



Smithsonian

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Smithsonian Institution

FY 2002 Budget Justification to OMB

January 2001

SMITHSONIAN INSTITUTION

FY 2002 OMB Budget Justification to OMB Table of Contents

Overview	1
FY 2002 Request	
Salaries & Expenses	
Summary Table	3
Non-Recurring Costs	4
Mandatory Increases for Sustaining Base Operations	5
Justification of Program Increases	13
<i>Public Impact</i>	
National Museum of the American Indian Mall Museum	13
National Air and Space Museum Udvar-Hazy Center	17
Outreach Initiative	19
Folklife Festival Infrastructure Support	22
National Portrait Gallery	24
<i>Scientific Research</i>	
Major Scientific Instrumentation, SAO VERITAS	25
Smithsonian Astrophysical Observatory, VERITAS	26
<i>Management Excellence</i>	
Support for Expanded Repair, Restoration & Alteration Program ..	29
Office of Physical Plant Maintenance Resources	30
Office of Protection Services Security System Modernization	31
Information Technology Enterprise Resource Planning System ...	33
Information Technology Managed Information Technology Infrastructure	35
Information Technology Digitization of Smithsonian Holdings	36
National Museum of Natural History Collections Infrastructure ...	38
Repair, Restoration & Alteration of Facilities	
Justification	39
Table	55

Construction

Justification 57
Table..... 63

Appendix – To be submitted later

Organization Chart
Outyear Estimates
Outlay Estimates
Trust Funds
Visits to the Smithsonian, FY 1996-FY 2000
A-11, Exhibit 53 – Report on Information Technology
A-11, 300B Exhibits:
 Information Technology.....
 Capital Projects
Repair, Restoration & Alteration of Facilities - Supplemental Information ..
Major Construction: *Building for the Future* – Supplemental Information
 (Separate cover)

Smithsonian Institution

FY 2002 Federal Budget Request

OVERVIEW

The Smithsonian Institution begins the new millennium redefining how it makes its rich resources accessible to the American public and carries forward its mission into another century. Having been in office for one year, the Secretary has refocused the Institution's historic mission. As a result, the Smithsonian's FY 2002 budget request reflects a revised interpretation of commitment to its mission and to the support and improvement of its programs and facilities.

The Smithsonian's primary mission is to serve the public through compelling, first-class exhibitions and national outreach. It will do so by appealing to more diverse audiences across America through expanded programs that stimulate and attract. The Institution will also identify the areas of scientific research where the Smithsonian has the most to offer by focusing its efforts on a few areas that will continue to produce first-class research.

Another priority of the new Smithsonian administration is to improve stewardship of the facilities, collections, and programs under its care. Management systems will be updated to bring them to a level of quality and sophistication appropriate to a contemporary organization of the size and complexity of the Smithsonian. Management is also putting into place new systems to ensure financial strength that can support its commitment to public service.

The Smithsonian therefore presents a budget request that is motivated by realizing the optimal possible stewardship of America's national culture. As part of this request, the Institution has reviewed past estimates and Congressional requests for funding for major construction and renovation projects. This request reflects revisions and updates to those estimates that were found to be outdated or based on faulty assumptions or analysis. The Institution needs, at a minimum, the funds for mandatory increases, plus a budget that allows for:

- the continuation of major construction projects already in progress;
- public exhibits and programs that reflect our dedication to serving the broad and rich mosaic of the American populace;
- major outreach initiatives intended to reach Americans in all 50 States

- first-class astrophysical research equipment built upon a foundation of well-documented success;
- an expanded program of facilities repair, restoration, and alteration to remedy serious deficiencies and prevent future ones;
- modernization of the Institution's security system to protect the Smithsonian's visitors, collections, and staff; and
- major information technology initiatives that will permit upgrades to systems that are capable of delivering timely and technologically adept means of managing the Institution's finances and making its collections and public programming information accessible to the online public.

Each of these increases is an integral part of a comprehensive effort to make the Smithsonian succeed as a publicly perceived steward of the public's collections and facilities.

Recognizing the necessity to pursue non-federal resources to accomplish these goals, the Institution increased its private-sector fund raising from a total of \$147 million in FY 1999 to \$206 million in FY 2000 and is committed to increased baseline giving by 15% each year. However, the table below demonstrates that the Institution is also seeking increased federal support to meet the infrastructure demands of ensuring the best possible stewardship of the Nation's collections and facilities, and of the programs designed to share them with the American people.

Resource Profile

Account	FY 2000 Appropriation	FY 2001 Appropriation	FY 2002 Estimate
Salaries and Expenses	\$371,230,000	\$386,902,000	\$445,447,000
Repair, Restoration and Alteration of Facilities	47,900,000	57,473,000	178,500,000
Construction	<u>19,000,000</u>	<u>9,479,000</u>	<u>51,700,000</u>
	\$438,130,000	\$453,854,000	\$675,647,000

**SMITHSONIAN INSTITUTION
SALARIES AND EXPENSES**

Summary of FY 2002 Change

FY 2001 Appropriation	\$387,755,000
FY 2001 Rescission	<u>(853,000)</u>
	\$386,902,000

FY 2002 Change:

Non-Recurring Costs—

National Museum of American History American Presidency Exhibition	(2,000,000)
National Air and Space Museum Program Planning	(1,136,000)
National Air and Space Museum Collections Preparation	(263,000)
National Museum of Natural History East Court	(200,000)
Major Scientific Instrumentation:	
Multiple Mirror Telescope Conversion (SAO)	(500,000)
Focused Ion Beam Instrumentation (NMNH)	(475,000)
Submillimeter Telescope Array (SAO)	<u>(25,000)</u>
Total Non-Recurring Costs	(\$4,599,000)

Mandatory Increases—

Salary and Related Costs	\$17,171,000	
Smithsonian Institution Libraries Serials	300,000	
Utilities, Postage, and Communications	<u>5,588,000</u>	
Total Mandatory Costs		\$23,059,000

Program Increases by Goal—

Public Impact

National Museum of the American Indian Mall Museum	\$7,708,000
National Air and Space Museum Udvar-Hazy Center:	
Collections Preparation and Program Planning	5,295,000
Outreach Initiative	3,000,000
Folklife Festival Infrastructure Support	250,000
National Portrait Gallery	<u>30,000</u>
Total Public Impact	\$16,283,000

Scientific Research

Major Scientific Instrumentation/Smithsonian Astrophysical Observatory: VERITAS	\$1,000,000
Smithsonian Astrophysical Observatory: VERITAS	<u>157,000</u>
Total Scientific Research	\$1,157,000

Management Excellence

Support for Expanded Repair, Restoration and Alteration of Facilities Program	\$2,045,000
Office of Physical Plant Maintenance Resources	2,000,000
Office of Protection Services Security System Modernization	1,350,000
Information Technology	
Enterprise Resources Planning System	9,900,000
Managed Information Technology Infrastructure	4,150,000
Digitization of Smithsonian Holdings	3,000,000
National Museum of Natural History Collections Infrastructure	<u>200,000</u>
Total Management Excellence	\$22,645,000
Total Program Increases	<u>\$40,085,000</u>

FY 2002 Request

\$445,447,000

SALARIES AND EXPENSES

FY 2000 Appropriation ¹	\$ 371,230,000
FY 2001 Appropriation ²	\$ 386,902,000
FY 2002 Estimate	\$ 445,447,000

¹FY 2000 Salaries and Expenses includes the \$1,671,000 rescission, PL 106-113.

²FY 2001 Salaries and Expenses includes the \$853,000 rescission, PL 106-554.

This section provides specific details about the Institution's Salaries and Expenses budget request for FY 2002. Of the total increase requested, approximately 61 percent is for priority program requirements for projects within the Institution and the remainder is attributable to mandatory costs for sustaining base operations.

NON-RECURRING COSTS - Fiscal year 2002 non-recurring costs include the following:

National Museum of American History American Presidency Exhibition (\$2,000,000) - to eliminate base funding added to the FY 2001 appropriation for the American Presidency Exhibition.

National Air and Space Museum Program Planning (\$1,136,000) - to reduce one-time base funding for design and testing of exhibit systems.

National Air and Space Museum Collections Preparation (\$263,000) - to reduce one-time base funding for preparation of aircraft, spacecraft and related artifacts for the move to the Udvar-Hazy Center.

National Museum of Natural History East Court (\$200,000) - to reduce base funding for completion of the East Court infill project.

Major Scientific Instrumentation

- **Smithsonian Astrophysical Observatory Multiple Mirror Telescope Conversion (\$500,000)** - to reduce base funding for the conversion of the Multiple Mirror Telescope in Arizona.
- **National Museum of Natural History Focused Ion Beam Instrumentation (\$475,000)** - to reduce one-time base funding for the purchase of the Focused Ion Beam Instrumentation.
- **Smithsonian Astrophysical Observatory Submillimeter Telescope Array (\$25,000)** - to reduce base funding for the construction of the Submillimeter Telescope Array in Hawaii.

MANDATORY INCREASES FOR SUSTAINING BASE OPERATIONS

This request includes funds for mandatory costs, as shown below.

Salary and Related Costs:

Restoration of FY 2001 Reduction	3,000,000
Restoration of FY 2001 Rescission	853,000
Annualization of FY 2001 Pay Raises	2,620,000
Proposed FY 2002 Pay Raises	7,315,000
One Additional Compensatory Day	1,036,000
Metro Subsidy	1,712,000
IT Workers' Pay Adjustment	232,000
Workers' Compensation	373,000
SERC Scientists' Pay Raise	<u>30,000</u>
Subtotal, Salary and Related Costs	<u>\$17,171,000</u>

Other Costs:

Smithsonian Institution Libraries Serials	300,000
Utilities, Postage, and Communications	<u>5,588,000</u>
Subtotal, Other Costs	\$5,888,000

Total Mandatory Increases **\$23,059,000**

Salary and Related Costs – The Institution requests \$17,171,000 for higher projected salary and benefits costs in FY 2002 for staff as described below.

- **Restoration of FY 2001 Reduction (\$3,000,000)** – to restore funding reduced by Congress in the Department of Interior and Related Agencies Appropriations Act, 2001 (P.L. 106-291). Congress reduced the amount requested for pay cost increases by \$3,000,000 based on one-time salary lapse in FY 2000. If this funding is not restored, the Institution will have to absorb the pay increase at the expense of operations.
- **Restoration of FY 2001 Rescission (\$853,000)** – to restore funding rescinded by Congress in the Consolidated Appropriations Act, 2001 (P.L. 106-554). If this funding is not restored, the Institution will suffer a permanent reduction to base funds.
- **Annualization of FY 2001 Pay Raises (\$2,620,000)** – to annualize funding of the approved 3.81-percent January 2001 pay raise for one-quarter of a year. In addition, this request will support the portion of the January 2001 pay raise that was not provided in the FY 2001 appropriation. The FY 2001 appropriation included funding for a 3.7-percent pay raise for three-quarters of the year. The actual approved pay raise for FY 2001 is 3.81 percent.
- **Proposed FY 2002 Pay Raises (\$7,315,000)** – to fully fund the anticipated 3.7-percent January 2002 pay raise for three-quarters of a year.
- **One Additional Compensatory Day (\$1,036,000)** – to cover the cost of one extra day. Currently, base funding is available for employee compensation for a 260-day workyear. In FY 2002 there are 261 workdays.
- **Metro Subsidy (\$1,712,000)** – to support the increase in operating costs including a management fee to the Department of Transportation for implementation of the Metro Subsidy program in conformance with Executive Order 13150.

Although the Institution is not covered by the Executive Order, the Smithsonian voluntarily chose to implement the Metro Subsidy program in FY 2001. New legislation to extend the transit fringe benefits described in Executive Order 13150 to other federal employees in the National Capital Region will be introduced in 2001. This pending legislation will specifically require that the Institution comply with the program.

- **Information Technology Workers' Pay Adjustment (\$232,000)** – to support an Office of Personnel Management change to the basic pay for grades GS 5 through 12 entry- and developmental-level computer specialists, computer engineers, and computer scientists.
- **Workers' Compensation (\$373,000)** – to support the provisions of Section 8147(b) of Title 5, United States Code, as amended April 21, 1976 by Public Law 94-273. Workers' Compensation is based on actual costs incurred in FY 1999, as provided by the Department of Labor.
- **Smithsonian Environmental Research Center Scientists' Pay Raise (\$30,000)** – For the past decade, SERC's world class scientists have fallen behind their peers in both government service and the academic community in terms of equitable compensation. Also, in comparison to the rest of the Smithsonian, the grades for SERC scientists are between two and three levels below comparable positions. This request will allow SERC to promote its scientists to competitive levels, allow for retention of skilled experts, and assist in recruitment of new staff members as vacancies occur.

Smithsonian Institution Libraries Serials (\$300,000) – For FY 2002, the Institution requests \$300,000 to counter the effects of extraordinary inflation on book and journal prices. The Institution primarily purchases books and journals in hard copy, although this is supplemented with electronic resources when necessary. The publishing trend toward electronic copy raises additional issues. Substituting electronic resources for hard copy on a full time basis is not a feasible option due to the limited availability of many scholarly journals in electronic form and the greater costs associated with electronic resources. For example, many times scholars rely on non-current or "back runs" of journals; many of these journals are not available in digitized form or a publisher will offer them as part of a very expensive "back run" digitized package. Another trend is that publishers used to offer electronic copy free with hard copy, but now charge an additional fee. If only one form is needed, the costs for electronic copy are higher than hard copy.

