Office of Inspector General

Report on the
Central Artery/
Ted Williams Tunnel Project

Federal Highway Administration

Report Number: TR-1998-109
Date Issued: April 3, 1998

DEPARTMENT OF TRANSPORTATION
UNITED STATES OF AMERICA

Memorandum

U.S. Department of Transportation
Office of the Secretary of Transportation
Office of Inspector General

Subject: ACTION: Report on the Central Artery/ Ted Williams Tunnel Project, Federal Highway Administration Report No. TR-1998-109

Date: April 3, 1998

From: Raymond J. DeCarli
Deputy Inspector General

Reply to Attn. of: J-2

To: Federal Highway Administrator

In response to a request from the Chairman, Subcommittee on Transportation and Related Agencies, Committee on Appropriations, U.S. House of Representatives, we audited the cost and financing for the Central Artery/Ted Williams Tunnel Project (Project). Specifically, we (1) identified cost elements that account for the majority of the increase from the State of Massachusetts' (State) $8 billion estimate in March 1995 to the State's current cost estimate of $10.8 billion, and (2) established a current estimate of the Project cost and associated sources of funding and identified factors that could result in project cost increases.

The Project is the largest transportation infrastructure project in the country. It will replace Boston's deteriorating, elevated Central Artery with a modern underground expressway and will extend the Massachusetts Turnpike to Logan Airport through the new Ted Williams Tunnel under Boston Harbor. Other elements of the Project include construction of a new bridge over the Charles River as a northern gateway to the city, and improved connections to highways and local streets. The methodology we used for our audit is in Attachment 1.

RESULTS

PAST COST GROWTH

The State's total Project cost estimate increased from $8 billion in March 1995 to $10.8 billion in September 1997. The increase was due to costs, identified on the next page, which were not included in the March 1995 estimate (see Attachment 2).

Increased Cost Estimate (Billions)	
Escalation due to inflation	$1.200
Project work funded by others	.998
Project work funded prior to 1991	.255
Reversal of potential air rights credits	.255
Increased construction costs	.121
Total Cost Increase	**$2.829**

CURRENT PROJECT COST

Based on our analysis of historical Project costs, we estimate the Project cost could further increase to $11.2 billion, if stringent cost containment methods are not enforced. This increase is based on potentially higher-than-budgeted costs for change orders, contract awards, and consultant costs.

Change Orders. The State's estimate of $10.8 billion is based on holding cost increases associated with construction change orders on contracts to 10.7 percent. We found, however, that as of January 1998, the actual composite rate of growth of contract costs due to change orders is 14 percent. If this current composite rate continues, rather than declines to the 10.7 percent rate used by the State, change orders will increase Project costs by an additional $292 million. Further discussion of change orders is provided in Attachment 3.

Contract Awards. The State's estimate of $10.8 billion also incorporates a 13 percent reduction from earlier cost estimates in budgeted construction contract costs, because contracts awarded through March 1995 were about 13 percent below budget estimates. However, as of January 1998, actual Project experience on "large" construction contracts (in excess of $95 million) has been averaging 11 percent over these reduced budget estimates. In fact, during our audit, the only two large construction contracts awarded were for a total of $406 million, approximately 11 percent higher than the estimated total of $369 million. The increases for these two contracts would have added $37 million to the State's total Project cost estimate of $10.8 billion if the Project had not increased its projected insurance refund to cover it. If large contract awards continue to average 11 percent over budget, the remaining large construction contracts would add another $65 million to the cost of the Project, for a total potential increase of $102 million for contract awards.

Consultant Costs. At the start of the Project, the State realized it did not have the staff or technical expertise necessary to design and manage the Project. Accordingly, in 1985 the State contracted with the joint venture firm of Bechtel Civil Inc. and Parsons, Brinckerhoff, Quade and Douglas (consultant). In addition to requiring the consultant to assist in managing the Project on a day-to-day basis, the contract requires the consultant to perform environmental studies, review preliminary design, administer and review detailed design contracts performed by the section design consultants, and manage the entire construction engineering process.

