



A. JOSEPH DeNUCCI
AUDITOR

The Commonwealth of Massachusetts

AUDITOR OF THE COMMONWEALTH

ONE ASHBURTON PLACE, ROOM 1819

BOSTON, MASSACHUSETTS 02108

TEL. (617) 727-6200

NO. 2002-0510-3C4

INDEPENDENT STATE AUDITOR'S REPORT
ON THE ACTIVITIES OF THE
MASSACHUSETTS TURNPIKE AUTHORITY'S
CENTRAL ARTERY/THIRD HARBOR
TUNNEL FORCE ACCOUNTS
JANUARY 1994 THROUGH NOVEMBER 2002

OFFICIAL AUDIT
REPORT
MAY 23, 2003

TABLE OF CONTENTS/EXECUTIVE SUMMARY

INTRODUCTION

1

The Central Artery/Third Harbor Tunnel (CA/T) Project is a major 7.5-mile interstate highway project designed to significantly reduce traffic congestion in downtown Boston through the construction of an eight- to 10-lane underground Central Artery, a four-lane underwater tunnel that crosses Boston Harbor, and a commercial traffic bypass road through South Boston. CA/T Project construction, which began in 1991, was 86% complete as of November 2002. Construction extends from the I-93 Massachusetts Avenue Interchange on the south to beyond the Leonard P. Zakim Bunker Hill Bridge over the Charles River on the north, and from the Massachusetts Turnpike interchange by the Fort Point Channel on the west under Boston Harbor via the Ted Williams Tunnel to Logan International Airport and Route 1A in East Boston.

In 1989, CA/T Project management estimated that the project, as then configured, would cost \$4.4 billion and would be completed in 1998. The project's cost estimate and completion date have been the subject of some controversy over the years due to the number of revisions made to these estimates. Most recently, in the October 1, 2002 Finance Plan, CA/T Project officials revised the total estimated cost of the project to \$14.625 billion based upon a recent comprehensive cost schedule update known as CSU 9.

This interim report reviewed the CA/T Project's Force Account activities, the estimated cost of which totals approximately \$612 million. Under a Force Account agreement agencies such as utility companies, public agencies, or railroads that have certain needed skills perform the necessary work with their own in-house or contracted labor force. The CA/T Project then reimburses the Force Account entity for the actual costs incurred. To date, the OSA's 17 interim reports have identified \$568 million in inaccurate, unnecessary, excessive, and avoidable project costs as well as available savings opportunities.

AUDIT RESULTS

4

PROJECT FORCE ACCOUNT MANAGEMENT ACTIVITIES NEED IMPROVEMENT

4

CA/T management is responsible for establishing adequate internal controls over all aspects of the project's operations. Such controls serve to ensure that all transactions are properly authorized, recorded, and reported. We found that management controls over CA/T Project Force Account activities need to be improved in order for the project's budgetary and financial records to be current, complete and accurate. Financial plans and records are important documents designed to provide senior program and oversight officials with the comprehensive information needed to make appropriate financial decisions regarding the project. Our review of selected Force Account projects identified several instances, involving approximately \$22 million in Force Account activities, in which management controls were lax, resulting in unused project funds and unreliable project recordkeeping and management reports.

INTRODUCTION

Background

The Central Artery/Third Harbor Tunnel (CA/T) Project is a major 7.5-mile interstate highway project designed to significantly reduce traffic congestion in downtown Boston through the construction of an eight- to 10-lane underground Central Artery, a four-lane underwater tunnel that crosses Boston Harbor, and a commercial traffic bypass road through South Boston. CA/T Project construction, which began in 1991, was 86% complete as of November 2002. Construction extends from the I-93 Massachusetts Avenue Interchange on the south to beyond the Leonard P. Zakim Bunker Hill Bridge over the Charles River on the north, and from the Massachusetts Turnpike interchange by the Fort Point Channel on the west under Boston Harbor via the Ted Williams Tunnel to Logan International Airport and Route 1A in East Boston.

In 1984, the Massachusetts Highway Department (MHD) awarded a management consultant contract to the joint venture of Bechtel/Parsons Brinkerhoff (B/PB) to manage CA/T Project design and construction activities. The management consultant has responsibility for project management, preliminary design, final design management, procurement, construction management and environmental services. The Massachusetts Turnpike Authority (MTA) assumed ownership and management of the CA/T Project under state law enacted in March 1997.

