

*A Report by a Panel of the*

NATIONAL ACADEMY OF  
PUBLIC ADMINISTRATION

*for the Smithsonian Institution*

July 2001

**A** Study of the  
Smithsonian  
Institution's  
Repair,  
Restoration and  
Alteration of  
Facilities  
Program



NATIONAL  
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A Study of the Smithsonian Institution's Repair, Restoration and Alteration of Facilities  
Program



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# FOREWORD

For over a century and a half, the Smithsonian Institution has been a significant cultural, historic, and scientific resource that has enabled Americans to build a better understanding of America and expand their commitment to it. Since its establishment in 1846, it has enlarged its fundamental role of increasing and diffusing knowledge through exhibits, educational programs, publications, and research and development. To prepare for future challenges and opportunities, the Smithsonian is in the process of defining a new strategic direction and strengthening the capacities of its staff, and of its infrastructure.

One of the greatest challenges the Smithsonian faces is the need to repair, restore, and alter many of its physical facilities. Many of the Smithsonian museums, and associated facilities are in urgent need of repair, restoration, and alteration. Although the Smithsonian started a major initiative in this area during 1996, requirements far outstripped the amount of funds available to carryout the necessary repair and restoration. The extensive need for resources necessary to carryout the work has led to many questions including: What is the size of the backlog? If resources were available, does the Smithsonian have the capacity to manage them? Does the Secretary have the range of tools and systems needed to hold employees accountable? And does the Smithsonian respond to the reporting requirements of the Congress and of the Office of Management and Budget?

As a part of the effort to answer those and other questions, the Senate and House Subcommittees on Interior and Related Agencies asked the Academy to conduct a study of the Smithsonian's repair, restoration and alteration program. Although the Smithsonian is already taking steps to address a number of issues raised in this report, the Academy's recommendations should add to those steps and should provide others that will help to put the facilities program on a sound footing.

Foreword

The Academy is pleased to have played a part in a study that has the potential of moving the Smithsonian forward into this Millennium. We extend our gratitude to the interviewees who shared their insights with us. Our appreciation also goes to the staff and members of the Academy Panel who provided guidance and expertise in the preparation of this report.



Robert J. O'Neill, Jr.  
President

# LIST OF ACRONYMS

CM	Construction Management
COTR	Contracting Officers Technical Representative
CPPB	Capital Program Planning Board
CRV	Current Replacement Value
FY	Fiscal Year
HVAC	Heating, Ventilating, and Air Conditioning
OFS	Office of Facilities Services
OMB	Office of Management and Budget
OPMB	Office of Planning, Management and Budget
OPP	Office of Physical Plant
RCM	Reliability Center Maintenance
RFP	Request for Proposal
RR&A	Repair, Restoration, and Alteration
SFS	Smithsonian Financial System
UOMD	Utilities, Operations and Maintenance Division





# EXECUTIVE SUMMARY

This report reviews the Smithsonian Institution's management and use of funds appropriated by Congress for repair, restoration and alteration of Smithsonian museums and facilities over the period from FY1996-2000. The Academy study team was convened after the conference report accompanying the FY 2001 appropriations for the Department of Interior and Related Agencies directed the Smithsonian to contract with the National Academy of Public Administration (the Academy) to obtain a better understanding of (1) how the Smithsonian had used the Repair, Restoration, and Alteration (RR&A) appropriations, (2) the progress the Smithsonian had made in restoring its buildings during that period, and (3) the extent of the Smithsonian's future RR&A requirements. The Smithsonian has started to make changes to address some of the problems highlighted by the Academy study team's findings. The recommendations in this report are expected to reinforce the need for those changes.

In 1993, the Board of Regents commissioned a group of select citizens to prepare a *Report of the Commission on the Future of the Smithsonian*. Issued in 1995, the report indicated that a total of \$50 million a year was needed over the next decade to assure that the Smithsonian's facilities (excluding the National Zoological Park) could be restored to the point of being safe and appropriate for people and collections. Fifty million dollars was approximately double the amount the Congress had appropriated for these purposes in 1995, and the Congress gradually increased the amounts it appropriated over the five years from 1996 through 2000. But in 2000, the Smithsonian told the Congress that its buildings were still in poor condition and estimated the cost of restoring them would be more than was estimated in 1995. This news disturbed the Smithsonian's Appropriation Committees because they thought the increased appropriations had reduced the requirements. The Academy study team was brought in to assist the appropriating committees in better understanding the Smithsonian's RR&A funding needs and expenditures.

The Academy team found that the \$208 million Congress appropriated for RR&A in the five years from 1996 through 2000 had been properly used by the Smithsonian for the purposes requested in the budgets. But because of age, high

visitation levels, inadequate maintenance and the monumental character of the buildings. Smithsonian estimates of its RR&A requirements at the end of the period exceeded the requirements that had been estimated at the beginning of the period. The Smithsonian now estimates that more than \$1 billion is needed over the next 10 years to bring its buildings into a good state of repair. The Smithsonian's building-by-building estimates are based on a reasonable approach and the need for investment on this scale is not overstated. In fact, that amount may be understated because the major capital renewal cost requirements are in fiscal year 2002 dollars with no provision for escalation beyond fiscal year 2002. The Academy team also found that there is a critical need to develop and implement a financial management system that meets the federal standards for financial reporting as well as for the Smithsonian to take immediate steps in improving its relations and its credibility with the Office of Management and Budget and the Congressional Committees.

In the process of answering the Committees' questions, the Academy team generated several recommendations to help the Smithsonian improve its management systems and processes for both delivering facilities RR&A services and reporting to Congress its valid funding needs and obligations. Central to the Academy study team's findings were two main themes: One, the Smithsonian's central management does not have effective tools for tracking obligations and expenditures or for measuring performance in order to hold managers accountable in achieving organizational goals, and two, some of the Smithsonian's difficulties in meeting federal requirements and expectations stem from an organizational culture that does not view the institution as a federal entity and that tends to take its federal support for granted.

The Academy study team made a wide range of recommendations – among them are the following:

The Smithsonian should

- Recognize and improve its relationship with the Office of Management and Budget and the Congress by revalidating its RR&A requirements and providing accurate and reliable cost estimates.
- Develop and implement a structured maintenance program that includes preventive maintenance, periodic testing and inspection, and programmed maintenance.
- Centralize its facilities management functions under a single facilities organization.
- Conduct a comprehensive analysis on the pros and cons of contracting out facilities operations and maintenance functions.
- Replace its inadequate financial management systems with one centralized system that meets federal standards and reporting requirements.

Although these findings and recommendations are designed specifically to improve the Smithsonian's facilities program, many weaknesses the Academy team identified are present in other Smithsonian programs; thus, they need to be put in a broader context.





# CHAPTER

# 1

## There is More to the Smithsonian than Museums

The Smithsonian Institution is the world's largest museum complex. Its most visible components are the 16 museums and galleries and the National Zoological Park in Washington, DC, but the entire operation consists of more than 400 buildings, 140 million artifacts, and extensive research and outreach capabilities. Activities conducted throughout the Smithsonian require safe and adequate facilities and building space. The Smithsonian's buildings along the Mall in Washington, some more than a century old, are national treasures. But in many cases because of the age of these buildings, the heavy visitation, and the inadequate maintenance over the years, the buildings and systems are breaking down at an accelerated pace. The immediate task is to restore and to keep them in sound condition.

James Smithson's bequest to the United States of America was to establish an organization for the increase and diffusion of knowledge; it was to be located in Washington, DC, and named the Smithsonian Institution. The Smithsonian's collections, museum exhibitions, and research activities are its basic means for increasing and diffusing knowledge. The public generally thinks of the museums on the Mall when it thinks of the Smithsonian. Most visitors do not know that substantial parts of the museum buildings are occupied by researchers and curators, their laboratories and collections; that the Smithsonian has extensive storage facilities (owned and leased), and research outposts in various parts of the United States and other countries; that everyday the Smithsonian conducts outreach and educational programs for national and global audiences on-site or through its website; and that the Smithsonian publishes a distinguished monthly magazine and books.

### THE ACADEMY STUDY DIRECTED BY CONGRESS

In the Conference report accompanying the FY 2001 appropriations for the Department of Interior and Related Agencies, the Appropriations Committees directed the Smithsonian to contract with the National Academy of Public Administration (the Academy) to provide the Committees a better understanding of what had been done with funds appropriated from FY 1996-2000 for repair and restoration of the Smithsonian's buildings and facilities. The Committees specifi-

cally asked that the Academy determine: (1) the Smithsonian's expenditure of federal funds for these purposes, (2) the strides that have been made in restoring the facilities, and (3) the tasks that lie ahead. Pursuant to the Conference Report's direction, the Smithsonian contracted with the Academy in November 2000.

## THE STUDY SCOPE AND METHODOLOGY

To meet the study requirements, the Academy assembled a study team with expertise in federal financial management and facilities engineering management practices. A panel of Academy fellows and other experts in public administration, management, and facilities maintenance and construction was established to review the study team's efforts and to provide guidance.

The study followed the principles of social science research, beginning with an extensive review of the Smithsonian's history and the legislation that establishes the parameters of the Smithsonian's operations and relationship with the federal government; the Smithsonian's operating policies; and the Smithsonian's budget requests, along with supporting materials. The study team also interviewed more than 65 Smithsonian managers and staff, officials from other organizations with similar operations, and officials from the Office of Management and Budget and Congress. Over the course of the Academy's examination, both the study team and the Academy panel visited and inspected a number of Smithsonian buildings and facilities.

To examine the use of federally appropriated funds, the study team obtained summary reports from the Smithsonian and reconciled them with the projects and transactions for which the funds were used. To verify that transactions were properly documented, the study team reviewed the testing processes used by the Smithsonian's public accounting firm and supplemented by the Smithsonian's Inspector General staff.

To determine what strides the Smithsonian had made toward improving its facilities with the funds appropriated from FY 1996-2000, the Academy team used a variety of data to verify that the funds were used for high priority projects consistent with the Smithsonian's Repair, Restoration and Alteration (RR&A) program's purposes. The study team compared building condition assessment reports and representations presented in the Smithsonian's budget requests over the period from FY 1996-2002. In addition, the Academy team reviewed how the Smithsonian assesses the conditions of its buildings and the costs associated with correcting deficiencies.

To determine whether the Smithsonian's assessment of current facilities conditions and its estimates of the costs for restoring facilities to "good" condition were reasonable, the study team interviewed Smithsonian employees responsible for assessing facilities conditions and reviewed the estimates they presented in the FY 2001 and FY 2002 budget requests. The study team also compared the Smithsonian's methods with generally accepted methods used by federal agencies and other government organizations.

## ORGANIZATION OF THE REPORT

Chapter 2 presents a brief description of the situation that resulted in the need for this study and what the Academy team found. Chapter 3 describes the Smithsonian's longstanding organizational culture and the resulting implications that make it difficult for the Smithsonian and Congress to communicate, thereby damaging the Smithsonian's credibility with its appropriations committees. Chapter 4 explains how the Smithsonian assesses the current conditions of its facilities and estimates the funding needed to meet its construction and RR&A requirements. It also reports on the Smithsonian's lack of maintenance programs for its buildings and facilities and includes recommendations. Chapter 5 describes the Smithsonian's organization and capabilities for planning, management and implementation of construction, repair, restoration and maintenance of facilities. Recommendations are presented. Chapter 6 describes the Smithsonian's systems for budgeting, allocation and control of funds, and accounting for and reporting on the expenditure of available funds, and presents recommendations. Chapter 7 reports on the Smithsonian's use of the federal funding appropriated for RR&A over the period from FY 1996-2001.

Appendix 1 lists the individuals interviewed. Appendix 2 contains the results of the Academy team's review of RR&A project priorities. Appendix 3 is a comparison of the Smithsonian's accounting practices with standard governmental accounting practices.

*There is More to the  
Smithsonian than  
Museums*



# CHAPTER 2

## Background

A 1995 “Report of the Commission on the Future of the Smithsonian Institution” stated that a thorough review indicated that over the next decade a total of \$50 million per year, more than double the 1995 budget, would be needed to assure that the Smithsonian’s existing facilities could be restored to the point of being safe and appropriate for people and collections. The review excluded requirements related to the National Zoological Park. These requirements had accumulated because the Smithsonian’s buildings and facilities were deteriorating at an accelerated rate due to their age, to large number of visitors, and to the failure of the Smithsonian to invest sufficient resources to repair, renovate, and maintain them. Estimates of the funding necessary to restore the Smithsonian’s buildings and facilities were presented to the Appropriations Committees in 1995, and the Committees increased (though not immediately) funding approaching the levels requested.

In 2000, the recently appointed Secretary of the Smithsonian testified before the Appropriations Committee, that he believed the Smithsonian’s buildings were in “shabby” condition and that the costs to restore them would be substantially more than the estimates the Committees previously had been given. The Appropriations Committees were concerned with this characterization and with the increased estimates of costs. The Committees had been under the impression they had provided the financial resources the Smithsonian requested and that the Smithsonian’s needs were being addressed. Because they believed the budget increases they had enacted were responsive to the Smithsonian’s requests, and therefore their needs, the Committees asked some basic questions. What had changed? Why were current needs so much greater than previous estimates had suggested? Why weren’t the buildings in better shape as a result of the increased funding provided to restore them between 1996 and 2000? Why should the current estimates be trusted when past estimates had apparently been so unreliable? The Conference Report accompanying the FY 2001 appropriations for the Department of Interior and Related Agencies directed the Smithsonian to contract for an impartial review by the National Academy of Public Administration (the Academy) to provide the Committees a better understanding of the expenditure of federal funds to date, the strides that the Smithsonian made since 1996, and the task that lies ahead.

The Academy team found that even though the Smithsonian had properly used the federal funding provided in fiscal years 1996-2000 for high-priority repair and restoration projects, its requirements were greater than the amounts provided in the Smithsonian's annual budgets. The Academy team also found that estimated needs reported by the Smithsonian in 2000 were more realistic than previous estimates. They were, in fact, greater than identified in 1995, despite the more than \$200 million of repairs and restoration that had been funded in the fiscal years from 1996 through 2000.

In short, the Smithsonian's actual requirements were significantly larger than were identified in its budget requests and the Smithsonian's failure to communicate the full extent of its requirements contributed to a loss of credibility with Congress. Fostering a sound basis for maintaining and improving existing and new facilities requires continuing and substantial infusions of funds, and the wise use of existing resources. This report addresses and responds to both of these challenges and provides a template of good practices and guidelines for the Smithsonian's adoption.

## CHAPTER

# 3

## The Smithsonian's Organizational Culture

Although most of its budget is provided by federal funding, many Smithsonian Institution employees do not think of themselves as government employees. In 1836, the United States Congress formally accepted the James Smithson bequest to the United States, creating a charitable trust that stipulated the United States would serve as a trustee. In 1846, Congress followed up the original agreement by creating the Smithsonian Institution to serve as the instrument to ensure that the trust was executed and administered in accordance with the purposes of the bequest. Although the Smithsonian is a “trust instrumentality” of the United States, many of its employees view themselves as similar to university faculty. Employees frequently refer to the burgeoning constellation of the Smithsonian’s facilities, for instance, as “the campus” and tend to emphasize the independence of their individual units. The Academy study team came away from some of its interviews with the impression that the federal government is viewed as an intrusive presence by many Smithsonian employees and that the concepts of public purposes, public accountability, public interest, and public funding and their linkages are not well understood. Yet, these concepts underpin the environments of all public organizations and pose major challenges for managers of public institutions including the Smithsonian.

