
Office of Inspector General

Review of
**INTERSTATE 15 (I-15)
RECONSTRUCTION PROJECT
IN UTAH**

Federal Highway Administration

**Report Number: TR-1999-028
Date Issued: November 24, 1998**





U.S. Department of
Transportation

Office of the Secretary
of Transportation

Office of Inspector General

Memorandum

Subject: ACTION: Report on Review of the
I-15 Reconstruction Project in Utah
Report No. TR-1999-028

Date: November 24, 1998

From: 
Lawrence H. Weinrob
Assistant Inspector General for Auditing

Reply to
Attn of: JA-30

To: Federal Highway Administrator

We are providing this report for your information and use. Your October 15, 1998 comments were considered in preparing this final report. An executive summary of the report follows this memorandum.

In your comments to our draft report, you concurred with our recommendation and agreed to take action to implement the recommendation. We consider the planned action to be responsive to the recommendation. The recommendation is considered resolved subject to the follow-up provisions of Department of Transportation Order 8000.1C.

Utah's Department of Transportation also provided comments of a technical nature. We reviewed those comments and made changes to the final report as we deemed appropriate.

We appreciate the cooperation and assistance provided by your staff during the audit. If I can answer any questions or be of further assistance, please contact me on x61992 or Patricia J. Thompson, Deputy Assistant Inspector General for Surface Transportation, on x60687.

#

Attachment

EXECUTIVE SUMMARY

OIG Mega Project Review of

Interstate 15 Reconstruction Project in Utah

Federal Highway Administration

OBJECTIVES

The objectives of our review of the Interstate 15 (I-15) Reconstruction Project in Utah were to: (1) determine current schedule, cost, and funding status and the reasonableness of related data; and (2) identify whether the project was at risk of not meeting the scheduled completion date; exceeding costs; or not having adequate Federal, state, and local funding.

BACKGROUND

I-15 is a major north-south highway link between the Canadian and southern California borders. The Utah Department of Transportation (UDOT) constructed I-15 through Salt Lake County in the early 1960's, providing six general-purpose traffic lanes, three in each direction.

The I-15 Reconstruction Project was undertaken by UDOT to correct deteriorating road and bridge conditions and provide additional capacity on I-15 around Salt Lake City. (See map at Figure 1.) The I-15 project, when completed in July 2001, will replace six lanes with eight lanes along 16.5 miles of the interstate highway, add High Occupancy Vehicle (HOV) and ramp lanes in each direction, and reconstruct more than 130 bridges. On completion of the Reconstruction Project, I-15 will be able to handle average weekday traffic volume up to 330,000 vehicles, a significant increase from the current 223,000 vehicles and sufficient to meet the expected volume of 287,000 vehicles in 2015. (See Figure 2 for this and other project statistics.)

RESULTS

Utah is Using Design-Build Contracting to Meet Olympics Deadline. Utah initiated planning for the reconstruction of I-15 in 1984 to meet anticipated increased traffic demands. In June 1995, after the U.S. Olympic Organizing Committee announced that Salt Lake City will host the 2002 Winter Olympic

EXECUTIVE SUMMARY

Figure 1.
MAP OF
I-15 RECONSTRUCTION PROJECT
IN UTAH



The I-15 project is shown in dark blue coloring.

Figure 2.

I-15 PROJECT STATISTICS	
Miles of Interstate Highway	16.5 Miles
Lane-Miles	282 Miles ^{a/}
Costs	\$ 1.6 Billion
Costs per Lane-Mile	\$ 5.8 Million/Lane-Mi.
Funding: Federal	\$ 281 Million ^{b/}
State/Local	\$ 1,351 Million
Completion Date	July 2001
Average Weekday Traffic:	
Current	223,000 Vehicles
Capacity upon Completion in 2001	330,000 Vehicles

^{a/} One mile of an X-lane highway = X lane-miles. This 282 lane-mile figure includes the lane-miles associated with high-occupancy-vehicle lanes.

^{b/} This figure includes \$54 million of funds provided under a special provision of TEA-21.

EXECUTIVE SUMMARY

Games, UDOT began exploring alternatives to accelerate the I-15 construction schedule to complete the project before the beginning of the games. UDOT officials estimated that traditional methods for designing and constructing this major highway project would take 8 to 10 years, which would not have been in time for the Olympics. Using the "Design-Build" contracting process, UDOT was able to accelerate the project schedule so that it is expected to be completed in time for the opening of the Olympics in 2002. In February 1996 the state began the Design-Build contracting process and, in April 1997, UDOT awarded a single Design-Build contract to a joint venture company, Wasatch Constructors.

The Design-Build contracting approach differs from traditional "design-bid-build" contracting in that it combines, rather than separates, responsibility for the design and construction phases of a highway project. Under traditional contracting, a project's design is contracted and performed separately from, and prior to, the construction contract. The Transportation Equity Act for the 21st Century (TEA-21), in acknowledging the potential benefits of Design-Build contracting, stated:

The benefits of the design-build approach include greater accountability for quality and costs, less time spent coordinating designer and builder activities, firmer knowledge of project costs, and a reduced burden in administering contracts. Design-build is particularly advantageous for accelerating project delivery.¹

Project Is Ahead of Schedule. UDOT estimates the Design-Build approach will enable the project to be completed in 4.5 years, saving an estimated 3 years of time compared to traditional methods. The incentive award fees of an additional \$50 million to the contractor for, among other things, meeting schedule milestones is also instrumental in the project being completed in a timely manner. The Design-Build contractor is ahead of the contract schedule and is on target to complete the project in July 2001, 3 months before the contract completion date of October 2001, and 7 months before the 2002 Winter Olympics open. As of June 1998, the project was 36 percent complete.

I-15 Project Cost Estimate Is Reasonable. Our analysis of supporting cost documentation shows the I-15 project is estimated to cost \$1.6 billion. This \$1.6 billion estimate does not include interest and fees on the debt incurred to fund

¹ TEA-21 also noted that, despite the potential advantages, Design-Build may not be appropriate for all highway projects.

EXECUTIVE SUMMARY

the project. As of June 30, 1998, UDOT has paid \$574 million (35 percent) of the costs.

