Chapter Three

METHODOLOGY

After many years of planning, the restoration of the Wisconsin State Capitol occurred in five distinct phases between 1990 and 2002. The project began in the North Wing and continued through the West Wing and Northwest Pavilion, South Wing and Southeast and Southwest Pavilions, Central Portion, and East Wing and Northeast Pavilion, during which time the exterior granite underwent a major cleaning and repair project. A pilot project, in the west wing, the Assembly Chamber Restoration and Relighting (1988-89) preceded the larger project, functioning as a trial run of restoration processes that the Division of State Facilities Management (DSFM) hoped to use throughout the building. As work drew to a close with the East Wing, a tunnel to the Rueser Justice Center across Main Street and an underground office facility beneath the park, terrace and the southeast exterior granite stair were constructed. Work on this project took place from 1998 to 2002 and included the reconstruction of the granite stair. The preservation methodology utilized for restoration of the Capitol evolved over time through the course of the different project phases. Changes occurred in the responsibilities of the architect/engineer (A/E) and general contractor. Additionally, other factors contributed to this methodological evolution: increasing use of historic research during planning and construction, refinement of both comprehensive surveys and highly detailed construction documents (facilitated by the use of advancing computer technology) and the general experience gained during each project.

The terminology used to describe the different components of the project, renovation, restoration and rehabilitation, were used in the project titles for the wings in varying combinations. According to the current definitions provided by the National Park Service, renovation is “the act or process of removing the original form and features, and replacing those materials and features with the new fabric and materials which are contemporary in nature.” Restoration is the “act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period.” The limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a restoration project. Rehabilitation is the “act or process of making possible a compatible use for a property through repair, alteration, and additions while preserving those portions or features which convey its historical, cultural, or architectural values.” Because the goal of the Capitol project was to “restore public areas and to renovate the private office areas with respect to all of the original building fabric,” a variety of preservation techniques was necessary to implement the different levels of work within the public and private spaces. The North Wing project was officially called “Renovation and Restoration,” and the West Wing and Northwest Pavilion called “Restoration and Renovation.” The remaining phrases were designated “Restoration and Rehabilitation.” In July 1995 with the South Wing project, DSFM’s successor, the Division of Facilities Development (DFD), decided that its use of the term renovation to describe the Capitol project would be changed to rehabilitation. Rehabilitation more adequately defined the type of work undertaken, including what had been termed renovation in the North and West Wings and Northwest Pavilion.

Following the North Wing Renovation and Restoration, with construction taking place between 1990 and 1992, the
3.2 Legislative office, South Wing, 1995

A principal impetus behind the twelve-year restoration and rehabilitation was the cramped office conditions endured by members of the legislature and their staffs. Beginning in the 1950s, legislators began occupying committee rooms, former departmental offices and vault spaces never intended as workspaces. The rehabilitation provided each member with a two-room office suite.

state committed itself to a full-scale project within the Capitol that would be based on the principles established in the Capitol Master Plan, issued by the Joint Committee on Legislative Organization (JICLO) in 1989. The larger effort was referred to as “Three Wings & Rotunda,” and it was to consist of four distinct and sequenced planning, design and construction phases. The West Wing and Northwest Pavilion Restoration and Renovation was underway in 1993 and continued until 1995; construction began on the South Wing and Southeast and Southwest Pavilion’s Restoration and Rehabilitation in 1996 and was completed in 1998; the Central Portion Restoration and Rehabilitation, a project that included the Rotunda Basement through the Dome, began in 1997 and ended in 1998; and construction began on the East Wing and Northeast Pavilion Restoration and Rehabilitation began in 1999 and concluded in 2001. Work on the North Grand Stairs was included within the Central Portion project; Observation Deck and Dome repairs were undertaken with the South Wing project, when the surface was replaced with granite pavers. This proved unsatisfactory, however, and the pavers were later replaced with poured concrete. An additional project was authorized near the end of the twelve-year Capitol project: the Southeast Stair project that began in 1998 and was completed in 2002. A variety of smaller related projects, such as the replacement of revolving doors, creation of handicap-accessible toilet rooms, a multiple-volume Historic Structure Report and many landscaping projects, continued throughout the course of the larger effort.

The impetus for such a comprehensive project grew out the need to upgrade mechanical and electrical systems, the desire to halt the deterioration of architectural and decorative features (altered by both modernization and earlier restoration efforts) and the need to resolve space-use issues. From the time the Capitol was completed in 1917 until 1989, only two major systems renovations had occurred: the 1958-63 DC/AC conversion and a 1968 plumbing renovation. By the late 1960s, unsightly window air-conditioning units pierced the façades of the building and made evident the need for a seasonal cooling system. In 1985 an air-conditioning study by Affiliated Engineers, Inc. (AEI) concluded that central air conditioning should be installed during restoration. In 1985-86, the Electrical Feeder System and Ground Floor North and South Renovation project expanded and updated the electrical feeder system to accommodate immediate and future electrical power and communication needs, but a systems project with a building-wide scope was needed to upgrade HVAC and plumbing systems and increased communication capabilities. In the absence of a coordinated systems effort, stopgap measures were put into place that damaged the historic building fabric. Electrical and communication lines were stapled to woodwork, original light fixtures were replaced with fluorescents, and original window framing was altered to accommodate air-conditioning units. In response to the interest in energy efficiency in the 1970s, ceilings had been lowered and skylights covered. The darker paint schemes in place historically were painted over with lighter tones to brighten work areas. Offices for legislators and support staff, constitutional officers and state bureaus had been in short supply since the Capitol was built. Bureau staff sizes had grown to the point that many agencies moved out of the Capitol, and the increased demands on legislators meant they needed more office space than just their desks in the Assembly and Senate Chambers. Makeshift room dividers, cubicles and the addition of modern office furniture all negatively affected the building’s architectural integrity.

