Office of Inspector General

Current Costs and Funding of the Central Artery/Ted Williams Tunnel Project

Federal Highway Administration

Report Number: TR-2000-050
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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 Current Costs And Funding of the Central Artery Project
Report Number:

Date: February 10, 2000

From: Raymond J. DeCarli
Deputy Inspector General

Reply to Attn of: JA-30

To: Federal Highway Administrator

The Massachusetts Central Artery/Ted Williams Tunnel (Project) will replace Boston's deteriorating elevated highway (part of Interstate 93) with a new underground expressway. The Project will also extend the Massachusetts Turnpike (Interstate 90) to Logan Airport. This is a significant project, not only for its role in New England's transportation infrastructure, but for the economic benefits and cost impacts it presents to residents of Massachusetts.

We determined that the cost of the Project as of April 30, 1999, was $11.8 billion, rather than the $10.8 billion shown in the Project's 1998 Finance Plan. Furthermore, if costs are not controlled or offsetting cost reductions are not identified, there is the potential for construction costs to increase by another $942 million. In responses to an October 1999 draft of this report (Attachments 1 and 2), both the Federal Highway Administration (FHWA) and the Central Artery Project Director strongly disagreed with our projections. The FHWA Executive Director stated the potential increases we identified were "exaggerated" and that "[a] lower and more favorable incidence of construction cost increases would seem appropriate recognizing the remaining construction activities." The Central Artery Project Director challenged the methodology we used to estimate the potential $942 million increase and said we made a "totally unsupported finding."

Because of their disagreements, we took time to revalidate our data and began analysis to determine if the Project growth we identified continued from May 1999 through the present time. We reviewed the contracts awarded from April 30, 1999, through September 30, 1999, and found those awards exceeded budget by 38 percent. This was a larger increase than we used in our projections. We had not completed our review of the latest construction cost increases when, on February 1, 2000, the Massachusetts Turnpike Authority (MTA) announced that Project costs would rise

by $1.4 billion, bringing the total to $12.2 billion.[1]

The increase announced by MTA includes $915 million in construction cost increases and $482 million of increases in other areas, such as right-of-way and management consultant costs. The construction cost increase in itself firmly negates the objections that the FHWA Executive Director and Central Artery Project Director raised to our projections. Moreover, coming only 3 months after the FHWA Executive Director and Central Artery Project Director refuted our projections, the recent increases are evidence of an alarming lapse in oversight by both FHWA and state Project managers. The failure of FHWA and Project management to identify the cost increases either in the 1999 Finance Plan that FHWA approved on February 1, 2000 or in their written response to our draft report, indicates that both Central Artery management and FHWA must demonstrate greater due diligence in their management of the Project. This reinforces our recommendations regarding the need for additional guidance to ensure full and accurate disclosure of costs in finance plans.

We conducted our review in response to Congressional direction contained in House Committee Report Number 105-648. In that report, the Committee directed the Office of Inspector General "to continue to oversee the costs, funding, and schedule of the Central Artery Project and to report periodically its results to the Committee." The objectives of this review were to determine the current cost and funding of the Project and to evaluate the Massachusetts Turnpike Authority's (MTA's) 1998 Finance Plan for the Project. Our objectives, scope, and methodology are detailed at Exhibit A.

RESULTS IN BRIEF

In the Central Artery's October 1998 Finance Plan, the cost of the Project at completion in 2005 was estimated to be $10.8 billion (after adjustment for a $876 million insurance refund). In our report on the insurance program ("Overpayments of Premiums for the Central Artery Project's Owner-Controlled Insurance Program," Report Number TR-1999-104, May 24, 1999), we advised that the insurance credit was inappropriate. In this review, we found that the estimated cost of the Project rose by an additional $189 million through April 30, 1999. Adjusting for the insurance credit and the $189 million cost increase already

[1] According to MTA, the cost of the Project rose from $10.8 billion in October 1998 to $12.2 billion as of February 1, 2000. The difference between the Project's reported 1998 cost of $10.8 billion and the 1999 cost of $11.8 billion we cite above is due to $142 million cost increases incurred from July 1, 1998, through April 1999 and the elimination of an $826 million insurance "credit" we found to be unallowable.

incurred, we estimated the cost of the Project as of April 30, 1999, to be $11.8 billion.

We also noted that the Project was experiencing significant construction cost increases, which it off-set with scope reductions and other "cost containment" measures. We projected that, should the trend in construction costs continue, the Central Artery could face an additional $942 million in construction costs before it is completed in 2005. Funding estimates as of April 30, 1999 identified $11.7 billion in funding available for the Project (Table 1, page 7). Consequently, the Project had a $142 million funding shortfall as of that date. Moreover, should the potential $942 million increase in construction costs materialize, we projected that the Project could require as much as $802 million[2] in additional funding or cost reductions before it is completed.

Cost Increases. The Project implemented significant cost containment measures to offset construction cost growth and keep the Project cost at $11.8 billion. During the period covered by the Project's 1998 Finance Plan (July 1, 1997 to June 30, 1998), and up to the date of the latest financial data available during our review (April 30, 1999), construction costs for the Project increased by a total of $827 million. Those cost increases were offset with $461 million of reductions in the cost and scope of future construction work, such as deleting decorative cobblestone paving, substituting pavement overlays for full-depth paving, and reducing the frequency of testing on concrete used on the Project. In addition, $118 million was offset with funds from construction reserve and contingency accounts, and $59 million of reductions in nonconstruction Project costs, such as management consultant costs, right of way, and insurance.[3]

Insurance Credit Not Valid. The 1997 and 1998 Finance Plans deducted an insurance "credit" to be received in the year 2017 ($779 million in the 1997 Plan; $826 million in the 1998 Plan) from the estimated construction cost to arrive at a "net cost" of the Project of $10.8 billion. We did not allow this credit because, if the premiums are appropriate for the Project's risk, there should be little funding available to return at the end of the Project. To the extent that the premiums are too high, excess funds can be removed from the insurance trust and thereby reduce the $11.8 billion Project cost.

In our prior review of the insurance program we determined that this "credit" was based on the unallowable retention and investment of excess Federal funds in the Project's insurance program reserve accounts. In a September 13, 1999 response to

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2 The potential additional funding needs are only $802 million because the Project had a balance of $140 million in contingency funds as of April 30, 1999 ($942 million - $140 million = $802 million).

3 The construction cost increases and offsets net to $189 million [$827 million – ($461 million + $118 million + $59 million)]. We note that between 1997 and 1998, the Project identified $47 million more in available funding sources. Thus, the current shortfall is $142 million [$189 million - $47 million].

that report, the Federal Highway Administration (FHWA) agreed to (1) require the Central Artery to apply previous overpayment to current costs or return the money, and (2) establish guidance to ensure future reserve accounts balances for owner-controlled insurance programs do not exceed allowable amounts.

Potential construction cost increases. If the construction cost growth trends continue at their current pace, we project there could be an additional $942 million in construction costs on the Central Artery before its scheduled completion in year 2004. Specifically, we found that from July 1, 1997 through April 30, 1999, contract awards exceeded the amount budgeted at the time of award[4] by 23.6 percent.[5] We also found that, from the Project's inception through April 30, 1999, costs increased during construction due to unforeseen circumstances encountered during the performance of work by about 21.2 percent of the amount of work performed (i.e., an average of about $21.2 million in new costs were incurred due to unforeseen circumstances encountered during each $100 million of work accomplished).

Applying these percentages to the value of contracts yet to be awarded ($667 million) and the projected construction expenditures remaining on the Project ($3.7 billion[6]) results in a potential $942 million ($157 million + $785 million) increase. The balance of the "future allowance" intended to cover construction cost increases was about $140 million as of April 30, 1999. If awards amounts continue to exceed budget and costs continue to increase after award at the rate experienced through April 30, 1999, the Project could require as much as $802 million ($942 million - $140 million) in additional funding or cost reductions before it is completed.

Since the Project design is substantially complete, and contracts for remaining work will soon be awarded, it will become increasingly difficult to identify up to $802 million in cost reductions on the Project. Therefore, FHWA and Project managers must closely oversee construction costs to monitor the effectiveness of efforts to correct cost growth trends. It is also important that FHWA and Project managers recognize the magnitude of potential future cost increases that will occur if

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4 The Project budget was "re-baselined" in 1995. Since that time, the budgets for individual contracts have been revised to account for transfers of budgeted scope between contracts. For all calculations comparing contract awards to budget in this report, we used the budgeted amount for each contract that was current at the time the contract was awarded. Project staff also informed us that since 1998 the Project has not always increased the budgets of unawarded contracts to account for cost changes *other* than transfers (e.g., new unbudgeted scope added, materials cost increases). The inclusion of unbudgeted scope is one potential reason, along with inflation and reduced market competition, that contract awards have exceeded their available budget.

5 In finalizing this report, we were examining whether cost trends continued after our field work. The latest figures available from the Project as of January 28, 2000, showed an additional three contracts were awarded between May 1, 1999 and September 30, 1999. The award amount of these three contracts exceeded the budget by 38 percent, which raised the overall rate by which contracts exceeded budget from 23.6 to 25 percent.

6 As of April 30, 1999, the Project estimated $3.8 billion in remaining construction costs through 2004. That estimate includes a $140 million "future allowance" the Project has set aside as a contingency against future construction cost increases. Since the future allowance would *not* grow along with costs, we deducted the amount and calculated the potential construction cost increase based on $3.7 billion ($3.8 billion - $140 million).

the construction cost trends continue, and identify additional funding and scope reductions that can be used to offset future cost growth.

Finance Plan Guidance Needs Strengthening. Our review also found that FHWA's guidance on finance plans was not adequate to ensure complete reporting of financial data concerning costs on the Project. For example, the Central Artery's 1998 Finance Plan was not required to report the full amount by which contract awards exceeded budget or that, since the 1997 Plan, there were $827 million in cost increases and $638 million in cost reductions on the Project. FHWA's guidance does not require that finance plans disclose significant changes in reporting methodology. For example, a table in the Project's 1997 finance plan that compared contract award amounts to the amounts budgeted for the contracts was revised in the 1998 finance plan to compare award amounts to cost estimates prepared immediately before each contract was awarded (pre-award cost estimate). The pre-award cost estimates can serve as an indicator of the effectiveness of the Project's contracting process at obtaining fair market prices. However, because contract pre-award estimates rise and fall with industry prices while the overall Project budget does not, comparing pre-award estimates to awards does not disclose how much awards varied from the budget.

Although it was not completed in time to be included in the analysis conducted for this audit, Central Artery Project managers provided the Project's October 1999 Finance Plan to FHWA on January 7, 2000. FHWA provided the plan to OIG on January 24, 2000. As stated in the 1999 Finance Plan, the Project's "to-go" cost was $4.0 billion as of June 30, 1999. We noted that the 1999 Finance Plan continued to compare contract awards to the pre-award cost estimate. In addition, the Project eliminated from the 1998 Finance Plan most other discussion of the Central Artery Project's past financial performance. This included eliminating such data as the total past expenditures (obligations) on the Project, expenditures (obligations) made in the past 12 months, and the projected total cost of the Project.

While ensuring adequate funding to meet future costs is a primary purpose of finance plans, knowing a project's past cost history is essential for decision-makers and the public to evaluate the reasonableness of the assumptions regarding future cost growth. By ensuring finance plans accurately and completely document financial performance, FHWA can ensure Congress, the Secretary of Transportation, state transportation agencies, and project managers are better informed of cost trends that may result in additional funding needs or scope reductions on large highway projects. In addition, by requiring projects to report on how they achieved significant individual cost reductions, FHWA would improve the value of finance plans as a tool for sharing innovative or successful cost reduction methods among projects.

Recommendations

To ensure adequate funding for the Central Artery Project, we recommend the Federal Highway Administrator require Project managers to identify:

1. the specific additional funding or cost reductions to meet the current[7] funding shortfalls; and

2. additional funding or cost reductions (i.e., scope reductions, or potential cost savings) that can be used to offset future cost increases.

To ensure the financial status of all projects (including Central Artery) can be more effectively monitored and reported, we also recommend that the Federal Highway Administrator:

3. revise the guidance for reporting financial data to include specific reporting criteria (such as "budgeted cost of work performed," "actual cost of work performed," and "contract awards versus budget");

4. require projects to disclose significant changes to the project scope in their annual financial plans by disclosing the total value of all project scope changes, and listing individual scope changes of $1 million or more.

In light of the February 1, 2000, announcement of $1.4 billion in additional costs on the Project, we added a new recommendation to this report. The increase was not identified or reported by FHWA's Massachusetts Division office, which is responsible for monitoring the Project. In fact, the FHWA Massachusetts Division was apparently unaware of the extent of the increase when it accepted the Project's latest Finance Plan earlier that same day. Therefore, we have added a new recommendation to this report. We now recommend the Federal Highway Administrator:

5. require the FHWA Massachusetts Division to perform reasonable independent validation of all Project status and cost data before agreeing with or making decisions based on information provided by the Massachusetts Turnpike Authority.

