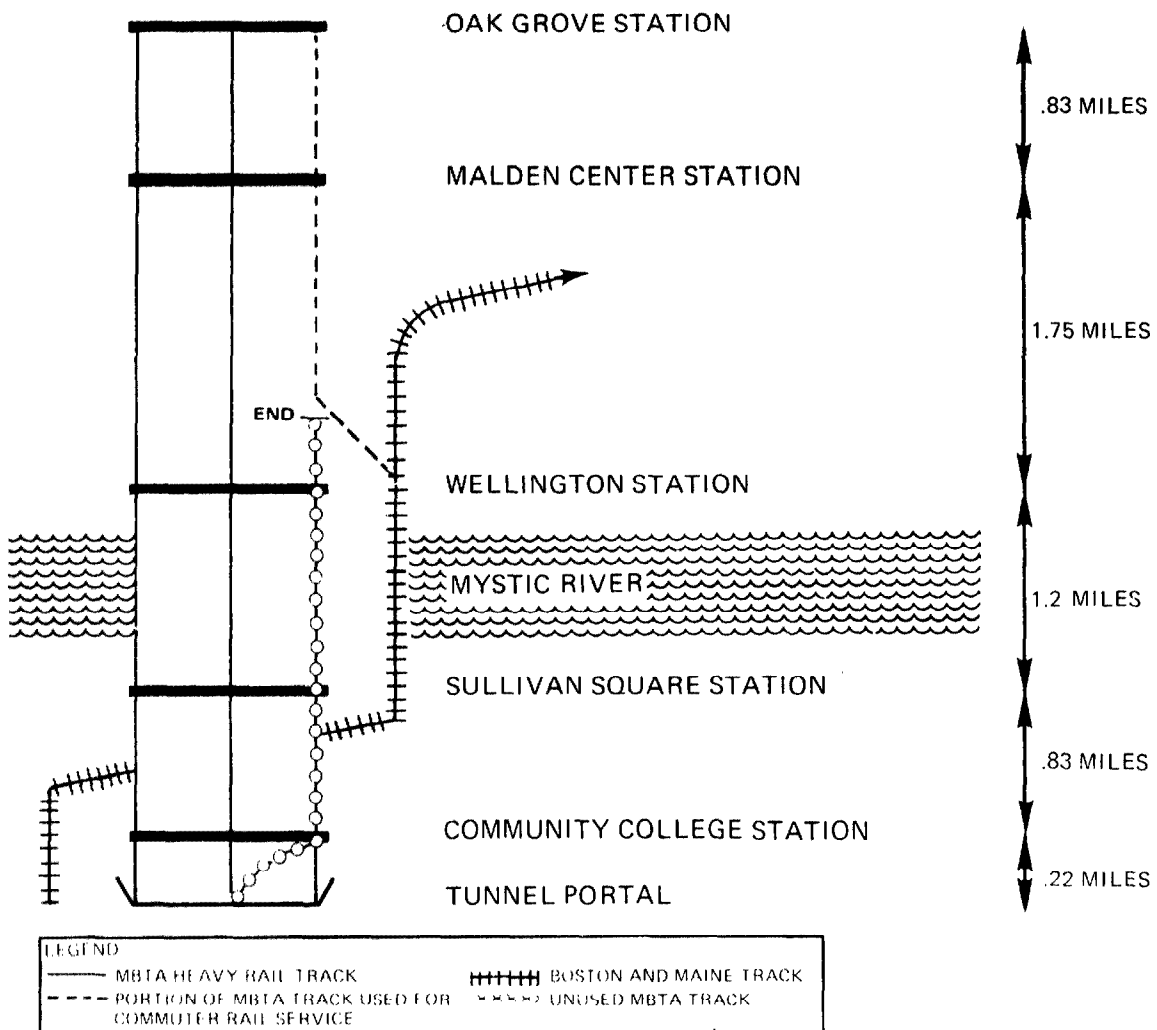
A track not used for its intended purpose

As part of its Haymarket North Extension project, MBTA built about 4.75 miles of track, about half of which is virtually unused and the other half of which is not used for its intended purpose. The track was designed to provide express rapid transit service between Boston and outlying communities. Instead, about 2.25 miles of the track is used only occasionally to test and store heavy railcars and in emergencies such as severe snow storms.

About 2.5 miles of track is used for commuter rail service. There is little likelihood that the track will be used for its intended purpose within the next 6 to 10 years. The track is estimated to have cost at least \$2.3 million.

The illustration below shows the unused portion of the track.

HAYMARKET NORTH EXTENSION UNUSED TRACK



The following photograph shows the end of the unused track.



Source: U.S. General Accounting Office

UNUSED TRACK

MBTA initiated the Haymarket North project in June 1966. In 1969 UMTA awarded MBTA a section 3 grant of about \$51 million for a segment of the Haymarket North Extension project. The grant was amended three times--in 1973, 1974, and 1976--and UMTA's share increased to about \$68 million. These funds were used to construct the Haymarket North Extension's three-track system, which as of 1981 is about 95 percent complete.

The original plan was to extend the Orange Line north along a railroad right-of-way to a location in the vicinity of Boston's circumferential highway--Route 128--about 9 miles from Boston to attract long-distance commuters. A three-track system was to be built in the railroad's right-of-way. The railroad was operating a commuter service in the right-of-way, but the rapid transit system, when completed, was to replace the commuter rail service. The third track was to be used during rush hours in the predominant direction for express service between downtown Boston and the northern suburbs. If the project was successfully terminated at Route 128, an express track made sense since it would attract long-distance commuters through Oak Grove Station.

In 1972 MBTA decided to terminate the project at the Oak Grove Station, about 4.75 miles from downtown Boston. The third

track between the Haymarket and Oak Grove stations would not be used for express rapid transit service but would be used for single-track commuter rail service. However, for several reasons only part of the track could be used for this purpose. About 2.25 miles of track, as an example, included a tunnel and two bridges which were not designed for commuter railcars. Also, the station platforms were not designed for commuter railcars. Instead, MBTA used the 2.25 miles of track to test 120 new rapid transit cars it had recently purchased.

The Haymarket North Extension from Oak Grove to Route 128 remains part of MBTA's long-range plans. However, MBTA officials could not agree on when the project will be completed. Estimates ranged between 6 and 10 years. Recent cutbacks in Federal transit assistance further cloud the issue.

In May 1981 we sent a letter to UMTA's region I administrator asking him about plans to seek recovery for the fair market value of the unused track in the Haymarket North project. In his reply, the administrator referred to MBTA's long-range plans for the Orange Line and noted that MBTA may still use the track someday. He noted further that although 2.25 miles of the track is not used for revenue service, MBTA does use it on an interim basis for testing and emergencies. Also, MBTA had informed UMTA that it plans to conduct formal technical studies to determine the most cost-effective use for the 2.25 miles of track. We would support any effort to make the track more productive.

Several factors account for the unused track, including the unpredictability of funding, change in public consensus and support for the project beyond Oak Grove, and a breakdown between MBTA's planning and development section and the project managers.

MBTA managers, because of the favorable climate toward mass transit in 1969, believed there would be sufficient funds and support to complete the project to Route 128. However, conditions changed. By 1975 funds were no longer available and public support for segments of the project beyond Oak Grove had diminished. Consequently, the Haymarket North Extension project's priority was lowered.

Better coordination between MBTA planning and construction elements may have prevented the track from being built. In 1964 the MBTA planning and development section participated in planning the Haymarket North Extension. When the project was initiated in 1966 this section was reorganized and its functions distributed among other MBTA departments. As a result, no single individual or section was in charge of planning. According to MBTA's design and development project manager, serious gaps appeared in the project's leadership and coordination between the planners and builders broke down. Segments of the project that should have been reevaluated, such as the decision to build the third track, were not. Consequently, the track was installed prematurely. Had UMTA project managers visited the project more

often, they would have noted that the track was not being used and corrective action may have been initiated earlier. As indicated in the response to our May 1981 letter, MBTA may have been able to initiate formal technical studies earlier.

Delay in acquiring automatic train control equipment

MBTA has yet to acquire the second part of a two-part automatic train control system ^{1/} for new cars for the Orange Line. Either MBTA and/or UMTA will have to spend additional millions of dollars or they will obtain only limited benefit from \$12.7 million spent on the first part of the system. Because of delays in finalizing the automatic train control procurement, MBTA lost the opportunity to have the equipment installed by the car manufacturer prior to delivery. As a result, MBTA will have to install the equipment after the cars are in service. As recently as September 1978, MBTA could have purchased the equipment for \$9.2 million. As of July 1981, this price has increased by about \$6 million to \$15 million due to inflation and the cost to retrofit the cars.