### FEDERAL SUPPORT IS TAKEN FOR GRANTED

Since mid 1800, the federal government has provided the Smithsonian with financial support. Currently about two-thirds of the Smithsonian’s operating budget is funded through direct federal appropriations, the other third coming from membership fees, federal grants and contracts, business activities, donations, investment income, and other sources. The fiscal year 2001 direct federal appropriations total more than \$450 million.

Nevertheless, the Smithsonian’s management appears to focus a disproportionate amount of its attention and energy to its trust fund activities. Management overemphasis on the trust arena and the publics’ positive attitude toward the Smithsonian, have resulted in the perception that public funding is taken for granted. The

Smithsonian's relationship with OMB and Congress is somewhat distant when compared to other organizations that depend on federal appropriations for significant support. Some Smithsonian managers who were interviewed were relatively unaware of practices federal agencies commonly use to keep OMB and Congressional committees, particularly the appropriations committees, well informed about program requirements. For example, the Smithsonian did not provide the appropriations committees information about how repair and rehabilitation funding was actually spent or the rate at which requirements are increasing; thus, the committees had no way of knowing that requirements were outstripping funding.

## DECENTRALIZED MANAGEMENT AND THE LACK OF SUPPORT FOR CENTRAL MANAGEMENT

As a result of the broad mission statement of the Smithsonian and the differentiation among units, management of the Smithsonian is highly decentralized. The collection of highly differentiated units operates with considerable autonomy. Each museum has its own philosophy and advisory boards; makes choices about goals, personnel, and the ways in which work is done; and controls its own programs within the funding available. For example, the museums decide what exhibits to develop, how they should be presented, what research to support, and so on.

In theory, the museums are organizationally accountable to the Smithsonian's Secretary, but few processes or systems exist which provide the Secretary with the information he needs to monitor activities or evaluate performance. Individual information on museum specific programs currently can only be obtained from the system of records each museum has created for its own purposes, commonly referred to as "cuff" records.<sup>1</sup> The result is a complex organization over which the Secretary does not have the tools available to monitor how the museums execute their annual budgets or how they report their program accomplishments. This kind of decentralized organization has the disadvantage of making it difficult for the Secretary and other central managers to see the big picture, to establish oversight and direction over the whole organization, to apply managerial discipline, and to achieve economies of scale.

With respect to decision making, Smithsonian management traditionally has gone to great lengths to achieve a consensus among the various museum and facilities managers when decisions were made, but when individual managers believe that their best interests are served by opposing or resisting a central decision they are not shy about doing so. As noted, managers of individual units frequently act in direct opposition to one another or have not balanced their goals against overall Smithsonian objectives. This continues to be a principal cause of inter-museum competition and wrangling which characterize the Smithsonian environment.

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<sup>1</sup> "Cuff" records are informal accounting systems created internally by various units at the Smithsonian. It was reported there were approximately 20 such "cuff" systems in existence.



The autonomy of the Smithsonian museums provides some advantages, including the potential for maximizing funds, because individual museums can focus on their own areas of expertise without interference and engage in independent fundraising. Autonomy also can provide an opportunity for detailed input into decision-making processes and allow the museums more flexibility with regard to the needs of those responsible for the execution of programs and projects. However, in the case of the Smithsonian, there is a mismatch between the high degree of decentralization and the ability of senior managers to take charge, set directions, and affect the performance and behavior of employees.

## **SMITHSONIAN MANAGEMENT "SYSTEMS" DO NOT SUPPORT FEDERAL REQUIREMENTS**

The Smithsonian's emphasis on its non-federal status and its highly decentralized environment contribute to its failures in meeting some basic federal expectations. For example, its outmoded financial management system was designed to produce information mostly useful to commercial or non-profit entities, and does not routinely produce federal obligation and outlay information for periodic reports, as required by the federal government. It is the Academy team's understanding that the Smithsonian Financial System (SFS) is also inadequate for meeting the information requirements pertaining to non-federal funds. What exists is a system that provides limited information of little use to the Smithsonian's operating organizations. As a result, the information the Smithsonian gives the federal government sometimes is not what was requested, either because the Smithsonian does not have the information or because compiling it requires additional time-consuming efforts. Chapter 6 discusses the need to overhaul the outdated financial system in greater detail.

## **THE SMITHSONIAN'S MANAGEMENT NEEDS TO CHANGE**

Whether things actually improve between the Smithsonian and the federal government in the facilities arena and other arenas depends on how the Smithsonian's management understands and acknowledges its relationship with the federal government and how it interprets notions of public interest, public accountability, and political responsiveness. Knowing legislative processes, legal processes, central management and oversight agencies, and federal budgeting, contracting, evaluation and auditing procedures and processes is also necessary. A management culture that views the federal government as its most important and valued source of support, deserving of the highest quality attention, would pattern itself accordingly. But a management culture that continues to regard federal support as an "entitlement," or merely one of many sources of funds, is likely to continue to run into trouble when it is time to ask for Congressional support. **Within the Smithsonian's organizational environment, ample opportunities exist to build a heightened consciousness about the role of the federal government and to listen and learn about the notion of public interest and its implications.**



# CHAPTER

# 4

## Evaluation of Future Repair, Restoration & Alteration Requirements

The Smithsonian's identification of its future requirements for RR&A was based generally on sound and reliable methods and procedures, and its total funding requirements were not overstated. In fact, the Academy's study team found that the capital renewal projects were likely understated because of the use of unescalated cost estimates and shifting schedules.

### Estimates of Future Requirements

The Academy team used the Smithsonian's FY 2002 budget request to Congress, the five-year plan for FY 2002-2006 included in the FY 2002 budget request, the current ten-year projections for FY 2002-2011, and a number of previously completed facility condition assessment reports as the basis for evaluating the Smithsonian's estimating methods. The Academy team visited facilities at the National Zoological Park and a number of the major museum facilities that have critical major renewal projects included in the budget requests or in the out-year action plans. The site visits helped verify, first hand, the extent and degree of deterioration existing in buildings, major systems and subsystems, and the need for major repairs, restoration, and renewals.

The majority of the Smithsonian's requirements for major renewal projects are in the historic monumental museum buildings on the Mall, the nearby Patent Office Building, and the National Zoo facilities at Rock Creek. The most prevalent categories of need include: repair; restoration and/or the replacement of heating, ventilating, and air conditioning (HVAC) systems; chillers; electrical systems, including motor control centers; roofs and exterior facades; water and sewer distribution systems; and elevators and escalators.

The methods and procedures being used by the Smithsonian to assess its facility conditions are typically used by the majority of federal agencies and generally are accepted to be sound and reliable. A small in-house assessment staff within the Facilities Planning and Assessment Division of the Office of Physical Plant carries

out inspections of facilities to assess their condition, determine the remaining useful life of major systems and equipment, and provide an estimated cost for the needed remedial work. A Smithsonian objective is to conduct facility condition surveys of its major facilities at least once every three to five years. In selected instances in the past, architect-engineering firms or construction management firms were used to conduct the assessments for the Smithsonian.

Cost estimates for RR&A requirements included in the long-range projections are based on a range of sources, such as completed in-house facility condition assessment reports, estimates based on similar work completed previously in a particular museum or other facility, estimates based on final design drawings that are at least 35% complete, and completed final design and construction documents. For some projects, independent professional cost estimating firms have been used. Logically, estimates for projects that occur in the far out-years are less reliable than estimates for projects that are closer to the current budget year and have undergone more detailed planning or early design. In addition to these building-by-building estimates, the Smithsonian uses economic models and estimating methods as checks for assessing the general validity of the aggregated estimated costs. The Smithsonian's cost estimating methods are typical of those used by federal agencies.

The Smithsonian's estimates of its total RR&A requirements are summarized in Table 4-1 ("Ten-year Projection of Repair, Restoration, and Alteration, FY 2002-2011"). The table reflects the requirements distributed over a ten-year period, within the budget guidelines provided to the Smithsonian by the Office of Management and Budget. This distribution leaves a requirement beyond FY 2011 that includes a significant number of major capital renewal projects that will have to occur. Spread over the ten-year period, the total requirement, including the additional remaining requirements for major renewal projects and for other continuing RR&A categories, is approximately \$1.2 billion. This figure, \$1.2 billion, is in current FY 2002 dollars and does not reflect adjustment for inflation. If inflationary adjustments were added over a 10-year period, the costs would rise to at least \$1.5 billion.

The Academy panel and staff concluded that the Smithsonian extensive backlog of major repair, restoration, and renewal requirements are valid and have not been overstated. However, the reliability of the estimated costs for meeting the requirements for the 12 major renewal projects included in the FY 2002-FY 2011 ten-year projection is considered to be too low, especially for the out-years that extend beyond FY 2006. Of the 12 major renewal projects planned, eight are not expected to be funded until FY 2007 or later (see Table 4-1). These projects have not received a similar degree of planning, conceptual design, or final design as the other four major renewal projects that are multi-year funded in FY 2002 through FY 2006 and the out-years. In addition, the total current estimated costs for each of the 12 projects are in FY 2002 dollars, with no accounting for escalated costs over the years beyond FY 2002. The Academy team has concluded that the estimated costs for the projects included in the out-years beyond FY 2006 are best categorized as "rough orders of magnitude" estimates and should be viewed accordingly.

TABLE 4-1. Ten Year Projection, Repair, Restoration, and Alteration,  
in Millions of Dollars (FY 2002 – 2011)

	Project Total	Prior Funding	FY 2002 Request	FY 2002 – FY 2006 Five Year Plan				Future Requirements					Outyears
				FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	
<b>MAJOR RENEWAL PROJECTS</b>													
Patent Office Building	151	33.6	15	24	45	33.4							
Arts & Industries Building	105	7.2	6			6	23.3	23.3	22	17			
National Air & Space Museum	45								4		18	23	
Renwick Gallery	23							3		12	8		
Museum Support Center	16											1	15
Hirshhorn Museum	11											1	10
Freer Gallery	3.5								0.5		3		
Quadrangle	44										4		40
Smithsonian Institution Castle	57	1											56
National Museum of American History	35										2	23	10
National Museum of Natural History	200	76	12	12	12	17	18	15	15	13	10		
National Zoological Park	171	8.3	5	11.3	11	11.6	12.7	15	15	15	15	15	36.1
<b>OTHER REPAIR &amp; RESTORATION</b> (includes Code Compliance & Security, Infrastructure Repairs & Modifications, and Alteration & Modifications, and preventive maintenance @\$1.9 M)			29.9	43.7	36	37	54	54.5	57.5	60	60	60	ongoing
<b>TOTAL PLANNED*</b>		<b>126.1</b>	<b>67.9</b>	<b>91</b>	<b>104</b>	<b>105</b>	<b>108</b>	<b>111</b>	<b>114</b>	<b>117</b>	<b>120</b>	<b>123</b>	<b>167.1</b>
				(Based on approved FY 2002 budget.)									
* Outyear numbers inflated per OMB targets								Total Planned FY 2002 - Outyears					<b>1228</b>

Annual budget limitations are likely to continue to dictate multi-year funding of most of these major renewal projects. It should also be recognized, however, that multi-year funding increases the complexity for "phasing-in" different work packages and probably different contractors which will increase costs. Full funding would permit improved scheduling of the construction contracts, earlier project completion dates, and lower the total costs. The Academy team was not able to evaluate the total estimated costs for each project in detail to determine whether they included such things as adequate contingency amounts, construction management contract amounts, engineering and design costs during construction, and costs for relocating staffs and exhibits during construction. The omission of any of these elements will, of course, increase the total project cost and funding requirement.

The Smithsonian's management should work to improve its relationship with the federal government entities it depends on for support, particularly the Office of Management and Budget and the authorizing and appropriating committees of Congress. As a first step, the Smithsonian needs to restore its credibility regarding its construction and RR&A programs. **The major factors that have damaged the Smithsonian's credibility are: the understatement and instability of estimates of the backlog of major repairs, restoration, and renewal requirements; the unreliability and inaccuracy of estimated RR&A costs in the budgets; the failure to adequately control increases in project scopes and costs for on-going projects; and the inability to develop strong and succinct project justifications.**

## RECOMMENDATIONS

- The Smithsonian should revalidate the total backlog of RR&A requirements. This revalidation should include completing detailed facilities condition assessments for all museums and other major facilities that have not been surveyed for this purpose within the preceding three years. In-house capability should be supplemented with contract assistance, if necessary, to expedite the completion of this task.
- The Smithsonian should develop a fully integrated and prioritized ten-year plan for executing the revalidated backlog of requirements and brief the OMB examiners and Congressional staffs on the total facilities requirements, even though the annual budget constraints may preclude requesting the full amount of funding actually needed.
- The cost estimates for all the capital improvement projects that are included in the Smithsonian's annual budget requests to OMB and Congress should be based on the completion of at least 35% of final design, with cost escalation included to improve the accuracy and reliability of the estimates.
- The Smithsonian should implement and adhere to strict control measures over project scope and cost increases. For selected major capital improvement projects, such as the Patent Office Building, it should consider establishing a formal review group to help control increases in project scope and cost.

- The budget format for the RR&A program should be changed and simplified to succinctly state the actual requirements, estimated costs, and construction schedules.

## RESPONSIVENESS TO CONGRESS

The Smithsonian has been inattentive and extremely slow in providing information to the Congressional committees that directly impact the Smithsonian's budget requests. The Smithsonian's inattentiveness is exemplified by its lack of response to a paragraph in the FY 2001 House and Senate Appropriation Committees Conference Report dated September 29, 2000, which states *"that the apparent lack of progress, the large unobligated carryover balances in past years, a commitment of funds to projects of lower priority, the absence of a detailed plan for implementation of a coordinated maintenance program, and grossly underestimated projects such as the Patent Office Building, which has tripled in cost, are all issues that should be explained prior to any substantial increase in funding."* In most federal entities, a requirement in an appropriation committee conference report receives priority attention. Although the Smithsonian established a team to prepare a response, a response had not been submitted to Congress as of June 26, 2001.

## RECOMMENDATION

- The Smithsonian should place significantly increased emphasis on responding to Congressional questions and requests in a timely and accurate manner.

## FACILITIES MAINTENANCE

Inadequate funding of facilities maintenance and minor repairs is a persistent problem that contributes directly to the deteriorated conditions that prevail throughout the majority of the Smithsonian's inventory of facilities. Despite the historical and architectural importance of the museums and related facilities, there is an abundance of physical evidence of continuing deterioration at accelerated rates due to their age, high visitation traffic, and under-funding. This is particularly true of the very oldest buildings, such as the Smithsonian Castle, the Arts and Industries Building, the Patent Office Building, and the National Zoo facilities.

One of the major factors that impact this specific problem is the lack of a well-structured and disciplined program that not only includes the day-to-day operations and recurring maintenance, but one that also provides preventive maintenance, predictive testing and inspections and programmed maintenance. The Academy team found the majority of maintenance activities to be reactive as opposed to proactive, which ultimately translates into breakdowns and costly repairs or replacements. The essential elements of a well-structured maintenance program include the following:

- The generally accepted definition of "maintenance and minor repair" is the upkeep of property and equipment work necessary to realize the originally anticipated useful life of a fixed asset. It also includes actions necessary to assure continuing service and to prevent breakdowns.