In the late 1970s, the Department of Administration (DOA) recognized that previous renovations had adversely affected the Capitol’s architectural integrity and that the situation would worsen as increasing space and mechanical demands were placed on the building. DSFM, with the assistance of former State Architect Shinji Yarnamato, released the State Capitol Restoration Guidelines in November 1980. The Guidelines represented an early written commitment to restoration of the Capitol’s public spaces; it also advocated taking special care of the building and its components during work to upgrade systems and fulfill legislative space needs. Between 1981 and 1984, several small remodeling projects were undertaken in the former offices of the secretary of state and state treasurer and on other offices on the ground, second and third floors of the West Wing, several senate offices on the second floor of the South Wing, and the executive offices in the East Wing. Although these efforts were intended to reinstate historic character to the rooms, the approach resulted
more typically in an evocation of historic intent with motifs and furnishings from assorted periods put into use.

By 1984, the State Capitol and Executive Residence Board (SCERB) decided that piecemeal restoration would not effectively achieve the results the board desired or be advantageous to the building in the long term. SCERB asserted that work in the building should be conceived as a cohesive whole and that a master plan was needed to upgrade systems efficiently and create legislative office space while "preserving Wisconsin's premier architectural and historical structure." In June 1987 the Joint Committee on Legislative Organization's Advisory Committee on the Capitol Building released the Capitol Master Plan, which recommended a phased approach toward completing a comprehensive restoration effort. The Wisconsin State Building Commission approved funding on 10 November 1988 for a design report on the North Wing, which had been designated as the first phase of the project.

In the 1980s and 1990s the Wisconsin Capitol was one of many state capitol restoration projects underway throughout the United States. As the discussion about a serious restoration effort in Wisconsin gained momentum, DSFM began as early as 1983 to gather information on restoration legislation, master plans and long-range plans from states such as California, New York, Pennsylvania, Texas, Rhode Island and Alabama. An Alabama Historical Commission seminar in 1985 about work at the Alabama Capitol impressed DSFM architects to the extent they requested a copy of the project research data log "so that we might learn from it and embark on a similar research-effort of our capitol here in Madison." Beginning in 1988, after work in the Wisconsin Capitol began, DSFM conferred with state capitol project managers and preservation professionals in Texas, Tennessee, New Jersey, Oregon, Iowa, Kansas, Oklahoma and Michigan. This interaction informed DSFM concerning preservation methodology and assisted it in assembling a team of specialized professionals for the work.

**Assembly Chamber Restoration and Relighting**

Soon after the Capitol Master Plan was approved, DSFM began the Assembly Chamber Restoration and Relighting project. The assembly had planned to replace the voting machine in 1988, a process that involved moving the desks to install new wiring and replacing the carpet. DSFM was charged with coordinating a much larger effort that included the restoration of decorative finishes, mural conservation, lighting (including restoration of the ring of lights around the skylight) and sound system upgrades, furniture refinishing, marble cleaning and other repairs. On 28 October 1987, the Wisconsin State Building Commission approved preparation of preliminary plans and a budget report. DSFM functioned in the A/E role, as was typical, and held its first planning meeting with assembly representatives on 12 November 1987. Historic research was made part of the planning process, and the Wisconsin Historical Society provided old photographs and newspaper accounts related to the construction and use of the chamber. DSFM released its budget report and preliminary plans on 4 January 1988. One month later, the Building Commission approved the report and authorized planning, bidding and construction. Bid documents were released in February 1988. At the bid opening on 6 April 1988, all bids were rejected because the lowest bid exceeded available funds. The project was rebid on 3 May 1988 using amended bidding documents. The invitation to bidders noted, "Only the best materials and workmanship are acceptable for this project." The assembly sent out a separate request for proposals (RFP) on 1 February 1988 for the voting system with proposals due 28 March 1988 and an anticipated contract award date of 2 May 1988.

Principal contractors selected were Carley Wood Associates of Madison as general contractor, H & H Electric Co., Inc. of Madison as electrical contractor and Conrad Schmitt Studios, Inc. of New Berlin, Wisconsin as decorative finishes contractor. DSFM, contractors, subcontractors and representatives of the assembly and the Department of Buildings and Grounds attended a pre-construction meeting on 11 May 1988. Work began by 25 May and continued...
through December 1988 with a small amount of finish work extending into 1989. Research on decorative finishes and mural conservation proceeded under Fine Arts Conservation Services (FACS) of Sheboygan. In January 1988 FACS examined Edwin H. Blashfield’s mural, Wisconsin, as well as eighteen oil-on-canvas works in the pendentives and in the loggia and made recommendations for conservation. Paint probes, cross-section analysis and research on original decorative finishes were accomplished between January and April 1988. Conrad Schmitt Studios used FACS’s research, as well as data resulting from probes made by DFSM, to choose colors and to restore or re-create original decorative finishes. FACS began conservation of the Blashfield mural and the other eighteen oil-on-canvas works in September and completed the work in November 1988. Inaugural activities were held in the Assembly Chamber on 3 January 1989. The Assembly Chamber Restoration and Relighting was honored during the ceremony for adhering to the objective that the restoration “respect the past: to use today’s technology with yesterday’s craftsmanship to restore the Chamber to its original condition.”

