Federal Task Force
on the
Boston Central Artery Tunnel Project

Review
of
Project Oversight & Costs

March 31, 2000

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EXECUTIVE SUMMARY

The Federal Government's role in the Central Artery/Tunnel (CA/T) Project is one of oversight. Costing billions of Federal and State dollars, the CA/T Project is often referred to as "the largest public works project in American history." More Federal funding–$5.8 billion and growing–has been allocated to the CA/T Project than to any other construction project of its kind. As stewards of these tax dollars, the Federal Highway Administration (FHWA) is responsible for ensuring Federal funds are used responsibly and lawfully.

To fulfill this fiduciary duty to the American people, the FHWA is governed by many statutes, regulations, and policies. As made clear by these legislative and administrative directives, the FHWA's oversight role is intended to be independent of the State's management of the Project. The FHWA Division Office is expected to evaluate critically the State's programs and provide technical assistance as needed.

The FHWA has a long history of relying on a strong Federal/State partnership in carrying out its oversight role. Begun at the start of the Federal-aid highway program in 1916, the concept of a "partnership" reflects the FHWA's unique oversight approach to State transportation departments, whereby relationships are based on mutual trust, fairness, respect, cooperation, and communication. Although the FHWA makes Federal-aid highway funds available to the States, each State is responsible for managing and developing its projects, subject to Federal oversight.

In the case of the CA/T Project, the FHWA's long history of strong Federal/State partnerships failed. On the one hand, the FHWA failed to maintain an independent enough relationship with the State to adequately fulfill its oversight role. On the other hand, the State breached its trust with the FHWA and others by intentionally withholding knowledge of the Project's potential cost overrun.

In October 1999, the CA/T Project Director began a "bottom-up" review of all construction contracts to identify all future cost exposures on a contract by contract basis. The CA/T Project undertook this comprehensive cost review out of concern that costs would substantially exceed the $10.8 billion cost referred to repeatedly by Project managers in recent years.

Although the FHWA Division Office did not receive complete information from the CA/T Project, it had received a draft of the U.S. Department of Transportation's Office of Inspector General (OIG) report dated October 7, 1999. In that draft, the OIG pointed out that the Project was experiencing significant construction cost increases, and if the trends continued the Project could need up to $942 million more in offsets or additional funding. The OIG draft report also pointed out that the Project's 1998 Finance Plan did not disclose significant cost information about the Project, such as construction cost increases or that contract awards were exceeding budget. These warnings should have caused the Division Office to scrutinize the information being provided by the Project more closely. However, the Division Office chose instead to continue to rely on assertions from the State that future cost increases were unlikely. Had FHWA independently reviewed the data provided by the OIG, it most likely would not have approved the finance plan presented by the CA/T Project in January 2000.

On January 7, 2000, the Director of the CA/T Project submitted to the FHWA Massachusetts Division Office an "Annual Finance Plan" (Plan) that had been due in October 1999. According to Title 23, United States Code, Section 106, the Plan must provide a detailed estimate of the "cost to complete" the remaining elements of the CA/T Project, including reasonable assumptions of future cost increases. There was no indication in this Plan of a potential cost overrun.

On February 1, 2000, the Division Administrator conditionally accepted the Finance Plan for the CA/T Project. Having discussed the potential for likely cost increases in the range of $500 million with State officials, the Division granted conditional acceptance and required the State to submit a revised Plan in April 2000 after the full extent of the increase became clear.

Later in the day, the Chairman of the Massachusetts Turnpike Authority (MTA) informed the media of a potential $1.4 billion cost overrun, bringing the total CA/T Project cost to $12.2 billion. The MTA Chairman informed the Task Force that he acted in response to an anticipated inaccurate press account of cost exposures expected later that week. According to the FHWA Division Administrator, the State had not directly forewarned the FHWA of a potential cost overrun of such magnitude in any document provided to the Division Office, in the Plan, or in discussions prior to the conditional acceptance of the Plan.

Because of the failure of the Federal/State partnership in Massachusetts, a change in FHWA's oversight role is needed. Specifically, in response to the failure of the CA/T Project management, the Federal Highway Administrator established a multi-disciplinary Federal Task Force to analyze the oversight process for the CA/T Project, review the structure of the FHWA's Division Office, determine the effectiveness of reporting documents, and recommend changes to the FHWA policy or procedures.

The Task Force reviewed documents, conducted interviews with key State and Federal officials and staff, and developed criteria for assessing the adequacy of the FHWA CA/T Project oversight processes. The Task Force gathered information from February 28 through March 10, 2000, in Boston. Additional analyses and follow-up interviews were conducted coincident with report preparation through March 31, 2000.

Information obtained during this review indicated that prior to submitting their Plan on January 7, 2000, senior management of the CA/T Project had sufficient evidence of the potential $1.4 billion cost overrun. The CA/T Project officials deliberately, however, chose to withhold that information. The review also indicated that information necessary to conduct an independent validation of the CA/T Project costs was available to the Division Office.

The Task Force reached conclusions in each of the seven objectives established for the review:

1. Assess the FHWA oversight process, including the knowledge of the FHWA staff and others, of the potential cost increases and recommend suggested changes to the current process.

The FHWA oversight is based on enhanced requirements in the Transportation Equity Act for the 21st Century (TEA-21) and on the long-held concept of "partnership," the central element of which is mutual trust. The FHWA failed to meet its enhanced oversight requirements under TEA-21. Additionally, a failure by the CA/T Project leadership to honor its partnership obligations with the FHWA and others delayed full knowledge of the potential cost overrun.

2. Review the FHWA management structure and determine if changes in leadership, reporting relationships, and delegated authority are necessary.

The Task Force recommends a change in the State CA/T Project leadership to restore public confidence in stewardship of the CA/T Project parallel to recently announced changes in the FHWA's CA/T Project leadership. The Task Force also recommends that the role of the MTA in the day-to-day management and control of the CA/T Project be reevaluated.

The existing management structure of the FHWA, reporting relationships, and delegations of authority, if exercised with initiative equal to the extraordinary nature of the CA/T Project, are generally adequate to permit appropriate oversight of the CA/T Project. However, FHWA leadership did not take advantage of available financial expertise in review of the October 1999 Finance Plan. Therefore, the Task Force recommends changes in the financial review process and delegation of authority for acceptance of the Finance Plan.

3. Determine the effectiveness of the Project Management Monthly (PMM) and the annual Finance Plan as information resources for management.

Neither the PMM report nor the Finance Plan, in their current form, provides a clear, accurate, and timely picture of the total potential CA/T Project cost exposure or cash flow needs.

4. Validate the $1.4 billion potential cost overrun.

The methodology used by the CA/T Project staff to identify the potential $1.4 billion cost overrun is a realistic approach and consistent with normal industry practice. However, there are risks that could lead to additional cost exposures in the range of $300 to $480 million. The Task Force estimated that a realistic cost estimate for the CA/T Project is now $13.4 billion to $13.6 billion.

5. Determine the soundness of the State's financial options for covering the $1.4 billion overrun.

The revised Finance Plan Update, submitted on March 15, 2000, for financing the potential $1.4 billion cost overrun does not provide a sound source of revenue to cover the identified potential exposures. Several of the proposed revenue sources have questionable legislative support. The Commonwealth of Massachusetts does appear to have adequate funds to finance the overrun but has not yet specifically identified which of those revenue sources will be applied.

6. Identify potential new indicators for better predicting cost increases.

The indicators used by the CA/T Project staff to predict cost increases are appropriate, but are not being used properly by the CA/T Project management. The current practice of constraining cost indicators to equal a predetermined budget amount must end. A new report must be developed that regularly and accurately predicts the potential cost exposure of all program work elements.

7. Identify potential cost saving measures.

There are limited opportunities for significant savings on the remaining major construction projects. The cost containment initiatives in place should be aggressively continued.

As a result of the Task Force's observations, research, and analysis, 34 recommendations have been offered. The recommendations can be found at the end of each section. The recommendations can be summarized by saying that FHWA must move beyond the failed "partnership" approach, which the State betrayed by its actions, to achieve independent and critical oversight of the CA/T Project.

INTRODUCTION

Background

The Central Artery/Tunnel (CA/T) Project in Boston, Massachusetts, is the largest federally funded public works project in recent history, involving the reconstruction of I-93 (i.e., the Central Artery) and the extension of I-90 (i.e., the Ted Williams Tunnel). The I-93 reconstruction includes a new eight-lane highway beneath the existing elevated Central Artery through downtown Boston. The I-90 extension involves placement of a four-lane immersed tube tunnel beneath Boston Harbor. The CA/T Project is approximately 7.5 miles long and includes approximately 160 lane-miles of new and reconstructed highway. The majority of the CA/T Project is below ground.

Although the Massachusetts Highway Department (MHD) is the nominal recipient of Federal-aid highway funds, State legislation in 1997 creating the Metropolitan Highway System transferred responsibility for the CA/T Project from the MHD to the Massachusetts Turnpike Authority (MTA). The Central Artery/Tunnel Project Management Agreement, setting out each agency's responsibilities, is included as Attachment 1. The State's CA/T Project Management Team is a blend of MTA staff and personnel representing Bechtel/Parsons-Brinckerhoff (B/PB), the joint venture overseeing day-to-day operations. This approach, combining the two entities to form an integrated team, may have assisted in the delivery of the CA/T Project, but also contributed to problems in oversight at the Federal and State levels and raises serious questions about the acceptability of such private/public management teams.

The cost to complete the CA/T Project has increased tremendously from the initial estimate of $2.3 billion in 1984. It is not the purpose of this report to explore why the costs increased over the years. However, prior to February 1, 2000, the total CA/T Project cost was reported to be $10.8 billion. The Task Force estimated that a realistic cost estimate for the CA/T Project is now $13.4 billion to $13.6 billion.

In response to the MTA's announcement on February 1, 2000, and the report of the U.S. Department of Transportation's (DOT) Office of Inspector General (OIG) critical of CA/T Project financing, U.S. Secretary of Transportation Rodney E. Slater, on February 17, 2000, endorsed a six-part action plan presented by Federal Highway Administrator Kenneth R.Wykle. The plan included establishing a task force to conduct a complete review of the Federal Highway Administration's (FHWA) oversight process. This report presents the work of the Task Force.

Mission

The Task Force was charged with the mission to assess the circumstances leading to the $1.4 billion potential cost overrun, evaluate the effectiveness of the Finance Plan for addressing such costs, and review the overall management and oversight processes. Specifically, the Task Force was to:

1. Assess the FHWA oversight process, including the knowledge of the FHWA staff and others, of the potential costs increases and recommend suggested changes to the current process.