- “Repair” is work to restore damaged or worn-out property and equipment to normal operating condition. Repairs are curative while “maintenance” is preventive.
- “Preventive maintenance” is often called time-based or interval-based maintenance that includes planned, scheduled periodic inspection adjustment, and minor repair of equipment and systems. Most federal agencies consider preventive maintenance to be the cornerstone of a solid cost-effective maintenance and repair program.
- “Predictive testing and inspection” monitor the condition or operating parameters of facilities system components to detect trends or conditions that indicate excessive wear or impending failure. It can reduce maintenance costs and improve availability by enabling just-in-time maintenance of facilities systems and equipment.
- “Programmed major maintenance” includes maintenance tasks whose cycle exceeds one year, such as painting, roof maintenance, roads and parking pavement maintenance, and utility systems.

A second major factor that impacts the under-funding of true maintenance activities is the Smithsonian’s propensity to characterize its very large backlog of major repairs, restorations, and renewal projects as a “maintenance backlog,” which is a misnomer. It is a misleading term that complicates dealing with external federal agencies and Congress. Calling the RR&A backlog a maintenance backlog creates the impression that Congress and the Smithsonian are funding maintenance, when in fact they are primarily funding repairs, restorations, and renewals. The Smithsonian’s maintenance activities are not funded in the RR&A program except for the first time effort to include a small amount of \$1.9 million in FY 2002 for preventive maintenance.

A third factor that adversely impacts maintenance activities is the Smithsonian’s current budget structure, which places the majority of facilities maintenance costs in the Salaries and Expenses appropriation account. Because the Smithsonian Financial System does not provide details of maintenance activities, Smithsonian staff are not able to accurately identify actual expenditures for maintenance when requested. The amounts included in the Salaries and Expenses account are characteristic of a day-to-day operating account, as opposed to a maintenance program account that would also include preventative maintenance, predictive testing and inspections, and programmed maintenance elements. The Academy team estimated that after deducting the costs for non-maintenance salaries, utilities, equipment, and other indirect costs, the remaining amounts are grossly inadequate for carrying out an effective maintenance program.

In the FY 2002 budget request, the Smithsonian included a new category titled “preventive maintenance” in the RR&A account for the first time, but the requested \$1.9 million is grossly inadequate for meeting actual needs. Although the replacement



value of the Smithsonian's museums and its other historic buildings is considered to be priceless, a reasonable estimate for the current replacement value (CRV) is in the near-vicinity of \$3 billion. A modest investment of 0.5% of the CRV or \$10 to \$15 million annually is a minimum guideline for carrying out meaningful preventive maintenance activities, which make-up one of the essential elements of a well-structured maintenance and repair program.

The Academy team was unable to identify a structured facilities maintenance program. Planning for preventive maintenance activities, predictive testing and inspections, and major programmed maintenance tasks (cycles that exceed one year) could not be identified. The absence of a maintenance program is one of the factors that resulted in the current needs for major repairs and replacements. This mode of operation is commonly referred to as "breakdown maintenance" or "run-to-failure." Numerous studies and analyses by the National Research Council have concluded that preventive maintenance is the cornerstone for any cost-effective maintenance and repair program.

## **RECOMMENDATIONS**

- The Smithsonian should develop and implement a well-structured program that includes preventive maintenance, periodic testing and inspection, and programmed maintenance.
- The Smithsonian should reorder its budget priorities to provide for an increase to at least \$10 to \$15 million annually in a preventive maintenance category.
- The Smithsonian should also consider budgeting all of its maintenance and minor repair requirements, excluding personnel costs, in one separate account in the RR&A budget to provide improved visibility and funds control.
- The Smithsonian should consider adopting the Reliability Center Maintenance (RCM) approach that many federal agencies use. RCM is a maintenance philosophy that incorporates an effective mix of proactive, preventive, predictive testing and inspection, and reactive maintenance practices that focus on reliability and risk management.

## **THE SMITHSONIAN'S "BACKLOG"**

The Smithsonian often refers to its extensive backlog of major repairs, restorations, and renewals as a "maintenance backlog," which is a misnomer and is misleading. A detailed examination of the extensive backlog of work needed to fully restore the Smithsonian's eleven monumental buildings on or near the Mall and the National Zoological Park facilities, and to make ongoing code compliance and infrastructure repairs throughout the Smithsonian, clearly shows that the bulk of the backlog is made up of major repairs, restorations, and renewals as opposed to maintenance. The Academy team concluded that the Smithsonian does not have a structured maintenance program with defined objectives, and the Smithsonian's failure to conduct effective preventive maintenance activities over the years has been an obvious

contributor to the large accumulation of problems that exist today. So while the Smithsonian does have a backlog of deferred maintenance, its major requirements are for major repairs, restorations, and renewals.<sup>2</sup>

## RECOMMENDATIONS

- The Smithsonian should use the commonly accepted definitions for facilities maintenance and repair as spelled out in the numerous National Research Council reports on this subject.
- The Smithsonian should also properly identify its very significant backlog of specific major repair and restoration requirements and refrain from attempting to identify all facilities deficiencies and needs under the misleading term, "maintenance backlog."

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<sup>2</sup> Deferred maintenance is defined in the Federal Financial Accounting Standards as "maintenance that was not performed when it should have been or was scheduled to be, and which therefore, is put off or delayed for a future period."

# CHAPTER

# 5

## Facilities Management and Organization

The Smithsonian's decentralized organizational structure and management practices have, in some cases, had a direct and sometimes an adverse impact on the effective management of the major facilities' functions. These functions include execution of the planning, design and construction activities integral to major repairs, restoration and renewal of facilities, as well as providing new facilities, and operating and maintaining facilities. The annual RR&A program, the annual construction program, and the operations and maintenance activities are the means for delivering these products.

Conducting RR&A programs efficiently and effectively requires a well-structured central organization that is vested with the authority and available resources to manage and control these programs. Within the present Smithsonian organization, this central office should be the Office of Facilities Services (OFS), which is the only organization within the Smithsonian that possesses the necessary skills, disciplines, and expertise for managing the RR&A functions and responsibilities. While museum directors are responsible for determining their specific program and exhibit requirements for the capital renewal projects, the director of the OFS should be responsible and accountable for implementing the approved requirements.

Current Smithsonian directives assign authority and responsibility for managing the annual RR&A program; facilities planning, design, and construction functions; and maintenance activities to the OFS and its subordinate organizations.

### THE OFFICE OF PHYSICAL PLANT

The principal operating unit for executing these functions under the direction of the OFS is the Office of Physical Plant (OPP). OPP has the lead for developing and formulating the annual RR&A program and five-year plan in coordination with client units (museums, research organizations, and other major facilities) and the Office of Planning, Management and Budget (OPMB). Within OPP, the Project Management Division prepares a list of projects that are candidates for funding under the RR&A appropriation and assigns priorities for each project. OPP project managers are

assigned to client units to provide the principal liaison and point of contact with the client for coordinating all aspects of each RR&A project. The five-year plans are evaluated and modified as required on an annual basis through a series of meetings and consultations with the client units and the OPMB. OPP project managers follow the projects throughout the different phases of development, including planning, design, and construction, and track project schedules and funding. Throughout the life of the project, project managers continue their roles, providing contact and liaison with the client units.

At the time the designs are to be initiated, the project manager requests that OPP's Engineering and Design Division assign a design manager to be responsible for design activities. The design manager works with the project manager and the Smithsonian's Office of Contracting to procure architect-engineer services to execute the project design. The design manager acts as the Contracting Officers Technical Representative (COTR) for the life of the design project. Reviews are held at specified stages (usually at the 35%, 60%, and 95% completion points). The design manager is responsible for determining when the project documents are ready to go to bid for construction. At that point, the Office of Contracting issues a Request for Proposal (RFP) to prospective contractors.

Prior to completion of the final design, the Construction Division within OPP appoints a construction manager to review the final drawings and specifications and to assist in the bid phase of the project. The construction manager acts as the COTR for the construction contract and becomes the principal liaison to the construction contractor during the construction phase. The Smithsonian also makes extensive use of commercial construction management (CM) firms to provide services for major renewal projects. Services provided by the CMs typically include on-site inspection, specialty testing, estimating, scheduling, support for claims resolution, and administrative assistance.

For the largest design and construction projects, such as the new National Museum of the American Indian, the National Air and Space Museum's Steven F. Udvar-Hazy Center at Dulles Airport, and the restoration of the Patent Office Building, project executives have been assigned within OPP to provide additional oversight for each project because of their size and complexity. Project executives are responsible for keeping the director of the Office of Facilities Services and other Smithsonian senior managers apprised of the current status of schedules, scope and funding, and for recommending solutions to major issues.

Throughout the total process for planning, design, and construction of the projects within the RR&A programs, OPP works in partnership with the Office of Contracting, which is responsible for all contract awards, modifications, terminations, completions, claims negotiations, and settlements.

## **FACILITIES MAINTENANCE AND OPERATIONS**

OPP is the principal operating unit for carrying out facilities maintenance and operations. Within OPP, functions and responsibilities designated as centralized functions are the responsibility of two divisions: the Utilities, Operations and

Maintenance Division (UOMD) and the Crafts Services Division. The UOMD is responsible for mechanical and electrical systems, such as heating, ventilating and air conditioning (HVAC), within the museums and other major facilities 24 hours a day, 7 days a week. These functions include operating centralized utility systems within the buildings and monitoring all utility systems from a central control center located in the Natural History Building. UOMD assigns building engineers to specific buildings during the first and second shifts. UOMD also normally does all the facilities' small repairs employing in-house labor. UOMD defines small repairs as those that require up to 40 hours of in-house labor, depending on the complexity of the job. Larger projects are contracted out or passed to the Crafts Services Division, which may accept projects that require up to 300 hours of in-house labor.

The Crafts Services Division includes a Mechanical Shop with pipe-fitters, insulators, machinists, sheet metal workers, and roofers; an Electrical Systems Shop with electricians and electronics systems mechanics; and a construction Shop with masons, plasterers, tilesetters, painters, and carpenters. Requests for work are received from the building managers or the OPP project managers. Upon receipt of work requests, the clients are contacted, the scope of the work is established, and the repair work is scheduled. Projects that exceed the capability of the Crafts Services Division are contracted out.

A number of primarily operations functions are carried out by Building Management Offices in the various museums and other major facilities. These functions include custodial, loading dock management, trash collection and very minor maintenance. The Building Management Offices are headed by building managers who report directly to the museum directors in each museum or to the directors of other facilities. The staff capabilities in these minor maintenance organizations vary between the individual museums and research organizations. These Building Management Offices are not part of OPP and are not funded by the RR&A budget.

OPP is not responsible for operating and maintaining facilities at the National Zoological Park or at the Conservation Research Center at Front Royal, Virginia, or for managing the RR&A program at these locations. Those functions are carried out by the on-site staff who report to the director of the National Zoological Park. Many of the maintenance and repair tasks for the National Zoo are performed by contractors because of its limited staff and capabilities.

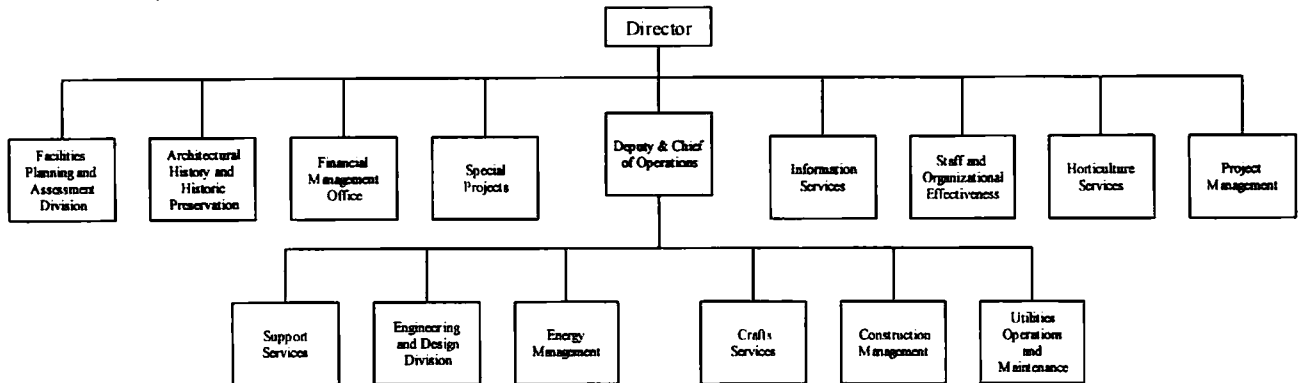
## **OTHER OPP RESPONSIBILITIES**

OPP has a number of other functions and responsibilities, including a Support Services Group that provides transportation and mail services; on-call contract services for escalator and elevator repairs; an Energy Management Office that tracks and forecasts utility bills, identifies energy savings initiatives and monitors energy conservation efforts of the Smithsonian; a Horticulture Services Division that maintains the gardens and landscaping for all of the museums and develops traveling exhibitions; and a Special Projects Office for overseeing major new construction projects and the renovation of the Patent Office Building.

**Interviews with a number of major customers, including museum directors,**

indicated a significant degree of dissatisfaction with the maintenance services and minor repairs received from OPP. They described maintenance and minor repair as ranging from poor to barely adequate. Many of the customers considered the quality of work provided by the in-house workforce to be of low grade and not timely in many instances. Among the favorable views, a number of the customers complimented the overall project management provided by OFS, as well as management of both design and construction activities and the services provided by the Office of Contracting. Horticulture Services also received numerous compliments from the customers interviewed.

CHART 5-1. Current Organization of Office of Physical Plant



The sheer size of the OPP and the wide diversity of its functions contribute to inefficient operations and in some instances diffused responsibility and accountability. The span of control over the 14 different divisions and offices coupled with the mixture of operations, maintenance, repair, restoration, planning, design, engineering, and construction have produced a hybrid organization that is awkward to manage and that does not facilitate focusing on the OPP's three primary responsibilities: (1) operation and maintenance of the Smithsonian's physical plant, (2) repair and restoration of facilities to reduce the extensive backlog, and (3) construction of new facilities.

The Smithsonian has two separate and distinct organizations for conducting facilities operations and maintenance—each organization reports to a different Smithsonian official. In addition, each museum or other major facility has its own separate building management organization charged with keeping the buildings clean, functional and presentable to the public. However, the museums are not responsible for keeping the buildings in good condition and must obtain repairs from the OPP or by contract. The National Zoological Park, on the other hand, operates and maintains its own complex of facilities, using a separate organizational entity that reports directly to the director of the National Zoo. The National Zoo receives only very limited assistance from OPP or other Smithsonian entities for operating and maintaining its facilities.

The functions and tasks associated with operating and maintaining facilities are

common to all of the Smithsonian's facilities. Overlap and duplication are likely when more than one organization is responsible for carrying out the same functions. It should be possible for the Smithsonian to provide more efficient and effective services by putting one organization in charge. Benefits would include the elimination of overlap and duplication, uniform policies and procedures, and improved accountability. The Office of Facilities Services is the logical place for all these responsibilities to reside.

The OPP is staffed adequately to carry out its current level of work, but if the Smithsonian is successful in obtaining a significant increase in RR&A programs, the OPP will be hard pressed to manage the programs successfully without supplementing the present staff with experienced engineers and architects to assist in overseeing the design and construction activities required by a much larger program.

