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Briefing Report to the Chairman, Subcommittee on Federal Services, Post Office and Civil Service, Committee on Governmental Affairs, U.S. Senate

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POSTAL SERVICE

Estimating the Cost of Construction Projects

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The Honorable David Pryor
Chairman, Subcommittee on
Federal Services, Post Office,
and Civil Service
Committee on Governmental Affairs
United States Senate

Dear Mr. Chairman:

This briefing report responds to your request that we review how the U.S. Postal Service develops its cost estimates for new construction facility projects. In addition you asked us to (1) identify major facility projects that were reviewed and delayed or otherwise questioned by the Postal Service's Board of Governors and (2) compare the actual project costs with the approved cost estimates for a sample of completed postal facilities.

The Postal Service develops cost estimates for all construction projects. The Postal Service's Board of Governors must approve cost estimates for major facility projects costing $10 million and over. These estimates limit the amount of funding the Service can commit on a project. If costs are later anticipated to overrun the approved amount, additional funding must be authorized.

On July 19, 1989, we briefed the Subcommittee on the results of our work. At that time, we agreed to provide you a written report summarizing the matters discussed at that briefing.

RESULTS IN BRIEF

The Postal Service estimates total project costs by combining the cost of the site selected with estimates for building construction costs. Construction costs are estimated using construction cost indexes and a database containing average price bids for constructing similar postal facilities, incorporating contingency factors ranging from 5 to 10 percent. Appendix I explains in more detail how the Service develops its cost estimates.

We found that the Board of Governors delayed or otherwise questioned 10 out of the 47 projects it reviewed during fiscal years 1984 to 1988, raising questions about such aspects as the site, size, and costs. The Board did not question the methods used to estimate project costs. Appendix II discusses the 10 projects.

We compared approved estimates with actual project costs for a sample of 220 projects for which data was readily available out of a total of 295 projects completed during fiscal year 1988. Overall, we found that while some projects cost more than the approved estimates, the average actual project costs were 7 percent under estimates. Major facility projects estimated to cost $10 million and over averaged 11 percent under estimates, while smaller post offices estimated to cost under $2.5 million averaged 3 percent under estimates. Although we did not verify the costs actually incurred or that the estimates were prepared in the manner described to us by the Postal Service, it seems that in the aggregate the process used gave a reasonable estimate of construction project cost. Appendix III provides more details on these 220 projects.

OBJECTIVES, SCOPE, AND METHODOLOGY

Our objectives were to determine how the Postal Service develops cost estimates for new construction projects and to identify major facility projects that were reviewed and delayed or otherwise questioned by the Board of Governors. We also agreed to compare final project costs with approved estimates for a sample of projects to determine whether actual average costs were higher or lower than initial estimates.

In carrying out our work, we obtained information from Postal Service officials and reviewed agency documents at the Postal Service headquarters in Washington, D.C. We relied on data from the Service's computerized Facilities Management System to identify the number and actual cost of postal facility projects completed during fiscal year 1988. At our request, Postal Service Headquarters asked the five regional Facilities Service Centers to verify initial cost estimates for the 295 projects identified. We were able to collect this information on 220 projects, which became our sample. The project files needed to verify estimates for the remaining 75 projects were not available at these regional centers. Our review was done between November 1988 and July 1989, in accordance with generally accepted government auditing standards.

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A draft of this briefing report was discussed with the General Manager, Capital Investment Division, and officials

within the Facilities Department of the Postal Service. They generally agreed with the facts presented, and their comments were considered in preparing our final report.

As arranged with the Subcommittee, we will distribute copies of this briefing report to the Postmaster General, the House Committee on Post Office and Civil Service, and other interested parties. Copies will also be made available to others upon request.

If you have any questions regarding this briefing report, please call me on 275-8676. Major contributors to this briefing report are listed in appendix IV.

Sincerely yours,

L. Nye Stevens

L. Nye Stevens
Director, Government Business
Operations Issues

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HOW THE POSTAL SERVICE DEVELOPS COST ESTIMATES FOR NEW CONSTRUCTION PROJECTS

The Postal Service has decentralized responsibility for the design and construction of major proposed postal facilities to the Facilities Service Centers in the five postal regions. The five centers are located in Windsor, Connecticut; Philadelphia, Pennsylvania; Chicago, Illinois; Memphis, Tennessee; and San Bruno, California. Each center has an estimator who is responsible for preparing cost estimates for proposed major postal facilities as well as for local post office facilities.

When the Service initiates a new building project, the cost estimator prepares a facility investment cost sheet for inclusion in a decision analysis report. This report is submitted for project approval and establishment of the project's cost ceiling. Postal divisions can approve projects up to $2.5 million, regions can approve those up to $5 million, and headquarters approval is needed for projects up to $10 million. The Postal Service's Board of Governors must approve projects costing $10 million and over. Estimated costs include contingency factors ranging from 5 to 10 percent for most components of a project's estimated cost to allow for operational changes or unforeseen conditions. If costs are later anticipated to overrun the approved estimate, additional funding must be authorized at the appropriate approval level.