In 1987, the United States Congress passed the Surface Transportation and Uniform Relocation and Assistance Act, which made the CA/T Project eligible for a maximum of 90% federal reimbursement, depending upon the roadway classification and the availability of funds, with the Commonwealth bearing the remaining costs. In 1991, Congress passed the Intermodal Surface Transportation Efficiency Act (ISTEA), which extended the federal government's financial support of the Project through 1997. In January 1998, Congress passed the Transportation Equity Act for the 21st Century (TEA-21). Under this legislation, Massachusetts will receive federal funding through fiscal year 2003. In fiscal year 2001, federal funding for the project was capped at \$8.549 billion.

In 1989, CA/T Project management estimated that the project, as then configured, would cost \$4.4 billion and would be completed in 1998. The project's cost estimate and completion date have been the subject of some controversy over the years due to the number of revisions made to these estimates. Most recently, in the October 1, 2002 Finance Plan, CA/T Project officials revised the total estimated cost of the project to \$14.625 billion based upon a recent comprehensive cost schedule update known as CSU 9.

This interim report reviewed the CA/T Project's Force Account activities, the estimated cost of which totals approximately \$612 million. To date, the OSA's 17 interim reports have identified \$568 million in inaccurate, unnecessary, excessive, and avoidable project costs as well as available savings opportunities.

Project Force Account Activity

Construction on the CA/T Project affects numerous utilities, government agencies, and abutters and necessitates the relocation of sewer, water, electrical, telephone, telegraph, and steam services, railroad lines, and postal facilities. To address the needs of properties impacted by the CA/T Project, the Massachusetts Turnpike Authority (MTA) has a number of Force Account agreements with the affected parties.

In most cases, the Force Account entities perform the necessary work with their own in-house forces or a contracted workforce hired by the entity. Force Accounts are essentially cost-reimbursement-type contracts; a characteristic that distinguishes them from the project's usual competitively bid construction contracts. Since the work performed under Force Account agreements is often unique to the Force Account entity, the arrangement often provides for the use of specially qualified workers. Title 23, Code of Federal Regulations (CFR) governs federal reimbursement of Force Account activities for design and construction work.

The 264 design and construction Force Accounts at the CA/T Project total approximately \$612 million (\$457 million relating to construction and \$155 million to design) and represent approximately 4% of the project's total cost.

Audit Scope, Objectives, and Methodology

Our audit, which is ongoing, included an evaluation of Force Account activities to determine whether CA/T Project management controls over approximately \$612 million in expenditures were reasonable. The objectives of our audit were to determine whether the CA/T Project's management activities (a) complied with applicable laws and regulations and (b) provided adequate control over all aspects of its operation. In order to accomplish these objectives, we employed several audit tests and procedures during our examination. We reviewed applicable laws, regulations, and internal operating policies and procedures and interviewed project officials. In addition, we reviewed contracts, cost records, correspondence files, and other documents, as determined necessary. Our examination was made in accordance with applicable generally accepted government auditing standards for performance audits.

AUDIT RESULTS

PROJECT FORCE ACCOUNT MANAGEMENT ACTIVITIES NEED IMPROVEMENT

Management of the Central Artery/Third Harbor Tunnel (CA/T) Project is responsible for establishing adequate internal controls over all aspects of CA/T operations. Such controls serve to ensure that all transactions are properly authorized, recorded, and reported. Financial plans and records are important documents designed to provide senior program and oversight officials with the comprehensive information needed to make appropriate financial decisions regarding the projects.

Our review indicated that management controls over CA/T Project Force Account activities needed to be improved in order for the project's budgetary and financial records to be current, complete, and accurate. Specifically, our review of selected Force Account projects identified several instances, totaling approximately \$22 million, in which lax management controls resulted in unused project funds and unreliable project recordkeeping and management reports.