Project-Related Legislation and Financing

Beginning in the late 1970s, the legislature asserted itself as the principal occupant of the Capitol by directing space allocation and funding for renovation efforts. Chapter 3, Laws of 1977 passed during the 1977-78 session amended Statute 13.80 on Capitol space assignment by the Joint Committee on Legislative Organization (JACLO) and re-created 16.835 related to constitutional and legislative offices in the Capitol. The amended statute declared that JACLO “shall reserve such space as is necessary in the capitol for the use of the legislature.” The act further stipulated that the offices of the governor would be in the Capitol and that the attorney general, lieutenant governor, supreme court, secretary of state and state treasurer were each to keep “a room” in the Capitol. As a result, the legislature reserved for itself nearly all space in the Capitol, completing a process that had begun decades earlier. The legislature also took a firmer hand in prescribing how the modifications were to be carried out. Chapter 221, Laws of 1979, section 2006, passed during the 1979-80 session changed chapter 34, Laws of 1979, section 2006m (1) (a) to authorize the addition of $5 million for state capitol remodeling to the DOA projects financed by general-fund-supported borrowing in the state building program for 1979-81. The same chapter also created Section 903g, Chapter 34, Laws of 1979, section 2006m (19) restricting the release of the $5 million until a plan for the remodeling was approved for bonding by the legislature’s Joint Committee on Finance and the actual design for remodeling was approved by JACLO.

In response to the intransigence of some Capitol occupants, the legislature further restricted space allocation in the Capitol. During the 1983-84 session, section 103m of Act 27, the budget act for the 1983-85 fiscal year, amended 16.835 to exclude from the Capitol altogether offices for the state treasurer and secretary of state. As discussion ensued concerning the reallocation of the spaces vacated by the state treasurer and secretary of state, the legislature exempted the Capitol restoration (and some other historic structures) from the usual competitive bidding requirements for state building contracts. Section 105 of Act 27 amended 16.855 (18) to include the state Capitol in a list of historic structures and sites not affected by directives given by 16.855 on construction project contracts. Related to 16.855, Section 2203 stated that 16.855 (18) first applied “to contracts for restoration or reconstruction of the state capitol building awarded after the effective date of this paragraph.” The legislature also increased the funds allocated for Capitol renovation. Act 77 of the Laws of 1985 amended 20.866 (2) (y) as affected by 1985 Wisconsin Act 29, the budget act for 1985-87, section 3007 (1) (a) to increase the amount authorized for state Capitol restoration from $4 to $7 million.

By 1987 the legislature had firmly asserted control over the Capitol and its pending renovation. That same year, JACLO, co-chaired by Senator Fred A. Risser and Representative Thomas A. Loftus, issued the Capitol Master Plan as the blueprint to implement the legislature’s directives. The legislature specifically left details, such as assignment
of space within or outside of the Capitol, to JCLO. The State of Wisconsin Building Commission (chaired by the governor and consisting of three members of the senate, three members of the assembly, a citizen member, and three non-voting advisory members from DOA) had to release the funds for construction. With the legislature controlling the membership of JCLO and providing six of the eight voting members of the Building Commission, it retained its prerogatives in determining much of the subsequent course of Capitol restoration.

Some aspects of the Capitol restoration continued to require direct legislative action, and multiple acts created or changed statutes specifically related to the twelve-year Capitol project between the 1987-88 and the 2001-02 legislative sessions. Passed during the 1987-88 session, Act 27, the budget act, section 2242aw amended 1985 Wisconsin Act 29, section 3007 (1) (a), to remove the words “and improvements” from the title of the State Capitol restoration project listed in DOA projects financed by general-fund-supported borrowing.17 Because preserving the historic appearance of the Capitol would prevent bringing the building into compliance with the state’s own building codes, the legislature took steps to assure a historically sympathetic project. Wisconsin Act 31, the 1989-91 budget bill, section 28k created statute 13.48 (13)(c) stating that “no construction undertaken by the state for the purpose of renovation of the state capitol building is subject to any state law, rule, code or regulation, or any zoning ordinance or regulation of the city of Madison, governing such as construction.” Section 2229h created 101.05 (3) related to a code exemption for the state while renovating the Capitol. The Capitol was thus exempted from Wisconsin building code. Also in Wisconsin Act 31, passed during the same session, the legislature addressed the long-simmering debate over who would have offices in the Capitol. Section 30f repealed and re-created 13.90 (3), delegating to JCLO the authority to assign space in the Capitol; Section 130 amended 16.835, removing the provision for extra offices to be used by the attorney general in the Capitol and Section 131 created 16.836, allowing for the temporary relocation of the governor, attorney general, lieutenant governor, supreme court and legislators from the Capitol for the purpose of installing air-conditioning or other renovation work. Section 494m created 20.485 (2)(b) and section 495m created 20.485(2) (m) related to appropriations for GAR Memorial Hall. Section 874L amended 45.01 and section 874m amended 45.02 to provide space for the museum in GAR Memorial Hall and its collections outside the Capitol. Legislators also recognized the need for the artwork to be preserved and section 3008 (10) allowed using funds from the state building program for restoring artwork in the Capitol.18