The decision to extend the Orange Line north was followed by a decision to relocate the southwest portion of the line (see p. 28) and to purchase 120 new cars. The 120 new cars would replace the aging original cars and accommodate increased ridership due to the Haymarket North Extension. The northern extension and southwest relocation would result in new track for more than 80 percent of the line. The new track and cars presented MBTA with a favorable opportunity to equip the Orange Line with an automatic train control system.

Accordingly, in 1972 MBTA decided to install electronic circuits in the extension project's tracks. The second part would be acquired later with the purchase of the new cars. The installation of the track circuitry from Haymarket to Oak Grove was completed in 1976 at a cost of about \$11.5 million. However, since MBTA had yet to acquire new cars and the old cars would not operate on tracks with electronic circuits, MBTA had to install a temporary blocking system at a cost of about \$1.2 million. UMTA funded a portion of both the circuitry and blocking system work as part of its Haymarket North Extension

^{1/}Automatic train control is a two-part signal system that controls a train's speed, limits its maximum speed, and maintains safe distances between trains. It uses electronic circuitry installed in the tracks to detect a train's presence. Signals are sent to receivers located in the train's cab and a control center. The system needs both the track and car components to operate properly.

grant awards. As noted by MBTA, its only other alternative would have been to equip the existing cars for approximately \$5 million and operate them until the new cars were delivered and equipped with automatic train control equipment.

In August 1976 MBTA contracted for 190 rapid transit cars, 120 of which were for the Orange Line. Earlier, in March 1976, MBTA at first included in, but later deleted from, its request for a proposal the purchase of automatic train control equipment. MBTA decided that because of technical problems with the automatic train control equipment installed on its Red Line, it would not purchase the equipment for the Orange Line until the Red Line problems were resolved. Automatic train control equipment had been installed on the Red Line in 1971. MBTA resolved the Red Line problems and the State Department of Public Utilities certified the system as operable in March 1979.

Difficulties in acquiring the equipment

Responsibility for resolving automatic train control equipment technical problems on the Red Line was divided between two departments within MBTA's operations directorate--engineering and maintenance and rail equipment. These departments had difficulties working with each other that were not resolved for 8 months. In November 1976 top MBTA management fixed responsibility for developing all signal equipment in the engineering and maintenance department's signals and communications division. Once responsibility was fixed, the division built an engineering prototype of an automatic train control system. The prototype was to be used to test and accept the Haymarket North Extension's electronic circuits and to purchase automatic train control equipment. The test was successfully completed in January 1978, but the results were not communicated to the engineering and maintenance department's chief engineer until September--about 8 months later. Based on the test results, the chief engineer declared that the tested system met the directorate of operations' criteria for a simple system.

Meanwhile, during testing, the division was also developing performance specifications ^{1/} for the second part of the automatic train control system--cab signal. An engineering firm under contract to MBTA was preparing the specifications for the first part--the electronic circuits in the tracks. In February 1978 MBTA submitted a set of specifications and requested price quotes

^{1/}Specifications for equipment generally are of two types--performance and hardware (or equipment). Performance specifications allow the contractor flexibility in building the customer's product while, with hardware specifications, the customer tells the contractor what he or she wants.

on automatic train control equipment from the car manufacturer. The company advised MBTA officials that it needed a firm order before May 1, 1978, in order to install the equipment without additional costs. In September 1978 the company quoted a price of almost \$9.2 million to furnish and install automatic train control equipment on the 120 cars. MBTA rejected the bid. An administrative decision was made not to negotiate the price and conditions. At the time, MBTA's chief engineer claimed that the bid was rejected due to excessive costs. Other MBTA officials in August 1981 told us that cost was not a factor in the rejection but that their decision was influenced by the problems experienced with automatic train control on the Red Line.

Status of the project
as of August 1981

According to MBTA, when it was considering having the cab signal part of the system installed by the car manufacturer, the use of MBTA personnel to develop specifications for the cab signal, was justified. Since this no longer may be the case and since MBTA already had a contract with an engineering firm to design the electronic circuits, MBTA decided to have the engineering firm also design the cab signal part of the system, at an additional cost of \$261,000. MBTA believes that such a move will result in considerable dollar savings through economies of scale. These specifications will not be ready until May 1982. Present estimates are that MBTA will not have the 120 cars retrofitted until July 1986, or about 10 years after the Haymarket North tracks were equipped.

We believe that if the project managers had analyzed the project data better, they would have noted the significant lapse between final installation of electronic circuits in the track and the fact that MBTA has yet to purchase automatic train control equipment for the new cars. For example, the progress reports would have shown that UMTA provided MBTA startup funds for automatic train control equipment in 1976 yet by 1981 still had not acquired the equipment.

Limited benefits from
a major power project

The Department of Transportation's Office of Inspector General also examined several UMTA capital grants to MBTA to evaluate MBTA construction and procurement practices. One of the grants reviewed in detail was for the rehabilitation of existing power equipment and the purchase and installation of additional equipment. The auditors did not examine UMTA's role in administering the grants under review. To determine UMTA's role, we re-examined the major power project and found that UMTA may have contributed to the problem.

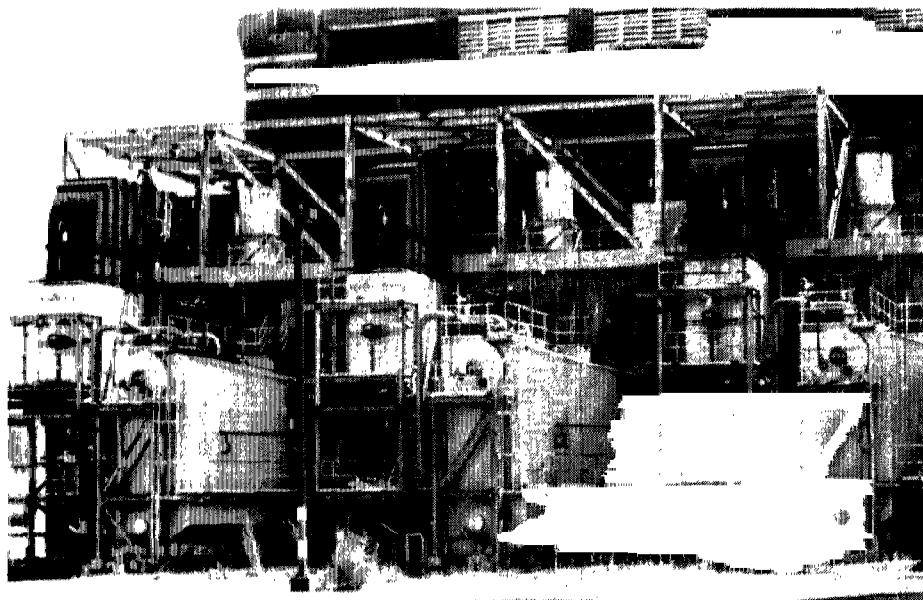
The auditors, among other things, found that MBTA purchased and installed three boilers in a new facility at a cost of \$5.6 million. The boilers will not be used. Specifically, in June 1975 UMTA approved a \$10.4 million section 3 grant to MBTA for its Immediate Needs Power Program. The grant was amended twice-- in 1977 and 1978--increasing UMTA's share to \$18.7 million. The program was to be a short-term measure to ensure safe and continued operations of MBTA's rapid transit and light rail vehicles until 1980, when another UMTA-supported project providing for two long-term solutions to MBTA's power problems could be put into effect. The short-term measure included the rehabilitation of boilers and steam generators in two plants and the purchase and installation of three new boilers and a gas turbine generator at one of the plants. The project was to be completed by November 1977. The long-term solution would enable MBTA to either purchase power or generate its own.

The Inspector General's auditors found that by 1977 MBTA had made little progress and had encountered numerous difficulties with the project. According to the auditors, MBTA management vacillated in its selection of alternate power sources, did not effectively manage the project, and constantly changed the program's objectives. For example, as the result of major mechanical problems, one plant was forced to close and the cost to rehabilitate four boilers at the other plant would be higher than originally planned. Because of the high costs, it was decided to rehabilitate only two of the four boilers. Also, the cost of the three new boilers--about \$2.2 million--and the gas turbine generator also proved to be much higher than planned. MBTA did not award the contract for the new boilers until late in 1977--approximately when the project was to be completed. The boilers were not received until early 1979. MBTA installed the boilers in a \$3.4 million new building adjacent to the powerplant. However, the boilers were not put into operation because the contractor who was to connect them could not obtain bonding. 1/ At this point, the contract could have been awarded to the next qualified bidder, but UMTA insisted that MBTA revise contract specifications, which resulted in the contract being rebid.

The same contractor also submitted the low bid the second time but still could not obtain bonding. Because of this problem and the possibility of a lawsuit if it awarded the contract to the next qualified bidder, MBTA decided not to connect the boilers since in the event of a lawsuit the useful life of the boilers would only be a year. In August 1981 the MBTA Board of Directors voted to shut down the remaining plant. MBTA continues to use the gas turbine generator. The boilers and the facility to house them remain idle.

