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INDEPENDENT STATE AUDITOR'S

REPORT ON CERTAIN ACTIVITIES

OF THE MASSACHUSETTS TURNPIKE AUTHORITY'S
OVERSIGHT OVER CERTAIN DESIGN AND CONSTRUCTION
ACTIVITIES RELATING TO THE NORTH/SOUTH RAIL LINK IN
BOSTON

NOVEMBER 1, 1989 THROUGH DECEMBER 31, 2000

OFFICIAL AUDIT
REPORT

JUNE 14, 2001

TABLE OF CONTENTS/EXECUTIVE SUMMARY

Page**INTRODUCTION**

1

The Central Artery/Third Harbor Tunnel (CA/T) Project is a 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. The CA/T Project construction began in 1991 and is well underway in certain areas, including the South Boston Bypass Road, the Boston Marine Industrial Park, the tunnel crossing under Boston Harbor, the Bird Island Flats area of Logan International Airport in East Boston, and the Central Artery.

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. Further, 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 June 1998, Congress passed the Transportation Equity Act for the 21st Century (TEA-21). Under this legislation, it is estimated that Massachusetts will receive an average of \$520 million per year for highway projects through fiscal year 2003. This amount of federal funding is approximately \$310 million less than the \$830 million average under the old ISTEA legislation and will impact the Commonwealth's percentage share of the remaining CA/T Project costs.

In 1989, CA/T Project management estimated that the project would cost \$4.4 billion and would be completed in 1998. However, a United States General Accounting Office report, dated July 17, 1997, to the Subcommittee on Transportation and Related Agencies, Committee on Appropriations, of the House of Representatives, noted that the cost of the project will exceed the Massachusetts Turnpike Authority's (MTA) estimates and could reach as high as \$11.6 billion. It was noted that the increase occurred primarily because of growth in the CA/T Project's estimated construction costs. Further, the report noted that CA/T management's cost containment goals envisioned a far better performance than had been achieved and that the cost of completing the project could increase between \$100 million and \$500 million more if these goals are not achieved.

The CA/T Project's 1998 Finance Plan indicated that project costs would total \$10.8 billion; however, an October 1999 U.S. Department of Transportation's Office of Inspector General (OIG) draft report (issued in final form in February 2000) noted that the actual figure was at least \$11.8 billion and that potential construction cost increases could add another \$942 million to this amount.

TABLE OF CONTENTS/EXECUTIVE SUMMARY (Continued)

Page

Although the CA/T Project Director dismissed the OIG's estimated cost increase as being "totally unsupported," on February 1, 2000, the March 2000 amendment to the CA/T Finance Plan indicated that the Project could cost \$13.1 billion.

Because of a surprise CA/T Project announcement on February 1, 2000 of a potential \$1.4 billion cost overrun, the U.S. Secretary of Transportation requested that the Federal Highway Administration (FHWA) establish a multidisciplinary Federal Task Force to analyze the oversight process for the project, review the structure of the cognizant FHWA Division Office responsible for the oversight, and determine the effectiveness of the supporting documentation reporting systems. On April 11, 2000, the task force issued its report, which stated that the FHWA must move beyond its failed "partnership" approach that was betrayed by state actions. The task force made 34 recommendations to achieve independent and critical oversight of the CA/T Project and stated that a more realistic cost estimate for the CA/T Project is currently \$13.4 to \$13.6 billion. As a result of this report, the Governor of the Commonwealth replaced the Chairman of the MTA, who had responsibility for the management of the project. In June 2000, the CA/T Project revised its cost estimate to \$13.5 billion.

In its most recently released finance plan, dated October 1, 2000, CA/T Project officials revised the estimated total cost of the project to \$14.1 billion. This estimate was based on a recently completed comprehensive cost and schedule revision update known as CSU 7.

This interim report reviewed the MTA's design and construction activities associated with portions of the CA/T Project and additional costs related to the proposed North/South Rail Link (NSRL) in Boston. To date, the OSA's 14 interim reports have identified approximately \$457 million in unnecessary, excessive, and avoidable project costs as well as available savings opportunities.