Building and maintaining carefully selected collections that closely match Smithsonian interests helps to sustain the research vitality of the Institution. The Institution's inability to keep pace with the rate of library materials inflation, a rate that is far greater than the Consumer Price Index, undermines the Institution's goals for public impact and enhanced research. For example, *Library Journal*, November 15, 2000, reports that the Consumer Price Index rose fifty-two percent between 1986 and 1998, while the cost of scholarly journals rose nearly 207 percent.

Without an increase in FY 2002, the Smithsonian Institution Libraries (SIL) will be forced to cancel journal subscriptions, severely reducing its responsiveness to all researchers' needs. SIL has already reduced book buying in order to add the electronic resources on which a growing number of the Smithsonian staff depends. At the current pace of inflation, in two years or less, SIL's entire materials budget will be devoted to journals alone, primarily for the sciences, as well as humanities and art history, with no money for books or electronic resources.

Utilities, Postage, and Communications (\$5,588,000) – The Institution requests an increase of \$5,588,000 for utilities, postage, and communications in FY 2002 to cover additional costs attributable to increased consumption and projected rate increases. The following table displays estimates from FY 2000 through FY 2002. Detailed explanations of each line item follow.

**Federal Utilities, Communications and Postage Costs
FY 2000 - FY 2002**

(Dollars in Thousands)	FY2000 Actual	FY 2001 Appropriated	FY 2002 Estimate
Electricity	10,617	11,120	14,149
Steam	3,432	3,396	4,200
Gas	1,468	1,628	2,002
D.C. Gov't Water/Sewer	5,139	3,976	4,570
Other Water and Fuel	354	365	496
Communications/Networks	8,773	10,020	10,302
Postage	2,317	2,466	2,840
Total	32,100	32,971	38,559
Base	32,100	32,971	32,971
Surplus/(Deficit)	0	0	(5,588)

- **Electricity (\$3,029,000)** – A major component of the utilities account is electricity. In addition to lighting and office equipment, electricity powers the machinery that provides cooling for Smithsonian buildings. A vigorous energy management program has allowed the Institution to maintain consistent electrical consumption levels throughout most facilities. However, electrical energy consumption and costs will increase in FY 2002 due to a number of factors. Deregulation of the electrical industry has increased costs for electricity at our New York

City facilities. In addition, completion of the American Agriculture Exhibit at the National Zoo and the Hilo telescope operations for the Smithsonian Astrophysics Observatory in Hawaii in 2002 will increase consumption. The FY 2002 estimate includes an inflation factor of three percent.

- **Chiller Plant (\$1,900,000)** – The FY 2002 request for electricity also includes an increase of \$1,900,000 to cover partial year costs of purchasing chilled water from the General Services Administration (GSA). The Smithsonian signed an agreement with GSA in FY 2000 for chilled water service to all Smithsonian buildings on the south side of the Mall. GSA will modify and update its plant located at 13th and C Street, SW, to meet the Institution's requirements, under an Energy Savings Agreement with Washington Gas.

The Institution will begin purchasing chilled water from GSA in 2002. GSA will convert existing Smithsonian buildings along the south side of the Mall to chilled water service in sequence, beginning with the National Air and Space Museum and the Hirshhorn Museum in FY 2002, and remaining buildings in FY 2003.

The energy savings will be a cost avoidance rather than a net savings in utility funds. Once the facilities are connected, Conversion to GSA chilled water will allow the Institution to eliminate aging and inefficient chiller plants in these buildings, which use outdated, costly and environmentally damaging chlorofluorocarbon refrigerants. Smithsonian long-term cost avoidance will include replacement costs for the old chillers and cooling towers, and maintenance costs for separate smaller plants in multiple buildings. The capability to use chilled water year round, as the Smithsonian does not presently do, will result in improved environmental conditions for the preservation of the Institution's collections. There will be an increase in costs to provide chilled water but energy savings will occur at this point because GSA's chiller plant will operate more efficiently than the Smithsonian's old equipment. Since GSA equipment will operate at more optimum levels, this will offset the cost to provide year round chilled water. Therefore, the Smithsonian will incur a cost avoidance from energy savings.

The Smithsonian's annual cost will include debt service over 15 years for GSA's construction costs, as well as the cost of producing the chilled water actually used by the Institution. The Smithsonian will apply current base funds towards the debt service. The funds requested represent the net increase over the current base of

approximately \$1,000,000 used to power the existing chiller plants in the south Mall buildings. A final phase of GSA's construction project is to install capabilities to cogenerate electricity. This should result in a lower production cost for GSA chilled water, and GSA and the Smithsonian will share these savings.

- ***Steam (\$804,000)*** - The Smithsonian uses steam primarily for heating facilities on the Mall and in New York, year-round humidification, and hot water production. Maintaining an interior environment conducive to the preservation of artifacts requires a great deal of steam consumption. As a result of escalating costs and the new, more precise metering techniques now used by the General Services Administration, the Institution has experienced an increase in steam costs. These increased costs are reflected in the estimate for FY 2002. The estimate also includes a three percent inflation factor.
- ***Natural Gas (\$374,000)*** - Natural gas costs have dramatically increased over the last year due to the low supply of gas and high demand in the United States. These increased costs are reflected in the estimate for FY 2002, which also includes a three percent inflation factor.
- ***DC Government Water/Sewer (\$594,000)*** - The FY 2002 estimate for water and sewer costs levied by the District of Columbia government is based on cost projections provided by the District in January 2001. The estimate includes a five percent rate increase effective in 2001 and an anticipated three percent increase in water costs in FY 2002.
- ***Other Water and Fuel (\$131,000)*** - Water consumption at satellite facilities in Maryland and Virginia should remain constant. Because natural gas is used as the primary heating and cooling fuel in most facilities, oil is now used as a backup heating fuel. Cost of fuel oil has risen dramatically in the past year due to high demand and low inventory. In addition, a small increase in consumption is expected. The FY 2002 estimate includes these increased fuel costs, along with a three percent inflation factor.
- ***Communications/Networks (\$282,000)*** - The FY 2002 estimate includes a three percent inflation factor. The increase also includes funding for conversion from GSA/Federal Telecommunications Services 2000 to GSA/Federal Telecommunications Services 2001, replacement of operators' consoles, and costs for Smithsonian

Astrophysical Observatory's Hilo telescope operations, including network and telephone services

- **Postage (\$374,000)** - The FY 2002 estimate for postage reflects a projected increase of three percent to cover the cost of an anticipated increase in volume for the Institution. The estimate also includes funding for a five-year cyclical replacement of aging postal equipment for metering and collecting data about the cost of the mail.

Public Impact

GOAL: PUBLIC IMPACT

National Museum of the American Indian (57 FTEs and \$7,708,000). For FY 2001, \$27,308,000 and 253 FTEs were provided to support the programs of the National Museum of the American Indian. The requested funds for FY 2002 will be used to support requirements associated with the opening of the Mall Museum; continued move of collections from New York City to Suitland; and operations at the Cultural Resources Center in Suitland, Maryland. This total includes \$3,997,000 and 19 FTEs for the opening and operation of the Mall Museum and \$3,711,000 and 38 FTEs for the collections move from New York and operations at the Cultural Resources Center. Of the total, \$3,695,000 and 17 FTEs represents a restoration of the portion of the FY 2001 request not funded by Congress. Failure to restore this amount will force a change in the opening date of the Mall Museum or in the level of programming planned for the public. The Institution requests that resources for this line item remain available until expended.

NMAI FY 2002 REQUESTED INCREASE	FTEs	\$000's
Mall Museum Opening		
• Exhibits Development		677
• Film Production		850
• Publications		74
• Technology		400
• Furniture/Equipment		479
Mall Museum Operations		
• Exhibition	3	414
• Education	3	183
• Publications	3	306
• Resource Center	1	65
• Performance/Media	2	109
• Administration/Facility Management	5	332
• External Affairs and Development	2	108
Subtotal, Mall Museum	19	3,997
Collections Move to Cultural Resources Center		688
Cultural Resources Center Operations		
• Research & Curatorial	4	362
• Archives Unit	4	313
• Conservation	3	214
• Photo Services	3	258
• Registration	3	217
• Repatriation		30
• Collections Management	6	389

• Community Services	2	166
• Resource Center	1	114
• IRM and Technology	8	778
• Facility Management	3	114
• Administration	1	68
Subtotal, Cultural Resources Center	38	3,711
Requested Increase	57	7,708

Mall Museum (19 FTEs and \$3,997,000). The FY 2002 request reflects staffing and program funding needs to plan for and implement programs in conjunction with the December 2003 opening of the Mall Museum. A more detailed account follows:

- **Mall Museum Opening (\$2,480,000).** The Institution requests a one-time increase of \$2,480,000 for the opening of the Mall Museum. This amount includes \$677,000 for the production and fabrication of exhibitions at the Mall Museum as required to meet the opening schedule. An amount of \$850,000 is requested for the production of an educational film to be shown daily at the museum to inform the public about the diversity of the native cultures of the Americas and to underscore the vitality of contemporary Native American culture. Also needed is \$74,000 to provide contract editorial and photographic services for two major books to commemorate the museum's opening. Furnishings and technology requirements as the building is prepared for opening will require \$879,000.
- **Mall Museum Operations (19 FTEs and \$1,517,000).** Three positions are requested to develop and produce exhibitions for the Mall Museum. A media producer will work with the exhibition project teams and designers to ensure efficient and unified solutions to all exhibition media needs. A writer/editor will draft, edit and provide editorial oversight over exhibition content. A production shops assistant will begin work on the production of the exhibition galleries.

Nine public program positions are requested to prepare for fully operating the museum in 2003. A curriculum developer will research and create curriculum materials and a lectures coordinator will develop educational programs. A secretary is needed to support these two new activities and other on-going public program activities. Three editors will support the increased demands for editorial assistance throughout the museum's projects and educational endeavors. A program manager will plan and manage the museum's resource center. Another program

manager will plan and manage film programs and audiovisual services for the theater and other program spaces. An administrative assistant will assist the program managers.

Five administrative positions are requested to prepare for the opening of the Mall Museum and the increase in services required to implement the Mall Museum programs. These positions include one procurement specialist, three technical support persons, and a facilities manager.

With regard to external affairs and development, a special events specialist is requested to organize events in New York associated with raising \$6.6 million at the George Gustav Heye Center (GGHC). The position will oversee the organization of a major fundraising gala in 2002-3 and will be responsible on a continuing basis for organizing all museum-related exhibition openings and other educational special events and audience service activities at GGHC. Once the Mall Museum opens, this special events specialist will spend full time on similar activities associated with the Mall Museum. In addition, a membership assistant, to be stationed in New York City, is requested to promote the growth of museum membership in New York, Washington DC, and throughout the country. It is anticipated that the Honor Wall Campaign will more than double the membership level to 100,000 or 120,000 by 2003 and this position will serve as a member service representative.

Cultural Resources Center (CRC) (38 FTEs and \$3,711,000). The FY 2002 request will allow NMAI to move closer to its goal of providing first-rate care of and wide public access to its collections. By continuing the relocation of the collections from New York and providing needed program and support staff at the CRC, the long-term preservation of the artifact, archive, and library collections will be assured. A more detailed account follows:

- **Collections Move (\$688,000).** One time funding of \$688,000 is requested for additional contract services for relocating the collections, an increase critical to maintaining the schedule of the five-year move plan and accommodating the Mall Museum opening.
- **Cultural Resources Center Operations (38 FTEs and \$3,023,000).** Four curatorial positions at CRC will fulfill NMAI's plan for developing and sustaining exhibitions in New York and Washington, and collections-based outreach and collaborative projects with communities and other public institutions.

Three archivists and one administrative assistant will support increased archival needs due to acquisitions and the transfer of film and video collections from New York. In a related vein, preservation requirements and the increase in collection size requires the addition of three conservators, one each in photo, paper, and objects.

Three positions for photographers will provide for digitizing the Photo Archives collection and covering special events in New York, Washington, and Suitland. Two computer specialists and a computer administrator will continue to develop and implement a registration database that will enhance collections management and serve as a foundation for a variety of NMAI initiatives including outreach and electronic access through the Web. Applying current technology to the recording of collections data during this relocation will improve management of the collections, expand security and inventory efforts, and make broadly accessible both text and image information for multiple users onsite and in distant locations.

Six museum specialists will support increased researcher access to the collections and repatriation visits to CRC. They will also assist with the installation of Mall Museum objects. In addition, an increase of \$30,000 is requested to support an increased repatriation program and traditional care consultations with tribal communities.

Community services can take many forms, including internships, visiting professional appointments, native artist fellowships, radio broadcasts, workshops, and electronic publications that target minority populations. To enhance community services, a program specialist and program assistant are requested. Community services staff will help link the CRC's resources to specific users and encourage collaborative projects.

One program specialist will develop program content for interactive computers at all NMAI facilities. In addition, eight positions are required to support the IRM and technology needs of NMAI. These include a computer specialist and a computer programmer to support NMAI staff at all locations and to maintain the central, integrated information system; one specialist to implement evolving standards to ensure compatibility with other Smithsonian units and outside museums; and five computer specialists to organize and support networks to extend NMAI resources electronically around the world in the form of broadcasts, World Wide Web activities, and digital projects.

Finally, with regard to administrative requirements, one procurement specialist, one laborer, and two custodial workers are requested to cover the operation of the CRC facility at full capacity.

National Air and Space Museum Udvar-Hazy Center, Collections Preparation and Program Planning (28 FTEs and \$5,295,000). The National Air and Space Museum is requesting 28 FTEs and \$5,295,000 to prepare the artifact and archival collections for transfer to the Steven F. Udvar-Hazy Center; refine the display, audio-visual and visitor interactive exhibit components; enhance the educational and outreach programs; and develop the Center's information technology and safety requirements. The National Air and Space Museum Udvar-Hazy Center will house, display, and provide a facility for restoration and preservation of the majority of the Smithsonian Institution's air and space-related artifacts. At the Center, these artifacts will be accessible to current and future generations of museum visitors and will form the basis for aviation and space education programs. The Center will provide museum-quality housing for objects in NASM's collection not on public display on the Mall and provide public access to most of these collections.

