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Report to the Chairwoman, Subcommittee on VA, HUD, and Independent Agencies, Committee on Appropriations, U.S. Senate

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VA HEALTH CARE

Actions Needed to Control Major Construction Costs

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The Honorable Barbara A. Mikulski
Chairwoman, Subcommittee on VA, HUD, and
Independent Agencies
Committee on Appropriations
United States Senate

Dear Madam Chairwoman:

This report responds to your request that we review the Department of Veterans Affairs' (VA) management of its major construction program. [1] Our objectives were to determine whether

- VA's methods for identifying construction needs and setting funding priorities are reasonable,
- VA construction projects exceed program needs, and
- construction funding is based on sound estimates of project costs.

Our scope and methodology are discussed in appendix I.

Background

Between fiscal years 1985 and 1992, VA received over $3.8 billion in appropriations for construction and modernization of its facilities. During the same time period, cost overruns amounted to over $224 million. Cost overruns occur on about 40 percent of construction projects.

The Congress and VA have made numerous attempts to improve management of the major construction program and control costs. These actions have included the establishment of methods to identify and prioritize needed construction projects, establishment of separate funding mechanisms for advanced planning and design of medical facilities to enable VA to develop better estimates of project costs before seeking construction funds, and a series of construction program reforms that VA identified in an April 1990 report to the Congress (see pp. 16 to 18).

Results in Brief

Although VA has strengthened many aspects of its construction program, the costs of VA's construction program are still too high because

[1]Major construction projects are those with an estimated cost of $3 million or more.

- factors that affect demand for VA health care services, such as incomes and insurance coverage of local veterans, are not considered in determining the need for VA construction;
- less costly alternatives to VA construction, such as joint ventures with Department of Defense (DOD) facilities and use of state and community resources, are given inadequate consideration in planning VA construction projects; and
- projects exceed program needs, containing too many beds, too much space, or designs that are too costly.

Also, projects increasingly receive construction funding before design development is complete and adequate cost estimates are developed.

We believe that because of the ongoing prospects for national health care reform, consideration should be given to limiting construction of additional acute care capacity until the future effects on demand for VA health care services can be determined.

VA Methods for Identifying and Prioritizing Construction Projects Are Reasonable

VA's methods for identifying needed construction and renovation projects and setting funding priorities are, for the most part, reasonable. [2] They do not, however, always result in adequate consideration being given to (1) factors such as income and insurance coverage that could affect the size of and need for VA construction projects by increasing or decreasing demand for VA services and (2) lower cost alternatives to new VA construction, such as joint ventures with DOD and conversion of existing facilities to other uses.

VA is statutorily required to develop, and update annually, a 5-year plan for the construction, replacement, and alteration of medical facilities. To do this, each VA medical center prepares a 5-year facility plan describing deficiencies, maintenance needs, and desired improvements. After review by VA regional offices, the individual facility plans are forwarded to VA's central office where they are combined to form VA's 5-Year Medical Facility Development Plan. The law also requires VA to establish a priority list of the 10 hospitals most in need of construction or replacement.

[2]There is not a direct link between the prioritization method and VA's budget request. This is because projects may be in different stages of planning, design, and construction. In addition, projects not identified through the prioritization methodology are frequently added at the direction of the congressional appropriation committees during the annual appropriation process. In fiscal year 1991, two-thirds of the projects receiving initial funding were added to VA's budget during the appropriation process.

Until 1985, VA did not have any formal process for establishing construction priorities. In 1984, the Senate Committee on Appropriations directed VA to develop a prioritization method. The method, implemented in 1985, assigns a numerical score based on established criteria to each project within a project category, such as new or replacement medical centers, outpatient improvements, cemetery projects, VA regional offices, correction of patient environment/privacy deficiencies, nursing homes, domiciliaries, and correction of seismic and life safety deficiencies. Each category is assigned a program emphasis weight, reflecting the relative importance of projects in that category. For example, projects to correct seismic deficiencies are assigned a higher weight than projects to build new regional offices. VA multiplies individual project scores by the program emphasis weights to develop a single integrated priority list (see p. 19).

Socioeconomic Factors Not Adequately Considered

While its overall approach to identifying and prioritizing construction projects is reasonable, the process could be improved by placing greater emphasis on assessing the socioeconomic characteristics of local veterans expected to use VA facilities. Better assessment of these characteristics could affect the need for or size of construction projects. Socioeconomic factors, such as income, service-connected status, and insurance coverage, can affect demand for VA care. For example, veterans with incomes below $10,000 use significantly more VA health care services than do veterans with incomes above $10,000.

Similarly, veterans without private health insurance are eight times more likely to use VA hospital care than veterans with health insurance. In this regard, VA did not consider the extent of veterans' private health insurance coverage in determining the need to build a VA hospital in Hawaii. Because of that state's nearly universal health care system, demand for VA services can be expected to be much lower than in other states where more veterans are uninsured. Also, national health reforms could have a dramatic effect on demand for VA services in other states. For example, a universal coverage program could reduce demand for VA inpatient care by 47 percent, quickly creating significant excess acute care capacity in VA hospitals.

Conversion of excess VA hospital capacity to other uses, such as nursing home care, could reduce the need for future VA construction of nursing homes. In addition, converting hospital beds to nursing home beds is generally less costly and faster than constructing new beds. For example,

it costs about twice as much to construct new nursing homes as it does to convert existing hospital beds to nursing home beds. Historically, VA takes about 8 years to plan, design, and build a new nursing home; generally, conversions take much less time to complete (see pp. 20 and 21).

Alternatives to VA Construction Not Adequately Considered

Less costly alternatives to new VA construction, such as use of state and community resources, conversion of existing space, and joint ventures with DOD, while generally supported by VA central office officials, are not always adequately considered at local and regional levels. This results in construction of excess capacity in some communities, further increasing health care costs (see pp. 21 to 24).

VA Projects Often Exceed Program Needs

VA construction projects frequently exceed program needs because they include too many beds or too much space or have numerous design changes as well as designs that are too costly. VA sometimes overestimates the number of beds and support services needed in construction projects resulting in excess capacity or costly redesigns to change the scope of projects. When the excess capacity is identified while a project is being designed, the project is delayed while designs are reworked to reduce the scope of the project. For example, VA attempted to add 117 beds to a planned clinical addition at the Atlanta medical center to accommodate special programs it hoped to establish and workload increases it believed were not accounted for by the VA bed sizing model. [3] OMB determined, however, that the sizing model already accounted for the factors VA was using to justify more beds and directed that the project be scaled down and 117 beds eliminated.

On the other hand, when the overestimate is not identified before construction begins, excess capacity is built. For example, a recently completed VA hospital in Albuquerque had significant excess capacity. The medical center contained enough excess capacity that entire wards in the completed medical center were not needed. Fortunately, the Air Force needed to replace its nearby hospital and was able to use the excess capacity VA constructed (see pp. 24 to 27).

Projects also tend to expand during final design. An approved design space, established through negotiations between VA's central office and medical center officials, is to be used by the architecture/engineering firm

[3]The model calculates the bed size based on 3-year utilization data for the facility and projected veteran population. VA annually updates the projected bed-size and workload for planned construction projects.

to develop construction documents reflecting the final design. The final designs of seven of eight recent projects we reviewed, however, exceeded the approved design space. The additional space included in the seven projects added over $10 million to construction costs. Such expansions occurred because the Office of Facilities was not delegated authority to require medical centers to comply with the approved design space. The recent reorganization of the construction program did not, in our opinion, adequately address this problem (see pp. 27 to 29).