## **RECOMMENDATION**

- The Smithsonian should centralize its facilities management functions, including the National Zoo, under a single facilities organization, the Office of Facilities Services. This change would improve operational efficiency and effectiveness, cost control, quality control, and accountability.
- The director of the Office of Facilities Services should be designated the principal Smithsonian official responsible for managing the facilities maintenance activities, the RR&A program, and the construction program.
- The Office of Physical Plant should be restructured to place a stronger emphasis and focus on its three primary responsibilities: (1) operation and maintenance of the Smithsonian's physical plant, (2) repair and restoration of facilities to reduce the extensive backlog, and (3) construction of new facilities.
- If the Smithsonian's RR&A program is substantially increased, the Office of Facilities Services staffing should accordingly be increased to effectively manage the larger program.

## **SHOULD FACILITIES OPERATIONS AND MAINTENANCE BE CONTRACTED?**

The Smithsonian has not conducted a comprehensive and detailed analysis to determine whether or not the facilities operations and maintenance functions that are provided by the OPP's in-house workforce could be accomplished more efficiently and cost effectively if contracted. In considering an analysis of this approach, it is recognized that the protection and security of the artifacts and exhibits would be a major concern of the museum directors, as well as the perception of a loss of control over these activities. However, it should be possible to structure an appropriate contract that could provide the desired performance, protection and security, and result in appreciable cost savings. Many agencies throughout the federal government have operational responsibilities that involve sensitive and valuable assets, yet they rely on commercial firms for these same common functions and services, and do so successfully.

The Academy team believes an optimum contract configuration would be a single facilities operations and maintenance contract that would service all of the museums on or near the Mall and the National Zoo. Another less desirable option is separate contracts for the National Zoo and the museums on or near the Mall. The management of the Office of Protection Services was not part of this study; however, since it is under the jurisdiction of the Office of Facilities Services, the Smithsonian may want to consider conducting a similar study on contracting out the protective services functions.

## RECOMMENDATIONS

- The Smithsonian should conduct a comprehensive and detailed analysis to determine whether or not the facilities operations and maintenance functions that are performed by the OPP in-house workforce could be accomplished more efficiently and cost effectively if they were contracted out.
- The Smithsonian should conduct a similar analysis of the facilities operations and maintenance functions for the National Zoological Park.

## CAPITAL PROGRAM PLANNING BOARD

The Smithsonian's Capital Program Planning Board (CPPB) was established in the early 1990s for the explicit purposes of providing strategic direction and facilitating final decisions on facilities planning and the allocation of space. The intent in establishing the board was to provide a mechanism for the Smithsonian's senior managers to review the Smithsonian's major facilities programs and projects as well as assessing space needs and determining priorities for space use. It was intended that the board be utilized in a manner similar to the way that most federal agencies use facilities review boards for assessing facility programs and projects for budgeting purposes. It is not evident that the Smithsonian currently uses the board for these purposes. The Academy team was not able to locate or identify any written minutes or records of any recent CPPB meetings. Failure on the part of the Smithsonian to exploit the use of the CPPB to help improve the development and management of the annual RR&A budget and program, along with the annual Construction budget and program, only compounds the problems that the Smithsonian is experiencing with both OMB and Congress. Orderly, well-structured and disciplined review sessions by the CPPB could significantly enhance the development of the budgets for RR&A, new construction, and maintenance programs.

## RECOMMENDATIONS

- The CPPB membership should be realigned and updated to accommodate the Smithsonian's current organization.
- The director of the Office of Facility Services should be designated the Smithsonian's principal and lead official for developing, presenting, and defending all facilities programs and budgets to the CPPB and to external organizations, such as OMB and Congressional staffs, where required.



- The CPPB should meet on a regularly scheduled basis to review and recommend approval of the annual budget request for the RR&A program, the maintenance program, and the construction program, as well as the five-year plans for each of these facilities programs. Minutes of each meeting should be recorded and provided to board members.
  
- Board review results should be provided in the form of formal written recommendations to the Secretary of the Smithsonian Institution.



# CHAPTER 6

## Smithsonian Budgeting and Financial Statement

In order to determine how the Smithsonian used the RR&A funding Congress appropriated over the period from FY 1996-2001, the Academy team used and evaluated the Smithsonian's budget and accounting systems and processes. The Smithsonian's accounting system, known as the Smithsonian Financial System (SFS), provides useful information only at the summary level and does not support either federal requirements for obligation and outlay information or the Smithsonian's internal project management requirements. These inadequacies create problems and inefficiencies throughout the Smithsonian system. As previously mentioned, because the SFS is inadequate to meet their needs, the Smithsonian internal units have created and maintained more than 20 informal accounting systems — "cuff" systems — which they use to keep track of their financial status. Maintaining multiple accounting systems is expensive for the Smithsonian and requires that the cuff systems and the SFS records be reconciled periodically. Although the cuff systems are often sophisticated automated systems, the reliability of their internal controls is not assured and their coverage is not uniform. The Smithsonian is highly dependent on the knowledge of a few individuals for operation of the cuff systems. Some information necessary for determining how the Smithsonian uses its federal funding is only available through these cuff accounts.

As noted, approximately two-thirds of its operating funds come from federal appropriations directly to the Smithsonian. For FY 2001, federal funds appropriated directly to the Smithsonian total \$454 million, of which \$67 million is included in appropriations for Construction and for RR&A; \$387 million is for operating expenses under the appropriation for Salaries and Expenses. The balance of the operating funds comes from private sources and government contracts and grants. For FY 2001, the Smithsonian projects that \$227 million will be available for operations, including \$97 million from general trust funds, \$62 million from donor/sponsor designated funds, and \$68 million from grants and contracts from government agencies.

General trust funds include investment income, earnings from unrestricted endowments, and net proceeds from Smithsonian business ventures and membership pro-

grams. Donor/sponsor-designated funds include gifts, grants and earnings from endowments that specify the purpose of the funds. Government grants and contracts provide for various efforts accomplished by Smithsonian units for governmental agencies, the largest amount being for astronomical research and development efforts by the Smithsonian Astrophysical Observatory. In addition to the funds available for operations, the Smithsonian receives a number of large donations of funds for major construction and exhibit development, such as the Udvar-Hazy Center at Dulles Airport and the Behring Center at the National Museum of American History. The Smithsonian's budgeting and financial management system needs to accommodate both the federal funding process and the receipt and management of trust and other funds.

## BUDGET AND ALLOCATION

The Smithsonian's federal budget is structured in three appropriations: Salaries and Expenses; Repair, Restoration and Alteration of Facilities; and Construction. The Salaries and Expenses budget justification shows funding and staffing for each major organizational unit (museums, research centers, other functional offices, and the National Zoo) with separate identification of amounts to be paid by federal appropriations and trust funds. RR&A activities are normally funded entirely from federal appropriations. The primary breakdown within the RR&A is by program category, such as major capital renewal, code compliance and security, infrastructure repairs and modifications. The budget justification for the Construction appropriation is specific to the projects to be funded by federal appropriations. Formulation of the annual plan and budget for RR&A is described in Chapter 5 of this report.

The Smithsonian's FY 2002 budget justifications for RR&A provide detail on the planned allocation of funds in the budget year, but no information on the allocation of funds in the current year or actual application of funds in the prior year. The Appropriations subcommittees have expressed dissatisfaction because of lack of information on how previously appropriated funds have been used. The Conference Report on the FY 2000 appropriation required the Smithsonian to report by December 1, 2000, and each subsequent year, its obligations, unobligated balances and expenditures for the prior fiscal year. The report on obligations and balances, but not outlays, by program category for FY 2000 was provided in February 2001. The FY 2002 budget justification, however, does not include specific data on the use of funds in FY 2000. The Smithsonian Chief Financial Officer has stated an intent to include prior year actual data in future budget justifications.

Once funds are appropriated by Congress and apportioned by OMB, the Smithsonian's Chief Financial Officer issues allotments to the Director, Office of Planning, Management and Budget (OPMB), who then allocates amounts by letter to each Museum and major office. The Comptroller establishes an account for each of these allocations. The allocation of appropriated funds, together with any unobligated balance available from prior appropriations, determines the amounts available for obligation in the current year. If a proposed procurement or other transaction would result in obligations in excess of the availability within an allocation, the Comptroller notifies the unit holding the allocation that the action cannot be processed unless the allocation is adjusted by OPMB. (Chart 6-1 provides the orga-

nizational chart for Smithsonian Institution.)

For the FY 2001 RR&A appropriation, the OPMB allocation letter assigns the following amounts:

TABLE 6-1. FY 2001 Allocations for RR&A Issued by OPMB

To OPP	Repair and Restoration	\$47,420,000
	Alterations/Modifications	2,470,000
To National Zoo	Repair and Restoration	7,583,000

In the accounts for FY 2001, however, the comptroller included the RR&A allocations to the Office of Physical Plant and the National Zoo in a single account. As a result, the comptroller's recurring reports do not separate the National Zoo's transactions from the OPP's. The managers in both organizations must identify their financial status by separate processes. The Academy team found that staff at the National Zoo has difficulty determining its obligations without assistance from the OPP staff.

The House appropriations subcommittee provided guidelines requiring Congressional approval of reprogramming by over \$500,000 or ten percent, whichever is less, to or from any "line item" in the budget justifications to Congress or any item specifically identified in Congressional reports. These limits do not apply to reallocations within the RR&A appropriation, however, because the total appropriation is treated as a single "line item." Therefore, reallocation of funds within RR&A has not been regarded as a reprogramming action, although the Smithsonian considers a reallocation of funds between the National Zoo and the OPP to be subject to Congressional notification.

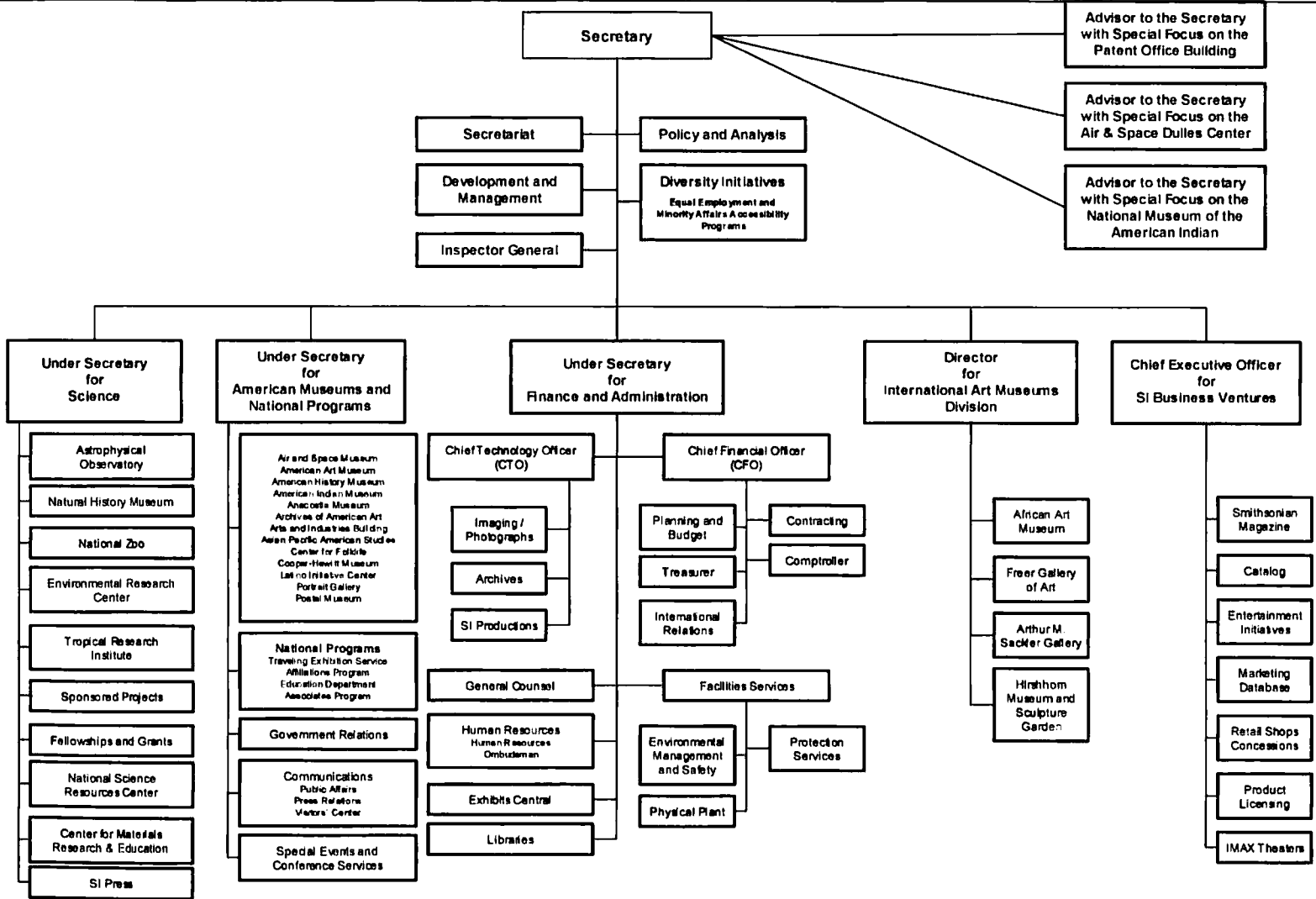
At the major category level within RR&A, the actual allocation of funds over the five-year period, FY 1996-2000, has followed rather closely the basis on which funds were appropriated. For that period as a whole, the allocations compared to the basis for the appropriations has been as follows:

TABLE 6-2. Comparison of RR&A Appropriation Amounts and Allocations in Millions of Dollars (FY 1996-2000)

	Appropriation	Allocation	Difference
Major Capital Renewal	58.2	57.9	-.3
Code Compliance and Security	24.3	26.3	+2.0
Infrastructure Repairs	104.4	102.7	-1.7
National Zoo	<u>21.3</u>	<u>21.3</u>	<u>0</u>
Total	208.2	208.2	0

In practice, there have been many shifts in the allocation of funds within RR&A at the project level in order to meet needs resulting from problems such as leaks, equipment failures and other urgent requirements arising during the year. Delays in availability of materials and problems

SMITHSONIAN INSTITUTION  
Board of Regents



relating to access to specific work areas also resulted in shifts of funds allocations. Specific information on the actual application of funds is provided in Chapter 7 of this report.

The Academy team found that the Smithsonian's obligation of RR&A funds over the 5 years, FY 1996-2000, were consistent with the intent of the appropriations (See Chapter 7). Individual projects within the major categories have varied from details provided by the budget justification in response to unanticipated requirements and other factors affecting the urgency of repair or readiness to proceed. But the study team also found that the Smithsonian had not effectively communicated with OMB and Congress about how it had used the RR&A funding it was provided.

## RECOMMENDATION

- The Smithsonian should routinely include specific data in its annual budget requests on how it applied its RR&A funding from the prior year.

## FUND CONTROL AND ACCOUNTING

The SFS serves as the Smithsonian's official accounting and reporting system for both federal and trust funds. The system is described as an adaptation of a private sector system, using obsolete data management technology. The system was developed to comply with accounting standards for not-for-profit organizations, but is not well suited for management and reporting of federally funded programs. Obligation and outlay data are provided by the Comptroller's office at the total appropriation level to comply with the specific report requirements of the Office of Management and Budget and Congress. Within the appropriations, however, the SFS does not directly provide the obligation data normally required in the management and reporting of federally funded programs.

