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**REPORT TO THE SUBCOMMITTEE  
ON PRIORITIES AND  
ECONOMY IN GOVERNMENT  
JOINT ECONOMIC COMMITTEE**

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**BY THE COMPTROLLER GENERAL  
OF THE UNITED STATES**

UNITED STATES  
GENERAL ACCOUNTING OFFICE



NOV 20 1975

**Increased Cost Of Implementing  
Commuter Ferry System On  
San Francisco Bay**

LIBRARY SYSTEM

**Urban Mass Transportation Administration  
Department Of Transportation**

The Urban Mass Transportation Administration has awarded nearly \$25 million in Federal funds to the Golden Gate Bridge, Highway and Transportation District to assist in developing and implementing a commuter ferry system for the San Francisco Bay. The cost of the system has more than doubled since initial estimates were made in 1970.

The GAO report recommends that the Urban Mass Transportation Administration develop criteria to assist in evaluating the cost-benefit aspects of the alternatives available within individual projects, improve the extent of written justification for management decisions, and insure that maximum competition is obtained for construction contracts awarded by grantees.

RED-76-40

NOV. 11, 1975

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COMPTROLLER GENERAL OF THE UNITED STATES  
WASHINGTON, D.C. 20548

B-169491

The Honorable William Proxmire  
Chairman, Subcommittee on Priorities  
and Economy in Government  
Joint Economic Committee  
Congress of the United States

Dear Mr. Chairman:

This is our report on the use of Federal funds by the Golden Gate Bridge, Highway and Transportation District to construct a commuter ferry system for San Francisco Bay. We made our review pursuant to your request of November 4, 1974.

We obtained and have incorporated the comments of the Department of Transportation and the District in the report.

As agreed with your office, we plan to send copies of the report to the Department of Transportation; the District; the Senate Committees on Appropriations, Government Operations, and Banking, Housing and Urban Affairs; the House Committees on Appropriations, Government Operations, and Public Works and Transportation; other interested Committees and Members of Congress; and State and local officials.

Sincerely yours,

  
Acting Comptroller General  
of the United States

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#### ABBREVIATIONS

BART	Bay Area Rapid Transit
GAO	General Accounting Office
UMTA	Urban Mass Transportation Administration

COMPTROLLER GENERAL'S  
REPORT TO THE SUBCOMMITTEE  
ON PRIORITIES AND ECONOMY  
IN GOVERNMENT  
JOINT ECONOMIC COMMITTEE

INCREASED COST OF IMPLEMENTING  
COMMUTER FERRY SYSTEM ON SAN  
FRANCISCO BAY  
Urban Mass Transportation  
Administration  
Department of Transportation

D I G E S T

The Golden Gate Bridge, Highway and Transportation District, with financial assistance from the Urban Mass Transportation Administration, is developing a commuter ferry system on the San Francisco Bay.

In August 1970 it was estimated the system could be implemented by 1972 at a cost of \$16.4 million, excluding cost of land and a 15-knot vessel then owned by the District. (See p. 5.)

Construction of the ferry terminals has not been completed (see pp. 20, 21, and 23), one 25-knot vessel is undergoing sea trials, and the other two are being temporarily stored. (See p. 14.) The existing 15-knot vessel continues in service. (See p. 22.)

Although the scope has been reduced, the estimated cost of the system has increased to about \$32.8 million, plus about \$2.2 million for land. (See pp. 5, 17, 22, and 23.)

The increased cost is attributed to several factors, including

- poor initial estimates,
- failure to include cost of certain essential elements in the initial estimates,
- significant changes in scope and design of the ferry system, and
- inflation. (See pp. 12, 16, 21, and 23.)

Grant applications for this project were processed before the District obtained sound cost estimates for the ferry terminals. A recent change in Urban Mass Transportation Administration policy will have the effect of requiring refined cost and design data before Federal funds are committed for construction in future projects. (See p. 28.)

Other matters noted demonstrate, in GAO's opinion, the need for improvement in the Urban Mass Transportation Administration's grant approval and administration process.

The award of a construction contract, when both the Urban Mass Transportation Administration and the District knew beforehand that a change order to reduce the scope probably would be executed, may not have resulted in obtaining the most effective competition for the work to be performed. (See p. 31.)

A 25-knot vessel estimated to cost \$2.1 million was selected over several different 20-knot vessels ranging in price from \$825,000 to \$1.65 million although the estimated patronage for the 25-knot vessel was only about 20 percent greater than for the 20-knot vessels. (See p. 35.)

Several management decisions regarding the ferry project lacked adequate written justification. (See p. 37.)

GAO is recommending that the Secretary of Transportation direct the Urban Mass Transportation Administration to:

- Develop and use criteria to evaluate the cost-benefit aspects of various alternatives available within individual projects.
- Require adequate written justification for all significant Urban Mass Transportation Administration management decisions affecting projects.

--Require revision of project specifications and readvertisement of bids in lieu of contemplated change orders to reduce scope when the low bid for a construction contract exceeds budget.

The Department of Transportation concurred with GAO's recommendations and said it has taken or plans to take certain actions to implement the recommendations. (See p. 42.)

The Department said GAO's third recommendation is consistent with existing agency policy. However, the Department believes that following this policy in this case would have delayed implementation of the ferry system and would have increased costs for the work performed. (See p. 43.)

Nevertheless, GAO questions whether deviation from agency policy in this instance resulted in achieving the most effective competition for work being performed.

GAO recommends, therefore, that in future circumstances such as this, the agency should direct revision of project specifications and resolicitation of bids so as to obtain the most effective competition for the work to be performed.

## CHAPTER 1

### INTRODUCTION

Of the several programs established to carry out the purposes of the Urban Mass Transportation Act of 1964, as amended (49 U.S.C. 1601 et seq.), the capital facilities grant program is the largest. The Urban Mass Transportation Administration (UMTA), Department of Transportation, administers this program and makes grants to State and local public bodies to enable them to acquire and improve existing transit systems or to build new transit systems.

Until July 1, 1973, maximum Federal assistance under this grant program was limited to two-thirds of the net project costs; i.e., the costs which "cannot be reasonably financed from revenues." Capital grants approved on or after July 1, 1973, are funded by UMTA at a mandatory 80-percent level of net project costs. The balance of funds needed must be provided from non-Federal sources.

At the request of the Chairman, Subcommittee on Priorities and Economy, Joint Economic Committee (see app. I), we have reviewed certain allegations that unnecessarily expensive ferryboats and terminals were being constructed with Federal assistance for use on San Francisco Bay. The Federal assistance was provided through an UMTA capital facilities grant to the Golden Gate Bridge, Highway and Transportation District to develop a ferry system for the bay area.

#### GOLDEN GATE BRIDGE, HIGHWAY AND TRANSPORTATION DISTRICT

The District was created by the California State Legislature in May 1923 for the purpose of constructing and operating the Golden Gate Bridge. Construction began in January 1933 and the bridge was opened to traffic in May 1937. Before the Golden Gate Bridge and the San Francisco-Oakland Bay Bridge (opened in 1938) were built, there were only two ways to get to San Francisco from the north--by traveling southeast around the bay and entering the city from the south or by using a ferry system, in operation at that time. The Bay Area Rapid Transit (BART) system, which became partially operational in late 1972, has not changed this situation because it serves only parts of San Francisco, some communities south of the city, and communities along the eastern shore of the bay.

In August 1969 the California State Legislature authorized the District to "study, construct, acquire, improve,

maintain, and operate any and all modes of transportation within the District, including but not limited to, water transportation."

The District's bus system, which was implemented in January 1972, was greeted with widespread approval and support from officials, citizens' organizations, and private individuals. However, opposition has been growing for many years in San Francisco to the growing number of automobiles and buses entering the city from neighboring communities. The San Francisco Board of Supervisors has, over several years, adopted a number of resolutions urging the District to include ferryboat service in its transit plans. The mayor and various Government and citizen groups of San Francisco have stated that using only buses to reduce traffic entering the city was not acceptable and that ferries were also needed. During the District's planning of its transportation requirements, the San Francisco Board of Supervisors resolved that the District's transportation system should include ferries as well as buses. Half of the District's 18-member board of directors represent San Francisco. According to a District official, San Francisco said the District must include ferries in its transit system or get no system at all.

Responding to this mandate and to the apparent transportation needs of the area, the District developed a bus-ferry transportation system and in 1971 sought financial assistance from UMTA.

Through June 30, 1975, the District had received direct financial assistance--made under two separate UMTA grant projects--in excess of \$39.1 million under UMTA's capital facilities grant program, as shown below.

	<u>Net project cost</u>			<u>Federal share</u>		
	<u>Bus</u>	<u>Ferry</u>	<u>Total</u>	<u>Bus</u>	<u>Ferry</u>	<u>Total</u>
	(millions)					
UMTA Project CA-03-0036 (note a)	\$16.2	\$35.0	\$51.2	\$11.3	\$24.7	\$36.0
UMTA Project CA-03-0065	3.8	-	3.8	3.1	-	3.1
Total	<u>\$20.0</u>	<u>\$35.0</u>	<u>\$55.0</u>	<u>\$14.4</u>	<u>\$24.7</u>	<u>\$39.1</u>

a/The third amendment to this project budgeted \$1.2 million for contingencies for the entire bus-ferry project. We attributed the \$1.2 million to the ferry component because the UMTA approval memorandum for the third amendment indicated the entire amount might be needed for the ferry component.

## SCOPE OF REVIEW

We reviewed the use of Federal funds to construct ferryboats and related facilities to implement a ferry system on the San Francisco Bay. We directed our review primarily at the (1) factors causing the cost of the ferry system to increase and (2) Federal Government's role in approving the ferry system component of the first of the two UMTA grants to the District.

We made our review at UMTA headquarters in Washington, D.C., and at the District's offices in San Francisco. We reviewed the applicable legislation, UMTA policies and procedures, and the project records and reports relating to the grants. We interviewed UMTA officials at headquarters and at its San Francisco regional office and obtained information from the grantee, several of its consultants and contractors, and officials of several local governments in the San Francisco area. We also interviewed officials of a private ferryboat company operating in the San Francisco Bay and obtained certain operating statistics from them.

We have included in the report pertinent comments obtained from the Department of Transportation and the grantee. Written comments received from the Department have been included as appendix II.

## CHAPTER 2

### PROBLEMS AND PROGRESS IN DEVELOPING AND IMPLEMENTING A COMMUTER FERRY SYSTEM FOR THE SAN FRANCISCO BAY

The District's ferry system was based on a commuter ferry system design report developed for the District by a naval architect in August 1970. This system design consisted of four ferry terminals, two 15-knot vessels, and five 25-knot vessels. The naval architect estimated that the system could be implemented by 1972 at a total cost of \$16.4 million, excluding the cost of land and the cost of the vessel already owned by the District.

By June 1975 the scope of the system had been reduced to three terminals, including one on which construction has been suspended indefinitely, one 15-knot vessel and three 25-knot vessels. The most recently approved grant amendment for the ferry project (June 1974) indicated a net project cost of \$35 million, including land and contingencies. UMTA's share in the ferry project as of June 30, 1975, amounted to \$24.7 million. The table on the following page shows the increase in the cost and the reduction in the scope of the ferry system from the original 1970 system design.

The cost escalation is attributed to (1) poor initial estimates, (2) failure to include the cost of certain essential elements in the initial estimates, (3) changes in the scope of the 25-knot ferryboats, and (4) inflation.

#### BACKGROUND ON FERRY SERVICE IN THE GOLDEN GATE CORRIDOR

Ferry service in the San Francisco Bay was provided at various times between 1868 and 1941. In 1962 a privately owned company began providing commuter ferry service between Tiburon, in Marin County, and San Francisco. However, this commuter service is limited, and it carries only about 550 round trip commuters daily. Most people traveling between San Francisco and Marin County use the Golden Gate Bridge.

#### Ferry system feasibility study

In 1968 San Francisco and the Marin County Transit District formed a San Francisco-Marin Water Transportation Study Committee. The committee hired a management consultant firm to determine (1) whether an advanced system of ferries between San Francisco and Marin County, coordinated with feeder service at both ends, could substantially reduce

Ferry System Cost Estimates

<u>Description</u>	<u>Architect estimates August 1970</u>	<u>Architect estimates October 1970</u>	<u>Original grant application May 1971</u>	<u>Amended grant application November 1971</u>
Ferryboats:				
25-knot vessels:				
Number	5	4	6	3
Cost	\$10,500,000	\$ 8,400,000	\$12,500,000	\$ 7,710,000
15-knot vessels:				
Number	1	-	-	-
Cost	700,000	-	-	-
Terminals:				
Larkspur	3,469,000	3,219,000	4,164,000	6,704,000
San Francisco	836,000	972,000	972,000	2,340,000
Sausalito	270,000	670,000	1,320,000	2,133,000
Tiburon	670,000	-	-	-
Other (note c)	-	-	-	-
Total ferry system cost estimates	d/ <u>\$16,445,000</u>	<u>\$13,261,000</u>	<u>\$18,956,000</u>	e/ <u>\$18,902,00</u>

a/No single application was submitted for the amendment. (See p. 39.)

b/The amount approved for the ferryboats in August 1972 was higher than the amount approved in May 1971 to reflect the actual construction bids received in June 1972. (See p. 3)

c/This category consists of costs which cannot be allocated to either the ferry project, such as construction management and inspection; part of the contingency; appraisal services; acquisition of equipment, furniture, service vehicles, and costs performed by in-house personnel.

d/Architect's August 1970 estimate included cost of a ferryboat--the M. V. Golden Gate--owned by the District. We adjusted the number and cost of 15-knot vessels and estimates to reflect the new cost only.

e/Detail does not add up to total shown due to \$15,000 addition error on the grand total.

the peak highway congestion in the Golden Gate Corridor by diverting a significant number of automobiles from it and (2) the feasibility of instituting such a system. In July 1969, the consultant reported that such a ferry system was feasible and that it would divert a significant number of vehicles from the Golden Gate Bridge. The report stressed, however, that to be acceptable to commuters a ferry system must include dependable and convenient feeder links and conveniently located terminals with ample parking facilities. The report added that if these basic requirements were met patronage would vary with the fare charged and the speed of the ferry system.