Design changes occurring after construction projects are funded both delay completion and increase the cost of major construction projects. Between fiscal years 1985 and 1992, VA reported overruns on 14 major construction projects caused, at least in part, by design changes occurring after the project received construction funding. These changes accounted for over $45 million of the $224 million in overruns during fiscal years 1985 to 1992.

VA established a Design Changes Review Board in fiscal year 1988 to determine the need for changes during the construction process. VA officials believe fewer significant changes have been made on major projects since the Board was established. We found that about 85 percent of the changes requested by medical centers between August 1988 and January 1992 were approved by the Board. VA has not, however, evaluated the effectiveness of this or the other reforms discussed in the Office of Facilities' April 1990 report to the Congress (see pp. 29 and 30).

VA costs to construct nursing homes are significantly higher than those in the private sector. The higher costs occur because (1) VA nursing homes are built on the grounds of VA medical centers and designs must be adapted to fit available sites and maintain architectural harmony, and (2) VA, unlike the private sector, uses the same design criteria for nursing homes as it does for hospitals.

Developing separate nursing home design criteria and allowing construction of freestanding nursing homes could reduce construction costs. VA could also reduce costs by adopting other private sector practices, but there may be tradeoffs in long-term costs and patient care services. For example, VA designs nursing homes to have longer life spans than those of the private sector. Building for a shorter life span would reduce construction costs, but subsequently result in more renovation. Similarly, VA provides more space for occupational, physical, and recreational therapy than do private sector nursing homes. Reducing such

space would cut costs, but possibly at the expense of patient care services (see pp. 30 and 31).

Appropriating Construction Funds Before Design Development Is Complete Creates Risks

VA construction funds are frequently appropriated by the Congress before the scope of the project is known and design development is complete. This creates certain risks. First, the project's scope may expand to use available construction funds, increasing the cost of the project without causing an overrun. Second, if the funds appropriated are not adequate to cover construction costs once the scope of the project is determined and design development is complete then (1) cost overruns may occur or (2) VA may be unable to award a contract within available funds. Finally, if unforeseen site problems, such as underground streams or limestone caves, are identified as the facility designs are refined, project costs may increase, leading to overruns. Delaying funding until design development is complete will not necessarily reduce the cost of construction, but would provide the Congress with better initial estimates of construction costs, potentially reducing the incidence of cost overruns.

To try to limit overruns that result when projects are funded before adequate design work is complete, the Office of Facilities notified the Congress in its April 1990 report on construction program reforms that requests for construction funding will be delayed until design development is complete and better estimates of construction costs can be prepared. VA has not, however, followed the reform. For example, 7 of the 13 projects submitted by VA in its fiscal year 1993 budget request for construction funding had not completed design development.

In addition, the Congress sometimes appropriates construction funds for additional projects that have not been requested by VA and not completed design development. During the 5-year period ending September 30, 1992, the Congress appropriated about $28.4 million for the construction of four projects on which design development had not been completed. At the time funds were appropriated, design development had not started on two of the projects. These two projects incurred overruns totalling $10.4 million.

VA has not assessed the effectiveness of the reform in those instances where construction funding was delayed until design development was complete. To determine the net effect of the reform, if fully implemented, on the costs of VA construction projects, VA would need to (1) compare the incidence and amounts of overruns on projects funded before and after

completion of design development and (2) determine the extent to which any reduction in cost overruns is offset by increases in cost estimates occurring during design development. This is important because delaying funding until design development is complete might reduce cost overruns without reducing project costs if the net effect of the delay is a higher initial appropriation. VA also needs to evaluate those projects funded before design development was complete to determine whether their scopes expanded to use available funds (see pp. 32 and 33).

Matters for Consideration by the Congress

With health care reform near the top of the new Administration's agenda, it appears likely that fundamental changes in the nation's health care system will occur. Because actions that would reduce the number of uninsured veterans could reduce the need for new VA construction and create excess capacity in existing facilities, the Congress may wish to consider limiting construction of additional VA acute care capacity until VA's role is determined. Such action could (1) free up funds for deficit reduction without affecting current VA health care services; (2) prevent construction of capacity that could become excess before it is completed; and (3) permit portions of available construction funds to be used by certain facilities to speed correction of seismic deficiencies, other life safety deficiencies, and essential renovations.

Recommendations to the Secretary of Veterans Affairs

We recommend that the Secretary of Veterans Affairs

- develop methods to better (1) anticipate changes in facility missions and (2) project workloads in order to minimize the need for significant changes in facility designs to accommodate unanticipated changes;
- develop methods for considering the socioeconomic characteristics of the veteran population in the area to be served by a facility in determinations of need and location;
- establish procedures to help ensure that VA medical centers work with state and local health planners and military facilities to determine whether (1) adequate resources exist in the community to meet VA's needs without the need for new construction and (2) health care construction and operating costs could be reduced through joint ventures and sharing agreements with DOD or private sector hospitals;
- assess the effectiveness of VA program reforms reported to the Congress in April 1990, particularly reforms relating to (1) delaying construction funding until design development is complete and (2) reviewing and

approving design changes proposed after construction funding is appropriated; and

- evaluate the cost and patient care tradeoffs between VA nursing home construction methods and private sector methods to identify ways to reduce costs without unduly sacrificing patient care.

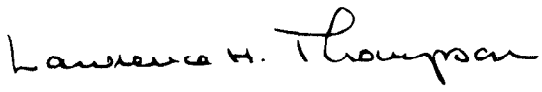
Agency Comments

We discussed a draft of this report in a February 24, 1993, exit conference with VA's Chief of Staff and other top VA operations and facilities management officials and obtained their views on our findings, conclusions, and recommendations. The VA officials generally agreed with the information contained in the report. The officials suggested various changes to the technical content of the report, which we incorporated as appropriate.

Unless you publicly announce its contents earlier, we plan no further distribution of this report for 30 days. At that time we will send copies to the Secretaries of Veterans Affairs and Defense; the House and Senate Committees on Veterans' Affairs; the House and Senate Committees on Armed Services; the House Committee on Appropriations; the House Committee on Government Operations; the Senate Committee on Governmental Affairs; the Director, Office of Management and Budget; and other interested parties.

This report was prepared under the direction of David P. Baine, Director, Federal Health Care Delivery Issues. If you have any questions, please call him on (202) 512-7101. Other major contributors are listed in appendix IV.

Sincerely yours,



Lawrence H. Thompson
Assistant Comptroller General

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Abbreviations

A/E	Architecture/Engineering
APF	Advance Planning Fund
CLI	cost limit increase
DAS/Budget	Deputy Assistant Secretary for Budget
DCRB	Design Changes Review Board
DOD	Department of Defense
FY	fiscal year
GAO	General Accounting Office
HUD	Department of Housing and Urban Development
O/F	Office of Facilities
OMB	Office of Management and Budget
VA	Department of Veterans Affairs
VHA	Veterans Health Administration

Objectives, Scope, and Methodology

Concerned with VA's cost overruns of construction projects, the Chairwoman of the Subcommittee on VA, HUD, and Independent Agencies, Senate Committee on Appropriations, asked our office to review VA's management of its major construction program. We focused on determining whether management procedures and policies are adequate to ensure that

- VA's methods for identifying construction needs and setting funding priorities are reasonable;
- VA construction projects do not exceed program needs; and
- construction funding is based on sound estimates of project costs.