Throughout the restoration process, the legislature continued to appropriate funds, to direct aspects of the construction (particularly as they affected the legislature’s own quarters and agencies) and to address other details. Act 27, passed during the 1995-96 session, created 20.855 (9)(a) making the amounts in the schedule for the restoration and renovation of the South Wing a continuing appropriation. Enacted during the 1997-98 session, Act 237 amended statute 16.835 to assign the second floor round room of the Southwest Pavilion to the Capitol press corps. Act 4, passed during the 1999-2000 session, amended 20.855 (3) to change the title from “Relocation Expenses” to “Capitol Renovation Expenses” and to create 13.90 (9), 16.838 and 20.855 (3)(c) related to funding for historically significant furnishings. Under non-statutory provisions, Act 4 also increased the bonding authority of the Building Commission for capital improvements, which included the Capitol restoration. Enacted during the 2001-02 session, Act 109 made expenditures for office relocations for the assembly, senate and legislative service agencies available only by approval of the JCLO co-chairs. Joint Resolution 19 marked the creation of a permanent hearing room for the Joint Committee on Finance and honored its ninety years of service.19

Overview of Project Methodology
Building on the methodology used for the Assembly Chamber Restoration and Relighting, DSFM launched the North Wing Renovation and Restoration as the first phase of the Capitol project. Construction began in 1990, and the complexity of the effort soon became clear to DSFM, which accordingly revised its strategy, particularly its design role. For work undertaken after the North Wing renovation (completed in 1992), architectural and engineering responsibilities were contracted under a more comprehensive “Three Wings & Rotunda” project title and an agreement was established with Kahler Slater Architects, Inc. of Milwaukee, which subcontracted with Affiliated Engineers, Inc. (AEI) of Madison. The two firms together functioned as the A/E for the balance of the project. This new team configuration resulted in the involvement of a much larger group of specialists, subcontracted through and managed by the contracted architect. An increasingly sophisticated team of engineers, architects, historians, tradespeople, art and decorative finish conservators and craftspeople became involved, and project methodology became refined through an understanding of the building that advanced as work advanced in each area. The approach to building survey and the preparation of construction documents specifically demonstrate the much higher degree of technological sophistication that developed as the work progressed through the 1990s. The use of Computer Aided Drafting (CADD) base sheets facilitated the dissemination of design information among team members and represented a considerable efficiency. By the time of the East Wing project, which commenced in 1998, survey data were collected on laptop computers and entered into a program that linked the data directly to the drawings. To the credit of the entire team, the building was recognized as a National Historic Landmark by the National Park Service in 2001 as the restoration drew to a close. This honor is bestowed only upon buildings whose historical context and architectural integrity remain in place.

Shifts in Team Configuration and Leadership
Shifts in team configuration and leadership were made as the Capitol project moved forward. Although management and coordination responsibilities rested with DSFM at the outset of work in the North Wing, by the time the last phase was underway, the general contractor had a separate “management” contract to assist in scheduling and coordinating project work. Kahler Slater oversaw the architectural coordination of the West Wing, the South Wing and the Central Portion projects, but with the East Wing a shift had occurred internally that resulted in the formation of a joint venture between Kahler Slater and Isthmus Architecture, Inc. (IAI) of Madison that was intended to keep the team together and working on the project. The joint venture, known as East Wing Architects, LLC, was dedicated specifically to the Capitol project with headquarters in the building. East Wing Architects provided architectural services based on a schedule that had been devised by the general contractor with significant input from the Governor’s office. The schedule was compressed with the thought that, based on their experience with the building, many of the subcontractors were best equipped to survey and assess conditions in the building and to create estimates for the work.

North Wing
The North Wing was the first phase of the work. To accomplish it DSFM carried forward the methodology established in the Assembly Chamber Restoration and Relighting project and functioned as A/E. Outside consultants included Mechanical Design, Inc. (MDI) of Middleton; G. Wentworth Smith, Inc. of Columbus, Wisconsin; Field and Field, Inc. of Madison; Durrant Engineers, Inc. of Madison; Capitol Engineering, Inc. of Madison; Fine Arts Conservation Services of Sheboygan; Milam Audio Company of Pekin, Illinois; Lund Carlisle Architectural Interior Design and Planning of Madison; Solner and Associates of Middleton; AI Iserbner, P. E. of Portage; American Air Environmental Services, Inc. of Oshkosh; and Kahler Slater Architects, Inc. (KSA) of Milwaukee. This team provided DSFM assistance with design and document production such as record drawings, specifications and plans. Representatives from the assembly, Capitol Police, and Capitol Building and Grounds also participated as part of the A/E team, providing input on design and programming.
All Selective Removal and construction work was bid, and Joe Daniels Construction Co., Inc. of Madison was awarded the Selective Removal contract with Pieper Electric, Inc. of Milwaukee hired to remove electrical components. Michael T. Robinson and Associates, Inc. of Madison and later Miller Asbestos Abatement Co. of Madison received Asbestos Abatement contracts. For New Construction, J. P. Cullen & Sons, Inc. of Janesville was chosen as general contractor. Cullen & Sons hired multiple subcontractors such as Eastman Architectural Millwork, Inc. of Foley, Minnesota for architectural woodwork; Block Iron & Supply Co., Inc. of Madison for new finish hardware; Custom Metals, Inc. of Madison for grilles, special metal and existing finish hardware; Portage Glass Co. of Portage for glass and glazing; Bollig Lath & Plaster Co., Inc. of Madison for plaster; and Pullham Painting Inc. of Madison for painting, staining and varnishing. General Heating and Air Conditioning, Inc. of Madison was contracted for HVAC; H & H Electric of Madison was awarded the contract for electrical. Superior Electric Company of Appleton was contracted for universal wiring. Monona Plumbing and Fire Protection, Inc. of Madison was awarded the contract for plumbing and fire protection. Milam Audio Company and Cerberus Pyrotronics of McFarland, Wisconsin, subcontractors to H & H Electric, provided the new sound and security systems respectively. Light Haus, Inc. of Madison removed, repaired and reinstalled the North Hearing Room’s glass ceiling, and Lange Bros. Woodwork Co., Inc. of Milwaukee renovated the hearing room’s bench. Anton Rajer of FACS was contracted to survey the condition of artwork and conduct paint probes. Under a separate contract, Rajer performed mural conservation in the North Hearing Room, in the GAR Memorial Hall and on the third floor corridor groin vaults. Garland Guild, Inc. of Indianapolis was contracted to restore and recreate decorative finishes and to perform additional paint probes later in the project. For the North Wing window preservation, DFSM hired Kahler Slater to oversee this separate but related project. Wood, Bauer & Raether Builders, Inc. of Madison with their subcontractor Klein-Dickert Co., Inc. of Madison were contracted to complete the window project.