Copies of a draft of this report were provided to the Federal Highway Administrator and Central Artery Project Director for review and comment. We received comments from FHWA's Executive Director and the Project Director (see Attachments 1 and 2). We considered all comments and made revisions, as appropriate. A complete discussion of FHWA's comments and our response begins on page 21.

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[7] Our original recommendation was to identify or cost reductions to meet the $142 million shortfall we identified. Because of the $1.4 billion cost increase announced on February 1, 2000, we modified our recommendation to encompass the entire current funding shortage.

Table 1 – Cost and Funding Reported by Central Artery / Ted Williams Tunnel

Project Location	Boston, Massachusetts
Project Length	7.5 miles total length / 161 lane miles
Completion Date	2004
Estimated Usage	190,000 vehicles per day (1998) 245,000 vehicles per day (2010)

Expenditures from Inception Through April 30, 1999 (Billions):

Expenditures by Cost Category:		**Expenditures by Funding Source:**		
Construction	$4.098	Federal Grants	$5.111	70%
Design	$0.865	GANs (Future Federal)	$0.545	8%
Management Consultant	$1.294	Mass. Turnpike Authority	$0.560	8%
Right of Way	$0.518	Mass. Port Authority	$0.035	0%
Insurance Premium	$0.481	State	$1.006	14%
	$7.256		**$7.256***	**100%**

Estimates of Total Cost and Funding Through Project Completion in 2004 (Billions):

Estimate Date:	**October 1997**	**October 1998**	**April 1999**	
Cost Category:				
Construction	$7.698	$7.824	$7.946	
Design	$0.993	$0.984	$0.996	
Management Consultant	$1.628	$1.593	$1.587	
Right of Way	$0.522	$0.503	$0.519	
Insurance Premium	$0.779	$0.763	$0.761	
Total Project Cost	**$11.620**	**$11.667**	**$11.809**	
Funding Source:				
Federal	$8.677	$8.431	$8.507	72.9%
Mass. Turnpike Authority	$1.100	$1.200	$1.355	11.6%
Mass. Port Authority	$0.200	$0.300	$0.300	2.6%
State	$1.643	$1.736	$1.505	12.9%
Total Project Funding	**$11.620**	**$11.667**	**$11.667**	**100%**

Sources:

Expenditures: The expenditures by cost category were provided by the Project on July 27, 1999. In response to comments on a draft of this report, we broke out the GANs from other Federal funding using expenditures by funding source data provided by the Project on January 12, 2000.

Total cost and funding: Estimated total cost by cost category data: "October 1997" - 1997 Finance Plan, Table 1; "October 1998" - 1998 Finance Plan, Table 1; "April 1999" – Budget, Cost, Commitment, and Forecast Report as of April 30, 1999. Estimated total funding source data: "October 1997" - 1997 Finance Plan Tables 1 and 6; "October 1998" and "April 1999" were provided by the Project in a funding summary on July 23, 1999.

- Does not add due to rounding error.

RESULTS

The objectives of this review were to determine the current cost and funding of the Project and to evaluate the Massachusetts Turnpike Authority's (MTA's) 1998 Finance Plan for the Project. Our findings regarding the current costs and funding of the Project are detailed in section A, below. Our review of the Central Artery's 1998 Finance Plan is detailed in section B, which starts on page 15.

A. Costs and Funding of the Central Artery

Costs. We found the overall cost of the Project rose by $189 million from July 1, 1997 to April 30, 1999. According to the Central Artery Project's October 1997 Finance Plan, the total estimated cost of constructing the Central Artery as of July 1, 1997, was $11.6 billion. The Project's October 1998 Finance Plan reported the estimated total cost increased $47 million to $11.7 billion (Table 1). Financial documents provided by the Central Artery Project showed that, by April 30, 1999, the estimated cost of constructing the Central Artery increased another $142 million to $11.8 billion.

Funding. The Central Artery's 1998 Finance Plan and a mid-year update issued in March 1999, identified total Project funding of $11.7 billion from all sources. Federal funds identified in Table 1 include both apportionments to Massachusetts under the Transportation Equity Act for the 21st Century and "Grant Anticipation Notes" that are issued by the Commonwealth of Massachusetts, but which are intended to be repaid with future Federal funding. The Project had not identified additional funding sources to meet the $11.8 billion estimated cost as of April 30, 1999, and thus faced a shortfall of $142 million.

Furthermore, we found that the $189 million net increase to the cost of the Project included $827 million of increases in construction costs that were offset by $638 million in cost reductions and other cost containment measures. If construction cost growth continues at the rate experienced from July 1, 1997 to April 30, 1999, the Project could face an additional $942 million in construction cost increases before the Project is completed in year 2004. The balance of funds intended to cover construction cost increases was about $140 million as of April 30, 1999. Therefore, unless cost growth is controlled and/or additional offsetting cost reductions are identified, the Project could require as much as $802 million in additional funding ($942 million - $140 million) before it is completed. A detailed discussion of construction cost increases and offsets on the Central Artery follows.

Construction Costs Increases are Offset With Cost and Scope Reductions

A significant component of the total estimated cost to complete the Project is "construction." As shown in Table 1, the cost of "construction" increased by a total of $248 million, from $7.7 billion in October 1997 to $7.9 billion in April 1999. That figure represents the net construction cost increase. Total construction cost increases were higher, but were largely offset by cost containment measures, such as reducing scope (that is, eliminating part of the planned work); substituting less expensive materials; and using improved work methods to lower costs. We determined that, from July 1, 1997 through April 30, 1999, construction costs actually increased by $827 million on the Central Artery Project because of such factors as:

- construction contracts awarded for more than budgeted amounts ($218 million);
- modifications to work requirements during performance of contract work ($428 million);
- increases in the allowance included in the budget for potential claims and changes to a construction contract after award;
- variations in police detail costs; and
- variations in materials cost.

We examined the two largest sources of construction cost increases on the Project, (1) contract awards over budget and (2) cost increases during contract performance. As detailed below, these factors contributed $646 million ($218 million and $428 million, respectively) of the $827 million in construction cost increases that occurred since July 1997.

Contract Awards Over Budget. The estimated Project cost reported in the Finance Plan includes a budgeted amount for future construction work. As contracts for work are awarded, any variance between the budgeted[8] amount and actual award amount of each contract results in an increase or decrease to the estimated cost of the Project. For example, at the time it was awarded, the amount budgeted for a contract for North Station tunnel work (contract number C19E1) was $72.6 million. The contract was actually awarded on May 28, 1998 for $145.5 million, resulting in a $72.9 million increase in the Project's cost. In contrast, contract number C09B2 for

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8 The overall budget for the Project was "re-baselined" in 1995. However, the budgets for individual contracts have been revised since that time to account for such things as revisions to the scope of work and specification changes. For all calculations comparing contract awards to budget in this report, we used the budgeted amount for each contract that was current at the time the contract was awarded; this figure was usually different than the original (1995) budget figure.

I-90 Seaport Access Tunnel Finishes was budgeted for $67.4 million, but was awarded for $64.1 million, resulting in a $3.3 million decrease to the Project's cost. Overall, there were 18 construction contracts awarded from July 1, 1997 through April 30, 1999. The total award amount of the 18 contracts exceeded the amount that was budgeted for them at the time of award by $218 million, or 23.6 percent ($924 million budgeted versus $1.1 billion awarded).

One reason that construction contract awards have exceeded budget was identified during discussions on a draft of this report with Project staff. Since 1995, the budgets of unawarded contracts have been adjusted when budgeted scope was transferred from one contract to another. However, Project staff informed us that, since 1998, the Project has not always adjusted the budget of unawarded contracts when other changes were made to the scope of the contract (e.g., new work was added). Since bids are based on the work being contracted for, awards exceeded the amount budgeted for the contract. Even if the scope of an unawarded contract remains unchanged, however, award amounts can vary due to changing market conditions (e.g., increased or decreased competition, material cost changes).

According to Project documents, construction on the Central Artery was about 53 percent complete as of April 30, 1999. The budget for construction of the remaining 47 percent of the Project was $3.8 billion. As of April 1999, $667 million of the remaining construction work had not been contracted. Therefore, if the contract award amounts for the construction work that remained as of April 30, 1999, exceed their budget by 23.6 percent, the cost of the Project could grow by an additional $157 million when those contracts are awarded.

Note: In response to comments OIG received on an October 7, 1999, draft of this report, we confirmed that the trend of contract awards exceeding budget has continued. In finalizing the draft of this report, the latest figures available from the Project as of January 28, 2000, showed an additional three contracts were awarded between May 1, 1999 and September 30, 1999. The total amount budgeted for these contracts was $109.4 million, while the awards amounted to $150.9 million, 38 percent over the budgeted amount. Overall, contracts awarded between July 1, 1997, and September 30, 1999, exceeded budget by $259 million, or 25 percent ($1.03 billion budgeted versus $1.29 billion awarded).

Cost Increases During Contract Performance. Construction costs also increased after contracts were awarded. Between July 1, 1997 and April 30, 1999, there were over 3,000 requested changes to more than 75 active contracts on the Central Artery Project. The contract changes that were approved during the period increased contract costs by $428 million.

Changes to construction contracts during the conduct of work are a normal occurrence. The changes that caused the Central Artery contracts to increase were requested by the contractor or by the Project for a number of reasons. For example, contract number C19E7 for construction work on the Initial Leverett Circle Connectors was awarded on August 12, 1997, for $45.9 million. As of April 30, 1999, with 62.8 percent of the work on the contract completed, the cost had increased by $14.3 million to $60.2 million because:

- 40 changes were made to the construction design ($5.8 million);
- the contractor was compensated for unexpected conditions, such as encountering boulders during excavation (5 instances totaling $2.5 million);
- work originally in other contracts was added due to contract revisions or schedule adjustments (12 instances totaling $4.2 million);
- material costs increased $1.4 million;
- police detail costs increased $0.1 million; and
- administrative, third-party mitigation, and "other" costs rose ($0.3 million).

To establish the rate at which the Project is incurring additional costs due to changes to construction contracts during the performance of work, we compared the cost of approved changes ($428 million) to payments made for completed construction work during the same period ($1.9 billion).[9] We calculated that construction contract changes incurred during the performance of work increased costs by about 22.9 percent of the amount of work performed (i.e., an average of about $22.9 million in new costs were incurred due to unforeseen circumstances encountered during each $100 million of work accomplished). That is an increase from the rate experienced by the Project up to the beginning of our review period.

From its inception through June 30, 1997, the Project accomplished about 28 percent of the planned construction work on the Central Artery. During that time, the Project accomplished about $2.2 billion worth of work and incurred construction contract changes of $439 million, or about 19.7 percent of the amount of work performed. Overall, from its inception through April 30, 1999, the Project accomplished about $4.1 billion worth of work and incurred changes totaling over $867 million, or about 21.2 percent of the amount of work performed.

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[9] We used the payments made as the value of construction work performed because the Project could not provide the exact cost of work performed for the period of our review (July 1, 1997 to April 30, 1999). The payments made approximate the value of work performed during the period. The value is approximate because there is a slight delay between when work is performed and when it is paid for. Therefore, payments made in the beginning of the period of our review were for work completed just before the period began, while payment for work completed at the end of the period would not be made until after the period closed. Variations in the work performed in those months could introduce error. We examined the potential error introduced by this variation and determined it was not significant. See Exhibit A for a complete discussion of our methodology.

We note that any prediction concerning the future rate at which unforeseen construction problems will occur is inherently imprecise. Some of the past $867 million ($439 million plus $428 million) in construction cost growth may reflect actions that not only resolved then-current problems, but will forestall potential problems on sections still to be constructed. On the other hand, on a project as complex as the Central Artery, it is always possible that unforeseen problems will occur that increase future construction costs by even greater amounts than has been experienced to date. The consistency with which cost increases have occurred during work done on the Project so far indicates that construction cost increases should be expected to continue to occur. As of April 30, 1999, remaining projected construction expenditures for the Central Artery were $3.7 billion. If construction cost increases during performance of the remaining construction work occur at the 21.2 percent rate experienced by the Project through April 30, 1999, it could add another $785 million to the cost of the Project.[10]

Overall, if the long-term construction cost growth trends continue, we project there could be an additional $942 million ($157 million from awards over budget plus $785 million from cost increases during the performance of work) in construction costs on the Central Artery before its scheduled completion in year 2004.

Although FHWA and the Central Artery Project Director did not accept our projections of construction cost increases in October 1999 (see discussion, page 22), on February 1, 2000, the Project announced expected cost increases of $1.4 billion. Based on this revelation, we conclude that our projections were conservative.

Offsetting Construction Cost Growth

To reduce the impact of the $827 million in construction cost increases incurred from July 1, 1997 to April 30, 1999, the Project offset all but $189 million by reducing future construction costs by $461 million; taking $118 million from reserve accounts; and reducing nonconstruction costs by $59 million.