1/A bond is a contract requiring that a fixed penalty be paid in the event one party does not perform as agreed.

We found that UMTA itself may have contributed to the project's problems. Had UMTA better analyzed the project data, it would have noted that the difficulties encountered were severe enough to warrant a reevaluation of the project's purpose and scope. Also, when MBTA readvertised for bids to connect the new boilers, the low bid was submitted by the same firm that was previously unqualified. Again, this firm could not obtain bonding. In order to get the job moving, UMTA could have given MBTA permission or encouraged it to award the contract to the next qualified bidder.



Source: U.S. General Accounting Office

NEWLY INSTALLED BOILERS

In June 1981 we sent a letter to UMTA's region I administrator asking him to seek recovery for the cost of the unused boilers in the Immediate Needs Power Program. In his reply, the administrator advised us that he preferred to wait until MBTA sells the boilers before seeking any recovery of funds. Given MBTA's decision to close the plant, we feel the administrator should seek immediate recovery. In addition, since there is no likelihood of selling the facility built to house the boilers, UMTA should make every effort to recover the \$3.4 million spent to acquire the building.

OTHER INSPECTOR GENERAL FINDINGS

In addition to the Immediate Needs Power Program, the auditors reviewed MBTA procurement and contract administration activities in several other projects. They found five instances in which MBTA management did not adequately manage projects and determined that MBTA was not adequately monitoring work performed by contractors under cost reimbursement agreements. As a result of poor management, MBTA used UMTA funds to construct concession stands for six privately owned businesses, increased contractor claims to MBTA contracts, and failed to establish procedures for accountability of the sale of scrap and surplus materials generated from federally funded projects.

CONCLUSIONS

By not adequately monitoring projects, analyzing progress reports, and conducting onsite visits, UMTA did not identify problems in time to take corrective action on three projects at MBTA. As a result, nearly \$8 million--about \$2.3 million for the third track and about \$5.6 million for the purchase and installation of the boilers--was spent with minimum benefit to MBTA, and an additional, unnecessary \$6 million cost will likely be incurred due to procurement delays. MBTA contributed to these problems by not properly managing the projects.

Insufficient staff appears to have been the major reason for UMTA's inadequate monitoring. Project managers who visit both small and large capital projects claimed that they did not have enough time to visit or analyze projects better and the size of their staff has not kept pace with the workload. A key UMTA official acknowledged that adequate capital grant monitoring is a problem in UMTA regional offices and that experiences similar to those at MBTA can be found at other transit properties.

Given that UMTA resources for project monitoring are limited, a possible solution would be to place greater accountability for managing Federal funds on the grantee. If that were the case, UMTA could periodically check the grantee's performance and, depending on what it found, decide on an appropriate course of action. UMTA would no longer be required to receive and analyze quarterly progress reports or make twice-a-year onsite visits.

RECOMMENDATIONS

The Secretary of Transportation should direct the Administrator of UMTA to:

- Require grantees to include a project monitoring plan as part of the grant application. At a minimum, the plan should include UMTA's requirements for monitoring projects. UMTA could then certify the plan and randomly spot check the grantee's monitoring performance, using either project

managers or independent evaluators. We recommend that UMTA insist on a minimum level of acceptable performance and that grantees' performance be tied to future grant awards. UMTA should adopt a system of penalties and incentives that would either punish or reward grantees based on performance.

- Until procedures are in place to carry out the above recommendations, redistribute project managers' grant workload by having them concentrate on major grants and monitor minor grants on a sample basis.
- Negotiate with MBTA for better use of the Haymarket North project's express track. If a better use cannot be found, examine ways of recovering some of the track's costs.
- Limit UMTA's participation in the acquisition of automatic train control equipment for the Orange Line to an amount equal to what UMTA's participation would have been in 1978.
- Recover \$5.6 million used to purchase and install three boilers for MBTA's Immediate Needs Power Program.

AGENCY COMMENTS AND OUR EVALUATION

DOT and MBTA disagreed with the findings discussed in this report. (See apps. I and II.) Their specific comments, as well as our evaluation of them, are contained in the following sections.

Overall, both MBTA and DOT stated that we considered neither UMTA's performance on all MBTA projects nor the benefits the public experienced from the Federal investment in mass transportation facilities in Metropolitan Boston.

While it is true that many benefits may have been derived from the transit projects funded by UMTA at MBTA, our work focused on reviewing six grants that cover nearly 24 percent of funds awarded to MBTA and on evaluating how well those funds were being managed.

UMTA monitoring

DOT disagreed that inadequate monitoring of grants is a problem area and said that we placed too much emphasis on the quarterly progress reports as a source of information.

DOT's response does not recognize the problems with region I monitoring practices, a track that is underutilized, a project that faces a major shortfall in funding, or a project that will probably either have to spend additional millions of dollars or else lose the benefits from a \$12.7 million investment.

DOT stated that if we had examined all the grants awarded to MBTA, we would have found that the majority were administered successfully. There is no way of substantiating this claim without a detailed examination of each grant awarded. As noted in our objective, scope, and methodology section on page 3, we selected the six grants for review because they cover nearly 24 percent of all funds awarded to MBTA. Examining each grant would be far too expensive; therefore, we believe that our decision on which ones to review was reasonable.

Although DOT said that we did not understand the relative importance of quarterly progress reports, it did not take issue with our statements that these reports are required of grantees to enable UMTA to (1) identify ongoing or anticipated project difficulties and (2) determine whether the project is conforming to its planned scope and, if not, what steps are being taken to bring it back on schedule. More significantly, DOT did not deny that 44 of the 45 required reports for the Haymarket North and Southwest Corridor projects were incomplete or vague or contained little information assessing the project's status. DOT also did not disagree with our statement that UMTA's analyses of the quarterly progress reports were limited. Furthermore, DOT did not take issue with our statements that the lack of monitoring in region I was not unusual, that all regions are understaffed, or that problems exist in capital projects at other transit authorities.

We placed great emphasis on quarterly progress reports for two reasons: (1) UMTA's procedures emphasized the importance of the reports and (2) we found no other source that could provide documentary evidence of monitoring activity, except for progress reports and reports from onsite visits. Moreover, as stated, most of the evidence related to onsite visits had to be reconstructed and could not be documented.

DOT stated that region I had other sources of information about activities at MBTA, including meetings and telephone conversations with MBTA, project visits, media information, and technical assistance requests, and that it had long known about findings we reported. As indicated on page 9, UMTA regional personnel reconstructed the number of times they visited a project in 1980 from their personal calendars and travel vouchers. According to the reconstructed schedule, project managers made about 42 visits to transit authorities--in addition to 10 visits that had been recorded in a trip report. However, it should be noted, that according to UMTA criteria, a total of about 216 visits should have been made. Moreover, if UMTA was aware of the problems discussed in this report, whatever the source, it would appear that action should have been taken either to prevent or correct the problems we found at MBTA.

DOT said that all grantees within region I were notified of the required quarterly progress report elements by the regional

office in April 1981 and that individual grantees are contacted if quarterly progress report deficiencies occur. UMTA region I officials told us that, except for the April 1981 letter, in only two instances was a grantee contacted about progress report deficiencies. Moreover, UMTA's Acting Director, Office of Program Management, told us that lack of monitoring in region I was not unusual and that monitoring problems exist in capital projects at other transit authorities.

Accordingly, we believe that, at a minimum, UMTA should have all 10 regional offices advise grantees of the quarterly progress report requirements. We also believe that UMTA should take appropriate action as deficiencies in the quarterly progress reports are noted and should assure that grantees take prompt corrective action.

MBTA planning, management, and coordination

MBTA took exception to our contention that poor planning contributed to the problems identified in the projects reviewed. It said that to describe planning as poor was unwarranted when new policies determined by Federal and local elected officials might have dictated changes which were beyond MBTA's control. MBTA contended that despite this fact, it had overall success in planning for projects and its comprehensive decisionmaking in the projects criticized was, on the whole, levelheaded and judicious.

MBTA also took exception to our evaluation of its project management and stated that decisionmaking in all three projects was sound. It believes that systemic problems such as changes in policy and economic conditions accounted for some of the problems we found at MBTA.

We agree that the term "poor planning" may have been a poor choice of words. Our purpose was to highlight the fact that MBTA, in at least one project, may have missed an opportunity to prevent the premature expenditure of Federal funds because of a breakdown between planners and project managers.

We do not agree that MBTA's planning and decisionmaking were levelheaded and judicious for the projects discussed in this report. Our comments on each of the projects are discussed below.

Third track

MBTA said that it was not valid to state that the third track is not being used for its intended purposes. It said that the entire project is being used for mass transportation purposes; 2.5 miles of the track is being used for express rail services

and the remaining 2.25 miles of track has been used for performance/conformance testing of new Orange Line cars and has also been used in emergency situations such as severe snow storms.