### Ferry system design studies

In January 1970 the District hired a naval architect to design a commuter passenger ferry system between Marin County and San Francisco and to recommend an optimum vessel for the system. In August 1970 the architect submitted his system design report. He recommended a system with four terminals (see map on following page); one in San Francisco and three in Marin County--one at Sausalito in Southern Marin, one at Tiburon <sup>1/</sup>, and one at either Corte Madera or Larkspur in Central Marin.

The architect recommended that the District's existing ferryboat--the M.V. Golden Gate (see photograph on p. 8)--and another similar type vessel be used between San Francisco and Sausalito. He also recommended acquiring five specially designed, 25-knot vessels, each 165 feet long and capable of carrying 636 passengers, to be used between San Francisco and Central Marin.

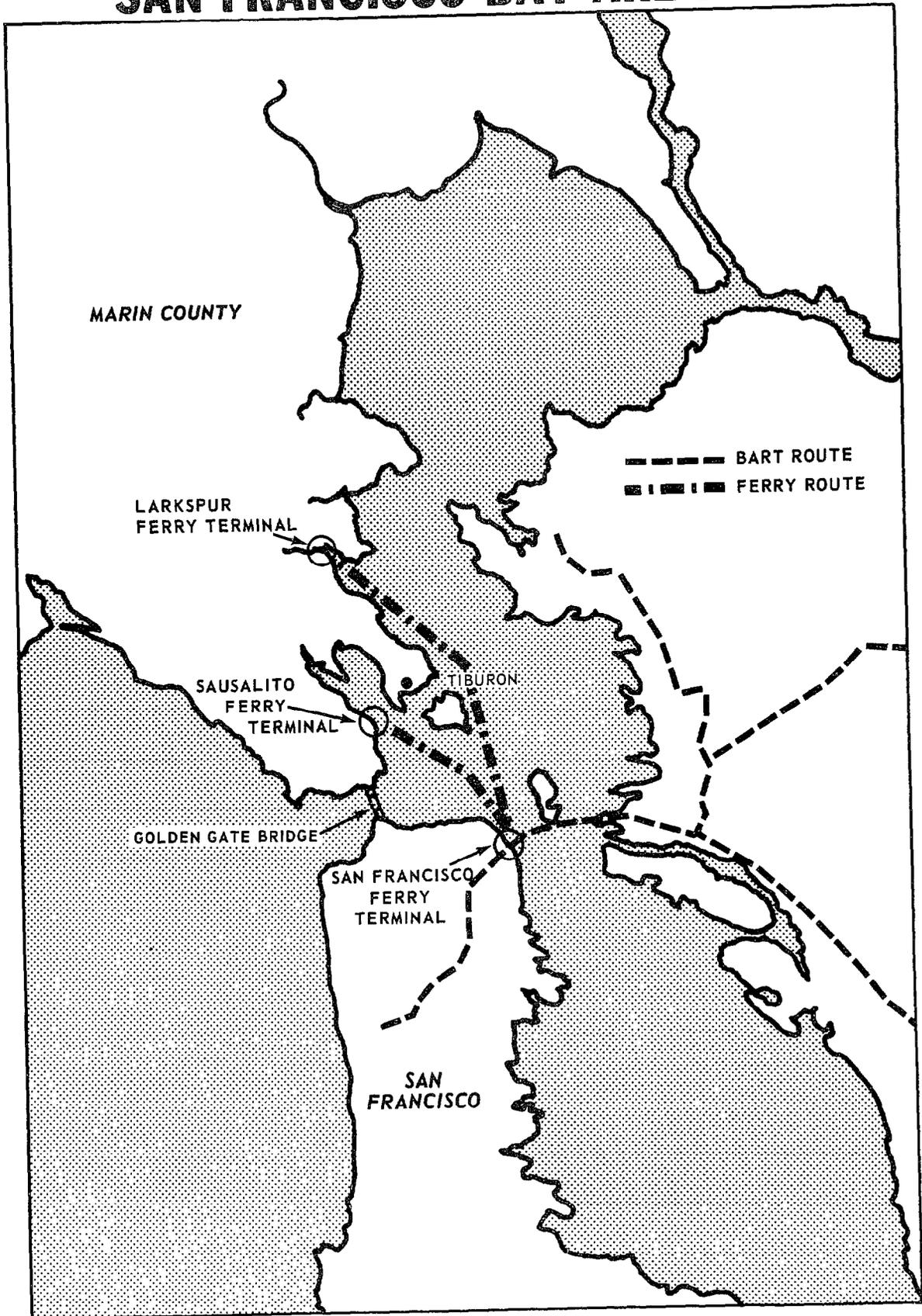
The architect estimated the system, including vessels, dredging, boarding and service floats, and modest terminal development (but excluding land) could be implemented by 1972 for about \$16.4 million.

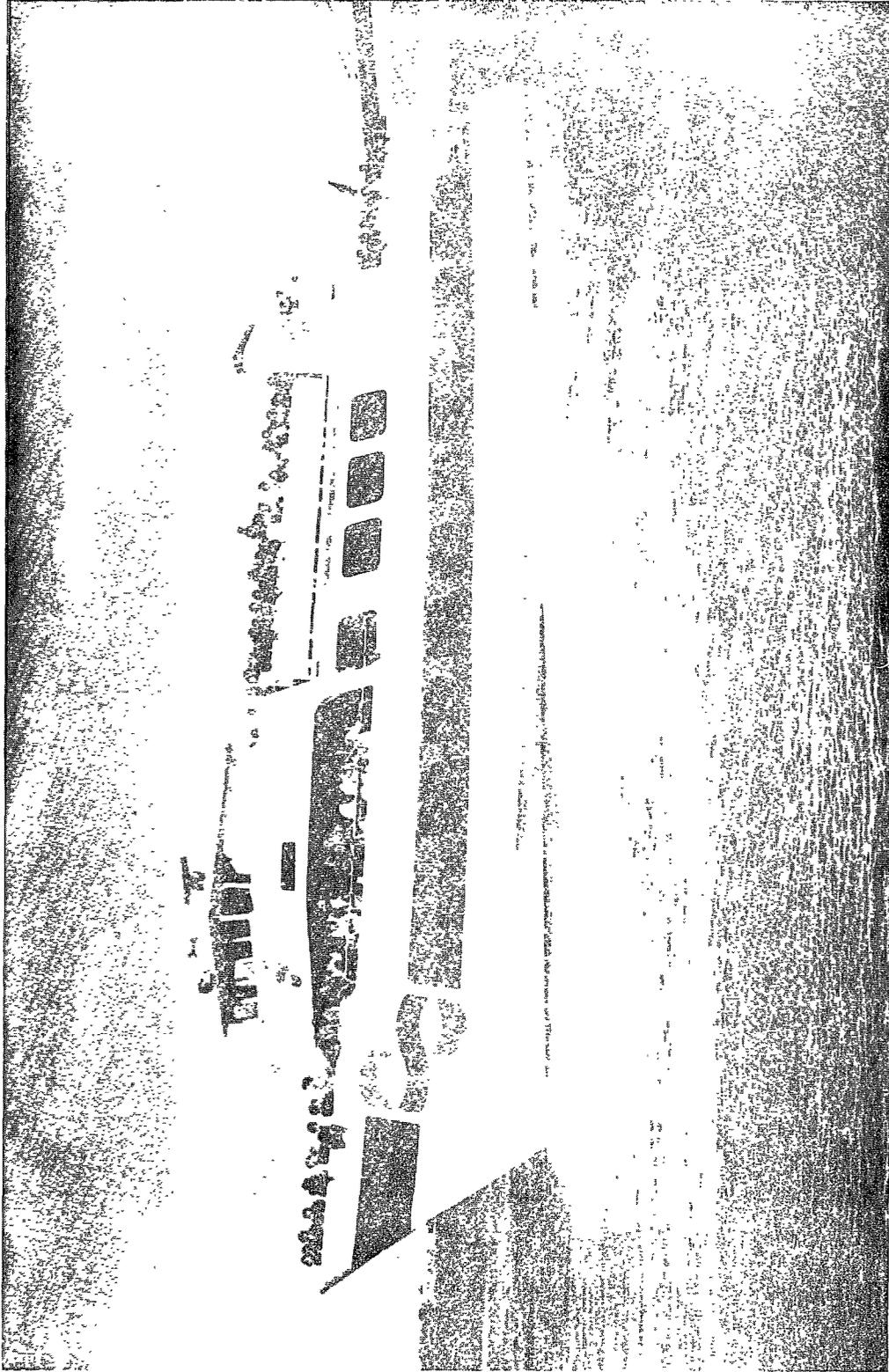
In October 1970 the architect prepared a supplement to his August 1970 system design report to reflect a more modest program than originally proposed. This supplement eliminated the terminal facility at Tiburon and proposed acquiring four 25-knot vessels instead of five 25-knot vessels and one 15-knot vessel as proposed in the August report.

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<sup>1/</sup>The facility at Tiburon was to be used for a stop-off point for the Bay Circle Cruise operation discussed on p. 38.

# SAN FRANCISCO BAY AREA





Source: Golden Gate Bridge, Highway and Transportation District

**M.V. GOLDEN GATE**

The architect's system design report, primarily the August 1970 report, formed the basis for the District's ferry project plan. A discussion of the changes in and cost escalations of the planned vessels and the terminal facilities follows.

#### THE OPTIMUM VESSEL

The District's architect recommended a specially designed 25-knot vessel as the optimum vessel for the proposed commuter ferry system. The vessel had higher estimated operating and construction costs than several 20-knot vessels evaluated and rejected by the naval architect. The recommended vessel subsequently has doubled in cost since the original cost estimate. (See p. 12.)

#### Selection of the optimum vessel

Before the architect undertook his system design study, he was directed by the District's board of directors as follows:

"In the design of the system and selection of the optimum vessel, maximum consideration will be given to those features which will attract the highest patronage. Comfort, speed, frequency and dependability of service are to be carefully considered so as to provide as attractive an alternate as possible to the private automobile."

The architect concluded that speed and frequency of service was the first consideration for attracting patronage to the proposed ferry system. He further concluded, based on the 1969 ferry system feasibility study (see p. 4), that transit time by ferry should take no longer than traveling by bus or private automobile.

The following table, extracted from the architect's report, shows comparable transit times of commuting via several modes of transportation from Central Marin County to San Francisco, the route to be covered by the optimum vessel.

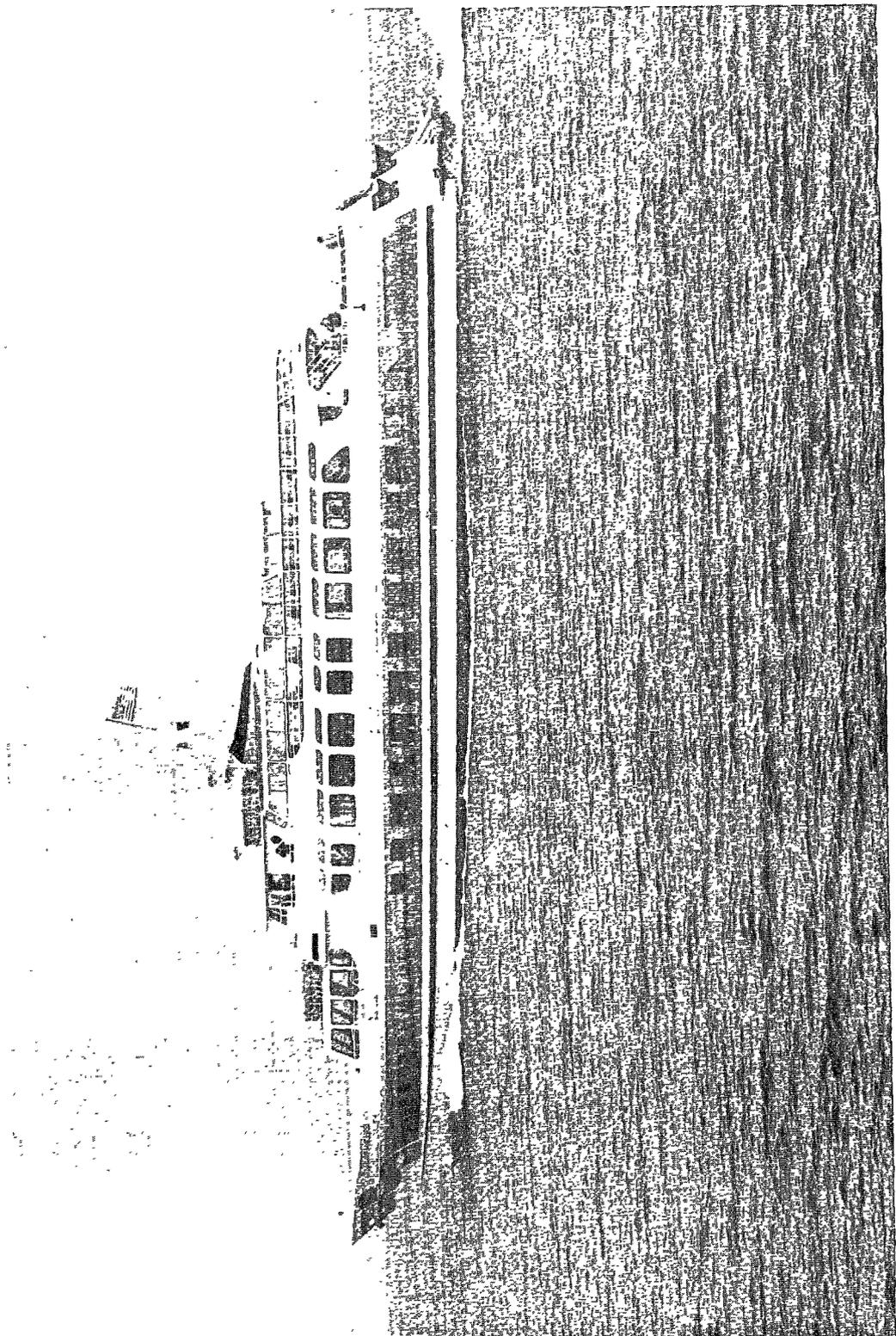
	Ferryboat system (speed in knots)					Greyhound bus	Optimum bus system (note a)	Private automobile
	15	20	25	30	35			
Traveltime (in minutes)	60	45	40	35	30	36	36.5 to 44	28 to 32

a/A bus system design prepared in 1969 by a local transit authority to replace existing Greyhound Bus services and meet the commuter needs of the Marin-San Francisco corridor.