Construction Cost Reductions. The Project reduced future construction costs by $461 million by reducing awarded and planned construction contracts to save $381 million and reducing work to be performed by utilities ("force account construction") to save $80 million. Each of the cost reduction measures is discussed in detail below.

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[10] As of April 30, 1999, the Project estimated $3.8 billion in remaining construction costs through 2004. That estimate includes a $140 million "future allowance" the Project has set aside as a contingency against future construction cost increases. Since the future allowance would *not* grow along with costs, we deducted the amount and calculated the potential construction cost increase based on $3.7 billion ($3.8 billion - $140 million).

Construction contract revisions. We requested a listing of the specific measures taken to achieve the $381 million reduction in construction contracts, but Project officials informed us they do not maintain a central listing of the measures. Nonetheless, despite a short time-frame, Project officials were able to provide a list of about 100 approved measures from the Project's cost containment program for the 1998/1999 time-frame, for which the Project claimed about $157 million in savings. We appreciate the Project's quick response to our request. The cost reduction measures they identified included design changes that eliminated or reduced planned work or substituted less expensive materials, as well as shifting costs away from the Project. Some of the cost containment measures affected cosmetic or nonoperational aspects of the Central Artery. Examples of these include:

- reducing concrete planters and plantings on contract 1B1 to save $78,550;

- changing contract 7C1 to adopt the MTA's standard toll booth design, saving $1 million;

- deleting cobblestone paving in no walk zones from contract 17A6 to save $180,000; and

- consolidating field offices set up to support six contracts (C09B2, C17AA, C20B2, C08A1, C09A3, and C09C2) into Project office space to save $8 million.

However, most of the cost containment measures were substantive, involving reductions in the features of the Project, substitutions of materials, or reductions in oversight. Examples of these include:

- substituting fiberglass for steel, iron, and plastic drains on viaducts and bridges to save $500,000;

- substituting non-fireproof color panels for fireproof panels on the parts of the roof and walls where fireproof panels are not required by fire codes to save $6.7 million on contracts 9B2 (for the I-90/Seaport Access tunnel) and 17AA (I-93 Northbound/Southbound tunnel);

- eliminating planned full-depth street paving and substituting an overlay on contract 17A6/15A9 to save $1.1 million;

- reducing the horsepower on a vent building fan to save $200,000 (contract 20B1);

- eliminating a "linear heat detector" and emergency strobe lights from contract 22A2 to save $7.7 million; and

- reducing the frequency of concrete testing and concrete truck inspections to save $700,000 over 2 years.

We also noted some of the cost containment items reduced the Project's budget by shifting costs to the MTA's budget. For example, contracts 24A2, 22A2, and 19B9 were reduced by a total of $31.4 million after costs for a maintenance facility, maintenance, and spare parts were reassigned to MTA.

Force account construction. Force account construction is work the Project obtains by having utilities (e.g., Boston Gas Company, Boston Water and Sewer Commission, Trigen-Boston Energy Corporation, Boston Edison Company, Bell Atlantic, and Massachusetts Bay Transportation Authority) accomplish actions related to their services, instead of the Project obtaining the work through competitive contracts. The Project identified $80 million in savings by reducing the cost of work to be obtained from utilities. For example, the Project saved $727,000 by eliminating or redesigning five utility manholes.

Reserve accounts. The Project's reserve accounts are "fund pools used to collect and redistribute funds among contracts." The reserves serve as a contingency against construction cost increases. The reserves comprise three separate accounts: a future allowance budgeted for all unawarded construction contracts, the police detail budget for all unawarded contracts, and the management reserve for all other contract accounts. From July 1, 1997 through April 30, 1999, the Project offset $118 million in construction cost increases with funds from the three reserve accounts.

Nonconstruction Cost Reductions. As shown in Table 1, the Project offset a net $59 million in construction cost increases with reductions in nonconstruction costs. As of April 30, 1999, the Central Artery estimated management consultant costs for the Project would total $1.6 billion, a $41 million reduction from the 1997 Finance Plan. In addition, right of way costs were reduced by $3 million, and insurance costs were reduced by $18 million. The remaining nonconstruction cost category, design, increased by $3 million, resulting in the net nonconstruction cost decrease of $59 million.

B. FHWA Guidance Inadequate to Ensure Costs Fully Reported in Finance Plans

Our review of the Project's 1998 Finance Plan found that actual cost trends and potential future increases we report above were not readily apparent to decision-makers. We then reviewed FHWA's guidance on finance plans and found it is not adequate to ensure financial data concerning costs on the Project is complete. By improving its guidance on financial reporting, FHWA can ensure finance plans better inform Congress, the Secretary of Transportation, state transportation agencies, and Project managers of cost growth trends and potential future construction cost increases on large highway construction projects. A detailed discussion of the financial data reported in the 1998 Finance Plan and FHWA's guidance for such plans follows.

Finance Plan's Discussion of Construction Cost Increases

According to the Project's 1998 Finance Plan: "Project costs remain stable. As of June 30, 1998, approximately 83 percent of construction contracts have been awarded, thereby significantly decreasing the possibility of major schedule and cost changes." The 1998 Finance Plan did acknowledge that scope reductions were required to offset cost increases in a one-paragraph discussion of contract awards over budget, which provided the following regarding tunnel work on North Station:

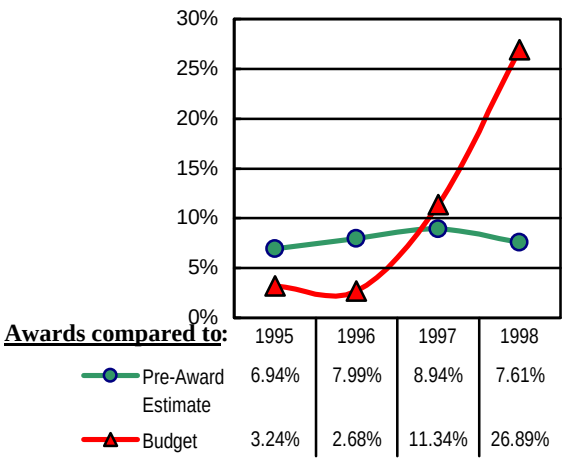
> **Bid Results:** Bids recently opened on the North Station tunnel work contract (C19E1) were significantly higher than budgeted due to scope refinements, contractor pricing variations and constructability improvements. This cost variance from budget was offset by the Project through aggressive scope reduction decisions in awarded and unawarded contracts. Further scope studies are on-going to identify additional cost containment reduction opportunities.

Some Cost Increases Not Reported. We also noted that the financial information presented in the 1998 Finance Plan was not sufficient to make clear the actual cost trends and potential future increases on the Project. For example, the Project's 1997 Finance Plan included a table that compared contract award amounts to the amounts budgeted for the contracts. However, the table in the 1998 Finance Plan (Table 3) was revised to compare award amounts to cost estimates prepared immediately before each contract was awarded (pre-award cost estimate).[11] The

[11] Pre-award estimates are prepared about 2 weeks before contracts are awarded to establish a "reasonable bid price" for contract work based on expected market costs (e.g., for labor and materials) to accomplish contract requirements. The pre-award estimates do not affect the budget established for each contract, and contact budgets are not updated to reflect the pre-award estimates (also see discussion of Contract Awards Over Budget page 22).

FHWA Project Administrator stated that the change in reporting methodology was made because the pre-award cost estimates more accurately reflect current industry costs. We agree that the pre-award cost estimates more accurately reflect current industry costs, and can serve as an indicator of the effectiveness of the Project's contracting process at obtaining fair market prices for contract work. However, because pre-award estimates rise and fall with industry prices while the Project budget does not, comparing the pre-award estimate to awards does not allow users of the Finance Plan to discern how much awards varied from the budget.

This is illustrated in the contract for North Station tunnel work (number C19E1) cited above in the Finance Plan's discussion of bid results. Contract number C19E1 was budgeted for $72.6 million. The pre-award cost estimate for the contract was $121.8 million. Therefore, the award amount of $145.5 million represented a 100 percent increase over budget, while the new methodolog7y used in the 1998 Finance Plan would recognize only the 19.5 percent by which the award exceeded the pre-award estimate. If the 1998 Finance Plan had compared contract awards to the budget for the years 1995 through 1998, it would have shown that award variances increased during those years (see figure).



Central Artery Contract Award Variance
For Years Ending June 30, 1995 - 1998

The 1998 Finance Plan could also have presented data on cost increases resulting from changes to construction contracts after award with greater descriptive clarity. According to the 1998 Finance Plan, cumulative construction contract changes amounted to $92 million, or 12.6 percent over the award amount of the contracts. However, the Finance Plan did not explain that the $92 million represented only cost increases that resulted from changes requested by the contractor (e.g., the contractor on contract C15A2 requested a change order for $2.4 million because an unexpected obstruction had to be removed). The $92 million did not include contract cost increases that resulted from changes initiated by other than the contractor (e.g., Project officials). The 1998 Finance Plan did not report the total cost increase to construction contracts from all sources during the reporting period. We determined there were $231 million in total cost increases to awarded construction contracts during the period covered by the 1998 Finance Plan, $139 million more than the $92 million that represented changes requested by the contractors.

Financial Reporting Guidance Needs to be Strengthened

FHWA Guidance Not Specific. We examined the guidance on finance plans FHWA issued on August 20, 1998 to see if it could be strengthened to provide more complete financial reporting. We found the guidance required initial and annual updates of cost estimates to "use the same project elements or breakpoints to present the cost…." However, the guidance does not establish specific cost, funding, and schedule indicators (such as "budgeted cost of work performed," "actual cost of work performed," "contract awards versus budget," "total projected cost by type of cost," and "annual funding requirements by source") to be reported.

Furthermore, although FHWA's guidance required significant cost changes to be "clearly presented," it does not specifically require that finance plans detail construction cost increases and the scope reductions made to maintain total project cost. Consequently, the $827 million in construction cost increases and the $638 million in cost reductions are not made clear in the Finance Plan. As a result, decision-makers and other concerned parties do not have complete information to evaluate either cost trends on the Central Artery Project, or the potential for transferring cost-reduction methods to other projects. While ensuring adequate funding to meet future costs is a primary purpose of finance plans, knowing a project's past cost history is essential for decision-makers and the public to evaluate the reasonableness of the assumptions regarding future cost growth.

By establishing better guidance, FHWA can improve the value of finance plans for Congress, the Secretary of Transportation, state transportation agencies, and project managers. By establishing criteria to ensure that finance plans include complete and consistent financial data and provide information on all significant scope reductions to projects, FHWA will help ensure decision-makers are better informed of past cost trends and potential future construction cost increases on large highway construction projects. Knowledge of potential cost increases is essential since they may result in significant additional funding needs or scope reductions on large highway projects. In addition, by requiring projects to report on how they achieved significant individual cost reductions, FHWA would improve the value of finance plans as a tool for sharing innovative or successful cost reduction methods among projects.

Finance Plans Not Required to Meet Recognized Standards. In addition, we noted that FHWA's guidance did not require that finance plans be prepared and certified as being in accordance with any recognized financial reporting standards. This is significant because adherence to financial reporting standards would have required the disclosure of significant changes in reporting methodology and limitations on data. For example, the American Institute of Certified Public

Accountants has issued Attestation Standards that prescribe how independent public auditors should evaluate financial statements which include projections and forward looking statements,[12] such as those in Central Artery's Finance Plan.

Adherence to these standards requires, among other things, that statements in a finance plan be complete (that is, do not omit information that could alter a decision) and consistent (presented in materially the same manner in succeeding periods). In the case of Central Artery's 1998 Finance Plan, this would have meant disclosing the changes in reporting methodology for contract awards and the limited scope of the contract cost increase figures.

1999 Finance Plan. Although it was not completed in time to be included in the analysis conducted for this audit, the Project's October 1999 Finance Plan was provided to FHWA on January 7, 1999, and to OIG on January 24, 2000. On February 1, 2000, FHWA accepted the October 1999 Finance Plan. The 1999 Finance Plan reported that the Project's "to-go" cost was expected to be $4.0 billion. According to the Plan, funding had been identified to meet the expected costs.

However, we noted that the 1999 Finance Plan did not correct the deficiencies in reporting we describe above, and even reduced the information it provided. For example, the 1999 Finance Plan continued to report contract awards and constructions contract changes as detailed above. The Project eliminated from the 1999 Finance Plan most other discussion of the Central Artery Project's past financial performance. For example, the 1999 Finance Plan eliminated data as the total past expenditures (obligations) on the Project as well as expenditures (obligations) in the prior 12 months.

In addition, the 1999 Finance Plan did not provide the projected total cost of the Project. Nonetheless, by extrapolating from the reported "percent complete" of 66 percent (which leaves 34 percent remaining) and "remaining expenditures" of $4.0 billion in the 1999 Finance Plan, we calculated that the total Project cost as of the date of the 1999 Finance Plan (June 30, 1999) was still $11.8 billion ($4.0 billion ÷ .34 = $11.8 billion). That is consistent with the $11.8 billion cost as of April 30, 1999, that we are reporting.