In Fiscal Year (FY) 1993, the consultant staff peaked at 961 employees. At that time, the State forecast that by the end of 1997, the number of consultant employees would drop to 590, as work progressed from design to full construction. Presently, the estimated date of completion has not changed, the design phase is nearly complete, and the Project has now moved into peak construction. However, the consultant had 951 employees as of January 1998, nearly the same level as in FY 1993. These 951 employees include 177 managers and supervisors; 387 engineers and architects; 307 support, secretarial, and clerical employees; 43 technicians; 15 accountants; 13 community/public affairs professionals; and 9 human resources employees.

The cost of the consultant contract has increased nearly 10 percent in the past 2 years and is a cost element at risk of growth. In 1995, the total estimated cost for the consultant contract was $1.48 billion. As of January 1998, the cost estimate had increased to $1.62 billion, of which about $1 billion has already been paid. Furthermore, the cost for the consultant will likely increase in the 5 years remaining on the contract, unless the consultant staff is reduced by approximately 360 employees, as originally planned. The State has indicated that it is preparing a plan to reduce the consultant staff.

PROJECT FUNDING

The State estimates total funding of $11.7 billion will be required through completion of the Project scheduled in December 2004. This $11.7 billion funding level differs from the State's current cost estimate of $10.8 billion because an insurance refund is expected in FY 2017 from the Project's owner-controlled insurance program. The State is using the anticipated insurance refund to offset $827 million of Project costs.[1] Nevertheless, the full $11.7 billion in costs must be funded until the insurance refund is actually received.

Funding Requirements. To meet the expected funding requirements of $11.7 billion, the State expects to receive a total of $8.6 billion in Federal funds and provide $3.1 billion from State funds. As of February 1998, $6.3 billion in funding for the Project had been obligated, of which $5.2 billion was from Federal funds. An additional $3.4 billion in Federal funds will be allocated to fund this Project through

[1] The estimated $827 million credit for the insurance refund in FY 2017, estimated as of March 1998, is higher than the $780 million credit assumed in the Finance Plan.

FY 2009.[2] The State has made a commitment to the Federal Highway Administration (FHWA) and Congress that it will maintain a "balanced highway program" throughout the entire State, and will not allocate all highway funds to support this Project. In fact, the January 1998 amended Finance Plan states "The Commonwealth is dedicated to a balanced transportation infrastructure repair and rehabilitation program and plans to maintain a $400 million per year state-wide program...." It is essential that FHWA ensure that the State fulfills its commitment.

As of December 1997, $5.312 billion of funds had been expended to pay Project costs, of which the Federal share was $4.462 billion (see table below). Expected remaining expenditures of $6.353 billion include $4.101 billion of Federal funds through FY 2009 and $2.252 billion from State sources through FY 2005. The table also reflects an insurance refund anticipated by the State in FY 2017.

Funding Requirements (Billions)			
Expenditures	Federal	State	Total
Incurred through 12/97	$4.462	$0.850	$5.312
Expected	4.101	2.252	6.353
Total	$8.563	$3.102	$11.665
Anticipated Insurance Refund in FY 2017			(0.827)
Total Project Cost			$10.838

Insurance Refund. The Project's owner-controlled insurance program provides workers' compensation, general liability, excess general liability, railroad protective liability, airport contractors' liability, professional liability, and builders' risk coverage for the State and its contractors. The Project expects to pay a total of $780 million for insurance premiums by the time the Project is completed in December 2004. In this owner-controlled insurance program, the premiums are based on "expected" losses which are actuarially determined, and can be adjusted to reflect project-specific actual loss experience. The premiums are deposited into interest-bearing accounts.

The Project has a good safety record and actual claims have been significantly less than the industry average used to establish the initial premiums. Consequently, payouts have been lower and interest accumulations higher than initially budgeted. As a result, after the Project is complete, and all claims and potential claims are settled, the State will be refunded a portion of the money remaining in the accounts.

[2] Federal funding is shown as extending beyond Project completion because the State intends to borrow funds to complete the Project by FY 2005, and to repay the principal portion of those borrowings using about half of its Federal highway grants in FY 2005 to FY 2009.

The State's estimated Project cost reflects an anticipated insurance refund of $827 million in FY 2017. Because this insurance refund is dependent on many variable factors, the amount of the refund, if any, is uncertain. Even with this uncertainty, the State has used the anticipated insurance refund to offset $827 million of Project costs.