Costs are not expected to increase significantly above this estimate, because the majority (about 85 percent) of the project's costs are associated with the Design-Build contract. As of June 30, 1998, UDOT approved 33 change orders for a net increase to the contract of \$1.4 million. If this trend continues, the Design-Build contract would increase by another \$2.8 million, for a total increase of \$4.2 million. This \$4.2 million would represent an increase of less than 0.3 percent of the project's total costs.

As noted in the TEA-21 legislation, there is an expectation that Design-Build contracting establishes greater accountability and firmer knowledge of costs, as well as decreasing the time to complete the project. This translates to an expectation that cost growth using Design-Build will be significantly less than using traditional contracting methods. To date, there has not been sufficient experience on highway projects to demonstrate that these Design-Build cost savings occur and at what frequency. One study that points to these benefits was made by the Florida Department of Transportation. This August 1991 study of 11 highway projects with total costs of \$30.5 million found that Design-Build projects "produced a significant reduction in after-bid changes to the contract" – an average change amount of 4.1 percent in the Design-Build projects compared to an average change of 8.8 percent in non-Design-Build projects. The study likewise found that Design-Build projects were completed in significantly less time – on average, 18 percent less – than non-Design-Build projects.

Special Fund Set Up to Pay for I-15 Project May Have Deficit. For purposes of funding, the Utah state legislature combined the I-15 project with 40 other highway projects and established a special fund, called the Centennial Highway Fund (Centennial Fund), to pay for all 41 projects. The Centennial Fund receives funds through the state's allocations of Federal funds and various other sources of revenue (e.g., state fuel taxes, state bonds, state General funds, and local contributions). These Centennial Fund projects (including the I-15 project) are in addition to Utah's regular highway program, which also uses Federal and state transportation funds to pay project costs.

Prior to enactment of TEA-21, the state decided to fund the majority of the Centennial Fund projects' costs with non-Federal revenue sources. Specifically, for the I-15 project, \$1,351 million (83 percent) of the \$1.6 billion cost is to be funded by state and local sources, while \$281 million (17 percent) is to come from Federal

EXECUTIVE SUMMARY

funds. However, information provided by UDOT disclosed that the Centennial Fund had not identified the funding necessary to cover all the I-15 project costs. Funding risks could result in yearly Centennial Fund shortfalls –assuming all projects within the Centennial Fund are funded – peaking at \$38 million in 2001.

Section 1223 of TEA-21 provides Federal assistance for transportation projects undertaken by cities or states hosting Olympic events. On August 28, 1998, UDOT requested \$174 million of additional Federal funding under this section of TEA-21. If received, this additional \$174 million would cover the Centennial Fund shortfalls that we identified. If, however, the requested funds or part of the requested funds are not received, shortfalls could occur as early as next year. UDOT should resolve these potential shortfalls as quickly as possible so that the timely completion of the I-15 project is not jeopardized. *(Note: On November 17, 1998, OIG confirmed that Utah will receive \$54 million of its request this year. This additional \$54 million is included in the calculations in this report.)*

RECOMMENDATION

We recommend the Federal Highway Administration require UDOT to keep current its finance plan. If all the additional requested Federal funds are not received, UDOT must identify how it intends to resolve the I-15 funding shortfalls identified in this report. We are not making any other recommendations at this time because the state is funding a large percentage of the project and the project is on schedule.

MANAGEMENT POSITION

In its October 15, 1998 response to a draft of this report, FHWA concurred with our recommendation and stated it would request UDOT to prepare an annual finance plan update for the project. UDOT, in a separate response to our draft report, also agreed to prepare annual updates starting immediately following the state legislative session in the first quarter of calendar year 1999. In addition, FHWA and UDOT requested clarifications and made suggestions regarding particular sections in our report. UDOT also specifically requested that we eliminate a discussion of the Legacy Highway Project from the report.

OFFICE OF INSPECTOR GENERAL COMMENTS

OIG considers FHWA's and UDOT's proposed actions responsive to our recommendation. Therefore, the recommendation is resolved subject to the followup provisions of Department of Transportation Order 8000.1C.

EXECUTIVE SUMMARY

OIG made several changes to its draft report to address FHWA's and UDOT's requests for clarifications. However, we did not remove the discussion of the Legacy Highway Project from the report, since construction of that project could affect financing of the I-15 Reconstruction Project.

UTAH I-15 RECONSTRUCTION

TABLE OF CONTENTS

TRANSMITTAL MEMORANDUM

EXECUTIVE SUMMARY

Section

1.	<i>INTRODUCTION</i>	1
	Background	1
	Objectives, Scope, and Methodology	3
2.	<i>COST, FUNDING, AND SCHEDULE STATUS</i>	5
	STATUS SUMMARY	5
	PROJECT COSTS	7
	PROJECT FUNDING	11
	FUNDING POTENTIALLY INSUFFICIENT TO MEET COSTS	14
	SCHEDULE STATUS	16
3.	<i>OIG RECOMMENDATION AND MANAGEMENT POSITION</i>	18

Exhibits

- A. Details of Other State and Local Revenue Sources
- B. Major Contributors to This Report

Appendix

- 1. Federal Highway Administration Response to Draft Report

Section 1

INTRODUCTION

BACKGROUND

Interstate 15 (I-15) was constructed through Salt Lake County in the early 1960's. The I-15 Reconstruction Project will relieve growing congestion and resolve deteriorating road and structure conditions around Salt Lake City. (See map at Figure 1.) The existing I-15 route through Salt Lake County provides six general purpose traffic lanes, three in each direction. I-15 provides a north-south link between the Canadian and southern California borders and is Utah's only continuous major north-south roadway. This interstate highway is also the only highway linking the urban areas of Ogden, Salt Lake City, and Provo.

Reconstruction of I-15 will include the following major components:

- reconstruction of 16.5 miles of the 6-lane interstate highway,
- addition of new lanes, including High Occupancy Vehicle and ramp lanes,
- construction or reconstruction of more than 130 bridge structures, which will provide the added benefit of making them less susceptible to earthquake damage,
- construction of new railroad grade separations, which will provide an added safety benefit by removing three railroad/highway crossings,
- reconstruction of a number of interchanges, including major connections to I-80 and I-215, and
- installation of a state-of-the-art automated traffic management system.