NASM FY 2002 REQUESTED INCREASE	FTEs	\$000's
Udvar-Hazy Center:		
• Collection Transfer Preparation	17	3,110
• Archives Transfer Preparation	2	131
• Exhibit Installation	4	1,099
• Education Outreach	2	184
• Infrastructure Requirements	3	771
Requested Increase	28	5,295

The FY 2002 funding request continues the work started in FY 2001 to prepare air and space craft for movement and display at the Udvar-Hazy Center, prepare the extensive archival collection for transfer to the Udvar-Hazy Center, and develop exhibits and plan education programs. The funding will allow NASM to train staff and prepare more artifacts for transfer to the new facility, expand exhibit development to include audio/visual and interactive elements, implement educational programs, and establish the technology and facilities management infrastructure. This funding request will ensure the timely opening of the Udvar-Hazy Center scheduled in December 2003. Non-recurring costs that stem from FY 2001 include \$1,136,000 for extensive design and testing used to configure exhibit systems and \$263,000 required to begin preparation of the aircraft, spacecraft, and related artifacts for transfer to the Udvar-Hazy Center.

- **Collection Transfer Preparation (17 FTEs and \$3,110,000).** The request is to support preparation of the collection for transfer to the Udvar-Hazy Center. When completed, the Center will present more than 180 aircraft and over 130 new space-related artifacts. The requested funds will be used to retain the expertise and equipment required for air and space collections management and restoration. Most of these artifacts require extensive efforts to conserve and prepare the artifacts for transfer to the Center. Restoration expertise at the level required for the collection is not available through contractors. Instead, these skills must be taught and honed through years of experience. The 17 FTEs will be used to machine one-of-a-kind metal fittings for World War II aircraft; create the wooden infrastructure for World War I biplanes; recover wings with new cotton duck fabric; clean aeronautical instruments that have not been touched in 50 years; and build stands to move multi-ton aircraft engines. In FY 2002, NASM staff will conserve 25 major air and space artifacts—a 25% increase over FY 2001's work. These funds are vitally needed to prevent further deterioration of one of the world's most valuable and irreplaceable collections of artifacts representing the history of aviation and space flight.
- **Archives Transfer Preparation (2 FTEs and \$131,000).** The requested funds will be used to continue the preparation to transfer archives to the Udvar-Hazy Center from the current facility at the Garber Center. These archives house aircraft, spacecraft, and related artifact plans and reference documents used by restorers and researchers. Aircraft and spacecraft researchers from around the world work with these archives. In some cases, the archives are the only records available about historical aircraft and spacecraft. Currently, the archives sit in cardboard boxes on metal shelves in poorly ventilated and heated buildings. To ensure their safe transfer to the Center, the archives must be inspected, documented, and catalogued, and cross-referencing tools for researchers must be developed to easily access information from NASM's recently modernized archival database.
- **Exhibit Installation (4 FTEs and \$1,099,000).** The requested funding is to develop exhibit kiosk, display cases, audio/visual and interactive exhibit elements. The four exhibit designers and audio/visual specialists will work on exhibit layouts for 15 or more area exhibit kiosk systems, 13 storefront display cases and many smaller artifact/mannequin cases. Labels must be designed and written for all of the 2,600 artifacts that will be displayed at the Udvar-Hazy Center. Approximately 47 new light stations will be constructed, which will also test NASM's planned approach to artifact protection. In addition, the interactive kiosks tied

into online artifact databases, as well as the audio and enhanced video tours, will require prototyping, testing and development. Additional interactive devices that visitors will use to learn more about the artifacts and their history and technology will also be designed and prototyped.

- **Education Outreach (2 FTEs and \$184,000).** The request is to develop the Udvar-Hazy Center's education outreach programs. Two professional educators and curriculum specialists will provide the technical expertise to develop exciting programs. FY 2002 funds will build on the work completed in FY 2001 to develop an educational concept and setting for use at the Center. The Northern Virginia area provides an exceptional opportunity for the Center to develop a regional and national educational program. This program will be structured to multiple grade levels, and in some cases may be usable in adult education programs. Virginia's new aviation curriculum high school (Westfields) in conjunction with the new educational staff assigned to the Center can develop a mathematical/scientific and historical educational program that can be shared nationwide. Using interactive technology and Web-based technologies, the Udvar-Hazy Center will expand its reach to classrooms and share the excitement of aviation and space history and current events.
- **Infrastructure Requirements (3 FTEs and \$771,000).** The requested funding will be used to develop information technology infrastructure and to outsource a building management program for the Udvar-Hazy Center. Recognizing that cost savings can be realized by drawing on private sector operations, the Center will outsource its technology and facilities management programs. An information technology specialist and operational support staff will oversee the installation of the voice/data cable system and the network wiring for the exhibits, retail, and museum operations. A building management manager will be used to select an integrated building support company and oversee the company's management of the Udvar-Hazy Center's building operations including cleaning, maintenance, and horticulture.

Outreach Initiative (6 FTEs and \$3,000,000). The Institution requests \$3,000,000 and 6 FTEs to develop a coordinated national outreach program to expand the presence of the Smithsonian Institution across the Nation and ensure that the Smithsonian speaks to all Americans and acknowledges why they matter. The strategic objectives of this national outreach effort will be

- to deepen the level of engagement between the American people and their historical, cultural, and scientific traditions

- to ensure a vital, recurring, and high-impact presence in all 50 States
- to strengthen the tripartite relationship among Congress, the Smithsonian Institution, and the American people
- to increase connections between the Smithsonian Institution and targeted audiences (African American, Asian American, Latino, Native American, new American, and K-college populations)
- to generate increased philanthropic support for the Institution

This outreach effort will include greatly expanded roles for the four programs that provide the critical mass of Smithsonian outreach activity: Smithsonian Affiliations (SA), the Smithsonian Institution Traveling Exhibition Service (SITES), The Smithsonian Associates (TSA), and the Smithsonian Center for Education and Museum Studies (SCEMS). Increased funding for these organizations is necessary to ensure a collaborative and unified approach for handling outreach activities, resulting in a high-quality, cost-effective expansion of the Smithsonian across the United States.

Smithsonian Affiliations (6 FTEs and \$1,000,000). The Smithsonian requests \$1,000,000 in new funding to build a base to administer a national program for establishing long-term relationships with communities throughout the United States. This is the Smithsonian's first request for federal funds to support the Affiliations program.

Smithsonian Affiliations is a unique outreach initiative that allows emerging and established museums to obtain Smithsonian collections for a prolonged period. The programs' mission is to make the extensive Smithsonian collection more accessible to the American people by lending artifacts to museums and cultural institutions across the country. A Smithsonian affiliate may use the tag line, "in association with the Smithsonian Institution" with the organization's name. The affiliate may also use Smithsonian collections in more than one way, e.g., exhibitions, research, and educational programs.

Particular emphasis will be placed on

- expanding affiliate relationships into all 50 States with special emphasis on developing relationships with museums in the west and southwest
- building relationships with Latino, African American, Asian American, and Native American museums and communities
- targeting K through college-age museum education and outreach opportunities in these communities
- seeking out affiliate partnerships with institutions that have national significance and are known for excellence in a particular area or field

The Affiliations program requires an increase in permanent staff to effectively plan, produce, coordinate, promote, and administer long-term relationships and collaborations with local museums and educational organizations throughout the country; to provide support for web site and computer and data communications; and to provide administrative and financial management support.

Smithsonian Traveling Exhibition Service (\$1,500,000).

The Institution requests \$1,500,000 in no-year funds to increase Smithsonian outreach in rural America through *Museum on Main Street (MOMS)* exhibitions (\$500,000), and for the development and deployment of traveling exhibitions of treasures from the Institution's vast artifact collections (\$1,000,000).

Since 1994, SITES, in partnership with State Humanities Councils, has circulated Smithsonian exhibitions to small, geographically isolated communities excluded from the Nation's mainstream cultural agenda. Through *Museum on Main Street*, small-town America has been able to reap the benefit of high-quality exhibits, collections, and technical training from the Smithsonian and a wide array of cultural and educational programs available at both the State and local level through the Humanities Councils.

This request (\$500,000 in no-year funds) represents the first part of a multi-year request to provide *MOMS* exhibitions to every State and 850 additional communities by 2010. The limited cultural resources available to rural parts of the country have resulted in an enormous demand for *MOMS* programs. That demand now far exceeds the supply. From among hundreds of requests from small-town museums in all 50 states, SITES and its Humanities Council partners have been able to provide Smithsonian exhibits and related programs to only 200 communities in 27 States.

The Institution requests \$1,000,000 in no-year funds to support the rapid deployment of traveling exhibitions that contain artifacts from the Institution's storehouse of more than 140 million objects. With hundreds of new affiliate museums seeking to showcase the Smithsonian in their own communities and the attendance figures for SITES exhibitions growing at record rates, the need to increase the availability of Smithsonian collections grows exponentially every month. This increase would enable SITES to create four traveling exhibition templates, each of which would be able to accommodate the ongoing rotation and constant circulation of Smithsonian artifacts now in storage. Once produced, these exhibits would carry a level of prestige and subject matter interest appealing not only to regional museums and science centers, but also to other facilities—historical societies, libraries, city center galleries, State fair art pavilions, and

municipal buildings—equally eager to share the Smithsonian with their own local public.

The Smithsonian Associates and Museums (\$400,000). The Institution requests new federal funding to augment support for outreach activities associated with The Smithsonian Associates and museums. Through a broad array of public programs, The Smithsonian Associates and the Institution's museums extend the vast intellectual resources of the Institution to the American people, offering unique opportunities for lifelong learning. This represents the Smithsonian's first request for federal funding to support the Associates outreach program.

An amount of \$400,000 in no-year funds will make it possible for Smithsonian scholars, researchers, and historians to participate in community-based outreach activities and programs around the country. These programs are developed collaboratively with the communities.

Smithsonian Center for Education and Museum Studies (\$100,000). To address the Secretary's goal of increased public impact, and to make it possible to offer programs in every region of the country, \$100,000 is requested for SCEMS to offer twelve additional regional programs targeted for museum professionals and educators who use museum resources. The programs will be offered in collaboration with national educational and museum associations and Smithsonian Affiliates.

These programs will have broad impact since they will target museum professionals and school district administrators. Program participants will be able to implement Smithsonian program ideas in their local museums and schools, reaching thousands of people who may never visit our museums in Washington DC. The funds requested will cover all program expenses including travel, per diem, publications, and honoraria for speakers, audio-visual equipment, on-site costs, and publicity.

Folklife Festival Infrastructure Support (\$250,000). For FY 2002, the Smithsonian requests \$250,000 to support the Smithsonian Folklife Festival's base infrastructure costs. Every summer the National Mall transforms from parkland into an interactive exhibit educating over one million visitors on up to three topics of cultural tradition and heritage. The featured State programs, developed in conjunction with the target communities, bring the Nation to the Capitol's doorstep. The annual Smithsonian Folklife Festival, known as the "museum without walls," is a living exhibition whose program content and emphasis, along with the physical layout of the exhibits and programs, undergo change each year.

While outside sources currently cover a majority of the Festival's program costs, the costs of rebuilding the base Folklife Festival infrastructure each summer have increased dramatically over the past decade with no corresponding increase in federal resources. In the past decade, the impact of infrastructure base price increases, the relocation of the Festival's Crafts Shop off the Mall, the relocation of programs to the center of the Mall, the rising costs of installing communications, utilities and security fencing, the new or increased reimbursement of costs paid to outside service providers, and the costs of maintenance/replacement of aging equipment have all contributed to the base infrastructure erosion.

Infrastructure Base Price Increases (\$78,000). Over the past six to seven years, infrastructure base price increases on the Folklife Festival have amounted to \$78,000. The costs to provide security, building materials, and paint have risen dramatically over this period of time with no corresponding budget increase. Since 1981 the cost to provide security services for the Festival has increased by \$35,000. The Festival security was originally provided by the Smithsonian's Office of Protection Services. It was determined that SI Officers have no legal jurisdiction on the grounds of the National Park Service, requiring the contracting of security to a private company for the Festival. The rental of tents has increased by \$15,000 since 1995 when the National Park Service directed the Festival to shift programs into the center of the Mall. The cost of paint (\$5,000) and building materials (\$13,000) has risen by \$18,000 since 1995. The cost to provide electricity has risen by \$10,000 since 1994 as the festival has grown and relocated to the center of the Mall.

National Park Service Policy Changes (\$86,000). Changes in policies of the National Park Service, which controls the National Mall, have been a prime factor in the rising costs of infrastructure totaling approximately \$86,000. Of this amount, the 1995 decision to relocate the majority of the Festival programs from under the trees to the center of the Mall (where there are no power or plumbing facilities) to protect the roots has resulted in added infrastructure costs of \$38,000. These include installation of temporary telephone, computer, electrical and plumbing services on the Mall (\$8,000); and rental of additional power generators and fuel costs (which have increased dramatically over the years) to power generators and service vehicles (\$30,000). The National Park Service also directed the Folklife Festival to pay for infrastructure costs previously provided free of charge including fencing (\$18,000), restroom facilities (\$8,000), trash removal (\$12,000), and reimbursement for U.S. Park Police officers (\$10,000) totaling \$48,000.

Contract Emergency Medical Services (\$10,000). The Smithsonian pays \$10,000 for contract Emergency Medical Technician (EMT) services to staff the emergency medical tent. Until 1994 the Red Cross provided volunteer nurses to perform first aid care for Festival visitors, exhibitors and staff. In 1994 a law was passed preventing the Red Cross from continuing to provide free medical care.