Once the Postal Service determines the need for and location of a new facility, the estimator begins by verifying the building size from the net building area needed on a facility planning data form. The estimator verifies the gross area, which includes halls, bathrooms, stairwells, and elevators, by multiplying the net area by standard adjustment factors, provided on the form, for functional areas such as the lobby and workroom.

After verifying the building size, the estimator prepares an investment cost sheet summarizing the total estimated project costs. Table I.I outlines how cost data for each component of the facility investment cost sheet--site, buildings, and fixed mechanization[1]--are estimated; and, where applicable, how contingency factors are calculated. Construction costs, which are the bulk of the estimates for buildings, are estimated by using construction cost indexes and a Postal Service database

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[1]Fixed mechanization: the specialized processing equipment specifically designed for a particular mail processing facility that requires specific building design features or modifications for installation at that facility. This component would not be used for developing cost estimates for a customer service facility.

that contains average construction contract bids for similar specific postal facilities in the same part of the country.

Table I.I:
Facility Investment Cost Sheet
Estimates of Cost by Component and the Related Contingency Factors Used

Site	Explanation of estimate
Land acquisition	Actual cost of land. If an estimate is used, a 10-percent contingency is added.
Engineering, real estate, legal and other fees	Costs such as pre-acquisition surveys and closing costs. No contingency is added.
Site development	Costs of preparing site for building construction, such as demolition, grading, and fill. A 10-percent contingency is added.
Third party relocation	Cost of relocating tenants from property if required by law. No contingency is added.
Buildings	
Design and engineering	Costs are estimated at 6 percent of all site and building construction costs without contingencies. To this 6-percent estimate, a 10-percent contingency is added.
Building construction	Costs are estimated using construction cost indexes and a Postal Service data base that contains average construction contract bids for similar facilities. A 5-percent contingency is added.
Telephone system	Estimated cost of the telephone system, plus a contingency of 5 percent.
On-site paving, landscaping, and utilities	Estimated cost of such items as sidewalks, site lighting, plantings, utility lines and connection fees, fencing, and driveways. A 10-percent contingency is added.
Construction supervision	The estimated cost of contracted management services to review drawings and specifications and supervise construction to assure that all requirements are being met. This cost component is estimated at 7 percent of all estimated costs, plus related contingencies for building and site development costs.

APPENDIX I

Fixed mechanization	Explanation of estimate
Mechanization design	The design cost estimate is 6 percent of the basic cost estimate to build and install customized fixed mechanization equipment. A 10-percent contingency is added.
Fabrication and installation	Estimated cost to build the custom-designed equipment and install it into a mail processing facility. A contingency of 5 percent is added.
Construction supervision	As with the building cost estimate for construction supervision shown above, this estimated cost is for contracted management services. This cost component is estimated at 7 percent of the estimated costs to design, build, and install the fixed mechanization equipment, plus related estimates for contingencies.

NEW CONSTRUCTION FACILITY PROJECTS QUESTIONED BY THE POSTAL SERVICE BOARD OF GOVERNORS

The Board of Governors deferred approval or otherwise questioned 10 of 47 major new construction facility projects during fiscal years 1984 to 1988. The issues questioned by the Board involved overall project size and related funding level, specific site or construction costs, and individual operational issues. These operational issues related to site size, the environment, return-on-investment calculations, and training facility operations.

Four of the projects were approved without change, three at a subsequent Board meeting. The remaining six projects were reduced in cost following the Board's inquiry. The Board did not raise questions regarding the methods used to estimate project costs. Table II.I summarizes the meeting dates, facility and locations, amount approved, and issues questioned.

Table II.I:
New Construction Facility Projects Questioned by the Board of Governors, FY 1984-88

Facility	Date of Board meeting	Amount approved (millions)	Issue questioned
General Mail and Vehicle Maintenance Facilities Los Angeles, CA	12/6/83	None	The Postmaster General requested deferment, because of the facilities' size and cost, until the Board could visit the site.
	2/9/84	$151.6	The Board approved the project with no change in the size or cost.
Vehicle Maintenance Facility and Garage New York, NY	8/7/84	None	The Postmaster General requested deferment, because of facilities' size and cost, until the Board could visit the site.
	9/11/84	$64.6	The Board approved the project with no change in the size or cost.
Technical Training Center Norman, OK	4/2/85	$66.4	The Board conditionally approved construction costs, pending a review of the need for centralized training in the new facility versus decentralized training.
	9/6/85	None	Postal management advised the Board that 25 percent of the training programs will be decentralized. The Board removed the hold on the project.
	6/3/86	None	The Postmaster General advised the Board that he had decided to scale back the facilities' size, which reduced the cost to about $30 million.