PRIOR AUDIT FINDINGS

Previously issued reports by the Office of the State Auditor (OSA) and the U.S. Department of Transportation's Office of the Inspector General (OIG) documented weaknesses in the management of CA/T Force Account Activities. These weaknesses resulted in the project's improper use of funds and a lack of supporting documentation for the actions taken. These issues are summarized below:

1. IMPROPER USE OF \$1.6 MILLION OF FORCE ACCOUNT FUNDS FOR FUNDING NON-CA/T PROJECT DESIGN ACTIVITIES

Because the Massachusetts Bay Transportation Authority (MBTA) and CA/T had concurrent design and construction contracts scheduled in the same proximity as the Blue Line Station at the New England Aquarium, the Massachusetts Highway Department (MHD) and the MBTA signed an Interagency Service Agreement (ISA) in 1992 to coordinate design and construction activities in the area.

On June 14, 2001, the OSA reported (Audit No. 99-4074-3) that \$6.9 million in state highway CA/T funds were used for preliminary design and construction of the North/South Rail Link (NSRL), which is a non-highway project. Approximately \$1.6 million of this amount came from Force Account No. DMB03 between MHD and the MBTA that was to be used for the design of the Central Artery section known as the Blue Line Crossing.

In April 1994, the ISA between the MBTA and CA/T was amended to provide the MBTA with \$300,000 to conduct a structural analysis of the impact of the NSRL on the CA/T design contract. In September 1994, another amendment was added to the ISA that provided for the use of approximately \$1.3 million of state highway Force Account funds to fund additional design changes to accommodate the NSRL project. Both of these expenditures of CA/T Force Account funds were for non-highway-related activities, but were paid for with CA/T Project/state highway funds.

Our prior report recommended that the CA/T Project obtain reimbursement from the MBTA and other parties that benefited from the expenditures of these highway funds for the design and construction activities associated with the NSRL and use those funds to defray current CA/T Project costs. Project officials indicated that our recommendation had been forwarded to the Deputy General Manager of the MBTA for his review.

2. UNUSED FORCE ACCOUNT FUNDS OF APPROXIMATELY \$1 MILLION AVAILABLE TO THE CA/T PROJECT

On June 26, 2002, the OSA reported in its interim audit of Force Account activities (Audit No. 2002-0510-3C3) that Force Account DMB09, for the design of a temporary ramp that branches off the Central Artery (I-93) above Causeway Street and runs southbound for a portion of the alignment, showed no financial activity for more than seven years. Project design funds of \$1,037,176 were budgeted for this activity and were included in the project's annual financial plan. Unused funds had been retained in the Project's Force Account for the design of this temporary ramp even though the MBTA had agreed to pay for the design costs.

Project management's belated confirmation of our finding that the design costs of this temporary ramp were not their financial responsibility resulted in the identification of approximately \$1 million in unused funds for future project use. Our report recommended that the CA/T Project, with Federal Highway Administration (FHWA) approval, reassign the unused funds in this force account to another project activity eligible for federal funding. Project officials responded that the majority of the unused funds would be reallocated to cover additional costs identified for another MBTA force account and the remainder would be put into an allowance for future project costs related to the MBTA.

3. FEDERAL DEPARTMENT OF TRANSPORTATION (DOT) OFFICE OF THE INSPECTOR GENERAL (OIG) CRITICAL OF FORCE ACCOUNT MANAGEMENT ACTIVITIES

The federal DOT/OIG has had concerns in the past with the Project's Force Account activities and in particular, the oversight of those activities.

In an August 12, 1997 management advisory memorandum, the DOT/OIG advised the Federal Highway Administrator of its evaluation of FHWA oversight of costs associated with the relocation of utilities on the CA/T Project. The Management Letter concluded that approximately \$10 million of federal participation in the costs of the largest utility relocation at the project was not justified. The CA/T Project eventually recovered only \$2.6 million of that amount. The Management Letter further states that both the CA/T and the FHWA lacked documentation supporting the reduced amount and recommended, among other things, that the FHWA increase its oversight of the relocation of other utilities on the CA/T Project.