2. Review the FHWA management structure and determine if changes in leadership, reporting relationships, and delegated authority are necessary.

3. Determine the effectiveness of the Project Management Monthly (PMM) report and annual Finance Plan as information resources for management.

4. Validate the $1.4 billion potential cost overrun.

5. Determine the soundness of the State's financial options for covering the $1.4 billion overrun.

6. Identify potential new indicators for better predicting cost increases.

7. Identify potential cost saving measures.

The Charter of the Task Force, including a list of Task Force members, is included as Attachment 2.

Methodology

In approaching its mission, the Task Force organized into two teams (Finance and Construction). Action plans were developed by each team and coordinated with legal advisors to address the seven objectives identified for the Task Force. Specific actions taken by the Task Force included review of pertinent CA/T Project documents and interviews with the Division Office staff, CA/T Project staff, and State officials. General briefings were also provided by the Division Office and the MTA.

It should be noted that the Task Force did not analyze, in detail, the costs included in the Financial Plan Update forwarded to the FHWA on March 15, 2000. While the Task Force report discusses the Plan, in part, a more comprehensive analysis of the Plan is being conducted by FHWA and will be transmitted to the CA/T Project Director. The Task Force charter also did not include the development of an ultimate final cost for the CA/T Project.

This report contains findings, conclusions, and recommendations based on information the Task Force obtained in documents, interviews, and briefings.

OBJECTIVES

Objective 1.	***Assess the FHWA oversight process, including the knowledge of the FHWA staff and others, of the potential cost increases and recommend suggested changes to the current process.***

<u>Conclusion</u>

The FHWA oversight is based on enhanced requirements in the Transportation Equity Act for the 21st Century (TEA-21) and on the long-held concept of "partnership," the central element of which is mutual trust. The FHWA failed to meet its enhanced oversight requirements under TEA-21. Additionally, a failure by the CA/T Project leadership to honor its partnership obligations with the FHWA and others precluded full knowledge of the potential cost overrun.

<u>Discussion</u>:

I. <u>Enhanced Oversight Activities</u>

The role of the FHWA traditionally has been to: 1) review and approve individual projects for reasonableness and conformance with Federal requirements and approved standards; and 2) make eligibility determinations regarding the use of Federal-aid funds on individual projects. Under Title 23, United States Code (U.S.C), Section 145, the sovereign rights of the States are recognized when determining the selection of projects. As long as a State complies with the FHWA's planning, environmental, and fiscal policies, it has the right to choose which projects will receive Federal-aid funds.

Prior to the enactment of TEA-21 in 1998, the role of the FHWA did not include a review of the aggregate construction cost of projects. As the owner of the facility, the State had full responsibility for managing and directing its projects, subject to Federal requirements. In addition, the State had full responsibility for ensuring that all matching funds necessary to complete a project were available when needed.

In the case of the CA/T Project, the FHWA imposed an administrative requirement for an annual Finance Plan beginning in 1995. Because of the multi-billion cost of the Project and the need to limit possible demands for additional Federal funding, the FHWA wanted to be certain the State would be able to meet its cash flow needs. The FHWA also wanted to ensure the State had sufficient funding to maintain a balanced statewide transportation program beyond the CA/T Project in Boston. The FHWA accepted the first Finance Plan on April 30, 1996.

Each year's Plan was reviewed by field and FHWA Headquarters staff prior to acceptance. The FHWA did not assume responsibility for conducting its own separate review of project costs. Rather, it accepted the State's cost estimate and ensured the State's summary of reasonably available resources indicated funding would be sufficient to complete the Project.

Under TEA-21, the FHWA's role on larger projects was enhanced. The requirement for a Finance Plan became mandatory under TEA-21, Section 1305(b)–Financial Plan, which states:

> FINANCIAL PLAN–A recipient of Federal financial assistance for a project under this title with an estimated total cost of $1,000,000,000 or more shall submit to the Secretary an annual financial plan for the project. The plan shall be based on detailed annual estimates of the cost to complete the remaining elements of the project and on reasonable assumptions, as determined by the Secretary, of future increases in the cost to complete the project.

Under this provision, the FHWA's responsibility to review and accept the State's Plan for meeting cash flow needs through project completion became statutory and, therefore, mandatory instead of administrative. Thus, beginning with the enactment of TEA-21 in 1998, the FHWA was required by law to review "detailed" estimates of the "cost to complete" the CA/T Project and to review "reasonable assumptions" of "future cost increases."

Preliminary guidance on how to fulfil this requirement was issued by the FHWA in 1998 and is included as Attachment 3. It retained the basic process in place for reviewing Finance Plans, with the State remaining responsible for preparing the cost portion of the document.

The preliminary guidance, which was based on experience with Finance Plans developed under the partnership concept of the CA/T Project, was not sufficiently strong in view of the statutory nature of the Finance Plan requirement in TEA-21. The FHWA continued to rely on State cost estimates, without independent verification, and to consider CA/T Project annual reports as a routine matter. The practice of accepting the Project's cost estimates continued even after the OIG's October 1999 draft report warned the Division Office that the FHWA's guidance on Finance Plans was inadequate to ensure complete and accurate reporting of project costs.

The FHWA's Massachusetts Division Office, despite having 15 technical specialists and support staff dedicated to the CA/T Project, was not staffed in expectation of conducting a detailed annual analysis of the cost to complete the CA/T Project. Further, the financial and planning experts in the Division Office were excluded from the Division's review of the Finance Plans. For example, the Finance Specialist on the CA/T team has not reviewed any of the Finance Plans since the initial Plan in 1995. The Financial Specialist is primarily involved in audits. The FHWA's failure to involve its own CA/T Project Financial Specialist in review of the Plans raises serious questions about the FHWA's understanding of its independent oversight role.

The Planning and Research Program Manager does not review the Plans even though one portion of the document discusses the adequacy of the State's commitment to a balanced Statewide Transportation Improvement Program (STIP). The Task Force concluded that future Division Office reviews of Finance Plans (or other significant project financial or status reports) should make use of the expertise needed to provide the most complete technical analysis possible.

Since the Task Force review of the potential $1.4 billion overrun began the week of February 27, 2000, the Division Office has conducted an independent estimate of total CA/T Project cost to complete. The methodology used and the resulting estimates (discussed under Objective 4 in this report) are considered by the Task Force to be adequate. However, such an independent validation required a concentrated effort and the diversion of the entire CA/T Project Team from other oversight activities.

Recommendations:

1. The Division Office should make an annual, independent cost-to-complete estimate to be used as a primary source of information for decision making regarding the adequacy and acceptability of all future Finance Plans submitted for the CA/T Project.

2. The process used by the Division Office staff in developing the independent cost estimate should be fully documented and refined with assistance from other elements of the FHWA. It should be published as a best practice for use in other mega-projects.

3. The FHWA must establish monitoring practices and procedures for mega-projects.

4. The Division Office should expand the roles of current staff to include a review of the Finance Plan by the Financial Specialist and the Division Planning & Research Program Manager. This will provide a technical analysis of the information presented in the Finance Plan, and provide additional assurances on the adequacy of data contained in the document.

II. Breach of Partnership Obligation

In addition to its statutory oversight duty, the FHWA has a long history of relying on a strong

Federal/State partnership in carrying out its oversight role. The "partnership" concept reflects the FHWA's unique oversight approach to State transportation departments. This approach was based on mutual trust, leaving the States to manage and develop their projects subject to Federal oversight. For the CA/T Project, this oversight approach was formalized in a "Project Oversight Agreement" signed by the MHD Director and the FHWA Division Administrator. A copy of the agreement is include as Attachment 4.

The Task Force concluded that this partnership approach to oversight failed. While the FHWA failed to exercise independent critical oversight of project costs, the CA/T Project staff and MTA leadership failed to disclose information necessary for the FHWA to carry out its oversight responsibilities.

It was evident throughout the Task Force's review that the CA/T project staff did not keep the Division Office informed of all potential cost exposures or the magnitude of the potential overrun. As indicated in the FHWA's conditional acceptance of the October 1999 Finance Plan on February 1, 2000, the Division Office was aware of additional cost exposures, exclusive of credits, on the CA/T Project of approximately $500 million. Although there were numerous opportunities to acknowledge concerns in achieving the zero-sum-gain budget goal of $10.8 billion, the CA/T Project management deliberately failed to inform the FHWA of the magnitude of the potential overrun prior to the public announcement on February 1, 2000. In fact, in discussions with the FHWA Division Administrator, CA/T Project management dismissed the $500 million overrun as manageable, rather than admitting the true potential size of the overrun.

This was a serious breach of the Federal/State partnership commitment by the CA/T Project leadership. Since the MHD is the designated recipient of Federal-aid highway funds, and the MTA has project oversight, both organizations share in the failure by the CA/T Project management to inform Federal officials of the size of the potential cost overrun. Moreover, the Task Force believes that MTA's responsibility for day-to-day management and control over the CA/T Project must be evaluated.

Although there were numerous discussions between the CA/T Project and the Division Office staff on the adequacy of the Finance Plan, the CA/T Project leadership deceived the FHWA Division Office by permitting it to believe that the document the FHWA was reviewing contained the most recent financial data. In fact, in the FHWA's acceptance letter dated February 1, 2000, Division Administrator Peter C. Markle advised CA/T Project Director Patrick J. Moynihan:

> Based on our recent discussions with you and the CA/T Project staff concerning the identification of additional cost exposure, our acceptance of this updated finance plan and continued use of AC authorizations is until April 15, 2000.

This sentence clearly shows that there were discussions between the two managers, but that the CA/T

Project leadership chose to be silent on the results of their cost to complete activities until confronted by the media. Despite the nondisclosure by CA/T Project leadership, the FHWA Division Office clearly knew of at least $500 million in additional cost exposures and had received warnings in the OIG's October 1999 draft report about cost trends which could have added $942 million to the cost of the Project. Nonetheless, the Division Office did not conduct any independent cost verification, but continued to rely on the State's cost reporting.

The following are additional examples of the CA/T Project leadership's breach of the partnership agreement:

- The CA/T Project staff did not share many of their forecast documents with the FHWA. In 1998, the CA/T Project staff started preparing a trending assessment document referred to as the "Up/Down" chart. The CA/T Project management viewed the cost exposures in the Up/Down chart as too speculative and, therefore, did not disclose them to the FHWA.

- A time-phased plan was started for the CA/T Project in the spring of 1999 to ensure that all potential cost increases were offset by corresponding cost decreases and/or revenue. The results of this review caused the CA/T Project Director to become concerned with achieving a zero-sum-gain budget goal for the CA/T Project. Again, the CA/T Project Director did not share these concerns with the FHWA.