From 1990 to 1994, I-15 experienced a 40-percent increase in vehicle miles traveled, and further increases in traffic demand are projected to occur by 2015. As of March 1997, average weekday traffic volume along the I-15 project corridor ranged up to 223,000 vehicles. On completion of the reconstruction project, I-15 will be able to handle up to an average weekday traffic volume of 330,000 vehicles.

Announcement of 2002 Winter Olympics Accelerated I-15 Project

Utah initiated planning discussions for the I-15 Reconstruction Project in 1984. With the 1995 announcement that Salt Lake City will host the Winter Olympics in 2002, the state legislature accelerated the project to be completed in time for the opening of the games.

Traffic flow during the 2002 Winter Olympics is expected to be quite heavy. Without the reconstruction project, state officials indicated that the anticipated Olympic traffic on top of existing traffic would have created serious traffic problems in the Salt Lake City area.

For purposes of funding, the Utah state legislature combined the I-15 project with 40 other highway projects and established a special fund, called the Centennial Highway Fund (Centennial Fund), to pay for all 41 projects. To finance the Centennial Fund, the state legislature raised state taxes and issued new bonds. Utah also decided to include in the Centennial Fund any additional Federal funding provided under the Transportation Equity Act for the 21st Century (TEA-21) that was in addition to the level of Federal highway funds provided in 1997 under the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA).¹

Design-Build Contracting Method

“Design-Build” is the name given to the contracting method that provides for both design and construction of a project using a single contract. Under the traditional contracting method, a project’s design is contracted and performed separately from, and prior to, the construction contract. With Design-Build, the design and construction phases are combined and are the responsibility of the prime contractor. This allows the project to start sooner – i.e., construction can begin on portions of the project while detailed design items are being finalized – and therefore the project can be completed quicker. Likewise, the contract award process is streamlined and expedited – there is only one round of contract bid and award instead of a separate and sequential design bid/award and then a construction bid/award. The major steps in the Design-Build award process include: 1) request for qualifications, 2) request for proposals, and 3) request for

¹ For its Federal-Aid Highway program, Utah is expected to receive an average of \$135 million of Federal funds under TEA-21 each year from 1998 through 2002 for the category of Federal funds available for Centennial projects (such as Interstate Maintenance and National Highway System funds). Utah’s TEA-21 funding averages about \$43 million per year above the 1997 ISTEA funding level of \$92 million. This average of \$43 million per year is the Federal funding Utah plans to provide to the Centennial Fund projects.

best and final offers. At each step, the field can be narrowed so that the contract is awarded based on “best value” by considering the quality of submitted designs, estimated time to complete the project, and amount of disruption to traffic during construction, as well as the ultimate cost.

Under Design-Build, risks of cost growth are transferred from the contracting agency to the contractor, with the exception of unforeseen circumstances such as unknown hazardous materials. Because design and construction are performed under the same contract, the potential for claims for design errors or construction delays due to re-design items is almost non-existent.

TEA-21 acknowledged the potential benefits of Design-Build contracting and stated:

The benefits of the design-build approach include greater accountability for quality and costs, less time spent coordinating designer and builder activities, firmer knowledge of project costs, and a reduced burden in administering contracts. Design-build is particularly advantageous for accelerating project delivery.

TEA-21 also noted that, despite the potential advantages, Design-Build may not be appropriate for all highway projects.

OBJECTIVES, SCOPE, AND METHODOLOGY

This review of the I-15 Reconstruction project is one of a series of OIG reviews of DOT’s “mega” infrastructure projects. OIG defines mega projects as those projects having potential costs of \$1 billion or more and/or having a high degree of congressional interest. The goal of OIG’s mega project reviews is to develop a baseline set of data points on these projects’ costs, funding sources, and schedules. We plan to conduct these reviews on an on-going basis.

The objectives of our mega projects reviews are, for each project: (1) to determine current cost, funding, and schedule status and the reasonableness of the related cost and schedule data; and (2) to identify potential financial and schedule risks. Further, these reviews are designed to benefit all Operating Administrations within the Department by increasing awareness of specific large-dollar projects and sharing success stories as well as pitfalls to be avoided.

In assessing the current cost, funding, and schedule status of the project, we reviewed and analyzed financial records, engineering estimates, contractual

documents, project management oversight reports, and construction status reports. We also evaluated the reasonableness of cost and schedule data provided through careful analysis of these and other supporting documents and discussions with management, including Federal, state, and local officials. During the review we verified UDOT's obligations to date, i.e., the total of actual contract awards, executed change orders or amendments, and other costs that will result in future expenditures.

We conducted this review from October 1997 through August 1998. Our review covered all project costs incurred and projected through June 1998 unless otherwise indicated. The review was conducted at the UDOT offices and construction sites in Salt Lake City, Utah, and at FHWA offices in Washington, DC, and Salt Lake City, Utah. We conducted this review in accordance with Government Auditing Standards prescribed by the Comptroller General of the United States.

Section 2

COST, FUNDING, AND SCHEDULE STATUS

The table below provides a summary of the I-15 Reconstruction Project's costs, funding, and schedule.

**Figure 3.
SUMMARY OF I-15
COSTS, SCHEDULE, AND FUNDING**

Total Costs at Completion By Funding Source (in millions) a/			Completion Date
Federal	State/Local	Total	
\$281	\$1,351 b/	\$1,632	July 2001

a/ Costs do not include interest and fees on debt.

b/ UDOT had not identified sufficient funding sources to cover these costs.

STATUS SUMMARY

What Will the Project Cost? As the table above shows, the current cost estimate for the I-15 Reconstruction Project is \$1.632 billion. As of June 1998, UDOT had expended \$574 million (35 percent of the total costs). Pre-construction (e.g., preliminary engineering) costs of \$42 million were paid from state General Funds, and the other \$532 million were paid from the Centennial Fund. Based on our review, we found UDOT's cost estimate of \$1.632 billion to be reasonable.