Equipment Maintenance and Replacement (\$76,000). The Festival's cost to maintain and replace aging equipment and provide communications to the Mall totals \$76,000. Rental of equipment and tools (\$25,000), service vehicles (\$25,000), and work trailers (\$8,000) all provide the base resources that keep the Festival running day to day. New costs for electrical (\$10,000) and communications (\$8,000) total \$18,000. Nearly all of the equipment purchased for the 1976 Bicentennial Festival is retired from service or beyond functional use. The Festival trucks, forklifts, golf carts and trailers are now leased, drawing a larger share of available base infrastructure resources as older equipment is retired from service. In addition, the Smithsonian no longer owns certain pieces of heavy equipment previously used free of charge in the delivery, assembly and removal of Festival materials and equipment.

National Portrait Gallery (1 FTE and \$30,000). The staff of the National Portrait Gallery (NPG) will relocate to the Victor Building at the beginning of the renovation of the Patent Office Building (POB) in 2001. Because the configuration of its new office and collections storage space in the Victor Building differs from that in POB, NPG requires a staff person stationed at the entrance to its offices on the 8th floor of the Victor Building. Although the Gallery will be closed during the renovation, NPG will continue to manage its elaborate exhibition program, oversee its acquisitions activities, and maintain its collections storage at various locations including the Victor Building. One FTE and \$30,000 will fund a position to monitor the arrival and departure of visitors and the movement of objects by staff and visiting scholars for study outside of the objects' secure collections storage area.

Scientific Research

GOAL: SCIENTIFIC RESEARCH

Major Scientific Instrumentation – VERITAS (\$1,000,000). The Institution requests redirection of existing funds within the Major Scientific Instrumentation line item to begin construction of instrumentation for the Very Energetic Radiation Imaging Telescope Array System (VERITAS). Funds will be redirected from the Focused Ion Beam Project at the National Museum of Natural History (\$475,000); and two Smithsonian Astrophysical Observatory (SAO) projects: the Submillimeter Telescope Array (\$25,000) and the Multiple Mirror Telescope Conversion Project (\$500,000).

VERITAS is a new project led by the Smithsonian Astrophysical Observatory, the goals of which are to exploit SAO's pioneering development of the field of very high-energy gamma-ray astronomy and to pursue the institutional goal of excellence in scientific research. SAO astronomers persevered for twenty years and succeeded in detecting extremely high-energy gamma-rays, the highest-energy form of light. The gamma rays detected were of far higher energy than anyone had suspected occurred in nature at intensities detectable from Earth. No one yet knows what processes in nature are responsible for this remarkable radiation.

VERITAS was ranked as a priority project in the recently completed decadal report by the National Research Council, which gives recommendations for the highest priority new projects in astronomy and astrophysics for the nation.

VERITAS will consist of seven 10-meter diameter imaging telescopes that will be capable of pinpointing and studying extraterrestrial sources of gamma rays with unprecedented accuracy. The array will be the most sensitive gamma-ray telescope in the world. A national and international consortium of ten institutions has formed to construct and operate VERITAS adjacent to SAO's Whipple Observatory south of Tucson, Arizona. Institutional support in VERITAS will be leveraged threefold. Specifically, the Department of Energy, the National Science Foundation, and the British and Irish equivalents of the latter will provide slightly over two-thirds of the required \$23 million in construction costs and an even larger fraction of the maintenance and operations costs of VERITAS. Smithsonian's contribution in support of the total cost of constructing the array will be \$7.6 million.

Additional funds are requested in the SAO justification (1 FTE and \$157,000) for a position and related costs to support the program and in the Construction section (\$1,000,000) of this request to develop the site infrastructure elements, including roads, utilities, communication lines,

foundations, instrument housings, and a control building. SAO will share the instrument development project costs with the U.S. Energy Department, the National Science Foundation, and a group of academic institutions.

**Smithsonian Astrophysical Observatory
Very Energetic Radiation Imaging Telescope Array System
Funding Requirements FY 2002 - 2005**

\$000's	FY 2002	FY 2003	FY 2004	FY 2005	Total
Salaries and Expenses:					
Major Scientific Instrumentation	1,000	500	744		2,244
Operations	157	157	157	157	628
Construction	1,000	3,500			4,500
Total	2,157	4,157	901	157	7,372

Smithsonian Astrophysical Observatory – Very Energetic Radiation Imaging Telescope Array System (VERITAS) (1 FTE and \$157,000). The Institution requests one workyear and \$157,000 for the VERITAS project. This project was included in "Astronomy and Astrophysics in the New Millennium" (May 18, 2000), the report of the Astronomy and Astrophysics Survey Committee of the National Research Council, as one of the top priorities of the decade for the nation's ground and space research initiatives. Recognizing the Smithsonian Astrophysical Observatory's pioneering work in this field over the last two decades, the scientific community involved in this field agreed that SAO should take the lead role in the project. Making use of the established technology of the 10-meter reflector at the Smithsonian's Whipple Observatory near Tucson, VERITAS consists of an array of seven 10-meter diameter reflectors that will achieve more than an order of magnitude improvement in sensitivity and far greater ability to locate sources than existing instruments. Successful implementation of this project will ensure that SAO maintains its position of excellence in this area of scientific research.

The requested increase will ensure the success of this large, collaborative program. The requested astrophysicist position will work directly with the current federal staff expert in this field—the original pioneer—to study the sources of the highest energies of light ever detected in the universe.

A request to redirect existing funds (\$1,000,000) within the Major Scientific Instrumentation line-item is included in that justification. Additional funding is requested in the Construction section (\$1,000,000) of this request to develop the site infrastructure elements, including roads, utilities, communication lines, foundations, instrument housings, and a control building. SAO will share the instrument development project costs with the U.S. Energy Department, the National Science Foundation, British and Irish equivalents of the latter, and a group of academic institutions.

Management Excellence

GOAL: MANAGEMENT EXCELLENCE

Support for Expanded Repair, Restoration, and Alteration of Facilities Program (14 FTEs and \$2,045,000). Appropriations for the Institution's Repair, Restoration and Alteration of Facilities (RR&A) program has increased 20 percent since FY 1990. As the RR&A Program continues to expand, permanent staff to support the program has remained at the same FTE level since FY 1990. Currently, between 7-21 term employees are supplementing the needed permanent staff. The increase will allow the Institution to hire and retain, on permanent status, individuals who have a high level of expertise to effectively manage the complexities of the Smithsonian RR&A program. The Institution requires increased funding in the following administrative offices to support RR&A projects:

Office of Physical Plant (10 FTEs and \$1,010,000). The Institution's requested increase to the RR&A program will provide funds for major repairs, restoration, and systems replacements at multiple facilities simultaneously. This will aggressively reduce the rate of deterioration, while increasing the efficiency of building systems, as well as safety and security for the public, staff and the collections. The infusion of RR&A funds will result in expanded workload requirements of RR&A projects. The Office of Physical Plant requests planning, project management, engineering, design, and construction staff to effectively plan, design and manage these added contracts. These permanent positions will enable the Office to retain experienced staff, and build continuous and constructive relationships that will allow the Institution to complete projects more efficiently and effectively. This request is to hire ten architect/engineers.

Office of Contracting (2 FTEs and \$770,000). With the expansion of the Institution's RR&A funding, the Office of Contracting requires two permanent staff positions and support to administer the higher burden of activity placed on the office. Since 1990 there has been an increase in RR&A funding of \$36.9 million for non-Zoo projects and \$1.1 million for Zoo projects. There has been no corresponding increase in staff or base funding in the Office of Contracting to support the higher level of service the increased RR&A resources require. This request will provide the additional staff and support services, as well as incremental funding to fully staff the 37 existing FTEs in the Office of Contracting at the grade levels necessary to fill professional positions.

The Institution's ability to contract for its RR&A and construction services in a timely and effective manner is severely compromised by the lack of funding to hire contracting staff. The staffing shortage manifests itself in problems with both the pre-award and post-award contract management

processes. Staffing shortages have lengthened the time period it takes the Office of Contracting to award contracts. Urgent contract requirements take precedence over routine requirements, necessitating a queuing process that lengthens average time to award. Post-award, contract administration is done on a by-exception basis, increasing the risk assumed by the Institution. Problems are handled as they arise and statutory and regulatory requirements are complied with. However, proactive management of critical areas such as contract changes, options, and subcontracting plans are not accomplished.

The increasing workload has been partially handled by temporary staff and an operating deficit that has been covered in recent years from available sources within the Institution. Increasing needs across the Institution make it very unlikely that any funds will be available for this purpose in the future, making the need to obtain base funding for staff even more imperative. This request covers the requirement for two additional staff positions to fill the existing base shortfall.

Office of Environmental Management and Safety (2 FTEs and \$265,000). The funding will provide direct support to the expanded RR&A program in addition to ensuring that the Smithsonian remains compliant with federal laws applicable to fire/life safety in its buildings. The Smithsonian has experienced a significant increase in both new building construction and in RR&A spending over the past few years. The number of hours spent reviewing design drawings, resolving conflicts or issues that arise during construction, and inspecting the final product to ensure that construction meets federal code requirements has increased as well. Staff now must work extensive overtime just to keep pace with the current program. The Smithsonian is now planning an even more aggressive RR&A program. The number and complexity of projects will increase the workload even beyond that which can be accomplished with overtime by the existing staff. The Institution requests 2 FTE and an additional \$265,000 for new fire protection engineers to accomplish the additional RR&A work. The additional staff will ensure that construction projects are designed to provide maximum protection to Smithsonian staff, collections, visitors, and buildings. While supporting the RR&A program will be the most important role, these staff members will also inspect all Smithsonian facilities annually, provide fire safety training to staff, and also inspect and conduct acceptance tests of new fire protection systems.

Office of Physical Plant Maintenance Resources (37 FTEs and \$2,000,000). The Institution requests \$2,000,000 and 37 FTEs to improve the appearance and functionality of Smithsonian facilities by providing the Office of Physical Plant (OPP) with the resources required to perform

necessary building maintenance, and increase the amounts of preventive and predictive maintenance on component systems.

Conditions and systems in Smithsonian facilities have been taxed beyond their useful life. Deteriorating interior finishes of buildings and aging mechanical, electrical, and plumbing systems are in constant need of maintenance and repair. Current base resource levels do not allow for comprehensive preventive and predictive maintenance to be performed as scheduled. Recent analysis of work performed indicates that the current ratio of unscheduled maintenance to scheduled maintenance is approximately 4:1. That is, 80 percent of the work is unscheduled and 20 percent of the work is planned/scheduled. Industry guidelines suggest the ratio should be approximately 2:3. That is, 40 percent of the work is unscheduled and 60 percent is planned/scheduled work. While systems are in place to schedule preventive maintenance and to test for predictive maintenance, frequent breakdowns occur and take priority over scheduled work. Staff shortages have impeded the operation and troubleshooting of aging systems, handling of emergency repairs, and ability to perform all scheduled maintenance. This situation has led to reduced service life of installed systems, and increased backlog maintenance.

Resources for maintenance were drastically reduced in fiscal years 1994-1996 when a total of 56 OPP staff took advantage of government-wide buyouts. Many of the staff were employed in the utility and craft fields. These departures along with an internal Smithsonian restructuring at the beginning of FY 1993 resulted in a reduction of \$3 million in OPP funding.

The requested funding will partially return OPP to the pre-FY 1994 staffing levels by providing funds to hire 18 utility systems mechanics and 19 trade and craft mechanics. The additional staff will enable OPP to perform scheduled maintenance and attend to deficiencies in a timelier manner, ensuring continued operations and preventing further deterioration of facilities and systems. It also will enable OPP to make a significant impact on reducing the backlog of deferred maintenance. The appearance and operations of the Smithsonian facilities will improve and the risk to collections, visitors, and staff will decrease. An additional 30 FTEs and \$1,651,000 will be requested in FY 2003 to fully support this effort at the required level.

Office of Protection Services, Security System Modernization

(\$1,350,000). The Smithsonian requests \$1,350,000 to complete the Institution-wide modernization of its security systems and bring them up to normal operational standards for similar facilities. This effort began with the replacement of the antiquated Smithsonian Institution Proprietary Security

System (SIPSS) in FY 1999 and FY 2000. Full modernization of the Smithsonian's security systems, which will capitalize on the replacement of SIPSS with a modern, flexible system capable of integrating access control, alarm monitoring and CCTV, will have cost \$12,000,000 when completed in FY 2004.

The requested funding will provide engineering support, equipment, training, installation, testing, and documentation at a number of Smithsonian facilities as noted below. The proposed plan will follow up on work initiated in FY 1999, which replaced core systems and components affected by Y2K in all Smithsonian facilities. In FY 2001, in partnership with the U.S. Army Corps of Engineers' Electronic Security Center of Expertise in Huntsville, Alabama, the Smithsonian is continuing to replace SIPSS in the National Museum of Natural History and will begin to install modern security systems at the Smithsonian Tropical Research Institute and the Central Control Office of the Office of Protection Services. Additionally, the Smithsonian will complete engineering work and begin installations for the Museum Support Center; the National Museum of American History; the Freer Gallery of Art; and the Quadrangle, which includes the National Museum of African Art and the Arthur M. Sackler Gallery. The funds requested in FY 2002 will allow completion of systems modernization for the Museum of Natural History, the Freer Gallery of Art, the Quadrangle, and the National Air and Space Museum.