AUDIT RESULTS

- | | |
|--|----|
| 1. <u>Failure to Resolve a Project Design Issue in a Timely Manner Resulted in Increased Project Costs of \$4.5 Million:</u> | 7 |
| Our review of the CA/T Project noted that, although project management became aware of cost increases due to a design issue with the NSRL, this issue was not resolved until approximately 20 months later. As a result, the CA/T Project incurred approximately \$4.5 million in unnecessary design and construction costs. | 7 |
| 2. <u>Improper Utilization of \$6.9 Million in State Highway Funding for Non-Highway Purposes:</u> | 12 |
| Our review noted that the CA/T Project improperly used approximately \$6.9 million in state highway funds for preliminary design and construction of the NSRL, which is a non-highway project. Moreover, our review noted that CA/T failed to obtain reimbursement of these costs from the parties that benefited. | |

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.

In 1984, the Massachusetts Highway Department (MHD) awarded a management consultant contract to the joint venture of Bechtel/Parsons Brinckerhoff (B/PB) to manage project design and construction activities. The management consultant has overall responsibility for project design, management, and interface coordination of all construction contracts. The Massachusetts Turnpike Authority (MTA) assumed ownership and management of the CA/T Project under a state law enacted in March 1997. Although much of the activities discussed in this report occurred under MHD's jurisdiction, we use the MTA designation throughout this report.

CA/T Project construction, which began in 1991, is well underway in certain areas, including the South Boston Bypass Road, the Boston Marine Industrial Park, the tunnel crossing under Boston Harbor, the Bird Island Flats area of Logan International Airport in East Boston, and the Central Artery. This interim report deals with MTA's oversight of the design and construction activities and related additional costs associated with the North/South Rail Link (NSRL).

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 for the project through 1997. In June 1998, Congress passed the Transportation Equity Act for the 21st Century, under which

Massachusetts will receive an estimated \$520 million per year for highway projects through fiscal year 2003. This amount of federal funding from the TEA-21 is approximately \$310 million less than the \$830 million average under the ISTEA legislation and will increase the Commonwealth's percentage share of the remaining project costs.

In 1989, CA/T Project management estimated that the project would be completed in 1998 at a cost of \$4.4 billion. However, the United States General Accounting Office (GAO) report, dated July 17, 1997, to the Subcommittee on Transportation and Related Agencies, Committee on Appropriations, of the House of Representatives, found that the cost of the project will exceed CA/T Project estimates and could reach as high as \$11.6 billion. GAO noted that the increase occurred primarily because of growth in the project's estimated construction costs. Further, the report noted that CA/T management's cost containment goals envisioned a far better performance than had been achieved and that the cost of completing the project could increase by between \$100 million and \$500 million more if these goals were not achieved.

The CA/T Project's 1998 Finance Plan indicated that project costs would total \$10.8 billion; however, an October 1999 U.S. Department of Transportation's Office of Inspector General (OIG) draft report (issued in final form in February 2000) noted that the actual figure was at least \$11.8 billion and that potential construction cost increases could add another \$942 million to this amount. Although the CA/T Project Director dismissed the OIG's estimated cost increase as being "totally unsupported," on February 1, 2000, the March 2000 Finance Plan acknowledged that the project could cost \$13.1 billion, or was approximately 198% more expensive than the 1989 estimate.

Because of a surprise CA/T Project announcement on February 1, 2000 of a potential \$1.4 billion cost overrun, the U.S. Secretary of Transportation requested that the Federal Highway Administration (FHWA) establish a multidisciplinary Federal Task Force to analyze the oversight process for the project, review the structure of the cognizant FHWA Division Office responsible for oversight, and determine the effectiveness of the supporting documentation reporting systems. On April 11, 2000, the Task Force

issued its report, which stated that the FHWA must move beyond its failed “partnership” approach that was betrayed by state actions. The Task Force made 34 recommendations to achieve independent and critical oversight of the CA/T Project and stated that a more realistic cost estimate for the CA/T Project was \$13.4 to \$13.6 billion. As a result of this report, the Governor of the Commonwealth replaced the Chairman of the MTA, who had responsibility for the management of the project. In June 2000, the CA/T Project revised its cost estimate to \$13.5 billion. In its most recently released finance plan, dated October 1, 2000, CA/T Project officials, through a recently completed comprehensive cost and schedule update revision known as CSU7, estimated the total cost of the project to be \$14.1 billion.