West Wing

A/E team configuration and leadership changed with the West Wing and Northwest Pavilion Restoration and Renovation. DFSM was reorganized into the Division of Facilities Development (DFD). DFD relinquished its role as principal architect and hired Kahler Slater, which subcontracted with Affiliated Engineers, Inc. (AEI) of Madison, to coordinate the design effort and prepare construction documents. Kahler Slater and AEI worked with multiple consultants throughout the West Wing project, including Graef, Ashalt, Schloemer & Associates, Inc. (GAS) of Milwaukee and Madison on structural engineering; Kapur and Associates of Madison on fire protection and plumbing; Kirkegaard & Associates of Downers Grove Illinois on acoustical engineering; and Joe Daniels Construction, Inc. of Madison and J. P. Cullen & Sons, Inc. of Janesville for cost-estimating. DFD continued to participate as an active client and was involved in consultation and review but was relieved of the responsibility of producing documents for the remaining wings and Rotunda. Building occupant representatives from the assembly and Capitol Building and Grounds completed the design team.

All Selective Removal and construction work for the West Wing was bid. Cullen & Sons received the Selective Removal contract and secured a number of subcontractors for the project, including Milwaukee Marble & Granite Co., Inc. of Milwaukee for marble removal; S. R. Block Iron & Supply of Madison for hardware and hollow metal and Reynolds Transfer & Storage, Inc. of Madison for furniture removal and transportation. E-Z Plumbing Co., Inc. of Madison was contracted for plumbing and related work with one subcontractor, J. P. Ahern Co. of Fond du Lac. General Heating and Air Conditioning, Inc. of Madison was contracted for HVAC and related Selective Removal work with two subcontractors. Pieper Electric, Inc. of Milwaukee was contracted for electrical and related work. DFD awarded Dore & Associates Contracting, Inc. of Bay City, Michigan the Asbestos Abatement contract and later contracted with American Air Environmental Services, Inc. of Oshkosh for air-monitoring services related to the Asbestos Abatement. Carley Wood Associates of Madison signed a contract for the Assembly Parlor Wood Preservation and Restoration project with one
subcontractor, The Lost Finish, Inc. of Madison. Before awarding the Selective Removal contracts, DFD hired Fine Arts Conservation Services (FACS) to evaluate finishes using wall probes, cross sections and photo documentation.

Cullen & Sons was awarded the New Construction General Contractor contract. Cullen & Sons submitted the names of sixteen subcontractors for approval, including Monona Masonry, Inc. of Madison for marble work; Lange Bros. Woodwork Co., Inc. of Milwaukee for architectural woodwork and wood doors; Custom Metals, Inc. of Madison for historic finish hardware and special finish grilles; Lake City Glass of Madison for glazing; Valda Plastering Co., Inc. of McFarland for plaster and moldings; Burdco of Traverse City, Michigan for simple flat painting; EverGreene Painting Studios of New York City for decorative finishes; and Baumeister Associates, Inc. of Milwaukee for stains and varnishes. H & H Electric Co., Inc. of Madison was awarded the electrical contract and used two subcontractors for data/telephone wiring and fire alarm/security work. The New Construction HVAC contract went to General Heating and Air Conditioning, Inc. of Madison, which used three subcontractors for temperature controls, thermal insulation and fans/housings. Monona Plumbing and Fire Protection, Inc. of Madison was awarded the New Construction contract for plumbing and had one subcontractor for pipe installation. DFD also awarded contracts to Wiss, Janney Elstner Associates, Inc. of Chicago to complete a survey of the exterior granite of the West Wing, Northwest Pavilion and Dome; to Quarra Stone Company of Madison for interior stone; Custom Metals, Inc. for furniture repair and refinishing; Doris Armstrong and Mydella Punnel of Janesville to provide draperies and hangings; and Garland Guild, Inc. of Indianapolis to restore decorative finishes in the Northwest Pavilion ground and first floor round rooms and in the West Wing third floor ceiling vaults.