The architect concluded that passenger transit time with a 25-knot vessel would compare favorably with the bus system as well as the automobile.

As reported in his August 1970 report, the architect evaluated 14 different vessels. He examined each vessel for safety, passenger acceptance, operating requirements, and economic feasibility. Seven of the vessels evaluated, reportedly capable of top speeds between 15 and 23 knots, were rejected apparently because they were not fast enough. Four others, capable of speeds over 35 knots, were rejected because of limited passenger capacity, high construction cost, high operating cost, or high susceptibility to damage from floating debris. One vessel was rejected because it was foreign-built. Another vessel--the G.T. Avalon--was considered to be closest to the desired vessel, but it was rejected because its passenger capacity was considered too small and because some other features of the vessel were more suited to ocean service than to bay service. After rejecting the above vessels, the architect recommended a unique design vessel as most suitable for the District's ferry system. This vessel was designated the Spaulding 165 (see photograph on following page) and was a modification of the G.T. Avalon vessel, which had been designed by the architect's firm in 1968 and built in 1969 at a cost of about \$1.9 million.

The architect and the District considered the design and operating characteristics of the Spaulding 165 to be highly suited for the San Francisco-Central Marin route. The architect believed that, because of the vessel's speed, shorter anticipated traveltimes would offer a higher frequency of service compared to slower vessels. He considered this essential to attract greater patronage on this route which, in turn, he expected to offset, in large part, the higher initial construction cost and comparatively higher operating cost of the Spaulding 165.



Source: Golden Gate Bridge, Highway and Transportation District

**SPAULDING 165**

### Cost escalation of the optimum vessel

In August 1970, when the Spaulding 165 was recommended as a suitable vessel for the ferryboat system, each vessel was expected to cost \$2.1 million. When construction bids were received, less than 2 years later, its cost had increased to over \$4 million.

The recommended Spaulding 165 incorporated a propulsion system rated at 5,000 shaft horsepower, the same as the G.T. Avalon. The Avalon had four gas turbines driving two propellers. The Spaulding 165 was to have two gas turbines driving two propellers. There were other basic differences between the two vessels. For example, the Spaulding 165 was almost 5 feet longer than the Avalon, 14 gross measurement tons larger, and could carry 131 more passengers. Despite these differences, the architect believed that the Spaulding 165 could attain the same 25-knot speed as the G.T. Avalon and could be built for about \$2.1 million, or about 10 percent more than the Avalon had cost in 1969.

In May 1971 the District submitted a grant application to UMTA for both the bus and ferry components which included a request for approval to purchase six Spaulding 165 ferryboats for \$12.5 million, or \$2.1 million each. According to UMTA officials, they had advised the District that UMTA would fund the bus component first and requested the District to scale down the request to three ferryboats before submitting an amended grant application. In November 1971 the District submitted an amended application for its ferry component which included a request for three Spaulding 165 ferryboats.

In May 1972 the architect notified the District that "recent material cost increases" would increase the cost of the three vessels to \$2.6 million each.

In June 1972 three companies submitted bids to construct three Spaulding 165s. The high bid was about \$16.8 million; the low bid was about \$12.6 million. A review of the low bid showed that each vessel would cost just over \$4 million, or a total of \$12 million, with the balance covering the spare parts and risk insurance. The table on the following page shows the reasons given by the architect for the increases in cost of the ferryboats.

Changes in vessel design accounted for 31 percent of the increase in cost. The most significant changes occurred in the propulsion system. Experience with the M.V. Golden Gate, the District's existing ferryboat operating between San Francisco and Sausalito, showed that its propellers were

Reasons Given For Increase In Cost Of Spaulding  
165 From Initial Estimate To Bid Price (note a)

Initial estimate:

Cost of G.T. Avalon (Bid in 1968, built 1969-70)	\$1,919,200
Escalation allowance--10 percent (anticipating bids on Spaulding 165 in January 1971)	191,920
	2,111,120

Less improvement in shipyard production curve due to multiple ship program	11,120
August 1970 estimate for Spaulding 165	2,100,000

Major changes in scope:

Second snackbar added	\$ 35,000	
Windscreen enclosure added	30,000	
Additional navigational and communication equipment	25,000	
Bigger and more complex boarding ramps	120,000	
Enclosed upper deck and resulting modifications	55,000	
Interior design changes	45,000	
Propulsion system changes	287,800	
		597,800
		2,697,800

Other factors:

Inflation (between January 1971 and June 1972)	539,340	
Minority apprentice hiring program due to Federal requirements	179,780	
Material cost uncertainty	89,890	
Allowance for handling of propulsion machinery	100,000	
		909,010

Total costs accounted for	3,606,810
Difference between cost accounted for and low bid	407,523
Low bid, June 1972	\$4,014,333

a/Based on information supplied to the District by the architect in May 1975.

sustaining frequent and costly damage from floating debris. Consequently, the two-propeller system specifications for the Spaulding 165 were changed to incorporate a water-jet pump propulsion system which, according to the architect, is not susceptible to damage by debris in the water. During testing of a model vessel, it became questionable whether the Spaulding 165 could generate 25 knots with only two drive units; therefore a third drive unit was added. These changes in the propulsion system were made in July 1971.

Inflation accounted for an additional 28 percent of the increase in cost. For example, District officials told us that during the 2 years between selecting the vessel (in 1970) and contracting for its construction (in 1972), the price of aluminum increased 200 percent, from 50 cents to \$1.50 a pound. Because each vessel requires about 250,000 pounds of aluminum for its hull, the cost of each vessel increased by \$250,000.

In August 1972 UMTA approved the November 1971 grant amendment application including \$13.2 million for the ferryboats, or \$600,000 more than the low bid of \$12.6 million. (The \$600,000 difference is discussed on p. 39.) The contract was awarded to the low bidder in August 1972.

In June 1974 UMTA approved another amendment to the grant, including about \$400,000 for additional costs of the ferryboats. According to UMTA records, this increase was needed to cover change orders and California State sales tax. An UMTA official told us that funds originally budgeted for the sales tax had been used for change orders. As of August 1975, one of the three vessels was fully completed and undergoing sea trials and the other two were virtually completed and were being stored pending successful completion of the first vessel's sea trials. According to District officials, costs were not expected to increase materially over the remainder of the contract. 1/

CENTRAL MARIN FERRY TERMINAL PROJECT  
AT LARKSPUR

The Central Marin ferry terminal, located at Larkspur, is the single most expensive element of the District's ferry project--it represents nearly one-half of the total project cost. Two aspects of the Larkspur terminal

1/In August 1975 the shipbuilder told the District that it estimated it would cost about \$6.8 million to construct one Spaulding 165 under current market conditions.

project--the choice of Larkspur as the site for the Central Marin terminal and the cost escalation of the project from initial estimates to the present cost estimates--are discussed below.

Selection of site and purchase of land  
for the Central Marin ferry terminal project

Three separate studies, conducted between 1969 and 1971, evaluated potential sites for the Central Marin ferry terminal project. The first study was conducted by the management consultant for the San Francisco-Marín Water Transportation Committee in 1969. Four possible Central Marin sites were evaluated in this study; two were in Corte Madera and were rated as the most suitable.

The second study was the District's consultant architect's study made in August 1970. The architect evaluated 10 sites, including the 4 sites evaluated in the 1969 study. Two sections of privately owned property at the banks of the Corte Madera Creek--one at Larkspur and the other on the south bank--were considered the best locations for a ferry terminal.

The third study was conducted in January 1971 by an engineering firm which evaluated four Central Marin sites. These were the two privately owned properties on the Corte Madera Creek which were previously recommended by the District's architect and sites at San Clemente Creek and north of San Quentin Prison which were included in the Water Transportation Committee study. The engineering firm evaluated these four sites against criteria which compared physical characteristics, ecological considerations, passenger accessibility and service, offshore consideration, onshore development, and patronage generation. The four sites were then ranked in the following order: Larkspur, Corte Madera South (the San Clemente Creek site), the North San Quentin site, and the property on the south bank of the Corte Madera Creek. As a result of this ranking, the North San Quentin site and the Corte Madera site were eliminated as possible terminal locations.

A real estate development company, acting in its own behalf, obtained and studied copies of the 1969 study conducted by the management consultant for the Water Transportation Committee and the architect's 1970 report. The company concluded that the two best locations for a terminal would be on either the north or south bank of the Corte Madera Creek; the Larkspur site was the most promising. On October 2, 1970, the company entered into a conditional purchase agreement with a rock quarrier who

owned about 106 acres of land encompassing the Larkspur site.

The agreement stated that the real estate development company would buy most of the land owned by the quarryer for \$2.5 million, providing several conditions were met. One condition was that the District select by April 1, 1971, with possible extension to October 1, 1971, a portion of the available land on which to build a ferry terminal. The owner of the property received \$1,000 for granting the real estate development company the purchase option.

Between November 1970 and February 1971, the District held a series of public hearings to discuss the proposed ferry system. Representatives of the real estate development company made presentations at several hearings on the superiority of Larkspur over Corte Madera South as a terminal site. Before selecting either of the two properties, the District was informed that an environmental organization held title to the marshlands adjacent to the Corte Madera South site through which ferryboats would have to pass and that the group would not permit the marshland to be disturbed. This left Larkspur as the site on which to build the Central Marin ferry terminal.

In January 1971 the District hired an independent real estate appraiser to value a 25.5-acre tract of the 106 acres considered suitable for a terminal site. In February 1971 the appraiser reported the tract was worth \$1,275,000.

In July 1971 the real estate development company exercised a portion of its option with the quarryer and purchased 11.5 acres of the Larkspur site. In August 1971 the District paid the development company \$25,000 for an option to purchase the entire 25.5-acre site and subsequently paid an additional \$25,000 to extend the option. In February 1972 the District purchased the development company's 11.5 acres and secured a release of the development company's option on the remaining 14 acres which were then purchased directly from the quarryer. Including the cost of the options, the District paid about \$1.25 million to acquire the 25.5-acre site for the Larkspur terminal.

#### Cost escalation of the Larkspur ferry terminal project

Construction costs for the Larkspur ferry terminal facility have escalated from the architect's 1970 estimate of about \$3.5 million to a 1974 construction contract price of \$13.7 million. The table on the following page shows the series of cost estimates between the architect's August 1970 estimates and the low bid received in July 1974. The table also shows the costs of various other items required to complete the project.

BEST DOCUMENT

Larkspur Ferry Terminal Project Cost Estimates

	Architect estimates August 1970	Architect estimates October 1970	Original grant application May 1971	Amended application November 1971 (note a)	San Francisco architect firm estimates	
					March 1973	October 1973
Terminal construction costs:						
Offshore development (including channel dredging)	\$1,905,000	\$1,260,000	\$1,260,000	\$1,260,000	\$1,611,000	\$ 2,517,100
Shoreside and onshore development including platforms	1,089,000	1,484,000	1,679,000	1,749,000	1,775,000	5,086,800
Terminal building	300,000	300,000	300,000	300,000	350,000	716,000
Landscaping and signs	-	-	-	-	124,000	137,400
Parking facilities	175,000	175,000	175,000	175,000	-	-
Total construction costs	<u>3,469,000</u>	<u>3,219,000</u>	<u>3,614,000</u>	<u>3,484,000</u>	<u>3,860,000</u>	<u>8,457,300</u>
Land acquisition	-	-	500,000	1,250,000	1,250,000	1,250,000
Other costs associated with terminal facility:						
Project design fees	-	-	-	389,000	-	-
Contingency costs	-	-	50,000	1,481,000	505,000	422,700
work performed by in- house personnel	-	-	-	-	-	-
Service vehicles and office and mainte- nance equipment	-	-	-	100,000	-	-
Total associated costs	-	-	50,000	1,970,000	505,000	422,700
Total	<u>\$3,469,000</u>	<u>\$3,219,000</u>	<u>\$4,164,000</u>	<u>\$6,704,000</u>	<u>\$5,615,000</u>	<u>\$10,130,000</u>

a/Approved by UM1A August 1972.

b/No breakdown of this figure was available.

c/Includes \$490,000 for purchase of land to be used for disposal of dredge spoils from Larkspur terminal.