Less than 1 month after providing the 1999 Finance Plan to FHWA – and within hours of receiving FHWA's acceptance letter -- on February 1, 2000, the Project publicly announced an expected cost increase on the Central Artery of $1.4 billion. According to published reports, that increase may result in a $750 million cash flow

[12] Retrospective financial statements are evaluated in accordance with Generally Accepted Accounting Principles (GAAP).

shortage. The increase, coming so soon after the Project gave FHWA and OIG its "latest" finance plan, provides immediate evidence that additional guidance is needed to ensure finance plans fully and accurately report costs.

CONCLUSION

As of April 30, 1999, the estimated cost of the Central Artery Project was $11.8 billion and $11.7 billion in funding had been identified. If construction contract awards and post-award costs continue to move upward at their present rates, there could be an additional $942 million in construction costs through completion of the Project in 2004.

The balance of the "future allowance" intended to cover construction cost increases was about $140 million as of April 30, 1999. Consequently, our projection indicated the Project could require $802 million or more in additional funding and/or significant reductions in scope before the Central Artery is completed.

Since the Project design is substantially complete and contracts for remaining work will soon be awarded, it will become increasingly difficult to identify cost reductions on the Project. Therefore, FHWA and Project managers must closely track construction cost growth to monitor the effectiveness of efforts to correct cost growth trends. It is also important that FHWA and Project managers recognize the magnitude of potential future cost increases that will occur if the construction cost growth continues, and identify additional funding and/or scope reductions that will be used to offset future cost growth.

FHWA's August 20, 1998 guidance on financial reporting on projects costing over $1 billion can be strengthened to ensure more complete and accurate disclosure of costs and funding. Better financial reporting guidance will help ensure Congress, the Secretary of Transportation, state transportation agencies, and project managers are fully aware of cost growth trends and potential future construction cost increases on large highway construction projects.

RECOMMENDATIONS

To ensure adequate funding for the Central Artery Project, we recommend the Federal Highway Administrator require Project managers to identify:

1. the specific additional funding or cost reductions to meet the current[13] funding shortfall; and

2. the additional funding or cost reductions (i.e., scope reductions, or potential cost savings) that can be used to offset future cost increases.

To ensure the financial status of all projects (including Central Artery) is effectively monitored and reported, we also recommend that the Federal Highway Administrator:

3. revise the guidance for reporting financial data to include specific reporting criteria (such as "budgeted cost of work performed," "actual cost of work performed," and "contract awards versus budget");

4. require projects to disclose significant changes to the project scope in their annual financial plans by disclosing the total value of all project scope changes, and listing individual scope changes of $1 million or more.

In light of the February 1, 2000, announcement of $1.4 billion in additional cost increases, we added a new recommendation to this report. The increase was not identified or reported by FHWA's Massachusetts Division office, which is responsible for monitoring the Project. In fact, the FHWA Massachusetts Division was unaware of the extent of the increase when it accepted the Project's latest Finance Plan earlier in the day. Therefore, we have added a new recommendation to this report. We now recommend the Federal Highway Administrator:

5. require the FHWA Massachusetts Division to perform reasonable independent validation of all Project status and cost data before agreeing with or making decisions based on information provided by the Massachusetts Turnpike Authority.

ACTION REQUIRED

Please provide written comments on all of the recommendations in this report within 15 days. For each recommendation, please include the specific courses of action taken or planned to address the recommendation, or any alternative course of action you propose to adequately address the findings of this report. In addition, please provide documentation of any actions you have taken, and target dates for actions you plan to take, in response to each recommendation.

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[13] Our original recommendation was to identify or cost reductions to meet the $142 million shortfall we identified. Because of the $1.4 billion cost increase announced on February 1, 2000, we modified our recommendation to encompass the entire current funding shortage.

If I can answer and questions or be of further assistance, please feel free to contact me at (202) 366-6767 or Patricia J. Thompson, Deputy Assistant Inspector General for Highways and Highway Safety Audits, at (202) 366-0687.

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MANAGEMENT'S COMMENTS AND OIG RESPONSE

The FHWA Executive Director provided written comments in response to our draft report on October 27, 1999, followed by the MTA's Central Artery Project Director on October 29, 1999. Their responses are included as attachments to this report. Both disagreed that the cost of the Project would increase beyond the $10.8 billion reported in the Project's 1998 Finance Plan. On February 1, 2000, the Massachusetts Turnpike Authority announced that the cost of the Central Artery had increased by $1.4 billion. Coming only 3 months after the FHWA Executive Director and Central Artery Project Director refuted our projections, the recent increases are evidence of an alarming lapse in oversight by both FHWA and state Project managers. The failure of FHWA and Project management to identify the cost increases either in the 1999 Finance Plan that FHWA approved on February 1, 2000 or in their written response to our draft report, indicates that both Central Artery management and FHWA must demonstrate greater due diligence in their management of the Project. This reinforces our recommendations regarding the need for additional guidance to ensure full and accurate disclosure of costs in finance plans.

We considered all comments provided and made revisions, as appropriate. The substance of our report is unchanged. The following is a detailed examination of the comments and OIG's response regarding each comment.

Comments Regarding Discussion in the Draft Report

$142 million funding shortfall. The FHWA Executive Director began his comments by stating:

> The audit team correctly identified $142 M of additional funding needs from the Project Monthly Management reports for January and February 1999. This supports the purpose of the Project Monthly Management document which is to serve as an early management indicator tool to identify and manage funding need changes. On major projects with multiple contracts, scope changes, and contract modifications there is constant reallocation of cost and response actions. The net changes of these actions should then be reflected in the annual update of the finance plan.

OIG: The cost and funding figures cited in the report were not taken from the *Project Management Monthly* reports. The estimated total cost of the Central Artery at completion in 2004 was taken from the Project's *Budget, Cost, Commitment and Forecast Report* dated April 30, 1999. The estimated total funding available through Project completion in 2004 was provided by the Project in a funding summary report

on July 23, 1999. Actions to address funding shortfalls should be taken throughout the year, and each annual update to the finance plan should report not just the net changes, but the financial implications for the Project should cost trends continue.

Insurance cost and returns. Regarding OIG's elimination of a claimed insurance "credit" to be received in the year 2017 from our calculation of Project costs, the FHWA Executive Director stated:

> FHWA continues to maintain that the cost of insurance is chargeable to the project and any potential return at the end of the insurance period is a credit that must appropriately be included when calculating the total cost for the project …. The FHWA did approve the 1998 Finance Plan Update recognizing the insurance credit and a total project cost of $10.8 billion …. We believe each finance plan update should include an update of the estimated balance in the trust at the termination of the liability, which should be included in any total cost calculations

OIG: Federal contributions to reserve accounts are limited to the amount actually needed to pay incurred liabilities (claims). The Project's plan to fund its insurance reserve in excess of the amount actually needed to pay claims in order to generate almost $1 billion in investment income is not allowable. As discussed on page 3 of this report, on September 13, 1999, the FHWA Executive Director agreed to use past OCIP overpayments to make scheduled premium payments for policy years 1999/2000 and 2000/2001; to immediately recover any of the past overpayments in excess of the scheduled payments; and to issue policy that ensures reserve accounts do not exceed allowable amounts in the future. As the Project's insurance reserves should be adjusted to allowable amounts on a regular basis throughout the life of the program, with the balance limited to the amount needed to pay outstanding claims. Consequently, there should be no expectation that more than a minimal return of excess funds will be available in 2017. Therefore, the "credit" claimed by the Project is invalid, and the finance plan should have reported the actual cost of completing the Central Artery, $11.8 billion. To the extent that excess funds can be removed from the insurance trust, the Project's $11.8 billion cost can be reduced.

Presentation of potential construction cost increases and cost reductions. The FHWA Executive Director stated that FHWA had three issues with the discussion of cost increases and cost containment in the report. Each of the three issues is addressed separately, below.

1. The Executive Director's first issue was:

> First, the projected percentage (21.2 %) for construction cost increases is exaggerated because the straight line projection from past experience doesn't recognize the current transition in actual construction activity. Past trends dealt with issues such as excavation and utilities, where a larger amount of unknown conditions existed as compared to the types of work remaining. A lower and more favorable incidence of construction cost increases would seem appropriate recognizing the remaining construction activities. Also, since the [1998] finance plan covers July 1, 1997 through June 30, 1998, using data after that point to point out shortcomings in the 1998 plan is not appropriate as a critique on what was or was not included in the 1998 plan.

OIG: We considered FHWA's comments regarding our projection, and cannot accept an unsubstantiated assumption that construction cost increases will necessarily be lower during the remaining work. Project figures showed that only 25 percent of the past cost increases we cited were due to the excavation and utility work cited by FHWA. Moreover, the work remaining to be done on the Project, including the critical "jacking" of the concrete tunnel casings into the tunnels excavated through frozen earth, has been described by the Project as some of the most difficult and challenging highway construction work ever performed. In addition to facing difficult work, the Project is entering its peak level of construction activity. Therefore, the potential for cost increases from delays and schedule conflicts may increase. Other potential sources for cost increases (such as general administration costs, third party costs, and scope changes) will also remain. The Project's public announcement of a $1.4 billion expected cost increase on the Central Artery on February 1, 2000, shows that our estimates were accurate.

Regarding FHWA's comment on the applicability of April 30, 1999 data to the 1998 Finance Plan, the objectives of the audit were to determine the current cost and funding of the Project and evaluate the MTA's 1998 Finance Plan for the Project. At the time of our audit, the April 30, 1999, data were the latest cost and funding information available from the Project and were used to provide the most current status of Project cost trends. In contrast, for those parts of the report that comment specifically on the 1998 Finance Plan, we extracted and accomplished our analysis using just the data related to the period covered by that plan. For example, in commenting on the fact that the 1998 plan did not include information on all cost increases, on page 16 of this report we compare the construction contract cost increases reported in the 1998 Finance Plan ($92 million) to the actual total construction contract cost increases for the same period ($231 million).

2. The Executive Director's second issue with the discussion of cost increases and cost containment in the report was:

> Secondly, the report only projected cost increases but is silent about projected cost containment benefits. No corresponding percentages have been included for projected cost containment efforts. Historically, project cost growth has been balanced with corresponding cost reduction through cost containment efforts and this fact should be recognized in the report.

OIG: We did not attempt to project future cost containment results. Since 1995, cost increases essentially equaled cost reductions indicating that Project managers were identifying cost reductions only when needed to off-set unfunded cost increases. This was confirmed in the FHWA Executive Director's response to our report, when he opined that the FHWA does "not believe it is conducive to good project management or cost containment goals to identify … potential cost reductions that would be available for potential future cost increases." Since the Project's past cost containment efforts depended on the amount the Project needed to off-set unfunded cost increases, those results cannot be used independently to project potential future containment savings.

3. The Executive Director's third issue with the discussion of cost increases and cost containment in the report was:

> Thirdly, we would like to emphasize that we have partnered constantly with the project staff to insure that cost containment initiatives have not sacrificed quality or service. In fact many of these actions have been service improvements.

OIG: We reviewed the example cost containment measures presented in the report and concluded they are representative of the complete list provided to us. Exhibit B to this report is the entire list of specific measures taken to achieve reductions in construction contracts as provided to us by the Project. We also note that, to the extent past cost containment measures were service improvements, this contradicts the FHWA Executive Director's position that early identification of potential cost containment measures is not good project management.

Contract budgets versus contract award amounts. Regarding OIG's discussion of how the Project presented information on contract award amounts in its 1998 finance plan, the FHWA Executive Director stated:

> The information presented in the graphic on page 16 depicts the pre-award estimate to budget costs. Early on, as the designs for the contracts progressed and better cost estimates were available, it was the practice to adjust the budget amount to the design estimates. This accounts for the consistency in the graph's early years. In the later years, as part of the strategic management process to further minimize the project costs, the budget has not been adjusted and instead the budget information has been used as a base line to develop cost reductions to drive cost down. Therefore, scope changes (or moving work from one contract to another) on contracts have not been accounted for in the numbers presented in the later years of the graphic. Because the information presented has different base characteristics, care must be used in interpreting the graph. It should be noted that the aggressive cost containment effort on the project has yielded cost reductions to offset increases resulting from contract awards.

OIG: In response to the Executive Director's comments, we confirmed with the Project's financial staff that the "budget" amount shown in the Project's financial system on the date contracts are awarded does reflect the actual budgeted funding available for the contract, including *transferred* scope. Project officials also told us that, since 1998, the budgets of unawarded contracts may not have been adjusted to reflect other changes, such as *new* scope (as opposed to *transfers* of budgeted scope transferred from another contract) or material cost increases. Therefore, our finding that contracts have increasingly exceeded the amounts budgeted for them was correct as stated. The inclusion of new unbudgeted scope explains why awards have increasingly exceeded their budget, since bids address all work in a proposed contract whether budgeted or not. We have added a statement to this effect to our discussion in the report.

