
Office of Inspector General
Audit Report

Review of the

**CYPRESS FREEWAY PROJECT
OAKLAND, CALIFORNIA**

Federal Highway Administration

**Report Number: TR-1998-212
Date Issued: September 30, 1998**



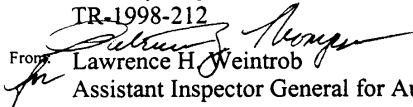


Memorandum

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

Subject: ACTION: Report on Review of the Cypress
Freeway Project, Oakland, California
TR-1998-212

Date: September 30, 1998

From: 
Lawrence H. Weintrob
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. We considered two technical clarifications FHWA informally provided to our September 10, 1998, draft report in preparing this final report. An executive summary of the report follows this memorandum.

In comments provided by FHWA's Office of Information and Management Services that reflected the agency's official position, FHWA concurred with our recommendation and the information presented in the report. Therefore, the recommendation is considered resolved subject to the followup provisions of Department of Transportation Order 8000.1C. We would appreciate receiving the specific action taken or planned and the target date for the action within 30 calendar days of the date of this final report.

We appreciate the cooperation and assistance provided by your staff during the review. 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.

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Attachment

EXECUTIVE SUMMARY

United States Department of Transportation, Office of Inspector General

Review of the

CYPRESS FREEWAY PROJECT

OAKLAND, CALIFORNIA

Report Number: TR-1998-212

September 30, 1998

Objectives

The objectives of the review were to: (1) determine current funding, cost, and schedule status and the reasonableness of related data for the Cypress Freeway construction project and (2) identify any segments of the project that are at risk for not having adequate federal and state funding, exceeding costs, or not meeting scheduled completion dates.

Background

The scope of our review was a freeway construction project replacing the Cypress Viaduct portion of Interstate 880 (I-880) in Oakland, California, which was destroyed by the Loma Prieta earthquake on October 17, 1989. Commonly referred to as the Cypress Freeway, the construction project is 5.2-miles long and estimated to cost slightly more than \$1 billion. The replacement freeway will reconnect San Jose and the East Bay area to I-80 at the San Francisco-Oakland Bay Bridge and in the City of Emeryville. The map on page v shows the construction project and its relationship to I-80.

Design and construction of the replacement project was the responsibility of the California Department of Transportation (Caltrans). Caltrans, in response to Federal and state environmental laws and community and economic concerns of the City of Oakland, selected a new route for the Cypress Freeway that eliminated the adverse impacts the Cypress Viaduct had on the City of Oakland and improved access to military, industrial, and commercial areas.

We collectively refer to the new 2.5-mile I-880 Cypress Freeway and its two connectors, a 1.3-mile Western Connector to the San Francisco-Oakland Bay Bridge and a 1.4-mile Northern Connector in the City of Emeryville, as the Cypress Freeway Project. The Cypress Freeway Project, when completely opened to traffic at the end of September 1998, will restore continuity to I-880 and the regional transportation network. However, the vehicle capacity of the 6-lane replacement freeway and 4-lane connectors will be less than the 8-lane Cypress Viaduct.

In 1989, Congress provided emergency relief funding to repair highways damaged by the Loma Prieta earthquake and hurricane Hugo. California received \$1 billion

for this and, in 1994, received an additional \$315 million from Congress to complete repairs. The Cypress Freeway Project is Caltrans' largest earthquake damaged highway construction project. Caltrans obligated \$967 million of the \$1.315 billion of Federal funds available to the Cypress Freeway Project and California added \$139 million, making \$1.106 billion available for the project. The remaining \$348 million of Federal funds were committed to four other major and numerous minor highway projects to repair highways damaged by the Loma Prieta earthquake. Caltrans used California's Federal/state funding ratio for interstate highways of 91.57 percent Federal and 8.43 percent state to pay for Cypress Freeway project expenses and added approximately \$56 million to cover expenses not eligible for Federal funding.

Caltrans originally proposed that the Cypress Freeway Project, including High Occupancy Vehicle (HOV) lanes, would substantially restore vehicle capacity. However, because of the vast amount of highway damage caused by the earthquake and the need to fund five major and numerous minor earthquake related reconstruction projects, Caltrans eliminated all HOV lanes from the Cypress Freeway Project except for the I-880 HOV lane connecting to westbound I-80 at the San Francisco-Oakland Bay Bridge. Even with reduced vehicle capacity, the Cypress Freeway Project substantially relieves congestion on nearby interstates and city streets. In addition, its new alignment improves access to the Port of Oakland, the Oakland Army Base, and industrial and commercial areas.