In FY 2003 and beyond, maintenance and renewal costs will remain stable at approximately \$2,000,000 per year. Beginning in FY 2003, the Smithsonian will seek to redirect the requested funding of \$1,350,000 to ongoing renewal and maintenance of its security systems, supplemented by \$650,000 in annual no-year funds first received for these purposes in FY 2001. For this reason the Smithsonian requests the \$1,350,000 as annual no-year funds. Maintenance of the system will include software upgrades, technical inspections, cleaning, repairs on front-end equipment (computers, switchers, and monitors), field devices, and data-gathering panels. Renewal costs include replacing installed equipment because of equipment failure, life-cycle termination, changes in technological approach, or additional requirements placed upon the systems, such as new exhibits or alarms. Hardware renewal is based on a three-to-five-year cycle. Wiring renewal is based on a 12-17-year life cycle, beginning two years after installation. Since the installation program is phased over a four-year time period, the renewal costs are expected to stabilize after four years.

Through this modernization program, the Smithsonian Institution will be able to maintain high standards of electronic security to ensure cost-

effective protection of the Nation's treasures, Smithsonian staff members and volunteers, and millions of visitors each year.

Information Technology, Enterprise Resource Planning System (8 FTEs and \$9,900,000). For FY 2002, the Smithsonian requests 8 FTEs and \$9,900,000 for the planning, selection, development, and implementation of a commercial off-the-shelf (COTS) Enterprise Resource Planning (ERP) software package to meet the Institution's financial management and human resource management requirements. Within the amount requested, \$7,656,000 is for one-time costs. The ERP system will be developed and deployed incrementally through FY 2004 and will cost approximately \$38,348,000. The funding schedule below identifies requested resources, both one-time and permanent, and base funds required for each fiscal year of the multi-year ERP implementation.

Smithsonian Institution						
Projected ERP Costs in \$000s						
FY 2002 to FY 2006						
	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	Total
Budget Request						
-One Time	7,656	6,746	4,243	161	68	18,874
-Permanent	2,244	883	1,050	778	16	4,971
Total Increase	9,900	7,629	5,293	939	84	23,845
Funded from base	0	2,244	3,127	4,177	4,955	14,503
Total Funding	9,900	9,873	8,420	5,116	5,039	38,348

The current state of the Institution's aging financial and human resource management systems provides inefficient data processing and inadequate responses to ever-growing demands for information. Information management tools and systems (from desktop spreadsheets and database management software to commercial financial management software packages) operate on a stand-alone basis with outdated data communication interfaces, out-of-date security safeguards, and antiquated or no systems support from the manufacturer.

The inability to integrate financial, management and human resource data elements with other Institutional applications regularly requires duplication of data entry. In addition, staff must often undertake time-consuming, labor-intensive reconciliation to identify discrepancies between unit "cuff" records and Institutional financial systems. Furthermore, data captured and

stored in one application cannot be easily accessed and used by other systems.

The existing Smithsonian Financial System (SFS) is based on a technologically obsolete commercial software product that is no longer supported by its vendor. As a result, the Institution is unable to maintain and improve SFS to meet management's changing requirements. In addition, the product utilizes batch processing of data when real-time financial integration is mandatory in order to develop a complete financial picture and make sound business decisions. Finally, maintaining adequate internal controls and safeguarding the Institution's assets becomes increasingly difficult with an outdated system.

Because the Smithsonian's human resources and payroll information systems do not interface directly with accounting data, timing and reporting discrepancies occur and, again, staff must undertake labor-intensive, time-consuming reconciliation. Antiquated systems require manual updates to enter the more than 12,000 personnel actions annually. Thirteen manual updates each pay period provide human resources and payroll data to unit managers. The administrative shuffle required by these systems reduces the time available for Smithsonian human resources specialists to advise and consult with their client units.

In deploying the new system, the Institution will adapt its business processes to the product selected, which will expedite implementation and more cost-effective operations. Integration of financial, human resource, payroll, and other data will improve the integrity and accuracy of information available to unit and Institutional managers.

For the Smithsonian to manage its financial and human resources information successfully and support both ongoing and new activities, the Institution must adopt a cohesive approach in order to provide accurate and timely information. The Chief Financial Officer and Smithsonian management at all levels will use this information to make decisions on investments in and management of core resources.

The Smithsonian's ERP system will encompass budget formulation, justification, and execution; financial accounting—standard general ledgers, subsidiary ledgers, transaction registers, grants and contracts, revenues, and fund-raising pledges and receipts; preparation of financial statements and reports; audit certification of payment vouchers, payroll, and purchasing; and personnel actions, time and attendance, recruiting, training and benefits administration. The requested resources will enable the

Smithsonian to join the 21st century in terms of financial and human resource management capabilities.

The Smithsonian's \$9,900,000 request for FY 2002 will support: \$1,716,000 in personnel costs for a total of 15 permanent FTEs to staff the ERP integrated product team (including 7 existing FTE slots for which permanent funding is required), \$6,950,000 to secure other services, ERP software, and hire contractors, and \$1,234,000 to acquire equipment to initiate the ERP detailed analysis phase and establish the ERP development environment.

The Institution has identified 7 FTEs within its total allocation that will be funded with the FY 2002 request, along with the requested 8 new FTEs, to staff the ERP integrated product team as follows: one Director, System Product Assurance; two System Product Assurance Staff; one Project Leader SL 1550; one Data Base Administrator; one System Programmer; one Team Leader, Financial System; one Team Leader, Human Resources System; four Financial Team members; two Human Resource Team members and one Technical Writer.

The baseline milestones for the Smithsonian's implementation of the ERP System are:

Define Functional Requirements	FY 2001
Establish Concept of Operations	FY 2001
Deploy General Ledger, Subsidiary Ledgers, Financial Reporting and Budget Modules	FY 2003
PAR Processing, Time and Labor Modules	FY 2003
Deploy Procurement and Project Accounting Modules	FY 2003
Deploy Benefits Administration and Recruiting and Staffing Modules	FY 2004
Deploy Position Management Module and Travel Manager interface	FY 2004
ERP System operations	FY 2005/6

Information Technology, Managed Information Technology Infrastructure (1 FTE and \$4,150,000). For FY 2002, the Institution requests resources to establish a standards-based information technology (IT) infrastructure that will provide distributed systems, user interfaces, information, and communication services to business applications and support applications throughout the Smithsonian. Funding will also support a network manager who will oversee these operations. The Institution requests \$4,150,000 as the first increment of multi-year funds, of which \$3,917,000 is requested as one-time funds. In FY 2002, the Institution will also use \$850,000 from

the Institution-wide information resources management pool, making a total of \$5,000,000 available for this effort.

Standards define the format in which data are exchanged, systems accessed, and services invoked. Establishing Smithsonian-wide IT standards will support the creation of system architectures that can be built from technology components available from many vendors. This approach includes a centrally managed information technology infrastructure that relies on commercially prevalent technical standards and products.

The Smithsonian plans to migrate its current IT infrastructure incrementally through FY 2004. Initially, it will focus on co-locating and consolidating Local Area Network (LAN) servers, centralizing LAN management, and replacing current email systems. The age of servers and underlying software platforms will help determine the most cost-effective migration schedule. About 25 percent of the existing server base can be reused in a managed IT infrastructure environment.

The Smithsonian has long been served by an IT infrastructure that is a heterogeneous collection of incompatible hardware and software systems with incompatible commercial-off-the-shelf software products, many of which are operated independently by the units. The IT modernization will create centrally managed Local Area Networks, replace LAN operating systems and directories, migrate file and print services and application servers to Windows 2000, replace and consolidate servers, and train IT specialists Smithsonian-wide.

Information Technology, Digitization of Smithsonian Holdings (\$3,000,000). For FY 2002, the Smithsonian requests \$3,000,000 for equipment and services to support the electronic capture, storage, access and dissemination of Smithsonian collections, images, archives, library and scientific research information to a broader national and worldwide audience. The Institution requests the funding in this line item remain available until expended.

Over the past several years, the Smithsonian has been digitizing its collections, archives, library, and research information and migrating its existing collection information systems to Web-accessible commercial off-the-shelf (COTS) software packages. In the individual museums this means that researchers, curators, librarians, archivists, registrars, and managers will have more access to rich and consistent information about collections from their desktop computer. Enriching registrarial records with research findings and curatorial notes from which they previously have been separated will enhance even further the information accompanying

electronic data and images. More than two million images and records based on Smithsonian collections are now available to the public on the Web.

Federal base resources of \$960,000 per year are insufficient to adequately digitize the information within the vast collections of the Institution and expedite its availability to visitors and scholars on the Web. Bringing the Smithsonian's treasures to people across the Nation and around the world is the ultimate goal of this project. An infusion of resources will enhance the quantity and quality of available data and bring to visitors and researchers a larger portion of the collections than has been possible in the traditional museum exhibit context. Collating and entering collection information that includes both text and images will require contract support to address the backlog and to enrich information currently available. In FY 2000, more than 4.5 million visitors accessed the Smithsonian web site, while a total of nearly 29 million visitors accessed Smithsonian museum web sites. More than two million images and records based on Smithsonian collections are now available to the public on the Web.

At present the Smithsonian uses two COTS application software packages to manage collections information: The Museum System (TMS), known as ARTCIS, and Horizon, known as the Smithsonian Institution Research Information System (SIRIS). The Institution's six art museums, the National Air and Space Museum and the National Postal Museum utilize TMS. While records exist in TMS of objects in the collections, many are skeletal, lacking images, as well as curatorial material. Across the Institution, 35 libraries, archives and research units use SIRIS, which has over 1.2 million records. SIRIS provides public access, as well as cataloging, circulation, and acquisitions needs of the users. Operations under the current system began December 15, 1999.

Other COTS applications currently under development include Multi-MIMSY at the National Museum of American History (NMNH) and Electronic Museum (EMu) at the National Museum of Natural History (NMNH). First operational in FY 2000, NMNH will deploy EMu through FY 2003 as more departments come online. It also plans to add data to existing specimen records and links to research data and findings. The National Museum of the American Indian (NMAI) is developing its own Collections Information System. The NMAI Collections Information System provides accountability for the move of objects from the Research Branch in New York to the Cultural Resources Center in Suitland, Maryland. It will incorporate collections and research information provided by Native Americans about the meaning, context, and importance of objects in the museum's collections.

As TMS, Multi-MIMSY, and SIRIS are in full production, they will continue to add records and associated images. Although records exist in TMS and Multi-MIMSY for all collection records, many are skeletal and lacking images. There is an urgent need to enrich the records with both textual information and images. Collections information is widely scattered in the museums in a variety of non-automated records. Collating and entering this information is a mammoth task that will require contract staff to complete the backlog.

Across the Institution, units are experimenting with new ideas and methods of disseminating research, knowledge, and the collections gathered during the past 155 years to a variety of audiences. Educational programs translate exhibitions and collections into materials for scholars, teachers, parents and children. Electronic access makes thousands of collections objects and records related to them available to audiences who may never have the opportunity of visiting Washington, DC. As the broader spectrum of collections information becomes available to all, the purpose of James Smithson's bequest "...for the increase and diffusion of knowledge..." comes closer to fulfillment.

National Museum of Natural History Collections Infrastructure (\$200,000). The Institution requests \$200,000 to meet collections management infrastructure needs in the National Museum of Natural History (NMNH). Funding will provide for an annual pest monitoring system to avoid infestation of insects and small rodents that can do irreparable damage to the priceless collections; state-of-the-art cabinets, drawers, and compactors to provide storage conditions that meet national standards; and supplies to house or rehouse collections with appropriate conservation. NMNH identified these needs in a FY 2000 comprehensive Collections Profiling project that assessed the status, condition, and needs for the collections and provided a better source of analytical information upon which to make key decisions with limited resources.

Recent national reports have called for rebuilding the infrastructure of the Nation's deteriorating natural history museums and botanical gardens. The NMNH collections serve as a critical resource to visiting scientists. In FY 2000, scientists from 296 academic institutions studied the collections. The requested funding will not only help to improve the ongoing care of the collections, but also improve the ability of visitors and staff to readily access them.

REPAIR, RESTORATION AND ALTERATION OF FACILITIES

	SI	NZP	TOTAL
FY 2000 Appropriation	\$41,900,000	\$6,000,000	\$47,900,000
FY 2001 Appropriation	\$50,000,000	\$7,600,000	\$57,600,000
FY 2002 Estimate	\$162,930,000	\$15,570,000	\$178,500,000

The Institution is responsible for over 400 buildings which comprise more than 7.8 million square feet of space, and range in age from new to over 150 years old. These buildings, including many visible and valuable structures, provide not only space for the Institution's programs and activities, but also provide safe storage for irreplaceable collections made accessible to millions of scholars and visitors each year. Included are museum and gallery buildings as well as restoration and storage buildings, centers for research and education, and a zoological park.

Recent Smithsonian assessments of key facilities reveal alarming deterioration in these facilities. The Institution's total funding requirement in Repair, Restoration and Alteration of Facilities is more than \$800 million over the next five years. An independent consultant has predicted, using modeling techniques used by several universities and museums, a backlog of system repair and restoration requirements of about \$400 million. Most of this backlog is in the monumental buildings on or near the Mall, and at the National Zoological Park's two properties, and represents HVAC electrical and other utility systems, roofs and building facades, elevators and conveying systems, and fire detection systems that have failed. This figure does not include necessary removal of hazardous substances like asbestos and lead paint, life safety and accessibility modifications required to meet current codes, restoration and modernization of the buildings, temporary relocation of staff and collections, or major repairs or replacement of building systems that will become due in the next few years. The Institution's estimate of funding required over the next five years to fully restore the buildings with a significant backlog of repair requirements--eleven monumental buildings on or near the Mall and the National Zoological Park properties--is estimated to be over \$600 million. In addition, the Institution must continue to make ongoing repairs to its other facilities, at an estimated cost of almost \$200 million between FY 2002 and FY 2006.