We also confirmed that contract awards have continued to exceed budget. The latest figures available from the Project as of January 28, 2000, showed an additional three contracts were awarded between May 1, 1999 and September 30, 1999. The total amount budgeted for these contracts was $109.4 million, while the awards amounted to $150.9 million, 38 percent over the budgeted amount. Overall, contracts awarded between July 1, 1997, and September 30, 1999, exceeded budget by $259 million, or 25 percent ($1.03 billion budgeted versus $1.29 billion awarded).

FHWA's comment regarding the need to use care when interpreting data with differing bases reinforces OIG's conclusions on the need for more descriptive finance plans. The point of OIG's discussion of award amounts (now at page 15) is that a significant change in basis occurred when the Project switched from comparing

award amounts to the amount budgeted, to comparing award amounts to the "engineers estimate" prepared just before contract award. As we explain, the engineers estimate is not the budget, but an estimate of how much the work included in the contract should cost at current industry prices. It identifies a reasonable price that can be used in evaluating bids for the contract and, if done correctly, should closely approximate the eventual award amount. As a "metric," it can indicate whether the Project's contracting process is effective in obtaining a fair price for the work being contracted. In contrast, the budget is the amount of money the Project has set aside for the work in the contract. Variances between awards and budgeted amount result in additions or subtractions to the total Project cost. As the graphic on page 16 shows, the change in the reporting basis obscured the significant upward trend in awards over budget and, thereby, the impact on the Project's total cost.

Grant Anticipation Notes as state versus Federal funding. Regarding Table 1 (now on page 7), which summarizes the cost and funding of the Project, the FHWA Executive Director offered the following "Technical correction":

> On page 5, Table 1, the Expenditures by Funding Source indicates $5.779 billion as the Federal expenditure; this total should be $5.111 billion. The number reported in the audit included the State Grant Anticipation Notes' (GAN's) loan funds in addition to the Federal funds. This difference of $0.668 billion should be added to the State line. Also, on Page 6, Section A, second paragraph, regarding the repayment of GAN's, we suggest "will be repaid" be changed to "are intended to be repaid." This is because the Federal Government can make no contractual commitment as such until appropriate authorization and apportionments are made.

OIG: Under the terms[14] of the GANs, the state is obligated to repay those notes with future Federal highway apportionments. The reliability of the future Federal money to repay these loans was a cornerstone of the state's marketing of the GANs, and no information has been provided to indicate this may not happen. However, the Federal contribution to the Project, including converted funds (i.e., the GANs), is limited to a defined percentage of costs. Showing the GANs as state funding until the loans are repaid – which may be after the Project is complete -- would obscure the ultimate dollar amount of Federal funding and the percentage of the total Project cost that represents until after the Project's costs and funding are no longer reported in annual finance plans. Therefore, the GANs loans must be reported in the finance plans as Federal share so that the portion of the Project's cost that will ultimately be borne by the Federal government is clear.

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[14] Section 10B of Chapter 121, Bill Number MA97RHB 5478, *An Act Providing for the Use of Certain Types of Securities in the Financing of the Central Artery/Ted Williams Tunnel Project.*

To accommodate FHWA's position, we revised the chart to show the GANs funding under the Federal funding on a distinct line. However, to determine the appropriate amounts, we used the documents provided by the Project on January 12, 2000 to detail the total expenditures on the Project of $7.256 billion. Those documents showed Federal expenditures of $5.111 billion and GANs expenditures of $545 million.

Comments Regarding Recommendations in the Draft Report

Recommendation 1. To ensure adequate funding for the Central Artery Project, OIG recommended that the Federal Highway Administrator require Project managers to identify the specific additional funding or cost reductions to meet the current $142 million shortfall.

The FHWA Executive Director agreed with the recommendation and stated "Funding needs are assessed annually through the update of the finance plan." Because of the $1.4 billion cost increase announced on February 1, 2000, we modified our recommendation to encompass the entire current funding shortage, and request FHWA to respond to this new recommendation, including target dates for action.

Recommendation 2. To ensure adequate funding for the Central Artery Project, OIG recommended that the Federal Highway Administrator require Project managers to identify the additional funding or cost reductions (i.e., scope reductions, or potential cost savings) that can be used to offset future cost increases.

The FHWA Executive Director agreed with recommendation 2, but then stated:

> Cost reduction initiatives are developed through hard work and effort by both project staff and our engineers. There is not a list of magical things to do. Each initiative must be studied and evaluated to assure that quality and service is not compromised. These cost containment activities are ongoing and monitored through regular progress meetings and the Project Management Monthly report. We do agree with the general intent of your recommendation that any future cost increases must be offset by additional funding or cost reductions. However, we do not believe it is conducive to good project management or cost containment goals to identify "potential" additional funding and/or "potential" cost reductions that would be available for "potential future cost increases." If you identify such potential funding increases or cost reductions, project personnel might not work as hard to contain costs.

OIG: If cost savings are identified only when and to the extent needed to off-set cost increases, potential savings that could actually reduce the overall cost of the Central Artery will be missed. Also, if cost containment efforts are delayed, savings opportunities may be lost. It is unlikely that the Project can offset the entire $1.4 billion cost increase announced on Feb 1, 2000, through cost containment unless significant reductions are made to the scope of the Central Artery. However, any savings that can be identified will reduce the amount of additional funding needed by the Project. Therefore, in light of the $1.4 billion cost increase announced on February 1, 2000, we request FHWA to respond to this recommendation, including target dates for action.

Recommendation 3. To ensure the financial status of all projects (including the Central Artery) is effectively monitored and reported, we also recommend that the Federal Highway Administrator revise the guidance for reporting financial data to include specific reporting criteria (such as "budgeted cost of work performed," "actual cost of work performed," and "contract awards versus budget").
The FHWA Executive Director did not formally state that FHWA agreed or disagreed with the recommendation, but indicated disagreement by commenting:

> As stated in our guidance to the field, issued on August 20, 1998, the purpose of the finance plan, and the annual updates, is to provide detailed estimates of the cost to complete the remaining elements of the project, reasonable assumptions of future increases, and the amount and source of funds needed to finance the project. The finance plan should address financing issues appropriate to each specific project. We do not believe it is desirable to be overly prescriptive as to what specific metrics are used. The necessity for applying innovation and creativity in financing a mega-project is a fact, and the guidance for presenting this information in a formal plan needs to be customized for each project and to allow maximum flexibility. The criteria should focus on the real question of whether funding is available.

OIG: OIG agrees with the Executive Director that project managers should exhibit innovation and creativity in financing mega-projects. However, requiring states to include specific information in annual financial plans does not limit projects to managing or reporting on only those criteria. For example, requiring projects to report the total amount by which contract awards exceeded budget is necessary to identify the total budgetary impact of contract awards during the year. This would not prevent project managers from also reporting the variance between contract awards and the "engineers estimate" as an indicator of whether the prices obtained were reasonable in the local market. Reporting both these figures would enable

decision-makers to evaluate the reasonableness of a project's budget for unawarded work.

Similarly, requiring projects to report the total amount of post-award increases to contracts is necessary to evaluate overall project cost trends. Again, if project managers identify significant sources of cost increases within the overall amount, such as changes requested by contractors, there is nothing to prevent them from tracking and reporting on how they managed each individual category of cost increase.

In contrast, failing to establish minimum reporting criteria for finance plans allows the possibility that finance plans will not fully answer basic questions when evaluating the financial performance of any project, such as:

- How much has the work done to date cost?
- How much was budgeted for that work?
- How much did costs go up last year and why?
- What additional money was obtained and/or how were costs reduced to off-set those increases?
- How much is the project going to cost if present trends continue?
- How will additional costs be funded or off-set?

Because of the lack of guidance, the Project's recent finance plans did not forewarn decision-makers of the $1.4 billion cost increase announced on February 1, 2000. To ensure the value of finance plans to the Congress, the Secretary of Transportation, state transportation agencies, and project managers, OIG maintains that it is critical for FHWA to establish specific minimum criteria for reporting on the financial results of mega projects. We request FHWA to reconsider its position and respond to this recommendation, including target dates for action.

Recommendation 4. To ensure the financial status of all projects (including Central Artery) is effectively monitored and reported, we recommended that the Federal Highway Administrator require projects to disclose significant changes to the project scope in their annual financial plans by disclosing the total value of all project scope changes, and listing individual scope changes of $1 million or more.

The FHWA Executive Director agreed with the recommendation but then stated:

> The sum of funding modifications resulting from scope or cost changes should be reported in the finance plan to assure proper accounting of the funding need. However, determining the necessity of listing each significant change separately or only those over

> $1 million should be resolved between the appropriate state and FHWA division office.

OIG: OIG does not agree with the FHWA Executive Director's proposal to require finance plan to report only the "sum of funding modifications." As detailed in Section A of this report, the Central Artery's 1998 Finance Plan disclosed only the net value of the cost increases and corresponding scope reductions. The total amount of increases ($827 million) and off-setting reductions ($638 million) were not reported. As a result, decision-makers and other concerned parties do not have available complete information to evaluate cost trends on the Project or the potential impact of those trends on the scope and functionality of the Central Artery.

Consequently, OIG maintains that, as a minimum, the value of both cost increases and scope changes should be reported. In addition, by requiring projects to report on how they achieved *significant* (i.e., over $1 million) individual cost reductions, FHWA would improve the value of finance plans as a tool for sharing innovative or successful cost reduction methods. We request FHWA to reconsider its position and respond to this recommendation, including target dates for action.

Recommendation 5 (deleted). To ensure the financial status of all projects (including Central Artery) is effectively monitored and reported, we recommended that the Federal Highway Administrator require the Central Artery and selected other major projects to institute a pilot program to have their financial plans reviewed by an independent entity, such as the State Auditor or certified public accounting firm, in accordance with the Attestation Standards issued by the American Institute of Certified Public Accountants before the plan is submitted to FHWA

FHWA disagreed with this recommendation. The FHWA Executive Director stated:

> FHWA does not see the value in another review of the finance plan by a State auditor or a certified public accountant. These entities are generally involved in reviewing financial reports containing historical data, and we are not sure that AICPA's Attestation Standards relate well to highway project finance plans. Having the finance plan flow through another entity, we believe, would result in no significant benefit and would delay the plan's submission to FHWA.

OIG: In meetings between FHWA and OIG senior management, we agreed to eliminate this recommendation. However, OIG remains concerned that the information reported to Congress and the public is complete and accurate. An independent review would add credibility that finance plans are complete and

accurate representations of the financial results of the Central Artery and other mega projects.

New Recommendation 5. In light of the $1.4 billion cost increase announced on February 1, 2000, we added a new recommendation 5 to this report. The increase was not identified or reported by FHWA's Massachusetts Division office, which is responsible for monitoring the Project. In fact, FHWA Massachusetts Division officials apparently did not know the full extent of the increase when they approved the Project's latest Finance Plan earlier in the day on Feb 1, 2000. Therefore, we now recommend the Federal Highway Administrator require the FHWA Massachusetts Division to perform reasonable independent validation of all Project status and cost data before agreeing with or making decisions based on information provided by the Massachusetts Turnpike Authority. We request FHWA to respond to this new recommendation, including target dates for action.

Exhibit A
(2 pages)

OBJECTIVES, SCOPE, AND METHODOLOGY

OBJECTIVES

We reviewed the Central Artery/Ted Williams Tunnel Project (Project) pursuant to Congressional direction in House Committee Report 105-648 (accompanying H.R.4328, Department of Transportation and Related Agencies Appropriations Bill, 1999), which stated:

> The Committee directs the department's Inspector General to continue to oversee the costs, funding, and schedule of the Central Artery project and to report periodically its results to the Committee.

The objectives of this review were to determine the current cost and funding of the Project and to evaluate the Project's October 1998 Finance Plan.

SCOPE AND METHODOLOGY

The scope of this review was limited to examining cost data for the period beginning July 1, 1997 through April 30, 1999. We also updated some elements of the cost data through September 30, 1999, in response to comments regarding a draft of this report. We conducted our evaluation using the Project's 1998 Finance Plan and management reports generated by the Project's management database. We also reviewed supporting documentation from FHWA and interviewed FHWA and Project managers to obtain explanations of (1) the tables and statements made in the 1998 Finance Plan, and (2) the cost categories, cost types, and other information presented in the Project's financial reports. The review also included an evaluation of the guidance regarding the preparation and submission of finance plans, including the legislative language that required finance plans for all projects over $1 billion, as well as guidance issued by FHWA.