Results

Federal and state funding is sufficient to pay for construction of the project. Caltrans estimates the project will cost \$1.047 billion or \$59 million less than available funding of \$1.106 billion. However, we estimate the project may cost as much as \$39 million less than the Caltrans' estimate or \$1.008 billion. Our \$1.008 billion cost estimate includes \$902 million of Federal funds and \$106 million of state funds. Our estimate reduces by \$27 million the amount of contingency funds in the project and by \$12 million the estimated cost for project development and engineering oversight. The amount of excess funds, therefore, could be as much as \$98 million (\$59 million plus \$39 million). The Federal share of these funds, \$65 million, can only be used to repair Loma Prieta earthquake damaged highways. Caltrans intends to apply up to \$51 million of the remaining Federal-aid funds to the Embarcadero Freeway reconstruction project in San Francisco. The remaining \$14 million would be returned to the Highway Trust Fund unless Caltrans identifies other eligible project needs.

In 1991, the California Transportation Commission (CTC) approved a capital budget developed by Caltrans of \$695 million for right-of-way, railroad relocation, and the construction cost portions of the project. In February 1995, the CTC approved an increased capital budget of \$900 million that included unplanned

costs such as additional requirements for seismic strengthening and increased the cost estimates for other items such as relocating or replacing railroad tracks and structures. The \$900 million capital estimate does not include the \$147 million Caltrans estimated for project development and project engineering because CTC approves only capital budgets.

In 1993, Caltrans' estimated that construction of the Cypress Freeway Project would be completed in July 1997. In March 1994, Caltrans revised the completion date to May 1998, primarily due to delays in acquiring rights-of-way and relocating railroad facilities. However, in April 1994, Caltrans' devised a \$24 million accelerated construction plan that enabled it to open the section of the project connecting to the San Francisco-Oakland Bay Bridge by the original July 1997 date, and other freeway segments in April and May 1998. As of August 1998, Caltrans targeted completion of the Freeway Project close to the end of September 1998. With the opening so imminent, we see no reason it should not occur as planned.

Table 1 provides key statistics for the Cypress Freeway Project.

Table 1 Cypress Freeway Project Statistics	
Length	5.2 miles
Lane Miles	42.9 miles
Costs	\$1.008 billion
Costs per Lane-Mile	\$23.5 million
Funding: Federal	\$ 902 million
State/Local	\$ 106 million
Completion Date	End of September 1998
Anticipated Traffic	163,000 vehicles per day

Conclusion

The Cypress Freeway will be completed within the funding amounts contained in a revised budget developed in February 1995, 4 years after the initial budget was developed and 13 months after the start of construction. Most of the remaining Federal-aid emergency relief funds will be applied to the Embarcadero Freeway project in San Francisco where funding needs still exist. There is a possibility that some surplus funds may be returned to the Highway Trust Fund. While the final freeway segment is targeted for completion at the end of September 1998, fourteen months after the original July 1997 completion date, most of the project was opened to traffic earlier.

Recommendation

We recommend FHWA closely monitor the surplus Loma Prieta emergency relief funds to ensure they are used only on eligible projects and that excess Federal funds are returned to the Highway Trust Fund.

Management Position

On September 25, 1998, FHWA's Office of Information and Management Systems provided the agency's official position. FHWA concurred with our recommendation regarding the monitoring of emergency relief funds and the information presented in the report.

Office of Inspector General Comments

FHWA's comments are responsive to our recommendation. We have asked FHWA to provide the specific action taken or planned and the target date for the action within 30 calendar days of the date of this final report.

Location of Cypress Freeway Project in Relation to Cypress Viaduct



Source: Caltrans map modified by OIG

OIG Review of the
CYPRESS FREEWAY PROJECT
OAKLAND, CALIFORNIA

TABLE OF CONTENTS

TRANSMITTAL MEMORANDUM

EXECUTIVE SUMMARY

SECTION

1.	INTRODUCTION.....	1
	Background.....	1
	Objectives, Scope, and Methodology	2
2.	FUNDING, COST, and SCHEDULE.....	4
	Project Funding is Sufficient to Complete Construction	4
	Project Costs Less Than Available Funding	5
	Caltrans’ Construction Plan Enabled Earlier Use Of Freeway Segments	9

EXHIBITS

A.	Prior Audit Coverage	13
B.	Major Contributors to This Report	15

APPENDIX

	FHWA Response to Draft Report.....	16
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INTRODUCTION

BACKGROUND

On October 17, 1989, the Loma Prieta earthquake collapsed portions of the upper deck of the Cypress Viaduct onto the lower deck, killing 42 motorists and injuring 108 others. The collapse closed a 1.5-mile section of I-880 and forced 160,000 vehicles a day onto other heavily-used Oakland area freeways and local streets. The Cypress Viaduct was a critical section of I-880 that connected San Jose and the East Bay area to I-80 at the I-80/I-580/I-880 interchange.