- The results of an October 1999 review completed to ascertain all anticipated additional costs to the CA/T Project through its completion were never shared. Although the FHWA was asked for its input on certain aspects of this exercise (e.g., comments were requested from the FHWA regarding the templates developed for the Program Management portion of the $1.4 billion overrun), the FHWA was never informed of this bottom-up effort or its results before the February 1, 2000, announcement.

- The FHWA was not informed of the contents of a briefing for the MTA Chairman in December 1999. The results of the efforts of the CA/T Project staff to identify the total cost exposure for the CA/T Project were discussed at this briefing.

- The FHWA was not informed that the MTA Chairman would announce the $1.4 billion potential cost increase on the same day the Division Administrator would conditionally accept the Finance Plan.

Senior CA/T Project management informed the Task Force that they made was a conscious decision to exclude the Division Office from the cost exposure exercises. The reasons most commonly heard were:

- Finding additional funds to cover any cost overruns would not involve Federal-aid highway funds and was solely a State issue;

- The CA/T Project Director wanted to know the estimated total project costs and offsets first;

- The MTA leadership had to be briefed before the cost figures went public; and

- There was no doubt that the CA/T Project would be completed, in spite of the overruns.

As discussed previously, this lack of communication by the CA/T Project's leadership contributed to the FHWA's failure to fulfill its federally mandated oversight duty. The Project's lack of candor has also seriously jeopardized the long-held partnership commitment between Massachusetts and the FHWA.

One constant theme that echoed during interviews with external monitoring agencies was the difficulty of working with the CA/T Project management (the B/PB joint venture and MTA personnel) in obtaining information and records. All requests for information must be coordinated through the MTA legal representatives. Direct access to information is not permitted. The State Auditor and the OIG stated it is very difficult and frustrating to obtain records and documents from the CA/T Project managers. It reportedly takes weeks or months to obtain the information requested. All records are required by regulation to be available for inspection. In Title 49, Code of Federal Regulations (CFR), Section 18.42(e), the Uniform Grant Regulations provide:

> *Access to records--(1) Records of grantees and sub grantees.* The awarding agency and the Comptroller General of the United States, or any of their authorized representatives, shall have the right of access to any pertinent books, documents, papers, or other records of grantees and sub grantees which are pertinent to the grant, in order to make audits, examinations, excerpts, and transcripts.

Therefore, once Federal funds are used for a project, the information supporting that project, including financial and programming data, must be available for audit purposes. The OIG, as the audit representative of the Secretary of Transportation, must have direct access to all information concerning the project, including the database used to generate that information.

Additionally, external monitoring agencies have been denied access (via a read only password) to the Oracle database of the CA/T Project information. This database contains all financial and schedule information and is the basis for all reporting by MTA management. This access has reportedly been denied to the OIG. The MTA, a State agency, has also denied direct access to information by auditors for the Commonwealth of Massachusetts, on the grounds of proprietary ownership.

The Task Force was also concerned about the close ties between CA/T Project management and the B/PB joint venture private consultants. As the CA/T Project moved toward construction, it was clear that the MHD was not equipped to manage a project of this scope. All parties, including the FHWA, agreed to use the joint venture to manage the project, thus taking advantage of the expertise available from two contracting firms, Bechtel and Parsons Brinckerhoff, with excellent international reputations. In practice, CA/T Project management and the joint venture became one entity. The joint venture did not maintain an independent, objective role, but rather became part of the management team committed to the zero-sum-gain budget goal of $10.8 billion. The joint venture's loyalty was to its MHD/MTA partners, not to the FHWA.

During the limited available review time, the Task Force could not fully explore the relationship between CA/T Project management and the joint venture. However, the Task Force is not aware of instances where the B/PB joint venture questioned either the CA/T Project's costs or management's decision to withhold information on potential cost increases from the FHWA. Answers to these questions are particularly important to the Federal Government because of the enormous number and value of ongoing contracts between private construction/development firms and the FHWA or its State transportation partners. Specifically, the Task Force would like to have had time to explore whether the joint venture's relationship with the CA/T Project is an anomaly or characteristic of how the two companies do business nationally when called on to form a joint venture with a State transportation department. The FHWA will consider changes in its contractual relationships with these and other private consulting firms depending on the answer to these questions.

<u>Recommendations:</u>

5. The Task Force recommends that the FHWA determine that the MHD and the MTA are "high risk" grantees as defined in 49 CFR Section 18.12, with respect to the CA/T Project. As high risk grantees, these agencies must provide more detailed financial and project management reports, as recommended in other sections of this report.

6. The U.S. Secretary of Transportation should request that the Governor of Massachusetts reevaluate the appropriateness of the MTA's continuing role in day-to-day management and control over the CA/T Project.

7. It is recommended that the CA/T Project management take whatever steps are necessary to ensure that all requests from external monitoring agencies for information, records, or access to records are met in a responsive and timely fashion. A failure to provide this access should be considered a violation of 49 CFR Section 18.42(e), which will impact the reimbursement and further availability of Federal funds.

8. Require B/PB to submit a certified letter to the Federal Highway Administrator describing their role in the management of the CA/T Project, including whether either company raised questions regarding escalating cost exposure and/or the decision to withhold material information from the FHWA.

9. It is recommended that the FHWA Office of Chief Counsel review the circumstances surrounding the failure to disclose information concerning the potential $1.4 billion overrun and recommend whether to take action under 49 CFR Part 29–Governmentwide Debarment And Suspension (Nonprocurement) And Governmentwide Requirements For Drug-free Workplace (Grants).

III. <u>Other Oversight Activities</u>:

The FHWA Headquarters has initiated several oversight activities as a result of the failures in oversight of the CA/T Project. Specifically, the FHWA is updating its August 1998 guidance on Finance Plans. While the FHWA's 1998 guidance was adequate to initiate the provisions of TEA-21, Section 1305, the OIG recommendations made it clear that more definitive guidance was necessary. The revised guidance (due April 25, 2000) will:

- Define the content and format of the Finance Plan data in terms of accepted accounting standards.
- Provide example charts and tables to promote uniformity.
- Require a commitment and acceptance of the plan by the leader of the State transportation agency
- Standardize the FHWA's procedure for reviewing Finance Plans and annual updates

In addition, considering the congressional and public attention surrounding the FHWA's oversight role on the CA/T Project, the FHWA has elected to establish a Headquarters Major Projects Team for review of all Federal-aid mega-projects. It is envisioned that this team will call on individuals with skills similar to the CA/T Task Force Team - financial specialists, attorneys, engineers and other program specialists on an "as-needed" basis. While the FHWA Division Offices will remain responsible for traditional Federal-aid oversight responsibilities, the Major Projects Team will assist the Division Office with risk assessment and oversight decisions in the areas of finance, public relations, environment, and program development.

The Major Projects Team will support the Division Offices during the review of the Finance Plans and in the independent verification of financial data. This will include reviewing and managing the implementation of recommendations from government audits or reviews such as those by the OIG. The responsibility for staffing and implementing the Major Projects Team lies with the Director of the Office of Program Administration, Infrastructure Core Business Unit.

The Massachusetts Division Office has instituted activities beyond those normally required for full oversight projects. Some of the initiatives are:

A. Organization:

The current CA/T Project and Division organizational charts are, for the most part parallel. This was done so that the levels of authority within each organization are consistent. The organization charts (as of February 27, 2000) found in Table A show the management levels of the FHWA and their CA/T Project counterparts.

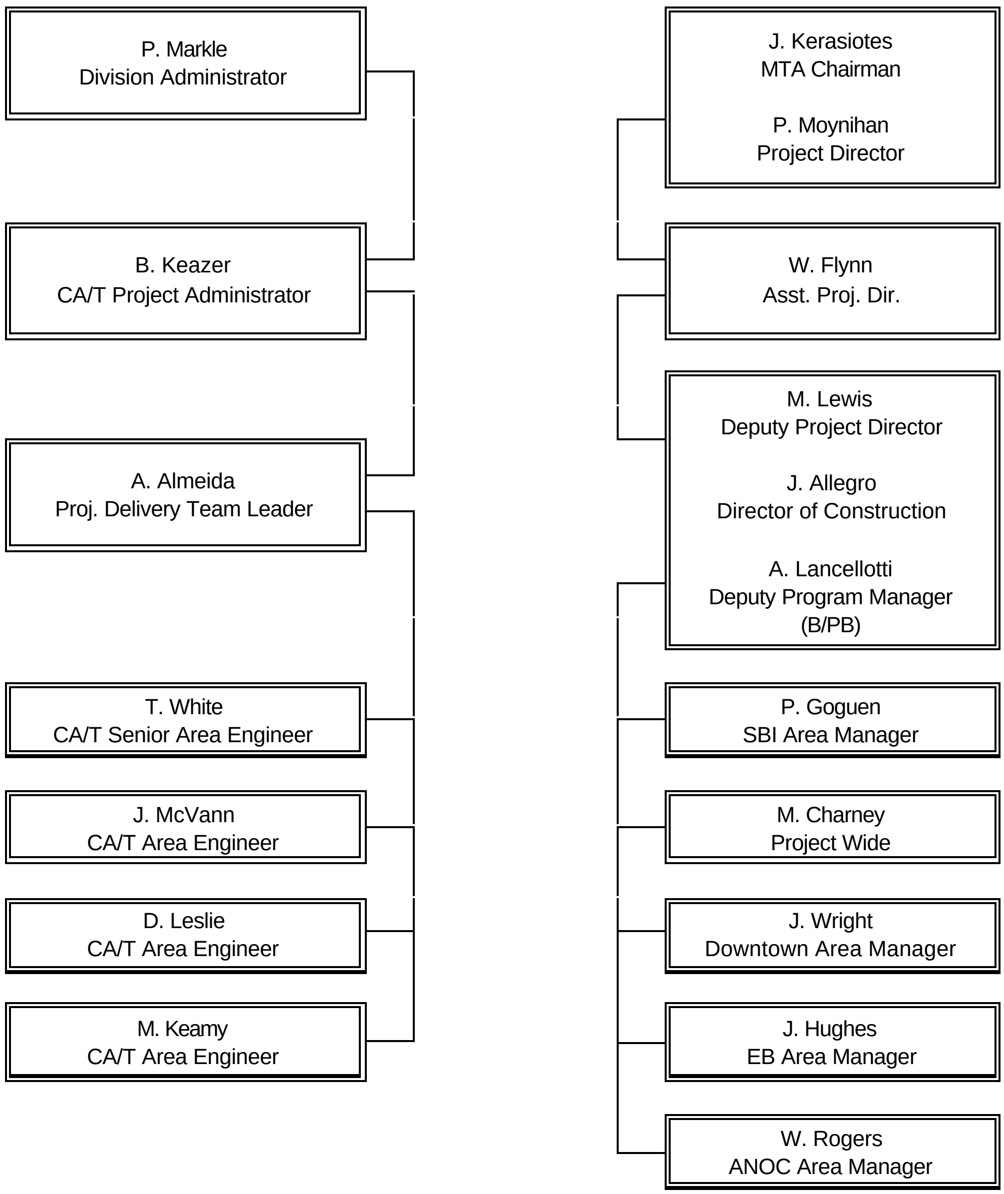
In general, the Area Engineers and the CA/T Project Area Managers have similar delegations for implementing small changes within each contract. The greater the dollar size of the change or impacts to the CA/T Project, the farther up the management levels the change has to be approved. This layering of management and authority levels within construction contract administration is common for highway construction. Problems during construction are resolved at the lowest level possible so that the contractor is not delayed. Contractor delays present time and money costs to the CA/T Project.