In his August 1970 report, the District's architect estimated that the Central Marin ferry terminal could be constructed for about \$3.5 million, including about \$1.6 million for onshore facilities. Developing specifications for onshore facilities was beyond the scope of the architect's study; this estimate was provided for the convenience of the District. As indicated by the table on page 17, most of the increase in cost of the Larkspur project is accounted for in these onshore facilities.

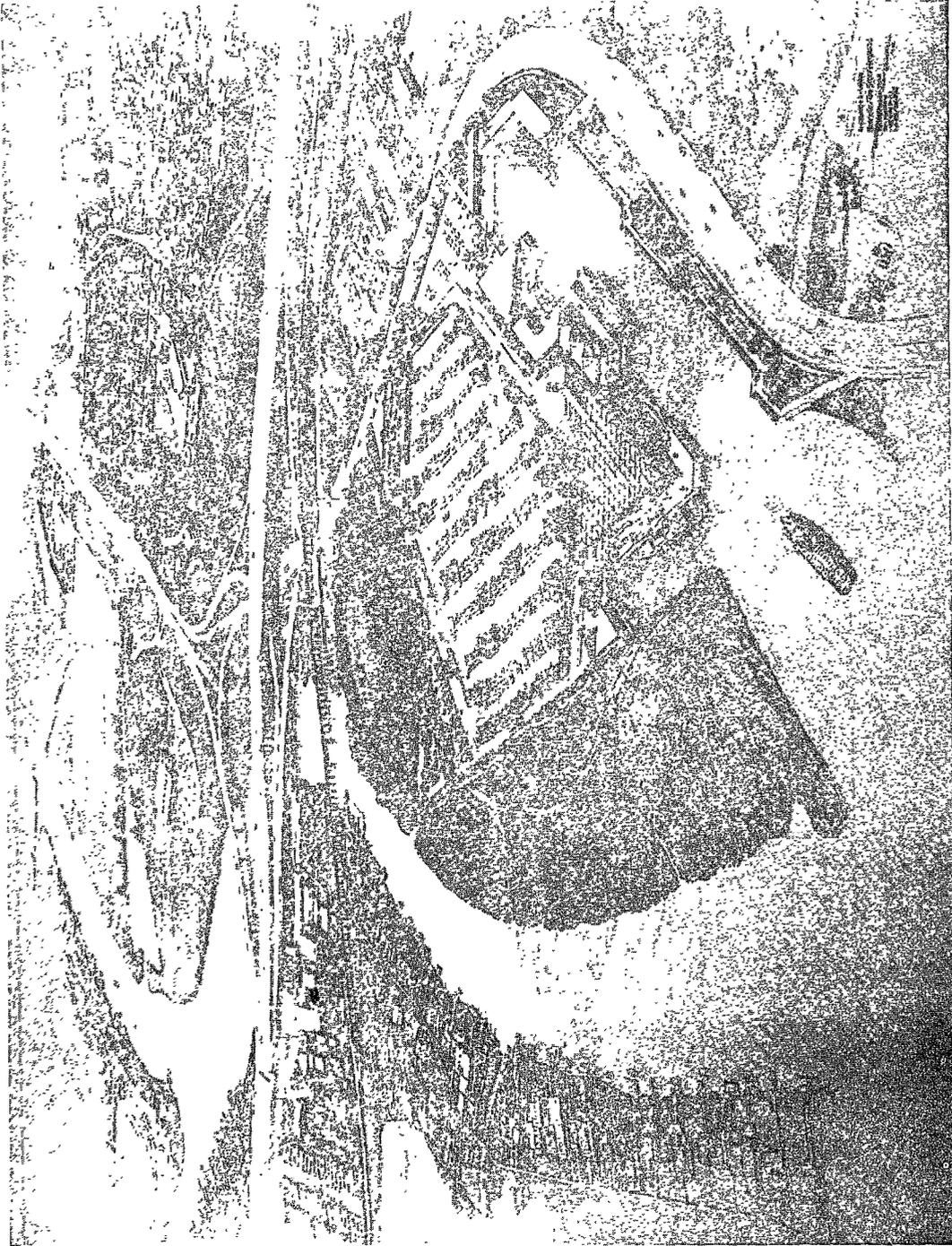
In the District's November 1971 amended grant application, the estimated construction cost of the Larkspur terminal was still about \$3.5 million, although certain cost items had been changed. In August 1972 UMTA approved the District's November 1971 application, including \$3.5 million for the Larkspur terminal construction costs.

In October 1972 the District contracted with a San Francisco architectural firm to develop a site master plan for the Larkspur project. In March 1973 the architectural firm submitted the site master plan to the District. The architectural firm estimated the project, as planned, could be constructed for about \$3.9 million, excluding contingencies.

When the project's final design was presented in October 1973 (see sketch on following page), the construction cost estimates had increased to \$8.5 million, excluding contingencies. The architectural firm attributed the increased cost to (1) upgrading the type and quality of the terminal's piling support needed for the type of soil conditions in the area, (2) significant increases in steel costs, (3) conforming with Bay Conservation and Development Commission safety requirements, and (4) inflation associated with the other construction components of the project. Asked by a District director if the project had been designed with limited soils information, a spokesman for the architectural firm said the design had taken place concurrently with the soils investigation. He said this is not normal but that it had been done before.

In January 1974 the District hired a consulting cost engineer to make an independent cost estimate of the October 1973 final design of the Larkspur project. The cost engineer reported that the construction costs of the Larkspur project would be about \$8.9 million, excluding contingencies.

In February 1974 the District's board of directors voted to accept the architectural firm's terminal design, which it had estimated to cost \$8.5 million, and authorized the District staff to advertise for construction bids.



Source: Golden Gate Bridge, Highway and Transportation District

**LARKSPUR FERRY TERMINAL**

In June 1974 UMTA approved the third amendment to the District's grant. This amendment included an increase in the Larkspur terminal construction costs to \$10.1 million.

On July 30, 1974, five bids to construct the Larkspur terminal were received and opened. Interested bidders had been asked to furnish two bids to show a variation in the rate of dredging to be done. The high base bid and alternate bid were \$17,040,000 and \$16,890,000 respectively; the apparent low base bid and alternate bid were \$14,077,000 and \$13,927,000, respectively. However, the day after the bid opening the District received a telegram from the bidder who had submitted the apparent second lowest bid. This bidder said it had miscalculated the extension for a line item in its bid and wished to correct it. The correction was made, making the corrected bid the lowest at \$13,717,200. We reviewed the original bid tabulation document and confirmed that a line item extension had been miscalculated.

After receiving UMTA's concurrence (see p. 33), the District awarded the contract to the low bidder for \$13.7 million on September 27, 1974. Construction began in January 1975; it is expected to be completed by April 1976.

#### SAN FRANCISCO FERRY TERMINAL PROJECT

The San Francisco ferry terminal is to be located adjacent to the Ferry Building at the junction of Market Street and the waterfront, which occupies most of the north-east shoreline of San Francisco. The District presently uses an existing docking facility a few yards to the north of the proposed new terminal site. The District, however, considered the existing facility, consisting of a landing platform and a partially covered passenger waiting area, to be inadequate for berthing two large passenger capacity vessels simultaneously. Also this facility did not permit rapid loading and unloading of passengers.

Originally the plan was to lease water area and build a permanent terminal on a specially constructed piling-supported triangular platform of 50,000 square feet located at about the midpoint of the Ferry Building. After making several changes to its plans for a permanent terminal facility, in December 1974 the District decided to build the terminal on an existing platform at the southern end of the Ferry Building. This decision was based on the recommendation of the California State Legislative Analyst,

who was reviewing various aspects of the District's mass transit activities.

As of April 1975 the District anticipated that its architect for the San Francisco terminal would provide final construction bid documents and a statement of probable construction costs by October 1975. If no problems are encountered, contractors will be asked to submit bids sometime around February 1976, with construction of the terminal to be completed by late 1976.

#### Cost escalation of the San Francisco ferry terminal project

In his August 1970 report, the District's consultant naval architect estimated that a San Francisco ferry terminal and any necessary dredging would cost \$836,000. By June 1974 the estimated construction cost had increased to about \$1.6 million. The table on the following page shows the progression of cost estimates for the San Francisco ferry terminal from the original estimate to the most current amendment to the grant.

In his August 1970 report the architect said that determining accurate construction cost estimates for onshore terminal facilities had not been a requirement of his study. In October 1970 the architect increased his cost estimates for the San Francisco terminal by \$136,000.

In the May 1971 grant application to UMTA, construction of the San Francisco terminal was estimated to cost \$872,000, or \$100,000 less than the architect's October 1970 estimate. The District's grant application, however, included a \$100,000 estimate for contingency costs for the San Francisco terminal.

In the November 1971 amended grant application, the estimated cost of constructing the San Francisco terminal was increased to over \$1.8 million. The cost increase was due mainly to adding \$1.1 million for concrete piers and a \$150,000 reduction in the cost of boarding floats.

UMTA approved the November 1971 grant application in August 1972. When the grant was further amended in June 1974, the amount budgeted for constructing the San Francisco terminal was reduced by about \$200,000--to \$1.6 million. The terminal is still being designed and the District told us they still intend to build the terminal within the current budget. The District anticipates construction cost estimates will be available by October 1975. As indicated by the table, the increases between the August 1970 and the June 1974 cost estimates are the result of cost factors which were not

San Francisco Ferry Terminal Project Cost Estimates

	Architect estimates August 1970	Architect estimates October 1970	Original grant application May 1971	Amended application November 1971 (note a)	Grant approved by UMTA June 1974
Terminal construction costs:					
Offshore development (including channel dredging)	\$586,000	\$672,000	\$672,000	\$ 522,000	\$ -
Shoreside and onshore de- velopment	200,000	200,000	200,000	1,300,000	-
Miscellaneous	<u>50,000</u>	<u>100,000</u>	<u>-</u>	<u>-</u>	<u>-</u>
Total construction costs	<u>836,000</u>	<u>972,000</u>	<u>872,000</u>	<u>1,822,000</u>	<u>b/1,600,000</u>
Land acquisition	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>200,000</u>
Other costs associated with terminal facility:					
Project design fees	-	-	-	195,000	117,000
Contingency costs	-	-	100,000	273,000	160,000
Work performed by in- house personnel	-	-	-	-	190,000
Service vehicles and office and maintenance equipment	<u>-</u>	<u>-</u>	<u>-</u>	<u>50,000</u>	<u>43,000</u>
Total associated costs	<u>-</u>	<u>-</u>	<u>100,000</u>	<u>518,000</u>	<u>510,000</u>
Total	<u>\$836,000</u>	<u>\$972,000</u>	<u>\$972,000</u>	<u>\$2,340,000</u>	<u>\$2,310,000</u>

a/Approved by UMTA August 1972.

b/No breakdown of this figure was available.

included initially--primarily land, contingencies, project design fees, and work performed by in-house personnel.

SAUSALITO FERRY TERMINAL PROJECT

In August 1970 the District started its own ferry system between San Francisco and Sausalito in Marin County with one ferryboat--the M.V. Golden Gate. The District plans to eventually replace its existing docking facilities at Sausalito with a new ferry terminal because it believes the existing facilities are inadequate for docking large vessels. However, in November 1972, after more than 2 years of negotiations with the District, the Sausalito City Council presented a number of conditions that must be met before the ferry terminal could go forward.

One important condition limited the number of passengers which could be brought to Sausalito at any one time. Another limited the number of shuttle buses serving the ferry terminal. These conditions, designed to minimize congestion, placed limitations on the planned ferry service. A District official told us that the District's board of directors was prohibited by law from giving Sausalito control over the level of ferry service to be provided.

Between November 1972 and August 1974 the District and Sausalito tried unsuccessfully to reconcile their differences

regarding the size of the planned terminal and ferry service. In August 1974 the District, realizing that the Larkspur project was going to cost much more than had been estimated for the project, decided to transfer funds from the Sausalito project to the Larkspur project. However, UMTA concurrence is required for such a transfer; their approval had not been obtained as of August 1975 because UMTA still desires that the District and Sausalito reach an agreement.

Because of Sausalito's opposition to the expanded ferry service planned for its community and because of the District's need for the about \$1.2 million in unused construction funds to offset the unexpectedly higher costs of the Larkspur terminal, the new Sausalito terminal has been placed in abeyance.

The table below shows the progression of cost increases for the Sausalito terminal from the original estimate to the most current amendment to the grant.

Cost escalation of the Sausalito  
ferry terminal project

Originally the District had considered having two terminals about 1 mile apart--one in north Sausalito and the other

Sausalito Ferry Terminal Project Cost Estimates

	Architect estimates August 1970	Architect estimates October 1970	Original grant application May 1971	Amended application November 1971 (note a)	Grant approved by UMTA June 1974
Terminal construction costs:					
Offshore development (including channel dredging)	\$270,000	\$270,000	\$ 270,000	\$ 370,000	\$ -
Shoreside and onshore development	-	350,000	400,000	600,000	-
Miscellaneous	-	50,000	-	-	-
Parking area	-	-	100,000	100,000	-
Total construction costs	<u>270,000</u>	<u>670,000</u>	<u>770,000</u>	<u>1,070,000</u>	<u>1,355,000</u>
Land acquisition	-	-	500,000	250,000	250,000
Other costs associated with terminal facility:					
Project design fees	-	-	-	194,000	237,000
Contingency costs	-	-	50,000	569,000	135,500
Work performed by in- house personnel	-	-	-	-	190,000
Service vehicles and office and maintenance equipment	-	-	-	50,000	43,000
Total associated costs	<u>-</u>	<u>-</u>	<u>50,000</u>	<u>813,000</u>	<u>605,500</u>
Total	<u>\$270,000</u>	<u>\$670,000</u>	<u>\$1,320,000</u>	<u>\$2,133,000</u>	<u>\$2,210,500</u>

a/Approved by UMTA August 1972.

b/No breakdown of this figure was available.

in south Sausalito. The north terminal was to have been the larger of the two because it would have served a larger commuter population. The south terminal was designed to serve walk-on passengers going to and from the Central Sausalito district.