South Wing
The team configuration did not change significantly from the West Wing to the South Wing projects. Building occupant representatives from the senate became an integral part of the team while representatives from Capitol Building and Grounds and Capitol Police remained involved as well. Kahler Slater Architects, Inc. continued as architect with Affiliated Engineers, Inc. of Madison providing mechanical, plumbing and electrical design. Graef, Anhalt, Schloemer & Associates, Inc. of Madison provided structural consultation while Kirkegaard & Associates of Downers Grove, Illinois was the acoustical consultant. J. P. Cullen & Sons, Inc. of Janesville supplied scheduling and cost-estimating services. The team worked to refine the methodology it developed on the West Wing project, capitalizing on its successes and making adjustments as necessary.

Selective Removal work for the South Wing was bid, and Cullen & Sons was hired as general contractor, representing a fairly significant shift in procedure. DFD awarded the plumbing contract to Monona Plumbing and Fire Protection, Inc. of Madison. H & H Industries Inc. of Madison was granted the HVAC contract while H & H Electric Co., Inc. of Madison was chosen as the electrical contractor. For Asbestos Abatement, DFD chose Robinson Brothers Environmental, Inc. of Waunakee as contractor. Two air-monitoring firms, American Air Environmental, Inc. of Oshkosh and AAP Environmental, Inc. of Madison were contracted for Asbestos Abatement. American Air was considered the primary contractor with AAP Environmental hired for its ability to respond quickly to an emergency due to its location in Madison. Reynolds Transfer and Storage, Inc. of Madison removed the Senate chamber furniture.20

DFD negotiated a construction contract with Cullen & Sons as lead contractor for New Construction. Subcontractors to Cullen & Sons included Monona Plumbing & Fire Protection for plumbing; General Heating & Air Conditioning, Inc. of Madison for HVAC; and H & H Electric for electrical.21 Other New Construction subcontractors included Thomas A. Mason Co., Inc. of Madison for flat painting; Baumeister Associates, Inc. of Milwaukee for staining; Garland Guild, Inc. of Indianapolis for decorative finishes; Preservar, Inc. of New York City for artwork conservation; Monona Masonry,
Inc. of Madison for marble; A & A Sheet Metal Works, Inc. of Janesville for sheet metal; Super Sky Products, Inc. of Mequon, Wisconsin for skylights; Lange Bros. Woodwork Co., Inc. of Milwaukee for woodwork; Valda Plastering Co., Inc. of McFarland for plaster; LaForce, Inc. of Green Bay and Madison for new hardware; Custom Metals, Inc. of Madison for repair and refinishing of original hardware; Lake City Glass of Madison for glazing; Custom Red Iron & Services, Inc. of Rockford, Illinois for structural steel; Arbor Green of Delavan, Wisconsin for landscaping; and Carley Wood Associates of Madison for furniture prototypes. Carley Wood was also the contractor for the Senate Parlor Wood Restoration, and Light Haus, Inc. of Madison was contracted for removal, repair and installation of the Senate Chamber stained glass ceiling. The design work for the Observation Deck & Done Repair, representing a separate project undertaken while work on the South Wing was underway, was completed by KSA and AEI; Cullen & Sons was awarded the reroofing contract. Pukall Company, Inc. of Cedarburg, Wisconsin had the contract for tuck-pointing the granite.

Central Portion

The project team for the Central Portion was essentially the group that had worked on the South Wing as the two projects overlapped. Kahler Slater Architects, Inc. and Affiliated Engineers, Inc. continued as A/E with Graef, Anhalt, Schoenmueller & Associates, Inc. of Madison providing structural engineering. A larger number of art and decorative finish specialists was required for this work. Because much of the Rotunda was inaccessible until scaffolding could be installed, the approach to this phase of work differed slightly from that used in the wings. Principally, survey of the upper surfaces and subsequent repair occurred in a much tighter sequence than had survey and repair elsewhere in the building.

DFD negotiated Selective Removal and construction contracts with J. P. Cullen & Sons, Inc. of Janesville as its general contractor and made the firm responsible for letting contracts and coordinating the work of the trades necessary to complete the restoration. Cullen & Sons' project scope included plaster repair, marble work, clay tile and installing some protective enclosures; gathering competitive bids and awarding contracts for the scaffold, protective materials, flat painting, sound system, lighting, decorative finishes and art conservation and woodwork. DFD contracted directly for HVAC control work, testing and balancing and Asbestos Abatement. Subcontractors working on the project included Anche Electronics, Inc. of Rolling Meadows, Illinois for the sound system; Baumeister Associates, Inc. of Milwaukee for window painting; Boldtronics, Inc. of Madison for video equipment; Custom Metals, Inc. of Madison for hardware and grilles; Experimetal's of Milwaukee for lighting; Garland Guild, Inc. of Indianapolis for decorative finish survey and recreation; H & H Electric Co., Inc. of Madison for electric work; Jerry Podany of the J. Paul Getty Museum, Los Angeles for mosaic survey; Klein-Dickert Co., Inc. Madison for painting; Lake City Glass of Madison for glazing installation; Lange Bros. Woodwork Co., Inc. of Milwaukee for woodwork; Light Haus, Inc. of Madison for glazing removal; Monona Masonry, Inc. of Madison for marble work; Presvar, Inc. New York City for mural survey and preservation; glass mosaic conservation and Rotunda Banquet ceiling panel survey and conservation; Ronald Koenig of Lansing, Michigan for scagliola column survey; Safeway Steel Products, Inc. of Milwaukee for scaffold; Seebohm, Ltd. of Petoskey, Michigan for glass mosaic survey and conservation; T. W. Cape & Associates (latter Waveguide Consulting, Incorporated) of Decatur, Georgia for acoustics and sound system testing; Thomas A. Mason Co., Inc. of Milwaukee for flat painting; Valda Plastering Co., Inc. of McFarland for plaster repair; and Wiss, Janney Elstner Associates, Inc. of Chicago as part of the glass mosaic survey.