The California Department of Transportation (Caltrans) immediately took action to replace the collapsed freeway. In January 1990, Caltrans began the environmental review process and, in September 1991, after completing the required environmental reviews, selected an alternate freeway route through a railroad corridor on the western edge of West Oakland that reflected community, economic and environmental concerns¹ of the City of Oakland. In January 1992, the Federal Highway Administration (FHWA) issued the Record of Decision that established the new route and freeway design. The new 5.2-mile freeway and connectors are substantially longer than the 1.5-mile Cypress Viaduct it is replacing and improves I-880 freeway service to the Port of Oakland, the Oakland Army Base, and adjacent industrial and commercial activities as well as reconnecting San Jose and the East Bay area to I-80. Most rights-of-way were acquired during 1992 and 1993 allowing construction to start in January 1994.

The 5.2-mile Cypress Freeway Project will consist of 2.5 miles of six-lane freeway from the I-880/I-980 split to West Grand Avenue and two 4-lane connectors when completed at the end of September 1998. One 1.3-mile connector branches west to meet with I-80 at the San Francisco-Oakland Bay Bridge, and a second 1.4-mile connector continues north to meet with I-80 in the City of Emeryville.

The new 6-lane Cypress Freeway will have a lower vehicle capacity than the 8-lane Cypress Viaduct. Caltrans originally proposed to include high occupancy vehicle (HOV) lanes throughout the Cypress Freeway Project as a means to encourage motorists to use carpools and public transportation. This design would have substantially replaced the vehicle capacity of the Cypress Viaduct and was favored by local highway planners.

¹ In designing the replacement freeway, Caltrans had to comply with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). NEPA and CEQA required Caltrans to address community, economic and environmental concerns of the City of Oakland.

However, because the state had five major and numerous minor earthquake damaged highway repair projects to fund, Caltrans eliminated all HOV lanes from the project as a cost saving measure, except for a westbound HOV lane in the connector to the San Francisco-Oakland Bay Bridge. Although there is reduced vehicle capacity, Caltrans anticipates that reconnecting I-880 to I-80 would substantially relieve congested traffic on nearby interstate highways and Oakland's streets, thereby improving regional traffic flow.

In 1989, California received \$1 billion of special Federal-aid emergency-relief funds to repair highways damaged by the Loma Prieta earthquake.² Due to the extent of damage to California's highways, Congress provided the state with an additional \$315 million in February 1994 to repair Loma Prieta earthquake damaged highways.³

OBJECTIVES, SCOPE, AND METHODOLOGY

This review of the Cypress Freeway Project is one in a series of Office of Inspector General (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 objectives of our mega project reviews are, for each project: (1) to determine current funding, cost, and schedule status and the reasonableness of related data for each construction project and, (2) to identify potential financial and schedule risks. Further, these reviews are designed to benefit all DOT Operating Administrations by increasing awareness of specific large-dollar projects and sharing success stories as well as pitfalls to be avoided. The goal of OIG's mega project reviews is to develop a baseline set of data points on these projects' funding sources, costs, and schedules. We plan to conduct these reviews on an on-going basis.

In assessing the current cost, funding, and schedule status of the Cypress Freeway Project, we analyzed financial records, project management construction status reports, Federal-aid funding reports, and environmental impact statements. We also evaluated the reasonableness of the data through careful analysis of the documents and discussions with Federal and state officials, including officials responsible for designing the replacement freeway as well as Caltrans' project manager and resident engineers overseeing construction of the Cypress Freeway Project.

We conducted our review from October 1997 through March 1998, and obtained updated information and discussed project status with program officials through

² Public Law 101-130

³ Public Law 103-221

September 2, 1998. The review was conducted at Caltrans' offices and construction sites in Sacramento and Oakland, California, and at FHWA's offices in San Francisco and Sacramento, California. We conducted this review in accordance with Government Auditing Standards prescribed by the Comptroller General of the United States.

Section 2

FUNDING, COST AND SCHEDULE

Federal and state funding is sufficient to complete construction. Caltrans current project cost estimate is \$1.047 billion or \$59 million less than available funding of \$1.106 billion. However, we determined that Caltrans' estimate includes \$27 million of excess contingency funds⁴ and \$12 million more for project development and oversight than we estimate will be needed. If the \$39 million is not needed, the total project cost would be \$1.008 billion making \$98 million (\$59 million plus \$39 million) available for other projects. Our \$1.008 billion project cost estimate includes \$16 million of contingency funds which we believe will be sufficient to cover pending and any other contractor claims.