Most museums and major office managers regard the information provided by the SFS reports to be of little or no value for management purposes because the system does not provide data on specific projects or activities. They have developed "cuff" systems for controlling funding actions and reporting status. The OPP's cuff system includes a database with information on individual transactions, including obligation status and receipt and approval of invoices for each RR&A project.

Information on funds available for obligations, amounts obligated during the year, outstanding commitments and balances available at the project level are also available in this system. The OPP's cuff system does not include RR&A funds allocated to the National Zoo. The National Zoo uses its own methods, accounting for RR&A funds by tracking commitments for each project. The OPP's system is totally separate from the official SFS, although many of the data sources are the same for both systems. In some cases, the cuff system totals for obligations for a given period do not agree with those reported in the SFS, primarily as a result of differences in when the obligations are recorded in the two systems. In terms of cumulative obligations over the past several years, however, the cuff records are in close agreement with those in the official records and provide a basis for reporting the use of appropriated funds over the several years under consideration.

Although the individual systems may be satisfactory for the units that devised and use them, reconciliation with the official Smithsonian reports is a continuing problem, as is development of meaningful data for the Smithsonian as a whole. Summaries of information at the unit level may not agree with the totals reported in the SFS records. In an effort to overcome this problem, the Office of Planning, Management and Budget's allocation letter for FY 2001 includes a requirement that recipients of allocations provide quarterly reconciliation of the amounts in their cuff records with the relevant totals in the Comptroller's records.

Currently, to derive the amounts for federal obligations and outlays as defined by OMB from the SFS, it is necessary to make calculations using a breakdown of the beginning balance obtained from prior year reports. To some extent the difficulties experienced by the Smithsonian in responding to Congressional questions results from the differing use of terms among the Smithsonian's various accounting systems and the inability of the SFS to provide data below the appropriation level in terms consistent with Federal definitions. SFS reports are structured to report "beginning balance" and "spending" in terms of cash balances and amounts authorized for payment. In these reports, "beginning balance" includes unobligated funds plus obligated amounts for which payments have not yet been approved. "Spending" actions during the year are reported as the sum of (1) "expenditures," meaning the amounts paid or approved for payment; (2) "obligations," meaning the remaining balance of obligations for which payments have not yet been approved; and (3) "commitments" or "requisitions," meaning amounts authorized for obligation, but not yet obligated (see Appendix C, Table C-2).

Essentially every employee interviewed with regard to the Smithsonian's financial reporting systems expressed dissatisfaction. Some of the reasons for dissatisfaction with the current financial management and reporting system are summarized as follows:

- The official accounting system does not produce the kinds of data needed to support the management and budgeting of federal funds. At a minimum, the system should provide obligation and outlay data for the categories, programs, and projects presented in the budget requests. Typically, an accounting system would provide this data to managers on a monthly basis.
- Top-level managers have difficulty accessing and obtaining data.
- The Smithsonian has difficulty responding to basic questions on the use of federal funds.
- Availability of most program and project level data is dependent on cuff records, and specifically on a small number of people who are able to effectively use these informal systems. Reconciliation of the cuff records with the amounts reported by the Comptroller at the appropriation level is a recurring problem.
- The Comptroller's office generates reports that do not provide the data normally needed for management of federal funds. Managers interviewed at both



the Smithsonian-wide and unit levels considered most SFS reports to be of little or no value.

- Required information is not available in a timely manner.
- In many respects, the National Zoo operates on a separate basis from other parts of the Smithsonian, but recurring reports provided by the comptroller for RR&A do not provide a ready separation of data for the National Zoo from that for other elements of the Smithsonian. The managers in these two organizations identify the amounts for each organization contained in the Comptroller's reports by a separate process.

There is general agreement among managers of the Smithsonian that significant changes in the accounting and reporting system are needed. A reorganization putting the budget office and the comptroller operation under the chief financial officer, to some degree reflects the need for better integration of these functions. The FY 2002 budget request contains funding to initiate activity to replace the current system. At best, however, any significant system improvement appears to be several years in the future.

## **IMPLEMENTING A MORE EFFECTIVE SYSTEM FOR FINANCIAL ACCOUNTING**

The Smithsonian Financial System (SFS) is based on obsolete data processing technology with software designed for private sector manufacturing concerns and modified for a not-for-profit organization rather than the management of federal funds. The SFS reports are generally regarded as of little or no use for program and project management. Actual data on current-year obligations and outlays at the program or project level are difficult if not impossible to obtain from these reports. This situation appears to be a critical factor in the Smithsonian's difficulty in responding to basic questions on the use of appropriated funds.

## **RECOMMENDATIONS**

- The current SFS should be replaced with an updated system. The Smithsonian should assure that the updated system is fully compatible with the standards set by the Joint Financial Management Improvement Program, and reports obligations and outlays at the program and project level. The Smithsonian should assure that program and major-unit managers, as well as working-level fund-control personnel, are consulted in the process of defining requirements for the new system.
- In the interim, terminology used in the SFS reports should be clarified. If practical, SFS reports should be revised to provide actual obligation data. Key personnel should be trained to correctly apply the terms used in the federal appropriation process and those used in internal operations.
- The Smithsonian should recognize that managers will continue to rely on separate cuff systems unless and until a Smithsonian system is in place that pro-

vides managers with program and project-level information that they need and in which the managers have confidence.

- The cuff records used by the National Zoo should be modified to more readily provide a basis for tracking obligations as well as commitments.
- The Smithsonian should survey managers to determine which SFS reports are actually providing useful data, which should be changed within the current system's capabilities, and which should be discontinued.
- The Smithsonian should modify SFS basic reports to provide separate reporting for OPP and National Zoo transactions.
- Until a unified system is available, a sufficient number of people should be trained to operate the various cuff systems the Smithsonian uses so that the absence of any one individual does not hamper operations.

# CHAPTER

## 7

### Appropriation and Use of Repair, Restoration & Alteration Funds (FY 1996–2001)

This chapter responds to the appropriation subcommittees' request for specific information on how the Smithsonian used the funds appropriated for Repair, Restoration, and Alteration of facilities. For the period FY 1996–2001, Congress appropriated a total of \$265.7 million (\$208.2 million for FY 1996–2000 and \$57.5 million for FY 2001). In addition, \$22 million was available in unobligated balances from appropriations made prior to FY 1996.

The Academy team worked with the Smithsonian records and appropriate staff to determine how these funds were used. Specific information on the use of funds by project was obtained from the cuff records of the OPP and the National Zoo. A total of \$216.8 million was obligated over the period FY 1996 – 2000 (\$190.6 million by the OPP and \$26.2 million by the National Zoo). These obligations provided for a large number of individual projects, ranging from major efforts, such as replacement of roofs, skylights, and window walls, to much smaller efforts, such as the replacement of handrails.

The Academy team found that the funds were obligated for the purposes for which they were appropriated, that high priority repair and restoration projects at many of the Smithsonian's facilities have been accomplished or are in progress, and that the Smithsonian did not use RR&A funds for other purposes.

Table 7-1 summarizes the distribution of obligations over the period FY 1996-2000, the unobligated balances at the end of FY 2000 and the allocation of the amounts appropriated for FY 2001. The following sections provide more specific information on how the funds were applied.

The Smithsonian uses the following definitions, which are applicable to the categories shown in Table 7-1:

## MAJOR CAPITAL RENEWAL

This Category provides funds for the cyclical replacement of major building systems and equipment and major renovation projects required for the preservation of the buildings. Primarily addresses the major replacement requirements for HVAC and electrical systems in the older buildings, where systems are nearing the end of their service lives.

TABLE 7-1. Repair, Restorations and Alterations in Millions of Dollars  
(FY 1996-2001)

	TOTAL OBLIGATIONS FY 1996-2000	UN OBLIG BALANCE 9/30/00	FY 2001 ALLOCATION	TOTAL THROUGH FY 2001
<b>SMITHSONIAN INSTITUTION (w/o National Zoo)</b>				
<b>MAJOR CAPITAL RENEWAL</b>				
NAT'L MUSEUM OF NATURAL HISTORY	35.3	03	10.7	46.3
PATENT OFFICE BUILDING	12.2	4.3	17.0	33.5
ARTS AND INDUSTRIES BUILDING	3.5	0.0	4.0	7.5
OTHER BUILDINGS	1.4	0.5	0.5	2.4
<b>SUBTOTAL</b>	<b>52.4</b>	<b>5.1</b>	<b>32.2</b>	<b>89.7</b>
<b>CODE COMPLIANCE AND SECURITY</b>				
FIRE DETECTION AND SUPPRESSION	3.8	0.0	0.3	4.1
ACCESS, SAFETY, ASBESTOS & LEAD ABATEMENT SECURITY	23.4	1.3	2.8	27.5
<b>SUBTOTAL</b>	<b>27.2</b>	<b>1.3</b>	<b>3.1</b>	<b>31.6</b>
<b>INFRASTRUCTURE REPAIRS AND MODIFICATIONS</b>				
GENERAL REPAIRS	34.5	2.1	4.8	41.4
FAÇADE, ROOF AND TERRACE REPAIR	49.7	0.6	4.9	55.2
UTILITY SYSTEM REPAIR	17.1	0.3	1.4	18.8
R&R PLANNING, DESIGN AND INSPECTION	8.4	0.3	1.2	9.9
ALTERATIONS AND MODIFICATIONS	1.3	1.6	2.3	5.2
<b>SUBTOTAL</b>	<b>111.0</b>	<b>4.9</b>	<b>14.6</b>	<b>130.5</b>
<b>TOTAL SMITHSONIAN INSTITUTION</b>	<b>190.6</b>	<b>11.3</b>	<b>49.9</b>	<b>251.8</b>
<b>TOTAL NATIONAL ZOO</b>	<b>26.2</b>	<b>2.1</b>	<b>7.6</b>	<b>35.9</b>
<b>TOTAL SMITHSONIAN INSTITUTION &amp; NATIONAL ZOO</b>	<b>216.8</b>	<b>13.4</b>	<b>57.5</b>	<b>287.7</b>

## CODE COMPLIANCE AND SECURITY

**Fire Detection and Suppression Projects:** provides fire protection and safety measures meeting current standards with state-of-the-art technology. Typically includes installation of detection systems, such as smoke alarms; suppression systems, such as sprinklers; and architectural modifications to create fire zones, such as installing firewalls and doors.

**Access, Safety, and Security Projects:** provides better access to facilities for persons with disabilities, improves environmental conditions of the health and safety of visitors and staff, and corrects facility conditions that threaten the security of the national collections.

## INFRASTRUCTURE REPAIRS AND MODIFICATIONS

**General Repairs:** provides resources for minor, unscheduled, but essential repairs that the Smithsonian cannot anticipate specifically or that do not fit into any one

discrete category.

**Façade, Roof, and Terrace Repairs:** provides exterior repair and maintenance to building envelopes to prevent major structural and interior damage and deterioration due to age, water intrusion, and weathering.

**Utility System Repairs:** maintains, repairs, and upgrades the heating, ventilating and air conditioning (HVAC) systems, plumbing, electrical, and communications systems. Ensures reliable and energy-efficient operation of utility systems through ongoing renovation, repairs, and replacement of deteriorated equipment.

**Repair and Restoration Planning, Design and Inspection:** supports projects to identify and analyze long-range repair and restoration needs and to design future-year projects in advance of funding requests.

**Alterations and Modifications:** provides for smaller projects with estimated costs of less than \$1 million.

### AVAILABILITY AND USE OF FUNDS (FY 1996 – 2000)

The following table provides more specific information on the RR&A appropriations and obligations for the Smithsonian Institution, including the National Zoo over the five-year period from FY 1996-2000. The amounts reported in the official accounting records include amounts appropriated under the separate appropriations "Repair and Restoration of Buildings, Smithsonian Institution" and "Construction and Improvements, National Zoological Park" in FY 1996-1999, and the combined appropriation "Repair, Restoration and Alteration of Facilities" in FY 2000. These amounts are summarized in Table 7-2.

TABLE 7-2. Smithsonian Institution Appropriations and Obligations (including National Zoo) in Thousands of Dollars (FY 1996-2000)

	SMITHSONIAN INSTITUTION w/o Zoo	NATIONAL ZOO	TOTAL
Appropriations: FY 1996	33,954	3,250	37,204
FY 1997	39,000	3,850	42,850
FY 1998	32,000	3,850	35,850
FY 1999	40,000	4,400	44,400
FY 2000	41,900	6,000	47,900
<b>Total Appropriations</b>	<b>186,854</b>	<b>21,350</b>	<b>208,204</b>
Obligations: FY 1996	21,513	4,758	26,271
FY 1997	28,624	5,834	34,458
FY 1998	53,962	6,038	60,000
FY 1999	52,169	3,178	55,347
FY 2000	34,330	6,434	40,764
<b>Total Obligations (FY 1996–2000)</b>	<b>190,598</b>	<b>26,242</b>	<b>216,840</b>

Note: "Obligations" are amounts obligated within each fiscal year including obligations from "carry-over funds" from prior year obligations.

## RELATIONSHIP OF OBLIGATIONS, OUTLAYS AND BALANCES

“Obligations” are defined as contracts awarded and other transactions under which the government accepts a legal requirement to make future payment for work to be performed, services to be rendered, or goods to be delivered. “Unobligated balances” are the amounts of available funds that have not yet been obligated. “Outlays” are defined as payments made by the federal government when the requirements of the contract or other obligating transactions have been met. “Unpaid obligations” are obligations for which payments have not yet been made either because the work has not been done or because the vouchers have not been paid. Depending on the nature and magnitude of the effort involved, outlays may occur shortly after the obligation in the case of small jobs, or over a period of several months or years for large projects. The following table summarizes these relationships for RR&A over the period from FY 1996-2000.

TABLE 7-3. RR&A Obligations, Outlays, and Balances in Millions of Dollars (FY 1996-2000)

Smithsonian Institution, including National Zoo	
Unobligated Balance at the Beginning of FY 1996	\$22
Appropriations FY 1996-2000	208
Total Available for Obligations	<u>230</u>
Obligations FY 1996-2000	
Against Beginning Unobligated Balance	22
Against FY 1996-2000 Appropriations	195
Total Obligations	<u>217</u>
Unobligated Balance End of FY 2000	13
<hr/>	
Unpaid Obligations at the Beginning of FY 1996	33
Obligations FY 1996-2000	217
Total	<u>250</u>
Outlays FY 1996-2000	
Against Beginning Unpaid Obligations	33
Against FY 1996-2000 Obligations	166
Total Outlays FY 1996-2000	<u>199</u>
Unpaid Obligations End of FY 2000	51

Most of the \$13 million unobligated balance at the end of FY 2000 was obligated early in FY 2001. The \$51 million of unpaid obligations at the end of FY 2000 represents obligations for work that the Smithsonian will pay for in FY 2001 and sub-

sequent years. Of this amount \$11 million was identified as “accounts payable,” indicating that the work had been accomplished. Forty million dollars was identified as “undelivered orders,” indicating that the work was not yet completed. The \$166 million in outlays against obligations incurred over the period from FY 1996-2000 and the \$11 million in accounts payable at the end of FY 2000 indicate that more than 80% of the work for which funds were obligated during this period was completed as of September 30, 2000.