East Wing

For the East Wing and Northeast Pavilion, a slight modification in team structure occurred. Although some names changed, the personnel remained essentially the same. East Wing Architects was established as a joint venture between Kahler Slater and Isthmus Architecture, Inc. The two firms established this arrangement at the request of the state after key preservation personnel left Kahler Slater to form IAI. Despite this shift, David Kahler, FAIA, President of East
Wing Architects and retired President of Kahler Slater, remained the “Architect of Record” for the work. East Wing Architects (EWA) joined AEI to function as the A/E for this final phase of the work. The Madison office of Graef, Anhalt, Schloemer & Associates, Inc. provided structural engineering services; Waveguide Consulting, Incorporated of Decatur, Georgia worked on the audiovisual equipment; Diane Al Shihabi Historic Restoration, Inc. of Middleton contributed furniture design and some interior design services; Garland Guild, Inc. of Indianapolis analyzed existing and historic interior finishes; Kirksgaard & Associates of Downers Grove, Illinois did acoustical design for fans and equipment; Stewart Design Associates, Inc. of Madison consulted for food service and kitchen design; Vierbergen Associates of Madison provided consulting on elevators; and Wiss, Janney, Elstner Associates, Inc. surveyed exterior masonry and roofs. New occupant representatives for the governor, lieutenant governor, attorney general, the assembly, Legislative Fiscal Bureau and the supreme court also joined the team. The general contractor, J. P. Cullen & Sons, Inc. of Janesville assumed a greater role than previously by providing all project coordination, scheduling and contract management. Cullen & Sons’ role in the East Wing project was expanded even beyond the role it had assumed in the Central Portion project.

Cullen & Sons managed almost fifty subcontractors, from the full assortment of disciplines; some were involved with Design Development, others with Selective Removal and Asbestos Abatement, still others with New Construction. Included were Carley Wood Associates of Madison for furniture fabrication; Preservar, Inc. of New York City for art consultation and conservation; Cunningham-Adams of Sandy Hook, Connecticut for fine art consultation; Custom Metals, Inc. of Madison for repair of brass grilles and hardware and fabrication of new ornamental metals; Diane Al Shihabi Historic Restoration, Inc. of Middleton; Electronic Engineers, Inc. of Montgomery, Alabama for audiovisual and teleconferencing installation; Garland Guild, Inc. of Indianapolis for decorative painting; General Heating and Air Conditioning, Inc. of Madison as HVAC contractor; J. P. Phillips, Inc. of Schiller Park, Illinois for lathing and plastering; James Diet Decorative Arts and Antiques of Milwaukee for furniture repair and restoration; JSL Pressure Washing, Inc. of Franklin Park, Illinois for Sponge-Jet cleaning of the exterior; Klein-Dickert Co., Inc. of Madison for interior painting and staining; LaForce, Inc. of Green Bay and Madison for new hardware and toilet room accessories; Lake City Glass of Madison for new glazing in windows, borrowed lights and doors; Lange Bros. Woodwork Co., Inc. of Milwaukee for casework, running trim, restoration of doors, wainscot and radiator enclosures; Light Haus, Inc. of Madison for repair of the Supreme Court Hearing Room glass ceiling; Monona Masonry, Inc. of Madison for survey of marble and stone; Monona Plumbing and Fire Protection, Inc. of Madison for basement sprinklers and roughing-in of new plumbing; Nonn’s Flooring, Inc. of Middleton for installation of carpet and tile; North Shore Marble Maintenance of Bayside, Wisconsin for cleaning and restoring marble; Protection Technologies, Inc. of McFarland for fire and security alarm installation; Robinson Brothers Environmental, Inc. of Waukesha for fire and security alarm installation; The Lost Finish, Inc. of Madison for stripping and refinishing of the Governor’s Conference Room walls and refinishing of the Supreme Court Hearing Room bench; and Valda Plastering Co., Inc. of McFarland for plaster survey.

Research and Building Documentation

As the Capitol project progressed through its phases, research and building documentation became an increasingly integral part of the process. Experiences early in the restoration demonstrated that a comprehensive knowledge of original features and historic construction practices, subsequent alterations and existing conditions was necessary to produce effective design documents and promote sound construction practices. Research of both historic and contemporary documentation required the study of library and manuscript collections in Wisconsin, New York and Washington, D.C. Documentation generated by the restoration project included a complete set of record drawings, construction documents and specifications, data concerning paint probes of original decorative finishes, and surveys recording the condition and location of architectural features, such as doorknobs and grilles, for reuse in the Capitol project. Much

3.8 Decorative finishes survey sheet, North Wing, 1990

The analysis of decorative finishes was critical to an understanding of the building. As processes in the Capitol evolved, procedures for determining original colors and decorative patterns became more sophisticated.
of the research was compiled in the historic structure reports (HSRs) developed for each phase of the Capitol project. The HSRs prepared for the South Wing and Southeast and Southwest Pavilions and the Central Portion were completed prior to the work in these areas and provided a synthesis of the historic research and preservation recommendations for use in project planning and Design Development. The balance of the HSRs completed on the Capitol were produced either during or after a phase ended. The reports included historic information and documented the restoration and renovation of the wings, pavilions and Central Portion.