This interim report deals with design and construction activities associated with portions of the Central Artery and additional costs related to the proposed NSRL in Boston. To date, our 14 interim reports have identified approximately \$457 million in unnecessary, excessive, and avoidable project costs as well as available savings opportunities.

The impacted project area, major design and construction contracts, and the proposed NSRL discussed in this report are briefly described below.

Central Artery/Tunnel Project Area: As proposed by the Central Artery Rail Link Task Force in May 1993, the NSRL would share a common alignment with the CA/T Project between Summer Street and Causeway Street in downtown Boston. Within this project area, several CA/T design and construction contracts would be impacted by the NSRL, including the D017A design contract and the C17A2 and C17A9 construction contracts.

D017A – I-93 Central Artery – Congress Street: The D017A design contract was awarded to the joint venture of Fay, Spofford, Thorndike/Howard Needles Tammen and Bergendoff (hereinafter referred to as the section design consultant) in the amount of \$22,216,530. The section design consultant was given a Notice to Proceed (NTP) on June 11, 1991. The design contract, originally scheduled to be completed February 5, 1999, is currently scheduled to be completed by December 31, 2004. As of November 1, 2000, the adjusted contract amount to complete design was \$82,337,455.

The D017A design contract's scope of work included the final design of approximately 3,400 feet of the Central Artery northbound and 2,000 feet of the southbound mainline tunnel, varying from eight to 10 lanes in width; 2,100 feet of ramp tunnels; 5,000 feet of at-grade surface streets; and ventilation building Number 3. The D017A design contract included the final design of the C17A2 and most of the C17A9 construction contract areas.

D017B – I-93 Central Artery – Blue Line Crossing: As designed, the newly depressed Central Artery passed over the Massachusetts Bay Transportation Authority's (MBTA) Blue Line Aquarium Station. Because the MBTA had already issued a design contract to modernize the Aquarium Station and the two projects were in the same proximity and would share several facilities, slurry walls, and a base slab, MHD and the MBTA signed an interagency agreement to coordinate design and construction in April 1992. As a result, the MBTA's design contract scope of services was amended to include the final design of a 150-foot section of the Central Artery's northbound and southbound tunnel boxes that passed over the Blue Line Aquarium station. The CA/T Project would reimburse the MBTA for the CA/T Project's share of its design costs, valued at \$2,985,043. The design contract, referred to as D017B, included the final design of the remaining portion of the C17A9 construction contract not included in the D017A design contract.

The design contract, originally scheduled to be completed on June 30, 1994, is scheduled to be completed on June 30, 2002. As of December 2000, the adjusted contract amount to complete design was \$8,179,098.

C17A2 – I-93, Central Artery, State Street to North Street: The C17A2 construction contract was awarded to the joint venture of Modern Continental/Obayashi (hereinafter referred to as the construction contractor) in the amount of \$147,239,356. The construction contractor was given a NTP on March 13, 1995. The construction contract was scheduled to be completed by October 19, 2000. As of October 31, 2000, the adjusted contract amount to complete construction was \$171,659,490.

The C17A2 construction contract's scope of work includes the construction of 900 linear feet of the mainline tunnel, consisting of a double box section with four lanes each northbound and southbound. The construction contractor is also responsible for underpinning the existing elevated Central Artery by transferring its weight to the new tunnel structure.

C17A9 – I-93, Central Artery, High Street to State Street, and the MBTA Aquarium Station:

The C17A9 construction contract was awarded to the construction contractor, (the joint venture of Modern Continental/Obayashi) in the amount of \$339,487,273. The construction contractor was given a NTP on April 17, 1996 and is scheduled to be completed by March 4, 2004. As of October 31, 2000, the adjusted contract amount to complete construction is \$348,995,589.