In his August 1970 report, the District's architect recommended locating a single terminal--rather than two separate terminals--midway between the two planned sites. The architect estimated that the necessary dredging and float facilities for the Sausalito terminal facility would cost \$270,000, excluding any necessary land acquisition. However, in October 1970, the architect increased his estimate by \$400,000 for a concrete pier and other miscellaneous items. These additions raised his total cost estimate for the Sausalito terminal to \$670,000.

In its May 1971 grant application, the District increased the architect's October 1970 estimate by \$100,000 to \$770,000 by adding estimates for the construction of parking facilities. The District stated in the application that the cost estimates were preliminary in nature.

In the District's November 1971 amended grant application, the estimated cost of constructing the terminal project increased to about \$1.1 million. The revised project cost estimate shows increases of about \$100,000 for the boarding floats and \$200,000 for a waiting area. The reasons given for the increased costs were inflation and omitted or re-evaluated cost estimates. However, these cost estimates were not supported with detailed engineering design studies. UMTA approved the grant in August 1972.

UMTA's approval of the third grant amendment provided for an increase in the Sausalito terminal cost of \$285,000 but it did not explain the nature of the increase. The grant amendment was approved in June 1974.

#### PROTECTION OF EXISTING PRIVATE TRANSPORTATION COMPANY

From almost the inception of the District's plan to develop a ferryboat system, a private ferryboat operator, who operates bay sightseeing vessels and a commuter ferryboat service between Tiburon and San Francisco, has been concerned that his business will be adversely affected by the District's ferryboat operation. The Urban Mass Transportation Act of 1964, as amended, provides for the protection of existing private mass transportation companies. Specifically, section 3(e) of the act states:

"No financial assistance shall be provided under this Act to any State or local public body or agency thereof for the purpose, directly or indirectly, of acquiring any interest in, or purchasing any facilities or other property of a private mass transportation company, or for the purpose of constructing, improving, or reconstructing any facilities or other property acquired (after the date of the enactment of this Act) from any such company, or for the purpose of providing by contract or otherwise for the operation of mass transportation facilities or equipment in competition with, or supplementary to, the service provided by an existing mass transportation company, unless (1) the Secretary finds that such assistance is essential to a program, proposed or under active preparation, for a unified or officially coordinated urban transportation system as part of the comprehensively planned development of the urban area, (2) the Secretary finds that such program, to the maximum extent feasible, provides for the participation of private mass transportation companies, (3) just and adequate compensation will be paid to such companies for acquisition of their franchises or property to the extent required by applicable State or local laws, and (4) the Secretary of Labor certifies that such assistance complies with the requirements of section 13(c) of this Act."

In its May 1971 grant application, the District indicated that the ferry system project would not adversely affect the private operator or his employees since most of his vessels operate as sightseeing vessels while the District's project would operate primarily as a commuter transit system. The District further stated that its ferry system would not compete with the privately operated ferry commuter service since the District and the private operator serve different geographic areas in Marin County.

As part of the conditions under which UMTA approved the District's grant application, the District agreed to (1) continue to provide a coordinated feeder bus service to the Tiburon ferry, (2) publish and circulate the Tiburon ferry schedule along with its own schedule, and (3) offer the private operator, under mutually acceptable terms, joint use of the new boarding float to be constructed by the District at its San Francisco terminal.

At the time of our review, feeder bus service to the private operator's Tiburon ferry terminal, scheduled to coincide with vessel arrivals and departures, continued to be

provided. In addition, the District's advertisement brochures show its own ferry schedule and also provide a telephone number for information on the Tiburon ferry service. When the new terminal in San Francisco is completed, the private operator is to be offered joint use of its docking facilities.

The private operator has provided morning and evening commuter service between Tiburon and San Francisco since 1962. About 550 round trip commuters use the Tiburon ferry service daily. Their continued use of the Tiburon service has remained fairly constant; company records show little fluctuation in patronage.

During noncommute periods and on weekends the company uses its vessels for pleasure cruises and bay sightseeing tours.

At the time of our review, the private operator had six ferryboats available for either commuter service or bay tours. The fastest vessel in the fleet had a top speed of about 12 knots. Company officials acknowledge that the District's planned Larkspur-San Francisco route will require a boat capable of more than 12 knots.

The District and the private operator had discussed the possibility of the private operator acquiring and/or operating the ferryboat system being planned by the District. According to the District, however, an agreement satisfactory to both parties could not be reached.

District officials told us they believe their ferry operation will not adversely affect the Tiburon commuter ferry service. They anticipate most people who now use the Tiburon service will continue to do so, pointing out that the District's existing ferry service from Sausalito has had no marked effect on the Tiburon patronage. They doubt that people who have found Tiburon convenient--generally residents of Tiburon and nearby communities--will find Larkspur more convenient when that terminal is operating. Larkspur is located in Central Marin and would mean a longer commute for present Tiburon ferry users. Furthermore, the California law which authorizes the District's transportation activities precludes the District from competing with the private operator's bay sightseeing business.

The private operator filed suit against the District in 1971 to prevent the District from implementing its ferryboat system. The suit originally alleged injury suffered as a result of the District's wrongful competition. However, these allegations were later dropped. The private operator then

asked the court to prohibit the District's ferry service on weekends, holidays, and midday on weekdays.

The District's position was that its ferry system operated on regularly scheduled runs every day regardless of weather and "sightseeing value." Its ferryboats will operate on a point-to-point basis, on direct routes, and without the normal elements of a sightseeing service, such as commentary on points of interest along the route.

In March 1975 the court rejected all the claims and contentions raised by the private operator and sustained all contentions of the District. The private operator filed a motion to move for a new trial. The District told us that the motion was denied by the court in May 1975 and that an appeal was filed in June 1975. According to the District, the appeal has since been dropped and the judgment in favor of the District is final.

### CHAPTER 3

#### NEED FOR IMPROVEMENTS IN UMTA'S GRANT APPROVAL AND ADMINISTRATION PROCESS

UMTA's role in developing the District's ferry project was generally limited to determining that Federal funds were available and that all statutory and administrative requirements were satisfied. Following its procedures, UMTA did not participate in developing the system design, determining the project scope or the scope of individual elements of the project, and the specifics of the various facilities determined by the District to be necessary to complete the project.

UMTA's management of the grant to the District for its ferry project has been generally limited to ascertaining that project expenditures were consistent with the grant and that the District's contracts were in accordance with UMTA's third party contract requirements. Although this limited role is consistent with UMTA's general approach to developing and managing grant projects under the capital grant program, we believe this project demonstrated the need for improvement in the following areas of UMTA's grant approval and administration process.

- Sound cost estimates should be obtained before approving grant funds.
- Maximum competition for construction projects should be obtained.
- The cost-benefit aspects of UMTA-funded projects should be considered.
- The extent of written justification for management decisions should be improved.

#### DECISIONS TO AWARD GRANTS BASED ON PRELIMINARY COST ESTIMATES

The amount of UMTA grant funds to be provided a grantee is based on the net project cost--that part of the project cost which UMTA determines cannot reasonably be financed from revenues. The initial determination of net project cost is based on estimates of total project cost less anticipated revenues. These estimates are to be derived from engineering studies, studies of economic feasibility, and data showing the nature and extent of the expected utilization of the project facilities and equipment. The final amount of the Federal

grant is determined at the completion of the project based on the actual net project cost. In no case, however, may the Federal funds expended exceed the maximum amount stated in the grant agreement.

Although the grant agreement obligates the grantee to undertake and complete the project as described in the agreement, necessary amendments can be made. Such amendments may be to (1) materially change the scope of the project, (2) alter the design of the project, or (3) change the project cost and the resulting amount of the Federal grant. Any increase in the amount of a Federal grant or change in project scope depends upon the adequacy of the justification presented by the grantee and the availability of Federal funds. Evidence of the availability of appropriate non-Federal funds is also required.

UMTA should have the best possible cost estimates to make sound funding decisions. The initial cost estimates provided by the District in support of its original grant application for its ferry project have turned out to represent only about half the present estimates.

One factor that should have been evident from the information available at the time of the application was the possible inadequacy of the cost estimates for the onshore terminal facilities. The District used the naval architect's cost estimates of the onshore terminal facilities as support for its application. The naval architect stated in his system design report that the estimates were made for the convenience of the District and were beyond the scope of his study. The estimated cost of these facilities at Larkspur has increased from about \$2.2 million in November 1971 to about \$11.8 million in July 1974.

Realistic cost estimates constitute important data in deciding whether to commit funds to a project. Both UMTA and the grantee are deprived of this decisionmaking data if funds are committed to a project before realistic cost estimates are developed. Once funds are spent to start a project, it is difficult to stop work because of the cost involved to terminate contracts.

UMTA officials told us that the District's application was processed before the completion of final engineering studies. In fact, for the Larkspur project, where the greatest cost overrun has occurred, the amended ferry component application was submitted by the District in November 1971, 1 month before the District selected Larkspur as the site for the Central Marin County ferry terminal and nearly 2 years before the final engineering studies for that site were completed.

UMTA requires that the net project cost be determined to provide a basis for evaluating and approving a grant application. Although final engineering studies help develop sound estimates necessary to calculate net project cost, UMTA's policy was, until December 1974, to approve funds simultaneously for the final engineering studies and the construction of a facility. As a result, UMTA's commitment to fund construction of a facility was based on preliminary cost and design data, usually developed by the grantee. If refined cost and design data made available through final engineering studies revealed that the preliminary estimates upon which the construction funding commitment was based were unrealistically low, as in the ferry project grant, both UMTA and the grantee would be committed to a project which required additional funds to complete.

A recent UMTA policy decision indicates that UMTA recognized that preliminary cost estimates, which subsequently are found to be unrealistic, have been a problem. This decision, reflected in an internal UMTA memorandum dated December 4, 1974, states:

"As per discussions in recent staff meetings, our new policy, which has been approved by the Associate Administrator, is to fund engineering studies on garages and other construction in order to refine the cost and design data. In the initial grant the garage construction should be approved in concept with hearings and other requirements. The garage then would be funded by an amendment."

UMTA officials told us that this policy change was approved by the UMTA Administrator and applies to all capital facilities grants. UMTA's initial commitment to a project would not necessarily be reduced because the grant might still include all budget items, except for constructing certain facilities. However, the real effect of this policy change is to provide refined cost and design data by completing the final engineering studies before funding construction of a facility. Thus the funding commitment for construction would be based on more realistic cost estimates and design data. In addition, the site of the facility would be determined before providing construction funds.

Under its revised procedures, UMTA would amend the initial grant contract and fund construction of the facility on the basis of refined cost estimates developed in the final engineering studies, if UMTA considers such cost estimates to be reasonable. An UMTA official told us that this policy, if it had been in effect at the time, would

have been applied to the District's ferryboats and ferry terminals at San Francisco, Sausalito, and Larkspur.

This "phased funding" appears to be a better approach to help prevent approving funds for constructing facilities which are based on unrealistic cost estimates.

NEED TO OBTAIN MAXIMUM COMPETITION  
FOR CONSTRUCTION PROJECTS

UMTA procedures require competition for construction contracts to be obtained to the maximum extent possible. However, UMTA's position with regard to the Larkspur terminal construction contract award may not have resulted in the most effective competition for the work being performed.

As discussed on page 20, the low bid for construction of the Larkspur project exceeded the approved budget for the project. On August 1, 1974, 2 days after the bids were opened, an UMTA regional official who was told of the results of the bid opening acknowledged in a letter to the District that the apparent low bidder was approximately \$3 million above the terminal construction budget. The regional official indicated, however, that UMTA could not concur with a solution being considered by the District to reduce the proposed construction contract price--negotiate with the apparent low bidder or possibly the two lowest bidders. Because the District did not wish to readvertise, the regional official indicated that an acceptable alternative would be as follows:

--Reject all bids.

--Invite all bidders to negotiate with the District in order to negotiate a contract price that would meet budgeted project costs. If necessary to make changes in the plans and/or specifications to accomplish this, such changes must be detailed before any negotiations, and the identical changes presented to each interested party with whom the District negotiates. Should other than minor changes be contemplated, UMTA concurrence would be required before completing the negotiations.

--Following the negotiations, each contractor should be requested to submit in writing his lowest and final offer.

--If an award is made, it should then be made on the basis of the lowest offer.

The UMTA regional official cautioned the District that this was not a procedure that could be used at will. The official said UMTA was not recommending that this procedure be used in this particular instance.

During August and September 1974 the District held discussions with the low bidder and with UMTA to reduce the scope and the cost of the Larkspur terminal and/or increase the amount of funds available from UMTA.

On September 20, 1974, the District's attorneys told UMTA's Chief Counsel that they had concluded that the alternative suggested by the UMTA regional official on August 1, 1974, would not be permitted under California law. The District therefore requested UMTA's concurrence in an award of the contract for constructing the Larkspur ferry terminal to the low bidder at the bid price of \$13.7 million with the understanding that a change order would be subsequently executed to reduce the contract price by an amount equal to \$3.9 million, resulting in a cost of \$9.8 million.