DOT said that it considered construction of the third track to be a prudent MBTA management decision at the time and to be consistent with MBTA's historical pattern of development. DOT admitted that the function of the third track was to provide express service for the future extension to Route 128.

Our review of the project files showed that the third track specifically was intended to be used during rush hours in the predominant direction to provide express service from downtown Boston to the outlying communities. While it is true that commuter rail service uses 2.5 miles of the third track for express service, our concern is that 2.25 miles of track has never been used for express rail service and no firm plans exist to use it for express rail service in the future.

The explanation that the 2.25 miles of track is being used for performance/conformance testing and emergency situations is a case of making the best of a bad situation. Our review of the UMTA and MBTA project files clearly showed that the purpose of the third track was to provide express rail service--the possibility of using this track for testing and emergency situations was never mentioned.

MBTA informed us that it has begun an informal investigation to identify other possible uses for the 2.25 miles of virtually unused track. Tentative uses identified include greater use for daily operations or commuter rail service. Either of these uses could mean dollar savings and/or increased efficiency. As indicated on page 13, MBTA informed UMTA that it plans to conduct formal studies to determine the most cost-effective use for the unused track.

Also, MBTA in its reply stressed the use of the 2.25-mile segment of the third track in testing MBTA's new Orange Line cars. This testing could have been done on existing tracks at night or during nonservice hours--a procedure used by other transit authorities with heavy rail capability and fully utilized tracks.

DOT concurred with our suggestion that studies should continue to identify near-term uses for the third track.

Delay in acquiring automatic control equipment

MBTA stated that a combination of lack of money and concern over technical problems prevented the purchase of the automatic train control equipment. MBTA believed that we were incorrect in stating that MBTA could have bought the equipment for \$9.2

million because the car builder's quote had a series of conditions attached that could have raised the price further. MBTA's concerns over technical problems stem from its experience with automatic train control equipment on the Red Line. In our discussions with MBTA officials 1/ of why the automatic train control equipment was not purchased, they said that MBTA made no attempt to negotiate either the car builders's price or conditions. Despite a successful 120-day test of a prototype, an administrative decision was made not to purchase the equipment because of concern over technical problems with automatic train control equipment. In the absence of hard negotiations, it is difficult to understand MBTA's present position on price and conditions. Successful negotiations may have resulted in a lower price or removal of one of the conditions. For example, the \$9.2-million figure included \$1.8 million in penalties for delaying delivery of the new Orange Line cars. As it turned out, the car builder was late in delivering the cars. Further, the Department of Public Utilities certified the Red Line's system as operable in March 1979, but now, more than 3 years later, MBTA has yet to acquire Orange Line automatic train control equipment.

We criticized MBTA management for taking 8 months to fix responsibility for resolving the Red Line's technical problems and preparing automatic train control specifications. MBTA stated that 8 months was not a long time to fix responsibility in light of the technical ramifications associated with instituting a new signal system. We disagree. We are criticizing not the nature of the problem but the lack of firm leadership.

The length of time necessary to purchase and install automatic train control equipment without additional cost was limited to about 20 months. In view of the limited time frame, firm management was needed early in the project. To purchase and install the equipment, MBTA first had to resolve the Red Line's technical problems, test the Haymarket North Extension project's electronic circuits, and prepare specifications. Delay of any of these actions meant less time for Hawker-Siddley (the car builder) to evaluate and propose a price quote. Had Hawker-Siddley received the specifications, many of the conditions referred to as prohibitive would not have existed.

MBTA's reply stated that the tests of the prototype train control system were, as we reported, for the purpose of developing a car package that would allow testing of the Haymarket North Extension project's electronic circuits. But MBTA infers that the tests were not to be used to purchase automatic train control equipment. MBTA officials closely associated with the project advised us that the test results would be used with the idea of purchasing equipment.

1/These officials included the director of construction, director of material, assistant director of construction, chief engineer, and acting director of operations.

Our review of internal documents and discussions with project personnel showed that problems existed among the divisions. Each division believed the other was responsible for delays in resolving Red Line automatic train control equipment problems. For example, in a March 25, 1977, memorandum to the director of operations, one division complained that the program (automatic train control) was not working.

"Things move to the limit of the control of the department and then die. Apparently, the implementation of cab signal is of little interest to some as it appears they fail to realize their responsibilities."

This memorandum prompted the director to call for a resolution to the dispute.

DOT has taken MBTA's position on this issue. It believes that, because of the experiences with Red Line automatic train control equipment, MBTA acted prudently in proceeding cautiously in its plans to install the equipment on the new Orange Line cars. UMTA noted that MBTA did attempt to include equipment as a change order to the contract with the car manufacturer but could not reach agreement on the cost. Like MBTA's, DOT's remarks do not consider MBTA's testing to demonstrate the workability of the equipment or the fact that the Department of Public Utilities had certified the Red Line's automatic train control equipment as operable about 3 years ago. Furthermore, UMTA does not recognize the fact that MBTA never undertook serious negotiations with the manufacturer on price. Had MBTA done so, it might have obtained a satisfactory price and favorable conditions.

Limited benefits from a major power project

MBTA chose not to comment on our observation on three new and unused boilers housed in a new facility especially built for the boilers, all at a cost of \$5.7 million for which the Federal Government received no benefit. Instead MBTA took exception with our reporting of the DOT Inspector General's conclusion that limited benefits resulted from the project. It pointed to the power generated by the new gas turbine generator over the past few years and its capability to generate power for present and future needs as beneficial. However, since the generator was only one part of a multipart project and its cost of about \$6.2 million represented about 33 percent of the total Federal grant award, and since no benefit was received from the boilers and housing facility, we agree with the Inspector General that expected benefits were reduced significantly.

MBTA also took exception to our reporting on the Inspector General's conclusion that management vacillated in its selection of alternate power sources. MBTA stated that it did not vacillate but modified its direction due to the unavailability of the new boilers for an extended period of time and to unfavorable economic conditions. We agree that these two factors influenced

the selection of alternate power sources, but we also agree with the Inspector General's conclusion that MBTA did not manage the power project program effectively.

Finally, MBTA objected to our statement that UMTA should seek immediate recovery for the three unused boilers and the facility that houses the boilers. It would prefer to negotiate an equitable settlement once disposition of the boilers and ancillary equipment is determined. We disagree with MBTA that negotiations should await sale of the boilers and ancillary equipment since we believe the boilers will not be used for the purpose for which they were purchased--to provide power on an interim basis--and the MBTA has already unsuccessfully attempted to sell them. Any delay in returning funds to the Federal Government amounts to lost revenue.

DOT agreed with us that the costs of the unused equipment provided under the Immediate Needs Power grant should be recovered immediately. They said that although they had agreed with MBTA to await the sale of the boilers before entering into payback negotiations, they will now inform MBTA that negotiations will begin by July 1, 1982, if the boilers have not been sold by then. DOT said that its decision not to concur in the award to a second lowest bidder of a contract to connect the boilers was based on a \$1 million increase above the \$1.2 million bid by the lowest bidder. It also wanted to protect the opportunity for the lowest bidder, a minority business enterprise, to obtain a contract. DOT regulations require that strong efforts be made to ensure that minority business enterprises have an opportunity to participate in its programs.

It appears that both MBTA and UMTA acted in good faith and adhered to DOT regulations. While we understand DOT's desire to bring minority enterprise into the procurement process, no law or regulation requires this to be done where, as here, the low bidder, a minority enterprise, is unable to secure a bond required by the solicitations to bid.

DOT disagreed with our first recommendation because it has conditionally certified larger, experienced grantees, waiving UMTA's older requirements that certain actions receive prior UMTA review and approval. DOT believes its current project monitoring requirements are satisfactory and require no change.

As pointed out in chapter 2 of this report, UMTA's monitoring system did not provide the agency with complete data that would allow UMTA project managers to fully assess project status. We attribute this deficiency to UMTA's lack of adequate staffing. Our recommendation is designed to shift the monitoring responsibility to the grantee, requiring UMTA first to establish monitoring requirements and then have grantees draw up the monitoring plan. UMTA would review the grantee's monitoring plan and certify that it meets UMTA's monitoring requirements. UMTA's role would be reduced to periodically spot checking the grantee's conformance

to its plan. Although the grantee would have greater responsibility, it would also have more flexibility in completing the project. For example, the grantee would not have to file quarterly progress reports.

A key feature of our recommendation would be to tie a grantee's future level of funding to its performance--consistently poor performance would result in no grant awards.

DOT also disagreed with our second recommendation to redistribute project managers' grant workload by having them concentrate on major grants while monitoring minor grants only on a sample basis. DOT stated that it cannot simply abandon working with smaller grantees as many of them require greater UMTA assistance than larger grantees.

We believe DOT has misinterpreted our recommendation on monitoring its grants. We did not state, or mean to imply, that UMTA should not continue to provide engineering assistance to smaller grantees as needed. Since we concluded that UMTA does not have sufficient staff to adequately monitor all grants, we continue to believe that UMTA should direct its monitoring efforts at those grantees which are receiving the most dollars, and to sample--not ignore--its smaller grantees.