The combined C17A9 construction contract's scope of services, prepared by the D017A and D017B section design consultants, included work for the CA/T Project and the MBTA. The construction contractor's scope of work included the construction of 900 feet of the I-93 tunnel northbound; the construction of 1,200 feet of the I-93 southbound; and the modernization of the Aquarium Station, which includes platform extension, mezzanine construction, and station improvements.

The CA/T Project would pay the construction contractor for the I-93 tunnel work, and the MBTA would reimburse the construction contractor for work related to the Aquarium Station. Approximately \$9.3 million was allocated for the construction of certain items that were determined necessary in order to not preclude the future NSRL rail connection. The Executive Office of Transportation and Construction (EOTC) reimbursed the construction contractor for this NSRL work from funds from the 1996 Transportation Bond bill.

North/South Rail Link (NSRL): The metropolitan Boston area is currently served by a local and regional passenger rail service that is divided into two separate and independent rail systems, one terminating at North Station and the other terminating at South Station. The MBTA operates the local commuter rail service and Amtrak operates the regional passenger rail service. North Station is the terminus for the MBTA's local commuter rail service to the north and northwest of Boston as well as

Amtrak's proposed regional rail service between Boston and Portland, Maine. South Station is the terminus for the MBTA's local commuter rail service to the south and west of Boston and for all of Amtrak's current service to Boston. There is no direct link connecting North and South stations, which are approximately one mile apart. The gap between the two stations often requires local and regional rail passengers to transfer to another type of service (electric rail, bus, or taxi) in order to complete their commute. The NSRL proposal was to build an underground railroad connection between North and South stations in the same corridor as the new depressed Central Artery. To date, an NSRL connection has never been built, and whether it will remain an open question.

Audit Scope, Objectives, and Methodology

Our audit, which is ongoing, included an examination of the CA/T Project's management activities associated with the design and construction of the NSRL through December 31, 2000.

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) resulted in effective, economical, and efficient utilization of resources. 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; interviewed project personnel; and toured project sites. In addition, we reviewed contracts, invoices, 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

1. Failure to Resolve a Project Design Issue in a Timely Manner Resulted in Increased Project Costs of \$4.5 Million

Our review noted that the Central Artery/Third Harbor Tunnel (CA/T) Project management's failure to resolve a project design issue involving the proposed North/South Rail Link (NSRL) in a timely manner resulted in approximately \$4.5 million in unnecessary design and construction costs.

In February 1993, the Secretary of the Executive Office of Transportation and Construction (EOTC) formed the Central Artery Rail Link (CARL) Task Force¹ to determine the feasibility of constructing a rail connection between North Station and South Station in conjunction with the CA/T Project. Some CARL task force members wanted it to be developed and opened simultaneously with the CA/T Project. However, CA/T Project officials expressed concern about the potential impact that the NSRL might have on the CA/T schedule and budget.

In May 1993, the CARL task force released a report that recommended the NSRL be built underneath the CA/T alignment using a "mined"² option rather than a "bored"³ option. The report recommended that the CA/T Project include the construction of deep slurry walls in order to allow the future construction of the rail link mined option under the artery. The deeper slurry walls would be classified as "deletive items" in the impacted CA/T Project construction contracts so as to have no "appreciable impact on the cost or construction schedule of the CA/T Project" if deleted.

¹ Members of the task force included representatives from EOTC, the Massachusetts Highway Department (MHD), the Massachusetts Bay Transportation Authority (MBTA), and technical support provided by the CA/T Project design team.

² The mined construction option would use the base slab of the new Central Artery as the roof of the NSRL. The excavation support slurry walls, installed by the CA/T Project, would be extended downward from the base slab of the central artery. At a future date, the earth between the deep slurry walls would be removed or mined out. The deep excavation support slurry walls would contain steel reinforcement known as soldier piles.

³ The deep bored option would be independent of the CA/T highway tunnel. Tunnel boring machines would be used to cut (bore) a tunnel approximately 80 to 120 feet below the surface. The deeper alignment would allow the tunnel to be constructed in a more stable environment rather than in the filled conditions found closer to the surface.