On September 25, 1974, UMTA's Chief Counsel told UMTA's Associate Administrator for Capital Assistance, with regard to the Larkspur terminal, that:

"The federal requirement for competitive bidding is a matter of federal administration practice-- UMTA policy and OMB Circular A-102 rather than federal law. Nothing in the Golden Gate procedure violates any specific element of administrative requirements, although the procedure would not be permissible in a federal procurement."

The Chief Counsel concluded that

- the District acted honestly in an attempt to obtain the most for the Government dollar,
- no Federal law precludes the District's procedure,
- the legality of the procedure will be subjected to careful scrutiny in the California courts, and
- a cancellation of the bids and readvertisement will result in higher cost to the Federal Government.

The Chief Counsel recommended that one of two courses of action be adopted. The first course of action was to concur in an award at \$13.7 million since most of the items

to be deleted by the change order were items that UMTA would have to fund sooner or later, and at an inflated price. The Chief Counsel indicated that this method would avoid the California legal question since the award would no longer be conditional on the acceptance of the change orders.

The second course of action was to concur in the award at \$9.8 million with a condition that, if the contract is subsequently found to be void under California law, any Federal funds spent under it will be refunded to the Federal Government. The Chief Counsel also indicated that UMTA could concur on the basis of a letter of no prejudice, and that UMTA could delay until the last possible moment in the pay-out process the time when the District will actually have to accept the grant and produce the local share. The Chief Counsel stated that this method would avoid the necessity of litigating the legal question.

The Chief Counsel concluded that:

"In view of the fact that the competitive bidding policy is policy, not law, that the violation, if there is one, is at the margin and will be litigated in state court, and that there is no suggestion of collusion between Golden Gate and the low bidder, it seems to me that the value to the federal government of UMTA's interest in its competitive bidding policy, or UMTA's right to be consulted in advance, is not worth the several millions of dollars that the vindication of those principles would entail in this case. I strongly urge that we adopt one of two courses of action set out above. Requiring cancellation and rebids, in my view, would involve expending millions of federal dollars in order to vindicate agency pride."

On September 26, 1974, UMTA concurred in the District's award of the contract for constructing the Larkspur terminal to the low bidder in the amount of \$13.7 million. UMTA recognized the need to proceed with the terminal construction and that there were not enough funds in the budget to cover the contract price. UMTA permitted the District to commit local funds which, if otherwise eligible, could later be included as project expenditures eligible for Federal participation should an amendment to the Federal grant providing for additional funding be approved. UMTA pointed out that its authorization carried no commitment or implication that an amendment would be approved for additional Federal assistance.

UMTA said it understood that the District intended to make a study to evaluate the number of floats that would be required and that, depending on the results of that analysis, it might be necessary to negotiate a change order to make changes in the design or number of float facilities.

On September 27, 1974, the District's board of directors passed a resolution to award the contract for constructing the Larkspur terminal to the low bidder at the bid price of \$13.7 million. The District awarded the contract the same day.

The board of directors also authorized the staff to undertake a detailed and comprehensive study of the float facilities which had been designed for the Larkspur terminal, with particular emphasis on design and operating criteria. The board further authorized issuance of instructions to the low bidder not to order material or parts for the boarding landings included in the Larkspur terminal project pending completion of the float facilities study and further appropriate board action.

On March 28, 1975, the District's staff reported the results of its float facilities study to the District's board of directors. On March 31, 1975, the District requested UMTA concurrence to approve a contract change order to modify the Larkspur float facilities and reduce the contract amount by \$766,000. As of August 1975, UMTA had not approved this request pending efforts by UMTA and the District to further reduce the contract amount.

Although this contract award was concurred in by UMTA and made by the District, we believe both agencies were on notice before the award that the contract specifications might have to be altered by a subsequent change order to reduce the contract cost to within the budget approved by UMTA. We question whether this procedure resulted in achieving the most effective competition for the work being performed because the price of the change order is being negotiated on a sole-source basis rather than offering the five bidders an opportunity to bid on a changed scope of work. We do not object to the contract award at this time in the absence of both a showing of bad faith on the part of both agencies and prejudice to other bidders. We believe, however, that in future circumstances such as this UMTA should direct revision of the project specifications and resolicitation of bids so it can obtain maximum competition for the work to be performed.

NEED TO CONSIDER THE COST-BENEFIT ASPECTS  
OF UMTA-FUNDED PROJECTS

The District's mandate to its consultant naval architect stated that, in the design of the system and selection of the optimum vessel, maximum consideration was to be given to those features which would attract the highest patronage. Comfort, speed, frequency, and dependability of service were to be carefully considered so an attractive alternative to the private automobile could be provided.

The consultant naval architect compared traveltime and costs for several modes of transportation between Marin County and the San Francisco Ferry Building to ferryboat traveltimes at various speeds. (See p. 10.) He concluded that, whenever practical, the time required for a ferryboat trip should be at least equal to or better than the time required for a bus trip.

The architect evaluated 14 vessels to determine which vessel the District should acquire for its ferry system. He rejected 13 of them for various reasons. (See p. 10.) The architect said that several 20-knot vessels appeared attractive but were rejected because the distance between Central Marin County and the Ferry Building at San Francisco was such that if the system was to provide the frequency of service believed necessary to attract riders, a 20-knot vessel could allow only 5 minutes terminal time for unloading and loading passengers. The architect concluded that the selected vessel, which was capable of a 25-knot service speed, would allow for a 10-minute terminal time on the San Francisco-Central Marin route. He believed this would provide sufficient margin to maintain a schedule in spite of short, unexpected delays.

The table on the following page shows the architect's estimates for acquisition costs, operating revenues and expenses, patronage, and service times for the system he recommended and for three other systems using different 20-knot vessels discussed in the architect's report.

The table indicates that the capital costs of the recommended vessel were higher than the costs of the three 20-knot vessels, and that the projected operating costs were higher for the recommended vessel system than for the 20-knot vessel systems. Also, the projected gross profits from operations was less for the recommended system than for two of the other systems.

In his August 1970 report, the naval architect stated that for the recommended vessel, "The higher construction

San Francisco-Central Marin County Ferry Service  
 Estimated Receipts, Expenditures, And Patronage  
 For Recommended Vessel and 20-Knot Vessels  
 For 1972 Assuming Five-Vessel Systems

	Recommended vessel	20-knot vessels		
		A	B	C
Cost per vessel	<u>\$ 2,100,000</u>	<u>\$1,017,500</u>	<u>\$ 825,000</u>	<u>\$1,650,000</u>
Total cost for vessels	<u>\$10,500,000</u>	<u>\$5,087,500</u>	<u>\$4,125,000</u>	<u>\$8,250,000</u>
Estimated annual revenue from:				
Central Marin Service	\$ 2,363,665	\$1,981,206	\$1,981,206	\$1,981,206
Bay Circle Cruise Service (note a)	<u>1,931,507</u>	<u>1,184,414</u>	<u>949,050</u>	<u>949,050</u>
Total	<u>4,295,172</u>	<u>3,165,620</u>	<u>2,930,256</u>	<u>2,930,256</u>
Direct operating cost from Central Marin and Bay Circle Cruise Services	<u>3,407,860</u>	<u>2,212,689</u>	<u>1,905,249</u>	<u>2,410,821</u>
Gross profit from operations	<u>\$ 887,312</u>	<u>\$ 952,931</u>	<u>\$1,025,007</u>	<u>\$ 519,435</u>
Daily patronage:				
Central Marin Service:				
commuters	4,171	3,500	3,500	3,500
noncommuters	1,317	1,100	1,100	1,100
Bay Circle Cruise Service (note a)	2,646	1,854	1,486	1,486
Passenger capacity per vessel	636	624	500	500
Traveltime in minutes	40	45	45	45
Fares:				
Central Marin Service	\$ .50	\$ .50	\$ .50	\$ .50
Bay Circle Cruise Service	2.00	1.75	1.75	1.75

a/The Bay Circle Cruise was proposed by the naval architect in his 1970 report; however, according to District officials the cruise was never a part of their planned system. (See p. 38.)

cost and greater operating expense has been given full consideration in this study and would in large part be offset by greater patronage due to shorter transit time and higher frequency of service." Thus the architect's primary consideration was to maximize patronage, reflecting the District's mandate to him.

The architect's patronage projections for the recommended vessel are about 20 percent higher than the projections for the 20-knot vessels. However, the capital cost of the recommended vessel is up to 2 1/2 times as much as one of the 20-knot vessels, and it is less profitable than two of the 20-knot vessel systems.

UMTA had not established any criteria to determine, within a selected mode of transportation, at what point the costs of a project element, such as a specific type of ferry-boat, outweighs the benefits to be derived from that investment. Although we recognize the importance of maximizing patronage in meeting the goals of this or any project, as well as UMTA's overall program, we believe UMTA should develop cost-benefit criteria to assist the grantee and UMTA in their decisionmaking processes for assuring that UMTA's mission of attracting more people to mass transit is accomplished in the most economical manner. Such criteria becomes increasingly important--now that 80-percent Federal funding is available for capital projects and up to 50-percent Federal funding for operating expenses--because the incentive for local transportation systems is not as great to keep the capital and operating costs at a minimum since the requirements for non-Federal funding have been reduced. In commenting on our report, the Department of Transportation stated that the implementation of the Proposed Policy on Major Urban Mass Transportation Investments will address this issue. (See app. II.)

NEED FOR IMPROVEMENT IN THE EXTENT  
OF WRITTEN JUSTIFICATIONS FOR  
MANAGEMENT DECISIONS

During our review we found it difficult in many cases to determine the reasons or justifications for management decisions. We recognize that it is time consuming to document every detail regarding a large project such as the District's ferry project. Nevertheless, we believe it is not a good practice for UMTA management to have to rely on the recollections of a few key officials for justifying major project decisions. This deprives UMTA management of a useful tool for evaluating grant applications and administering its program, and it exposes UMTA to the potential inability to justify its decisions later.

UMTA internal procedures require that certain statutory and administrative determinations and documentation of compliance with requirements be included in the final application and that they be in acceptable form and content. However, the procedures do not specify the documentation required to justify management decisions. We believe that in several instances in the District's ferry project UMTA should have required more justification for local decisions than was provided in the application and in the supporting documentation.

### Changes in the ferry project plan

The Urban Mass Transportation Act requires capital grant applicants to present evidence of adequate planning. As part of this requirement, UMTA requires a transit development plan covering the local system's capital needs. The District's May 1971 grant application indicated that the architect's August 1970 system design was the basis for this plan for the ferry project. The plan proposed a seven-vessel system--the M.V. Golden Gate, owned by the District at the time; a vessel similar to the M.V. Golden Gate; and five Spaulding 165s. The application, however, provided for use of the M.V. Golden Gate and requested funding for six Spaulding 165s. There was no justification in the application for the change in fleet composition nor was there any discussion of its impact on capital or operating costs. This substitution increased estimated capital costs by \$1.4 million, the difference in cost between a Golden Gate class vessel and a Spaulding 165. UMTA officials told us the reason for this change was that the District wanted to have a fleet of interchangeable vessels and that it wanted to avoid acquiring and maintaining two sets of spare parts.

The naval architect estimated the Spaulding 165s would cost \$2.1 million each. However, the District indicated in its grant application that the first two Spaulding 165s could be acquired for a total of \$4.1 million, or \$2.05 million each. There was no justification for this \$100,000 reduction in the estimated cost. A District official attributed the difference to a simple math error.

The architect's report also discussed a Bay Circle Cruise service from San Francisco which would stop at Sausalito, Tiburon, and Corte Madera Creek and would return with stop-over and transfer privileges to following ferryboats or to the bus system. The system design report is not clear as to how much of the estimated operating costs were attributable to this cruise service. District officials told us they never planned to use its vessels for this type of multipoint service. The District did not include a cruise ferry service

in its applications to UMTA. However, the District did not provide UMTA with any clarification on what effect not providing this service had on operating cost estimates.

#### Changes in costs in subsequent amendments

In November 1971 the District applied to UMTA for a grant amendment to fund part of the cost of the ferry project, then estimated to cost \$18.9 million. UMTA approved the November 1971 application in August 1972 for two-thirds of a revised net project cost of \$24.7 million. There was no written justification for the decision to increase the net project cost by \$5.8 million.

UMTA headquarters personnel told us that apparently UMTA believed it necessary to grant sufficient funds to cover the actual bid price on the ferryboats. The bids were received by the District in June 1972. The low bid amounted to \$12.6 million, or about \$4.9 million more than the cost of the ferryboats as estimated in the November 1971 application. However, the UMTA approval memorandum for the August 1972 grant amendment budgeted \$13.2 million for the ferryboats, or \$600,000 more than the low bid. No breakdown of this cost item was provided, but an UMTA official told us that the \$600,000 had been included to provide for California State sales tax and for anticipated change orders. District officials told us that the \$600,000 related to sales tax which was specifically excluded from the bid because of the question of its applicability at the time.

In June 1974 UMTA approved the third amendment to the grant for an additional \$8.3 million in Federal funds for the ferry project, representing 80 percent of an estimated increase in project cost of about \$10.3 million. According to an UMTA official, there was no single application for this amendment. Rather, the application consisted of a series of documents and communications during the 2-year period before the third amendment was approved. Although a series of letters and documents might constitute the application for amendment to the grant, they are not identified as such, unnecessarily complicating the grant application review process. Consequently, the documentation of the District justification for the additional funds is fragmented although UMTA's internal approval document for this amendment did cite general reasons for the cost increases.