DOT agreed with our recommendation to negotiate with MBTA for better utilization of the express track. It noted that it has encouraged MBTA to study additional uses for the track and that MBTA has expressed a willingness to cooperate. DOT, however, did not believe that recovering any of the costs associated with express track construction was warranted.

DOT disagreed with our recommendation to limit its participation in acquiring Orange Line automatic train control equipment to an amount equal to what participation would have been in 1978. It noted that MBTA's present plan to advertise a contract for a complete automatic train control system for the entire Orange Line places system responsibility on a single contractor. It believes that this plan is superior to the 1978 proposal to contract the work separately and, although more costly, will result in a better system. While it is true that MBTA's plan to deal with a single contractor could result in better coordination, we were advised by MBTA that the plan will not result in any technological improvements. In any event, DOT did not comment on our recommendation to limit its participation in the acquisition for automatic train control equipment to an amount equal to what participation would have been in 1978.

DOT agreed with our recommendation to recover funds for purchasing and installing the three boilers. It noted that the recovery of funds will begin either as soon as MBTA sells them or by July 1, 1982.

CHAPTER 3

NEED FOR UMTA GUIDANCE TO ASSURE

ADEQUATE PROJECT FUNDING

The categorical nature of grants for mass transit projects sometimes fragments funding for these projects. This condition calls for greater coordination and attention so that disparate funding sources can be properly brought to bear on a project so as to avoid problems. UMTA has no guidance on third-party funding and thus cannot be sure that projects it supports are adequately funded. During our review we noted one MBTA project where anticipated third-party funds were not received. As a result, MBTA will probably have to reduce the scope of the project or seek additional UMTA funds.

SOUTHWEST CORRIDOR PROJECT

Between August 1978 and December 1980, UMTA awarded MBTA approximately \$354 million for a project to relocate the southwest portion of the Orange Line. The project's total cost was initially estimated at about \$600 million but has since been revised to \$900 million. The idea for the project originated in the 1950's. By 1970 the State had cleared land for a new segment of an interstate highway, but because of controversy the Governor halted construction and ordered a study of the transportation needs. The study recommended that the relocation of the Orange Line's southwest corridor be given top priority.

The project will relocate about 4.7 miles of the Orange Line to a railroad right-of-way and include five tracks--two for rapid transit and three for commuter and intercity rail--and will result in the construction of nine new stations, a 500-car parking facility, a new street, and 23 bridges.

In its application, MBTA did not seek UMTA funds to pay for the street and 7 of the 23 bridges since it believed these would be paid for by the State's Department of Public Works (DPW) and the Federal Department of Transportation's Federal Highway Administration (FHWA) funds--the third-party contributors. As of November 1981, MBTA had yet to receive any DPW funds.

Problems in acquiring DPW financial assistance

MBTA believed that at least four sources of FHWA funds--Primary, Off-Highway, Urban Systems, and Bridge Replacement and Rehabilitation Programs--could be used in the project. Because DPW and FHWA officials would first have to determine eligibility and approve MBTA project plans, neither DPW nor FHWA could make

specific funding commitments. In December 1978 MBTA sent DPW a draft agreement including proposed street and bridge work and the expected DPW contribution. Except for one bridge to be paid for under the Bridge Replacement and Rehabilitation Program, DPW advised MBTA that Urban Systems Program funds were the only source of FHWA funding that could be used. The use of these funds also would require the city of Boston's approval.

In December 1979 Boston agreed to use \$15 million in urban systems funds for street construction. To obtain the \$15 million, DPW would first have to approve MBTA's street construction plans. As noted above, it was essential that DPW approve the street construction plan before MBTA advertised the first contract that included street work, since urban systems funds cannot be used without prior DPW approval. By the end of 1980, MBTA was ready to award a contract that included about \$7 million in street work but had not submitted final street plans for DPW's approval. MBTA, which had been submitting plans earlier but had not received DPW comments, simply stopped sending plans. In January 1981, despite the fact it had not received DPW approval, MBTA awarded the contract to avoid costly construction delays. Because of its action, MBTA may lose at least \$4.1 million of the anticipated \$15 million in urban systems funds, as shown in the following table.

MBTA's estimate of total street cost	\$18,045,887
Less: Estimated value of street work included in awarded contract	<u>7,211,237</u>
Estimated value of street work remaining	<u>10,834,650</u>
DPW/FHWA contribution	15,000,000
Estimated cost of street work remaining	<u>10,834,650</u>
Amount of street construction work for which DPW/FHWA funds may be lost	<u>\$ 4,165,350</u>

In addition, MBTA may not receive the remaining portion of the \$15 million because of the limited amount of urban systems funds. DPW awards these funds annually, on a first-come basis. Projects receiving DPW and urbanized area approval are placed on a list. Since DPW has yet to approve the project's final street plan, it is not on the list. According to DPW's Capital Expenditures Program officer, by the time the funds are allocated there may not be enough money for MBTA.

Improper project cost estimation

MBTA unilaterally estimated DPW's financial contribution to the Southwest Corridor project and incorporated the amount into its planning. In November 1978 street and bridge work (including landscaping) was estimated at \$51 million and DPW's share at about \$35 million. The estimate for DPW's share increased to about \$43 million in October 1981. DPW never agreed with MBTA's estimate, primarily because MBTA indicated sources of FHWA funding that in DPW's opinion were ineligible. In addition, DPW disagreed with MBTA's estimate of the number of bridges it should pay for. MBTA's project application showed that DPW would pay for 7 bridges; MBTA then revised its expectation to 10. DPW said it would pay only for the bridge to be built under the Bridge Replacement and Rehabilitation Program. Because of disagreements over the source of funding and payment for the bridges, together with the problems in acquiring the \$15 million in urban systems funds, the prospects of MBTA's receiving any DPW funding, except for one bridge, are minimal. As a result, MBTA is likely to face a \$43 million shortfall for the project.

Other sources of funds to cover shortfall

We considered other possible sources of project funding to determine if money would be available to cover any shortfalls and found that the project faces other problems. For example, MBTA estimated the amount of the project eligible for Interstate Transfer funds to be about \$727 million. However, only about \$634 million will be available, leaving a shortfall of about \$93 million. Moreover, project funds set aside for contingencies have already been allocated for other purposes. In addition, UMTA informed MBTA that the only source of UMTA funds that could be used for the Southwest Corridor project would be under the interstate transfer grant. Should project costs exceed the grant amount, MBTA will have to pay the differences from its own funding sources.

Other factors contributing to the problem

UMTA failed to assure itself that MBTA's Southwest Corridor project was adequately funded. It accepted the statement in MBTA's project application that DPW would pay for a street and bridges and did not request additional support for the statement even though the street and bridges were essential to the project. UMTA has no guidance on external funding to UMTA-supported projects and, in the absence of guidance, used subjective judgment. UMTA's subjective judgment was influenced by the knowledge that the project, at the time the application was submitted, had the support of key State officials.

UMTA became aware of the funding problems between MBTA and DPW after it had approved the project. Consequently, UMTA met with MBTA, DPW, and FHWA officials several times to resolve the problems but to date has been unsuccessful. Also, it should be noted that the method used to fund this project involving different levels of government and sources of funds, and the subsequent problems in delivering these funds, were factors in the shortfall in project funding.

CONCLUSIONS

MBTA may have to scale down a major construction project because it is unlikely to receive an anticipated DPW contribution. In addition, it improperly estimated costs for the project. Any reduction in the project's scope will probably reduce some expected benefits. Also, UMTA did not assure itself that third-party funding for the project was committed before amending the grant. UMTA has no guidance on coordinating its grant program with those of other Federal programs. It relies solely on the relationship between the grantee and key State officials and their interest in the project.

RECOMMENDATION

The Secretary of Transportation should direct the Administrator of UMTA to establish guidelines for UMTA-supported projects involving external funding to ensure that sufficient funds will be available to complete projects.

AGENCY COMMENTS AND OUR EVALUATION

DOT said that the arterial street and seven bridges were never considered essential to the construction and operation of the project and the deletion would have little effect on the project's usefulness. Further, DOT noted that the shortfall in project funding caused by the street and bridges had not affected project construction and local and State officials continue to work on the problem. In addition, DOT said the street and bridge work will be done through cost reductions and deferrals, but it did not indicate what costs will be reduced or what steps deferred. In either case, should this occur, the project will have experienced an unexpected setback, affirming our conclusion about possible reductions in benefits.