It is not surprising that the Institution is faced with a problem of this magnitude. Despite additional funding provided since FY 1996, the available resources have not been sufficient to keep pace with the accelerating deterioration of its buildings. In part, this is because the Institution did not have a system of analysis in the past that would allow a more complete analysis of system failures. In addition, building inspections in the last few years have revealed more extensive deterioration than previously thought, and actual design of some of the work has shown that required renovations will be more complex and more expensive to complete. However, the larger issue driving the growth of the Institution's backlog of repair and restoration is a factor known as block obsolescence.

More than half of the square footage owned by the Smithsonian Institution is in structures built or last renovated 25 to 40 years ago. Now at the end of their useful life, their systems—mechanical, electrical, plumbing, heating, air conditioning, and roofing, as well as interior and exterior walls—must all be replaced or repaired at the same time. Moreover, building, fire, and life safety systems must be updated to meet current code requirements as well as standards established by the Americans with Disabilities Act. Other upgrades are needed to modernize these buildings so that they fully support the exhibitions, research and collections care activities for which they were intended. For example, electrical capacity must be increased to support more extensive use of computers by staff and interactive displays in exhibitions; new HVAC systems must meet current requirements for stable environmental conditions required to preserve collections; and appropriate ventilation equipment must be installed in laboratories to support research and conservation activities.

These circumstances of block obsolescence are not unique to the Smithsonian. The 1998 report of the National Research Council, *Stewardship of Federal Facilities*, notes that since 1789, the federal government has constructed or otherwise acquired more than 500,000 buildings. The report also emphasizes the need to stem the tide of deteriorating buildings and their infrastructure by investing more than \$300 billion in them:

Despite the historic, architectural, cultural and functional importance of, and the economic investment in, federal facilities, studies by the General Accounting Office (GAO) and other federal government agencies indicate that the physical condition of this portfolio of public assets is deteriorating. Many necessary repairs were not made when they would have been most cost effective and have become part of a backlog of deferred maintenance. In addition, a large proportion of

federal facilities are more than 40 years old. As wear and tear on buildings and their systems increases, the need for maintenance and repair to sustain their performance and functionality also increases. Federal agency program managers, the GAO, and research organizations have all reported that the funding allocated for the repair and maintenance of federal facilities is insufficient.¹

In March 2000, the General Accounting Office issued *Federal Buildings: Billions Are Needed for Repairs and Alterations* in which it noted that

GSA [General Services Administration] data indicate that billions of dollars are needed to satisfy the repair and alteration needs in government-owned buildings that it manages. These repairs and alterations are needed so that buildings can better meet quality, health, and safety standards. If this work is not done, buildings could continue to deteriorate and become functionally obsolete.²

Assessment of Facility Conditions - Building systems and components have limited life expectancies. Despite planned preventive maintenance and repair efforts, their heavy and constant use exacerbates the natural aging process of components. As building systems age, the risk of operational failure, unscheduled closings, and damage to collections increases dramatically. In addition, aging systems require increasingly frequent maintenance and repair, which drives up costs. Eventually, systems reach the breakdown mode of operation. Once a system has reached this stage, it can no longer reliably support activities housed in the building. In the case of museum mechanical systems (heating, ventilation and air conditioning) or roofs, this usually means that the continuous close control of environmental conditions and protection from the elements required to preserve collections cannot be guaranteed. In addition, it costs as much as five times more to achieve minimally acceptable performance through breakdown maintenance—that is, repairing or replacing system components on an emergency basis when they fail. Resources must be spent to patch existing systems, even though the systems later require full replacement. More importantly, because of the Institution’s high public visibility and nearly 35 million annual visits, the potential for irreparable damage to the collections and unplanned system failures is a major concern. When a system has deteriorated to the breakdown point, major

¹ *Stewardship of Federal Facilities*, National Research Council, National Academy Press, 1998, p. 2.

² United States General Accounting Office, *Federal Buildings: Millions are Needed for Repairs and Alterations*, March 2000, p. 14–15.

renewal or replacement is the only way to regain acceptable performance.

The Institution has carefully inspected its facilities and analyzed the current condition of its buildings. Parameters used to assess existing conditions are watertight enclosure; age and condition of heating, ventilating and air conditioning (HVAC) and electrical systems; and compliance with current codes and industry operating standards. With this information, the staff determines the remaining life of building systems and components and estimates repair or replacement requirements to keep each building operating at an acceptable performance level.

Two of the Smithsonian's major buildings, the National Museum of Natural History and the Patent Office Building, have already reached the breakdown stage, and work has already begun on these projects, as discussed below. Two more buildings, the Arts and Industries Building and the Smithsonian Institution Castle, as well as many buildings at the National Zoological Park's Rock Creek and Front Royal sites, are rapidly approaching this stage, and seven other buildings will require major renovation within the next three to five years. Together, these eleven buildings and the National Zoological Park properties represent over 70% of the Institution's usable square footage and contain most of its public space.

The most significant deficiencies at these facilities are antiquated and failing mechanical and other utility systems, but a number of modifications are also required to meet life safety and accessibility codes. The Institution plans to invest the majority of its RR&A resources over the next five years in restoring these facilities to an acceptable performance level.

An aggressive and sustained program of renewal is imperative if the Smithsonian is to provide for the safety and comfort of its visitors and staff, and to honor its commitment to stewardship of the artifacts and facilities with which it has been entrusted. The Institution has developed such a program, which emphasizes restoring these buildings over the next decade while sustaining a constant funding level to continue more routine repairs in the Smithsonian's other facilities. Timely attention to deficiencies prevents further deterioration and allows the Institution to take a proactive approach to sustaining the viability of its physical infrastructure. This request will allow the Institution to implement the program.

FY 2002 REQUEST - The Institution requests a funding level of \$178,500,000 for FY 2002, which includes \$15,055,000 for the National Zoological Park. While this amount represents a very significant increase over the current funding level, such an investment is needed over the next several years in order allow the Institution to fulfill its stewardship

responsibility not only of the artifacts in its collections but also for the buildings in which they are housed and displayed. Funding at the requested level will allow the Institution to make progress toward the timely renewal of some of the most deteriorated buildings, and to make ongoing repairs required to maintain current conditions in newer buildings. Without an immediate infusion of additional funds, the renewal process will be too slow to make a significant difference in all but a few facilities, and the problem will only grow. The Smithsonian will continue to play maintenance catch-up. Buildings and galleries may be closed because of needed repair, and programs relocated or temporarily curtailed. In addition to the disruption to visitors and staff, the costs of renewal in future years will be far greater than they are now.

The FY 2002 RR&A request includes:

Smithsonian locations (excluding Zoo)	\$163,445,000
National Zoological Park	<u>15,055,000</u>
TOTAL	\$178,500,000

The Smithsonian expects to use the funds requested in FY 2002 to perform work in the categories described below. The chart following this narrative provides a summary of projected expenditures by category of work for FY 2002-FY 2006. The Institution contracts for most RR&A projects unless it is more cost-effective to use existing employees or to hire temporary staff to accomplish the work. The National Zoological Park also contracts for certain ongoing maintenance services with funding in the RR&A account. The account also funds expenses required to accomplish the RR&A work, such as security requirements or relocation of staff and collections that might be placed at risk during construction. The Institution is also requesting additional Salaries and Expenses resources for the Office of Physical Plant, the Office of Contracting, and the Office of Environmental Management and Safety, in order to manage the larger RR&A program presented here.

Major Renewal Projects - This category includes the major renovation of Smithsonian facilities to ensure their long-term preservation and usefulness. Projects in this category differ in magnitude, expense, and planning complexity from routine ongoing restoration work, repair projects, or replacements undertaken when a piece of equipment fails. Work in this category primarily addresses the major replacement requirements for HVAC and electrical systems at the Institution’s older facilities where these and other critical building systems are nearing the end of their useful service

lives. Most of the Smithsonian's facilities on or near the Mall now need or are nearing the need for major renewal.

Projects in this category involve complete replacement of HVAC, electrical, and plumbing systems, and restoration or replacement of exterior components such as facade, roof, and windows to ensure long-term operation and preservation of the building. Modifications to the building also improve energy efficiency, meet fire detection and suppression requirements, and correct hazardous conditions. By combining these kinds of tasks into a single project, the Institution saves money and avoids repeated disruption to activities in the building. The Smithsonian achieves operating efficiencies as well by designing new building systems and components to work together. For example, by installing multiple-paned windows and increasing insulation, the Smithsonian can select more energy-efficient heating and cooling equipment. The equipment costs less to purchase and install, and long-term operating costs are lower. The impact of renovation work on programmatic activities is a key factor in planning a major project. Work of this magnitude causes serious disruption to activities in the building. The Institution must relocate staff and collections from the areas under construction to prevent damage, allow staff to continue working during the construction period, and ensure safety and, when possible, continued public access. Major renewal projects are phased over a number of years to achieve the most efficient balance of cost savings while minimizing disruptions to public programs and staff activities.

The current condition and planned renewal of facilities in the FY 2002 request is summarized below.

- ***Patent Office Building (\$114,000,000)*** - By far the most pressing candidate for a major infusion of funds in this request is the Patent Office Building, home of two Smithsonian museums—the National Portrait Gallery and the Smithsonian Museum of American Art. One of the oldest and stateliest of Washington buildings, designed by Robert Mills and Thomas U. Walter and built between 1836 and 1868, it was last renovated in 1968. The Smithsonian recently replaced the roof, but the mechanical and electrical systems inside the 332,000 square foot building are over 30 years old and in very poor condition. Other utility systems have seriously deteriorated as well, including electronic panel boards, switchgear and distribution networks, fire protection systems, plumbing, steam distribution, and communications systems. The elevators break down frequently, the exterior of the building is also deteriorated, and many interior surfaces have sustained significant water

damage. Substantial modifications are also required to support current life safety and health codes, and meet accessibility requirements.

Renovation of the building calls for replacing all major building systems, repairing basic infrastructure deficiencies, and bringing the premises into compliance with the Americans with Disabilities Act. Some mechanical and electrical systems will be relocated in new spaces beneath the courtyard and the adjacent excavated areas will be utilized for public programming. The staff will relocate to the newly acquired Victor Building in spring 2001, and collections will be stored in leased space during the duration of the project. The building closed to the public in January 2000 to allow staff to prepare for relocating the collections and operations in advance of construction.

The total cost of renovating the Patent Office Building is estimated to be \$151 million. This represents an increase from the earlier estimate of \$110-\$120 million, which was developed in 1996-1997. The Institution's initial projections for the Patent Office Building project did not adequately anticipate the competitiveness of the labor market in the metropolitan area. The recent unpredictable labor market conditions, labor shortages and prevailing labor rates have had a significant impact on the estimated costs to completion. Construction starts in the Washington metropolitan area have increased by approximately ten percent over the previous year, have created labor shortages, and driven up labor prices. These increases are reflected in the Davis-Bacon wage rates. Hourly wages have risen at a rate of 5.3 percent annually before inflation. With inflation, this represents the fastest rate increase recorded in the past 25 years. Further, the metropolitan area is experiencing a one-percent unemployment rate. Such labor-related market conditions have resulted in local construction projects averaging ten percent higher than expected.

Additional increases are associated with the project's expanded scope. The original plan called for replacing HVAC and other utility equipment in their current locations throughout the building. However, the Smithsonian determined that it would be more efficient to relocate some of the mechanical equipment to new space beneath the courtyard. Relocation of the equipment will free space in the building for public use, as well as provide adjacent excavated areas for public programming.

The expanded scope is accompanied by additional design costs and an extension of the project schedule. The original budget was based on a completion date in 2003. The current estimate predicts completion a

year later. Taking into account the labor costs, revisions in scope, and the passage of time, the original project estimates have been increased to \$151 million.

To date, \$33.6 million in RR&A funding has been allocated to this project. The Smithsonian completed planning and a historic structure survey, and has nearly completed design of the physical plant renewal project (\$9.8 million). Contract documents will be complete in September 2001. Meanwhile, as a first phase, the Institution recently awarded contracts for removal of the antiquated systems and all hazardous materials in the building (\$7.3 million), construction management of the project (\$3.1 million), and relocation of a small number of collections (\$0.1 million). The demolition and removal of hazardous materials will begin as soon as the building is vacant. The Institution expects to contract later this year to lease space for collection storage space and to relocate the collections, replace the windows and restore the facade of the building (\$13.3 million).

In FY 2002, the Smithsonian requests \$114,000,000 to complete the renewal and restoration program in the Patent Office building. This amount will allow the Institution to award a single contract to replace the HVAC, electrical, plumbing, and other utility systems, as well as upgrade fire protection and communications systems, restore the elevators, and create accessible entrances and restrooms. The renovation will also provide new mechanical space for public presentation and programs beneath the courtyard, and return administrative and support space to much-needed gallery and public uses.

In addition to renovations to be made from appropriated funds, the Institution plans to make further enhancements. These enhancements, to be funded from private sources and projected to cost in the range of \$30 million, include a glass dome over the building's 28,000 square foot courtyard, a modern kitchen and restaurant, the addition of up to two exterior visitor kiosks, and reconstruction of the original majestic South entry staircase.

The Institution plans to complete the renewal of the Patent Office Building by September 2004. Future year funding will be requested in RR&A to support the lease of collection storage space through the construction period.

The renewal of the Patent Office Building will result in a fully restored building capable of supporting the varied functions of the two museums

housed in it. The revitalized building will be the centerpiece of a neighborhood renaissance that is bringing significant economic recovery to the surrounding area. Along with the MCI Sports and Entertainment Arena and the new Washington Convention Center, the Patent Office Building will serve as a lively venue for events and entertainment, drawing new audiences with evening hours, expanded events, and public attractions. The planned renovation will add an estimated 100,000 square feet for public use, as well as dramatically improve the space already in use.