The design and early construction phases of this Project are not necessarily the type of activities that result in significant injuries, accidents, and claims. The expectation that there will be excess premium payments and interest earnings is at least partially premised on "claims to date." However, current claim costs do not necessarily reflect what can be expected during the heavy construction remaining on the Project. Much of the remaining construction on the Project requires underground tunneling involving work in confined areas, with poor lighting and ventilation, and with heavy equipment operating overhead. Such work conditions typically increase the risk of job-related injuries and claims. In addition, the construction will take place in densely populated urban areas, where potential damage to adjacent buildings also increases the risk of claims.

The Project suffered its first fatal accident in March 1998 during relocation of a utility. Both the construction worker who died and another worker, who was traumatized by the accident, were covered by their company's separate insurance policy and not included under the Project's owner-controlled insurance program. Even though the accident did not have an adverse impact on the Project's insurance program, the accident clearly demonstrates the risks involved in Project construction.

Grant Anticipation Note (GAN) Financing. During peak construction, between FY 1998 and FY 2001, the Project will require more cash than it expects to have available from either Federal or State sources. Consequently, the State plans to use interim borrowing to bridge the cash shortage by issuing $1.5 billion of GANs. GANs are a short-term, anticipatory financing technique. The State intends to redeem the principal portion of the GANs by using a significant amount of its future Federal highway grants during FY 2003 through FY 2009. We have not included the interest cost on the GANs, which is estimated at $668 million, as a Project cost because FHWA and the states have typically not included financing costs as part of project costs. Therefore, it would be unfair to single out the Project for such treatment if it is not applied to all other surface transportation projects.

The State's ability to repay the $1.5 billion of GANs by FY 2009 is predicated on receiving a Federal funding level of $580 million per year between FY 1998 and FY 2003. The State's estimate of its future funding level, used in its amended January 1998 Finance Plan, is based on the version of the National Economic Crossroads Transportation Efficiency Act that was proposed by the Department of Transportation in March 1997.

The State expects to use about 71 percent of its Federal highway funds anticipated through FY 2002, and 50 percent of its Federal highway funds anticipated from FY 2003 through FY 2005 for the Project. As identified in the Finance Plan, this would provide $2.9 billion, of which $637 million would be used for redemption of GANs. The State intends to use an additional $876 million from future Federal funds anticipated to be received by FY 2009 to redeem the remaining principal of the GANs. In March 1998, the U.S. House of Representatives proposed an annual highway grant funding level of $591 million for the State, while the U.S. Senate proposed a $478 million level. If the final funding level does not reach the anticipated $580 million level and the State intends to maintain its commitment of $400 million for projects elsewhere in the State, additional short-term financing or new revenue sources will be required to meet the Project's cash requirements, and redemption of the GANs may require some portion of Federal grants beyond FY 2009.

RECOMMENDATIONS

We recommend FHWA:

1. Instruct the State to aggressively pursue cost-containment goals on construction contracts.

2. Closely monitor the State's progress toward achieving its cost containment goals. If these goals are not met, and Project costs rise above the current estimate, FHWA should promptly require the State to identify additional sources of revenue and notify the appropriate Congressional committees of the situation.

3. Ensure the State carries out the balanced transportation infrastructure program statewide, as specified in its Finance Plan for the Project.

4. Continue to submit periodic updates of the State's Finance Plan to the Office of Inspector General for review.

We recommend the Secretary:

1. Determine if project cost estimates should include the costs and credits from owner-controlled insurance for projects in which it is used. If those costs are to be included, the Secretary should instruct the Operating Administrations to issue appropriate guidance.

2. Determine if project cost estimates should include the interest expense of grant anticipation notes. If those costs are to be included, the Secretary should instruct the Operating Administrations to issue appropriate guidance and develop a methodology for assessing their effects on the feasibility of proposed and future projects.

MANAGEMENT COMMENTS AND OIG RESPONSE

We have considered all comments provided by FHWA and the State's Project Director in response to our draft report and made revisions, as appropriate.