For elements of costs and funding that were not fully identified in the Finance Plan, we independently calculated the potential costs and funding shortfalls of the Project. We made our projections of potential cost increases by using reports obtained from the Project's management database to (1) calculate the rate of cost increase experienced on Project contracts at the time of award and apply that rate to the Project's current projections for contracts to be awarded, and (2) identify the rate at

which contract cost increases are being incurred as work is performed and apply that rate to the estimated budget for work remaining on the Project.

Because the Central Artery could not provide the budgeted or actual cost of the work performed for the period covered by our review, we compared the *cost of approved changes to contracts* to the *payments made for work performed* to determine the rate at which cost increases were incurred during the performance of work in the period. We note that using the payments made for the value of work performed is an approximation because there is a delay between when work is performed and when it is paid for. That is, payments made in the beginning of the 22 months covered by our review (July 1, 1997 to April 30, 1999) were for work completed just before the period began. Payment for work completed near the end of the period would not be made until after the period closed. Likewise, there is also a short delay between when contract changes are requested and when they are approved.

To determine the potential impact of this delay on our projection, we compared the construction completed in the periods most likely to be affected by the payment delay: the 3 months prior to the start of our review period and the last 3 months of our review period. The difference in the volume of construction performed in these periods was small. Specifically, about 1.8 percent of all planned construction work on the Project was completed in the 3 months preceding July 1, 1997, while about 2.3 percent of construction work was completed in the last 3 months of our review. A total of about 24.5 percent of all planned construction work was completed between July 1, 1997 and April 30, 1999. The one-half percent difference (2.3 percent minus 1.8 percent = .5 percent) in the construction during the periods most likely to be subject to the delay amounted to only 2 percent of the construction completed during the period of our review (.5 percent divided by 24.5 percent). Therefore, we determined the small potential error introduced by the delay does not prevent using the payments made to approximate the value of work performed during the period for projection purposes.

Our review was conducted in accordance with Government Auditing Standards prescribed by the Comptroller General of the United States and included such test of records and other auditing procedures as were considered necessary in the circumstances. The review was conducted at the FHWA Massachusetts Division Office in Cambridge, Massachusetts and Project offices in Boston, Massachusetts.

#

Exhibit B
(11 Pages)

LISTING OF 1998 – 1999 COST CONTAINMENT ACTIONS ON THE CENTRAL ARTERY

As provided by the Central Artery to OIG on August 12, 1999

Approved Items

Contract	Item	Estimated Savings	Reduced Scope	Tech. or Work Approach Change.	Assign To others
1B1	Replace Roof Pavers with Walk Mats	$ 91,000		X	
1B1	Reduce Painting of Interior CMU Walls	$ 172,000	X		
1B1	Reduce Concrete Unit Pavers and Concrete Base. Replace with Concrete Paving	$ 90,000		X	
1B1	Reduce Extent of Concrete Planters 25%	$ 63,300 (min.)	X		
1B1	Reduce Plantings 25%	$ 15,250	X		
1B1	Replace Rain screens with other other Material Ordinary Panel - Option 2	$ 1,279,300		X	
1B1	Delete SS Exhaust Stacks, Adopt Precast	$ 600,000 (min.)		X	
1B1/9A3	Revise Air Intake Louvers to a more Economical Material	$ 414,000 - 1B1 $ 930,000 - 9A3		X X	
7C1	Revise Toll Plaza Canopy EPPM Membrane Roof, Metal Strip Ceiling	$ 1,170,000		X	
7C1	Replace Rainscreen with Ordinary Metal Panels Option 2 Selected	$ 718,000		X	

Cost Containment Program

Approved Items

Contract	Item	Estimated Savings	Reduced Scope	Tech. or Work Approach Change	Assign to Others
7C1	Revise Interior Finishes to CMU in Lieu of Drywall Plus CMU	$ 45,000		X	
7C1	Change Toll Booths Design to MTA Std	$ 1,000,000		X	
7C1	Assign to MTA Since not needed for Transportation Program	$ 4,200,000			X
8A1	Extend 1A SB Right Hand Off Connection	$ 3,000,000			
8A1	Reduce 8A Plantings by 15%	$ 100,000	X		
8A1	C08A1 - Simplify work Neptune & Bennington Intersection	$ 1,000,000		X	
9A3	Structural Stairforms - Replace with Steel Pan	$ 190,000		X	
9A3	Delete Retaining Structures	$ 275,000	X		
9A3	Eliminate Planters	$ 112,000	X		
9A3	Replace Rainscreen with Less Expensive Options (Approved Option 2)	$ 628,000		X	
9A3	Replace SS Stacks with Pre-cast	$ 600,000		X	

Cost Containment Program

Approved Items

Contract	Item	Estimated Savings	Reduced Scope	Tech. or Work Approach Change	Assign To others
9B2	Tile height to 10ft. From 12'-8" (Keep tile)	$ 2,500,000	X		
9B2	Eliminate Dropped Ceiling under Vent. Building No. 5 & 1	$ 680,000	X		
9B2	Eliminate Color Fireproofing from Roof/Wall	$ 5,860,000	X		
9B2	Eliminate LMC at Sight Shelves - Replace with same Material as Adjacent Pavement and Use Striping	TBD		X	
9D1	Reduce Numbers of Trees by 25%	$ 1,500,000	X		
15A3, others	Review Field Mock-Ups (Use in-Place Assemblies - Case by Case Review Required)	$ 100,000		X	
15C/1A7	Revise Sign Structures to Reduce Spans and Foundations	$ 500,000		X	
17AA	Replace LMC at Sight Shelves with Painted Bit. Concrete	$ 780,000		X	
17AA	Change Tile Wall Height	$ 3,000,000	X		
17AA	Eliminate Color Fireproofing from Roof/Wall	$ 840,000	X		
C17AA/ 9B2	Add Color Stain - 17AA Panels/ 9B2 Ceiling	$ 3,000,000		X	
17A2	Elimination of a Portion of the Struts where Applicable a) 17A2 - Delete 2nd Level	$ 120,000			X

of Struts

Cost Containment Program

Approved Items

Contract	Item	Estimated Savings	Reduced Scope	Tech. or Work Approach Change.	Assign To others
17A3	Eliminate Curtain Grouting	$1,500,000		X	
17A3	Eliminate Vertical Walers at the Vent Building C17A1/C17A3 Interface	TBD		X	
17A6	Delete Interior Parcel Pathways	$ 95,000	X		
17A6	Delete Cobble Paving in "No Walk Zones"	$ 180,000	X		
17A6	Eliminate Mini Deck	$ 9,800,000		X	
17A6	Eliminate Full Depth Construction for Temporary Roads and Replace with 3" Bit. Pavement over Existing Subgrade	$ 1,550,000		X	
17A6	Substitute less Costly Alternate for Concrete Unit Pavers in High Volume Crosswalks	$ 275,000		X	
17A6	Eliminate Granite Caps at Boat Section Portals	$ 1,000,000	X		
17A6	Eliminate Temporary Side walks (Keep at Entrances)	$ 350,000	X		
17A6	Eliminate Granite Caps at Boat Section Base	$ 1,000,000	X		
17A6	Permit Blasting of Existing Boat Section Base Slab	$ 1,000,000		X	
17A6/ 15A9	Consolidate Contracts	$ 2,920,000		X	

Cost Containment Program

Approved Items

Contract	Item	Estimated Savings	Reduced Scope	Tech. or Work Approach Change	Assign To others
17A6/ 15A9	Replace Full Depth Surface Street Paving with Overlay	$ 1,080,000		X	
17A6/ 15A9	Disallow Tractor Truck and Bus Traffic in Roofed Areas	$ 1,350,000		X	
17A6	Replace LMC with Micro Silica	$ 300,000		X	
17A6	Downgrade Portions of Proposed Brick Paving to Cement Concrete	$ 282,000		X	
17A6	More RE Field Offices to Project Space	$ 900,000		X	
17A6	Landscaping - 17A6 Tree Insulation	$ 100,000		X	
17A6	Minimize Longitudinal Jts	$ 2,500,000		X	
19B9	Maintenance/Operation Facility by MTA	$ 7,600,000			X
20B1	PLC Changes	$ 1,636,000		X	
20B1	Vent Building No. 4 - Fan Horsepower Reduction	$ 200,000		X	
20B2	Design Changes Consistent with Current Criteria	$ 1,875,000		X	
22A2	Outer Ring OHVD - Ramps	$ 3,000,000	X		
22A2	Use Integrated CCTV "Dome Type Cameras"	$ 2,900,000		X	

Cost Containment Program

Approved Items

Contract	Item	Estimated Savings	Reduced Scope	Tech. or Work Approach Change	Assign to Others
22A2	Vehicle Asset Management System	$ 480,000	X		
22A2	D008A Route 1A TSCS	$ 300,000		X	
22A2	DPM 102 - Drivers Fatigue Requirements. Use Glue-on Elements. Retain Mile Markers	TBD		X	
22A2	Ramp N-S/S-N IPCS Elements	$ 1,000,000	X		
22A2	Vehicle to Roadside Communications (DSRC). Delete I-93. Keep I-90	$ 4,770,000	X		
22A2	Security System - ACS Interior Zones and Tunnel	$ 1,400,000		X	
22A2	Linear Heat Detector	$ 7,100,000	X		
22A2	Reduce the Number of 800 MHZ Trunked Radio Channel Change in the CA/T from 10 to 5 (Total Channels from 25 to 20)	$ 150,000		X	
22A2	Defer Lane Use Signs - Alternate Accepted - Reduced Number of Lane use and VMS	$ 5,300,000	X		
22A2	Eliminate Emergency Strobe Lights	$ 550,000	X		
22A2	Assign Maintenance and Spare Parts to MTA Budget	$14,000,000			X

Cost Containment Program

Approved Items

Contract	Item	Estimated Savings	Reduced Scope	Tech. or Work Approach Change	Assign to Others
901	Landscaping - 9D - SBI Change-in-Field to Lawn Plus Trees	$ 700,000		X	
8A4	R08A4 - Delete Loam and Seed over Contaminated Soil	$ 40,000	X		
22A2	Eliminate Ramp Metering Software from 22A2	$ 300,000	X		
22A2	22A2, Finish, Traffic SDC/ B/PB Integration	$ 4,000,000		X	
17A3	Delete Architectural Concrete Finish on Exhaust Stack Above Grade - 17A3	$ 100,000	X		
1A3	Eliminate Fargo Street Full Depth Paving/Reconstruction that will be the Future Construction Site of the Convention Center (1A3)	$ 200,000	X		
1A3	Eliminate the Summer Street Bridge Curtain Wall that is Underneath the East Abutment. Not be needed because of Convention Center (1A3 Field)	$ 400,000	X		

Cost Containment Program

Approved Items

Contract	Item	Estimated Savings	Reduced Scope	Tech. or Work Approach Change	Assign to Others
9C1	Eliminate Pedestrian Stair/ Ramp Amenities at Hudson Street and Ramp X	$ 2,500,000		X	
17A6	Delete Construction Period 17A6 Noise Barrier	$ 300,000	X		
8A1	Eliminate Proposed 1A Mil NB Off Ramp to Neptune Road Retained LFCF Approach and Four Span Bridge (Maintain Existing Off Ramp for I-90 EB, Construct of Grade Ramp at Frankfort St. for 1A NB Off Ramp Traffic) (8A)	$ 2,500,000 *($2M-$2.5M)*	X		
Project-wide	Change Crack Control Criteria	$ 2,000,000		X	
C09B2	Move RE Field Offices to Project Office Space	$ 432,000		X	
C17AA	Move RE Field Offices to Project Office Space	$5,120,000		X	
C20B2	Move RE Field Offices to Project Office Space	$1,071,000		X	
C08A1	Move RE Field Offices to Project Office Space	$ 475,000		X	
C09A3	Move RE Field Offices to Project Office Space	$ 420,000		X	

Cost Containment Program

Approved Items

Contract	Item	Estimated Savings	Reduced Scope	Tech. or Work Approach Change	Assign to Others
C09C2	Move RE Field Offices to Project Office Space	$ 500,000		X	
Project-wide	Use 12" Gravel Beneath Invert Slab	$ 3,000,000			
Project-wide	Utilize Soldier Piling, Lagging and Cast-in-Place Concrete at Slurry Wall Infill Panels	TBD		X	
Project-wide	Delete Grouting of Invert Slab Connectors	TBD		X	
Project-wide	Change Handrail to Epoxy Painted Galvanized - Use Modular Type	$ 1,000,000		X	
Project-wide	Delete Base Slab Haunches	$ 500,000		X	
Project-wide	Reduce Use of Reinjectable Hose	$ 2,000,000	X		
Project-wide	Eliminate Irrigation and Trees from Development Parcels	$ 175,000	X		
Project-wide	Simplify LUS by Eliminating Pixel Failure Monitoring	$ 350,000		X	
Project-wide	Change Galvanized Steel, Ductile Iron or PVC Drainage to Fiberglass for Permanent Viaducts and Bridges	$ 500,000		X	