Is Sufficient Funding Identified? We concluded that UDOT had not identified sufficient funding to cover all costs of the Centennial Fund projects, including the I-15 Reconstruction Project. The potential annual funding shortfalls for the Centennial Fund would be \$38 million in 2001 and be \$31 million in state fiscal year¹ (SFY) 2002, the SFY in which the I-15 project is to be completed. UDOT officials stated that I-15 will take priority over all other projects to be built with Centennial funds, which would eliminate the shortfalls.

¹ The Utah state fiscal year is from July 1 through June 30.

A special section of TEA-21 provides Federal assistance for transportation projects undertaken by cities or states hosting Olympic events. On August 28, 1998, UDOT requested \$174 million of additional Federal funding under this section of TEA-21. If received, this additional \$174 million would cover the Centennial Fund shortfalls that we identified. If, however, the requested funds or part of the requested funds are not received, shortfalls could occur. *(Note: On November 17, 1998, OIG confirmed that Utah will receive \$54 million of the requested amount in SFY 1999. We included these additional funds in the calculations in this report.)*

Is the Schedule Realistic? The original schedule of the project required the contractor to be 19 percent complete by June 1998 in order to complete the project by the original October 2001 target date. The Office of Inspector General Engineer concurred with UDOT's June 1998 status report that the project is about 36 percent complete (based on the dollar value of contract work activities completed). This report also indicates that the contractor is on target for completing the project by July 2001. This is 3 months ahead of schedule and 7 months prior to the opening of the Olympics. Page 16 of this report displays the time-lines to complete the project by the target dates.

The contract's \$50 million incentive awards program provides periodic award payments to the contractor for meeting schedule and quality goals. This program includes a final \$5 million payment for completing the project 3 months ahead of schedule (July 15, 2001, instead of October 15, 2001). Because of the incentive awards program and the current timely progress of the contractor, we concluded the contractor's current schedule to meet the target completion date of July 2001 is realistic.

PROJECT COSTS

The following table provides a breakdown of the \$1.6 billion in costs by the major elements of this project, as well as the actual costs to date and the costs remaining.

Figure 4. SUMMARY OF I-15's PROJECT COSTS (in millions)			
Cost Element	Total Expected Costs	Actual Costs	
		As of June 1998	Remaining Costs
Pre-construction	\$ 42	\$ 42	\$ 0
Design-Build Contract	1,333	442	891
Contractor Incentive Fees	50	2 ^{a/}	48
Program Management	58	15	43
Right-of-Way	49	27	22
Improvements to Parallel Streets	39	35	4
Facilities/Utilities	27	3	24
Insurance	22	7	15
Public Information	6	1	5
Automated Traffic Mgmt. System	6	0	6
Totals	\$1,632	\$574	\$1,058

^{a/} An additional \$5.0 million of incentive fees was approved for payment in July 1998.

Our review concluded that these cost estimates are reasonable. The significant costs for the I-15 Reconstruction Project are detailed below.

Design-Build Contract is Most of Project's Costs. The total cost in the Design-Build contract category (\$1,333 million) along with potential Contractor Incentive Fees (\$50 million) totals \$1.4 billion, or about 85 percent of the costs of the entire project. As shown in the following table, the base Design-Build contract was \$1,318 million, but it is currently estimated at \$1,333 million due to the exercise of options² and other contract changes for a net increase of \$15 million.

² One major option was for the \$5.6 million Gateway subproject to revitalize downtown land made vacant by the I-15 project; other options included miscellaneous subcontractor and supplier costs.

Figure 5. UDOT's I-15 Design-Build Contract	
Item	Amount (in millions)
Base Design-Build Contract	\$ 1,318
Options	19
Value Engineering	(5)
Change Orders	1
Total	\$ 1,333

UDOT bases its payments on an estimate of the percent of work completed; however there is a time lag, generally 1 week, between contractor invoicing and payment by UDOT. As of June 1998, UDOT estimated that the contractor had completed about 36 percent of the work. UDOT has paid \$442 million (33 percent) to the contractor, not including incentive fees.

The I-15 Project has a value engineering program that allows the contractor to submit cost saving construction proposals that deviate from the design specifications that were required by UDOT. Any cost savings to the project as a result of value engineering items are shared (50 percent) with the contractor. As of June 1998, two approved value engineering items reduced the Design-Build contract cost by \$5 million. The two value engineering items saved costs by eliminating one ramp and by moving the alignment of a parallel street structure, which eliminated a railroad crossing. Other value engineering items could be proposed and approved that would result in further cost savings.

The I-15 Design-Build contract requires that the contractor be responsible for any construction costs resulting from design errors, a cost typically borne by the state through change orders. Although the Design-Build contract minimizes change orders, it does not eliminate them entirely. As of June 30, 1998, UDOT approved 33 change orders for a net increase to the contract of \$1.4 million. Our analysis indicates that the \$1.4 million represents an insignificant increase in contract costs – less than 0.4 percent of the Design-Build contract costs through June 1998. Further, even if this trend continues, the Design-Build contract would increase by another \$2.8 million, for a total increase of \$4.2 million, or less than 0.3 percent of total project costs.

As noted in the TEA-21 legislation, there is an expectation that Design-Build contracting establishes greater accountability and firmer knowledge of costs, as well as decreasing the time to complete the project. This translates to an expectation that cost growth using Design-Build will be significantly less than using traditional

contracting methods. To date, there has not been sufficient experience on highway projects to demonstrate that these Design-Build cost savings occur and at what frequency. One study that addresses these potential benefits was conducted by the Florida Department of Transportation. This August 1991 study of 11 highway projects with total costs of \$30.5 million found that Design-Build projects “produced a significant reduction in after-bid changes to the contract” – an average change amount of 4.1 percent in the Design-Build projects compared to an average change of 8.8 percent in non-Design-Build projects. The study likewise found that Design-Build projects were completed in significantly less time – on average, 18 percent less – than non-Design-Build projects.

In summary, we found the Design-Build contract costs to be reasonable. However, potential additional costs to UDOT for unforeseen circumstances and items (e.g., clean-up of hazardous materials) are inherent in this type of highway project.