To determine whether VA's methods for identifying construction needs and setting funding priorities are reasonable, we (1) reviewed VA's construction prioritization methodology handbook, (2) compared VA's agency-wide medical facility development plans for fiscal years 1988 through 1992 to VA budget submissions and VA appropriations to determine the extent to which VA's designated priorities are approved and funded, (3) interviewed VA officials regarding scoring and ordering procedures and factors considered in setting priorities, and (4) reviewed legislative requirements concerning authorization of construction projects. Our assessment of the extent to which less costly alternatives to new VA construction are considered was based primarily on prior GAO studies and interviews with senior VA officials. [1]

To determine whether VA construction projects exceed program needs, we (1) compared the final design space for eight judgmentally selected projects to the approved design space, (2) interviewed VHA and O/F officials about the reasons for frequent scope changes, (3) reviewed studies comparing VA and private sector construction costs, (4) obtained and analyzed nursing home construction cost data from the New York State Department of Health, (5) reviewed VA space planning criteria, (6) discussed with private and public sector officials the reasons for differences between VA and private sector construction costs, (7) compared the number of beds included in selected projects to the number of beds indicated by VA's sizing model, (8) analyzed overruns for fiscal years 1985-1992 to determine the extent to which they were caused by design changes occurring after the project received construction funding, (9) analyzed efforts by VA to limit design changes, including the

[1] VA Should Consider Less Costly Alternatives Before Constructing New Nursing Homes (GAO/HRD-82-114, Sept. 30, 1982); VA Health Care: Improvements Needed in Nursing Home Planning (GAO/HRD-90-98, June 12, 1990); and VA Health Care: VA Plans Will Delay Establishment of Hawaii Medical Center (GAO/HRD-92-41, Feb. 25, 1992).

establishment of the Design Changes Review Board and the October 1992 reorganization, and (10) interviewed medical center directors and other VA and contractor officials involved in three construction projects in Chicago area VA medical centers.

To determine whether construction funding is based on sound estimates of project costs, we (1) evaluated VA's implementation of an O/F reform intended to delay construction funding until completion of design development, (2) determined the extent to which VA construction projects are funded before design development is complete, and (3) determined the extent to which projects funded before completion of design development subsequently incurred cost overruns.

We discussed the results of our review with responsible agency officials and have incorporated their comments where appropriate.

Our work, conducted primarily at the VA central office in Washington, D.C., between July 1991 and July 1992, was done in accordance with generally accepted government auditing standards.

Actions Needed to Control Major Construction Costs

Background

VA operates a health care delivery system with 171 medical centers, 127 nursing homes, 263 outpatient clinics, and 35 domiciliaries. Through its major construction program, VA spends nearly a half billion dollars a year to maintain and enhance these facilities and to build new ones. [1]

Phases of the Construction Process

Major construction projects involve five phases:

Design program: the functional and physical space requirements for a project are broadly defined.

Schematics: the functional and physical requirements for a particular project are synthesized into an initial design.

Design development: plans are more thoroughly developed and a set of drawings are prepared that permit VA to develop more detailed estimates of project costs. This point represents approximately 35 percent completion of the working drawings.

Construction documents: working drawings and other documents necessary for the bidding and construction of the project are completed.

Construction: the designed project is actually built.

Management of the Construction Process

The VA construction process involves planning and coordination between staff at the medical center requesting construction, regional office, and three levels of review within the VA central office—Veterans Health Administration (VHA), Office of Facilities (O/F), and the Deputy Assistant Secretary for Budget (DAS/Budget). [2] The Office of Management and Budget (OMB) and the Congress are also key participants in the major construction program.

Each VA medical center identifies major construction needs and develops the initial scope of work to support the medical center's mission requirements. The regional office reviews the medical center's actions and

[1]Major construction projects are those with an estimated cost of $3 million or more.

[2]Effective October 1, 1992, VA reorganized the major construction program. As part of the reorganization, the O/F was abolished and most of its functions transferred to VHA. Because most of the activities discussed in this report occurred before October 1, 1992, we have maintained the distinction between O/F and VHA.

obtains further reviews by O/F, VHA, and the DAS/Budget within VA central office.

The O/F manages the major construction program, including preparing construction cost estimates and contracting with architecture/engineering (A/E) firms and monitoring their work. [3] While O/F manages construction projects, it is VHA that determines the scope of the projects. For example, VHA determines the number of beds required in a new or replacement facility. VHA does this using a bed-sizing model that projects bed requirements based on each medical center's historical utilization rates and projected veteran population.

In addition, the DAS/Budget reviews construction projects to ensure that designs are based on such things as approved project scopes, workload and staff projections, and costs. Finally, OMB and the Congress become involved in the major construction program through their reviews of VA's annual budget requests.

Cost Overruns Hinder VA's Major Construction Program

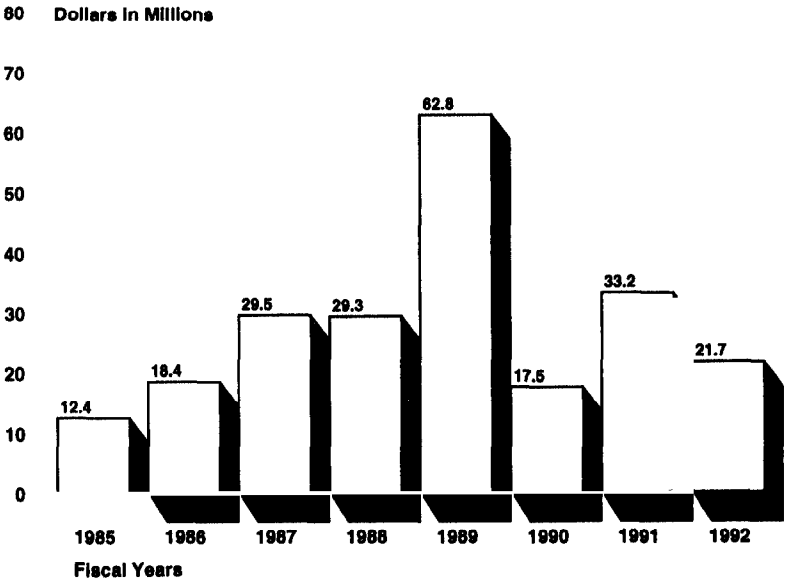
Over the years, cost overruns have plagued VA's major construction program. [4] In fact, about 40 percent of VA construction projects incur cost overruns. [5] Between fiscal years 1985 and 1992, cost overruns totaled over $224 million, peaking at almost $63 million in 1989. (See fig. II.1.)

[3]VA contracts with outside architecture/engineering (A/E) firms to perform the design work for major construction projects.

[4]A cost overrun occurs when the cost of a project exceeds the established cost limit. The cost limit is the lesser of (1) the amount appropriated for the project or (2) the revised total estimated cost based on the construction award.