CURRENT REVIEW FINDINGS

During our ongoing review we observed that problems continued to be encountered in the management of the Project's Force Account activities. These problems, which involved approximately \$22 million in Force Account activities, include inadequate monitoring of a utility Force Account, duplicative project budgeting activity, failure to budget for a known activity, the inclusion of funding in the budget for services that had previously been terminated, and inaccurate project management reporting, as summarized in the following table:

Audit Result Number	Description of Audit Result	Dollar Amount
1	Underreported/Unbilled utility costs	\$766,500
2	Duplicate budgeting activity and failure to budget funds for a known activity	1,800,000
3	Inaccurate and incomplete Interagency Service Agreements (ISA) with the Metropolitan District Commission:	
	• Underreported spending	7,200,000
	• Unspent balances on lapsed ISA's	9,900,000
	• Discrepancies in reported values	200,000
4	Inaccurate and incomplete Interagency Service Agreements with the Inspector General's Office	700,000
5	Inaccurate and incomplete Interagency Service Agreements with the Attorney General's Office:	
	• Underreported spending	1,463,000
	• Discrepancies in reported values	<u>150,000</u>
		<u>\$22,179,500</u>

1. INADEQUATE MONITORING OF A UTILITY FORCE ACCOUNT ACTIVITY

Our review of paid invoices for a utility's Force Accounts revealed that the CA/T Project is slow to obtain invoices for completed work. In fact, completed work of \$766,500 remains unbilled, some of which has been completed for two to three years, which indicates that the project is not adequately monitoring the utility's Force Accounts. The agreements with the utility specifically state that invoices will be prepared and submitted on a monthly basis.

The project has 25 Force Account Agreements totaling \$9.4 million with this utility. Based on what appeared to be large unspent balances and little activity over the past few years, we selected for review three agreements having a value of \$5.7 million, or 60% of the total dollar value. Our review indicated that approximately \$3.6 million of this amount was expended for billed work, \$766,500 was for completed work that remained unbilled for lengthy periods, and approximately \$1.3 million was for future work to be assigned.

Our analysis of recently processed invoices revealed many instances in which completed work remained unbilled for up to two to three years. MHD's Internal Audit Group

indicated that this utility's invoices are often two to three years late. In the absence of timely invoicing activity under this utility's Force Accounts, the CA/T Project's budgetary and financial records are not current, complete, or accurate because monthly invoices are not being received and processed. When invoices are received several years after the utility incurs the costs, it is difficult for CA/T personnel to accurately verify the work done and charges submitted. This takes on added significance as the project nears completion and those most knowledgeable of the work and potential claim activity may not be available to participate in their resolution.

2. DUPLICATE BUDGETING ACTIVITY AND FAILURE TO BUDGET FUNDS FOR A KNOWN ACTIVITY

Our review of the construction budget for the Spectacle Island Visitor Center and Marina facility showed that its cost was initially estimated to be \$4.2 million. When the bids for the contract were received, however, they were substantially higher than CA/T's cost estimate. In March of 2002, CA/T reevaluated its cost estimates and split the project into two parts: a Construction Account for the Visitor Center and a separate Force Account for the Marina. The combined value of the new accounts was estimated at \$6.5 million: \$4.7 million for the Visitor Center and \$1.8 million for the Marina. Approximately \$2.4 million was transferred from the original \$4.2 million to partially fund the Visitor Center. The remaining \$2.3 million to fund the Visitor Center came from a \$2 million transfer from an Art Tower in Dewey Square that was deleted from the CA/T Project and \$.3 million from contingency funds. Unfortunately, the CA/T Project did not budget \$1.8 million for the Marina facilities. To correct the budget shortfall, the project later transferred \$1.8 million from a City of Cambridge Force Account Allowance to the Marina Force Account.

We were informed that the total \$2.8 million in the Cambridge Force Account Allowance was to be used for road construction in the North Point project area. However, budgeted funds for that activity were already included in a separate North Point construction contract budget, thus resulting in a duplication of budgeted funds. Accordingly, \$1.8 million was transferred to the new Spectacle Island Force Account (IDEM2) to construct the Marina.

The remaining \$1 million in the Cambridge Force Account Allowance will be retained in that account for future unspecified work.

The occurrence of duplicate budgeting activity and the failure to budget for the Spectacle Island Marina indicates that management budgeting controls are lax and that project record keeping needs to be strengthened.

3. PROJECT BUDGETS AND REPORTED SPENDING UNDER INTERAGENCY SERVICE AGREEMENTS WITH THE METROPOLITAN DISTRICT COMMISSION (MDC) ARE INACCURATE AND INCOMPLETE

The CA/T Project entered into 11 ISAs with the MDC totaling approximately \$29 million. Project management reports involving these ISAs are inaccurate and incomplete and continue to reflect lower expenditures and higher available funding balances than warranted. Moreover, although a number of these ISAs have expired, the disposition of the unexpended balances has not been determined.