## UNOBLIGATED BALANCES

The Appropriations subcommittees expressed concern about the size of the unobligated balances of RR&A funds. As shown in the Table 7-4, the balances were large relative to the level of the appropriations prior to FY 1998, but have declined significantly since then.

The \$13 million unobligated balance at the end of FY 2000 included \$4 million, which was obligated in early FY 2001 for removal of antiquated systems and hazardous materials from the Patent Office Building. An unobligated balance of this magnitude is not considered unusual for the type of work involved.

TABLE 7-4. RR&A Appropriations and Unobligated Balances  
in Thousands of Dollars (FY 1996-2000)

SMITHSONIAN INSTITUTION (including National Zoo) RR&A Appropriations and Unobligated Balances (Thousands of Dollars)			
	Appropriation	Unobligated Balance End of Year*	% of Annual Appropriation
FY 1996	\$37,204	\$33,036	89%
FY 1997	\$42,850	\$41,428	97%
FY 1998	\$35,850	\$17,278	48%
FY 1999	\$44,400	\$6,329	14%
FY 2000	\$47,900	\$13,413	28%

\*Note: Includes balances from carryover funds appropriated in prior years.

## PRIORITIES IN APPLICATION OF FUNDS

A project-by-project review of the actual obligation of funds for Smithsonian Institution projects during FY 1996-2000 showed that funds were applied in a manner consistent with the indicated priorities. For a detailed summary of the priorities assigned to the projects the Smithsonian funded over the period from FY 1996-2000 (See Appendix B).

## OBLIGATIONS BY FISCAL YEAR, CATEGORY AND LOCATION (FY 1996 – 2000)

The Smithsonian Financial System provides the appropriation level obligation and outlay data used in external reporting to the Office of Management and Budget and incorporated in the budget documents and other material provided to Congress. Program and project managers generally rely on internally generated records of requisitions and obligations for managing funds at the project level. The internal (or “cuff”) records are in agreement with the external reporting; some specific differences are caused by differences in the timing of recording obligations. The obligation information in this section is based on the internal records as opposed to SFS records.

### SMITHSONIAN INSTITUTION: OBLIGATIONS BY CATEGORY (SEE TABLE 7-5)

#### Major Capital Renewal

The Smithsonian obligated \$190 million for facilities other than the National Zoo in FY 1996-2000; \$52 million was obligated for “Major Capital Renewal” projects, which provide for replacement of major building systems and equipment, and for major renovations required to preserve the buildings. These projects included \$35 million for work on the National Museum of Natural History, including a facilities condition assessment, design for corrective actions, roof replacement, and initial work on HVAC and other internal systems; \$12 million for a facilities condition assessment, related design effort, and award of a major construction management contract for the Patent Office Building; \$3.5 million for assessment and design activities for the Arts and Industries Building, and \$1.4 million for similar work on the National Museum of American History.

#### Code Compliance and Security

Twenty-seven million dollars of the \$190 million was obligated for “Fire Detection and Suppression” projects and for “Access, Safety and Security” projects. “Access” projects include compliance with the Americans with Disabilities Act; “Safety” projects include asbestos and lead abatement; “Security” projects provide for safety of visitors and staff and for correction of building conditions that threaten the security of collections.

#### Infrastructure Repairs and Modifications

One hundred eleven million dollars of the \$190 million was obligated for “Infrastructure Repairs and Modifications.” Within this category, \$35 million was obligated for “General Repairs,” which include a wide variety of small repair projects as well as more extensive efforts, such as renovation of buildings in the Anacostia Museum, the Cooper Hewitt Museum, the Silver Hill Facility and the Tropical Research Institute. Obligations of \$50 million for “Facade, Roof and Terrace Repair” covered major efforts to replace skylights and window walls at the National Air and Space Museum, the roof and rain gutters at the Patent Office Building, the roof on the National Museum of American History, roof repair and



paving replacement at the Museum Support Center, and a number of smaller roof and façade repair projects. "Utility System Repair and Improvement" projects required obligation of \$17 million for chiller and HVAC system repairs and improvements, data system cabling, lighting upgrades and related activities at a number of locations. "Repair and Restoration Planning, Design and Inspection" obligations totaled \$8 million.

### Alterations and Modifications

In FY 2000, "Alteration and Modification" obligations of \$1.3 million provided for staff housing at the Smithsonian Tropical Research Institute, for Smithsonian Institution Libraries' rare book room at the National Museum of Natural History, and for several other items.

Table 7-5 provides a summary by budget category of the Smithsonian's obligations for RR&A for each fiscal year and the unobligated balances remaining at the end of FY 2000.

TABLE 7-5. Smithsonian Institution RR&A Obligations by Category (excluding National Zoo) in Thousands of Dollars (FY 1996-2000)

	FY1996	FY1997	FY1998	FY1999	FY2000	TOTAL OBLIG FY1996-2000	UNOBLIG BALANCE 9/30/2000
<b>MAJOR CAPITAL RENEWAL</b>							
NAT'L MUSEUM OF NATURAL HISTORY	2,531	7,298	2,273	11,509	11,678	35,289	286
PATENT OFFICE BUILDING	448	87	6,911	1,043	3,707	12,196	4,293
ARTS AND INDUSTRIES BUILDING	-7	31	313	2,635	510	3,482	46
NAT'L MUSEUM OF AMERICAN HISTORY	852	684	-175	31		1,392	
NAT'L AIR AND SPACE MUSEUM	8	30				36	
SMITHSONIAN CASTLE							500
<b>SUBTOTAL Major Capital Renewal</b>	<b>3,830</b>	<b>8,130</b>	<b>9,322</b>	<b>15,218</b>	<b>15,895</b>	<b>52,395</b>	<b>5,125</b>
<b>CODE COMPLIANCE AND SECURITY</b>							
FIRE DETECTION AND SUPPRESSION	1,357	895	280	1,156	71	3,759	18
ACCESS		252	629	118	509	1,508	3
SAFETY: ASBESTOS & LEAD ABATEMENT		4,528	1,084	3,091	907	9,610	254
SECURITY		885	1,017	2,936	2,331	7,169	1,039
ACCESS, SAFETY AND SECURITY	5,116					5,116	
<b>SUBTOTAL Code Compliance &amp; Security</b>	<b>6,473</b>	<b>6,560</b>	<b>3,010</b>	<b>7,301</b>	<b>3,818</b>	<b>27,162</b>	<b>1,314</b>
<b>INFRASTRUCTURE REPAIRS AND MODIFICATIONS</b>							
GENERAL REPAIRS	4,425	5,395	5,580	13,727	5,430	34,557	2,136
FAÇADE, ROOF AND TERRACE REPAIR	3,079	2,645	30,334	9,676	3,960	49,694	577
UTILITY SYSTEM REPAIR	2,086	4,722	3,455	3,413	3,428	17,104	281
R&R PLANNING, DESIGN AND							
INSPECTION	1,608	1,190	2,261	1,737	1,584	8,380	271
ALTERATIONS AND MODIFICATIONS					1,290	1,290	1,635
<b>SUBTOTAL Infrastructure Repairs &amp; Mods</b>	<b>11,198</b>	<b>13,952</b>	<b>+1,630</b>	<b>28,553</b>	<b>15,692</b>	<b>111,025</b>	<b>4,900</b>
<b>TOTAL SMITHSONIAN INSTITUTION</b>	<b>21,501</b>	<b>28,642</b>	<b>53,962</b>	<b>51,072</b>	<b>35,405</b>	<b>190,582</b>	<b>11,339</b>

Note: Negative numbers indicate adjustments to obligations recorded in previous years.

## RECAP OF SMITHSONIAN INSTITUTION OBLIGATIONS BY LOCATION

RR&A funds were obligated for work at most of the Smithsonian's buildings over the period from FY 1996-2000. The \$190 million obligated during FY 1996-2000 included efforts at the following locations:

**National Museum of Natural History.** Thirty-five million dollars were obligated for design and initial construction as part of a major capital renewal effort, including HVAC replacement and renovation, roof replacement and upgrade of electrical and other basic building systems. In addition, \$8.4 million was applied to other repair and renovation projects for asbestos and lead abatement, rotunda restoration, rare book room, security system upgrade, data cabling, elevator repair and other repair activities.

**Patent Office Building.** Twelve million dollars were obligated to provide for assessment and design and for a construction management contract in preparation for total renovation of this building, which houses the National Portrait Gallery and the Museum of American Art, and related studios and archives. In addition, \$9.7 million has been obligated for roof and rain gutter replacements, window repairs, HVAC renovation, lighting and other repairs.

**Arts and Industries Building.** Three and a half million dollars were obligated for a building condition assessment and a preliminary design for the major capital renovation, and \$1.5 million for roof and skylight repair, office renovations and other repairs.

**National Museum of American History.** A total of \$10.3 million was obligated, including \$1.4 million for assessment and planning for major capital renewal, \$3.6 million for roof replacement, and \$5.2 million for other repair and restoration efforts. The latter included replacement of switchgear and feeder cable, as well as work on the HVAC system, the Music Hall, the entry vestibule and retaining walls.

**National Air and Space Museum.** Approximately \$27 million was obligated for replacement of skylights and window walls, and \$4.5 million for facade reconditioning, planter repairs, safety, access and general repairs.

**Anacostia Museum.** Obligations for major renovation of the building and paving were \$7.7 million.

**Silver Hill Facility.** More than \$3.4 million was obligated for compliance and safety projects, including asbestos removal, and \$6.0 million for other building repairs.

**Museum Support Center.** Obligations for chiller upgrade and pavement and utility system repairs were \$5.6 million.

The \$190 million in obligations also covered RR&A efforts at the Smithsonian Castle, the Quadrangle, the Hirshhorn Museum, the Renwick Gallery, the Cooper

Hewitt Museum, the Smithsonian Astrophysical Observatory, the Tropical Research Institute, the Environmental Research Center, and several other locations. Table 7-6 provides information on the obligation of RR&A funds at each location, by fiscal year (FY 1996-2000).

*Appropriation and  
Use of Repair,  
Restoration &  
Alteration Funds  
(FY 1996-2001)*

TABLE 7-6. Smithsonian Institution Obligations by Location (excluding National Zoo appropriations) in Thousands of Dollars (FY 1996-2000)

	FY1996	FY1997	FY1998	FY1999	FY2000	TOTAL FY1996-2000
NATIONAL MUSEUM OF NATURAL HISTORY	<u>3,008</u>	<u>8,144</u>	<u>3,995</u>	<u>15,206</u>	<u>13,359</u>	<u>43,712</u>
MAJOR CAPITAL RENEWAL INCLUDES ROOF REPLACEMENT, HVAC, ELEC & PLUMBING, FIRE PROTECTION, ASBESTOS AND LEAD ABATEMENT, ETC.	2,531	7,298	2,273	11,509	11,678	35,289
ROTUNDA RESTORATION			102	1,131	91	1,324
DATA CABLING AND IMPROVEMENTS	-1	134	241	858	170	1,402
SECURITY SYSTEM UPGRADES INCLUDING SIPPS REPLACEMENT		223	506	1,602	62	2,393
SMITHSONIAN LIBRARIES RARE BOOK ROOM		51		17	576	644
OTHER RR&A INCLUDING ROOF REPAIRS, CODE COMPLIANCE, ELEVATOR AND GENERAL REPAIRS	478	438	873	89	782	2,660
PATENT OFFICE BUILDING	<u>1,790</u>	<u>585</u>	<u>12,122</u>	<u>3,111</u>	<u>4,310</u>	<u>21,918</u>
MAJOR CAPITAL RENEWAL	448	86	6,911	1,044	3,707	12,196
ROOF & RAIN GUTTER REPAIR / REPLACEMENT	635	34	5,007	2,015	600	8,291
OTHER RR&A INCLUDING ASSESSMENT, DESIGN, CONSTRUCTION MGMT CONTRACT, RAIN GUTTER, APSE WINDOW, HVAC AND LIGHTING REPAIR	707	465	204	52	3	1,431
ARTS AND INDUSTRIES BUILDING	<u>402</u>	<u>408</u>	<u>495</u>	<u>3,218</u>	<u>522</u>	<u>5,045</u>
MAJOR CAPITAL RENEWAL ASSESSMENT AND DESIGN	-7	31	313	2,635	510	3,482
OTHER RR&A INCLUDING ROOF & SKYLIGHT REPAIR OFFICE RENOVATIONS, ETC	409	377	182	583	12	1,563
SMITHSONIAN CASTLE	<u>163</u>	<u>209</u>	<u>203</u>	<u>392</u>	<u>240</u>	<u>1,207</u>
RR&A INCLUDING EXTERIOR STONE REPAIR & PAINTING, AND HVAC REPAIRS						
NATIONAL MUSEUM OF AMERICAN HISTORY	<u>1,217</u>	<u>3,204</u>	<u>123</u>	<u>3,524</u>	<u>2,200</u>	<u>10,268</u>
MAJOR CAPITAL RENEWAL ASSESSMENT AND DESIGN	852	684	-175	31		1,392
ROOF REPLACEMENT				2,662	980	3,642
SWITCHGEAR & FEEDER CABLE REPLACEMENT		1,601	9			1,610
OTHER RR&A INCLUDING MUSIC HALL, HVAC, VESTIBULE, AND RETAINING WALL REPAIRS	365	919	289	831	1,220	3,624
NATIONAL AIR AND SPACE MUSEUM	<u>2,926</u>	<u>10,453</u>	<u>24,025</u>	<u>1,591</u>	<u>1,926</u>	<u>31,921</u>
SKYLIGHT & WINDOW WALL REPLACEMENT	462	200	23,957	1,017	1,823	27,459
STONE FAÇADE RECONDITIONING, PLANTER REPAIR, SAFETY, ACCESS, AND GENERAL REPAIRS	2,464	1,253	68	574	103	4,462
HIRSHHORN MUSEUM	<u>914</u>	<u>1,092</u>	<u>1,629</u>	<u>299</u>	<u>255</u>	<u>4,189</u>
EXHIBIT LIGHTING, CHILLER REPLACEMENT AUDITORIUM, REST ROOM AND OTHER REPAIRS						
RENWICK GALLERY	<u>79</u>	<u>55</u>	<u>184</u>	<u>568</u>	<u>1,257</u>	<u>2,143</u>
GRAND SALON RENOVATION, FAÇADE POINTING ELEVATOR REPLACEMENT, CHANDELIER WINCHES, COOLING TOWER & OTHER REPAIRS						
FREER GALLERY	<u>-63</u>	<u>2</u>	<u>82</u>			<u>21</u>
COURTYARD ACCESSIBILITY						
MUSEUM SUPPORT CENTER	<u>1,046</u>	<u>301</u>	<u>1,512</u>	<u>2,512</u>	<u>228</u>	<u>5,599</u>
CHILLER UPGRADE		104	1,331	33		1,468
ROOF, PAVEMENT AND UTILITY SYSTEM REPAIR	1,046	197	181	2,479	228	4,131
QUADRANGLE	<u>60</u>	<u>155</u>	<u>304</u>	<u>2,230</u>	<u>418</u>	<u>3,167</u>
CENTRAL SECURITY SYSTEM, STONE SEALANT, KIOSK LEAK, SKYLIGHT, LOADING DOCK, ETC						

Appropriation and  
Use of Repair,  
Restoration &  
Alteration Funds  
(FY 1996-2001)

COOPER HEWITT MUSEUM FOURTH FLOOR AND MILLER / FOX HOUSE RENOVATION, FIRE DETECTION	1,785	-13	806	1,545	234	4,257
ANACOSTIA MUSEUM MAJOR RENOVATION OF BUILDINGS	-32	250	707	6,352	461	7,738
NATIONAL MUSEUM OF THE AMERICAN INDIAN GENERAL REPAIRS, HEYE CENTER & RESEARCH BR	977	759	373	586	309	3,004
SILVER HILL FACILITY CODE COMPLIANCE, SAFETY, AND SECURITY	743	2,835	1,104	3,573	1,121	9,376
GENERAL REPAIRS	16	1,744		1,425	231	3,416
	727	1,091	1,104	2,148	890	5,960
SMITHSONIAN ASTROPHYSICAL OBSERVATORY <u>UTILITY SYSTEMS, CABLE NETWORK, GENERAL REPAIRS</u>	-33	1,688	459	153	260	2,527
TROPICAL RESEARCH INSTITUTE EMERGENCY GENERATOR, COMMUNICATIONS UPGRADE, BCI HOUSING	1,249	1,096	862	902	1,004	5,113
ENVIRONMENTAL RESEARCH CENTER DOCK, ROOF AND HVAC REPLACEMENT / REPAIR, GENERAL REPAIRS	477	111	1,085	486	497	2,656
MULTI SITE PROJECTS	4,793	5,971	3,631	4,222	6,804	25,421
SECURITY SYSTEM MODERNIZATION		462		463	2,128	3,053
COMPLIANCE / SAFETY / ACCESS	3,074	1,502		322	387	5,285
CENTRAL CHILLED WATER PLANT					1,697	1,697
OTHER UTILITY SYSTEM AND GENERAL REPAIRS	1,719	4,007	3,631	3,437	2,592	15,286
EMERGENCY FIRE PROTECTION		337	261	602		1,200
<b>TOTAL SMITHSONIAN INSTITUTION</b>	<b>21,501</b>	<b>28,642</b>	<b>53,962</b>	<b>51,072</b>	<b>35,405</b>	<b>190,582</b>

Note: Negative numbers indicate adjustments to obligations recorded in previous years.