However, despite earlier information reported by the management consultant in a March 1993 study that the mined option would have significant cost and schedule impacts on the CA/T Project whereas the bored option would not, the CA/T Project Director, on May 21, 1993, directed the management consultant to design the impacted CA/T contracts so as not to preclude the future mined construction of the NSRL.

In June 1993, CA/T project officials issued a change order to provide a design that would preserve the space below the Central Artery for future utilization by the NSRL. The change order directed the section design consultant (SDC) to modify the DO17A design for the mined option by extending the slurry walls of the Central Artery to a sufficient depth to allow future tunneling below the base slab for the NSRL. The change order, which totaled \$500,000, estimated that the revised NSRL design could have a potential construction impact of \$20 million. Because the NSRL was not part of the CA/T Project, the Federal Highway Administration (FHWA) would not participate in the NSRL's funding.

In December 1993 Bechtel/Parsons Brinkerhoff (B/PB), the management consultant, advised CA/T Project officials that the traditional mined option could cost approximately \$6 million in additional design costs and up to \$20 million in construction costs, plus significant schedule delays. On the other hand, it was estimated that the bored option could cost approximately \$500,000 in design costs and approximately \$2 million in additional construction costs, with no impact to the CA/T Project's schedule. Consequently, B/PB recommended that the bored option be pursued for the NSRL.

In January 1994, the CA/T Project officials increased the change order from \$500,000 to \$1.2 million. This increase expanded the D017A SDC's scope of services to provide for the redesign of deeper slurry walls, including C14C2 and C17A2 construction contracts. In February 1994, an FHWA structural engineer advised the CA/T Project Director that the FHWA would not pay for construction changes that were the result of the CA/T Project's decision "not to preclude rail link alternatives." For instance, in an attempt at reducing costs, the C14C2 construction contractor had recommended reducing the number and length of the soldier piles. However, the CA/T Project rejected the contractor's proposal because it did not want to preclude other rail link alternatives. Although the FHWA official did not question the CA/T

Project's motives, the official cautioned that the FHWA would deduct federal aid for those actions related to the NSRL connection.

On March 11, 1994, CA/T Project officials issued another change order to the D017A contract that required the SDC to provide a design that would extend the slurry walls to the proper depth for the C17A9 construction contract so as not to preclude the future placement of the NSRL. The final cost of this change order was \$1.5 million.

On March 15, 1994, the management consultant advised CA/T officials that the strategy to maintain both the mined and bored options as possible alternatives imposed the highest design and construction costs to the CA/T Project. As a result, the management consultant recommended that CA/T Project officials select an option immediately.

Despite the concerns of the FHWA official and the management consultant about escalating costs associated with maintaining both NSRL options, in early April 1994 the CA/T Project issued a change order to the C14C2 construction contractor to immediately install the deeper slurry walls necessary to accommodate the more expensive mined option. As a result, this option's construction cost to the state was \$944,000, and the C14C2 construction contractor incurred delay costs of \$193,000 associated with the implementation of the NSRL construction.

In October 1994, the management consultant informed MHD that substantial modifications were made to the design of the slurry walls, base slab, and roof structure in order to maintain the mined option. The management consultant stated that maintaining the mined option requires the use of more and longer soldier piles in the deeper slurry walls throughout the tunnel alignment. The management consultant advised that the decision to abandon the mined option after design is complete, but before construction begins, would not allow the CA/T Project to recover the increased construction costs, regardless of whether the walls are raised. The management consultant therefore recommended that it was less costly to abandon the mined option at this point rather than waiting until the design was complete.

In November 1994, approximately 20 months after the CA/T Project management consultant

indicated that the mined option would have significant cost and schedule impacts, the CA/T Project issued a change order for about \$630,000 to eliminate the mined option in favor of the bored option. Unfortunately, the Project's failure to resolve the NSRL issue in a timely manner resulted in approximately \$4.5 million in unnecessary design and construction costs.