[5]This analysis does not include (1) projects that received funding prior to fiscal year 1978, (2) parking garages, or (3) National Cemetery Service projects.

Figure II.1: Cost Overruns on Major Construction Projects



Note: Dollar amounts have been rounded.

VA Major Construction Program Changes

The Congress and VA have made numerous attempts to improve management of the major construction program and control cost overruns (table II.1). VA's construction process and organization have been the subject of 7 different studies over the past 22 years and numerous changes have occurred.

Table II.1 Summary of Actions Taken to Improve VA's Major Construction Program

FY	Action	Description
1976	Working Reserve Fund	When construction contracts are awarded the excess funds are transferred to the working reserve. These funds are then used to offset cost overruns on other projects. Prior to the working reserve, funds appropriated to projects remained on the projects until financial completion.[a]
1978	Advance Planning Fund (APF)	The APF is an annual appropriation that provides "seed money" to support project development for future major construction. The APF allows VA to contract with architecture/engineering (A/E) firms for design work completed through design development.[b]
1979	5-Year Facility Plan	VA is statutorily required to (1) obtain House and Senate Veterans' Affairs Committees approval before major projects can be funded, (2) prepare and annually update a 5-year plan for the construction, replacement, and alteration of medical facilities, and (3) notify the Veterans Affairs Committees when a project's cost is likely to be more than 10 percent above the amount approved by both committees.
1985	Design Fund	Established to allow a project to pass directly from the advance planning stage into the construction documents stage. The construction documents stage involves the production of complete drawings used for bidding and construction. The Design Fund is used for projects that VA expects to request construction funds for during the next budget cycle. VA currently suspends the design work upon completion of design development to notify Congress of the projects ready to move forward to the construction documents stage.
1985	Method for Setting Priorities	Developed by VA to prioritize major construction projects. Projects identified for planning consideration are scored using the methodology. Each project is evaluated, scored, and ranked on the basis of evaluative criteria. Prior to 1985, VA did not have a formalized process for ranking major construction projects.
1990	VA Reforms	O/F notified Congress of 14 planned and ongoing construction program improvements to reduce the incidence of cost overruns.
1993	Process for Authorizing Projects	Public Law 102-405 prohibits VA from expending funds appropriated by the Congress for major construction projects (except advance planning and design funds) that have not been specifically authorized by law.

[a]VA must request reprogramming authority from the House and Senate Appropriations Committees to transfer funds from the working reserve for overruns that exceed the lesser of $250,000 or 10 percent of the total project cost. VA notifies Congress of cost limit increases (CLIs)—transfers of less than $250,000—but such transfers do not require congressional approval.

[b]During design development, the A/E drawings are defined to the point that the O/F estimates a cost target for funding. VA anticipates it will fully fund these projects 3 years from the onset of advance planning.

For example, VA established a working reserve fund in 1976 to capture surplus funds from construction projects and transfer the needed dollars to other projects. In 1978, VA created the advance planning fund to improve

VA's estimating capabilities and provide funding through the design development phase of a construction project. A year later, Public Law 96-22 (1) required VA to develop a 5-year facility development plan and (2) set new requirements for funding construction projects.

Further changes occurred as a result of 1984 hearings before the Subcommittee on VA, HUD, and Independent Agencies, Senate Committee on Appropriations. Concerned that VA might not be focusing its major construction efforts on the highest priority projects, the Committee directed VA to develop a methodology for prioritizing major construction projects. In fiscal year 1985, VA established the design fund which allows a project to continue design work without additional delays in funding.

When cost overruns exceeded $60 million in 1989, the Senate Committee on Appropriations required O/F to develop a plan for improving its management of the major construction program. In April 1990, O/F outlined 14 planned and ongoing reforms aimed at improving its major construction program (these reforms are described in appendix III).

For example, VA discussed a Design Changes Review Board (DCRB), established in fiscal year 1988 to limit medical center input after a project is included in the budget. As a result, medical center-requested changes proposed after completion of design development must be reviewed and approved by the Board if the current change(s) will increase costs by more than $50,000, or if the new changes combined with prior changes will exceed $200,000.

Another reform, proposed by O/F in fiscal year 1990, was for projects to complete the design development phase before VA sought construction funds. This reform was intended to enable VA to develop better cost estimates for congressional appropriations.

VA's Methods for Identifying and Prioritizing Construction Projects Are Reasonable

VA's methods for identifying needed construction and renovation projects and setting funding priorities are, for the most part, reasonable. [6] They do not, however, always result in adequate consideration being given to (1) factors such as income and insurance coverage that could affect the size of and need for VA construction projects by increasing or decreasing demand for VA services, and (2) lower cost alternatives to new VA construction, such as use of state and community resources, joint ventures with DOD, and conversion of existing VA facilities to other uses.

VA Develops Methods to Set Construction Priorities

In response to congressional direction, VA has developed methods to prioritize construction needs. First, VA is statutorily required to develop, and update annually, a 5-year plan for the construction, replacement, and alteration of medical facilities. To do this, each VA medical center prepares a 5-year facility plan describing deficiencies, maintenance needs, and desired improvements. After review by the responsible VA regional office, the individual facility plans are forwarded to VA's central office where they are combined to form VA's 5-Year Medical Facility Development Plan. The law also requires VA to establish a priority list of the 10 hospitals most in need of construction or replacement.

Until 1985, VA did not have any formal process for establishing construction priorities. In 1984, the Senate Committee on Appropriations directed VA to develop a prioritization method. The method, implemented in 1985, assigns a numerical score based on established criteria to each project within a project category, such as new or replacement medical centers, outpatient improvements, cemetery projects, VA regional offices, correction of patient environment/privacy deficiencies, nursing homes, domiciliaries, and correction of seismic and life safety deficiencies. Each category is assigned a program emphasis weight reflecting the relative importance of projects in that category. For example, projects to correct seismic deficiencies are assigned a higher weight than projects to build new regional offices. VA multiplies individual project scores by the program emphasis weights to develop a single integrated priority list.

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VA Develops Methods to Set Construction Priorities

In response to congressional direction, VA has developed methods to prioritize construction needs. First, VA is statutorily required to develop, and update annually, a 5-year plan for the construction, replacement, and alteration of medical facilities. To do this, each VA medical center prepares a 5-year facility plan describing deficiencies, maintenance needs, and desired improvements. After review by the responsible VA regional office, the individual facility plans are forwarded to VA's central office where they are combined to form VA's 5-Year Medical Facility Development Plan. The law also requires VA to establish a priority list of the 10 hospitals most in need of construction or replacement.

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Conversion of such excess capacity to other uses, such as nursing home care, could also reduce the need for future construction. In addition, converting hospital beds to nursing home beds is generally less costly and faster than constructing new beds. For example, it costs about twice as much to construct new nursing homes as it does to convert existing hospital beds to nursing home beds. [10] Historically, VA has taken about 8 years to plan, design, and build a new nursing home; generally, conversions take much less time to complete.

State/Community Resources Not Adequately Considered

VA does not always adequately consider the availability of nursing home and hospital beds in community facilities and state veterans' homes when planning its health facility construction projects. Construction of VA facilities where adequate capacity already exists in the community can increase government costs and affect the financial stability of community facilities.