The \$65 million Federal share of the potential \$98 million of surplus funds available may be used only to repair Loma Prieta earthquake damaged highways. Caltrans told us the Embarcadero Freeway project in San Francisco is the only earthquake damaged project needing additional Federal funds. The state share of the potential surplus, \$33 million, may be used on any other California transportation project.

In a 1993 planning document, Caltrans' estimated that construction of the Cypress Freeway Project would be completed in July 1997. In March 1994, Caltrans revised the completion date to May 1998, primarily due to delays in acquiring rights-of-way and relocating railroad facilities. As of August 1998, Caltrans targets completion of the freeway for the end of September 1998. While this is 14 months after the original completion date, Caltrans' devised a \$24 million accelerated construction plan enabling it to open the connector to the San Francisco-Oakland Bay Bridge and the southbound lanes⁵ of the freeway by the original July 1997 date. Other freeway segments opened in April and May 1998.

**PROJECT FUNDING IS SUFFICIENT
TO COMPLETE CONSTRUCTION**

In October 1989, California received \$1 billion of Federal-aid emergency-relief funds for highway repairs necessitated as a result of the Loma Prieta earthquake.

⁴ Contingency funds are an estimated sum or a percentage of contract costs set aside to pay for expected but unidentified construction costs, such as differing site conditions, which often occur. Setting aside contingency funds is a common practice on construction projects.

⁵ Completed southbound lanes were modified to temporarily carry two lanes of traffic in each direction while construction continued on the northbound lanes.

Congress subsequently provided California with an additional \$315 million in February 1994 to repair Loma Prieta earthquake-damaged highways.⁶

The California Transportation Commission (CTC) approved the initial capital budget developed by Caltrans for the project in 1991. The budget included \$695 million for right-of-way, railroad relocation, and the construction cost portions of the project. In February 1995, more than a year after beginning construction in January 1994, the CTC approved an increased capital budget of \$900 million. The revised budget included costs not in the 1991 budget, such as additional requirements for seismic strengthening, and increased cost estimates for other items including relocating or replacing railroad tracks and structures. The \$900 million capital budget does not include the \$147 million Caltrans estimated for project development and project engineering because CTC approves only capital budgets.

Caltrans, which is responsible for planning, designing, and overseeing California highway construction projects, obligated available Federal funds for five major and several minor earthquake related highway construction projects. It ultimately decided to obligate \$967 million of the \$1.315 billion of Federal funding to the Cypress Freeway Project, leaving \$348 million available for other earthquake-damaged highways. In addition to the \$967 million of Federal funds applied to the Cypress Freeway Project, the California Transportation Commission provided \$139 million in state funds for total funding of \$1.106 billion.

PROJECT COSTS LESS THAN AVAILABLE FUNDING

As of August 1998, the OIG estimates the cost of the Cypress Freeway Project may be as low as \$1.008 billion or as much as \$39 million below Caltrans' estimate of \$1.047 billion and \$98 million below the available funding level of \$1.106 billion. The potentially available \$98 million includes \$65 million of Federal funds, which would be available for other earthquake damage projects, and \$33 million of state funds.

The OIG's estimate is \$39 million lower than Caltrans' estimate because we reduced by \$27 million, from \$43 million to \$16 million, the amount of contingency funding in the project for right-of-way and construction costs. Our estimate also reduced by \$12 million, from \$147 million to \$135 million, Caltrans' estimate of the funding needed for project development and engineering oversight costs.

⁶ Public Law 103-221.

We calculated our \$1.008 billion cost estimate after discussions with Caltrans' project manager and careful review of construction budgets, estimates, and cost records. We also reviewed project contracting and status reports that showed all major freeway contracts had been awarded and that the project was "functionally" complete except for the northbound lanes of the Northern Connector. Caltrans' project manager agreed that the final project cost might be even less than the Caltrans' cost estimate of \$1.047 billion, but said he needed to be conservative and include adequate reserves in the project for unexpected costs.

OIG's Project Estimate is Less Than Caltrans' Estimate

The OIG's \$1.008 billion estimate for the Cypress Freeway Project is \$39 million lower than Caltrans' estimate. Our estimate incorporates a reduction in the amount of contingency funds held in the project and a reduction in the amount Caltrans has budgeted for project development and project engineering oversight. Table 2 shows Caltrans and OIG cost estimates for major capital cost categories and the amount of contingency funding in the categories.