Recommendation: To preclude the significant increased costs associated with unresolved design issues, CA/T project management should take immediate action to ensure that optional design issues are timely resolved.

Auditee's Response: In commenting on this issue, the CA/T Project Director stated, in part:

This audit finding unfairly criticizes the CA/T Project by implying that the decision to pursue a "bored option" in lieu of a "mined option" was within the Massachusetts Highway Department's purview or could be reached prior to completion of a technical assessment of construction options. This was not the case. Under the sponsorship of the Executive Office of Transportation and Construction (EOTC), the Central Artery Rail Link (CARL) task force was organized and charged with performing the preliminary assessment of [the] feasibility and development of construction options for the NSRL. The CA/T Project sent representatives to the CARL task force meetings to assist with coordination and furnish information, but the task force operated independently with respect to developing conceptual design information. The CARL task force report, released in 1993, identified the mined option as a feasible and possibly preferred method of construction for the NSRL. Accordingly, the Project made provisions to not preclude the mined option in the C14C2, C17A9, and C17A2 construction contracts.

Subsequent to the CARL task force report, the Massachusetts Bay Transportation Authority (MBTA) was funded to procure the services of [the design consultants] to perform a more detailed assessment of the feasibility and cost effectiveness of various construction options for the NSRL. Feasibility depended on numerous factors beyond the CA/T Project's knowledge or purview and could only be determined after the NSRL consultants developed the design concept and assembled and assessed the available technical information.

While it was recognized and documented by the CA/T Project staff that the impacts of the "mined option" were more significant and costly to the Project than the "bored option", it was not known whether the bored option was feasible or cost effective until [the design consultants] had sufficiently progressed their evaluation. Around the fall of 1995 and prior to the completion of [the design consultants'] preliminary technical report, it was determined collectively by EOTC and the CA/T Project, based on the work of [the design consultants] that the "mined tunnel" option would be dropped and the "bored tunnel" option pursued. We believe, therefore, that the CA/T Project took prudent and immediate action at the earliest opportunity.

Auditor's Reply: The decision to drop the mined option and go forward with the bored option for the CA/T Project was made at least as early as November 8, 1994 and not during the fall of 1995,

contrary to the Project Director's response. A project change order signed by MHD on that date provided that:

The SDC [Section Design Consultant] is directed to stop work on the implementation of modifications to the C17A9 tunnel structure to accommodate the "mined" option, as previously authorized.... The SDC shall change the design such that only those modifications necessary to preserve the "bored" option are included in the C17A9 Contract Documents.

Moreover, the Project Director's response indicates that the project was unable to make the decision to pursue a mined or bored option because it was not known whether the bored option was possible or cost-effective until MBTA's design consultants provided a more detailed assessment of the feasibility and cost-effectiveness of the construction options for the NSRL.

It is clear from the following Management Consultant statement in October 1994 that the project knew that the MBTA design contract had not been awarded. However, despite not having this detailed assessment, MHD, as discussed above, directed the SDC to modify the design to preserve only the bored option:

Your original direction to maintain all options was based on the assumption that the MBTA would be able to procure a Design Consultant to advance operational analysis and conceptual design to the level that a more definite decision on which options to pursue could be made. However, the MBTA has put the NSRL design program "on hold" pending procurement of a design consultant.

Accordingly, the decision to drop the mined option was made without input from the MBTA design consultant study and therefore could have and should have been made earlier, especially, with the concerns that were continuously raised by the Management Consultant. Also, it is apparent from the repeated appeals of the Management Consultant that he believed that MHD/CA/T had the authority to make this decision.

Adding to the confusion as to whether the bored option decision was made in October 1994 or the fall of 1995 is a response made to the State Auditor's Office by the Deputy Secretary of EOTC. When asked on June 1, 2000 who made the decision that the NSRL would be bored, when was that decision made, and why, we were told that "no final decision has been made regarding the tunneling method to be used in the

construction of the NSRL.” This statement from EOTC directly conflicts with the Project Director’s statement that “Around the fall of 1995...it was determined collectively by EOTC and the CA/T Project...that the ‘mined tunnel’ option would be dropped and the ‘bored tunnel’ option pursued.”