Contractor Incentive Fees. In addition to the basic contract, the contractor is eligible for an additional \$50 million in incentive fees for items such as exceeding milestones and exceeding the construction industry’s quality standards. Through June 1998, the contractor had earned \$7.5 million of these incentive fees for timeliness and quality of work.

Program Management. UDOT has contracted with the firm of Parsons/Brinckerhoff to integrate with the UDOT staff for the purpose of managing the project. Parsons/Brinckerhoff staff are being used to supplement and complement UDOT’s regular staff in those areas needing additional expertise or manpower to oversee this mega project. Of the \$58 million program management cost element, the Parsons/Brinckerhoff contract for program management activities is estimated to cost \$26 million. The remaining \$32 million includes \$30 million for UDOT expenses and about \$2 million in stipends to the losing Design-Build contract bidders to defray the costs of developing their bids.

Right-of-Way. UDOT retained responsibility for the right-of-way acquisitions, instead of including it in the Design-Build contract. UDOT has budgeted \$49 million for right-of-way acquisitions and has spent \$27 million as of June 1998. UDOT estimated that the properties remaining to be acquired have an acquisition value of \$22 million.

Owner-Controlled Insurance Program. An owner-controlled insurance program (OCIP) provides workers' compensation, general liability, and other coverage for both the state and its contractors. An OCIP eliminates contractors' markups on insurance premiums reflected in their bids, and it implements a centrally-managed and closely monitored safety program with incentives for achieving a good safety

record. The Construction Business Review³ recommends that an OCIP be considered for large projects of \$75 million or more. UDOT concluded that it could realize large savings by using an OCIP. UDOT's insurance broker estimated that the OCIP for the I-15 project would cost less than 2 percent of construction costs compared to standard contractor insurance costs which range from 5 to 8 percent of construction costs.

Figure 6.	
Included in the I-15 OCIP	Not Included in the I-15 OCIP
<ul style="list-style-type: none"> • Workers' compensation and employer's liability • General liability • Umbrella/excess liability • Professional liability • Pollution liability • Railroad protective liability • Builders' property insurance 	<ul style="list-style-type: none"> • Workers' compensation for other than project employees • Contractors' equipment • Automobile liability

For OCIP coverage on the I-15 project, UDOT has budgeted \$22 million. These insurance costs could decrease or increase as the project progresses, depending on the project's insurance claims history. If claims are less than expected, costs will go down. These reduced costs are in the form of 1) reduced premium payments and 2) potential rebates of up to 50 percent from the \$8.3 million reserve set up to cover UDOT's deductibles. The reserve is included in the \$22 million OCIP cost figure. The rebate from the reserve would not occur until after completion of the project and payments of claims are finalized. Higher than predicted claim activity would require UDOT to pay increased premiums as well as require UDOT to deplete the reserve account.

The I-15 project's claims history is currently running below UDOT's estimates. UDOT's budget to cover its liability for deductibles and other payments on claims through June 1998 was \$1.9 million. As of June 1998, actual workers' compensation and general liability claims totaled \$826,000 – or 57 percent below UDOT's estimate. If this trend continues, UDOT would receive a rebate from the insurance reserve and may also receive a reduced premium rate from the insurance company. No claims have been filed against the other OCIP coverages for the I-15 project.

³ Volume 7, Number 4; 1997.

PROJECT FUNDING

We concluded that UDOT has not identified sufficient dedicated funding to cover the cost of the I-15 Reconstruction Project. The potential annual funding shortfall for the I-15 project and other Centennial Fund projects would be \$38 million in SFY 2001, before decreasing to a \$31 million shortfall in SFY 2002, the scheduled completion date. To address these shortfalls, Utah's Governor's Office stated that I 15 would take priority over all other projects to be built with Centennial Funds.

In 1996, the state set up the Centennial Fund, a special fund to finance the I-15 project and, initially, 86 other highway projects. In November 1997, the plan was revised to cover 41 projects, including the I-15 project. The Utah legislature decided to finance the Centennial Fund primarily with state and local funds, plus that portion of Federal funds available under TEA-21 that is over the previous amount provided to Utah in the ISTEA legislation.

The Centennial Fund does not separately identify the specific funding sources to cover the I-15 project costs; therefore, we analyzed the entire Centennial Fund through SFY 2002, the year when the I-15 project will be completed and the costs paid. The following chart provides the breakdown of the Centennial Fund's revenues from Federal, state, and local sources through SFY 2002.

Figure 7. CENTENNIAL FUND REVENUE SOURCES 1997 – 2002 (in millions)		
FEDERAL <i>a/</i>		\$ 281
STATE:		
General Fund	\$ 658	
General Obligation Bonds & BANs <i>b/</i>	566	
Special Transportation Funds	330	
Registration Fee	85	
Investment Income	39	
Sales Tax Revenue	12	
State Subtotal		1,690
LOCAL:		
Davis County Contribution	100	
Sandy City Contribution	3	
Local Subtotal		103
TOTAL ALL SOURCES		\$ 2,074

a/ UDOT will draw Federal funds into the Centennial Fund from an available pool consisting of Interstate Maintenance, National Highway System, Surface Transportation Program, and Minimum Guarantee Federal funds.

b/ BANs = Bond Anticipation Notes. This figure is net of debt service costs (\$168 million) and initial principal repayments (\$56 million).

The significant revenue sources for the Centennial Fund and the I-15 Reconstruction Project are discussed below. Exhibit A provides further details and discussion of the other funding sources.

Federal Funding Represents a Small Percent of Total Revenues. The above figures represent the state's latest estimate of Federal funding. The Federal funding represents about 14 percent of all funding sources, because the state decided to fund the Centennial Fund projects with state/local revenues and to fund it outside its normal Federal-aid highway program. (This Federal funding is to be used for the I-15 project and represents 17 percent of the I-15 total costs.) The state intends to draw those Federal funds under TEA-21 that are above the state's 1997 ISTEA funding level for similar highway projects.⁴

We concluded that the \$281 million Federal funding level shown above includes appropriate and reasonable estimates of Federal funding under the recently enacted TEA-21. Further, we noted that TEA-21 includes a special provision that could make additional Federal funding available to support the Olympics in Salt Lake City and, therefore, the I-15 project. This provision (under section 1223) of TEA-21 made specific accommodation for the Olympic cities, such as Salt Lake City. Section 1223 of TEA-21 states:

The Secretary [of Transportation] may provide assistance, including planning, capital, and operating assistance, to States and local governments in carrying out transportation projects relating to an international quadrennial Olympic or Paralympic event or a Special Olympics International event.