In April 1989, the Local Health Council of East Central Florida, Inc. expressed concerns about VA's plans to construct a VA hospital in either Brevard or Orange counties. [11] The council noted that there are 2,120 empty acute care hospital beds in the district on any given day and that a VA hospital of the size contemplated (400 beds) would have a significant impact on existing hospitals both in terms of patients and manpower. Overall hospital occupancy rates in the district were just over 55 percent in 1988, a decrease of 15 percentage points from 1983 occupancy rates. Only one of the nine hospitals in Orange County had an occupancy rate over 60 percent; two had rates below 40 percent.

The council attributed the decline in occupancy rates to, among other things, the implementation of the prospective payment system under Medicare. The council recommended that VA contract to utilize existing hospital beds in the district rather than construct additional excess capacity. Excess capacity also existed in Volusia County, the third major

[10] VA Health Care: Improvements Needed in Nursing Home Planning, (GAO/HRD-90-98, June 12, 1990).

[11] A voluntary, not-for-profit corporation serving Brevard, Orange, Osceola, and Seminole Counties. The council's purpose is to promote needed health services, facilities, and manpower which meet the district's needs and to monitor the overall health care system in order to improve its effectiveness based upon considerations of availability, costs, quality of care, and access by all segments of the population. The role of the council in the certificate of need program is to produce the district's health plan. The Florida Office of Regulation and Health Facilities is required to use the district health plan in the review of certain capital expenditure proposals by promulgating elements of the district plan as rules. The council provides a standard of measurement against which all certificate of need (CON) applications for Brevard, Orange, Osceola, and Seminole Counties must be reviewed and provides a vehicle for local input.

area to be served by the new VA hospital. In fact, the Director of Volusia County's Department of Veterans Affairs advised VA in February 1991 that a 300 bed hospital in excellent condition was available for about $10 million.

In our February 1992 review of plans to build a VA medical center in Hawaii, we found similar excess acute care capacity in state and community hospitals and at the Tripler Army medical center. The Administrator of Hawaii's State Health Planning and Development Agency told us that the state does not have a shortage of acute care beds and that it could be as long as 15 years before a certificate of need for more acute care beds will be approved by the state's health planning agency. VA, however, is exempt from certificate of need requirements. Similarly, an official from the University of Hawaii's School of Public Health told us that Hawaii has a surplus of hospital beds and that more acute care beds are not needed. Tripler Army medical center also has sufficient unused capacity to meet VA's projected acute care needs.

Finally, significant excess capacity exists in community hospitals in the Martinez, California area. Two community hospitals within 10-15 miles of the former VA medical center had the capacity to absorb the entire Martinez medical, surgical and neurological workload.

For more than 10 years, we have been recommending that VA similarly consider the availability of community and state nursing homes in its facility construction process. Although VA central office has repeatedly promised to implement changes to ensure adequate consideration of state and community resources, VA sometimes downplays the availability of such resources.

For example, in deciding to build 240 nursing home beds as part of the replacement for the Martinez VA medical center, VA discounted the availability of about 595 nursing home beds and 870 domiciliary beds at the state veterans' home in Yountville, California. [12] VA said the beds are not appropriate for VA use because access to most of the beds is limited to current residents of the state home. State veterans homes are, however, VA-supported and, according to VA central office officials, should be included in determining the total number of VA-supported nursing home beds in a community.

[12]Yountville is in the Martinez catchment area, and is less than 50 miles from Martinez.

In addition, there appears to be an excess of community nursing home beds in the Martinez area. In March 1991, the director of the former Martinez medical center advised the regional director of VA's Western Region that the Los Medanos Hospital, located about 15 miles east of Martinez, was willing to rent 100 beds in its nursing home to VA.

Similarly, VA included two 120-bed nursing homes in plans for the new VA medical center in east central Florida. We found no indication that VA considered the availability of nursing home care at the state veterans home under construction in Daytona Beach in deciding to build the two nursing homes. The state veterans home, expected to be operational in 1993, will have 120 nursing home beds.

Joint Ventures Can Reduce Construction and Operating Costs

Joint ventures between VA and DOD can reduce both construction and operating costs. Section 8111 of Title 38, United States Code requires VA and DOD to explore opportunities to share equipment and other resources. Although both the VA central office and DOD's Office of the Assistant Secretary (Health Affairs) support joint ventures, the potential for joint ventures is sometimes overlooked at the local and regional levels.

A joint venture is intended to (1) improve services, (2) contain costs, and (3) efficiently utilize federal facilities. By combining workloads, a joint venture may offer services that could not be efficiently offered separately. For example, a small DOD hospital can not offer many specialized services, but by entering a joint venture with a larger VA medical center, additional services can be offered.

Joint ventures can contain costs by eliminating unnecessary duplication of federal health care resources including personnel, equipment, supplies, and physical facilities. Finally, by using excess capacity in existing VA and DOD facilities, joint ventures can eliminate unnecessary construction and ensure optimal use of existing facilities.

For example, a VA/Air Force joint venture in Albuquerque was developed because (1) the VA medical center under construction was found to have excess capacity because of a decline in projected workload, and (2) the hospital at Kirtland Air Force Base would have required about $35 million in renovations. By building an Air Force outpatient clinic adjacent to the new VA hospital and using the hospital's excess inpatient capacity, the Air Force was able to close rather than renovate the hospital at Kirtland.

In reviews of three proposed major construction projects in the past year, we found that VA did not adequately consider potential joint ventures in developing construction plans. For example, VA developed plans to renovate an unused portion of Hawaii's Tripler Army medical center to create an additional 105 acute care beds although the Army has sufficient excess capacity in its recently renovated, state-of-the-art medical center, to meet VA's projected acute care needs. Although VA termed the project a joint venture, VA essentially planned to build a self-contained medical center on the grounds of the Army facility.

In response to our report, VA initially revised its construction plans to make greater use of Tripler's existing acute care capacity and thus speed construction and reduce costs. Subsequently, however, VA announced that it would revert to its original plan to build additional acute care capacity.

In a second review, we found that VA had not given adequate consideration to potential joint ventures with DOD in deciding to build a replacement hospital in Davis, California. In response to congressional concerns, VA reopened its site selection process and included a joint venture at Travis Air Force Base in its reevaluation. VA announced in November 1992 that the replacement hospital will be built as a joint venture at Travis Air Force Base resulting in significant savings over the original plans for a Davis medical center.

Finally, in an ongoing review of potential sites for a new VA medical center in east central Florida, we have found that VA did not adequately consider the advantages to the government of a joint venture with the Air Force or the potential for sharing agreements with the Navy to use excess capacity at the Orlando Naval Hospital. We are currently preparing a report on the results of our review.

VA Projects Often Exceed Program Needs

VA construction projects frequently exceed program needs, including too many beds, too much space, or designs that are too costly. Such over-building occurs because

- the number of beds and support services needed in VA construction projects is often overestimated;
- projects tend to get bigger during final design work;
- design changes, occurring after construction funds are awarded, delay completion and increase the cost of major construction projects; and

- differences in how and where VA and private sector nursing homes are built result in VA construction costs that are significantly higher than those in the private sector.