Finally, DOT noted that our report does not mention a third-party agreement needed for the Southwest Corridor project that was made before UMTA approved the project--a \$62 million contribution from the Federal Railroad Administration. Such an agreement was in place; however, before the funds could be released, UMTA, MBTA, and the Federal Railroad Administration had to sign an implementing agreement and memorandum of understanding. We examined this agreement and found that the negotiations to implement

it were proceeding slowly. MBTA was concerned that the work to be done would cost more than the Federal Railroad Administration's \$62 million contribution. The Federal Railroad Administration was concerned that it would not have its work done for \$62 million. Given these concerns and the possibility that the parties would either resolve their differences or end up in a legal suit, we decided not to pursue the matter. The implementing agreement and memorandum of understanding have yet to be signed.

MBTA did not respond directly to our findings on the Southwest Corridor project. Instead, MBTA advised us that it is still pursuing funding for the arterial street and seven bridges. MBTA advised us further that the project is being re-analyzed so that it can be built within the existing budget. It hopes to identify sources of funds to pay for the street and bridges. MBTA, although it too did not regard the street and bridges as essential to the project's usefulness, believed that the construction of the street and bridges afforded an opportunity to maximize benefits to the surrounding community.

The assistant to Boston's Commissioner for Traffic and Parking disagreed with both State and Federal officials and believes the arterial street and bridges are essential to the project, especially now that the original bridges have been removed. He noted that without the bridges, essential services, such as fire protection, cannot be provided. In our opinion, if constructing the street and replacing the bridges were important enough to be proposed in the project, then every effort should have been made to assure that these items were constructed in a timely manner. Otherwise, they should not have been included in the project from the beginning.



U.S. Department of
Transportation

Assistant Secretary
for Administration

400 Seventh St., S.W.
Washington, D.C. 20590

JAN 25 1982

Mr. Henry Eschwege
Director, Community and Economic
Development Division
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Eschwege:

I have enclosed two copies of the Departmental response to the General Accounting Office (GAO) draft, "Better Administration of Capital Grants Could Reduce Unnecessary Expenditures," dated December 10, 1982.

We disagree with the GAO findings and recommendations which indicate that the Boston Regional Office (Region I) is failing to properly monitor the operations of the Massachusetts Bay Transportation Authority (MBTA) and is thereby permitting the misuse of millions in grant funds. Evidence provided by the Regional Office in response indicates that auditors placed too great an emphasis upon the Quarterly Progress Reports for their source of information and failed to consider other sources that were available to the Regional Office to monitor the MBTA's activities. Also, the draft report appears in one or two instances to have failed to mention agreements and funding commitments in effect at the time.

If we can be of further assistance, please let us know.

Sincerely,


Robert L. Fairman

Enclosures

Department of Transportation Reply
To
GAO Draft Report
On
Better Administration of Capital Grants
Could Reduce Unnecessary Expenditures (345557)

Summary of General Accounting Office (GAO) Findings and Recommendations

The GAO reviewed the Department of Transportation's (DOT's) monitoring of grants made to the Massachusetts Bay Transportation Authority (MBTA) for local construction, rail modernization, and purchase of rolling stock. These grants are made and administered by DOT's Urban Mass Transportation Administration (UMTA). GAO has criticized UMTA for inadequate monitoring of capital grants which prevented UMTA from taking corrective action to prevent the MBTA from the unnecessary expenditure of millions of dollars due to:

- A. the construction of a track that is not being used;
- B. costly delays in acquiring automatic traincontrol equipment; and,
- C. the purchase and installation of power equipment which will not be used.

The report also criticizes the MBTA for not acquiring expected third-party funding for highway elements of Project No. MA-23-9007.

The GAO has recommended that the Secretary of Transportation direct the Administrator of UMTA to: (1) require that the MBTA prepare a project monitoring plan which will include UMTA's requirements for monitoring as part of the grant application, and submit the plan to UMTA for certification and use by UMTA for periodic evaluation of the MBTA's performance; (2) redistribute the grant workload, in the interim, by having the UMTA Regional Office grant managers concentrate on major grants and monitor minor grants on a sample basis; and (3) establish guidelines for projects involving external funding for UMTA-supported projects, to ensure that sufficient funds will be available to complete projects.

Summary of DOT's Position

1. After reviewing this draft report, DOT is concerned that the GAO has presented a distorted picture of grant administration in UMTA Region I by failing to consider the performance record of the Office on the 69 MBTA projects that have been carried out. Most have been accomplished according to the approved scope of work and without significant problems. We would like to go on record that the transit service in the Boston area has been significantly aided by UMTA assistance.
2. Although the GAO report indicates a problem with the installation of automated train control equipment on the Haymarket North Extension, it fails to mention the alternative controls employed and the overall success of this multi-million dollar extension. Since the line's opening in 1976, it has operated without problems and is carrying thousands of daily riders into and out of Boston.

3. The report mentions that additional staffing is needed in Region I's Project Management Division. Staff has been redeployed in the Regional Office in order to aid the Project Management Division in carrying out its many duties. GAO failed to mention this action.
4. Finally, the GAO report indicates a misunderstanding of the relative importance of Quarterly Progress Reports and the dynamics of State and local decisionmaking in the completion of project activities.

Position Statement

UMTA Monitoring

We agree with the GAO that an increase in staff would permit the Regional Office to do an even better job of monitoring capital grant programs. However, due to a reduced staff, prudent management dictates that the following review and approval actions must take precedence over field inspections:

1. 25% and 75% construction plans and specifications;
2. Third party contracts;
3. Change Orders;
4. Force Account Work;
5. Cost Allocation Plans;
6. Appraisals for Property Takings;
7. Meetings with Grantee Officials; and,
8. Telephone Guidance for Grantees.

The GAO implies that UMTA was unaware of items A., B., and C. (listed on the first page) because these issues were not noted in the Quarterly Progress Reports. These items have long been known to the Regional Office staff because there are numerous other sources of information (e.g., meetings and telephone conversations with the MBTA, project visits, media information, and technical assistance requests by the MBTA) to draw upon to monitor projects.

With regard to the quality of Quarterly Progress Reports, all grantees were notified of the required elements by the Regional Office's letter of April 27, 1981. Further, as the need arises, individual grantees are advised if Quarterly Progress Report deficiencies occur.

Third Track

A third track was constructed as part of the extension of the MBTA's Orange Line rapid transit service from the Community College Station to Oak Grove, the temporary terminus, a distance of 4.75 miles. The function of the third track is to provide express service for the future extension to Route 128.

Although the southerly 2.25 miles of the third track are used only occasionally for testing or emergencies, they were constructed at the most cost-effective moment, during the Haymarket North Extension, and at a time when it was fully expected that the line would be extended to Route 128. To construct it later would have incurred the following additional costs:

1. Double digit inflation;
2. The contractor's restricted access to the work site;
3. The protection devices for the adjacent active revenue track only a few feet away;
4. Flagmen labor rates; and,
5. Premium time for construction activities during non-revenue service hours.

We consider the construction of the third track a prudent management decision by the MBTA at the time, and is consistent with its historical pattern of development. The third track was placed in the ultimate configuration of the extension to Oak Grove. At present, the track is suffering minimal deterioration, since rail wear, tie stress, and ballast fouling result from the traffic which moves along the route.

We concur with the GAO that studies should continue to identify uses to which the third track can be used in the near term and have encouraged the MBTA to this end.

Automatic Train Control (ATC)

The track component of an automatic train control system was installed as part of the Haymarket North Extension of the Orange Line in 1975.

Since the old No. 11 Cars were not equipped with ATC (car borne cab signals), a temporary wayside signal system, employing all of the ATC track components except the speed command function, was superimposed on the ATC track work. This system has been in daily use since opening day and, according to MBTA sources, has saved millions of dollars in labor costs.

No. 11 Cars were still required to provide the scheduled service until late in 1981, so that the temporary wayside signal system had to be built and installed, regardless of the availability of ATC on the new No. 12 Cars.

The MBTA experienced an eight-year debugging effort on the prototype ATC system on the South Shore section of the Red Line. These problems resulted in the MBTA incurring thousands of dollars of additional operating costs to have an adequate backup system in place. Because of this experience, we believe that the MBTA is acting prudently in proceeding cautiously in its plans to install the ATC on the new No. 12 Cars.

The MBTA did attempt to include the car borne cab signals as a change order to the No. 12 Car procurement, but could not reach agreement on the cost with the manufacturer. Instead, the MBTA has engaged a design engineer to develop a specification for the complete ATC signal system, including car borne cab signals for the No. 12 Cars and the track component for the entire Orange Line. This strategy places total system responsibility on one contractor. The specifications will be advertised for bids this Spring. All work will be completed to coincide with the construction schedule of the Southwest Corridor Project now underway. Although the new ATC system will now cost more, it is expected to be a superior system. All of these events have been well known to the Regional Office and any absence of their description in Quarterly Progress Reports should not be taken to indicate a loss of data.

Power Plant

We concur with GAO that the costs of any unused equipment provided under the Immediate Needs - Power grant should be recovered. Although we have agreed to await the sale of the Mitsui Boilers before entering into negotiations on a payback, we shall inform the MBTA that negotiations must begin by July 1, 1982, in the event the unused equipment has not been sold by then.