Cost Containment Program

Approved Items

Contract	Item	Estimated Savings	Reduced Scope	Tech. or Work Approach Change	Assign to Others
Project-wide	Change Electrical and IPCS Conduit to Fiber Re inforcement Epoxy on Viaducts and Bridges	$ 2,000,000		X	
Project-wide	Vacate South Station	$ 2,000,000		X	
Project-wide	Revisions to Materials Manual	$ 700,000 (2 Yrs)		X	
	a. Reduce Frequency of Testing Concrete Batch Plant Aggregates from Monthly to Every Three Month				
	b. Substitute Frequent Testing of Bituminous Concrete with Monitoring the Supplier's Testing and Conducting Periodic Assessments during Production				
	c. Reduce Testing of Less-Critical Concrete Place ments from Daily to Random Weekly Testing				

Cost Containment Program

Approved Items

Contract	Item		Estimated Savings	Reduced Scope	Tech or Work Approach Change	Assign to Others
	d.	Change Inspection of Ready-Mix Concrete Trucks from Inspecting all Trucks Every Six Months to Occasional Random Inspections by Field Technicians				
24A2		Maintenance Facility by MTA	$ 9,800,000			X

- end of document provided by Central Artery -

Total savings	Reduced Scope	Tech or work approach change	Assign to Others
$157,098,850	$45,957,550	$75,541,300	$35,600,000

U.S. Department of Transportation

Federal Highway Administration

Memorandum

Attachment 1
(4 pages)

Subject: FHWA Comments to OIG "Draft of Proposed Report, Current Costs and Funding for the Central Artery Project"

Date: October 27, 1999

From: Anthony R. Kane
Executive Director

Reply to Attn. of: HAIM-10

To: Alexis M. Stefani
Assistant Inspector General for Auditing (JA-1)

We have reviewed the "Draft of Proposed Report on the Current Costs and Funding for the Central Artery Project," Project Number 99T3002T003, and offer the following comments for your consideration:

The audit team correctly identified $142 M of additional funding needs from the Project Monthly Management reports for January and February, 1999. This supports the purpose of the Project Monthly Management document which is to serve as an early management indicator tool to identify and manage funding need changes. On major projects with multiple contracts, scope changes, and contract modifications there is constant reallocation of cost and response actions. The net changes of these actions should then be reflected in the annual update of the finance plan.

FHWA continues to maintain that the cost of insurance is chargeable to the project and any potential return at the end of the insurance period is a credit that must appropriately be included when calculating the total cost for the project. In response to an earlier audit we agreed to require annual reviews of the insurance program and make the appropriate adjustments where warranted. The FHWA did approve the 1998 Finance Plan Update recognizing the insurance credit and a total project cost of $10.8 billion. We are presently in the process of reviewing the Owner Controlled Insurance Program liabilities, both short term and long term. We believe each finance plan update should include an update of the estimated balance in the trust at the termination of the liability, which should be included in any total cost calculations. As we continue our periodic review of insurance liabilities, costs and credits, we will share our information with you.

We have three issues with the presentation in the audit report concerning cost increases and cost containment effort:

First the projected percentage (21.2%) for construction cost increases is exaggerated because the straight line projection from past experience doesn't recognize the current

transition in actual construction activity. Past trends dealt with issues such as excavation and utilities, where a larger amount of unknown conditions existed as compared to the types of work remaining. A lower and more favorable incidence of construction cost increases would seem appropriate recognizing the remaining construction activities. Also since the finance plan covers July 1, 1997, through June 30, 1998, using data after that to point out shortcomings in the 1998 plan is not appropriate as a critique on what was or was not included. However, cost and funding changes subsequent to June 30, 1998, are important as the 1999 plan is developed.

Secondly, the report only projected cost increases but is silent about projected cost containment benefits. No corresponding percentages have been included for projected cost containment efforts. Historically, project cost growth has been balanced with corresponding cost reduction through cost containment efforts and this fact should be recognized in the report.

Thirdly, we would like to emphasize that we have partnered constantly with the project staff to insure that cost containment initiatives have not sacrificed quality or service. In fact many of these actions have been service improvements.

The information presented in the graphic on page 13 depicts the pre-award estimate to budget costs. Early on, as the designs for the contracts progressed and better cost estimates were available, it was the practice to adjust the budget amount to the design estimates. This accounts for the consistency in the graph's earlier years. In the later years, as part of the strategic management process to further minimize the project costs, the budget has not been adjusted and instead the budget information has been used as a base line to develop cost reductions to drive cost down. Therefore, scope changes (or moving work from one contract to another) on contracts have not been accounted for in the numbers presented in the later years of the graphic. Because the information presented has different base characteristics, care must be used in interpreting the graph. It should be noted that the aggressive cost containment effort on the project has yielded cost reductions to offset increases resulting from contract awards.

Technical correction: On page 5, Table 1, the Expenditures by Funding Source indicates $5.779 billion as the Federal expenditure; this total should be $5.111 billion. The number reported in the audit included the State Grant Anticipation Notes' (GAN's) loan funds in addition to the Federal funds. This difference of $0.668 billion should be added to the State line. Also, on Page 6, Section A, second paragraph, regarding the repayment of GAN's, we suggest "will be repaid" be changed to "are intended to be repaid." This is because the Federal Government can make no contractual commitment as such until appropriate authorization and apportionments are made.

The following comments are made specific to the recommendations for FHWA to "require" project managers to identify:

1. The specific additional funding or cost reductions to meet the current $142 million shortfall:

We agree.

Funding needs are assessed annually through the update of the finance plan.

2. The additional funding or cost reductions that can be used to offset potential future cost increases.

We agree.

Cost reduction initiatives are developed through hard work and effort by both project staff and our engineers. There is not a list of magical things to do. Each initiative must be studied and evaluated to assure that quality and service is not compromised. These cost containment activities are ongoing and monitored through regular progress meetings and the Project Management Monthly report. We do agree to the general intent of your recommendation that any future cost increases must be offset by additional funding or cost reductions. However, we do not believe it is conducive to good project management or cost containment goals to identify "potential" additional funding and/or "potential" cost reductions that would be available for "potential future cost increases." If you identify such potential funding increases or cost reductions, project personnel might not work as hard to contain costs.

The following comments are made specific to the recommendations for the FHWA administrator:

3. Revise the guidance for reporting financial data to include specific reporting criteria.

As stated in our guidance to the field, issued on August 20, 1998, the purpose of the finance plan, and the annual updates, is to provide detailed estimates of the cost to complete the remaining elements of the project, reasonable assumptions of future increases, and the amount and source of funds needed to finance the project. The finance plan should address financing issues appropriate to each specific project. We do not believe it is desirable to be overly prescriptive as to what specific metrics are used. The necessity for applying innovation and creativity in financing a mega-project is a fact, and the guidance for presenting this information in a formal plan needs to be customized for each project and to allow maximum flexibility. The criteria should focus on the real question of whether funding is available.

4. Require projects to disclose significant changes to the project scope in their annual financial plans by disclosing the total value of all project scope changes, and listing individual scope changes of $1 million or more:

We agree.

The sum of funding modifications resulting from scope or cost changes should be reported in the finance plan to assure proper accounting of the funding need. However, determining the necessity of listing each significant change separately or only those over $1 million should be resolved between the appropriate state and FHWA division office.

5. Institute a pilot program to require that financial plans on the Central Artery and selected other major projects be reviewed by an independent entity, such as the State Auditor or certified public accounting firm, in accordance with the Attestation Standards issued by the American Institute of Certified Public Accountants before the plan is submitted to FHWA.

We do not agree.

FHWA does not see the value in another review of the finance plan by a State auditor or a certified public accountant. These entities are generally involved in reviewing financial reports containing historical data, and we are not sure that AICPA's Attestation Standards relate well to highway project finance plans. Having the finance plan flow through another entity, we believe, would result in no significant benefit and would delay the plan's submission to FHWA.

Massachusetts Turnpike Authority
Central Artery/Tunnel Project

Attachment 2
(7 pages)

October 29, 1999

Kenneth Mead
Inspector General
United States Department of Transportation
Room 9210
400 7th Street, SW
Washington, DC 20590

Dear Mr. Mead:

I cannot allow the factual errors, misstatements and misleading calculations that riddle your office's draft report on the Central Artery/Tunnel Project costs to be foisted on the public as a true picture of the Big Dig.

What is most disturbing is the continued repetition of information that we, along with officials at the Federal Highway Administration, repeatedly have told your office is not correct. Attached you will find the Project staff's detailed response to your draft report. In addition to those comments, I write to address some of the broader, systemic flaws in this draft. While your flawed assumptions and conclusions may make your report "sensational" and, I suppose once again, good fodder for headlines, they render it completely useless as an accurate guide to the Project's cost or as a tool for constructive management.

At the outset, I must note that the 1998 Finance Plan you purport to audit was accepted by FHWA last year. In fact, this type of finance plan has been accepted annually by FHWA since 1996 and reviewed in detail by the General Accounting Office beginning in 1995. Furthermore, the DOT IG staff conducted an in depth project cost review and issued a report as late as April 1998 and, although they reviewed the Finance Plan, they offered no criticism of the plan. Needless to say, it is surprising that you now choose to critique the Project's Finance Plan methodology and the cost/funding assumptions after all other cognizant federal agencies have acknowledged and relied on them for several years.

Your draft report espouses a backward looking management technique that is unworkable and shows a fundamental lack of understanding of how a multi-billion dollar megaproject needs to be managed. For example, you say that the Finance Plan should be akin to a year end financial statement. This means that under your approach to management, some time after the close of a given federal fiscal year, the Project should analyze -- after the fact -- all of its funding needs/ resources and then go out and find more money to fund remaining needs. Simply put, this management approach would make it impossible to manage to our time and budget goals -- and would lead to precisely the type of cost growth that you talk about in your draft report.

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In contrast, the Project manages time and budget issues by relying on cost and schedule information that is tracked on a daily, monthly and yearly basis to identify actual or potential problems so they can be avoided or corrected in real time -- not after the fact as the DOT IG would have us do. Because of your misguided approach to Project management, your staff auditors have decided that our monthly management reports listing areas of potential exposure are an end in themselves and that money must be thrown immediately at each problem by adding to the bottom line. That is not how we do business, nor should it be. We track actual or potential exposures in funding monthly so we can make prudent cuts, program changes or management decisions that will avoid or minimize extra costs, or address any funding needs. We have done this with great success that your report acknowledges in the section detailing the Project's successful cost containment efforts.

As for your specific finding that as of April 30, 1999 -- almost six months ago -- the Project Management Monthly showed a potential exposure of $142M, we agree. But then your draft report goes on to mistakenly assert that this is money that has been permanently lost to the Project from its bottom line. You then make calculations using this incorrect conclusion and further skew the report's findings. Meanwhile, the $142M figure you site as a shortfall has already been covered within the Project budget. Your staff auditors will discover this if they examine subsequent Project Management Monthly reports.

Unfortunately, this misuse of the Project Management Monthly shows a continued failure to understand how large-project cost tracking and containment actually works. We identify needs so we can fix them in real time -- which we did here. We urge you to correct your finding to match reality.

You also make a totally unsupported finding that the Project may face construction cost exposures of $942M. This is another example of your auditors flawed methodology that leads you to inaccurate findings. This finding is made by simply extrapolating, without further analysis, to-go costs based on past trends. As you must know by now, the Project is not a static enterprise. It changes from year to year, as do the factors that drive time and budget. During the first half of the project we faced major challenges inherent in underground construction -- but now excavation is 75 percent complete; 80 percent of slurry walls are poured; construction is nearly 60 percent complete and utility relocation is essentially over.

How, then, can you project budget issues for the next four years based on past cost trends that resulted from the then existing circumstances and type of construction being performed? Those cost battles have, in large part, been fought and won. Yet your staff auditors looked to that old data to provide inflated and unrealistic estimates for future year costs. Again, if the agenda is to pump up numbers and generate headlines, this method may succeed. But as a tool for overseers or managers, it is completely inaccurate and therefore has no value.

Finally, your office persists in a quixotic and futile attack on the insurance credit that will be taken against total Project costs. As we explained to you in our response to your interim audit on the Owner Controlled Insurance Program (OCIP), we completely disagree with your assertion that there was any "unallowable retention and investment of excess federal funds" in the OCIP. You misleadingly imply that FHWA agreed with you -- but FHWA's response to your report clearly and unequivocally took the position that the OCIP was not overfunded. Further, both FHWA and GAO have agreed that the Project may appropriately take a credit against the final cost of the Project for insurance funds returned from the OCIP in 2017. Contrary to your assertion, the Project will continue funding the OCIP as needed to meet the Project's potential risk exposures. If the Project is successful in managing the OCIP, we anticipate that there will be a return of funds, as reflected in the Project's prior accepted Finance Plans.

The recent resolution of the premium adjustment issue changes neither the Project's OCIP funding plans to meet its risk exposures nor the Project's goal to aggressively manage the insurance program to maximize the insurance return. Therefore, you have no basis whatsoever to try to artificially inflate the final cost of the Project by unilaterally deciding not to count the insurance credit that both FHWA and GAO have accepted.