VA Sometimes Overestimates Medical Program Needs

VA sometimes overestimates the number of beds and support services needed in construction projects resulting in excess capacity or costly redesigns to change the scope of projects. When the excess capacity is identified while a project is being designed, the project is delayed while designs are reworked to reduce the scope of the project. For example, VA attempted to add 117 beds to a planned clinical addition at the Atlanta medical center to accommodate special programs it hoped to establish and workload increases it believed were not accounted for by the VA bed sizing model. [13] OMB determined, however, that the sizing model already accounted for the factors VA was using to justify more beds and directed that the project be scaled down and 117 beds eliminated.

On the other hand, when the overestimate is not identified before construction begins, excess capacity is built. For example, a recently completed VA hospital in Albuquerque had significant excess capacity. The medical center contained enough excess capacity that entire wards in the completed medical center were not needed. Fortunately, the Air Force needed to replace its nearby hospital and was able to use the excess capacity VA constructed.

Our recent review of the ongoing construction project in Hawaii identified several problems that, if unresolved, will result in significant excess capacity. First, VA inappropriately assumed that all veterans previously receiving VA-sponsored care at Tripler Army medical center and community hospitals would use the new VA hospital. We believe that VA should have reduced its estimated bed needs because (1) emergency care will continue to be provided by the Army at Tripler or at the nearest community hospital, (2) patients needing specialty services will be referred to Tripler and the larger community hospitals, and (3) veterans on the outer islands will likely continue to obtain most care at community hospitals closer to home.

The second problem involves an adjustment to the bed-sizing model based on perceived suppressed demand. VA terms the difference between actual utilization at a medical center and a higher average regional or national

[13]The model calculates the bed size based on 3-year utilization data for the facility and projected veteran population. VA annually updates the projected bed-size and workload for planned construction projects.

utilization suppressed demand. A 1987 VA task force concluded that veterans in Hawaii were using VA services at a lower rate than veterans on the mainland and increased the number of beds included in the proposed hospital project by 13 to compensate for suppressed demand. Although a 1990 study by VA's Western Region lowered estimated workload for the proposed hospital, rather than reducing the number of beds planned for the VA hospital, VA increased the adjustment for suppressed demand to 27 beds.

The third problem we identified with the Hawaii project was the planned number of operating rooms. VA's Honolulu Outpatient Clinic and Medical Regional Office, based on input from VHA's Surgical Service, was planning to build 8 VA operating rooms to support 30 surgery beds. Based on VA's projected surgical workload, less than one surgery would have been performed per operating room per day. Previous GAO studies have shown that one operating room should be adequate to support 30 surgery beds. After we brought the excessive plans for operating rooms to their attention, VA central office officials reached an agreement to use existing capacity at Tripler Army medical center. We believe, however, that the example illustrates the ease with which medical centers and VHA can expand projects beyond the scope indicated by sizing models.

During our review, we identified 26 other ongoing projects that have been redesigned because of projected changes in workloads or missions. Such redesigns delay construction but may reduce construction costs if the redesign results in a smaller project. For example, VA, based on approved workload levels as of May 1990, designed a replacement bed building at the Muskogee, Oklahoma medical center to contain 210 hospital beds (110 medicine, 30 intermediate care, and 70 surgery beds). However, a year later, in April 1991, the authorized bed level was reduced to 142 based on a review of actual utilization during fiscal years 1987-1989. In addition, the types of beds were changed; the facility was authorized 81 medicine, 1 intermediate, 3 spinal cord injury, 46 surgery, and 11 psychiatric beds. As a result, the project was redesigned to eliminate one floor.

Similarly, when VA started work for a new addition at the Gainesville, Florida medical center it planned to include 200 long term psychiatric beds in the project. VA subsequently decided to transfer a significant portion of the beds to other medical centers throughout the state which required the Gainesville project to be redesigned.

VA's Deputy Undersecretary for Health told us that VA is developing a national Health care plan that will enhance its ability to anticipate changes in facility missions that could affect project scopes. In addition, the national health care plan will improve VA's ability to anticipate and react to changes outside the VA system, such as reform of the nation's health care system, that cause shifts in VA workloads.

Projects Expand Beyond Approved Design Space

Projects frequently expand beyond the approved design space. The approved design space is based on VA space planning criteria and deviations from those criteria agreed to through negotiations between O/F and the medical center. [14] The approved design space is generally established prior to the completion of design development and is to be used by the architecture/engineering firm to develop construction documents reflecting the final design.

Of eight recent projects for which data were available, seven exceeded the approved design space (table II.2). For example, the difference between the approved design space and the final design for the replacement medical center in Detroit, Michigan was 32,447 net square feet. The additional space represents an increase of approximately $10 million in construction costs. To the extent such expansions occur prior to construction funding, the increased cost is factored into the initial appropriation. If, on the other hand, the expansions occur after construction funding, they result in design changes that could lead to cost overruns.

[14]Space planning criteria are VA-approved standards for determining the net square feet, on a room-by-room basis, to be provided in construction projects. The criteria are developed by O/F based on (1) a series of statements of tasks that explain what each function or service does and (2) workload and staffing projections. O/F uses the space planning criteria as a baseline for determining the amount of space required in VA construction projects.

Table II.2: Increases in Net Square Footage for Eight VA Major Construction Projects as of July 1992

Medical center	Space planning criteria	Approved design space	Final design space	Net increase
Dayton, Ohio	246,628	246,628	248,623	1,995
Palm Beach, Florida	not available	385,112	398,566	13,454
Beckley, West Virginia	59,803	60,298	65,095	4,797
Dallas, Texas	255,680	284,982	297,930	12,948
Indianapolis, Indiana	200,038	231,186	232,779	1,593
Nashville, Tennessee	159,712	162,693	162,693	0
Dublin, Georgia	39,780	40,375	49,037	8,662
Detroit, Michigan	540,688	537,293	569,740	32,447

A senior O/F official told us that as projects are developed, the medical centers move away from the approved design space and towards including what they believe they need. He said that projects are thus designed to support the medical center's preferences instead of workload requirements.

Although O/F officials recognized that projects typically expanded throughout their development, they told us that they could not control this phenomenon. Officials told us that they would periodically object when projects expanded beyond approved design space, but they could not require the medical center to comply with the approved design space. VHA, they told us, typically approved the expansions. O/F viewed its role as advisory, and ultimately designed construction in accordance with the wishes of its "clients"—the medical centers and VHA.

Under the October 1992 reorganization, responsibility for program oversight was placed under the Assistant Secretary for Acquisition and Facilities. A facilities oversight group was established to monitor, among other things, project cost and scope. The oversight group is expected to ensure that projects are completed within the costs and scope of work agreed upon with the medical centers during design development. A senior VA official told us that medical center directors who deviate from the agreement (1) risk having the project delayed a year to resolve the differences and (2) may receive an adverse rating for violating the performance standard related to managing construction projects. The Assistant Secretary, however, was given no specific authority to enforce compliance with the scope and cost limits. In effect, the Assistant

Secretary can question the scope and cost of a project but cannot require VHA to reduce the scope of the project.

Design Changes Delay Projects and Increase Costs

Design changes occurring after construction projects are funded both delay completion and increase the cost of major construction projects. These changes result, in part, from the incentives medical center staff have to expand the scope and size of projects. Although VA established the Design Changes Review Board to discourage unnecessary changes, it has not reviewed the effectiveness of the Board, which approved about 85 percent of the changes requested between August 1988 and January 1992. Further, VA's reorganization of the major construction program does not, in our opinion, create adequate incentives for medical centers to limit design changes.