#### UMTA STAFF EXPERIENCE

UMTA officials told us that, at the time the District application and supporting documentation was being reviewed,

UMTA lacked the expertise to adequately evaluate the reasonableness of the ferry project cost estimates. An UMTA official said that UMTA is now in a much better position to evaluate such estimates. However, UMTA must still rely on the grantees and their consultants for basic cost estimate information. The official also said that UMTA must have some degree of confidence in the grantee because UMTA does not have enough staff to conduct a detailed analysis of the grantee's recommendations, which are often based on highly technical information and local data.

An UMTA official told us that some of the factors which now put UMTA in a better position to evaluate estimates include (1) greater experience of its transportation representatives, (2) additional engineers on the staff, (3) a part-time consultant retired from a large transit system and, (4) the services of the Transportation Systems Center.

Transportation representatives are the UMTA personnel responsible for assisting grant applicants in the development of applications to an approvable form and preparing recommendations for approval of individual capital grant applications. In March 1972 the average experience of the 13 transportation representatives was about 14 months. In May 1975 there were still 13 transportation representatives, but their average experience was about 41 months. UMTA believes that this greater experience means a better capability to review grant applications. However, the workload of transportation representatives has increased from an average of 7 grants processed by each in fiscal year 1972 to an average of 17 grants processed in fiscal year 1975.

In 1972 UMTA had 4 engineers on its staff; in 1975 there were 12. Most are civil engineers and assist in the review process.

Another factor is a part-time consultant, a retired official of a large transit system, who provides assistance to the transportation representatives in evaluating applications.

Finally, UMTA officials told us that they also are able to use the resources of the Transportation Systems Center in Cambridge, Massachusetts. The Center is a Department of Transportation entity which provides the Department with program management, technical assistance, socioeconomic information, and transportation data services. UMTA's Office of Capital Assistance, responsible for the capital facilities grant program, began using the Center in late 1974 for assistance in evaluating applications.

## CONCLUSIONS

In general, UMTA does not take an active role in the local decisionmaking process as to how to best satisfy local mass transportation requirements. UMTA's approval of the District's grant applications for the ferry project was based on preliminary cost estimates which subsequently have been found to be unrealistic. The acceptance of preliminary estimates as support for a grant application and the lack of a penetrating review of all supporting documentation may result in UMTA funding projects (1) which are not cost-beneficial or (2) where the true costs are not known at the time of grant approval.

As a result, projects may be funded where actual costs greatly exceed preliminary estimates, thus putting a burden on Federal and local funding sources to complete the project. Once committed, the pressures become greater on UMTA to fund a project through to completion despite extensive cost escalation. UMTA's recent policy change to provide for a limited "phased funding" of the project appears to be a better procedure and should help prevent approving funds for construction of facilities which are based on unrealistic cost estimates.

UMTA's concurrence in the award of the Larkspur terminal contract, when it was known at the time that a change order to reduce the scope of the contract was being contemplated, may not have resulted in achieving the most effective competition for the work being performed.

There appears to be a very informal relationship between UMTA and the District in implementing the ferryboat system to such an extent that all relevant factors which affect decisionmaking are not supported by written justifications. Furthermore, UMTA procedures do not specify the documentation required to justify grant approval decisions. Such procedures are needed to enable meaningful evaluation of these decisions.

UMTA's ability to perform greater indepth analyses of grant applications and supporting documentation appears to have improved since the District's ferry project application was reviewed, but UMTA still relies extensively on the expertise of grantees and their consultants. The increased workload of UMTA's transportation representatives, however, has shortened the amount of time they can spend evaluating each application.

The lack of formal cost-benefit criteria to assist in the evaluation of alternatives within specific projects impairs UMTA's ability to assure that its mission of attracting

more people to mass transit is accomplished in the most economical manner.

RECOMMENDATIONS TO THE  
SECRETARY OF TRANSPORTATION

We recommend that the Secretary of Transportation direct the Administrator of UMTA to:

- Develop criteria to assist UMTA and grantees in evaluating the cost-benefit aspects of various alternatives available within individual projects.
- Require full written justification for all significant UMTA and grantee management decisions concerning a project.
- Require revision of project specifications and readvertisement of bids in lieu of contemplated contract change orders to reduce scope when the low bid for a construction contract exceeds the budget.

AGENCY COMMENTS AND OUR EVALUATION

In an October 10, 1975, letter (see app. II), the Department of Transportation stated that it concurred with our recommendations. The Department said that actions are presently underway to improve project analysis and documentation.

We believe that the Department's actions, taken or planned, to implement our recommendations are positive steps toward evaluating alternatives available to grant applicants on a cost-benefit basis and prevent funding projects based on preliminary cost data.

According to the Department, its policy of obtaining competition to the maximum extent possible is consistent with our recommendation that specifications should be revised and readvertised in lieu of change orders to reduce the contract price to be within the budget. The Department stated that it was aware that the District was considering a major reduction in the scope of the contract for the Larkspur ferry terminal but that it was unwilling to concur in the scope change until a detailed evaluation was made of the impact on service levels of such a reduction.

The Department concluded that a substantial delay would have occurred had the bids been rejected, the study performed, and specifications revised to be consistent with the study.

It stated that readvertisement for bids based on the revised specifications would have further delayed the project and that these delays would have delayed implementation of the ferry service. Furthermore, the Department stated that inflation during the period of delay would have eliminated the cost savings resulting from the reduced work.

We recognize the Department's concern that rejection of bids, revision of specifications, and readvertisement would have delayed implementation of the ferry service and would have cost more for less due to the effects of inflation during the period of delay. However, our recommendation for resolicitation of bids results from our experience that, as a general matter, adherence to the requirements of the competitive bid system produces the most effective procurement.

Therefore we believe that, in the future, it would be necessary under similar circumstances to reject all bids, revise the contract specifications, and resolicit bids in order to meet the requirements for open and competitive bidding for the work to be performed.

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JOHN R. STARK,  
EXECUTIVE DIRECTOR

**Congress of the United States**  
JOINT ECONOMIC COMMITTEE

(CREATED PURSUANT TO SEC. 5(a) OF PUBLIC LAW 304, 79TH CONGRESS)

WASHINGTON, D.C. 20510

November 4, 1974

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B-169491

Hon. Elmer B. Staats  
Comptroller General of the U.S.  
General Accounting Office  
441 G Street, N.W.  
Washington, D. C. 20548

Dear Elmer:

Attached is a letter I recently received concerning the use of Transportation Department funds to construct unnecessarily expensive excursion boats for use on San Francisco Bay.

If the charges made in this letter have any merit, the situation certainly merits an investigation. I would like for your office to investigate these charges (including those referred to by columnist Dick Nolan) to see whether further action is justified. I would like a letter report by December 4, 1974. If there are any questions concerning this investigation, please see Mr. Douglas Lee of the Joint Economic Committee staff.

Sincerely,



William Proxmire  
Vice Chairman



ASSISTANT SECRETARY  
FOR ADMINISTRATION

OFFICE OF THE SECRETARY OF TRANSPORTATION  
WASHINGTON, D.C. 20590

October 10, 1975

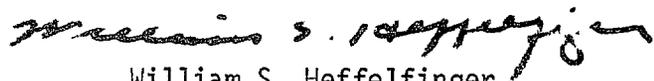
Mr. Henry Eschwege  
Director  
Resources and Economic Development  
Division  
U.S. General Accounting Office  
Washington, D. C. 20548

Dear Mr. Eschwege:

This is in response to your letter of September 8, 1975, requesting our comments on the General Accounting Office (GAO) draft report on increased cost of implementing commuter ferry system on San Francisco Bay. The report recommends that the Urban Mass Transportation Administrator (1) develop criteria for evaluating the cost/benefit aspects of various alternatives available within individual projects, (2) require full written justification for all significant management decisions concerning a project, and (3) require revision of project specifications and readvertisement of bids in lieu of contemplated contract change orders to reduce scope when the low bid for a construction contract exceeds the budget. The Urban Mass Transportation Administration (UMTA) has initiated actions to require cost effectiveness analysis as part of major capital grant applications and to improve project documentation. UMTA advises that its existing policy is consistent with the report's third recommendation.

I have enclosed two copies of the Department's reply to the report.

Sincerely,

  
William S. Heffelfinger

Enclosure  
(two copies)

Department of Transportation  
Statement on GAO Report

I. Title: Increased Cost of Implementing Commuter Ferry System on San Francisco Bay

II. GAO Findings and Recommendations:

The GAO conducted a review on the use of Federal funds to construct ferry boats and related facilities to implement a ferry system on San Francisco Bay. The ferry system is being implemented by the Golden Gate Bridge Highway and Transportation District and its costs have significantly increased over original estimates.

GAO's review focused on the factors causing the cost of the ferry system to increase and the role played by the Federal government in approving this project. Based upon its review, GAO has recommended that the Secretary require UMTA to:

- (1) Develop criteria to assist UMTA and grantees in evaluating the cost/benefit aspects of various alternatives available within individual projects.
- (2) Require full written justification for all significant UMTA and grantee management decisions concerning a project.
- (3) Require revision of project specifications and readvertisement of bids in lieu of contemplated contract change orders to reduce scope when the low bid for a construction contract exceeds budget.

III. DOT Comments on Findings and Requirements:

UMTA concurs in GAO's recommendations. Actions are presently underway to require cost effectiveness analysis as part of major capital grant applications and to improve project documentation. GAO's third recommendation is consistent with existing UMTA policy.

UMTA recognizes that the cost of the ferry system has significantly increased over original estimates. The ferry system was approved on the basis of preliminary cost and design data which did not adequately reflect the complex nature of a marine project. Nevertheless, despite the increased costs, UMTA still considers the project a sound mass transportation alternative which will aid in further reducing congestion in the Golden Gate Corridor.

Following are comments on each of the specific GAO recommendations in numbered order.

1. At a time when urban mass transit funds are limited, UMTA supports the use of cost and effectiveness criteria in evaluating various project alternatives. In this regard, UMTA has recently published a Proposed Policy on Major Urban Mass Transportation Investments (Attachment A) which will apply to all projects over \$100 million and to other significant transit projects. The proposed policy calls for a thorough analysis of alternatives, including documentation of costs, levels of effectiveness and other analyses necessary for a sound funding decision.

The policy statement formalizes procedures that have evolved over a long period of time. Although the statement speaks only of significant projects, UMTA now reviews all projects to ensure that alternatives have been considered. As an example, applicants requesting new maintenance facilities must explore the feasibility of rehabilitating existing maintenance buildings. Documentation on this type of analysis is found in Attachment B.

Alternative examination also extends to mode selection. Fixed guideway applicants must weigh the benefits of light vs. heavy rail. An applicant proposing to implement a major ferry system project in the future will not only have to examine a range of bus alternatives but will also have to justify the cost of the chosen commuter boat over other vessels.

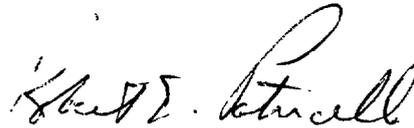
2. Staff is aware of the need for improved project documentation but the volume of work sometimes precludes this activity. At the present time, 16 transportation representatives are reviewing over 300 capital grant applications. Their workload also includes amendments, congressional correspondence, briefing papers and routine meetings with applicants. This staff needs to be expanded.

3. UMTA's policy is consistent with the recommendation that specifications should be revised and readvertised if a grantee decides to make major modifications through change orders to reduce the contract price to be within the budget. UMTA was aware that the grantee was considering a major reduction in the scope of the contract for the Larkspur Terminal. However, UMTA was unwilling to concur in the scope change until a detailed evaluation was made as to the impact this reduction would have on service levels. A substantial delay would have occurred if bids were rejected, the study performed, and then specifications were revised to reduce the scope to be consistent with the conclusions of the study. (It could have been concluded that no changes be made.) Further delay would have followed during readvertisement of revised specifications. Inflation during such a time period would have eliminated the cost savings occurring from the reduced work. It was very possible that the grantee would have paid more for less. In addition, some of the materials required a long delivery time. Changes in contract scope could not have reduced the lead time. Since the ferry boats were scheduled for delivery prior to completion of the terminal, any delay in award of the contract would have resulted in an equivalent delay in the implementation of passenger service.

#### IV. Status of Corrective Action

1. To prevent similar occurrences where there is a wide discrepancy between original estimates and actual costs, UMTA has instituted a policy of initially funding only final design for a project. Once this is completed, UMTA reviews the project to determine if there are increases in cost and if so, whether the project warrants further funding.
2. The Proposed Policy on Major Urban Mass Transportation Investments has been published in the Federal Register for comment. All comments received before October 1, 1975 will be considered in the preparation of the final policy statement. Additional guidelines expanding the concepts outlined in the policy statement are being developed.
3. UMTA recognizes that marine projects may involve complexities beyond the expertise of its regular staff. Therefore, appropriate professional consultants will be used in evaluating future ferry boat projects.

4. A new Technical Coordination and Support Division has been established within the Office of Capital Assistance. It consists of economists as well as planning, operational, and environmental specialists. The technical support staff will play an important role in doing the type of analysis recommended by GAO as well as other analyses pertinent to sound Federal decision-making on the use of mass transit funds.
5. UMTA has requested major staff increases in its proposed FY 77 budget. The additional personnel are essential not only for improved project documentation but also for the more comprehensive project analysis as recommended by GAO.



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Administrator

Attachments

## ATTACHMENT A

32546

## NOTICES

DEPARTMENT OF  
TRANSPORTATIONUrban Mass Transportation  
Administration

[Docket No. 75-04]

MAJOR URBAN MASS TRANSPORTATION  
INVESTMENTS

## Notice of Proposed Policy

The purpose of this Notice is to issue for review and comment a statement of Federal policy with respect to decisions on major urban mass transportation investments assisted under the Urban Mass Transportation Act of 1964 as amended. The need for such clarification has resulted from the shifting nature and complexity of the UMTA capital program and the increasing demands for available funds.