B. Meetings:

Numerous meetings with the CA/T Project personnel are scheduled on a regular basis. These meetings are conducted to provide information on schedule, cost concerns, and other issues. They range in scope from the review of construction issues to overall briefings of top FHWA and CA/T Project management. A complete description of these meetings is contained in Attachment 5.

TABLE A FHWA DIVISION AND CA/T PROJECT MANAGEMENT ORGANIZATION

(As of February 21, 2000)



FHWA Massachusetts Division CA/T Project Team

CA/T Project Management Team

C. Cost Containment Activities:

The Division Office has fully participated in the CA/T Project activities to contain costs. Methods for containing costs include:

- Value Engineering (VE)–a systematic review process that uses a multi-disciplinary team to analyze a project design and develop recommendations to improve the design and/or reduce the overall construction cost of a project. A VE program was established for the CA/T Project in 1991 as the Project was entering the construction phase.

- The Division Office encouraged the CA/T Project staff to recover costs associated with consultant design errors and omissions.

- Constructability Reviews were performed during the preliminary design phase to ensure the elements of the design concepts could actually be constructed or be constructed without causing an increase in cost. This effort continues through the final design process. By means of the continuous involvement by the FHWA in the CA/T Project development process, the Division Office engineers have been in a position to recommend numerous design changes that have led to significant savings and improvements in the quality of the constructed product.

- The Potential Change Allowance program has realized a cost savings. This program was initiated to capture all potential changes and associated costs for review and implementation by upper management of the CA/T Project and the FHWA.

A more detailed discussion of cost containment efforts is included as Attachment 6.

Recommendation:

10. The Division Office should continue its oversight and coordination efforts to ensure that the containment of costs and the mitigation of delays and conflicts remain a primary CA/T Project focus.

Objective 2. ***Review the FHWA management structure and determine if changes in leadership, reporting relationships, and delegated authority are necessary.***

Conclusion

The FHWA leadership relied, to their detriment, upon the partnership with State agencies to oversee the CA/T Project and provide information in an accurate and timely manner. The public trust in the FHWA has been compromised and as a result the FHWA needs to seek new leadership.

Discussion:

In fiscal year (FY) 1999, the FHWA completed a major reorganization. The FHWA Headquarters was restructured along functional lines into "core business units" (CBU), including Planning and Environment, Infrastructure, Operations, and Federal Lands Highways. The Headquarters structure also includes "service business units" (SBU), including Policy, Administration, Professional Development, Corporate Management, Chief Counsel, Civil Rights, Public Affairs, and Research, Development, and Technology. Nine Regional Offices, which had served as overseers of FHWA's Division Offices, were abolished and four Resource Centers were established across the country to provide specialized services and expertise in support of the field organization. The authority of the former Regional Administrators was delegated, for the most part, to the Division Administrator in each State.

The Massachusetts Division Administrator is supervised by the Director of the Eastern Resource Center (ERC), in Baltimore, Maryland. The Director, however, has no program authority over the Division Administrator. Rather, program direction is exercised by the Headquarters CBU Program Managers in their respective areas of responsibility. The ERC Director consults with the CBU Directors and others for the annual evaluation of the Division Administrator's performance. The Infrastructure CBU has lead responsibility for coordinating CA/T Project matters in FHWA Headquarters.

The Massachusetts Division Office is authorized to have 30 Full Time Equivalent (FTE) positions. Of these, 15 positions are assigned directly to the CA/T Project, including a CA/T Project Director. This represents a 50-percent increase over the 10 positions reflected in the 1995 process review of CA/T oversight, which found the FHWA's CA/T staffing level to be higher than for any other major Federal-aid project in the Nation. The CA/T staff is divided into two teams: Project Delivery and Technical Services. The Team Leaders, who have statewide program responsibilities, supervise Area Engineers and technical support engineers, in addition to the CA/T teams. The Division Office Organization Chart is included as Attachment 7.

Given the relative size and scope of the CA/T Project compared with the remaining statewide program, the distribution of FTE within the Massachusetts Division Office appears appropriate.
The Task Force concluded that the existing management structure of the FHWA, including the reporting relationships and delegations of authority, did not preclude appropriate oversight of the CA/T Project. The failure of oversight occurred because FHWA Headquarters and Division Office managers did not institute monitoring commensurate with the task, as discussed below.

Leadership Changes

Public confidence in the Federal and State partnership administering the CA/T Project has been seriously compromised. The most immediate cause of FHWA management's failure to anticipate the magnitude of the $1.4 billion potential cost overrun can be traced directly to the decision of the MTA's CA/T Project Director to withhold material information. It had been the State's practice to undertake detailed cost reviews and provide the information to the Division Office. The CA/T Project Director knew the Finance Plan submitted on January 7, 2000, excluded information regarding the potential $1.4 billion overrun, but he did not disclose this fact to the FHWA prior to February 1, 2000. The Task Force found this failure of communication noteworthy because the FHWA Division Administrator had talked with the CA/T Project Director about a potential overrun that appeared to be in the range of $500 million on the basis of PMM reports.

However, a second cause of FHWA management's failure to anticipate the $1.4 billion cost overrun was the failure to undertake an independent review of the MTA's financial forecasts. This management failure is particularly noteworthy given the magnitude of the CA/T Project, the fact that the Division Administrator had knowledge of at least a $500 million cost overrun, and the fact that information necessary to conduct an independent validation was available to the Division Office. With respect to the $500 million cost overrun, he accepted the CA/T Project management's assertions that the overrun was manageable and could be offset by savings that had not yet been identified, which led to the February 1 conditional acceptance of the October 1999 Finance Plan.

In recognition of the need to restore public confidence in FHWA's stewardship of the project, the leadership of the Massachusetts Division Office has been changed. This change provides a fresh opportunity to establish strong oversight based on vigilance rather than trust. Although recommendations on personnel decisions to the State are beyond the authority of this Task Force, the Task Force believes that restoration of public confidence in Federal and State management of the CA/T Project requires consideration of a comparable change in State CA/T Project leadership. Failure to take positive action would be strong evidence of a continued lack of commitment by the State to a full and open partnership approach on this project.

Reporting Relationships

Interviews with staff in the Massachusetts Division Office reflect a clear understanding of internal delegations and reporting relationships. Senior Division Office staff also have a clear understanding of the relationships between the Division Office, Resource Center, and FHWA Headquarters officials.

Because of the longstanding agreement with the State that CA/T Project officials would conduct detailed cost reviews, no system exists in the Division Office for aggregating information concerning financial progress of the CA/T Project as a whole. Instead, information collected by CA/T team members (such as the Area Engineers and the Realty Specialist) is used for their independent purposes. Thus, while information that would assist in an independent validation of CA/T Project costs is routinely collected, no mechanism existed prior to February 1, 2000, for capturing that data to monitor overall financial management of the CA/T Project.

Delegations of Authority

The FHWA policy is that authority be delegated to the maximum extent compatible with effective direction and control and as close as possible to the point where functions are performed and decisions actually made.

Accordingly, the Division Administrator has been delegated full authority to manage the FHWA's role in the CA/T Project as well as the statewide program. Similarly, the Division Administrator has redelegated sufficient authority to the CA/T team members to oversee progress of the work and to ensure all work is consistent with approved plans, specifications, and related Federal requirements and thus, is eligible for Federal reimbursement. The Massachusetts Division Delegation of Authority, as of August 23, 1999, is included as Attachment 8.

The October 1999 Finance Plan was submitted to the Infrastructure CBU for review. Even though the OIG had warned in October 1999 that the financial disclosure in the Project's previous finance plan was inadequate, no other financial experts within the FHWA or the DOT reviewed the Plan. Thus, the decision of the Division Administrator with respect to the Finance Plan was not based on an adequate analytical review and in fact ignored prior warnings of cost trends and inadequate cost reporting. Notwithstanding, as reflected in the Division Administrator's letter of February 1, 2000, he was aware of significant problems of potential cost exposures on the project and had taken steps to ensure the CA/T Project would address the issue.

As subsequent events have shown, the Division Administrator's trust in his CA/T Project counterparts was misplaced, as demonstrated by the State's actions before and after the Finance Plan was accepted conditionally. Had the Division Administrator taken other steps within his delegated authority, consistent with the unique nature of the CA/T Project, the FHWA might have avoided the resulting embarrassment and loss of public confidence in its stewardship.

Recommendations:

11. The U.S. Secretary of Transportation should consult with the Governor of Massachusetts to seek changes in the State CA/T Project leadership consistent with the recently announced change in Federal CA/T Project leadership.

12. Documentation of the Massachusetts Division Office's process for independent validation of CA/T Project costs should include a system for aggregation of cost and schedule related data routinely accumulated in the normal course of project oversight by FHWA CA/T staff.

13. The delegation of authority to accept annual Finance Plans for the CA/T Project should be withdrawn to FHWA Headquarters.

14. The FHWA Division Office should obtain written assurance from the State that all data with respect to the independent audits of the CA/T Project (e.g., O'Brien Kreitzberg and Deloitte Touche) will be provided to the FHWA. The FHWA should independently and objectively review this and other external reviews of the Project (such as by the OIG, state auditors, etc.), and must not accept assurances provided by Project officials.

Objective 3.	***Determine the effectiveness of the Project Management Monthly (PMM) report and annual Finance Plan as information resources for management.***

Conclusion

Neither the PMM nor the Finance Plan, in their current form, provides a clear, accurate, and timely picture of the total potential CA/T Project cost exposure or cash flow needs.