Facility	Date of Board meeting	Amount approved (millions)	Issues questioned
General Mail and Auxiliary Vehicle Maintenance Facilities Denver, CO	8/6/85	$7.0	The Board expressed concern about the cost ($132 million) and size (1.1 million square feet) of the project and approved only the site purchase, asking management to review the justification for a project this large.
	3/3/87	$75.5	Postal management submitted a revised request for a general mail facility of 678,000 square feet to be used in conjunction with the existing terminal annex building of 487,000 square feet. The Board approved the reduced project plan.
General Mail and Vehicle Maintenance Facilities Queens, NY	9/9/86	$125.6	The Board questioned acquiring a site with environmental problems. The Board was advised that the preferred site was not available at that time but that discussions were continuing. The project was approved.
	2/3/87	None	Postal management advised that the preferred site would be purchased, reducing overall project costs to $115.7 million.

Facility	Date of Board meeting	Amount approved (millions)	Issue questioned
General Mail and Vehicle Maintenance Facilities Montgomery, AL	12/2/86	$23.3	The Board questioned a difference between land costs in the written Decision Analysis Report and costs presented orally at the Board meeting. Postal management explained that the written report contained an earlier estimate, which had been subsequently revised. The Board approved the project.
Mail Processing Center and Vehicle Maintenance Facility Coppell, TX	4/7/87	$72.1	The Postmaster General advised the Board that he wanted to review the land acquisition and construction costs before leasing the project. The Board approved the project subject to this request, and land costs were subsequently reduced $700,000.
Mail Processing Center and Vehicle Maintenance Facility Atlanta, GA	4/7/87	$82.1	The Postmaster General again advised the Board that he wanted to review the land acquisition and construction costs. The Board approved funding subject to this request, and land costs were subsequently reduced $2 million.

Facility	Date of Board meeting	Amount approved (millions)	Issue questioned
General Mail Facility Alhambra, CA	6/2/87	None	The Board expressed concern about the site size, which was smaller than estimated site requirements and contained an existing building to be demolished. Action was deferred to evaluate other sites.
	11/3/87	$61.5	No new site was identified, and the Board approved the project.
General Mail and Vehicle Maintenance Facilities Champaign, IL	9/1/87	None	Although the project was withdrawn from consideration, the Board was concerned about a negative return on investment projection.
	11/3/87	$17.0	Postal management revised the project to a positive return by identifying additional labor savings. Project was approved.

ACTUAL COSTS COMPARED WITH APPROVED INITIAL COST ESTIMATES FOR 220 NEW CONSTRUCTION FACILITY PROJECTS COMPLETED IN FISCAL YEAR 1988

We identified 295 new construction facility projects completed in fiscal year 1988 using the Postal Service's computerized Facilities Management System. Our objective was to determine whether actual costs for a sample of real estate projects were higher or lower than official estimates. The Service asked the regional facility service centers to verify initial cost estimates for the 295 facilities. The centers were able to verify initial cost estimates for 220 of these facilities. Project files that would be needed to establish estimates for the remaining 75 projects were not available at the regional facility service centers.

We identified actual project costs for each of the 220 completed projects as reported in the system and compared those amounts to the initial cost estimates. We did not verify these costs or that initial cost estimates were prepared in accordance with the Service's procedures described in appendix I. We found that overall the process used gave a reasonable estimate of construction project cost and that on average the projects were completed at a cost that was 7 percent under original cost estimates.

However, we also found extreme deviations. For example, the Postal Service approved $162,000 for one project and the actual cost was $253,268, 56 percent over the estimate. On another project, the actual cost was 49 percent under the approved amount; the Postal Service authorized $1,677,000, but project costs totaled $857,004.

For the 220 projects, estimates ranged from $35,000 to $64,612,000. Actual costs for these projects ranged from $21,658 to $63,160,783. According to the Postal Service, the difference between original cost estimate and actual commitment is affected by various factors, including time elapsed between project approval and construction, favorable or unfavorable construction environments, number of firms competing for the contract, savings from the use of a single contractor to design and build a facility, as well as changes in project scope.

Service officials explained that an approved project's cost estimates do not obligate or commit a project's total funds or prevent those funds from being used for other capital projects. They said that yearly capital commitment budgets are developed

on the basis of the most current cost estimates available, not the originally approved level. Actual commitment amounts are carefully monitored, and available funds within the capital budget resulting from favorable contract awards are reallocated to other approved projects that could not be funded within the original budget.

Table III.I describes our overall sample and is segmented by approved amounts.

Table III.I:
Average Percentage that Actual Costs of 220 New Construction Postal Facility Projects Completed in Fiscal Year 1988 Were Over/Under Approved Amounts

Approved amount (in millions)	Number of projects	Average percent over/under approved amount
$10.0 and over	10	11 percent under
$5.0-$10.0	4	23 percent under
$2.5-$ 5.0	85	13 percent under
Under $2.5	121	3 percent under
	220	7 percent under

MAJOR CONTRIBUTORS TO THIS BRIEFING REPORT

General Government Division

Willis L. Elmore, Assistant Director
Peter N. Stathis, Evaluator-in-Charge
Lou V.B. Smith, Evaluator
Barry L. Reed, Technical Advisor
Linda F. Peterson, Technical Advisor

(224014)

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