<p align="center">Table 2 Caltrans and OIG Cost Estimates and Differences in the Amount of Contingency Funds Needed to Complete the Cypress Project (\$ in millions)</p>					
Cost Category	Caltrans Cost Estimate	Contingency Funds in Caltrans' Estimate	OIG Reduction of Contingency Funds	Contingency Funds Remaining in OIG Estimate	OIG Cost Estimate
Right-of-Way Costs	\$ 295	\$ 8	\$ 7	\$ 1	\$ 288
Construction Costs	605	35	20	15	585
Total	\$900	\$43	\$27	\$16	\$873

Caltrans' cost estimate for right-of-way and construction costs includes \$43 million of contingency funding. The OIG's cost estimate reduces the amount of these contingencies to \$16 million: \$7 million from right-of-way costs and \$20 million from construction costs. Caltrans is maintaining the contingency reserves for right-of-way because settlement of all right-of-way acquisition costs, including cleanup of contaminated property, is not yet finalized. However, the Caltrans project manager said there is not a high probability final acquisition costs would substantially increase but he needed to be conservative and retain sufficient funding in the project in case a claim is made.

Caltrans' estimate also includes \$35 million in contingency funds in the construction budget for additional contract work and settlement of pending and potential contractor claims. Based on our discussions with project officials

through August 31, 1998, we determined there are not any large anticipated claims or pending lawsuits which may need substantial funding. Therefore, we reduced the amount of contingency funding in the construction budget by \$20 million, leaving \$15 million in contingencies for construction costs. In our opinion \$16 million should be sufficient to cover any additional work and claims.

The OIG estimate includes a reduction of \$12 million from the Caltrans estimate for expected project development and engineering oversight costs. The Caltrans estimated amounts and OIG reductions are shown in Table 3.

Table 3			
Caltrans and OIG Cost Estimates For Project Development and Project Engineering			
(\$ in millions)			
	Caltrans Cost Estimate	OIG Reduction	OIG Cost Estimate
Project Development Expense	\$ 77	\$ 2	\$ 75
Project Engineering Oversight	70	10	60
Total Project Development & Oversight Expenses	\$147	\$12	\$135

Our estimate reduces the amount budgeted for project development and engineering oversight from \$147 million to \$135 million. Through our analysis of potential additional project development work and discussions with the Caltrans project manager, we estimated that Caltrans' \$77 million estimate is high by approximately \$2 million. Our analysis of project engineering cost history and anticipated future expenses also determined that Caltrans' engineering oversight budget of \$70 million was high by approximately \$10 million. Caltrans project manager said his estimates may be high, but he needed to be conservative and include adequate funding in his estimate for additional costs. Based on information available through August 31, 1998, \$135 million should be adequate to cover project development and project engineering oversight costs.

Caltrans' Plans for Using Surplus Funds

OIG estimates there will be a \$98 million surplus upon completion of the Cypress Freeway Project: \$65 million in unspent emergency-relief Federal-aid funds, which can only be used for other Loma Prieta earthquake repairs. The remaining \$33 million is unspent state funds which California may apply to other state transportation projects including non-earthquake related projects. Caltrans' Federal-aid resource manager told us Caltrans plans to apply up to \$51 million of the \$65 million of surplus funds to remedy earthquake damage on the Embarcadero Freeway project in San Francisco. The resource manager told us

any remaining funds would revert to the Highway Trust Fund. Table 4 shows the Federal and state funds made available to the project and the amount of available funds remaining using the OIG total cost estimate.

Table 4			
CYPRESS FREEWAY PROJECT FUNDING			
<i>(Funds in \$ million)</i>	<i>Federal^{a/}</i>	<i>State</i>	<i>Total</i>
<i>Funds Available</i>	<i>\$967</i>	<i>\$139</i>	<i>\$1,106</i>
<i>OIG Estimated Project Cost^{b/}</i>	<i>\$902</i>	<i>\$106</i>	<i>\$1,008</i>
<i>Potential Excess Funds</i>	<i>\$ 65</i>	<i>\$ 33</i>	<i>\$ 98</i>

^{a/} Federal-aid Emergency-relief Funds

^{b/} Figures include \$6 million of costs that were shifted from Federal to state costs because the costs were determined to be ineligible for Federal funding.

Caltrans used the Federal/state funding ratio used for interstate system costs in California of 91.57 percent Federal and 8.43 percent state to pay for Cypress Freeway Project expenses. California provided \$139 million for the project to match Federal funds and cover project costs that did not qualify for Federal funding. We estimate \$106 million of state funds will be used for project costs: \$83 million to match Federal funds and approximately \$23 million to cover expenses not eligible for Federal funding. The remaining \$33 million, primarily the funds set aside for expenses not eligible for Federal funding, but not used, can be used by Caltrans for other transportation projects including non-earthquake repair projects.