I hope as the Project continues to move toward successful completion your office will use its time and resources to ends that will have a value for the taxpayer, the Project and the stakeholders of this very important venture. We need constructive, sound criticism that will help us manage the work carefully. Unfortunately, the dated and inaccurate review you have produced does not fall into that category.

Sincerely,

MASSACHUSETTS TURNPIKE AUTHORITY

Patrick J. Moynihan
Project Director

1999-2699L

Response to Draft Report on Current Costs and Funding of the Central Artery Project.

A. Audit Assertion: The Project Cost is $11.8B.

DOTIG insists on labeling the cost of the Project as $11.8B. This completely contradicts DOTIG's own 1998 position where it acknowledged the Project funding needs as $11.66B and Project costs as $10.8B (page 4 of Report Number TR-1998-109 dated April 3, 1998). Also, as discussed below, DOTIG continues to misrepresent the appropriateness of the insurance program credit. DOTIG needs to modify its semantics, changing the term "project costs" to "funding needs."

B. Audit Assertion: The insurance program credit should be eliminated.

The Project remains adamant that the insurance credit is a project cost reduction item. The Project intends to fully fund the insurance program because it must protect Project workers and the general public against potential risk exposures. If the insurance program can be aggressively managed to avoid or minimize losses and associated costs, it is reasonable to assume for programmatic budgeting purposes that there will be a return of unused insurance funds at the expiration of the "insurance tail" period of 2017. This credit will offset the final cost of the Project.

Contrary to DOTIG's assertion, FHWA has not agreed to DOTIG's unilateral attempt to do away with the insurance credit. In fact, FHWA, GAO, and DOTIG have evaluated past Finance Plans with the insurance credit taken against the final Project cost. It is obvious that DOTIG wants to discount this insurance credit in a misguided attempt to artificially inflate the costs of the Project by ignoring the magnitude of the risk exposures and the need to fully fund these exposures. It is disappointing that DOTIG seems to be willing to sacrifice the Project's successful insurance program in order to grab headlines. On a final note, even if the Project were to adopt DOTIG's viewpoint on the insurance reserve, DOTIG has not incorporated this cost reduction into its Project funding needs assessment.

C. Audit Assertion: Project Costs are $142M higher.

DOTIG should properly present the purpose of the Project Management Monthly Report. The draft audit report notes that "the Project had a $142 million funding shortfall as of April 30, 1999." This is yesterday's news; it is but a one month snapshot of the Project finances. The PMM process is meant to identify potential changes early so that Project management can proactively manage these types of cost challenges. In fact, the PMM process has worked as designed because this potential funding shortfall has since been resolved. The resolution will be contained in the 1999 Finance Plan, the normal time when such cash flow issues are addressed.

D: Audit Assertion: Future Construction Costs will Rise by $942M.

The Project strongly disagrees with your unsupported assertion that construction costs may rise by $942M. DOTIG's information and logic is faulty, and does not support its conclusion.

Change Orders - Relative to future change order projections, DOTIG has calculated construction cost growth trends using a simple linear projection without any analytical consideration given to the type of work remaining. DOTIG's projections are, echoing its own words, "inherently imprecise."

DOTIG's simplistic extrapolations fail to address whether past trends are indicative of the future. Based on a cursory review of its two-year assessment period, it is readily apparent that DOTIG has severely overstated the applicability of past changes to future construction activity. For some unexplained reason DOTIG has avoided a root cause assessment even though they have received promptly and regularly causal- type information and had ample time to conduct this evaluation.
At least one-half to two thirds of past changes do not apply to future construction activity. The Project's assessment, in contrast to DOTIG's, is based on a root cause analysis and the current status of the Project.

During the DOTIG study period, about 25% of the contract changes originated from differing site conditions. Changes related to unforeseen or differing field conditions (primarily underground) are for the most part in the past. Relocation of existing underground utilities is virtually complete. Slurry wall construction is 80% complete. The Project has reached the final excavated level in most construction zones with overall excavation approaching an 80% complete level. To-go contracts are primarily mechanical and electrical scopes plus a few civil contracts that are geographically isolated and well defined.

Changes originating from design refinement (approximately 15% of total) are also behind us. Currently, overall design is 98 plus percent complete and it is expected that change activity of this type will be significantly less in the future.

Scope related changes during DOTIG's two-year study period (approximately 33%) were a result of detailed pre-construction coordination at contractor interfaces and excavated materials management. Recognizing that over 85% of the construction contracts have been awarded, plus the advanced state of design and excavation, scope related contract changes as a percentage of remaining construction value will be dramatically reduced.

In summary, it appears that DOTIG's math is correct but its analysis is faulty. If DOTIG bothered to incorporate the knowledge gained by a root cause evaluation, the Project is confident that DOTIG would decrease dramatically its assessment of to-go construction costs exposures.

Bid Awards - The reason for the apparent budget variance growth over time for new contract awards should be recognized in DOTIG's report. During the course of completing design, scope elements are modified as part of the evolving design process. It has been the practice of Project management since 1998 to manage construction costs very aggressively. Therefore, even though scope may change during the design process, the Project continues to push costs back towards the budget. Current exposure variances to budget are highlighted in the monthly management report. At the time of bid opening the exact value of the contract scope is known and the budget is then modified to reflect the awarded value.

The recent increase in bids versus budget comparison is attributed to a more aggressive budget management process as opposed to deterioration in the competitiveness of the marketplace. This aggressive cost management practice has resulted in the lowest reasonable bid costs to the taxpayer. DOTIG should make it clear in its report that historically Project cost increases have been successfully offset with cost reductions resulting in an overall balanced budget.

The Project expects the remaining contracts to be bid very aggressively. The majority of the to be awarded contracts are relatively small (less than $25M) and attract a wide range of contractors with several bidders per contract and correspondingly competitive bid values. The remaining three large (greater than $100M) contracts are scheduled for award when the current active large contracts are nearing completion. Thus, major contractors will have the financial resources and stability, as well as available equipment and personnel, to take on additional risk and aggressively bid these large contracts.

Reductions in Costs - DOTIG has performed a macro assessment of potential construction cost increases based on past trends, but has failed to account for corresponding extrapolations of cost reduction trends. DOTIG also fails to recognize Project insurance cost reductions resulting from the Project's exemplary safety experience and aggressive claims management process.

Misrepresenting Costs Allegation- On page 14 the DOTIG accuses the Project of misrepresenting cost values, or "not using descriptive clarity." They are referring to the subject of cost increases to construction contracts (October 1998 Finance Plan page 23 - Key Cost Containment Assumptions). DOTIG's contention is that the value of changes on contracts awarded through 6/30/98 - $92M- excluded changes "initiated by other than the contractor." The Project notes that the referenced footnote (no. 8) on page 23 of the Finance Plan clearly states that this value excludes " scope-related costs."
As discussed with DOTIG on several occasions, the intent of the Key Cost Containment Assumptions Table was NOT to identify the total value of construction changes. It was intended to provide visibility to variances to the Potential Change Allowance (PCA) budgeted target value of 10.7%, which was $92M as of June 1998. The PCA budget does not include nor was it meant to include allowances for scope changes.

E. Audit Assertion: Cost Containment Measures May Compromise Project Quality

DOTIG implies that the cost containment/reduction program is gutting the basic scope of the Project. Cost containment concepts are not approved until reviewed by the management consultant, and approved by the MTA and FHWA. To imply that the Project is compromising quality is not correct and is again an example of DOTIG's headline grabbing. Specific "emotional" examples are provided in the draft report. Our response on specific items is as follows:

Deleting decorative cobblestone paving - it should be made clear in the "Results in Brief" section that a more economical paving with the same use life was included.

Substituting pavement overlays for full-depth paving - this was assessed to be technically proficient in areas where the base material was sound.

Reduce concrete testing frequency - this was accomplished only after the technical assessment of B/PB, MTA and FHWA. The project has underscored the importance of not compromising the quality of the product.

Substituting fiberglass for other materials in viaduct and bridge drains -this practice is consistent with current industry trends.

Substituting non-fireproof color panels for fireproof panels - the real change was replacing a sprayed colored fireproofing with a colored stain in only those areas where fireproofing was not required per code.

Reducing vent building fan horsepower - the needs of the fan were reexamined leading to this reduction.

Eliminating linear heat detector and emergency strobe lights - these items were classified as non-essential because they represented one more level of backup as well as the technology had not been adequately validated.

It should also be noted that DOTIG has selectively ignored many of the more noteworthy cost containment achievements of the cost reduction program that need to be conveyed for proper recognition of the program. These initiatives include:
The Ventilation Building cladding and stacks were replaced with more economical materials, a savings of $2.5M.

Developing more efficient means of constructing particular project elements, in other words refining the construction staging requirements. These evaluations have led to cost savings in the tens of millions of dollars. Elimination of concrete construction joints, alternate demolition methods, and alternate traffic movement concepts are examples of these creative ideas.

Taking advantage of new but proven technology - The use of dome closed circuit TV cameras, which saved millions of dollars, exemplifies this category.

Deleting items where the technology has not been proven - as stated before this was the case with the linear heat detectors; also vehicle to roadside communication technology has not been demonstrated to the satisfaction of the Project.

Reorganizing and integrating various work groups from several companies to form one united dedicated design team for a particular area.

Re-reviewing technical data to confirm that all design conservatism has been removed from the project scope. This resulted in some alterations in lighting levels, PLC changes, etc., saving project wide millions of dollars.

F. Audit Assertion: Finance Plans Should Be More Like Year-End Financial Statements.

DOTIG expresses several opinions on future Finance Plans. A few points need to be addressed in this regard.

First, Finance Plans are exactly that–they are forward looking documents. They are meant to address whether to-go funding supports the to-go needs. A detailed accounting of past changes and past trends is not appropriate because management needs to know about these changes in real time, not a year after they happen. The focus of the Finance Plan needs to be the future, not the past as DOTIG proposes.

Second, DOTIG states that Finance Plans should "include specific reporting criteria (such as budgeted cost of work performed, actual cost of work performed and contract awards versus budget.)." DOTIG may want to impress readers of the report by using technical terms such as "budgeted/actual cost of work performed." But DOTIG apparently does not know that this performance metric is more appropriate to a contractor performing the work than an owner, because the owner is responsible to pay the bid price for the work regardless of whether the contractor's metric is above or below its budget for the particular work.

Moreover, the Project has spent significant time and effort developing effective cost management tools that apply to a mega-project like the Central Artery. These go well beyond the recommendation of DOTIG. These existing control tools provide continual visibility on Project cost status and trends. This information is the basis of our monthly reports, and ultimately is reflected in the semiannual Finance Plans. The existing Project management tools are what DOTIG and several other external oversight groups already depend on to assess the Project status. In fact, other outside oversight groups, such as GAO, who have audited several mega-projects, have stated that they wish the control tools in effect on this Project were in use on all other projects.

Concluding the second point, the Project believes strongly that its control methods are appropriate for proper management of this mega-project. Its financial plan and control system not only provides the information requested by DOTIG, but also is the envy of the industry.

The third point addresses the involvement of additional oversight groups to validate the completeness and accuracy of the Finance Plan. This seems to be a self-serving statement designed to guarantee future involvement by DOTIG in the Project. It is also another example of DOTIG recommending ideas that will increase Project costs. We are concerned that this recommended action would prolong the acceptance of each Finance Plan and bring with it negative cost and schedule consequences of delayed acceptance. By way of example, DOTIG only recently issued its audit report for the 1997 and 1998 Finance Plans. Based on this demonstrated turnaround time, the Project would have to start preparing its year 2001 Finance Plan NOW in order to have it timely approved by the year 2001.

As a fourth point, it should be noted that the first CA/T Finance Plan was developed in 1995-1996, three years before Congress mandated that such a plan be produced for projects in excess of $1B. Subsequent Finance Plans have been evolutionary, following the guidance contained in earlier plans. There have been no ground rules issued by US DOT for the content of such a plan other than the Project should address the to-go cost needs and compare them to to-go available sources. Over the past several years the Project has successfully met that challenge. Lacking such detailed guidance from DOT, it is premature for DOTIG to put its definition on what should be included in the CA/T Finance Plan.

G. DOTIG Needs to Present Consistent Information.

It is alarming that DOTIG uses the wrong semantics when describing various costs. Even though DOTIG has constantly monitored the Project for several years and has received volumes of financial information, it still inaccurately describes the cost of various Project elements. For example, on one page of the report DOTIG quantifies construction costs including force accounts and geotechnical support, but on the next page it quantifies construction costs using only direct construction contract costs. Also, DOTIG constantly misuses the term "budget." In several areas the draft report describes trended costs as budgeted, when in fact these trended costs are the Project's current/potential forecast value which is different at a line item level than the budgeted value. These items should be corrected in the DOTIG report.