Moreover, TEA-21 placed no limit on the amount of money authorized for assistance to the Olympic cities for Federal FYs 1998 through 2003.

On August 28, 1998, UDOT requested an additional \$174 million of Federal funding for the I-15 project under Section 1223 of TEA-21. (*Note: On November 17, 1998, OIG confirmed that Utah will receive \$54 million of this request in SFY 1999. We included these additional funds in the calculations in this report.*)

State Bonds and BANs. The Centennial Fund includes \$790 million in funds from the sale of general obligation bonds. As of June 1998, \$340 million in these bonds had been issued. In addition, the state issued \$500 million of Bond Anticipation Notes (BANs), which will be retired by 2002 as the remainder of the general

⁴ TEA-21 funding averages about \$43 million per year above the corresponding 1997 ISTEA funding level. This average of \$43 million per year is the Federal funding Utah is to provide to the Centennial Fund.

obligation bonds are issued and other revenues are received. Total debt service costs (interest and fees) for the general obligation bonds and BANs through 2002 are estimated to be \$168 million. The Centennial Fund includes interest and principal repayments for the bonds and BANs issued to finance the 41 Centennial Fund projects. (The “Revenues – State: General Obligation Bonds and BANs” figure of \$566 million in the table on page 11 is the net revenue after deducting debt service costs and initial principal repayments.) UDOT does not pro-rate the debt service costs to the individual Centennial Fund projects; therefore, the I-15 project’s total cost of \$1.6 billion does not include any debt service costs.

State Special Transportation Funds. The state estimates it will provide the Centennial Fund with \$330 million from various special fuel taxes (\$293 million) as well as UDOT departmental contributions (\$37 million) through SFY 2002. The state assumed that fuel consumption will increase 3 percent annually as its basis for the fuel tax estimate. Our analysis of the state’s assumption concluded the 3-percent annual increase to be reasonable, as the previous 3 years’ growth has been at an annual rate of 4.2 percent. The \$37 million contribution represents transfers from other UDOT accounts to cover salary expenditures and other support costs for UDOT personnel working on the Centennial Fund projects. This figure includes a \$7 million rebate UDOT received in SFY 1998 from another state office.

Local Funding from Davis County Is Doubtful. One of the Centennial Fund projects is a 14-mile segment of the planned Legacy Highway (a 100-mile new highway near the Great Salt Lake). The 14-mile segment of the Legacy Highway through Davis County, estimated to cost \$260 million, is to be initiated while I-15 is under reconstruction. Davis County was expected to provide a total of \$130 million to the Centennial Fund (\$100 million through SFY 2002) to pay for one-half of the cost of this segment. However, Davis County’s contribution has a high-degree of risk of not materializing or not materializing on time.

The Davis County funding originally was based on the highway being a toll road, but the state and the county subsequently decided that the highway will not be a toll road. Further, the project may be delayed because of a disagreement between state legislators and the U.S. Army Corps of Engineers regarding which of three proposed routes the new highway should take. The disagreement stems from unresolved environmental concerns.

State officials told us that construction of this segment of the Legacy Highway will be delayed until a funding source (state or local) is identified to replace the \$130 million. We note that postponement of this construction will reduce Centennial Fund costs of \$219 million (of the \$260 million total cost) which will not be incurred for the Legacy Highway between SFYs 2000 and 2002. The net effect

of the delay of the Legacy Highway work is that the Centennial Fund will have about \$119 million more – the reduced costs (savings) of \$219 million minus the reduced revenues of \$100 million – to fund the I-15 project or other Centennial Fund projects between SFYs 2000 and 2002.

**FUNDING POTENTIALLY
INSUFFICIENT TO MEET COSTS**

As shown in the chart on page 11, the legislature anticipated a \$1,690 million state funding level and a \$103 million local funding level for the Centennial Fund through SFY 2002 when the I-15 project is to be completed. The Utah Governor’s Office on Planning and Budget told us that the I-15 project would be made a priority, and that Utah would delay other transportation projects (and non-transportation projects if necessary) to ensure timely completion of the I-15 project.

As the following chart shows, the Centennial Fund, and therefore potentially the I-15 project, is currently projecting an overall deficit of about \$31 million at the end of SFY 2002.

Figure 8. CENTENNIAL FUND COSTS AND REVENUES For 6-year period, SFYs 1997 – 2002 (in millions)		
(Figures as of June 1998)		
REVENUES:		
Federal	\$ 281	
State	1,690	
Local	103	
Total Revenues		\$ 2,074
COSTS:		
I-15 Project (excludes pre-construction costs)	\$1,590	
40 Other Projects	515	
Total Costs		\$ 2,105
SHORTFALL (Revenues minus Costs)		(\$ 31)

Yearly Analysis Shows Deficit Starting in 2000. Detailed UDOT yearly revenue and cost data shows that, based on current planned projects, the Centennial Fund will have shortfalls in SFYs 2001 and 2002. The state has not identified sufficient funding for the Centennial Fund to cover all Centennial Highway Program projects that may be initiated during the I-15 construction period. Current

estimates indicate the Centennial Fund shortfalls would be \$38 million in SFY 2001 and be \$31 million in SFY 2002 at the completion of the I-15 Reconstruction Project. The following table depicts the yearly Centennial Fund balances under current project plans and revenue estimates.