Discussion:

I. Project Management Monthly

The PMM report is periodically issued by the CA/T Project to the FHWA and other oversight agencies. According to CA/T Project personnel, the PMM is designed to report on the current schedule status and the effectiveness of MTA management in containing program costs within the 1995 approved $10.4 billion budget amount. This 1995 budget figure was contained in the Cost/Schedule Update, Revision 6 (C/SU Rev. 6), which has been the basis for all budget information. This figure was later adjusted to $10.8 billion. An example of a PMM is included as Attachment 9.

The PMM includes an Executive Summary and four schedules:

A. Significant Schedule Trends:

The Significant Schedule Trends provide data on the eight key CA/T Program milestones (see Attachment 10 for an example of the Significant Schedule Trends report). The trends are measured as projected deviations from the original milestone completion dates established in 1995. In the PMM of June 30, 1999, the six remaining milestones show projected delays of up to 6 months. However, a trend arrow for each milestone indicates the MTA anticipates improvements to these schedule variances. In general, this June 1999 PMM would lead the reader to conclude the program will experience some delay in achieving its planned milestones. The amount of the delay is unknown.

B. Total Costs:

The Budget, Cost, Commitment and Forecast report is based on data from Oracle. An example of this report may be found in Attachment 11. This report, which provides the basis for much of the financial information contained in the PMM, shows the Current Budget (CB) and Potential Forecast (PF) figures for each major cost category. On the surface it appears this data should indicate any potential cost exposures to the current budget. That conclusion

would be wrong.
To understand the reported figures, it is necessary to understand the MTA Chairman's mandate that drives the cost data being reported. The mandate was "zero-tolerance" for growth in total CA/T Project costs. For every identified cost increase on the CA/T Project, the CA/T Project staff was directed to identify offsetting cost savings in other work elements. As a result, the use of the term "Potential Forecast" is misleading since both the CB and PF totals always equal the $10.8 billion target amount.

C. Significant Cost Trends:

The Significant Cost Trends portion of the PMM is a summary of the status of the effectiveness of the MTA's balancing of cost increases against cost savings. The Significant Cost Trends schedule lists the potential increases and decreases to the
$10.8 billion budget. Potential increases that are firm changes with firm values are indicated with solid bars. These changes have been approved by the MTA management. The solid bar increases have to be equal to the solid bar decreases so the PF does not exceed the $10.8 billion budget. The PF figures included in the CA/T Project's primary reporting document, therefore, do not include potential costs, but only those that will require an offset to meet the final budget figure. The CA/T Project management has stated that the PMM was designed to identify circumstances that were putting pressure on the CA/T Project schedule and not as a budget forecast document.

The Significant Cost Trends schedule contains a second category of changes that are open or "soft bars." The soft bars are early indicators of potential changes that do not have firm values assigned to them. These potential changes have not yet been approved by the CA/T Project Director and are considered too speculative to be included as potential costs to the CA/T Project.

E. Progress Report:

The $10.8 billion original budget figure was the result of a bottom-up review of the CA/T Project costs by the CA/T Project management in March 1995, as later adjusted. This effort was done in association with the C/SU Rev. 6. Subsequent to the bottom-up review, the CA/T Project's major cost categories were periodically updated to reflect recent "hard bar" or firm increases or decreases in project costs. These updates were not the result of a bottom-up approach and basically just made adjustments among the major budgeted categories while maintaining the C/SU Rev 6 budget total of $10.8 billion.

The CA/T Project management did not perform another bottom-up analysis of costs until late 1999. Management believed that performing additional cost reviews would provide no benefit since they "had their figure" (i.e., $10.8 billion). It was the 1999 bottom-up review that identified the potential $1.4 billion cost overrun.

Management's zero tolerance approach may have contributed to containing costs on this project, but over time it hindered the ability of the CA/T Project staff to identify true potential cost exposure. The Task Force believes more frequent bottom-up reviews would have resulted in earlier identification and depiction of all potential exposures.

Recommendations:

15. CA/T Project should perform an annual bottom-up review for the remaining years of the CA/T Project, beginning with the last quarter of 2000. The results of these efforts should be incorporated into the PMM.

16. The data contained in the PMM should be modified to show potential project cost exposures identified in the separate document referred to as the Up/Down chart. The PMM or similar vehicle should include such items as: (1) anticipated cost exposures in design and/or construction activities; (2) projected labor rate increases; (3) anticipated petroleum price increases or decreases; (4) expected increases in operational costs such as insurance premiums, consultant support services, and materials; and (5) potential and settled claims.

17. The Significant Schedule Trends Report shows possible delays to all six remaining key milestones. The PMM should indicate why the projected delays have occurred and what measures are being considered by MTA management to remedy this deficiency.

II. The Annual Finance Plan

In 1996, as part of the overall oversight for the CA/T Project, the MHD completed the initial Finance Plan. The goal of the Plan was to show the total funding needs of the CA/T Project and anticipated revenue sources, and to outline the commitment by Massachusetts to a balanced statewide transportation program. This initial Finance Plan was based on information provided by a bottom-up analysis of CA/T Project costs, the implementation of a very aggressive cost containment program by CA/T Project management, and the projection of revenue sources anticipated through multiple highway bills.

The first Plan established four key cost containment assumptions for developing cost information:

- The first was a design-to-cost program that assumed no growth in design costs;
- The second established an escalation value to illustrate the effects of inflation on remaining costs of 4 percent;
- The third addressed construction contract changes that included a 7 percent construction contingency in all construction contracts; and
- The fourth assumed a continuation of the trend that actual bids will be below the engineer estimates.

At the time, these assumptions were found to be acceptable by the FHWA as basic cost containment assumptions.

The first Finance Plan following enactment of TEA-21 was the October 1999 Plan submitted by the MTA in January 2000 that was conditionally accepted by the FHWA on February 1, 2000. The Task Force review of the Finance Plan highlighted several key elements of the Plan:

A. Funding Sources

The Plan uses only the most optimistic figures when determining the revenue sources for the CA/T Project. For example, Federal funds shown in the Plan are based on apportionment amounts, although Congress routinely establishes an annual obligation limitation less than the apportionment amounts (the FHWA's conditional acceptance letter for the 1999 Plan addressed this issue). In fact, the 1999 Plan shows Federal funding available for the CA/T Project in FY 2000 as $362 million, but the Plan Update dated March 2000 shows a reduced amount of $314 million. It is likely that Federal funds shown in the 1999 Plan were overstated for FY 2000. If reductions in obligation authority continue during the next 3 years, the 1999 Plan will have overstated Federal revenues by more than $100 million.

The Plan contains no discussion of contingencies should funding sources fail to produce the anticipated revenues. In fact, the Plan states: "Without a fully authorized GANs program, an alternate funding source will need to be identified to support the Project schedule and cash flow." (GANs are Grant Anticipation Notes, a financing mechanism discussed in Objective 5.) A comprehensive Plan should identify alternative funding sources should revenues decrease or costs increase.

B. Project Costs:

There has been much discussion on the "cost" of the CA/T Project. The method in which the "cost of the project" is shown in the Plan has contributed to the inaccurate projection of the CA/T Project cost. Two basic principles should be applied when establishing the cost of the project. First, interest costs, project revenues, and project credits occurring after construction is completed should not be included in the calculation of project cost. Second, the source of funding should not be a factor in determining project cost.

While neither interest costs nor project revenues and credits should be included in the "cost of the project," they should be included in the cash flow models. These items affect the amount of money needed to pay for the project and its related debt. The way in which these items are reflected in the Plan is discussed in more detail in the sections that follow.

While funding levels are optimistic, so are the expectations of the CA/T Project management for controlling project costs as shown by the $1.4 billion projected overrun. If the Plan were based on a more realistic scenario (i.e., most likely to occur scenario), a different picture of the budget requirements and cash flow needs would have been indicated in the Plan. The use of overly optimistic scenarios driven by a zero-sum-gain budget total proved to be misleading and not indicative of true project cost exposures.

The description of the CA/T Project's costs does not include all costs associated with the CA/T Project. Costs borne by a State agency, such as the MTA or the MHD, are not recognized as part of total CA/T Project costs. For example, part of the $1.4 billion overrun includes a $260 million increase in program management costs. This amount covers the funds needed to pay the B/PB joint venture for additional operating costs incurred under the present contract, and to fund an extension of the contract to 2002. Of this $260 million increase, a portion ($100 million) is attributable to the discarded assumption that the project management function would be staffed entirely by MTA employees after 2002 and, therefore, not counted as a CA/T Project cost. Since this assumption is no longer deemed feasible, the $100 million becomes a project cost and is included in the estimated overrun. The Finance Plan should fairly represent the true costs of the CA/T Project, regardless of the source of funding or support.

With the adoption of a "To Go" funding status in the 1999 Plan, there is no clear picture presented of the total costs of the CA/T Project. The Plan should describe amounts obligated and expended to date, as well as the "To Go" activities.

C. Advance Construction:

The use of advance construction is a key component in the overall funding of the CA/T Project. Under this concept, a project is authorized by the FHWA without the obligation of Federal funds and no commitment by the FHWA that funds will be available in the future. The State then uses its own funds to pay project costs. When Federal funds become available, the State may decide to convert the project and request that Federal funds be obligated. There is no obligation of Federal funds until the project is converted, at which time the State may be reimbursed for the Federal share of costs incurred on the project from the original date of authorization.

The FHWA allows the incremental conversion of advance construction projects, providing States the opportunity to manage their limited Federal-aid funding while accelerating the delivery of projects through the use of their own funds. The Plan discusses the anticipated need for advance construction that goes from a high of $2.8 billion in FY 1999 (the height of construction) to a low of $1.8 billion in FY 2004. The incremental conversion of these funds will take place well past the 2004 completion date. (Because TEA-21 authorized Federal-aid highway funding only through FY 2003, future legislation will determine the pace of Federal-aid funding for Massachusetts and, therefore, the amount available for conversion of advanced construction projects.)

The extensive use of advance construction on the CA/T Project raises questions regarding the State's plans for claiming Federal funds to convert advance construction projects. Although the Division Office indicates the State does not plan to convert all advance construction projects to traditional Federal-aid funding, the approval of advance construction exposes the Federal Government to cash outlays far into the future. The Division Office stated that, although the Finance Plan indicates a $1.8 billion balance of advance construction at the end of FY 2004, only the dollar amount needed to retire the GANs balance ($1.5 billion) will be converted.

In addition, the March 2000 Update Plan indicates the use of advance construction for the $1.4 billion potential cost overrun, increasing the exposure by another $900 million. The advance construction conversions beyond FY 2004 should be reflected in the Plan. The inclusion of this information will provide a better picture of the total costs of the CA/T Project and how the State plans to address its overall funding requirements.