The complex issues of repairing obsolete elements of a dilapidated power plant to prolong its useful life for just a few years were, and have been, well known to the Regional Office staff. The absence of pertinent discussion in the Quarterly Progress Reports in no way diminished our knowledge of the project.

UMTA's decision not to concur in the award of a contract to connect the boilers to a second lowest bidder was based on a \$1.0 million increase above the \$1.2 million bid by the lowest bidder. We also wanted to protect the opportunity for the lowest bidder, a minority business enterprise, to obtain a contract. Department of Transportation regulations require that strong efforts be made to insure that minority business enterprises have an opportunity to participate in our grant programs.

Other Funding Sources

GAO cites UMTA for failing to get commitments from other sources of funding, specifically, FHWA-Massachusetts Department of Public Works' (DPM's) funds for seven bridges and arterial street construction within the project limits. Contrary to the GAO Report, these bridges and the arterial street have never been considered essential to the construction and operation of the Mass Transit Project, and their deletion will have little effect on the usefulness of the completed transit project. At the time of grant approval, UMTA had in place all of the funding commitments necessary to complete its mass transit project.

Three other items should be pointed out in regard to the bridges and street construction.

1. The former Dukakis Administration of the State had made clear commitments to use FHWA-Massachusetts DPW funds for the subject work at the time that UMTA approved the Orange Line project. Subsequently, a new Administration with new funding priorities took office. UMTA has no control over the election of local officials and the policies that they institute.
2. The present apparent shortfall in funding of the bridges and street work has not impacted the Orange Line rapid transit construction. Local and State officials are continuing to meet on the problem, and it is expected that through a series of cost reductions and deferrals most of the bridge and street work will be done.
3. The third party funding commitment that was needed for the Orange Line Rapid Transit Project (a \$62,000,000 commitment from the Federal Railroad Administration was in place prior to UMTA's approval of the Orange Line Project). The Interagency Agreement between UMTA, the MBTA, and FRA that set FRA's participation at \$62,000,000 was signed on August 2, 1978. The GAO report makes no mention of this agreement or funding commitment.

Recommendations

Our comments on GAO's five general recommendations are presented in the order in which the recommendations appear on Page 20.

1. UMTA has already conditionally certified larger, experienced grantees, waiving UMTA's older requirements that certain actions receive prior UMTA review and approval. Also, this Region I has waived additional prior review and approval requirements for the MBTA where their internal procedures provide sufficient safeguards. We shall continue these efforts wherever feasible.
2. Our experience has shown that smaller grantees, while not encountering sophisticated problems, do require our engineering assistance and, in particular, our project administration guidance. They often are not fully able to comply with the requirements of OMB Circular A-102 and the External Operating Manual without our administrative assistance. We cannot simply abandon working with many of the small communities of this Region, such as Burlington, Portland, or Bangor as the GAO report seems to suggest.
3. We have encouraged the MBTA to study additional uses of the third track and they have expressed their willingness to cooperate. However, recovery of any of the costs associated with the construction of the third track is not warranted as described above.
4. The MBTA's present plan to advertise a contract for a complete ATC system for the entire Orange Line places system responsibility on a single contractor. This is a superior plan to the 1978 proposal to contract the work separately, and, although more costly, will result in a better system.

5. The recovery of funds for the unused boiler equipment will be deferred pending the sale of the boilers or by July 1, 1982, if the equipment has not been sold by that date.

In closing, we must again emphasize UMTA's strong disagreement with the conclusions drawn by the GAO in the subject draft report. We will be giving further consideration to this draft report and providing more detailed comment in response to it as soon as additional data may be obtained from the MBTA.

**MASSACHUSETTS
BAY
TRANSPORTATION
AUTHORITY**

50 High Street, Boston, MA 02110

January 21, 1982

Mr. Henry Eschwege, Director
Community and Economic Development Division
United States General Accounting Office
Washington, DC 20548

Dear Mr. Eschwege:

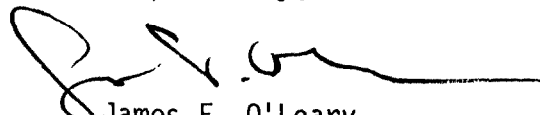
SUBJECT: GAO Draft Report Concerning MBTA
Administration of Capital Grants

The MBTA has completed its review of the subject report forwarded with your letter dated December 10, 1981 covering the administration of capital grants and naming four specific areas of concern.

We are appreciative of the opportunity to review and comment upon this document. You will note our non-concurrence with many of the conclusions. We believe it is not an accurate reflection of facts and circumstances associated with the issues raised.

We trust the comments contained in this review will provide new information which will improve the accuracy of the draft audit.

Respectfully,



James F. O'Leary
General Manager

km
Enclosure

M.B.T.A. RESPONSE
to
U.S. GENERAL ACCOUNTING OFFICE
DRAFT REPORT ON THE
ADMINISTRATION OF CAPITAL GRANTS
JANUARY 15, 1982

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GAO NOTE: Some page and other references have been changed to correspond to the final report.

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PART IINTRODUCTIONA. BACKGROUND

By letter dated December 10, 1981, the United States General Accounting Office advised the MBTA of its preliminary findings resulting from an audit on the Authority's administration of Capital Grants. This letter, which also transmitted the draft audit, requested comment within 20 days. The receipt of the letter and document was December 15, 1981. In consideration of the seriousness of the criticisms which appeared in the draft, this office requested an extension of time until January 22, 1982.

B. SCOPE

Based upon analysis of the GAO's comments, the Authority has developed new information which will improve the accuracy of the four areas of concern as described by GAO, which are contained herein.

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PART IIRESULTS OF GAO AUDITMBTA COMMENTSA. GAO ASSESSMENT AND MBTA RESPONSE1. GAO General Allegations/MBTA Response

The draft report stated under Weakness in MBTA Management of Construction Projects that three problems in management were found: poor planning, management indecisiveness, and lack of coordination. The GAO draft's conclusions appear to be based on partial information and periodic non-objective reporting.

The nature of long-term project planning is to reflect the goals and objectives of policy level through regional planning, state planning, metropolitan planning, and top MBTA officials. Change in the emphasis of transportation projects can be anticipated during the average 10-year life span of certain endeavors. Therefore, planning at the MBTA termed as poor seems unmerited when new policies determined by elected official, both federal and local, dictate a change which is beyond MBTA control. Despite this limitation, the MBTA has had overall success in its planning for projects which involve extensions, maintenance facilities, and systemwide improvements. This is proven by the significant ridership use of our extension projects, efficiencies experienced in our maintenance facilities and overall cost-effectiveness of our other system improvements.

The evaluation of management decisions or indecisions can be a nebulous area, considering that the decision to expend funds at one point can be termed successful or not in retrospect, depending on what future policy decisions have developed and the prevailing economic conditions. The MBTA contends that the comprehensive decision-making involved in the projects criticized in GAO's draft has, on the whole, been level-headed and judicious when the totality of the long-range period is examined.

2. Specific Project Evaluation/MBTA Responsea. A Track Not Used for its Intended Purpose--Draft Pages 10-14

It is invalid to state that the track of the Haymarket North Extension project is not being used for its intended purpose. The entire project is being used for mass transportation purposes.

The 2.5-mile segment of track between Revere Beach Parkway and Oak Grove Station was constructed to provide services for riders north of Oak Grove to downtown Boston and it is used intensively for the purpose of express rail service between Oak Grove and Wellington and carries approximately 4,500 to 4,800 passengers on 38 commuter rail trains each weekday.

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The remaining 2.25 miles of express track has been used for performance/conformance testing of the MBTA's new Orange Line cars. Although U.S. D.O.T. has a test track at Pueblo, Colorado, this track is only available for scheduled testing of vehicles. Performance/conformance testing involves testing of the first vehicles manufactured to assure that the vehicle performs in conformance to specifications. This phase normally requires design modification and a number of test iterations. The period of performance/conformance testing cannot be precisely estimated, thereby making use of the Pueblo test track impractical. Also, acceptance testing, which is performed on each vehicle, is undertaken after delivery of vehicles to the MBTA. Additional shipping of rail vehicles could result in damage for which the MBTA would be liable.

The third track has also been used in emergency situations such as severe snow storms.

The MBTA has undertaken informal investigations of potentially more intensive uses for the Prison Point Bridge-Revere Beach Parkway segment of the express track. Potential uses which have been identified include testing of proposed cab signal equipment for Orange Line cars, more intensive use of the track in day-to-day transit operations, and conversion of the track to commuter rail use. To determine which of these options is most cost-effective requires more detailed study. The MBTA has reported its intention to UMTA to request their approval to undertake a technical study of these alternatives to ascertain optimum use of this investment.