FHWA Comments and OIG Response. In its response, FHWA objected to the wording of the first three recommendations as conveying an inappropriate meaning. FHWA believed the wording appeared to be recommendations for new initiatives, when in fact, they were ongoing activities. We agree with FHWA that the first three recommendations in our report reflect ongoing activities, but believe it is extremely important to reemphasize the need for aggressive cost containment on the Project and the need for the State to maintain a balanced transportation infrastructure program statewide. FHWA concurred with recommendations 4, 5, and 6. (Recommendations 5 and 6 are now recommendations 1 and 2 to the Secretary.)

FHWA viewed our confirmation of the Project's $10.8 billion total cost as a convergence on the way that "total project cost" is defined. We disagree. To the contrary, we noted that FHWA does not have policies regarding the inclusion in total project cost of the interest costs for borrowing against future Federal grants nor for calculating the actual benefit of future insurance refunds. Therefore, we indicated we would not arbitrarily include these costs for this project. However, the interest cost for the GANs borrowing is a real cost to the taxpayers of Massachusetts; likewise, an insurance refund in 2017 is worth only a fraction of the present-day Project costs that it is being used to offset. In view of the need to establish a consistent policy for all Operating Administrations on these interest and insurance issues, we are redirecting these recommendations to the Secretary.

FHWA stated that we drew conclusions based on samples that were not representative of the Project trends at large (examples include extrapolations on items such as "construction cost increases" using only "large" projects). Our computation of potential cost increases related to change orders was made using all contracts, not only the large ones. However, our computation of potential cost increases related to contract awards did use only large projects, that is, construction contracts in excess of $95 million. Using only the large contracts awarded since 1995, we cited a potential 11 percent increase for the $585 million of large contracts remaining to be awarded. Subsequent to receipt of FHWA's comments, we reviewed the contract cost increases experienced on the Project for all contracts awarded since 1995. According to information contained in the Project's automated database, the low bids for all contracts exceeded the budget estimates by an average of 9.6 percent. Applying the 9.6 percent to the $1.2 billion of all contracts remaining to be awarded yields a potential cost increase of about $115 million, compared to the conservative estimate we cite in our report of $65 million in cost increases.

FHWA also asserted that we used dated material as the basis for the conclusion that the Project staffing is too high. However, the response also stated that FHWA and the State are committed to keeping the staff level as low as possible, while ensuring that a high quality project can be built safely. We used the 1993 projections to demonstrate how the Project had originally intended to reduce the consultant staff over the past 5 years. Our information for the current staffing level was provided to us by Project staff in February 1998. The January 1998 Project Management Monthly Report shows 951 consultant employees, nearly the same level as in 1993. If the Project staff has been reduced to 898 employees as of March 1998, as was indicated in the Project Director's comments, we commend these actions and encourage further reductions.

FHWA stated that the report implied a degree of uncertainty regarding the eventual viability of the long-term insurance proceeds for the Project, and stated that FHWA anticipates that future savings will accrue, and at the appropriate time, can be used to further lower other costs to the Project. We did indicate that there is a degree of uncertainty for this refund. We maintain this position in the final report. The recent fatal accident illustrates the risk involved as the Project enters peak construction.

Finally, FHWA concluded by taking exception to the statement in the report that the allocation of Federal funds during upcoming years through FY 2009 to the Project will be "a significant drain on the State's expected Federal funding in this period." FHWA believed that characterizing the impact as a "drain" was an unnecessarily negative connotation. This statement was intended to show the extent of the future Federal funds that will be needed to pay for the Project after it is completed. We have deleted the reference from the final report, based on FHWA's comment.

Project Director's Comments and OIG Response. We also received comments on our report from the State's Project Director. In his response, the Project Director asserted that we agreed the baseline for our audit would be the $10.4 billion estimate of March 1995. Our August 6, 1997 letter announcing this audit stated that one of our objectives was to "Identify cost elements that account for the majority of the increase from the $8 billion of less than 18 months ago, to the State's current cost estimate." The audit addressed this objective. We regret any misunderstanding.

The Project Director also claimed that comments on an earlier draft were not incorporated into our report, and that little backup information was provided to justify our calculations. The Project Director's comment is not accurate. Extensive information, including the backup for most of our calculations, while not included in this report, was provided to the individual designated by the Project Director as our point of contact.