An ISA is a contract between two state agencies: a buyer (in this case the CA/T Project) and a seller (in this case the MDC). The seller provides goods and services for the buyer, who reimburses the seller for their costs. The ISA requires the seller to provide the buyer with monthly fiscal and programmatic reports.

We reviewed 11 ISAs with the MDC valued at approximately \$29 million. The Massachusetts Management Accounting Reporting System (MMARS) reported expenditures under these ISAs of approximately \$16 million as of September 2002. However, according to project management reports, expenditures under these ISAs totaled approximately \$8.8 million as of that date, or approximately \$7.2 million less than reported under the state's MMARS system. Individually, only one of the 11 ISAs MMARS expenditure balances agreed with project records. Moreover, six of the 11 ISAs have expired, leaving an unexpended funding balance of approximately \$9.9 million. The disposition of these funds has not been determined.

It should be pointed out that an additional \$3.5 million is currently available in an MDC contingency account associated with these 11 ISAs and that another \$11.3 million is available

in the overall Force Account budget as a contingency allowance for other Force Account activities. In addition, the budgeted value of the ISAs and amendments provided to us for review are approximately \$200,000 less than the value of the ISAs as reported in the Project's management reports.

4. PROJECT BUDGETS AND REPORTED SPENDING UNDER INTERAGENCY SERVICE AGREEMENTS WITH THE MASSACHUSETTS OFFICE OF THE INSPECTOR GENERAL OFFICE ARE INACCURATE AND INCOMPLETE

The CA/T Project entered into several ISAs with the state's Office of the Inspector General to provide the CA/T Project with among other things, technical assistance in preventing fraud, waste, and abuse of public funds. Approximately \$4.1 million had been included in the budget for that activity. A senior Project official advised us that the entire budget of \$4.1 million had been spent. However, CA/T was only able to provide us with documentation for approximately \$1 million of the total expenditure. CA/T Project officials suggested we contact the Office of the Inspector General for the remaining documentation.

The Office of the Inspector General stated that \$3.4 million had been expended under the ISAs between the Office of the Inspector General and CA/T and provided us documentation supporting that amount. Project officials indicated that they revised the CSU 9 budget to reflect the overstatement of approximately \$700,000 reported by us and reprogrammed these funds to other approved projects. However, current management reports continue to report committed funds for the Office of the Inspector General ISAs totaling approximately \$700,000 more than the revised budgeted amounts.

5. PROJECT BUDGETS AND REPORTED SPENDING UNDER INTERAGENCY SERVICE AGREEMENTS WITH THE OFFICE OF THE ATTORNEY GENERAL ARE INACCURATE AND INCOMPLETE

The monthly Budget, Cost, Commitment and Forecast (BCCF) report and the Project Management Monthly (PMM) report for November 2002 identify the following ISAs with the state's Office of the Attorney General along with the expenditures for each as reported by the CA/T Project and the state MMARS system.

ISA	EXPENDITURES			
	Agreement Value	Project Records	State MMARS	Difference
IAG01 FY 98 ROW Services	\$ 689,702	-	\$ 689,702	\$ (689,702)
IAG02 FY 99-00 ROW Services	1,255,934	-	1,257,783	(1,257,783)
IAG03 FY 01-03 ROW Services	<u>2,400,000</u>	<u>\$1,155,533</u>	<u>671,156</u>	<u>484,377</u>
Totals as of 10/31/02	<u>\$4,345,636</u>	<u>\$1,155,533</u>	<u>\$2,618,641</u>	<u>\$(1,463,108)</u>

The \$1,463,108 difference shown above documents that the CA/T Project's expenditures are understated by that amount and that funding availability is overstated by that amount. This is another example of the inaccuracies reported in the project BCCF and PMM reports. In addition, the budgeted value of the above ISAs is \$150,000 less than the value of the ISA documents furnished to us by the CA/T Project.

Conclusion

The management controls over the CA/T Project's Force Account activities need to be significantly strengthened in order for the project to have current, complete, and accurate budgetary and financial records and to identify in a timely manner any unused available funding for future uses.