Between fiscal years 1985 and 1992, VA had over $45 million in cost overruns caused, at least in part, by design changes occurring after the projects received construction funding. For 14 of the 29 projects that incurred overruns, the medical center requested changes after the construction contracts were awarded.

VA officials told us that medical center staff may be inclined to increase the size and scope of projects throughout the construction process for four reasons. First, major construction projects are infrequent and medical center directors may have to wait 10 or more years for another chance to make a change. Second, expanding the services available to veterans may be seen as a "feather in the cap" of the medical center director. Third, medical center staff may strive to expand programs and services to respond to pressures applied by the affiliated medical school. [15] Finally, medical center staff rotate and new personnel have differing ideas on what should be included in the construction project. As discussed on pages 27-28, to the extent that such expansions occur before construction funds are appropriated, the higher costs are included in the initial appropriation. When design changes occur after construction funding is obtained, they can lead to cost overruns.

In fiscal year 1988, VA created a Design Changes Review Board to discourage medical centers from requesting changes after completion of design development. Prior to the establishment of the Board, VA did not

[15]VA medical centers enter into affiliation agreements with medical schools to aid in recruitment and retention of staff physicians and to obtain medical residents who participate in the care of veterans. The medical schools obtain expanded opportunities for clinical teaching, especially in the areas of geriatric and ambulatory care.

have a formal process for approving client-requested changes—requests were generally approved as long as funds were available. VA officials believe fewer significant changes are made on major projects since the Board was established. VA has not, however, evaluated the effectiveness of this or the other reforms discussed in the Office of Facilities' April 1990 report to the Congress. Although VA believes the Board discourages medical center directors from requesting changes, it has no data showing the incidence of change orders has declined. In addition, the deterrent effect of the Board may be minimal because the Board approved 96 of the 113 (85%) requests for changes submitted between August 1988 and January 1992 for its approval.

Differences Between VA and Private Sector Nursing Homes Increase Costs

Factors related to VA nursing homes result in significantly higher construction costs than those in the private sector. Specifically, VA nursing homes are designed (1) to be integrated into an existing medical center, (2) using hospital design criteria, (3) to have longer life spans than private sector nursing homes, and (4) to provide more space for occupational, physical, and recreational therapy than do private sector nursing homes.

A 1986 Smith Korach study [16] commissioned by the VA, reported that VA hospitals cost about as much per gross square foot to construct as private sector hospitals but that VA nursing homes cost almost as much per gross square foot ($101) as VA hospitals ($110) and 40 percent more than nursing homes in the private sector ($62). Smith-Korach reported that the level of design and costs for VA nursing homes is similar to VA hospitals.

VA's Commission on the Future Structure of Veterans Health Care reported in 1991 that similar differences between VA and private sector nursing home construction costs ($132 v. $92 per gross square foot) still existed. [17] Finally, our analysis of nursing home construction costs for VA and the New York State Department of Health found comparable differences in costs between VA and other public sector construction ($160 v. $122 per gross square foot, respectively). [18]

The Smith-Korach study identified several factors contributing to VA's increased nursing home construction costs. First, VA builds nursing homes

[16]Study of Veterans Administration Design and Construction Requirements to Reduce the Cost of Facilities prepared by The Smith Korach Hayet Haynie Partnership, February 1986.

[17]Report of the Commission on the Future Structure of Veterans Health Care, November 1991.

[18]The Smith-Korach and Commission analyses used initial bid construction costs. We included design costs and based comparisons on project costs at time of substantial/physical completion.

"on-station," that is, on the medical center grounds and, most often, attached to the main hospital building. Building on-site results in higher construction costs to (1) make the nursing home aesthetically compatible, (2) maintain floor-to-floor relationships to connect the nursing home to the existing hospital, and (3) build for future vertical expansion. Smith-Korach estimated that building on site adds over $12 per gross square foot to the cost of VA nursing homes.

VA generally locates nursing homes on the grounds of its medical centers to allow more interaction between hospital and nursing home staff. Thus, building freestanding nursing homes could reduce costs, but with a tradeoff in patient care. VA currently plans to build nursing homes in California and Florida in conjunction with outpatient clinics in addition to medical centers.

Second, VA nursing homes are built using hospital design criteria. The private sector has separate design criteria for hospitals and nursing homes. The private sector's nursing home criteria are less stringent than the hospital criteria. Consequently, the VA's use of hospital design criteria results in higher construction costs for such things as the mechanical and electrical systems, floors, and interior walls and corner guards. For example, VA nursing homes contain the same heating, ventilating, and air conditioning systems used for VA hospitals. Smith-Korach estimated that using hospital systems increased the cost for VA nursing homes by over $5 per gross square foot.

Third, VA designs nursing homes for life spans that exceed the private sector. VA designs facilities to have a 35 year life span compared to 20 years for the private sector. Smith-Korach estimates this decision adds about $1.50 per gross square foot to the construction costs. Building for a shorter life span would reduce construction costs, but result in more renovation.

Finally, Smith-Korach reported that VA nursing homes provide more occupational, physical, and recreational therapy areas than the private sector. The additional space results in VA nursing homes that contain more gross square footage than private sector nursing homes with the same number of beds. This increases total construction costs, and, Smith-Korach reported, higher costs per gross square foot because such therapy space costs more to construct than patient rooms. Reducing such space would cut costs at the expense of patient care services.

Appropriating Construction Funds Before Design Development Is Complete Creates Risks

Adequate estimates of construction costs are frequently not available at the time construction funding is appropriated by the Congress. When projects are funded before design development is complete, it is difficult to estimate construction costs because the scope of the project may change. Thus, in our opinion, providing construction funds before design development is complete creates certain risks.

First, the project's scope may expand to use available resources, increasing the cost of the project without causing an overrun. Second, if the funds appropriated are not adequate to cover construction costs once the scope of the project is determined and design development is complete, then (1) cost overruns may occur or (2) VA may be unable to award a contract within available funds. Finally, if unforeseen site problems, such as an underground stream or limestone cave, are identified as the facility designs are refined, project costs may increase, leading to overruns. In such cases, delaying funding until design development is complete will not necessarily reduce the cost of construction, but would provide the Congress with better initial estimates of construction costs, potentially reducing the incidence of cost overruns.

Providing construction funds before design development is complete also leads to delays in awarding major construction contracts. This happens because the contract cannot be awarded until design development is completed and the construction documents prepared. Delays that occur while design work is completed can increase costs because of inflation. Since 1984, all of VA's annual appropriations acts have included requirements that contracts be awarded within specified time limits. Our office reports annually to the House and Senate Appropriations Committees on VA's compliance with these time limits. Funding projects before design development is complete is repeatedly cited in our reports as one of the major reasons for delays in awarding major construction contracts.

Office of Facilities Reports That Requests for Construction Funding Will Be Made After Design Development Is Completed

To try and limit overruns that result when projects are funded before adequate design work is complete, the Office of Facilities notified the Congress in its April 1990 report on construction program reforms, that requests for construction funding will be delayed until design development is complete and better estimates of construction costs can be prepared. This, the Office believed, would allow them to develop more accurate estimates of construction costs and thereby reduce the incidence of cost overruns.