D. Cash Flow Charts:

The annual budget needs of the Plan cover only the years to FY 2004 and cash flow needs are shown through FY 2005. The remaining amounts are shown as lump sums. A more accurate picture of the true funding requirements of the CA/T Project will necessitate that the charts contained in the Plan show cash needs past the completion date of 2004. Since a significant portion of the CA/T Project has used advance construction or has been financed with GANs, the cash flow needs should address the post-construction years. This schedule should not only address the repayment of the principal but also the interest payments on the GANs and other debt issuances.

E. Statewide Funding Commitment:

Although the Plan indicates the State is committed to a balanced statewide transportation program, the basis for this commitment appears to be State internal policy without a binding agreement. This commitment has two parts. First, the State agreed to commit at least $400 million annually to the statewide program (i.e., excluding the CA/T Project). Second, the State limited Federal funds on the CA/T Project to 71 percent of the amount it receives from the FHWA through 2002, and thereafter, 50 percent. This commitment to a balanced statewide program has been referenced in past Finance Plans accepted by the FHWA as well as the Plans submitted in October 1999 and March 2000.

The FHWA's ability to enforce this internal policy is limited under 23 U.S.C. 145, which ensures the State has sovereignty to decide which projects are developed. We have relied, instead, on the State's own commitment to its county and municipal partners. However, interpretation of the commitment is subject to debate. This has been evidenced by recent discussions between State and local officials, with FHWA involvement, about how the State will honor its $400 million annual commitment and how it will calculate the Federal-aid funding split between the CA/T Project and other projects. Moreover, as funding pressures on the CA/T Project mount, local officials have expressed concern that the State will not honor the commitment or will change the definition of its terms in a way that reduces Federal and State funding for projects around the State.

Given recent events, the Task Force believes the commitment to a balanced statewide program should be memorialized in a formal manner that gives the FHWA an enforcement mechanism. The Task Force believes this could be accomplished by incorporating it explicitly into the STIP of projects the MHD develops in cooperation with local officials. The FHWA and the Federal Transit Administration (FTA) are responsible for joint review and approval of the STIP. By conditioning approval of the STIP on compliance with the formal agreement between the MHD and local officials for a balanced statewide program, the FHWA would have the enforcement mechanism it needs to ensure compliance. If the MHD does not comply with the agreement, the FHWA and the FTA could halt project approvals and/or withdraw approval of the STIP until compliance is achieved.

The Task Force expects the State to take the lead in engaging its partners and constituents in building a consensus on how to define and measure a balanced statewide program. The FHWA would be willing to participate in the discussions and, if necessary, to facilitate them. The end result must be a State/local agreement that is satisfactory to all parties and can be enforced if not satisfied.

F. Project Credits:

The Plan includes potential project cost offsets (such as insurance credits and air rights revenue) that have been determined to be outside the scope of the CA/T Project. Therefore, actual costs of the CA/T Project are understated, and will continue to be so as long as the Plan uses these types of credits as potential cost overrun offsets. For example, it is inappropriate to include an insurance credit against total Project costs when it may not be realized, if ever, until 2017. Air rights revenues and the sale of a building should not be credited to the CA/T Project unless they will occur before project completion. Under the FHWA's policy, revenues from air rights and the sale or lease of property are not credited to projects.

The largest credit involves the OCIP, which provides contractors with certain types of insurance coverage. On a traditional project, each contractor provides its own insurance coverage. On large projects, OCIPs are generally believed to be less expensive and provide more efficient insurance coverage than contractor-controlled insurance. The CA/T Project management has reported significant savings resulting from its OCIP.

The primary coverage provided through the OCIP is workers compensation and general liability. Coverage is purchased from a private firm, AIG, with the CA/T Project funds covering claims that fall within specified deductibles. The CA/T Project management has established trust accounts where funds are maintained to pay claims. Federal and State funds are used to pay insurance premiums and fund the trust accounts. Trust account balances are invested, with the earnings retained in the accounts and used to pay claims.

The CA/T Project management has determined that the insurance program should remain in place until 2017, at which time any funds remaining in the trust accounts will be credited to the CA/T Project. The Federal share of any amount credited will be applied to the Federal accounts originally charged and will be available to Massachusetts for obligation on Federal-aid projects.

To date, approximately $450 million of Federal funds have been paid to the OCIP in addition to State funds. After premiums are paid to AIG, and other expenses, such as a contractor safety incentive program, are deducted, the remaining amounts are deposited in the trust accounts and used to pay claims for which the State is responsible. On January 31, 2000, the trust account balances totaled $274 million.

While the OCIP appears to be an effective method for providing insurance coverage on the CA/T Project, the Plan also presents the OCIP as an innovative method for controlling total CA/T Project cost. Since the CA/T Project has enjoyed a good safety record, the reduced loss ratios (claims paid compared with premiums paid) are identified as savings. For example, the PMM report dated June 30, 1999, shows $163 million in savings resulting from reduced loss ratios. These savings are used as offsets against cost increases to maintain the target amount of $10.8 billion.

Actually, the $163 million does not exist and may never exist. The $163 million is calculated based on its value in 2017; it does not exist today. The value at that time is speculative. If safety problems occur, the loss ratio would increase, resulting in additional payments from trust accounts. As a result, all funds must remain in the trust accounts. They cannot be used to cover current cost increases.

If these savings were to occur, the State has projected the balance in the OCIP trust account to be $826 million in 2017. The 1999 Plan shows this $826 million as a credit to the project cost. The Task Force believes it is inappropriate to apply the OCIP credit against the CA/T Project costs for the following reasons:

- Credits (or expenses) occurring after project completion are generally not applied to project costs. It was noted that no interest payments associated with the OCIP or other bonds are identified as a project expense. In fact, the OCIP credit will occur in 2017, while the Federal payments associated with the CA/T Project are expected to end in 2015 when the GANs are repaid.

- The $826 million trust account balance is unlikely to exist. The OIG stated that the current amount in the trust account is excessive and should be reduced by $150 million. The CA/T Project management has argued strongly that, considering the remaining risks associated with the CA/T Project, the current balances are reasonable. However, a memorandum on March 14, 2000, from the CA/T Project's insurance consultant stated "... that $150 million could be made available in November 2002 if the better than expected loss experience continues and the investment earnings assumptions stay consistent between now and then."

- The FHWA has advised the CA/T Project management that it will require periodic risk assessments to determine the amounts needed in the trust accounts and deduct any amounts considered to be excessive. As a result, one of two events will occur. First, significant claims occur that reduce the account balances. Second, no significant claims event occurs during construction, reducing the likelihood of post-construction claims, resulting in a reduction in the trust account balances. In either case, the reduced balances will result in reduced investment earnings and smaller amounts will become available as credits to the CA/T Project.

<u>Recommendations:</u>

18. The Finance Plan should be based on more realistic cost and revenue scenarios, and include contingency plans to cover potential revenue shortfalls or cost overruns.

Inclusion of contingency plans will minimize the surprises inherent in an overly optimistic forecast scenario and provide for an earlier discussion of how potential circumstances would be addressed.

19. The Finance Plan, since it is a picture of the funding revenues and outlays for a project, should include all costs associated with the project, regardless of the source of funding. Since this project does not recognize costs borne by the State, such as personnel expenses for MTA employees, the total CA/T Project cost figures are inherently low. A more realistic picture would include such costs, since they are directly attributable to the CA/T Project, although they would not be included in a budget for the B/PB jointventure.

20. By showing post-construction funding as lump-sum amounts, the annual budget and cash flow needs through the conclusion of the project financing are not clear. For example, funds needed for the GANs repayments and the conversion of advance construction should be shown annually.

21. Although the financing requirements are intended to accurately depict the future needs of the CA/T Project, it is recommended that future Finance Plans include a short discussion of past costs and the impact these have had on the initial assumptions. This permits the reader to gain a full understanding of the finances for the Project, past, present, and future.

22. The Federal Highway Administrator should require the MHD to reach agreement with local officials on the terms of a balanced statewide program. By making the agreement a formal condition of STIP approval, the FHWA and the FTA would have a means of ensuring the commitment is satisfied.

23. The Finance Plan contains potential project offsets that have been determined to be outside the scope of the CA/T Project. These include the OCIP credits, air space leases, and the sale of the CA/T Project management building. While post-construction credits and revenues may be included in cash flow models, the Task Force recommends that they not be allowed as offsets to reduce the cost of the CA/T Project.

24. The FHWA should require the CA/T Project management to obtain an independent certification as to the accuracy of the information contained in the Finance Plan. This certification would accompany the Plan upon submission to FHWA for review and acceptance.

25. The FHWA should retain the services of an independent contractor to conduct a review of the OCIP and the risks associated with the CA/T Project, and to assist the FHWA in the development of a National policy on OCIPs.

Objective 4. Validate the $1.4 billion potential cost overrun.

<u>Conclusion</u>

The methodology used by the CA/T staff to identify the $1.4 billion overrun is a realistic approach and is consistent with normal industry practice. However, there are risks that could lead to additional cost exposures in the range of $300 to $480 million.

<u>Discussion:</u>

As stated in the Finance Plan Update dated March 15, 2000, the MTA believes the $1.4 billion potential cost overrun constitutes a realistic and reliable estimate of additional cash needs for the CA/T Project. This estimate falls within an identified range between $1.277 billion and $1.669 billion.

The following table is a breakdown of the potential $1.4 billion cost overrun, taken from information in the Finance Plan Update. A more detailed summary is included as Attachment 12.

Table B–Breakdown of Potential $1.4 Billion Cost Overrun

Category	$ (millions)	
Construction		$915
Scheduled Maintenance	$292	
Potential Change Allowance	$302	
Exposures to Unawarded Contracts	$321	
Force Accounts		$90
Right-of-Way Settlements/Judgments		$72
Design		$60
Project Management		$260
Insurance Premiums		-
Total		**$1,397**

Independent Validation

The MTA assessment of additional cash needs for the CA/T Project was validated by the independent firm of O'Brien-Kreitzberg (OK). In December 1999, the CA/T Project management requested OK to review and comment on the validity of the method and process used by the CA/T staff to estimate the design and construction portions of the cost to complete forecast. The review by OK was conducted during a 4 week period that ended on March 10, 2000. The review focused on estimation methodology used by the CA/T Project staff. It also evaluated the reasonableness and completeness of the assumptions, procedures, and calculations used. A summary of the review is presented below in Table B. The full report by OK, taken from the Finance Plan Update of March 15, 2000, is included in this report as Attachment 13.