Innovative Construction Techniques

Caltrans used new construction materials and techniques in constructing the replacement freeway in order to reduce maintenance costs. For instance, cellular concrete replaced heavier soils under the freeway while polystyrene material lowered the weight of fill material in earthen ramps to reduce settling caused by the weight of roadways and ramps built over soft soils. Caltrans used the cathodic protection technique to reduce rusting, thereby extending the life of steel piles used to support footings of elevated freeway structures.

Caltrans also installed Intelligent Transportation System (ITS) features, including nine video cameras and five message boards, to enhance highway safety. The California Highway Patrol uses the cameras to monitor highway conditions and the message boards to advise motorists of approaching traffic congestion or other

adverse road conditions and to suggest alternative routes. This is part of a major effort of Caltrans to install ITS features throughout the state.

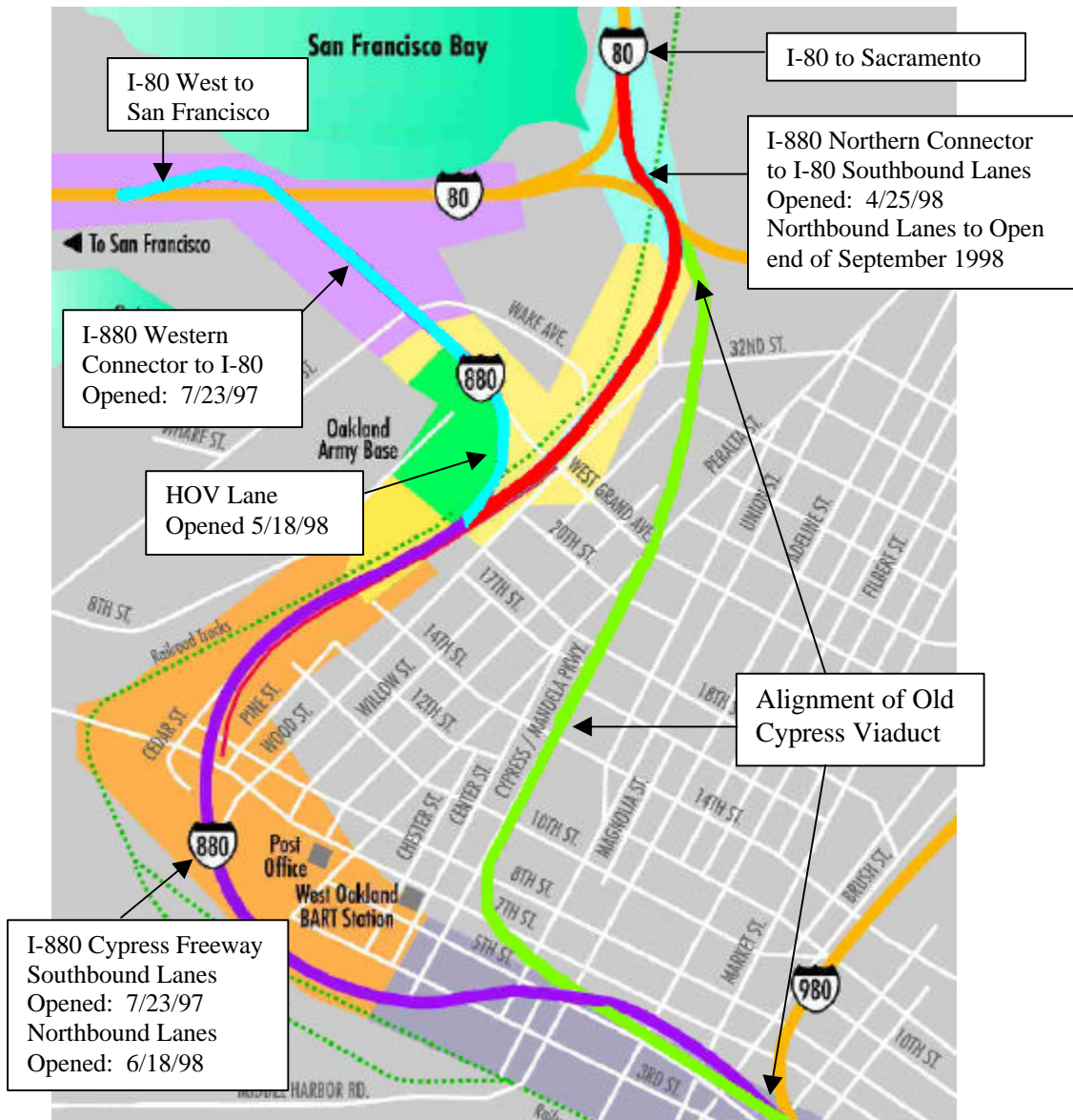
**CALTRANS' CONSTRUCTION PLAN ENABLED EARLIER USE
OF FREEWAY SEGMENTS**

Caltrans' earliest project construction plan, dated January 1993, indicated that construction of the Cypress Freeway Project would be completed in July 1997. In March 1994, the anticipated completion date was pushed back to May 1998, primarily due to delays in acquiring rights-of-way and relocating railroad facilities. Caltrans' devised a \$24 million accelerated construction plan to compensate for the delayed completion. The plan enabled Caltrans to open the section of the project connecting to the San Francisco-Oakland Bay Bridge by the original July 1997 date, and other project segments in April and May 1998. As of August 1998, Caltrans targeted completion of the remaining sections of the project for the end of September 1998, two months ahead of its November 1998 scheduled completion date but 14 months after the original July 1997 completion date. Table 5 and the map on page 10 provides completion dates for various segments of the Cypress Freeway Project.

Table 5. CYPRESS FREEWAY PROJECT SEGMENTS AND DATES OPENED TO TRAFFIC			
Freeway Segment	Length (Miles)	Lane Miles ^{a/}	Opened to Freeway Traffic
I-880 Cypress Freeway between I-980 and West Grand Ave.	2.5	23.8	Southbound lanes opened July 23, 1997 Northbound lanes opened June 18, 1998
I-880 Western Connector to I-80 at Bay Bridge and HOV Lane	1.3	11.7	July 23, 1997 May 18, 1998
I-880 Northern Connector to I-80 in Emeryville Southbound lanes Northbound lanes	1.4	7.4	April 25, 1998 End of September 1998
Cypress Freeway Project	5.2	42.9	Scheduled Freeway Completion end of September 1998

^{a/} Mileage in this column includes lane miles, frontage road miles, and ramps.

Status of the Cypress Freeway Project