In addition, the Project Director took exception to the information in our report regarding the rate of increase for change orders, cost initiatives, and the size of the consultant staff. According to the Project's Potential Change Allowance Report, cost increases applicable to all change orders have amounted to 12.6 percent through January 1998. This is very close to the 14 percent we estimated. However, construction change orders generally do not occur early in the contract. We did not say that the 14 percent level will continue. We are warning, however, that aggressive cost containment efforts are needed to restrain change order cost increases to 10.7 percent as presented in the Finance Plan.

The Project Director's comment that change order increases on Contract No. C11A1 have been "completely offset" is not correct. Actual and pending change orders to this contract are $59 million, of which $17 million has been offset by cost reduction initiatives, involving sequencing and traffic management changes. We agree that the change order costs incurred as of January 1998 are included in the $10.8 billion estimate. However, as noted in our report, the work under this contract is only 51 percent completed. Potential change orders for the remaining 49 percent of work on this contract are not included in the $10.8 billion estimate. If the remaining change order costs on this contract, and on other ongoing and yet to be awarded contracts, continue at the 14 percent growth rate, an increase of as much as $292 million could occur.

In addition, regarding the Project Director's comment on the two contracts cited in our report, which were awarded over budget, we agree that the $37 million of actual increases are included in the $10.8 billion estimate. We revised the final report accordingly.

Our response to the Project Director's comments regarding the size of the consultant staff is the same as addressed to FHWA above. If the State needs to retain a larger consultant staff than originally envisioned, due to increases in Project scope, the Finance Plan should reflect this requirement and the necessary funding.

The Project Director also did not agree with our assumptions for insurance on the Project. The low accident rate experienced by the Project is commendable and we hope it continues throughout the life of the Project. Our point was and remains that the Project is now almost entirely in the construction phase, which has a higher risk of accidents than the previous planning and design phases.

The Project Director also stated that GANs financing plans are based on an annual Federal funding level of $550 million, not the $580 million in our report. This statement is not correct. The $580 million used in our report was obtained from page 21 of the amended January 1998 Finance Plan for Fiscal Years 1998 through 2003.

The complete responses from FHWA and the Project Director are included as appendices to this report.

ACTION REQUIRED

The actions discussed by FHWA are responsive to the audit recommendations. We request FHWA provide us a copy of any guidance issued in response to the recommendations made to the Secretary. We appreciate the cooperation and assistance extended to our staff. If you have any questions, or require additional information, please contact me at 366-6767 or Patricia J. Thompson, Deputy Assistant Inspector General for Surface Transportation, at 366-0687.

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Methodology

We evaluated supporting documentation from FHWA and the State, and analyzed information in the September 1997 revision to the Massachusetts Turnpike Authority Finance Plan for the Project. The Conference Report accompanying the Department of Transportation and Related Agencies Appropriations Act for FY 1998 (P.L. 105-66) instructed FHWA to provide us a copy of the revised Finance Plan for our review. Based on our observations and comments, the State amended its Finance Plan in January 1998. FHWA accepted the amended Finance Plan on February 5, 1998. Our audit was performed over the period August 1997 to March 1998, and was conducted in accordance with Government Auditing Standards prescribed by the Comptroller General of the United States.

Attachment 2

Explanation of Past Cost Growth

Escalation due to inflation. The State's $8 billion cost estimate did not account for the effects of future inflation. State officials indicated that they were not purposely underestimating inflation costs, but were simply following FHWA guidelines at the time for reporting total project cost. In 1995, FHWA directed the State to prepare a Finance Plan for the Project reflecting all projected future Project costs, including inflation. The State and FHWA agreed that a conservative annual escalation rate of 3.35 percent was realistic and appropriate. The State applied the rate to the remaining total estimated construction costs, and in its 1996 Finance Plan, the State estimated future inflation would add $1.2 billion in Project costs. We agree that the total Project estimate should include inflation costs, and that the State's methodology and estimate of $1.2 billion for inflation are reasonable.