Recommendation

CA/T Project management should correct its financial records to reflect current, complete and accurate Force Account data and strengthen communications between those responsible for managing the Force Account activities and those responsible for managing their financial reporting. Moreover, CA/T Project management should determine whether available unused project Force Account funding should be reprogrammed for other approved uses or included and accounted for as a part of the CA/T Project's Management Contingency Fund.

Auditee's Response

In response to our current findings and recommendation, the CA/T Deputy Project Director stated that:

Finding No. 1: *We concur that the CA/T Project's record keeping and monitoring of Force Account spending activities need to be improved, in order to ensure that our budgetary and management reports are complete and accurate at all times. As a result of the attention you brought to this matter, we have taken several immediate actions, in order to improve invoicing practices of utilities and agencies that perform work under force account agreements.*

For example, we have forwarded notices to such entities, requesting that their respective invoices be made current with the Project through February 2003 and that these invoices be submitted no later than June 1, 2003 Feedback from those notified indicates they are taking steps to improve internal accounting and invoice preparation procedures accordingly. We believe this cooperation and response to our requests will greatly improve our ability to adequately reconcile force account work that has remained unbilled.

In addition, we have put in place a protocol system whereby the Utilities Project Engineer's office will review billing and expenditure information with the accounting staff of force account entities on a routine basis. Billing delinquencies and expenditure inconsistencies will be noted at that time and corrective actions will be implemented accordingly.

Finding No. 2: *We would like, by way of clarification, to further explain the Project's budget decisions relative to several Spectacle Island Force Accounts. One of the force account agreements was with the City of Boston to construct a Spectacle Island Visitors Center, with associated Marine Docking Facilities for a total cost not to exceed \$4.2 million. Subsequent to this agreement, the Project entered into a separate agreement with the Department of Environmental Management (DEM). Under this agreement, DEM would design certain elements and construct all of the Marine Docking Facilities. In turn, the DEM would be reimbursed by the Project for a total of \$1.8 million. The balance of the Project's "not to exceed" budget cap became \$2.4 million.*

However, the Project's cost estimate for solely the Visitors Center then became \$3.8 million. At about the same time, the Project decided to delete the Dewey Square Tower Artery Arts Project agreement also with the City of Boston. As a result, the \$2 million budgeted to this agreement in the C17A6 construction contract, was transferred to the Visitors Center, the total value of which became \$4.4 million. This amount was the budget status for Spectacle Island Facilities in March 2002. In April 2002, the bids we opened for the Visitors Center contained a low bid of \$4 million. For budgetary purposes, the Project added \$.7 million of "Future Allowance" to provide for contract modifications during construction.

It is also important of note that during the Cost Schedule Update (CSU 9) process (April-July 2002), the budget of \$1.8 million for the Marine Docking Facility was inadvertently deleted during one of our estimate review meetings. In August 2002, the Docking Facility, as well as a similar issue with City of Cambridge force account were resolved, thus allowing the Project to transfer budget of \$1.8 million to the Docking Facility agreement.

Finding No. 3, 4, and 5: *We concur that the spending levels, as reported for various Interagency Service Agreements (ISA's) with the Metropolitan District Commission (MDC), the Office of Inspector General (OIG), and the Office of the Attorney General (AG) by the Project are not as up to date as they could be. It has been the Project's experience that due to the security features of the Commonwealth's financials, we had been unable to directly access these agencies information on the MMARS accounting system. However, on a quarterly basis we will be requesting the Chief of the MHD Fiscal Management group, who does have such access, to report to the Project on a quarterly basis the specific expenditures for these ISAs. This information will then be reconciled with the Project's Oracle accounting information. We expect that . . . putting this procedure in place [will] enhance force account reporting.*

Auditor's Reply

Based on their response CA/T Project officials have recognized and taken corrective action to improve the monitoring of Force Account activities identified in Findings No. 1, 3, 4 and 5. Notwithstanding the Project's clarification of events relating to Finding No. 2, we reiterate our conclusion that the occurrence of duplicate budgeting activity and the failure to budget for the Spectacle Island Marina indicates that management budgeting controls are lax and that project recordkeeping needs to be strengthened.