Page 11, Paragraph 1

The text implies that costs in excess of \$2.3 million were spent by the MBTA as a result of the third track for right-of-way acquisition. Whereas the additional right-of-way offered by the Boston & Maine at the same cost has little value other than for transportation purposes, it was only prudent to acquire the full package whether for a two- or three-track system.

Page 12, Paragraph 2

The second sentence is not factually correct, as all three tracks must be built in the railroad's right-of-way.

The last sentence in this paragraph appears to make an incorrect judgment by starting an express track made sense only if the project terminated at Route 128. In fact, the value of an express increases at stops from Oak Grove and intermittent stops beyond, but, the system is not required to go to 128 to be an effective express track.

Page 13, Paragraph 3

The MBTA most emphatically did conduct a systemwide analysis of its total funding needs, proof of which is to be found in the Program for Mass Transportation Report. Based on this analysis, there were funds to start the project. However, as time passed, the uncertainty of future funding caused by State and Federal policy changes determined that the project should not be advanced. It

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would have been unconscionable to proceed otherwise.

b. Delay in Acquiring Automatic Train Control Equipment--Draft
Pages 14-16

It is not correct to represent (on pages 14 and 16) that had the Authority accepted the carbuilder's offer the quote of \$9.2 million would have been the ultimate cost. The manufacturer's insistence on deletion of language from the base contract (including release from warranty) and the signal specification represented loss of protection to the Authority which would have caused exposure to "unknown" future financial claims. With the decision that the quoted price would most likely not have been the ultimate cost, coupled with the numerous technical considerations under evaluation, the MBTA's rejection of the September 1978 bid and the pursuit of the present course of action appeared to be in the best interest of the public.

Management had developed a sentiment that many of the problems with cab signalling on the Red Line followed from interpretation of the specification. The Authority had been at an impasse with the contractor since 1970; the company claiming that terms of the specification had been met, yet the Authority could not use the system because it did not meet safety standards. This uncertainty also represented potential cost increases beyond the car manufacturer's quote. It is further emphasized, as detailed in the GAO report, that the Department of Public Utilities did not certify the system as operable until March of 1979.

In addition, the following points are submitted:

Page 14, Paragraph 1

The paragraph seems to indicate that delays were caused due to the finalizing of the car procurement program. It is suggested that the third sentence be changed to read:

"Because of delays in finalizing the ATC procurement, the MBTA lost the opportunity to have the equipment installed by the car manufacturer prior to delivery."

There were no funds set aside for ATC in the new car grant. \$9.2 million was only the base, for which additional funding would have had to be approved by UMTA plus funding to cover escalation, the amount of which was unknown.

Page 14, Paragraph 3

The spending of \$1.2 million was a necessary and justifiable expenditure in view of the impending purchase of the No. 12 RTL cars. The only alternative would have been to have equipped the existing No. 11 cars for approximately \$5 million and operate them until the No. 12 cars were delivered and equipped with an ATO package.

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Page 15, Paragraph 2

The implementation of cab signalling did pose a "responsibility" problem in that carborne signal equipment was in the area of Equipment Maintenance (Signal Division). Nevertheless, when the technical difficulties became excessive, a decision was made to place responsibility for all signal equipment (both carborne and wayside) with the Engineering and Maintenance Department (Signal Division). We feel that the time frame involved for the resolution of responsibility was not excessive in light of the technical ramifications associated with instituting a new signal system.

Page 15, Paragraph 3

These tests of a prototype train control system of the No. 11 RTL cars were for the purpose of developing a car package which would allow us to test the wayside portion of the Haymarket North Extension under actual, rather than simulated, conditions.

Page 15, Paragraph 3

When the cab signal equipment was to be installed by Hawker Siddeley, the use of "T" personnel to prepare a specification was justified. Under the present design contract with Kaiser Engineers, their services were contracted, not because of limited "T" staff, but because the carborne equipment was to be purchased as part of the Southwest Corridor, and Kaiser was under contract to prepare the Southwest Corridor wayside signal specification.

To consolidate the two aspects as one contract would, we felt, reduce the carborne cost through economies of scale. The savings of combining the two contracts we believe will be considerable.

Page 15, Paragraph 2

We take exception to the last line on the page which refers to internal strife (as if there were a revolution going on). What might be better said is that there was appropriate discussion as to whether ATO/ATC should be pursued faced with technical difficulties and the high labor requirements demanded to provide an ongoing, reliable system and that these labor requirements would, in the future, be responsible for operating budget dollars.

Page 16, Paragraph 2

We are not aware of any substantial funds being provided by UMTA for Automatic Train Control equipment in 1976.

A letter to UMTA from the General Manager dated June 30, 1981, details the steps taken by the Authority to complete the decision-making process required for the wayside and in-cab signal system of the Southwest Corridor and its integration with the Haymarket North Extension (attached as Appendix "A").

c. Limited Benefits from a Major Power Project--Draft Pages 16-18Page 16

We take exception to the captioned limited benefit for a major power project. The Authority did receive benefits by extending the useful life of its power plant. Installation of a new gas turbine generator to generate power at 25 Hz, and later at 60 Hz, addresses both present and future needs of the system. The extension of generating capability in itself is, and continues to be, a great benefit to the Authority and the users of the transit system. It, as well, provides the Authority with a strong bargaining position in its negotiations with Boston Edison Company for the securement of a new source of power.

It should be identified that the report does not adequately differentiate between the existing 13,200, 25 Hz system modified under MA-03-0037 with the planned 13,800, 60 Hz system funded under MA-03-0019. Under MA-03-0019 it was anticipated to purchase 60 Hz power for the new substation program, and, to date, the Authority has not signed a bulk power agreement to provide power to the new substations.

Page 17, Paragraph 3

"The MBTA Board of Directors in August 1981 voted to shut down the steam plant. In its place, the MBTA signed an agreement with a local utility company to purchase electricity." When the Authority shut down generation by steam in August 1981, the Authority continued to generate power by using its new gas turbine purchased and installed as part of Grant MA-03-0037. This shut down of the steam generator was necessitated by the constraints of the "T" Operating Budget. The "T" has signed a temporary power contract with BECO for 60 Hz power needed to commission our new substations for an Interim Period which has no direct connection with the Immediate Needs Project or the Authority's decision to shut down the power plant.

Page 17, Paragraph 2, "Factors minimizing project benefits"

The MBTA management did modify the objectives of the grant, but it occurred after extensive study and economical analysis were performed by the MBTA Power Study Committee. The Authority did not "vacillate", but modified their direction due to the unavailability of the new boilers for an extended period and then due to economical restraints.

Page 18, Paragraph 2

The Authority has always kept UMTA informed before it made decisions pertaining to curtailing contracts or requested changes to the objectives of the grant. We believe that an equitable settlement between UMTA and the MBTA should be negotiated once disposition of the boilers and ancillary equipment is determined.

-7-

d. Southwest Corridor Project--Draft Pages 28-31

The funding for the Arterial Street and bridges in the Southwest Corridor Project has been, in the past, and is still being, pursued by the Authority. The MBTA is continuing this effort and it is anticipated that a source of funds will be secured for the payment of these items. The Authority has presently on-going a process by which the Project is being re-analyzed so as to build it within the authorized budget and it is expected that the source of funds for the payment of the Arterial Street and bridge elements will be identified by the time the cost savings candidates are identified, reviewed by the community, and approved. Although the construction of the Arterial Street and bridges is not essential to the construction and operation of the Mass Transit Project, it affords an opportunity to maximize the benefits to the surrounding community.

3. Conclusion

The MBTA is disappointed in the presentation of facts by the GAO draft report and ascertains that it clearly fails to represent the many successful benefits experienced by the riding public from the federal investment in mass transportation facilities in the Metropolitan Boston area.

It is hoped that the General Accounting Office will see fit to expand this report prior to its publication so as to reflect the strengths of the federal grant program.



DEPARTMENT OF TRANSPORTATION
URBAN MASS TRANSPORTATION ADMINISTRATION
WASHINGTON, D.C. 20590

MAR 12 1982

Mr. Henry Eschwege
Director, Community and
Economic Development Division
U. S. General Accounting Office
Washington, D. C. 20548

Dear Mr. Eschwege:

This is to confirm discussions I have had with GAO staff regarding the audit of UMTA's administration of capital grants at the Massachusetts Bay Transit Authority (MBTA) and UMTA Region I in Boston.

Essentially, I informed them that the problems they found at the MBTA also exist at other transit authorities. Indirectly, the UMTA staff levels in Washington and the Regional Offices and supporting administrative funds are grossly insufficient to make an adequate number of on-site visits and to devote sufficient time to analyze pertinent project data submitted by grantees to provide the level of project oversight to accomplish the objectives to which the GAO staff referred.

Please let me know if I can be of further assistance.

Sincerely,

Wilbur E. Hare

Wilbur E. Hare
Acting Director
Office of Program Management

(345557)



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