Project work funded by others. The State's $8 billion cost estimate did not account for approximately $998 million of Project costs funded by others. For example, the Massachusetts Port Authority funded $177 million for the Logan Airport interchange. Design and construction of this interchange provided roadway improvements for the connection between Logan Airport and Route 1A. The table below provides a complete list of the Project costs funded by others, but now included in the total Project cost.

Project Work Funded by Others (thousands)

Description	Total
Roads connecting to Massachusetts Turnpike	$230,863
Logan Airport Interchange (design and construction)	177,012
100% State Funded Design and Construction	169,478
Mitigation and Interagency Service Agreements	75,745
Surface Restoration not directly related to Roadways	47,692
Temporary Facilities/Systems (including Central Artery North Area temporary ramps)	45,241
Research and Development Programs (West Virginia Fire Test Program)	44,581
Massachusetts Bay Transportation Authority-Funded Scope	39,662
Maintenance and Police Facilities	33,521
South Station Track Relocation	31,861
Cambridge Memorandum of Understanding	30,000
Miscellaneous Other Scope (Broadway Bridge/Summer St. Bridge/South Boston Surface Sts.)	27,405
Operations/Maintenance/Startup Costs (including toll facility construction)	19,985
Scope Deferments (I-93 Southbound HOV lanes)	18,153
North-South Rail Link Related Costs	6,336
Total	**$997,535**

Project work funded prior to 1991. Up until 1991, FHWA required each state to submit an annual Interstate Cost Estimate as the basis for determining the amount of future Federal funding needed to complete the interstate highway system. In 1991, FHWA directed the State to prepare its Interstate Cost Estimate on the basis of remaining costs required to complete the Project. Accordingly, the State's $8 billion estimate excluded $255 million of costs incurred prior to 1991. However, in 1995, when FHWA directed the State to prepare a Finance Plan for the Project, FHWA instructed the State to include all Project costs. Accordingly, the $255 million of Project costs incurred prior to 1991 had to be added to the $8 billion estimate.

Reversal of potential air rights credits. After completion of the Project, the depressed segment of the Artery through downtown Boston will be covered with land. About 70 acres of land will be surplus to highway needs and will be available for limited development. The land could be used for businesses, recreation, environmentally pleasing areas, and commercial development. The rights to build on this land are referred to as "air rights." The State anticipates being able to lease or sell these air rights for about $255 million. When preparing its $8 billion Project cost estimate, the State deducted this amount from the total cost of the Project. However, in 1995 FHWA disallowed the deduction because the amount and timing of any air rights credits are uncertain. Consequently, in 1996 the State reversed its potential air rights credits, thereby increasing the net total Project cost estimate by $255 million.

Increased construction costs. Increased construction costs of $121 million were not included in the State's $8 billion estimate. The increase primarily reflects actual contractor awards for two major contracts that were higher than the State's original estimates. For example, Contract No. C15A1, for tunnel segments to replace the elevated Central Artery, was originally awarded in March 1997 at a cost of $377 million. However, the cost of the contract subsequently increased by a net amount of about $68 million. This increase is due to the complex work needed to integrate the new tunnel with the existing Boston Harbor tunnels, without disrupting traffic, and the need for extensive noise-mitigation measures. Similarly, the second contract, No. C09A4, was awarded in January 1997 for $397 million. This contract required construction of an underground connection at Fort Point Channel to link I-90 and the Ted Williams Tunnel. The complex tunneling requirements resulted in a net increase of $53 million over the original estimate.

Construction Contract Change Orders

In 1995, the State established an overall goal of holding the Project's construction contract change orders to 10.7 percent, or less, of the contracts' award amounts. However, as of January 30, 1998, cost growth due to construction contract change orders on awarded contracts averaged approximately 14 percent of contract award amounts. Change orders are cost changes to awarded contracts that are necessary because of unexpected conditions encountered during construction.

For example, in 1995 the State awarded a $377 million contract to construct the I-93 Northbound Tunnel (Contract No. C11A1). Although the tunnel is only 51 percent complete, and will not be finished until FY 2000, we estimated that this contract will exceed its award amount by 22 percent. Numerous unexpected site conditions were encountered on this contract. For instance, while excavating to relocate a 30-inch gas line to an adjoining street, the contractor encountered unexpected obstructions, including utilities that were in service, but not identified in plans. The construction contract changes caused by these obstructions and their impact on the work schedule added $7 million to the cost of this contract. As of January 1998, this contract had 624 actual and pending change orders. If the remaining change order costs on this contract, and on other ongoing and yet to be awarded contracts, continue at the 14 percent growth rate, an increase of as much as $292 million could occur.