## NATIONAL ZOO OBLIGATIONS (SEE TABLE 7-7)

At the beginning of FY 1996, there was an unobligated balance of \$7 million under the appropriation "Construction and Improvements, National Zoological Park." This balance included funds previously appropriated for construction on the Grass Lands, Think Tank and Amazonia projects. For FY 1996-1999, Congress appropriated \$15.35 million under "Construction and Improvements, National Zoological Park." For FY 2000, the appropriation "Repair, Restoration and Alteration of Facilities" included \$6 million for work at the National Zoo. Against this total of \$28.3 million available for obligation, \$26.2 million was obligated over the period from FY 1996-2000.

Because the National Zoo monitors its RR&A financial transactions on a commitment rather than obligation basis and does not use the same "cuff" system OPP uses, the actual obligation amounts and balances for each project for each fiscal year had to be developed by a special analysis. Table 7-7 provides a breakdown of these obligations by category and type of work based on data provided by the National Zoo and OPP's staff.

TABLE 7-7. National Zoo Obligations by Category in Thousands of Dollars  
(FY 1996-2000)

*Appropriation and  
Use of Repair,  
Restoration &  
Alteration Funds  
(FY 1996-2001)*

NATIONAL ZOO OBLIGATION BY CATEGORY	TOTAL OBLIGATIONS					UNOBLIG BALANCE	
	<u>FY1996</u>	<u>FY1997</u>	<u>FY1998</u>	<u>FY1999</u>	<u>FY2000</u>	<u>FY1996-2000</u>	<u>9/30/2000</u>
<b>MAJOR CAPITAL RENEWAL</b>							
PANDA BUILDING REPAIRS					799	799	
MANE BUILDING DESIGN					48	48	
TOTAL MAJOR CAPITAL RENEWAL					847	847	53
<b>CODE COMPLIANCE AND SECURITY</b>							
FIRE DETECTION AND SUPPRESSION	49	159	130	203	179	720	
ACCESS, SAFETY SECURITY	217	77	198	147	374	1,013	
TOTAL COMPLIANCE AND SECURITY	266	236	328	350	553	1,733	672
<b>INFRASTRUCTURE REPAIRS AND MODIFICATIONS</b>							
<b>GENERAL REPAIRS</b>							
PANDA EXHIBIT IMPROVEMENTS					190	190	
ZEBRA YARD RENOVATION				351		351	
EMERGENCY REPAIRS, ROAD REPAIRS							
ELEPHANT RESTRAINT, RESTROOMS	772	1,248	1,844	776	868	5,508	
AND OTHER REPAIRS AT ROCK CREEK							
GENERAL REPAIRS AT FRONT ROYAL	230	190	993	166	398	1,977	
<b>FAÇADE, ROOF AND TERRACE REPAIR</b>							
LION-TIGER ROOF REPLACEMENT							
ROOF LEAK INVESTIGATION AND							
REPAIR AT ROCK CREEK	60	214	573	11	211	1,069	
ROOF AND FAÇADE REPAIR							
AT FRONT ROYAL			451		48	499	
<b>UTILITY SYSTEM REPAIR</b>							
HVAC MAINT, REPAIR & IMPROVEMENT							
AT ROCK CREEK AND FRONT ROYAL	797	980	578	740	956	4,051	
CHLORAMINE FILTRATION							
AT ROCK CREEK					1,067	1,067	
GENETICS LAB VENTILATION SYSTEM							
AT ROCK CREEK	26	446				472	
SEAL/SEA LION PUMP AND OTHER							
REPAIRS AT ROCK CREEK	189	147			26	362	
TRANSFORMER REPLACEMENT							
AT FRONT ROYAL				139	55	194	
UTILITY SYSTEM REPAIRS AND							
IMPROVEMENTS AT FRONT ROYAL	414			543	21	978	
TOTAL INFRASTRUCTURE REPAIRS AND	<b>2,488</b>	<b>3,225</b>	<b>4,432</b>	<b>2,726</b>	<b>3,840</b>	<b>16,718</b>	<b>35</b>
MODS							
TOTAL R, R & A	2,754	3,461	4,767	3,076	5,240	19,298	760
<b>REPAIR, RESTORATION AND MAINTENANCE (USING REMAINING FUNDS FROM CONSTRUCTION AND IMPROVEMENTS, NZP)</b>							
UTILITY SYSTEMS AT ROCK CREEK & OTHER REPAIR AND IMPROVEMENTS					1,194	1,194	1,314
<b>CONSTRUCTION</b>							
COMPLETION OF CONSTRUCTION OF GRASSLANDS, THINK TANK AND AMAZONIA	2,005	2,373	1,269	103		5,750	
TOTAL NATIONAL ZOO	4,759	5,834	6,036	3,179	6,434	26,242	2,074

## REPAIR, RESTORATION AND ALTERATION (FY 2001)

Congress appropriated \$57.5 million for FY 2001 for RR&A. Table 7-8 shows the allocation of the FY 2001 funds as contained in material supporting the FY 2002 budget request, the unobligated balances brought forward from prior appropriations, and the total availability for obligation in FY 2001.

TABLE 7-8. Availability and Allocation in Thousands of Dollars (FY 2001)

	UNOBLIG BALANCE 9/30/00	Appropriation Allocation FY 2001	TOTAL AVAILABLE FY 2001
<b>SMITHSONIAN INSTITUTION (w/o National Zoo)</b>			
<b>MAJOR CAPITAL RENEWAL</b>			
NATL MUSEUM OF NATURAL HISTORY	286	10,655	10,941
PATENT OFFICE BUILDING	4,293	17,000	21,293
ARTS AND INDUSTRIES BUILDING	46	4,000	4,046
SMITHSONIAN CASTLE	500	500	1,000
<b>SUBTOTAL</b>	<b>5,125</b>	<b>32,155</b>	<b>37,280</b>
<b>CODE COMPLIANCE AND SECURITY</b>			
FIRE DETECTION AND SUPPRESSION	18	300	318
ACCESS; SAFETY; ASBESTOS & LEAD ABATEMENT; SECURITY	1,296	2,835	4,131
<b>SUBTOTAL</b>	<b>1,314</b>	<b>3,135</b>	<b>4,449</b>
<b>INFRASTRUCTURE REPAIRS AND MODIFICATIONS</b>			
GENERAL REPAIRS	2,136	4,820	6,956
FAÇADE, ROOF AND TERRACE REPAIR	577	4,948	5,525
UTILITY SYSTEM REPAIR	281	1,362	1,643
R&R PLANNING, DESIGN AND INSPECTION	271	1,190	1,461
ALTERATIONS AND MODIFICATIONS	1,635	2,280	3,915
<b>SUBTOTAL</b>	<b>4,900</b>	<b>14,600</b>	<b>19,500</b>
<b>TOTAL SMITHSONIAN INSTITUTION</b>	<b>11,339</b>	<b>49,890</b>	<b>61,229</b>
<b>TOTAL NATIONAL ZOO</b>	<b>2,074</b>	<b>7,583</b>	<b>9,657</b>
<b>TOTAL SMITHSONIAN INSTITUTION &amp; NATIONAL ZOO</b>	<b>13,413</b>	<b>57,473</b>	<b>70,886</b>

The remainder of the text describe the current allocation. The actual allocation of resources among projects may vary from this plan in order to meet urgent needs that arise and other necessary adjustments to planned activities and schedules.

### MAJOR CAPITAL RENEWAL

For the “Smithsonian Institution Major Capital Renewal” funding, the FY 2001 allocation provides for continued work on the Patent Office Building, the National Museum of Natural History and the Arts and Industries Building.

**Patent Office Building:** Design of the physical plant renewal will be completed. A contract in the amount of \$7.3 million has recently been awarded for removal of antiquated systems and hazardous materials. Current plans include obligation of

the remaining funds for lease of space and the relocation of the collections, replacement of the windows and restoration of the facade of the building.

**National Museum of Natural History:** In FY 2001, most of the remaining work on restoration of the rotunda will be completed, a fire alarm system will be installed, additional HVAC replacement will be accomplished, data cabling will be completed and the capital renewal master plan will be updated.

**Arts and Industries Building:** The FY 2001 funding will be used to complete schematic design for the major capital renewal of this historic building.

**Smithsonian Castle:** The FY 2001 funding, together with the unobligated balance from FY 2000, will provide for assessment, planning and development of as-built drawings in preparation for the future major capital renewal effort.

## **CODE COMPLIANCE AND SECURITY**

**Fire Protection and Suppression:** Most of the effort in this category will be at the Smithsonian Astrophysical Observatory, providing for fire alarm improvement and sprinkler system.

**Access, Safety and Security:** Funds have been obligated for work on an accessible entrance at the National Museum of Natural History and for lead and asbestos abatement at several locations. Planned obligations include provision for exterior door and handrails and other safety improvements at the National Museum of American History, safety improvements at the Quadrangle, upgrading of security at the Museum Support Center and Smithsonian Tropical Research Institute, as well as a number of smaller projects.

## **INFRASTRUCTURE**

**General Repairs:** Obligations will cover many repair efforts and include provision for unscheduled but necessary repairs. Larger planned efforts include continued work on the National Museum of Natural History Rotunda, restoration of the Grand Staircase and Octagon Room at Renwick Gallery, road improvements and general repairs at the Tropical Research Institute, additional renovations at the south end of the Anacostia Museum, and improvements in the Smithsonian Castle.

**Façade, Terrace and Roof Repair:** Major planned activities in this category include continued work on the National Air and Space Museum's skylights and window walls, roof and window repair at the Smithsonian Institution Building, roof replacement at the National Museum of Natural History and skylight, and window repairs at the Freer Gallery.

**Utility System Repair:** Funds in this category are allocated to work on the basement HVAC at the National Museum of American History, seawater system and HVAC improvements at the Tropical Research Institute, electrical system upgrade at the Museum Support Center, and a number of other projects.

**R&R Planning, Design and Inspection:** These activities involve a number of planning design and inspection activities for a number of facilities. The largest amounts are for the Museum of American History, the Quadrangle, the Environmental Research Center, and the Smithsonian Astrophysical Observatory.

**Alterations and Modifications:** Among the alteration and modification activities funded in FY 2001 are survey of space needs at the Hirshhorn Museum and Sculpture Garden, Smithsonian Institution Library compact shelving, and space modifications at the Museum of National History, a dorm extension at the Smithsonian Astrophysical Observatory, lab additions at the Environmental Research Center, and service facilities at the Smithsonian Castle.

## **NATIONAL ZOOLOGICAL PARK**

Planned FY 2001 obligations for “Repair and Restoration” at the National Zoo include renovation of the Mane building, major HVAC repair and improvements, roof repair, fire protection improvements, access improvements, including renovation of the auditorium and seating for the disabled, and other general and emergency repairs.





# APPENDIX

## List of People Interviewed

Aris T. Allen, Jr.  
*Project Manager for Arts & Industries,  
Smithsonian Institution Building  
Office of Physical Plant  
Smithsonian Institution*

Charles W. Arthur, Jr.  
*Chief, Support Services  
Office of Physical Plant  
Smithsonian Institution*

Robert D. Bailey  
*Under Secretary for Finance and  
Administration  
Smithsonian Institution*

John D. Bartell  
*Manager, Museum Support Center  
National Museum of Natural History  
Smithsonian Institution*

Nancy Bechtol  
*Chief, Horticulture Services Division  
Office of Physical Plant  
Smithsonian Institution*

Ronald E. Becker  
*Associate Director for Capital Programs  
National Museum of American History  
Smithsonian Institution*

Sheila P. Burke  
*Under Secretary for American Museums  
and  
National Programs  
Smithsonian Institution*

Judith A. Cooper  
*Assistant Director, Crafts Services Division  
Office of Physical Plant  
Smithsonian Institution*

Spencer R. Crew  
*Director  
National Museum of American History  
Smithsonian Institution*

Vicki Zobisch Cundiff  
*Financial Management Advisor, Capital  
Program  
Office of Physical Plant  
Smithsonian Institution*

John (Jack) R. Dailey  
*Director  
National Air and Space Museum  
Smithsonian Institution*

James Duff  
*Treasurer  
National Gallery of Art*

List of People  
Interviewed

Jodi R. Ernst <i>Program Manager (Facilities Management) Office of Facility Services Smithsonian Institution</i>	Jay Henn <i>Director of Research Support Division, NASA detailed to National Air and Space Museum Smithsonian Institution</i>
Justin Estoque <i>Project Manager for National Air &amp; Space Museum Steven F. Udvar-Hazy Office of Physical Plant Smithsonian Institution</i>	Sarah Horrigan <i>Program Examiner Science and Space Program Branch Office of Management and Budget</i>
Cynthia R. Field <i>Director Architectural History and Historical Preservation Smithsonian Institution</i>	Alison A. Hunt <i>Project Manager for National Museum of Natural History Office of Physical Plant Smithsonian Institution</i>
Robert W. Fri <i>Director National Museum of Natural History Smithsonian Institution</i>	Steven J. Isakowitz <i>Branch Chief Science and Space Program Branch Office of Management and Budget</i>
John F. Gleason <i>Supervisor, Accounting Office of the Comptroller Smithsonian Institution</i>	Nancy L. Johns <i>Assistant Director, Staff and Organizational Effectiveness Office of Physical Plant Smithsonian Institution</i>
Paul A. Green <i>Chief, Facilities Assessment Branch Office of Physical Plant Smithsonian Institution</i>	Jack W. Johnson <i>Project Manager for Hirshhorn Museum and Sculpture Garden, Freer Gallery, QUAD: Ripley Center, National Museum of African Art, Sackler Gallery Office of Physical Plant Smithsonian Institution</i>
Steven J. Groh <i>Project Manager for Victor Building and Patent Office Building Office of Physical Plant Smithsonian Institution</i>	Michelle I. Kayon <i>Chief of Project Management National Zoological Park Smithsonian Institution</i>
Leslie D. Heacock <i>Project Manager for National Air &amp; Space Museum, Silver Hill Facility, Museum Support Center Office of Physical Plant Smithsonian Institution</i>	