Caltrans justified a \$24 million accelerated construction plan in 1994 for the 1.3-mile Western Connector to the San Francisco-Oakland Bay Bridge by citing a 1990 economic study by the Bay Area Economic Forum and the Metropolitan Transportation Commission. The study assessed the economic impact of the lost freeway connection between the I-880/I-980 interchange, I-80, and the Bay Bridge. The study projected a \$2.5 million per month increase in travel time and vehicle operating expenses for the next 25 years.⁷ Caltrans reasoned that if the accelerated construction plans reduced construction by 10 months, from May 1998 to July 1997, the public would save \$25 million in travel time and vehicle

⁷ The Metropolitan Transportation Commission projected a \$759 million increase in travel time and vehicle operating expenses over a 25-year period. Caltrans computed a monthly average of \$2.5 million.

operating expenses and thereby justify the cost of the plan. The projected savings was not realized, however, due to construction problems with the I-880 HOV lane.

HOV Lanes' Schedule Impacts Projected Economic Savings

Completion of the HOV lane included in the project was delayed because of a sagging 225-foot span that carries I-880 HOV traffic over six lanes of I-80 eastbound traffic. Caltrans' engineers and the design contractor worked for 10 months to develop a computer model capable of determining the cause of the problem and another 2 months to develop a revised construction plan to correct it. It then took the construction contractor four months to complete construction of the HOV lane.

Although the accelerated construction plan enabled the Western Connector to the Bay Bridge to open to traffic in July 1997, Caltrans acknowledges that failure to complete the HOV lane to the Bay Bridge toll plaza resulted in significant congestion during the morning commute. Caltrans estimates that 20 percent of the projected monthly economic savings were lost because the HOV lane did not open to traffic until May 1998, 10 months after Caltrans opened the Western Connector.

Problems in Completing the Northern Connector

Completion of the Northern Connector of the Cypress Freeway Project was originally planned for March 1997, but was pushed back to November 1998, because of delayed right-of-way acquisition and construction conflicts with the I-80 HOV flyover project. The northbound lanes of the connector extend over the I-80/I-580/I-880 Interchange and connect with eastbound I-80 in the freeway median. The I-80 HOV work, which began in 1992, included an elevated structure to carry westbound I-80 HOV traffic to the Bay Bridge Toll Plaza. To provide room in the median for the both this structure and the I-880 connection, Caltrans had to shift the I-80 eastbound lanes to the east, requiring additional rights-of-way that Caltrans anticipated it could acquire by December 1993. However, due to lengthy negotiations the right-of-way was not available to Caltrans until January 1996.