MHD was the design and construction agency responsible for the CA/T Project. To pursue dual design and construction activities before knowing up front which course of action the project should follow is tantamount to producing wasted design and construction efforts. It would have been far better to elevate the issue immediately for timely resolution.

2. Improper Utilization of \$6.9 Million in State Highway Funding for Non-Highway Purposes

Our review noted that the CA/T Project improperly used approximately \$6.9 million in state highway funds for preliminary design and construction for the NSRL, which is a non-highway project, and failed to obtain reimbursement of these costs from the parties that benefited. Specifically, our review noted that during a 29-month period beginning in November 1992, the CA/T Project issued several change orders to the management consultant totaling approximately \$1.7 million to undertake certain studies and provide geotechnical engineering support to the NSRL initiative, in addition to the previously discussed \$944,000 change order to construct deeper slurry walls. As a result, these change orders for the NSRL were funded with state highway funds that were intended for highway projects and not railway use.

As mentioned earlier, because the MBTA and the CA/T project had concurrent design and construction contracts scheduled in the same proximity, MHD and the MBTA signed an interagency agreement in April 1992 to coordinate design and construction activities in that area. This interagency agreement was amended in April 1994 and provided the MBTA with \$300,000 to conduct a structural analysis of the impact of the NSRL on the D017B design contract. The CA/T Project paid for this analysis of the NSRL with state highway funds. In September 1994, MHD and the MBTA executed another amendment to the agreement that provided for the use of about \$1.3 million of state highway funds to redesign the D017B design contract to accommodate the NSRL. Both of these change orders were for non-highway-related activities, but paid for with state highway funds.

In August 1996, at the request of the MBTA, the CA/T Project issued a change order to the C17A2 construction contractor to build a revised bulkhead⁴ that would accommodate the future NSRL. Again, this use of CA/T Project funds to accommodate the NSRL resulted in about \$2.5 million of state highway funds being used for non-highway purposes. Moreover, the CA/T Project also paid two lobbying firms to pursue federal funds for the NSRL. We estimate that about \$200,000 of project funds was expended on NSRL activities⁵.

In total, the CA/T Project expended about \$6.9 million of state highway funds on the preliminary design and construction of the NSRL, a non-highway-related project. Moreover, the CA/T Project did not obtain reimbursement for these funds from the parties that benefited.

Recommendation: The CA/T Project should obtain reimbursement from the MBTA and other parties that benefited from the expenditure of the \$6.9 million of highway funds for the design and construction activities associated with the NSRL and use those funds to defray current CA/T Project costs.

Auditee's Response: In commenting on this issue, the Project Director stated, in part:

Preserving the potential for future construction of a rail link was a CA/T Project Environmental Commitment as well as a goal of EOTC, the umbrella agency of the Commonwealth's transportation agencies. However, the draft report recommends that the CA/T Project seek reimbursement from the MBTA and other parties that benefited from the expenditure of \$6.9 million dollars. Therefore, the Project has forwarded that recommendation on to the Deputy General Manager of the MBTA for his review.

Auditor's Reply: The Project Director should vigorously seek reimbursement from the party that benefited from the expenditure of those funds. We will monitor the recovery of those funds during our ongoing audit of the CA/T Project.

⁴ A bulkhead is a wall specifically designed and constructed to provide lateral support and groundwater control.

⁵ The combined value of the two consulting contracts was \$403,504. Each contract had two tasks, one of which was to pursue possible funding sources for the NSRL. Project officials were unable to provide a breakdown of these costs by task. Consequently, we allocated 50% of the contract costs as NSRL-related.

It should also be noted that, as shown below, the Secretary of Environmental Affairs' Certificate on the Final Supplemental Environmental Impact Report specifically excluded the NSRL as an environmental mitigation requirement:

Given the fact that from an engineering standpoint this connection is at worst impossible and at best impracticable, and given the relatively low demand that would be expected for this service, and given the expense of such a connection, I do not consider this project a mitigation measure necessary for the CA/THT project.