- ***National Museum of Natural History (\$12,000,000)*** - Following closely behind the Patent Office Building in urgency of renewal, this historic beaux-arts building was built in 1911, and the wings were added in the 1960s. Some of the mechanical equipment in the original building was replaced at that time. Now almost 40 years old, the mechanical, electrical, and other utility systems are all about 10 years past their normal life span. Given funding limitations and the difficulty of closing dozens of laboratories and galleries, as well as relocating collections, the Smithsonian opted several years ago to keep the museum open and accommodate complete renovation, wing by wing, floor by floor, by moving occupants and collections in an elaborate, carefully planned staging process.

Based on this master implementation plan, completed in 1987, the Institution is in the midst of a comprehensive renovation program in the National Museum of Natural History building, which will replace the HVAC equipment, ductwork, electrical equipment and wiring, piping systems, and the roof and windows of the main building. Asbestos and lead will be abated or encapsulated; the fire protection, storm water, communications, alarm, and emergency power systems will be upgraded; storm water systems and a hazardous chemical control facility will be installed; and the Museum's main entrance on the Mall will be made accessible to persons with disabilities. The estimated total cost of the renovation of the National Museum of Natural History is \$172 million.

Using \$48 million provided to date, the Institution has completed approximately 28 percent of the required renovation. Most of this work was exterior work, such as replacement of the windows in the wings, and other work that did not require disrupting the public and staff. The Institution has also replaced the central cooling plant and emergency generator, abated asbestos in the attics and mechanical spaces, constructed new rooftop mechanical rooms, upgraded some elevators

and communications systems, restored the rotunda, and completed about one-third of the space in the east wing.

The remaining portions of the project include system replacement and interior renovations to the galleries and the west wing of the building, which houses collections and laboratories. The Institution requests \$12 million in FY 2002 to complete system replacement in the Rotunda, replace sewer and other utility routing lines running beneath the floor of the main building, and begin the floor-by-floor interior renovation of the west wing of the building. Swing space will be provided to house staff activities displaced by the work.

While looking to private funding for most of the restoration of permanent exhibitions, the museum will restore office, storage, and laboratory spaces and return the exhibitions to state-of-the-art galleries. An estimated \$112,000,000 in additional funds will be required beyond FY 2002 to continue this incremental renewal program, primarily for interior systems, over the next ten years.

- ***Arts and Industries Building (\$6,000,000)*** - Originally designed to house the rapidly growing National Museum, the Arts and Industries Building was started in April 1879 and completed in March 1881. The last major renovation of the building utility systems took place in the 1970s. The HVAC equipment, electrical and other utility systems are now nearly 30 years old, and break down with increasing frequency. One of the cooling towers is out of service, and one of the chillers serving the building and the Smithsonian Castle is reaching the point where it can no longer be repaired. Maintenance is difficult and expensive on the entire system, controls are manual, and the humidification system is virtually inoperable. The chiller plant contains CFCs. The main steam station leaks steam into the air continuously. Pressurized steam pipes, chilled water pipes, and electrical conduits are located in utility trenches under the first floor. These trenches contain asbestos and are filled with abandoned pipes and conduits. The building's two elevators are frequently out of service for repairs. Many spaces are not accessible to persons with disabilities. The sewer occasionally backs up into the basement due to building settlement. The older portion of the roof is badly deteriorated. Air and moisture infiltration at the seams and flashing causes leaks and flaking paint to fall on the exhibits. The fire alarm system is antiquated and does not have additional capacity or flexibility for future changes. Asbestos has been found on pipe elbows and insulation, floor tile and mastic, duct insulation mastic, and fire doors. The building has some lead-based paint.

The Institution plans to replace the roof and the mechanical, electrical, plumbing, fire protection, and communications systems in the building, modify and upgrade the elevators, make modifications to ensure compliance with the Americans with Disabilities Act (ADA), abate or encapsulate asbestos and lead paint, repair the façade, and restore the interior to reflect its original architecture. The new energy efficient mechanical system will be located in underground space outside the building, and an underground connector with the Quadrangle building will be created to allow use of the loading dock in that building to serve the Arts and Industries Building. Relocation of the HVAC equipment will also free space in the building for museum program and public use.

The estimated cost of the total renovation of the Arts and Industries Building is \$105 million. The Smithsonian has completed concept design of the project, using \$4 million previously provided, and will use \$4 million in FY 2001 to complete schematic design. The Institution requests \$6,000,000 in FY 2002 to complete design of the renewal project. The Smithsonian plans to begin the renovation of the building in FY 2003 and complete it by the end of FY 2006.

- ***National Zoological Park – (\$7,500,000)***

Rock Creek (\$5,000,000) - Like the monumental buildings around the National Mall, the National Zoological Park's Rock Creek site has a number of historic buildings that are in urgent need of renewal.

A number of buildings at Rock Creek are currently below the acceptable performance level. As major components of the building systems age, the risk of operational failure, unscheduled closings, and danger to the animal collections and research efforts increases dramatically. Among the buildings with serious deficiencies, including structural deficiencies, failing HVAC systems, obsolete or inadequate electrical systems and leaking roofs or siding are the Australia Building, the Bear Exhibit, the Mane Building, the Elephant House, the Property Yard and Valley Keeper areas, and the Holt House. Several other buildings barely meet a minimum acceptable performance level, including the Reptile Building, Deer and Tapir Building, and Seal/Sea Lion Exhibits. In addition to outdated utility systems and failing exterior structures of individual buildings, basic infrastructure deficiencies include antiquated and inadequate central utility service capacities and distribution systems, obsolete fire alarm and smoke detection systems, practically nonexistent central monitoring of animal life support systems (such as water treatment and climate control), and deteriorated roadways and bridges.

To date, \$6 million has been allocated to begin the needed renewal of the Rock Creek buildings and infrastructure. The National Zoological Park used these funds to develop a site utilities master plan for renovating the underground utility infrastructure at Rock Creek. This plan, when complete in spring 2001, will guide the replacement and upgrade of the antiquated and inadequate utility systems—electrical, water, sewer, storm water, telecommunications, steam and gas—that serve the Park. With the funds allocated, the National Zoological Park rebuilt a portion of the one-quarter mile long Blue Road to correct a structural failure which required closing the road (\$1.2 million). The project also repaved the entire road, repaired associated retaining walls, and installed storm drainage. The National Zoological Park completely renovated the Panda House in anticipation of the arrival in December 2000 of the new pandas from China, *Tian-Tian* and *Mei Xiang* (\$1.8 million). In addition to replacement of mechanical and electrical systems, the animal holding building was brought up to all fire and life safety and accessibility codes. The National Zoological Park completed design of the renovation of the Mane Building (\$0.5 million), and will contract in FY 2001 to complete the project (\$2.4 million). The work includes a total replacement of the mechanical, electrical and plumbing systems; replacement of the windows and doors; installation of an elevator and other accessibility improvements; and upgrade of the fire protection system.

For FY 2002, \$5,000,000 is requested to continue renewal of the buildings and infrastructure at Rock Creek. The work will include road and bridge improvements (\$500,000), utility infrastructure improvements (\$2,300,000), design of the Deer and Tapir Area (\$1,500,000), contingencies for the Mane Building renovation (\$200,000), and concept design of the Elephant House renewal (\$500,000).

Front Royal (\$2,500,000) - The Smithsonian acquired the 3,150-acre Front Royal property from the U.S. Army in 1974 to house the National Zoological Park's Conservation Research Center. The first buildings date from 1910-12, with the majority constructed in the 1930s. The Smithsonian renovated some of the buildings and added a veterinary hospital in the 1970s. Today, the property has more than 89 buildings ranging from animal shelters to research laboratories and residences, totaling about 250,000 square feet of space. The site is served by two and one-half miles of roads and 20 miles of jeep trails, and is secured by 30 miles of fencing.

The Institution recently completed a comprehensive evaluation of the condition of the buildings and infrastructure components at Front Royal and the staff is developing a long-range plan to correct deficiencies. Of immediate concern, however, is replacement of several badly deteriorated maintenance buildings with a single consolidated facility. Several of the buildings that house maintenance shops and equipment—in actuality not much more than sheds scattered around the property—are in such poor condition that they are no longer safe for use. The Smithsonian has completed design of a consolidated facility to replace these buildings and will use \$2 million allocated to date to contract for demolition, site work, and construction of the building shell. The Institution requests \$2.5 million in FY 2002 to complete the facility. These funds will install fire alarms, sprinklers and smoke detection and other life safety systems, provide code compliant mechanical systems for the maintenance shops, including specialized equipment such as a paint spray booth for the paint shop and a dust collection system for the cabinet shop. When complete, the facility will allow maintenance activities to be conducted in a safe environment.

Ongoing Repair and Modification Requirements. In addition to the major renewal projects described above, the Institution must continue to make more routine repairs to all facilities in order to keep them in viable operating condition. Failure to address these ongoing requirements will cause deterioration of building systems to accelerate. Eventual replacement costs, if not addressed when the fix needed is routine, will become part of a backlog of repair and renewal.

The Smithsonian applies a rigorous priority system to balance the need for major renewal work with the ongoing needs of other facilities when developing its annual and long-range budget requirements. The staff prioritizes these requirements as follows:

Priority A:

- Work needed to correct hazardous conditions that pose a serious threat to public or employee safety or health, or required to meet mandated life safety or health codes
- Repair or replacement of building shell or utility components or systems experiencing active failures, such as roof or wall leaks, or HVAC or electrical equipment breakdowns, which pose an immediate risk of damage to the collections or disruption of program activities

Priority B:

- Fire and life safety, accessibility, and security modifications that pose a less than serious threat or are required to meet life safety or health codes with a deadline in the future
- Repair or replacement of building shell or utility components or systems that are in imminent danger of failure, such as minor roof leaks or electrical equipment that requires more frequent than normal maintenance, or HVAC systems whose components are failing at an increasing rate

Priority C:

- Predicted renewal requirements, based on normal life span and observable condition of building shells and systems
- Ongoing or phased renovation efforts, including work needed as part of a higher priority project
- Repairs or equipment replacement which will produce energy or maintenance savings or credits

Priority D:

- Repairs that are needed to improve building conditions but can be deferred

In applying the priorities and scheduling, the staff considers other factors which influence how and when projects might be accomplished, including the potential for disruption of the public and the extent to which work of differing priorities should be undertaken at the same time in a particular building in order to take advantage of better pricing. The availability of space to relocate staff and collections that would be at risk while the work is performed also impacts the timing of projects. The detail of how each project is ranked can be found in, "The Repair, Restoration and Alteration of Facilities, FY 2002-FY 2006 Five-Year Plan," located in the Appendix of this budget document.

Code Compliance and Security - This category includes projects included in the Fire Detection and Suppression, and the Access, Safety and Security categories. The majority of this work, as well as the work in the next section, is accomplished by contract, with a small amount of work accomplished by existing employees or temporary staff when appropriate and cost-effective. The amounts indicated represent current planning estimates for each subcategory.

- ***Fire Detection and Suppression (\$110,000)*** - Smithsonian staff have developed a fire protection master plan for every major Smithsonian facility. Projects typically include installation of detection systems such

as smoke alarms, suppression systems such as sprinklers, and architectural modifications to create fire zones by installation of firewalls and doors.

- ***Access, Safety, and Security (\$6,215,000)*** - These projects provide better access to the Institution's facilities for persons with disabilities, improve environmental conditions in buildings, and correct facility conditions that threaten the security of the National Collections. Work includes projects such as asbestos abatement and correction of ventilation problems; modifications to ensure accessibility of public facilities, eliminating obstructions and overhead hazards, improving emergency warning systems, and providing seating space for wheelchair users and listening systems for the hearing impaired; and projects to improve the security of the collections, staff and visitors, such as installing security surveillance systems, improving exterior lighting, and installing card access systems to limit and document entry to certain spaces.
- ***National Zoological Park Code Compliance & Security (\$1,935,000)*** – Projects in this category include fire detection and suppression and the access, safety and security projects.

Infrastructure Repairs and Modifications - This category includes projects in the General Repair, Facade, Roof and Terrace Repair, Utility Systems Repair, and Repair and Restoration Planning, Design, and Inspection categories. This category also includes Alterations and Modifications (A&M) projects. The amounts indicated represent current planning estimates for each category.

- ***General Repair (\$10,065,000)*** - These projects include minor, unscheduled, but essential, repairs that the Institution cannot anticipate specifically. Estimates of requirements are usually based upon historical data on the volume of work needed each year.
- ***Facade, Roof, and Terrace Repair (\$870,000)*** - This work includes a variety of projects required to ensure that buildings remain watertight. Projects include patching or replacing portions of roofs, recaulking facade joints, and repairing and repainting window frames and other exterior components. Smithsonian buildings require continuing facade work in order to restore and maintain intact the building envelopes.
- ***Utility Systems Repair (\$6,375,000)*** - These projects maintain, repair, and upgrade the HVAC, plumbing, electrical, and communications systems throughout the Institution's facilities. Ongoing renovations,

repairs, and replacement of deteriorated equipment components are essential for ensuring reliable and energy-efficient operation of utility systems. The long-term preservation of the National Collections depends upon stable temperature and humidity conditions.