U.S. Department
of Transportation
**Federal Highway
Administration**

Memorandum

Subject: **ACTION**: Report on the Central Artery/Ted Williams Tunnel Project, Federal Highway Administration Report No. TR-1998

Date: March 31, 1998

From: Executive Director

Reply to Attn. of: HNG-1
H. Rentz
64854

To: Mr. Lawrence H. Weintrob
Assistant Inspector General (JA-1)

Attached are our comments on the subject report that you gave to us on March 27, 1998.

Anthony R. Kane

Attachment

FHWA Comments on OIG Draft Report
Central Artery/Ted Williams Tunnel Project
Received Friday, March 27, 1998

We must object to the wording of the first three recommendations as conveying an inappropriate meaning. As worded, they appear to be recommendations for new initiatives, whereas they are in fact ongoing activities.

In the case of recommendation 1, the State has been aggressively pursuing cost containment goals on construction contracts as evidenced by the continuous decline in the value of construction changes as a percent of contract bid amount since adoption of the first finance plan. Both the State and FHWA consider this a necessary area for continued emphasis.

In the case of recommendation 2, this exact mechanism has been an integral part of FHWA's acceptance of the three finance plans accepted to date. Our acceptance letters have called for a finance plan update each October 1, as well as interim updates if necessary to accompany and explain any significant variance in cost or revenue projections.

In the case of recommendation 3, this again has been a requirement for FHWA's acceptance of the three finance plans.

These recommendations should either be eliminated as unnecessary calls for actions that are ongoing or they should be reworded to call for a continuation of those actions as was done in the case of recommendation 4.

In the case of recommendations 5 and 6, we have previously stated that we will develop policies that will be applicable for all future mega projects that:

- include in project costs any estimated owner-controlled insurance costs and credits, if applicable; and
- clearly show the use of grant anticipation notes, if applicable, and the impacts of these grant anticipation notes on project feasibility/finance plans and on future Federal-aid funds available to the State.

In addition, the following comments on several items in the report are offered:

- We note that the DOT OIG has indicated that the total cost of the project is $10.8 billion, as is also stated in the most recent finance plan accepted by the FHWA on February 5, 1998. We believe that this agreement is important and indicates a convergence on the way that "total project cost" is defined.
- In a number of cases in this report, the OIG drew conclusions based on samples that are

not representative of the project trends at large (examples include extrapolations on items such as "construction cost increases" using only "large" projects). Since an automated

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database of information for all projects is available, we question the validity of extrapolating non-representative results when data representing a full universe is available to analyze trends such as those questioned.

- o Regarding the staffing of the Management Consultant, the FHWA continues to assert that the OIG used dated material as the basis for the conclusion that the project staffing is too high. FHWA and the State are committed to keeping the staff level as low as possible, all the while insuring that a high quality project can be built safely. To that end, the FHWA and State will continue to carefully monitor and control staffing levels.

- o The OIG's report infers a degree of uncertainty regarding the eventual viability of the long-term insurance proceeds for the project. While recognizing that the future credits are, in part, based upon maintaining low accident figures over the coming years, we believe that the experienced and proven "track record" of the past six years of heavy construction is significant. The estimating of future credits has still been based upon a very conservative analysis of the projects loss ratios. The credits assume ratios that are significantly higher than what are being experienced. In fact, we anticipate that future savings will accrue, and at the appropriate time, can be used to further lower other costs to the project.

- o The OIG makes a conclusionary statement about the CA/T Project's impact on the rest of the Statewide Program in Massachusetts. For example, the statement is made that the allocation of Federal funds during upcoming years through 2009 to the project will be "a significant drain on the State's expected Federal funding in this period." Characterizing the impact as a "drain" has an unnecessarily negative connotation, particularly at this time, when the future level of Federal funding is unknown. In addition, if the State of Massachusetts concludes through appropriate public processes that this project is the State's priority for Federal funds, then we do not believe that the negative characterization is appropriate. Finally, as has been stated in the past, the total funding levels (including both State and Federal funds) for the statewide program during the years of the project's construction have been, and will continue to be maintained at significantly higher levels than during the years before the CA/T Project.