Figure 9. CENTENNIAL FUND BALANCES FOR CURRENTLY PLANNED PROJECTS Through SFY 2002 (in millions)							
	1997	1998	1999	2000	2001	2002	Totals
Beginning Balance	\$ 0	\$ 45	\$519	\$153	\$7	(\$38)	--
Plus: Revenues	111	1,047	221	239	232	224	\$2,074
Less: Costs							
I-15	49	511	504	306	172	48	1,590
Legacy Segment	2	9	27	57	65	97	257
Bangerter Extn.	15	50	13	0	0	0	78
38 Other Projs.	0	3	43	22	40	72	180
Cost Subtotal	66	573	587	385	277	217	2,105
Ending Balance	\$ 45	\$ 519	\$153	\$7	(\$38)	(\$31)	--

As the table indicates, the three largest Centennial Fund projects – I-15 Reconstruction (\$1,590 million), Legacy Highway segment (\$257 million), and Bangerter Highway extension (\$78 million) – would be under construction during this 6-year period. We note that the other 38 Centennial Fund projects have relatively low costs, averaging less than \$5 million per project.

UDOT prepares yearly revenue and cost data, which indicate that the Centennial Fund will have shortfalls in SFYs 2001 and 2002. However, UDOT has not developed contingency plans or analyses which show alternative approaches to addressing the shortfalls. The Governor’s Office told us that, while no formal contingency plan exists, the I-15 project would be made a priority over all other Centennial Fund projects if the state legislature did not take action before SFY 2001 to close the funding gaps.

We agree that postponing \$38 million of costs of other Centennial Fund projects in SFYs 1999 through 2001 would eliminate the shortfalls. In addition, we recognize that the state does have other sources of revenue to cover the shortfalls, e.g., the special provision for Olympic cities in the recently enacted TEA-21 could be used to obtain additional Federal funding. If UDOT receives all of the requested \$174 million in additional Federal funds, the Centennial Fund would not experience any of the above shortfalls. However, if the requested funds or part of the requested

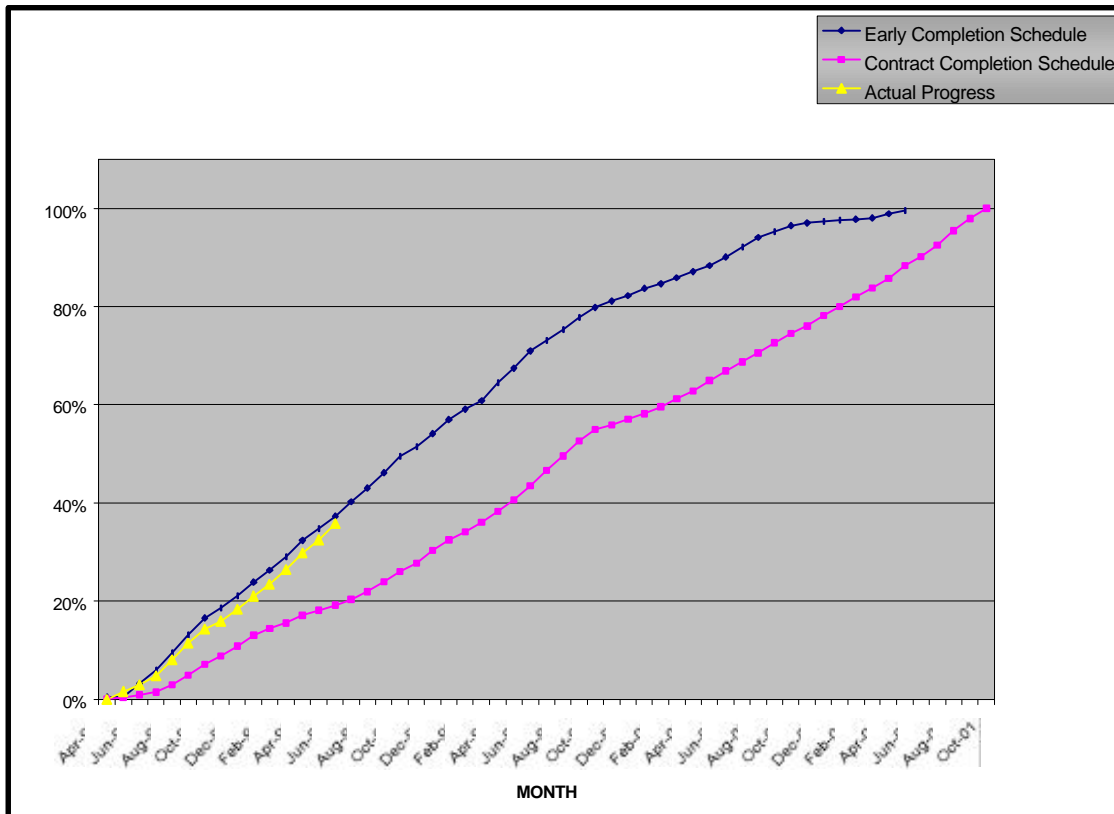
funds are not received, shortfalls could occur. (Note: On November 17, 1998, OIG confirmed that Utah will receive \$54 million of this request in SFY 1999.) UDOT should resolve all potential shortfalls as quickly as possible so that the timely completion of the I-15 project is not jeopardized.

SCHEDULE STATUS

Our review of project status documents indicates the contractor is on target to complete the project by July 2001, 3 months ahead of schedule. While the actual contract schedule calls for a completion date of October 2001, the contractor has committed to complete the project 3 months ahead of schedule in return for a \$5 million award fee payment (part of the \$50 million in incentive fees). Completion by July 2001 will be 7 months before the 2002 Winter Olympics open.

The following chart shows the original planned schedule to meet the October 2001 date (“Contract Completion Schedule”), the accelerated schedule for the July 2001 date (“Early Completion Schedule”), and the contractor’s actual progress.

Figure 10.
I-15 Reconstruction Project
Comparison of Construction Schedules



The Office of Inspector General Engineer concurred with UDOT's June 1998 status report that the project is about 36 percent complete (based on the dollar value of contract work activities completed). For comparison, the original milestone called for about 19 percent of the project to be completed by June 1998. The contract's built-in incentive awards program has induced the contractor to focus attention on schedule timeliness and quality of the work. As of June 1998, the contractor has earned \$7.5 million in incentive award fees.