The 25-month delay in acquiring the needed right-of-way had a ripple effect in Caltrans' construction plan to complete the Cypress Freeway Project. To avoid contractors working on two projects in the same place, Caltrans chose to construct the HOV flyover first, thereby relieving congestion during the I-80 westbound morning commute. The delay in starting work on the I-880 connector pushed back Caltrans' anticipated completion date for the Northern Connector, as well as the entire project, to November 1998. However, construction of the I-880 connector

to I-80 is slightly ahead of the revised November schedule. The entire project is expected to be completed at the end of September 1998.

Recommendation

We recommend FHWA closely monitor the surplus Loma Prieta emergency relief funds to ensure they are used only on eligible projects and that excess Federal funds are returned to the Highway Trust Fund.

Management Position

On September 25, 1998, FHWA's Office of Information and Management Systems provided the agency's official position. FHWA concurred with our recommendation regarding the monitoring of emergency relief funds and the information presented in the report.

Office of Inspector General Comments

FHWA's comments are responsive to our recommendation. We have asked FHWA to provide the specific action taken or planned and the target date for the action within 30 calendar days of the date of this final report.

PRIOR AUDIT COVERAGE

The OIG is reviewing the cost, funding, and schedule of other "mega" infrastructure projects. Mega projects are defined as projects having potential costs of \$1 billion or more and/or having a high degree of congressional interest. In April 1998, OIG issued a report concerning our review of the Central Artery/Ted Williams Tunnel Project in Boston [Report No. TR-1998-109]. In June 1998, we issued a report on the Los Angeles Metro Rail Red Line [Report No. TR-1998-111]. Other mega projects under review are the Federal Highway Administration's Interstate 15 Reconstruction Project in Salt Lake City, Utah; and the Appalachian Development Highway System's Corridor H in West Virginia; the Federal Transit Administration's Completion of the Metrorail System in Washington, DC; and the National Railroad Passenger Corporation's (AMTRAK) Northeast Corridor Improvement Project.

OIG issued a report on the Emergency Relief Program, Federal Highway Administration [Report No. RO-FH-7-009] on August 26, 1997. OIG reported FHWA properly pursued and received credits from insurers and responsible third parties when Federal aid was used to pay for repairs to damaged highway facilities. However, FHWA needed to improve program guidance and adherence to existing regulations. The audit found 10 projects included betterments recommended through the environmental review process that were not economically justified. The audit also found FHWA did not fully comply with its existing guidance for 27 projects when they (1) exceeded the Federal share payable (for 19 projects), (2) duplicated assistance available under other Federal programs (five projects), (3) did not prepare economic justification (two projects), and (4) did not withdraw funds from one project that was not proceeding timely.

OIG also issued a report on Acquisition of Contaminated Property, Federal Highway Administration [Report No. R6-FH-002] on October 21, 1996. The report indicated that FHWA did not always ensure that states acquired contaminated property in accordance with Federal guidelines. OIG recommended that FHWA seek recovery of Federal-aid funds that states used for cleanup of contaminated property when the fair-market value of the property was not adjusted to reflect the impact of contamination or the estimated cleanup cost. The FHWA's California Division and Caltrans have been working to resolve the issue of 13 contaminated parcels Caltrans acquired for the Cypress Freeway Project. Caltrans identified about \$1.8 million applied to cleanup costs that it proposes to credit to previously claimed Federal-aid.

The General Accounting Office (GAO) issued EMERGENCY-RELIEF: Status of the Replacement of the Cypress Viaduct [Report No. RCED-96-136] on May 6, 1996. GAO reported that Caltrans had completed about one-third of the project and expected the entire project to be completed in 1998. The GAO also revealed that Caltrans did not begin construction until early 1994, because Caltrans had to address public opposition to replacing the Viaduct in its original location, complete an environmental review to select a new alternative, and negotiate to acquire the new right-of-way. The GAO questioned whether FHWA should have allowed Caltrans to use Federal-aid emergency-relief funds for the entire Federal share of the Cypress Freeway Project but did not recommend that FHWA recover the funds.

MAJOR CONTRIBUTORS TO THIS REPORT

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FHWA Response to Draft Report

The following response to the draft report was provided by FHWA via electronic mail.

Auditor's Note: FWHA verbally provided 2 technical clarifications that were made in the final report. (1) Remaining emergency relief funds would be returned to the Highway Trust Fund. The draft report stated the funds would be returned to the United States Treasury. (2) References to I-480 were changed to the Embarcadero Freeway.