At the outset of the urban mass transportation assistance program in 1964, the \$75 million annual budget was directed toward the preservation of urban transit service in selected cities through the conversion of failing private transit companies to public ownership. A decade later, UMTA's annual capital assistance budget exceeds \$1 billion, and is primarily devoted to the rehabilitation and expansion of existing transit properties and to the construction of new transit systems. Not only has the magnitude of potential Federal investments increased significantly but the number of potential recipients for UMTA funds has grown. The pressure of these competing demands requires the Department of Transportation to ensure that the available Federal resources are utilized in the most prudent and productive manner.

In the interest of making all urban areas aware of the issues which will be considered in the Federal decisions to assist in the implementation of major mass transportation investments, the Department of Transportation has decided to promulgate a statement of policy. This policy represents a process-oriented approach designed to allow each urban area to take into account its unique characteristics in the planning and implementation of transportation improvements. As a condition of eligibility for Federal assistance, the policy requires that alternative investments be evaluated to determine which investment best serves the area's transportation needs, taking into account the social, economic, environmental and urban development goals. The policy stresses the need to consider combinations of transit modes appropriate to the service requirements of specific corridors, and improved management of the existing transportation resources as an alternative to the construction of new facilities. The policy also requires that major mass transportation investments be implemented in increments, with priority given to the more immediate needs of the area.

The extent of the Federal commitment will be based on the cost of the initial increment of the plan which provides for the transportation needs of the community in a cost-effective manner.

The statement has been developed in concert with Federal, State, and local transportation and planning officials, transit properties, public interest groups, and other groups potentially affected by the proposed policy. Comments and suggestions from these diverse groups have been solicited by UMTA through individual solicitations as well as through a major UMTA-sponsored Transportation Research Board Conference (Airlie House Conference). These comments have contributed substantially to the substance of this proposed statement.

The Department of Transportation invites further comments from all interested parties. Written comments should be directed to Urban Mass Transportation Administration, Office of Policy and Program Development, 400 7th Street, S.W., Room 9316, Washington, D.C. 20590. All comments received before October 1, 1975 will be considered in the preparation of the final policy statement.

Issued at Washington, D.C., July 25, 1975.

WILLIAM T. COLEMAN,  
Secretary.

FEDERAL POLICY ON ASSISTANCE FOR MAJOR  
MASS TRANSPORTATION INVESTMENTS

Since the beginning of this decade, the Federal government has provided an increasing share of the Nation's investment in urban mass transportation. In the years ahead, as more and more communities seek federal financial aid to improve and expand their mass transportation systems, it is more essential than ever that Federal funds be effectively and efficiently utilized. The following is a statement of the policy that will guide future federal decisions in determining eligibility for and the extent of federal commitment to the funding of major mass transportation investments. This policy will be applicable to all funds administered for these purposes by UMTA-Discretionary Grant funds (Section 3); Formula Grant funds (Section 5); Interstate Transfer funds; and Urban System funds.

## ELIGIBILITY FOR FEDERAL ASSISTANCE

Since each metropolitan area has differing characteristics, federal mass transportation assistance programs cannot be based on standardized solutions. Rather, federal programs should be flexible, relying heavily on local ability to assess present and anticipated transportation needs, to identify and evaluate alternative opportunities for improvement, and to initiate needed actions.

The Federal government does, however, have a strong interest in ensuring that federal funds available for mass transportation assistance be used prudently and with maximum effectiveness. While there are no simple standard procedures that will guarantee this outcome, a careful and systematic evaluation of the implication of alternative courses of action in advance of a federal commitment to participate in a major mass transportation investment should improve the quality of decisions. To this

end an analysis of transportation alternatives will be required as a condition of eligibility for federal assistance for any major mass transportation investment. Generally this would include investments which anticipate a federal participation of more than \$100 million in capital funds. However, circumstances may occasionally arise that make it desirable to require analysis of a smaller investment. For example, in smaller metropolitan areas a transit investment involving substantially less than \$100 million may be considered as a major mass transportation investment if it represents a significant portion of the area's total transportation program.

This analysis of alternatives shall be based on the following general principles and shall be performed as an integral part of a comprehensive transportation planning process.

## A. Integration of Transit Services

Long-range transportation plans should reflect an awareness that different levels of transportation service may be needed in different portions of the metropolitan area. The plans should include specific transit elements tailored to the travel demands and service requirements of the specific corridors and neighborhoods they serve. Explicit recognition should be given to community-level transit services which address local circulation needs, as well as to express line-haul connections which foster regionwide accessibility. As an example, a comprehensive strategy plan may call for the construction of a rail rapid transit line in a corridor of heavy demand, supplemented by a light rail network or busways in lower density portions of the metropolitan area, and assisted by fleets of fixed route buses and flexibly routed paratransit vehicles acting as feeders to the higher capacity line haul systems.

## B. Incremental Development

Major mass transportation investments should be implemented in increments based on an analysis of the projected 5-10 year transportation needs of the total area. The increments should be consistent with area-wide long-range transportation plans which should be reviewed and revised periodically to reflect changes in the long-range forecasts.

Where long-range plans call for the construction of an area-wide fixed guideway system, the initial segments of the system should be implemented in corridors having priority needs. These initial segments of the fixed guideway system should be capable of efficient operation in themselves.

Corridors having less immediate needs should be provided with interim, lower level of service. This corridor service level should be upgraded progressively as the demand develops.

Incremental development will ensure that high priority corridors receive initial attention, will help to spread out the fiscal burden, and will preserve maximum flexibility to respond to changing

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urban conditions, technological change, and shifting land use and travel patterns.

*C. Improved Management of Existing Transportation System*

Improvements in transportation service should be sought through effective management and operation of the existing transportation system as well as through construction of new facilities. Actions such as preferential treatment of buses on freeways and city streets, reserved lanes and transitways, parking management, measures to reduce the use of automobiles in congested areas, changes in fare structure to stimulate off-peak travel, promotion of carpooling and of paratransit services, staggered work hours and other actions designed to make more efficient use of existing transportation facilities, should be considered as alternatives and supplements to the construction of new capital facilities.

*D. Systems Evaluation*

An analysis of alternatives should be undertaken in the development of the long-range plan and in the determination of the increment of the plan to be implemented. This analysis should include an assessment of the alternatives'

impact on local and regional accessibility, air quality, energy consumption, neighborhood environment, community and regional development patterns, corridor traffic flows and modal choice, and other factors considered important by the area's residents. In defining the increment of the plan, the analysis of alternatives should indicate which alternative investment provides for the metropolitan area's transportation needs in a cost-effective manner, taking into account the social, economic, environmental and urban development goals of the community.

*E. Public Involvement*

There should be full opportunity for the timely involvement of the public, local government and metropolitan, regional, State and Federal agencies in the alternative analysis process. This involvement should be initiated early, so that all groups have the opportunity to influence the process in a timely and constructive fashion, particularly as to the alternatives to be considered, the effects to be studied, actions to be taken to minimize or avoid adverse effects, priorities for implementation, and the phasing of program and project development activities.

**EXTENT OF FEDERAL COMMITMENT**

The extent of the Federal commitment for a major mass transportation investment will be determined by the cost of the increment of the long-range plan which provides for the metropolitan area's transportation needs in a cost-effective manner, taking into account the social, economic, environmental and urban development goals of the community. However, the locality may use the Federal funds available as a result of the Federal commitment to support any of the alternatives evaluated, provided that the transit coverage of the selected alternative is substantially the same as that of a cost-effective alternative, that the locality is willing and able to secure any additional funding which might be required, and that any project for which Federal assistance is sought meets the statutory requirements for approval.

**FUTURE ACTION**

Additional guidelines expanding the concepts outlined in this policy statement are being developed. In the interim UMTA will continue to work with metropolitan areas on a case-by-case basis in developing procedures which will adequately fulfill these requirements.

[FR Doc.75-20009 Filed 7-31-75; 8:45 am]

## ATTACHMENT B

NOV 8 1974

Subject: Analysis of Capital Grant Requests  
for the Construction or Rehabilitation  
of Maintenance and Storage Facilities

From February 1965 to July 1974, grants have been made under UMTA's capital assistance program for the construction or rehabilitation of 96 transit maintenance and storage facilities. Major new construction has taken place in such places as Pittsburgh, Detroit, Atlanta, and Boston. Smaller garages have been built in a host of other communities. Work will begin soon on facilities in such places as Los Angeles, San Francisco, Kansas City, and Tucson.

The depth of analysis in reviewing each applicant's request for assistance has varied overtime. With the passage of new legislation such as the National Environmental Policy Act of 1969, additional questions have had to be raised. With the introduction of new administrative requirements such as the inclusion of the Capital Grant Guidelines within our overall application format, the emphasis of review has shifted. In essence, current review of any request is a two-step process.

The first series of questions centers around determining whether there is a need to do anything at all. Normally an applicant justifies its need to act on the condition and age of its facility; the inadequate size of its building; the building's location; or its ownership. For example, a garage may be so old as to be unsafe, like the circa 1900 MUNI garage in San Francisco that survived the 1906 earthquake, has been condemned since that time, but is only now being replaced. A garage may be too small. This problem usually follows from the rapid expansion of a bus fleet, as is the case in Madison, Wisconsin. Due to changing routes, a garage may be poorly located. Unacceptably high deadhead costs result. The solution is to relocate the garage, as is being planned in Kalamazoo, Michigan. Finally, a garage may be leased from a landlord who no longer wants to continue his lease agreement with the transit operator. The Lexington-Fayette County Transit Authority of Lexington, Kentucky faced this situation when it assumed responsibility for providing transit service upon the demise of the local private carrier. Generally, more than one of the above factors is employed by an applicant when justifying any single grant request, although single factor justification is not uncommon.

Once the need to act has been clearly demonstrated, a second series of questions is addressed. These relate to the investigation of various alternatives open to an applicant. An operating property can rehabilitate its existing garage; purchase and rehabilitate an existing building; or construct a new facility. Factors that influence the decision include:

1. The availability of alternatives
2. The cost of new construction

3. The cost of rehabilitation
4. The cost of real estate acquisition
5. The cost of operating the facility
6. The cost of operating the transit system from the facility
7. The consideration of future requirements
8. The useful life of the facility
9. The environmental impact of the action.

All of the above factors play a role in the ultimate decision. From the applicant's point of view, operating costs weigh very heavily. From our perspective, capital costs and the environmental impact of the proposed project are high priority considerations.

Several case studies may help illustrate the entire process. Green Bay, Wisconsin submitted a capital grant application on July 9, 1973. Assistance was requested in the purchase of the assets of the local private transit operator, six new 45-passenger buses and related support equipment as well as the construction of a new bus maintenance and storage facility. A grant of \$975,548 was approved on December 26, 1973. Its scope included \$477,500 for the construction of a new facility to house a fleet whose ultimate size would probably never exceed fifty buses. Justification for the new building was based on several factors. First, the private carrier did not want to sell its bus garage. Second, the city facilities were ill-designed and equipped to support the storage and maintenance of a bus fleet. Finally, there were no other suitable buildings to be found. A site next to other city garages was therefore chosen for the construction of the new garage. This location would enhance coordination of city functions and minimize the project's environmental impact. However, the city did recognize that the site was somewhat removed from the center of the bus system and that higher operating costs would result. Since the time of grant approval, the former private carrier has approached the city and has said that it is now willing to sell its garage. A grant amendment to allow this change in scope has been submitted. A capital savings of more than \$200,000 to all parties involved should result. Because the garage is located at the end of most bus routes, substantial savings in operations costs will also follow. Yet, until the private carrier was willing to sell, this optimum alternative was not available.

The Ann Arbor Transportation Authority of Ann Arbor, Michigan submitted an amendatory application to its original grant on May 22, 1974. The scope of their request included the acquisition and rehabilitation of an existing facility so that it would be used as a storage and maintenance facility. In support of the amendment, the Authority first adequately demonstrated that there was a need to act. Its original garage was too small, poorly heated, in marginal condition, surrounded by residential and commercial properties, and not located at the center of the system's eventual service area. The Authority then had an independent architectural firm examine

alternative sites. In its final report, the firm recommended the purchase of an existing building and the construction of a warm storage building to protect buses from the extremes of Ann Arbor's winter months. They found that such a course would cost \$519,050 less than the construction of a totally new building, less real estate costs. When they included the cost of acquiring an existing facility or land for new construction, the purchase and rehabilitation of their recommended site was still \$170,875 cheaper than any other alternative. The firm also stated that given the rate of inflation in the construction market, the differences between new construction and the rehabilitation of existing properties would continue to grow in favor of the rehabilitation alternative. The Authority's request was ultimately approved.

As transit system sizes increase or as we consider the needs of rail properties, the ability to find existing buildings well suited for a transit maintenance and storage facility diminishes. In Cincinnati, Ohio, Queen City Metro is actively considering the purchase and renovation of the former Cincinnati Union Railway Terminal so that it could be used as a bus maintenance facility. Although the issue is not yet settled, the purchase and renovation of the terminal may prove the most cost beneficial alternative from both an operating and capital investment perspective.

The Kansas City Area Transportation Authority also considered purchasing that city's railway station. Because it could not be purchased, the Authority had to request assistance in building a new single centralized maintenance and storage facility to replace its two small antiquated garages. In the process, three construction sites were examined. The one chosen maximized operating economics and efficiencies.

In summary, the various factors involved in reaching a decision interact in different ways in different cities. In all cases, the availability of alternatives is the foundation upon which eventual requests for capital assistance are built.

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