The construction of the I-15 project is divided into four segments or activities – construction along the Cottonwood, or southern, part; construction along the Jordan, or central, part; construction along the Downtown, or northern, part (including the main interchanges for Salt Lake City); and construction of the Automated Traffic Management System. The Automated Traffic Management System includes 310 miles of optical fiber cable and 1,200 traffic monitoring devices. The table below provides the progress of the various segments as of June 1998.

Figure 12. Progress Schedule by Segment				
Segment	Size	Percentage Completed As of June 1998		
		Planned	Actual	
Cottonwood	8.2 miles	30%	42%	
Jordan	4.4 miles	22%	27%	
Downtown	3.6 miles	25%	34%	
Automated Traffic Management System	Includes 310 mi. of optical cable; 1,200 traffic monitors; 130 TV cameras; and 54 variable message signs	54%	45%	

Section 3

**OIG RECOMMENDATION AND
MANAGEMENT POSITION**

Recommendation

We recommend the Federal Highway Administration require UDOT to keep current its finance plan. If all the requested additional Federal funds are not received, UDOT must identify how it intends to resolve the I-15 funding shortfalls identified in this report. We are not making any other recommendations at this time because the state is funding a large percentage of the project and the project is on schedule.

Management Position

In its October 15, 1998 response to a draft of this report, FHWA concurred with our recommendation and stated it would request UDOT to prepare an annual finance plan update for the project. UDOT, in its response to our draft report, also agreed to prepare annual updates starting immediately following the state legislative session during the first quarter of calendar year 1999.

FHWA's and UDOT's responses also requested clarifications and made suggestions regarding particular sections in our report. FHWA stated that Utah is under contract for the reconstruction of I-15, and Utah officials have continuously stated that I-15 will take priority over all other projects to be built with Centennial Funds. FHWA stated that our draft report could be misleading in its discussion of competition between the I-15 project and other Centennial Fund projects, and may not reflect the level of commitment that UDOT has made to the I-15 project. UDOT also specifically requested that we eliminate a discussion of the Legacy Highway Project from the report.

OIG Comments

OIG considers FHWA's and UDOT's proposed actions responsive to our recommendation. Therefore, the recommendation is resolved subject to the followup provisions of Department of Transportation Order 8000.1C.

OIG made several changes to its draft report to address FHWA's and UDOT's requests for clarifications. However, we did not materially change our discussion of the relationship of the I-15 Reconstruction Project to the other 40 Centennial Fund projects. The Centennial Fund is facing funding shortfalls; therefore, the timing of the funding of these other projects will impact the funding of the I-15 project. In addition, we did not remove the discussion of the Legacy Highway Project from the report, since construction of that specific project likewise could affect financing of the I-15 project.

I-15 RECONSTRUCTION PROJECT

**Details of Other
State and Local Revenue Sources**

State - General Fund. In 1997, the state identified a \$110 million surplus in its General Fund -- \$35 million was a one-time 1997 surplus and \$75 million is a surplus that is expected to continue annually through at least SFY 2002. The recurring surplus is a result of a stronger than expected statewide economy, which in turn will generate greater tax revenues. The legislature already transferred the SFY 1997 General Fund surplus (\$110 million) into the Centennial Fund. In addition to the recurring \$75 million surplus, the legislature has indicated it will provide at least another \$25 million annually to the Centennial Fund. In total, the state is to provide \$658 million from the General Fund to the Centennial Fund for SFYs 1997 through 2002.

State - Registration Fee Increases. To raise additional funds for the Centennial Fund, the state increased the registration fee for vehicles weighing 12,000 pounds or less by \$10 per vehicle and applied a 10 percent increase to registrations for vehicles weighing more than 12,000 pounds. The state expects to allocate more than \$16 million per year to the Centennial Fund from these increases.

State - Investment Income. The Centennial Fund includes investment income earned on unused cash balances each fiscal year. Using a 4.5 percent rate, UDOT estimated it would earn \$39 million through SFY 2002.

State - Sales Tax Increase. State law requires the state and local communities to each contribute a 1/64-cent sales tax, starting in the year 2000, toward the 2002 Winter Olympics. The legislature voted to direct the state's 1/64-cent contribution toward the Centennial Fund. This contribution will provide \$12 million between SFYs 2000 and 2002 for the Centennial Fund.

Local - Sandy City. Through 2002 Sandy City will reimburse UDOT \$3 million for the 10000 South Overpass that was not included in the original scope of the project.

I-15 RECONSTRUCTION PROJECT

Major Contributors to this Report

The following is a list of the major contributors to the Mega Review of the I-15 Reconstruction Project.

Glenn Griser
Dan Schultz
Al Larpenteur
Gregg Bond
Gloria Echols

Program Director
Project Manager
Lead Auditor
Auditor
Auditor



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

Memorandum

Subject: INFORMATION: FHWA Response to
OIG Draft Report on Review of the I-15
Reconstruction Project in Utah

Date: October 15, 1998

From: Associate Administrator for
Administration

Reply to
Attn. of: HMS-14

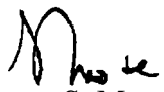
To: Mr. Lawrence H. Weintrob
Assistant Inspector General for Auditing (JA-1)

The FHWA has reviewed the draft report and offers the following comments.

We believe OIG should clarify the interrelationship between the I-15 reconstruction project and the other Centennial Fund projects. The state is under contract for the reconstruction of I-15. From the outset, Utah officials have stated continuously that I-15 will take priority over all other projects to be built with Centennial Funds. Discussion in the draft report about the I-15 reconstruction project competing with other Centennial Fund projects could be misleading and not reflect the level of commitment the Utah Department of Transportation (UDOT) has made to this project.

The draft report recommends that FHWA require UDOT to keep current its finance plan, and if the requested additional discretionary funds are not received, for UDOT to identify how it intends to resolve the I-15 funding shortfalls identified in the draft report. FHWA concurs in this recommendation and has requested UDOT to prepare an annual finance plan update for the project. The UDOT has agreed to prepare annual updates. So timely, accurate information may be included, the updates will be prepared immediately following the State's legislative session during the first quarter of the calendar year.

We appreciate the opportunity to comment on this draft report. If you have any questions, please contact Kathy Ray, FHWA Audit Liaison, at 366-9380.


George S. Moore, Jr.