- ***Repair and Restoration Planning, Design, and Inspection (\$5,000,000)*** - The Smithsonian uses funds to identify and analyze long-range repair and restoration needs and to design future-year projects in advance of funding requests. In addition to improving the accuracy of cost estimates, design of projects in advance of funding reduces escalation costs by enabling the staff to award construction contracts as soon as resources are appropriated. Needed repairs are also accomplished much sooner, thus preventing further deterioration and ensuring faster compliance with codes.
- ***National Zoological Park Infrastructure Repairs (\$5,620,000)*** – Funds in this category support general repairs; façade roof and terrace repairs; utility systems repairs; and planning, design, and inspection.
- ***Alterations and Modifications (A&M) (\$2,810,000)*** - The Institution must make changes, improvements or minor additions to existing space and plan for future requirements in order to maintain the vitality and operating effectiveness of its programmatic activities. Funding in A&M allows staff to contract for space planning and feasibility studies to ensure the best programmatic use of space as needs change, for design and construction of specific building modifications and minor additions, and for equipping of changed space. Individual projects will cost no more than \$1,000,000 and will have little or no impact on facility operating costs. A&M projects for the National Zoological Park are included here.

Repair, Restoration, and Alteration of Facilities
FY 2002–FY 2006

(Dollars in millions)

CATEGORY TITLE	Prior Funding	Current Request	FUTURE REQUIREMENTS					Outyear Costs
	Received	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006		
Major Renewal Projects								
National Museum of Natural History	48.0	12.0	17.0	16.0	18.0	18.0	43.0	
Patent Office Building	33.6	114.0	1.4	2.0				
Arts and Industries Building	8.0	6.0	91.0					
Smithsonian Castle	1.0				5.0	51.0		
National Air and Space Museum			4.0	41.0				
Renwick Gallery			3.0	20.0				
Museum Support Center			1.0	15.0				
Hirshhorn Museum				1.0	10.0			
Freer Gallery				0.5	3.0			
Quadrangle				4.0	40.0			
National Museum of American History			2.0	15.0	18.0			
National Zoological Park	8.0	7.5	11.5	11.0	21.6	42.7	68.7	
SUBTOTAL	98.6	139.5	130.9	125.5	115.6	111.7	111.7	
Code Compliance and Security								
Fire Detection and Suppression		0.1	2.7	0	0.1	0.1		
Access, Safety and Security		6.2	2.7	5.2	3.5	6.7		
National Zoological Park Code Compliance & Security *		2.0	2.1	2.1	2.1	3.3		
SUBTOTAL		8.3	7.5	7.3	5.7	10.1	ONGOING	
Infrastructure Repairs and Modifications								
General Repairs		10.0	10.3	11.7	10.7	11.2		
Façade, Roof and Terrace Repair		0.9	3.3	1.2	6.4	1.5		
Utility System Repair		6.4	1.5	2.2	3.1	5.0		
R&R Planning, Design and Inspection		5.0	4.0	5.0	5.0	5.5		
National Zoological Park Infrastructure Repairs *		5.6	8.4	7.6	.6	5.7		
Alterations and Modifications		2.8	3.0	3.0	3.0	3.0		
SUBTOTAL		30.7	30.5	30.7	32.8	31.9	ONGOING	
SUMMARY								
SUBTOTAL, Smithsonian		163.4	146.9	142.8	125.8	102.0		
SUBTOTAL, National Zoological Park *		15.1	22.0	20.7	28.3	51.7		
GRAND TOTAL		178.5	168.9	163.5	154.1	153.7	ONGOING	

* Estimates for National Zoological Park include about \$3.5 million annually for maintenance service contracts. Maintenance of the rest of Smithsonian facilities is included in Salaries and Expenses.

CONSTRUCTION

	SI	NZIP	TOTAL
FY 2000 Appropriation	\$19,000,000	0	\$19,000,000
FY 2001 Appropriation	\$4,500,000	\$5,000,000	\$9,500,000
FY 2002 Estimate	\$51,700,000	0	\$51,700,000

Plans for facility development represent a major investment in the continuing vitality of all Smithsonian programs—whether they are for collections management, research, public exhibitions, or education—as well as its many support services. To carry out these plans, the Institution requests \$51,700,000 in FY 2002.

The FY 2002 Construction program includes:

National Museum of the American Indian Mall Museum	\$50,700,000
Smithsonian Astrophysical Observatory, VERITAS	1,000,000
Museum Support Center, Pod 5 Construction ¹	0
TOTAL	\$51,700,000

National Museum of the American Indian Mall Museum (\$50,700,000).

Public Law 101-185, which created the National Museum of the American Indian (NMAI), authorized the Institution to construct three facilities to house the new museum and its collections. The Museum's main exhibition building will be constructed on the National Mall near the foot of Capitol Hill. The location, adjacent to the world's most frequently visited museums, will provide excellent exposure for Native American artifacts and related museum activities centered on Native American culture. The Mall Museum will house permanent and changing exhibitions, reference and resource areas, an auditorium, a native foods café, retail areas, and space for performances and other public programs in approximately 254,000 square feet of programmed space. The other NMAI buildings include the George Gustav Heye Center, which opened in New York City in 1994 and provides

¹The Institution is not seeking new funds for construction, but requests authorization and reprogramming approval to use \$16.4 million in available Museum Support Center equipment funds to construct Pod 5 at the Museum Support Center.

82,000 square feet of exhibition and public program space, and the Cultural Resources Center in Suitland, Maryland, which opened in 1999 and will house more than one million artifacts in the Museum's collection and related care and study activities in 145,000 square feet of space.

The final design for the Mall Museum was approved by both the National Capital Planning Commission and the Commission of Fine Arts in the summer of 2000. Construction documents were completed shortly thereafter and cost and technical proposals were requested from interested contractors in the fall of 2000. The first round of cost proposals was received January 16, 2001.

In 1989, the planning, design and construction of the National Museum of the American Indian was estimated at \$110 million, two-thirds of which was to come from federal appropriations and one-third from private fund-raising initiatives. Between 1990 and 2000 a total of \$73.3 million was appropriated and the corresponding private funds raised. Since that original estimate, significant cost increases have driven the total project construction costs to an estimated \$186 million. These increases are attributable to:

- Modifications required by the Commission of Fine Arts and National Capital Planning Commission Planning and design costs (\$10 million), including legal fees related to the termination of the original architect;
- Cost of construction (\$24 million) related to the complexity of the curvilinear design and exterior skin construction; and
- Cost increases (\$18 million) resulting from the sharp escalation in the capital region construction market since 1999.

In addition to the costs of construction, this project has a number of anticipated costs associated with its completion. These costs, estimated at \$20 million, can include:

- Interest costs associated with bridging the time when funds are required for the project and cash is received from private pledges;
- Costs associated with fund raising; and
- Costs of move-in, exhibitions and start up.

The total estimated project cost, including estimated construction-related expenditures and the costs to completion, is \$206 million.

A ceremonial groundbreaking took place in September 1999, and a site preparation contract was awarded. This preparatory work, including site fencing, utility relocation, sheeting and shoring, and full excavation of the site, was completed in January 2001.

In light of the significant increase in project costs, an aggressive fund-raising campaign is already underway. Based on the new cost estimate of \$186 million, the Institution has identified a shortfall of \$90 million. Of this amount the Institution plans to raise an additional \$39.3 million from individuals, foundations, corporations and Native American tribes throughout the country. For FY 2002, the Institution requests the balance of \$50.7 million needed to complete the construction and equip the building. The projected opening of the Museum is the end of 2003.

Smithsonian Astrophysical Observatory, VERITAS (\$1,000,000). VERITAS (Very Energetic Radiation Imaging Telescope Array System) is a proposed major ground-based gamma-ray observatory to be built in the vicinity of the Smithsonian's Whipple Observatory in southern Arizona. Supporting the Secretary's goal of focused first-class scientific research, the array of seven 10-meter diameter imaging Cherenkov telescopes will be the most sensitive gamma-ray telescope in the world and will provide valuable insight into supernova remnants, gamma-ray-emitting pulsars, active galactic nuclei, gamma-ray bursts, and the origins of the universe. The preferred site is near the Smithsonian Astrophysical Observatory Base Camp at the approach to Mt. Hopkins about 35 miles south of Tucson, Arizona. A consortium including the U.S. Department of Energy, the National Science Foundation, and several U.S. and international research and academic institutions will share the total telescope development costs of about \$23 million. The Smithsonian's share includes a total of \$4.5 million in the Construction account for the site work and facility. The Salaries and Expenses section of this request also includes funding to support the Institution's share of staffing and VERITAS instrumentation development.

The Smithsonian requests \$1,000,000 in FY 2002 for design and the first phase of construction of the VERITAS observatory. The scope of work for the first phase includes designs for access roads, site utilities, control building, and related structures. The first phase also includes partial construction of site access roads, telescope piers, alignment structures, and rudimentary site utilities sufficient to install and operate the first of the seven gamma-ray telescopes.

The Institution plans to request funding to complete facility construction in FY 2003. This second phase will complete site infrastructure development

including construction of access roads, communication lines, site utilities, foundations, telescope piers, alignment structures, instrument housings, and the control building.

Museum Support Center, Construction of Pod 5. When the Museum Support Center (MSC) was designed in the early 1980s, it was proposed that each of the four collections storage spaces or “pods” be constructed as open bays capable of accommodating a three-level storage structure. This design concept proposed a freestanding steel structure in each of the pods to provide this three-level storage. This design was partially implemented in Pod 3 for collections preserved in alcohol, but the limitations of the original design soon became apparent and the design was not repeated for the other three pods; instead a more conventional structure using reinforced concrete decks to provide the three levels in each pod was constructed.

Pod 3 Deficiencies. Three separate segments of a three-level storage system were installed in Pod 3 filling about 25% of available space. It houses a portion of the National Museum of Natural History’s collections preserved in alcohol. The Institution engaged in a lengthy design process to produce a plan to complete the installation of the steel storage structure in Pod 3, which is the last pod to be fully equipped in the Museum Support Center.

Those involved in the design effort have concluded that, for the following reasons, attempting to complete the storage structure as originally designed would be grossly inefficient. There are several problems inherent in the original plan for Pod 3 storage:

- The original steel structure design allows almost no flexibility in the storage layout
- Low ceiling heights between the levels of the steel structure would require that tanks containing large specimens be placed in pits dug out beneath the floor slab so that these tanks could be fully accessed
- Pod 3 is presently a completely open space with no internal firewalls. Vertical fire divisions between the existing and new storage structures can be installed. However, horizontal fire divisions between the storage levels would be extremely difficult to achieve due to the open steel structure
- Low ceiling heights between the levels of the storage structure would present a ventilation problem for staff working with opened storage

tanks as exposure to alcohol vapors from the tanks would rise to unacceptable levels and the low ceilings of the structure would prevent the installation of proper ventilation equipment to dissipate the vapors

- Retrofitting Pod 3 would also be costly. Collections cannot remain in the space under construction for physical and fire safety reasons. They must remain in a controlled environment. Therefore, a new storage structure would have to be built in two phases. This would necessitate moving the collections three times within the Pod, once during each of the two construction phases and one final time after construction.

Construction of Pod 5. The provision of adequate storage at MSC for the balance of the alcohol collections is vital to the Museum because rooms housing alcohol collections that currently remain at the Mall do not meet present fire codes and consume approximately 50,000 square feet of valuable Museum space. Construction of a new Pod at MSC for alcohol collections storage would alleviate all the problems identified in retrofitting Pod 3. The new pod would provide flexibility in storage options, be consistent with current fire safety practices, require only one move of the alcohol collections currently in Pod 3, and accommodate the collections in the Natural History Building.

Three cost estimates have been done to construct and equip Pod 5 for alcohol storage, and they are all in close agreement. The total balance (including the FY 2001 appropriation) in the MSC Equipment Account is \$16.4 million, which is the amount of the highest cost estimate. With approval to use these existing funds, design could begin immediately.

Use of Pod 3 after Pod 5 Construction. Upon the completion of Pod 5, Pod 3 would become available for other Institutional collections storage needs. Pod 3, with a footprint of 36,000 square feet, could be renovated as a two- or three-level conventional storage building providing between 72,000 and 108,000 square feet of space. If funding is made available for the renovation in future years, the Institution would relocate the Smithsonian American Art Museum (SAAM) and National Portrait Gallery (NPG) collections to a permanent storage location in Pod 3 upon completion of Pod 5 and relocation of the wet collections currently stored in Pod 3. Until Pod 5 is available, and a decision is made on renovating Pod 3, SAAM and NPG's collections will be stored in commercial space, as discussed in the RR&A section of this budget request.

A collections study is underway to guide the Institution in determining the highest priority uses of Pod 3. Access to the Smithsonian collections is currently limited by the fact that the storage space in a number of the

museums is overcrowded and off-site leased storage of over 200,000 square feet is spread in various locations throughout the metropolitan area.

The Institution requests authorization and approval to use \$16.4 million in MSC equipment funds currently held by the General Services Administration to construct Pod 5 at the Museum Support Center.

**Long Range Construction Program
FY 2002 - FY 2006**

ESTIMATED COSTS	PRIOR FUNDING	OUTSIDE FUNDING	FY 2002 REQUEST	FUTURE REQUIREMENTS				
	Federal	Non-Fed	Federal	FY 2003	FY 2004	FY 2005	FY 2006	Outyear Costs
National Museum of the American Indian								
Mall Museum								
Plan/Design: 26.0	17.1	8.9						
Construction: 150.0	50.2	49.1	50.7					
Equipment: 10.0	6.0	4.0						
186.0	73.3	62.0	50.7					
Smithsonian Astrophysical Observatory								
VERITAS								
Plan/Design: 1.0			1.0					
Construction: 3.5				3.5				
Equipment: 0.0								
4.5			1.0	3.5				
<i>SUMMARY</i>								
Plan/Design:	17.1	8.9	1.0					
Construction:	50.2	49.1	50.7	3.5				
Equipment:	6.0	4.0	0.0					
TOTAL	73.3	62.0	51.7	3.5	0.0	0.0	0.0	0.0