Sat Nam Singh Khalsa  
Supervisory Auditor  
Office of Inspector General  
Smithsonian Institution

Edward L. Knapp  
Comptroller  
Office of the Comptroller  
Smithsonian Institution

Sheryl L. Kolasinski  
Director, Project Management  
Office of Physical Plant  
Smithsonian Institution

Lynn E. Lantz  
Auditor  
Office of Inspector General  
Smithsonian Institution

Thomas W. Lentz  
Director  
International Art Museums  
Smithsonian Institution

Donald S. Lopez  
Deputy Director  
National Air and Space Museum  
Smithsonian Institution

Peter Lufkin  
Principal, Economics  
Whitestone Research

Alice Collier Maroni  
Chief Financial Officer  
Smithsonian Institution

James (Patrick) McDonald  
Associate Director for Operations  
National Museum of Natural History  
Smithsonian Institution

Judson J. McIntire  
Project Manager for National Museum of  
American History  
Office of Physical Plant  
Smithsonian Institution

Major General Charles Metcalf, USAF  
(Ret)  
Director  
U.S. Airforce Museum  
Wright-Patterson Airforce Base,  
Dayton, Ohio

Tom P. Myers  
Project Manager for Renwick Gallery,  
Smithsonian Astrophysical Observatory,  
and Smithsonian Environmental  
Research  
Center  
Office of Physical Plant  
Smithsonian Institution

Debra A. Nauta-Rodriguez  
Project Manager for National Museum of  
the  
American Indian  
Office of Physical Plant  
Smithsonian Institution

Carole M. P. Neves  
Director  
Office of Policy and Analysis  
Smithsonian Institution

Kenneth E. Olmsted  
Deputy Director and Chief of Operations  
Office of Physical Plant  
Smithsonian Institution

Nell Payne  
Director, Office of Government Relations  
Smithsonian Institution

Elard J. Phillips  
Manager, Financial Reporting and  
Analysis  
Division  
Office of the Comptroller  
Smithsonian Institution

David P. Radzanowski  
Program Examiner  
Science and Space Program Branch  
Office of Management and Budget

List of People  
Interviewed

Richard H. Rice, Jr.  
Senior Facilities Services Officer  
Office of Facility Services  
Smithsonian Institution

Mary J. Rodriguez  
Assistant Director, Compliance and  
Representation  
Office of Planning, Management and  
Budget  
Smithsonian Institution

Harold Rombach  
Associate Director for Facilities Planning  
and Assessment  
Office of Physical Plant  
Smithsonian Institution

Derek Ross  
Assistant Director, Construction  
Management  
Division  
Office of Physical Plant  
Smithsonian Institution

Elizabeth Scheffler  
Associate Director for Administrative  
Services  
National Air and Space Museum  
Smithsonian Institution

Dennis Shaw  
Chief Technology Officer  
Office of Information Technology  
Smithsonian Institution

Kurt D. Sisson  
Chief of Facilities  
National Gallery of Art

Lawrence M. Small  
Secretary  
Smithsonian Institution

Michael J. Sofield  
Director  
Office of Physical Plant  
Smithsonian Institution

Michele L. Stam  
Assistant Director, Information Services  
Office of Physical Plant  
Smithsonian Institution

Lawrence D. Stuebing  
Associate Director of Engineering and  
Design  
Office of Physical Plant  
Smithsonian Institution

William L. Thomas  
Associate Director for Special Projects  
Office of Physical Plant  
Smithsonian Institution

Robin L. Vasa  
Assistant Director, Facilities Management  
and Construction  
National Zoological Park  
Smithsonian Institution

Sherell L. Vucci  
Financial Management Officer  
Office of Physical Plant  
Smithsonian Institution

Deborah Weatherly  
Staff  
House Appropriations Interior  
Sub-Committee

Robert A. Weisman  
Chief, Energy Management  
Office of Physical Plant  
Smithsonian Institution

W. Richard West  
Director  
National Museum of American Indian  
Smithsonian Institution

L. Carole Wharton  
Director  
Office of Planning, Management and  
Budget  
Smithsonian Institution

Ellen C. Williams  
*Manager, Financial Reporting  
Office of Facility Services  
Smithsonian Institution*

Darrell R. Willson  
*Administrator  
National Gallery of Art*

J. Andrew Wilson  
*Assistant Director for Fire Protection and  
Safety  
Office of Environmental Management and  
Safety  
Smithsonian Institution*

Howard L. Wink, Jr.  
*Assistant Director, Utilities Operations and  
Maintenance  
Office of Physical Plant  
Smithsonian Institution*

*List of People  
Interviewed*



# APPENDIX

## Review of Smithsonian's Repair, Restoration & Alteration Obligation Priorities

# B

The Academy team compared the Smithsonian Institution's actual obligations by project for each fiscal year with the priorities indicated in the five-year plan supporting the budget request for that year. This analysis led to the conclusion that the actual obligation of funds has been consistent with the priority designations supporting the budget requests. The priority ratings used by the Smithsonian are as shown below.

Table B-1 summarizes the first-year obligations for projects initiated by the OPP, other than Major Capital Renewal and Advanced Planning and Design over the period FY 1996-2000 in terms of the priorities indicated in the budget justifications for the year of initiation. As indicated, \$82 million was obligated in the year of initiation for projects in this category. Of the \$82 million, 47.4% was for projects designated in the plan as priority A and 15.0% for priority B projects. The remaining 37.6% went primarily for projects for which the plan did not indicate a specific priority and for urgent requirements that arose during the year. Only 3.5% was obligated for projects rated as priority C or lower.

### EXPLANATION OF PRIORITY RATINGS

Priority Rating "A" involves those projects that *must not be deferred*. These projects include 1) Building Shell Failure (e.g., active roof leak and active wall leak); 2) HVAC, Electrical, Security System Failure (e.g., active piping leak, active or frequent system/equipment failures); and 3) Mandated/Code Compliance.

Priority Rating "B" involves those projects that *should not be deferred and are of high priority*. These projects include 1) Building Shell Maintenance (e.g., imminent failure of exterior shell, imminent failure of HVAC, electrical, security equipment, and on-going site utility maintenance problem); 2) Building System Maintenance (e.g., imminent failure of building systems); and 3) High Priority Code Improvement (e.g., fire and life safety, accessibility, HVAC, electrical, security equipment).

Priority Rating "C" involves those projects that *should not be deferred and are of mod-*

erate priority. These projects include 1) Predicted, Required Repair or Maintenance; 2) On-going or Phased Construction Efforts (e.g., separate but part of on-going construction, needed for start of higher priority project, and needed to properly complete high priority project); and 3) Cost-Effective Payback Period (e.g., energy or maintenance savings payback within 7 years).

Priority Rating "D" involves those projects that can be deferred for one year or logically phased.

TABLE B-1. SMITHSONIAN'S RR&A PRIORITIES (FY 1996-2000)

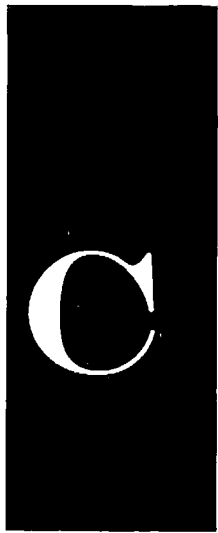
Projects Started During Fiscal Year (FY 1996 - FY2000)			
PRIORITY	AMOUNT	% of REPAIRS	# of PROJECTS
In Plan			
A	39,296,365	47.4%	48
B	12,368,340	14.9%	106
C	2,934,965	3.5%	16
D	329	0.0%	1
Undesignated	17,966,865	21.7%	44
Not in Plan	10,270,724	12.4%	122
Total	82,837,589	100%	337

\* RR&A projects managed by the OPP other than Major Capital Renewal and Advanced Planning and Design.



# APPENDIX

## Comparison of Smithsonian Institution's Reporting and Federal Appropriation Accounting



The tables below compare the internal accounting of the Smithsonian Institution in the SFS system with the appropriation accounting required for reporting to OMB and Congress. The figures shown are the FY 2000 actual amounts for the "Repair, Restoration and Alteration of Facilities" appropriation plus the carryover funds available under the "Construction and Improvements, National Zoological Park" appropriation. Congress makes appropriations authorizing agencies to incur obligations and requires control and reporting of obligations. Program and project managers for RR&A control funds on an obligation and commitment basis. The Smithsonian, as a not-for-profit organization, accounts for its funding actions on an "expense" basis. This situation results in difficulties with regard to management and reporting on federal funds. Obligation and outlay data for specific programs and projects are not available in the regular Smithsonian reporting. The present situation results in production of accounting reports with little or no value to managers and difficulty in responding to requests from Congress for basic information regarding obligations and outlays under appropriated funds. Table C-1 presents the basic data for FY 2000. Table C-2 shows the way it is reflected in the Smithsonian accounting. Table C-3 shows the way the data is reported in basic federal appropriation accounting.

TABLE C-1. FY 2000 Basic Data in Thousands of Dollars

A = Beginning Unpaid Obligations	\$65,391
B = Beginning Accounts Payable	\$4,754
C = Beginning Unobligated Balance	\$6,277
D = New Obligational Authority	\$47,900
E = Obligations during period	\$40,764
F = Outlays During Period	\$54,886
G = Unpaid Obligations End of Period	\$51,269
H = Accounts Payable - End of Period	\$10,895
I = Outstanding Commitments - End of Period	\$4,397

Comparison of  
Smithsonian  
Institution's  
Reporting and  
Federal  
Appropriation  
Accounting

TABLE C-2. Smithsonian Institution Accounting (FY 2000)

Beginning Balance	(C+A-B)	\$66,914	<u>Beginning Balance</u> = Unobligated Balance plus Unpaid Obligations less Accounts Payable
New Authority	(D)	<u>\$47,900</u>	
Total	(C+A-B+D)	\$114,814	
"Spending"			
"Obligations"	(G-H)	\$40,374	<u>"Obligations"</u> = Unpaid Obligations less Accounts Payable
"Expenditures"	(F-B+H)	\$61,027	<u>"Expenditures"</u> = Outlays +/- change in Accounts Payable
Commitments	(I)	<u>\$4,397</u>	
Total Spending		\$105,798	
Balance		\$9,016	<u>Uncommitted Balance</u>

TABLE C-3. Federal Appropriation Accounting (FY 2000)

Beginning Unobligated Balance	(C)	\$6,277
New Obligational Authority	(D)	<u>\$47,900</u>
Total	(C+D)	\$54,177
Obligations	(E)	<u>\$40,764</u>
Ending Unobligated Balance	(C+D-E)	\$13,413
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Beginning Unpaid Obligations	(A)	\$65,391
Obligations	(E)	<u>\$40,764</u>
Total	(A+E)	\$106,155
Outlays	(F)	<u>\$54,866</u>
Ending Unpaid Obligations	(A+E-F)	\$51,269

*OMB Definition of Obligation (from OMB Circular No. A-11, 1999):* A binding agreement that will result in outlays, immediately or in the future. Budgetary resources must be available before obligations can be incurred legally.

*Smithsonian Process To Calculate Obligations As Used In Federal Reporting:* Take the "Obligations" plus "Expenditures" as contained in the Construction Report and subtract the "Obligations" from the Construction Report for the end of the prior year.

*OMB Definition of Outlays (From OMB Circular No. A-11, 1999):* A payment to liquidate an obligation (other than the repayment of debt). Outlays are the measure of Government spending.

*Smithsonian Process To Calculate Outlays As Used In Federal Reporting:* Take "Expenditures" as contained in Construction Report plus Accounts Payable at the end of the prior year and subtract the current Accounts Payable.

*Commitments* are defined as an approval by competent fiscal authority to incur obligations.

In this example the “Ending Unobligated Balance” in the federal system less the “Outstanding Commitments” is equal to the “Balance” of \$9,016,000 reported in the Smithsonian system.

*Comparison of  
Smithsonian  
Institution's  
Reporting and  
Federal  
Appropriation  
Accounting*



# APPENDIX

# D

## Academy Panel and Study Team Biographies

### ACADEMY PANEL

**Howard Messner**, Panel Chair – Senior Advisor and former Executive Vice President and Chief Operating Officer, American Consulting Engineers Council. Former Assistant Administrator for Administration and Resources Management, U.S. Environmental Protection Agency; Comptroller, U.S. Department of Energy; Assistant Director for Management Improvement and Evaluation, U.S. Office of Management and Budget.

**James E. Colvard** – Visiting Professor, Virginia Polytechnic Institution and State University. Former Associate Director, John Hopkins University Applied Physics Laboratory; Deputy Director, U.S. Office of Personnel Management; Director of Civilian Personnel Policy, U.S. Navy; Deputy Chief of Naval Material; Technical Director, Naval Surface Weapons Center.

**Robert Hale** – Former Assistant Secretary of the Air Force for Financial Management and Comptroller. Assistant Director for National Security, Congressional Budget Office; Deputy Assistant Director and Principal Analyst. Analyst and Study Director, Center for Naval Analysis. Officer, U.S. Navy.

**Ray Kline** – Former President, National Academy of Public Administration; Deputy Administrator and Acting Administrator, U.S. General Services Administration; Associate Administrator for Management Operations, National Aeronautics and Space Administration.

**Albert J. Bast, III** – Vice-President, URS Corporation. Senior Project Manager. Engineer at the headquarters of URS Corporation – a large engineering and construction company. Formerly, Vice-President; Senior Project Manager, Professional Associate; Senior Engineering Manager for Parson, Brinckerhoff, Quade and Douglas, Inc. Professional registrations in California, Virginia and Hong Kong.

## ACADEMY STUDY TEAM

William E. Lilly – Project Director. Director, National Aeronautics and Space Administration Programs, National Academy of Public Administration. Former Associate Administrator/Comptroller, National Aeronautics and Space Administration.

Billie J. McGarvey – Major General, USAF (Ret.) – Team Leader. Former Director of Facilities Engineering, National Aeronautics and Space Administration and Deputy Chief of Staff for Civil Engineering, U.S. Air Force. Registered Professional Engineer.

Herbert R. McLure (CPA) – Senior Research Associate. Former Associate Administrator for Human Resources Management, Federal Aviation Administration and Deputy Assistant Comptroller General, U.S. General Accounting Office.

C. Thomas Newman – Senior Research Associate. Former Assistant Deputy Administrator, Comptroller, and Director of Resources Analysis, National Aeronautics and Space Administration.

Jeffrey W. Sutton – Research Associate.

Mary Y. Brown – Project Secretary.



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