Table C. O'Brien Kreitzburg Report of Review of the CA/T Project Cost Increase of $1.4 Billion

CATEGORY	CA/T Estimate	OK Low Estimate	OK High Estimate
Construction			
Schedule Maintenance	$292.0	Not Quantified	Not Quantified
Change in Awarded Work	$302.0	$187.0	$502.0
Unawarded Contracts	$321.0	$321.0	$381.0
Design Firms	$60.0	$60.0	$80.0
Force Account	$90.0	Not Reviewed by OK	Not Reviewed by OK
Right-of-Way	$72.0	Not Reviewed by OK	Not Reviewed by OK
Management Consultant *	$260.0	Not Reviewed by OK	Not Reviewed by OK
Total	**$1,397.0**	**$1,282.0**	**$1,677.0**

Note: Dollars in Millions

* This Management Consultant Increase was reviewed by Price Waterhouse Coopers but no change in this cost was recommended.

The Division Office, as directed by the Federal Highway Administrator, also prepared an independent cost estimate that identified a potential cost overrun ranging from $1.713 to $1.878 billion. A summary of the Division Office analysis is shown in Table D:

Table D. RESULTS OF FHWA MASSACHUSETTS DIVISION'S INDEPENDENT FUTURE COST ESTIMATE

CATEGORY	COLUMN (1) Budget Cost Containment Funding as of SEPT. '99	COLUMN (2) CA/T UPDATE (DELTA)	COLUMN (3) CA/T EST. (CURRENT) (1)+(2)	COLUMN (4) FHWA EST. LOW (DELTA)	COLUMN (5) FHWA EST. HIGH (DELTA)	COLUMN (6) FHWA EST. LOW (CURRENT) (1)+(4)	COLUMN (7) FHWA EST. LOW (CURRENT) (1)+(5)
Construction Contracts Complete & Active	$7,055.9	$594.0	$7,646.5	$798.9	$939.7	$7,854.8	$7,995.6
Construction Contracts Unawarded	$564.9	$321.0	$917.5	$380.6	$380.6	$945.5	$945.5
Force Account	$461.1	$90.0	$551.1	$90.0	$90.0	$551.1	$551.1
Geotechnical	$31.1	$0.0	$31.1	$0.0	$0.0	$31.1	$31.1
Right-of-Way	$506.4	$72.0	$578.4	$78.8	$78.8	$585.2	$585.2
Design Firms	$875.0	$60.0	$935.0	$92.0	$106.0	$967.0	$981.0
Management Consultant	$1,589.4	$260.0	$1,849.4	$250.0	$260.0	$1,839.4	$1,849.4
Insurance	($250.7)	$0.0	($250.7)	$23.0	$23.0	($227.7)	($227.7)
Total with Insurance Credit	**$10,833.1**	**$1,397.0**	**$12,230.1**	**$1,713.3**	**$1,878.1**	**$12,546.4**	**$12,711.2**
Insurance Credit	$824.0		$824.0			$824.0	$824.0
Total without Insurance Credit	**$11,657.1**		**$13,054.1**			**$13,370.4**	**$13,535.2**
Note: Dollars in Millions							

Federal Task Force Assessment

The Task Force did not conduct a full analysis of the additional cost requirements for the CA/T Project, which would have been beyond the resources available in the short period of the review. Observations of the Task Force, however, are as follow:

A. Schedule Initiatives:

The Task Force concurs with the concepts forwarded by the CA/T Project staff and reflected in the OK report. Pursuing initiatives to keep the CA/T Project on schedule, though costly, will be less expensive than not pursuing them. However, individual contracts were routinely advertised with many amendments to follow, prior to receipt of bids. This is an indicator that contracts were advertised prior to being complete as a method of maintaining schedules, and bidders were given incomplete packages to prepare bids. According to the OK report, the cost of pursuing these initiatives ($292 million plus $65 million in costs authorized prior to the bottom-up estimate) is less than the cost of delays that would occur ($416 million) if the initiatives were not pursued.

B. Range of Costs:

The Division Office report indicates its estimated range of the CA/T Program construction costs for complete and awarded contracts (comparable with the CA/T Project staff's figure of $594 million listed above) is $799 to $940 million, pushing the upper, pessimistic end of the CA/T Project cost range higher. The analysis figures developed by the Division Office suggest cost can rise from $205 to $346 million more than the CA/T Project estimate indicates. In a similar vein, the estimate by the Division Office for higher than anticipated costs of unawarded contracts is about $60 million more than the CA/T Project staff's estimate.

Taken as a whole, this would lead to the conclusion that the CA/T Project staff's estimate for construction is likely low by $300 to $480 million. If site conditions, bidding atmosphere, escalation or other factors are worse than the aggressively optimistic assumptions of the CA/T Project staff, higher construction costs in this range ($300 to $480 million) could occur.

C. Inflation:

The construction controls group of the CA/T Project staff uses 2.35 percent to account for inflation. While this figure is appropriate to date, significant changes in the economy in the next 4 years could cause this rate to rise, affecting labor, materials and many other construction costs. This would cause the $1.4 billion figure to rise.

D. Estimate Discounting:

According to the CA/T Project staff, estimates for unawarded construction contracts are discounted by 13 percent in projecting future costs. This means that after the engineers estimate is prepared for pending construction contracts, the CA/T Project staff assumes the contract will be awarded for approximately 13 percent below that amount because of competitive pressure. This discount rate of 13 percent was valid in the past, but appears excessive based on recent bids, which are coming in under the engineers estimate, but not as much as expected. For example, the low bid on contract C08A1, received on February 28, 2000, was 6.5 percent below the engineers estimate, not the projected 13 percent. In fact, the OK report confirms the trend toward a lower "discount rate," with the average discount (amount below the engineers estimate) on recent contracts being 6.5 percent. The Task Force agrees with OK's conclusion. Continuation of this trend will cause the bid price of future contracts to climb for the CA/T Project's current projection ($321 million). According to OK, this trend could add $40 to $60 million to the total construction cost. This trend is also reflected in the Division Office's estimate range referred to previously.

E. Potential Change Allowance (PCA):

The CA/T Project staff indicated trend studies show change orders are generally being finalized at between 14 percent and 19 percent over original contract prices. (Change orders are requests for approval for changes in the project scope or extra work, after the initial contract is executed.) Yet the CA/T Project management continues to use a 7 percent contingency factor over bid price for newly awarded contracts. This has been adjusted to 10 percent for unawarded contracts. Given the 14 percent to 19 percent trend, these higher figures should be used in estimating the final cost of work. The OK report, on page 4-2, indicates that the CA/T Project's pessimistic figures (higher end of their range of possible construction costs) reflect acceptance of a 14 percent change order rate for unawarded contracts. If a 14 percent or higher contingency rate were applied to the elements in the schedule initiative, the CA/T Project's pessimistic figures would be closer to those of the Division Office estimates, as well as to recent experience.

F. Construction Phase Services:

Construction Phase Services (CPS) are activities required to ensure contracts follow in a logical pattern. As an example, hiring a concrete paving contractor before excavation of the project site takes place would not be cost effective. On large multiple-contract projects such as the CA/T Project, the final cost for CPS activities is difficult to predict. As a result, for budgeting purposes, a flat percentage of the estimated construction value is used to set estimated CPS budget needs. The MTA appears to have used an initial rate of 1.25 percent to estimate CPS needs as part of the Rev. 6 budget. However, experience on such projects has been that CPS activities cost in the range of 1 to 4 percent of constructed cost. This somewhat higher amount results from such factors as project construction complexities, local site conditions, and the number of owner-directed changes.

Based on subsequent experience, the initial budgets of the MTA for CPS using 1.25 percent were inaccurate. Recent information suggests actual and projected rates for some projects are considerably higher than 1.25 percent. The Task Force believes a CPS estimate of 2 percent of total constructed value of remaining CA/T Project contracts would be more realistic.

Recommendation:

26. The CA/T Project figures for extra construction costs are optimistically low. The bid discount rate of 13 percent and PCA rates of 7 percent to 10 percent should be changed to properly reflect recent trends. If this is done, the likely cost of the remaining construction work will be estimated at $300 million to $480 million higher than reflected in the bottom-up CA/T Project estimate. A more realistic estimate would be $1.7 to $1.88 billion in potential project cost overruns. This increases the potential total project cost to the range of $13.4 to $13.6 billion. (The $13.4 billion figure is the total of the $10.8 billion pursuant to the C/SU Rev. 6 estimate, plus $900 million in allowable credits, plus the $1.7 billion project overrun). In addition, if inflation rates rise, as is the present trend, the estimate should be further adjusted to reflect this trend. Finally, further adjustments should be anticipated for litigation, vulnerability, environmental contingencies, and other unforeseen events likely in a project of this magnitude.

Objective 5. Determine the soundness of the State's financial options for covering the $1.4 billion overrun.

<u>Conclusion</u>

The revised Finance Plan Update, submitted on March 15, 2000, for financing the potential $1.4 billion cost overrun does not provide a sound source of revenue to cover the identified potential exposures. Several of the proposed revenue sources have questionable legislative support. The Commonwealth of Massachusetts does appear to have adequate funds to finance the overrun but has not yet specifically identified which of those revenue sources will be applied.

<u>Discussion:</u>

The Task Force objective was to determine the soundness of the State's proposal to pay for the overrun. While State officials from the Office of the Governor and the Legislature stated that funds will be made available to cover the CA/T Project costs, the Task Force evaluated only the specific Plan submitted to the FHWA by the State. The evaluation is based on the soundness of the Plan, that is, whether the funds identified are considered secure or reliable. A more comprehensive analysis of this Plan is being conducted by the FHWA.

The Finance Plan Update, dated March 15, 2000, provides the following sources for financing the $1.4 billion potential cost overrun:

MTA Cash	$200 million
Metropolitan Highway System (MHS) Bonds	150 million
Insurance Reserves	150 million
Extension of Maximum MHS Bond Maturity to 50 Years	100 million
Annual Contract Assistance Agreement	600 million
Massport Contribution	50 million
Additional Grant Anticipation Notes	150 million
Total:	$1,400 billion

The following items do not require action by the State Legislature:

<u>MTA Cash</u>: The Plan states that the MTA has $200 million of reserves to finance the overrun and is committed to making those funds available. The Task Force considers these funds as being reasonably available to cover a portion of the overrun.