Reform Has Not Been Followed

VA has not, however, followed the reform. Projects are increasingly added to VA's construction budget before design development is complete. For example, 7 of the 13 projects submitted by VA in its fiscal year 1993 budget request for construction funding had not completed design development.

In addition to projects added to VA's budget request before design development is complete, the Congress sometimes appropriates construction funds for additional projects that have not completed design development. During the 5-year period ending September 30, 1992, the Congress appropriated about $28.4 million for the construction of four projects on which design development had not been completed. At the time funds were appropriated, design development had not started on two of the projects. These two projects have incurred overruns of $10.4 million to date.

First, the Congress added a Saginaw, Michigan, nursing home project to VA's construction appropriation in fiscal year 1989. Costs for the project, which is still ongoing, currently exceed the initial appropriation by 72 percent. Second, the Congress added a heating, ventilation, and air conditioning project in Madison, Wisconsin to VA's fiscal year 1988 construction appropriation. Costs for the project currently exceed the initial appropriation by 40 percent. This project is still ongoing as well.

Effectiveness of Reform Not Assessed by VA

VA has not assessed the effectiveness of the reform in those instances where construction funding was delayed until design development was complete. To determine the net effect of the reform, if fully implemented, on the costs of VA construction projects, VA would need to (1) compare the incidence and amounts of overruns on projects funded before and after completion of design development, and (2) determine the extent to which any reduction in cost overruns is offset by increases in cost estimates occurring during design development. This is important because delaying funding until design development is complete might reduce cost overruns without reducing project costs if the net effect of the delay is a higher initial appropriation. VA also needs to evaluate those projects funded before design development was complete to determine whether their scopes expanded to use available funds.

Conclusions

Although VA and the Congress have strengthened many aspects of VA's major construction program, problems remain that require further actions by both VA and the Congress. Specifically,

- less costly alternatives to VA construction, such as joint ventures with Department of Defense facilities and use of state and community resources, are not given adequate consideration in planning VA construction projects;
- projects often exceed program needs, containing too many beds, too much space, or designs that are too costly; and
- projects often receive construction funding based on inadequate cost estimates developed before design development is complete.

National health reform could have a dramatic effect on demand for VA care and thus the need for future construction. Although reform would primarily affect demand for inpatient hospital care and outpatient care, the excess capacity that could be created in VA hospitals could be converted to long term care, reducing the need for nursing home construction.

Matters for Consideration by the Congress

With health care reform near the top of the new Administration's agenda, it appears likely that fundamental changes in the nation's health care system will occur. Because actions that would reduce the number of uninsured veterans could reduce the need for new VA construction and create excess capacity in existing facilities, the Congress may wish to consider limiting construction of additional VA acute care capacity until VA's role is determined. Such action could (1) free up funds for deficit reduction without affecting current VA health care services, (2) prevent construction of capacity that could become excess before it is completed, and (3) permit portions of available construction funds to be used by certain facilities to speed correction of seismic deficiencies, other life safety deficiencies, and essential renovations.

Recommendations to the Secretary of Veterans Affairs

We recommend that the Secretary of Veterans Affairs

- develop methods to better (1) anticipate changes in facility missions and (2) project workloads in order to minimize the need for significant changes in facility designs to accommodate unanticipated changes;
- develop methods for considering the socioeconomic characteristics of the veteran population in the area to be served by a facility in determinations of need and location;
- establish procedures to help ensure that VA medical centers work with state and local health planners and military facilities to determine whether (1) adequate resources exist in the community to meet VA's needs without new construction, and (2) health care construction and operating costs

could be reduced through joint ventures and sharing agreements with DOD or private sector hospitals;

- assess the effectiveness of VA program reforms reported to the Congress in April 1990, particularly reforms relating to (1) delaying construction funding until design development is complete, and (2) reviewing and approving design changes proposed after construction funding is appropriated; and
- evaluate the cost and patient care tradeoffs between VA nursing home construction methods and private sector methods to identify ways to reduce costs without unduly sacrificing patient care.

Description of O/F's 1990 Program Reforms

In its April 1990 report to the Congress, VA identified 14 reforms to improve its management of the major construction program and reduce the incidence of cost overruns. These reforms are listed below.

1. Design Changes Review Board: Implemented in fiscal year 1988, the Board reviews all proposed major construction changes over $50,000 and submits recommended changes to the Assistant Secretary for Acquisition and Facilities for approval.

2. Assistant Secretary for Acquisition and Facilities: During fiscal year 1990 an additional level of review was added for approving client-requested changes in excess of $50,000.

3. Review of VA's In-House Estimating Capability: Consultant contracted in September, 1991 reviewed VA's construction cost management, its problems, and opportunities for improvement.

4. Use of Bid Alternates: Bid alternates are portions of the construction contract solicitation which provide flexibility to award contracts within available funds. Bid alternates are options for reducing construction costs to allow an award to be made in the event of high bids.

5. Shorter Design and Construction Periods: In fiscal year 1990 O/F changed its method of design in order to reduce the uncertainty in the economic forecasting time frame. Reduction in construction time is accomplished through (1) reducing the time needed to complete construction documents and (2) minimizing project phases.

6. Facility Development Plans: This is an ongoing project in which VA is systematically identifying program needs. Also, facilitates user participation in defining the project. Completed facility development plans will enhance the ability to define project scope earlier in the design process.

7. Better Developed Early Designs: This reform is aimed at completing design development prior to submitting projects for construction funds. Budget estimates will be based on fuller and more accurate descriptions of proposed projects, allowing more accurate budget estimates.

8. Alternate Construction Techniques: VA is studying the use of construction management (with and without a guaranteed maximum

price), along with considering the viability of employing other methods such as design build and lease/purchase. [1]

9. Oversight of Architecture/Engineering Contracts: Implemented in fiscal year 1990, O/F is providing increased oversight and monitoring of the ongoing costs of the A/E's design work.

10. Project Phasing and Constructibility Improvements: Complex project phasing increases the cost of construction. A/E firms directed to simplify client needs for multiple-project phases in order to reduce construction costs.

11. Value Engineering: Value engineering is the application of a range of engineering techniques to eliminate unnecessary effort while maintaining a project's overall function and quality. Formal value engineering reviews are made during design, and cost-sharing opportunities are offered to construction contractors during construction.

12. Equipment Coordination: Improved coordination between major equipment deliveries and construction schedules to eliminate costly change orders to accommodate equipment that cannot fit into the originally designed and constructed spaces.

13. Project Financial Monitoring and Construction Supervision: Increased monitoring of ongoing construction projects using a computer system - Contract Administration Management System (CAMS). This system, installed in fiscal year 1988, tracks project accounts, change orders, and supplemental agreements.

14. O/F Screening and Interviewing Process of A/E Firms: Ongoing effort to hire the best qualified A/E firms by incorporating past performance in the scoring process used to evaluate and select firms for VA construction projects. Also, the Selection Board composition is modified to include officials accountable for the specific project.

[1]Design/build is a project delivery approach that involves an owner hiring a single firm responsible for both designing and constructing the project. This so-called single contract or turn key approach contrasts with the traditional design-bid build approach. In this case the owner hires an A/E firm to design the project and prepare the bid package, then hires a general contractor to build the project.

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