Massachusetts Highway Department
Central Artery/Tunnel

March 31, 1998

Mr. Kenneth Mead
Inspector General
United States Department of Transportation
Room 9210
400 7th Street, S.W.
Washington, D.C. 20590

Dear Mr. Mead:

I appreciate the opportunity to respond to your draft report on Central Artery/Tunnel Project costs and financing. As you know, the project is progressing well, with two major achievements on the horizon: Design is approaching 100 percent completion and construction – now entering the period of peak activity – is on schedule to pass the 50 percent completion mark later this year. The project budget, as your report confirms, is holding at $10.8 billion.

I'd like to offer some general comments before turning to specifics:

First, your staff agreed in our August 1997 entrance conference for this audit that the baseline for this report would be the project's $10.4 billion estimate of March 1995. In spite of this agreement, your report makes frequent comparisons with what you refer to as an $8 billion estimate from March of 1995. Second, I was disappointed to discover that most of the project's February 5 comments on an earlier draft have not been incorporated in this version, and because you include little or no backup information to justify your calculations, we have not been able to verify all of the assertions in your report.

In fact the project budget is holding at $10.8 billion – essentially equivalent to the $7.7 billion plus inflation budget of 1994 – because we are doing what is necessary to meet our schedule, reduce costs, and maintain Massachusetts' statewide road and bridge program. Cost containment measures continue to focus on bid results, change orders, reductions in remaining utility contracts, and the design-to-cost program. The budget also reflects a commitment by the Commonwealth of Massachusetts to bear an unprecedented percentage of the final cost of the project, more than 30 percent based on our March 1998 finance plan, compared to state shares of 10 or at most 20 percent on the rest of the Interstate Highway system.

Regarding specific points in your report: First, we disagree with your assumption that change orders have amounted to 14 percent above estimates thus far, and will continue at that level hereafter. As a practical matter, we are making cost reductions to offset increases that do occur due to change orders. On the example you cited, from the C11A1 contract, the change order increases referred to have been completely offset through cost reduction initiatives involving sequencing and traffic management changes. In a related discussion involving bids on two contracts, you referred to $37 million that could increase the $10.8 billion estimate. In fact these higher bids have been included in the $10.8 billion project budget since the contracts were awarded.

Second, on the size of the project's Management Consultant staff, it is erroneous to include the 37 people covered by Work Program 13, as these personnel are dedicated to post-construction operations and maintenance duties, which are not federally funded. Moreover, the size of the staff today is 898 people, not 951. I should point out that the 1993 staffing plan did not reflect changes to the project's design for the Charles River Crossing. Since that time, staffing levels did not increase commensurate with increases in project scope.

Third, on the project's insurance program, as we draw closer to the 50 percent completion mark for project construction, we are preparing to revisit the loss ratio assumptions that drive the premiums we pay and the return we expect from the insurance program. As you point out, our loss record has been exemplary thus far, about 25 percent compared to a planning assumption of 55 percent. We are re-examining these assumptions with an eye toward reducing the loss ratio number and either increasing the planned return on the investment of premiums or decreasing the premiums paid through the end of construction. With the actual loss ratio holding at 25 percent, we believe the planning figure could be reduced significantly and still provide enough coverage for the peak years of construction. This is what our study is looking at.

Finally, regarding Grant Anticipation Notes (GANs), you suggest that the state plans to use "a significant amount of its future Federal highway grants" to repay GANs between FY 2003 and FY 2009. In fact the figure is 50 percent. This repayment is based on an annual Federal funding level of $550 million, not $580 million as you suggest.

Again, I want to thank you for the opportunity to respond to your draft report. I have attached for your reference an August 1997 letter referring to the $10.8 billion baseline agreement for this audit, as well as the project's February 5 response to your earlier audit draft.

Sincerely,

Peter M. Zuk

Peter M. Zuk
Project Director