MHS Bonds: The Plan states that the MTA expects to raise funds from the issuance of additional MHS Bonds. The MTA has additional debt capacity and could realize as much as $150 million of additional proceeds from the issuance of these bonds without raising tolls beyond the levels stipulated in the MTA Official Statement, dated March 11, 1999. Based on the conditional language of the Plan, the Task Force does not consider these funds to be reasonably available to cover the CA/T Project costs.

Insurance Reserves: The Plan proposes withdrawing $150 million from the OCIP Trust as early as November 2002. In recent discussions relating to the amount of funds in the OCIP Trust, CA/T Project officials made strong arguments to the FHWA and OIG that all funds in the OCIP Trust were needed to cover the potential risk exposure on the CA/T Project. Considering the CA/T Project's strong arguments to maintain the OCIP Trust, the Task Force does not consider these funds to be reasonably available to cover the CA/T Project costs. Consistent with the OIG recommendation to determine proper funding levels for the insurance program, the FHWA is seeking an independent actuarial assessment of the level of funding required to properly capitalize the insurance fund.

The remaining items require approval by the State legislature. Based on discussions with State and legislative officials, the Task Force believes the legislature is not likely to endorse all of the State's proposals. As a result, the Task Force does not consider the following funds to be reasonably available to cover CA/T Project costs:

Extension of Maximum MHS Bond Maturity to 50 Years: Extending the bond maturity would be an expensive source of revenue considering the long-term nature of the bonds. Legislative approval may be difficult to obtain.

Annual Contract Assistance Agreement: Legislation is required to retain license renewal fees, which will provide approximately $45 million annually to the Highway Fund. These revenues over a 30-year period would allow the MTA to finance $600 million of the CA/T Project costs.

Massport Contribution: The Governor has proposed a $50 million contribution from Massport, which in return would acquire additional roadway assets from the CA/T Project.

Additional GANs: In addition to $1.5 billion of authorized GANs, the Governor will seek legislation authorizing another $150 million to help finance the CA/T Project.

Recommendations:

27. The Finance Plan should include revenue sources that are likely to be available to the CA/T Project. If a revenue source requires legislation, legislative support needs to be demonstrated. If the revenue is to be provided by another State agency, agreement or concurrence from that agency needs to be obtained.

28. Another option, pending legislative action on the above proposals, is for the State to commit its general funds to the CA/T Project. The general funds would serve as surety until other funding sources are established. State officials advised the Task Force that funds may be available from budget surpluses or other reserve funds.

Objective 6 **_Identify potential new indicators for better predicting cost increases_**.

Conclusion

The indicators used by the CA/T Project staff to predict cost increases are appropriate, but are not being used properly by the CA/T Project management. The current practice of constraining cost indicators to equal a predetermined budget amount must end. A new report must be developed that regularly and accurately predicts the potential cost exposure of all program work elements.

Discussion

The CA/T Project's financial and reporting database (the Oracle System) contains basic forecast and budget information for every work element of the program. The PF, when compared with the budget, should be the basic indicator of the cost of a project. Common management practice on large projects such as the CA/T Project requires that forecasts truly reflect a best estimate of the final cost of every element. This was not done on the CA/T Project. Specifically, the PF total was constrained at the $10.8 million level, regardless of actual costs. Further, there apparently was no requirement that the managers of the many CA/T Project elements regularly prepare an estimate-at-completion cost for their elements. Consequently, there was no adequate early warning report, or even solid predictive trends, that would have alerted the parties interested in the completion of the CA/T Project to the emerging $1.4 billion project cost increase. To prevent a reoccurrence of this reporting deficiency, the current MTA policy regarding the handling of the PF should be revised.

However valid the prediction capability may be, it is of limited value to the FHWA if the MTA and the CA/T Project officials chose not to share the information. As documented in earlier sections of this report, the PMMs enabled the FHWA to detect a potential increase in project costs, but CA/T Project management chose not to inform the FHWA Division Office of the full extent of the increase. Given this breach of partnership obligations, the recommendations of the Task Force are designed to ensure the FHWA has access to all information needed to make independent predictions of potential cost increases.

Recommendations:

29. The PF for all project elements should be a best estimate of the completion cost.

30. The PF should be maintained on a current basis for all project elements.

31. The PF total for all project elements should not be constrained by MTA policy directives.

32. On a quarterly basis, an overall CA/T Project Budget vs Potential Forecast Variance Report should be furnished to the FHWA. This report would contain an explanation of all significant variances, by project element, segregated into the following categories:

- The components of the reported variances that are deemed to be firm to the point of requiring a corresponding revision to the budget of the affected project element. These kinds of changes include, but are not limited to, the value of actual contract awards (or executed change orders), approved scope changes to be incorporated during design, and expected settlement amounts for asserted differing site condition claims.

- The components of the reported variances that are deemed by the CA/T Project management to be subject to further adjustment by future management corrective action, or other alternative remedies.

- The components of the reported variances that are deemed by the CA/T Project management as being speculative in nature. These include reported potential forecast variances that are difficult to quantify and price but which could have a positive or adverse effect on the future cost of the program.

Objective 7. ***Identify potential cost saving measures.***

<u>Conclusion</u>

There are limited opportunities for significant savings on the remaining major construction projects. The cost containment initiatives in place should be aggressively continued.

<u>Discussion:</u>

On the CA/T Project, several initiatives were established to promote cost savings. These cost containment initiatives are detailed in Attachment 14.

Value Engineering Change Proposals (VECP) have been used to produce a reduction in total project construction costs of $13 million to date, with projected additional savings of $8 million not yet realized. These proposals have been successful since they include the contractors in the solution of design challenges. In addition, the design phase of the CA/T Project has realized a savings of $480 million in potential project budget overrun costs. This program is well established as a corporate philosophy and should be continued for the remaining contracts.

To protect against fuel price volatility, a fuel price adjustment clause could be used as an additional measure. The price adjustment clauses are incorporated into contracts to reduce the contractor's risk of bidding on speculative price trends. This type of clause provides for adjusted compensation for specific materials and supplies used in performance of the work. Price adjustment clauses have been used in the industry for materials such as asphalt, fuel, and concrete. They may also be warranted for regional fuel shortages or where the price of fuel is escalating rapidly.

The scope changes have not led to reductions in total CA/T Project costs. Decisions relative to scope and schedule adjustments have already been implemented and their effects on the overall cost of the CA/T Project have been realized.

As the end of the CA/T Project approaches, the effectiveness of the cost containment programs is diminished. There are fewer opportunities to promote cost containment initiatives as the final contracts are awarded. At this point in the CA/T Project, most decisions relative to changes and deletions have been incorporated into the two remaining major contracts. Deleting work at this point is not expected to be an option that would realize savings large enough to offset the current projected CA/T Project overrun of $1.4 billion.

The MHD has a price adjustment provision but the MTA has chosen not to include it in the CA/T Project contracts. The Task Force believes the MTA should consider the use of such a clause on the remaining two large construction contracts, which have estimates of approximately $150 million and $400 million.

Recommendations:

33. CA/T Project management and the Division Office should continue with the cost containment initiatives to achieve the greatest savings by:

- A pro-active and aggressive change negotiation and claims defense;
- Rigorous controls to prevent scope change for remaining construction work;
- The encouragement of VECPs to simplify construction logistics and staging on construction contracts;
- Limiting changes in scope and minimizing scope transfers between projects; and
- Adding a construction contract clause for price adjustment for fuel prices to the remaining construction contracts.

CONCLUSION

FHWA's "partnership" approach to oversight failed to achieve independent and critical oversight of the CA/T Project in Boston, Massachusetts. On the one hand, this failure was due to FHWA's over reliance on trust between itself and the State. The FHWA had available to it the information necessary to critically analyze the CA/T Project's costs, including an OIG report and other documentation. Rather than scrutinize the information about the CA/T Project costs more closely, the FHWA continued to rely on assertions from the State that future cost increases in the magnitude of $1.4 billion were unlikely.

While FHWA exhibited a lack of diligence, the State, on the other hand, demonstrated disrespect for the Federal oversight process by intentionally withholding knowledge of the CA/T Project's potential cost overrun. The State and its joint venture jeopardized the integrity and future success of the Federal/State partnership by repeatedly and deliberately failing to disclose the full scope of the CA/T Project's finances. It was the surprise announcement on February 1, 2000, of a potential $1.4 billion overrun that Secretary of Transportation Rodney E. Slater told Chairman Frank R. Wolf of the House Subcommittee on Transportation was "unconscionable." It stands as one of the most flagrant breaches of the integrity of the Federal/State partnership in the history of the nearly 85-year old Federal-aid highway program.

The recommendations in this report attempt to restore the FHWA's oversight role and to establish new reporting and verification procedures necessary to ensure the State's accurate and full financial disclosures in the future. To establish this new oversight, the Task Force recommends that the FHWA and the MHD enter into a formal agreement implementing all recommendations relevant to their working relationship. Given the breach of trust, the Task Force also recommends establishing means of ensuring a balanced statewide program is satisfied.

The FHWA is fully committed to completing the CA/T project. The Task Force firmly believes it will not only be an asset to Boston for years to come, but will be hailed as one of the engineering marvels of the 21st century. But, the Task Force also notes something that John A. Volpe, a former three-term Governor of Massachusetts, a former Federal Highway Administrator, and a former U.S. Secretary of Transportation, used to say:

> I submit that as we live in times of change, we must be the architects of that change or we will most certainly be its victims.

The FHWA must ensure it is an architect of change with regard to the CA/T Project.

Recommendation:

34. The Task Force recommends the FHWA and the MHD enter into an agreement to formalize recommendations contained in this report which are relevant to the working relationship between the parties.

Glossary of Abbreviations

B/PB	Bechtel/Parsons-Brinckerhoff
CA/T	Central Artery/Tunnel
CB	Current Budget
CBU	Core Business Unit (FHWA)
CPS	Construction Phase Services
C/SU Rev. 6	Cost/Schedule Update, Revision 6
ERC	Eastern Resource Center (FHWA)
FY	Fiscal Year
FTA	Federal Transit Administration
FTE	Full-Time Equivalents (Employees)
FHWA	Federal Highway Administration
GANs	Grant Anticipation Notes
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
MHD	Massachusetts Highway Department
MHS Bonds	Metropolitan Highway System Bonds
MTA	Massachusetts Turnpike Authority
OCIP	Owner-Controlled Insurance Program
OIG	Office of the Inspector General
OK	O'Brien Kreitzburg

PCA	Potential Cost Analysis
PF	Potential Forecast
PMM	Project Management Monthly
STIP	Statewide Transportation Improvement Program
TEA-21	Transportation Efficiency Act for the 21^{st} Century
USDOT	United States Department of Transportation
VE	Value Engineering
VECP	Value Engineering Change Proposal