North Wing

The level of historical research completed for the North Wing Renovation and Restoration was comparable to that done for the Assembly Chamber Restoration and Relighting. DSFM relied upon its previous experience with Capitol projects, supplemented with review of Post & Sons' original plans and specifications. Contacts were made with the Wisconsin Historical Society, which had undertaken some preliminary research on the Capitol, and manuscripts and photos held by the Wisconsin Historical Society Archives were made available.

Building documentation included the production of as-built drawings and the completion of surveys and schedules for the artwork, decorative finishes and architectural components. Base drawings showing existing conditions were supplemented with survey data gathered for architectural features, such as hardware and grilles. The items were surveyed and evaluated for potential reuse and recorded on building schedules so they could be tracked during Selective Removal and reinstalled during New Construction. The design team photographed the wing's interior before any architectural intervention took place and photographic documentation continued throughout the construction process. Anton Rajer and his firm, Fine Arts Conservation Services (FACS) of Sheboygan and Madison, surveyed the condition of artwork in the North Hearing Room, the GAR Memorial Hall and on the ceiling of the third floor public corridors. FACS also conducted paint probes to document original decorative finishes throughout the wing. The results of the artwork and decorative finish surveys were compiled in a two-volume report completed in 1992. Garland Guild, the decorative finish contractor, performed additional probe work in 1992, uncovering additional patterns undocumented by FACS.

A more extensive compilation of historical research was assembled ten years after the project’s completion for the North Wing Historic Structure Report. Research involved examination of records from the Wisconsin Historical Society Archives and Library, multiple libraries on the University of Wisconsin-Madison campus, the State Law Library, the Legislative Council Library, the Legislative Reference Bureau, the Wisconsin Veterans Museum, the Madison Public Library, the Milwaukee Journal Sentinel, the New-York Historical Society, the Avery Library at Columbia University and the National Archives. The organization of project-related materials maintained in the Capitol in 2000 made accessible the full range of documentary material concerning the Capitol project. The volume, published in 2003, described the original construction of the wing, modifications that had occurred since completion, as well as the renovation and restoration undertaken between 1990 and 1992.

West Wing

A higher level of historical research was integrated into the West Wing and Northwest Pavilion project. At the outset, research was completed at close to the same level as it initially had been for the North Wing with historic documents and photos at the Wisconsin Historical Society and Post & Sons construction drawings being consulted. As the project moved forward, DFD undertook additional research to understand better the conditions in the wing while the production of New Construction documents was underway. With the larger objective of producing a HSR on the wing and pavilion, the study of the papers of the Capitol Commission, other building records and photos at the Wisconsin Historical Society Archives supplemented earlier research. Special attention was given to information concerning the original
decorative finish scheme and the New York firm that implemented it, Mack, Jenney and Tyler. Research undertaken at the New-York Historical Society and at Columbia University's Avery Architectural and Fine Arts Library yielded previously unknown historic construction drawings and early photographs of the Capitol. Oral histories from past building occupants provided information on alterations to the building.

Base drawings were completed using measurements taken throughout the Capitol and entered on-site into AutoCAD on a laptop computer. The survey of architectural elements became more exhaustive and recorded location, type, size and condition of finishes for plaster, picture and chair rails, marble and stone, windows, doors and hardware, light fixtures, grilles, borrowed lights and fire hose cabinets. The light fixtures were videotaped during Selective Removal in an effort to record how the fixtures’ pieces fit together. Each item was assigned an alphanumeric designation that allowed it to be tracked after Selective Removal and reinstalled in its original location whenever possible during New Construction. Photography also became an important part of the process; room conditions and architectural details were recorded during all phases from survey through construction. DFD contracted directly with FACS to survey decorative finishes. The contract called for a similar approach to documentation, using wall probes, cross sections and photo documentation, as FACS had completed in the North Wing and Assembly Chamber. FACS’s final report was to be used in producing decorative finish construction documents. It submitted a preliminary report in September 1993 and a final report in April 1994. Decorative finish contractors Garland Guild and EverGreene Painting Studios performed additional paint probes in areas specified by DFD, with both firms uncovering and documenting more paint colors and stencils in late 1994 and early 1995. DFD awarded a contract to Wiss, Janney Elstner to conduct an exterior survey and analysis of the West Wing, Northwest Pavilion and Dome. Its report was submitted on 7 March 1994.

The West Wing and Northwest Pavilion Historic Structure Report was completed under a separate contract in 2003. In addition to the documents collected earlier, further research was undertaken at the Wisconsin Historical Society Archives and Library, multiple libraries on the University of Wisconsin-Madison campus, the State Law Library, the Legislative Council Library, the Legislative Reference Bureau, the Madison Public Library, the Milwaukee Journal Sentinel, and the National Archives and also included project records held in the Wisconsin State Capitol Archives.

**South Wing**

The completion of the South Wing and Southeast and Southwest Pavilion Historic Structure Report represented an additional refinement to project methodology. Issued in September 1995, the South Wing HSR provided a comprehensive project-related pre-design documentation and served as a guide in the development of construction documents. The team reviewed manuscript and photographic collections and published materials at the Wisconsin Historical Society Archives and Library, the libraries of the University of Wisconsin-Madison, the Legislative Reference Bureau, the New-York Historical Society and the New York Public Library. The documentation provided the design team with information both on the Capitol and about general design and construction practices during its period of construction. A small cache of DFD documents also contributed to an understanding of the remodeling and renovation projects that had occurred in the South Wing and Southeast Pavilion since original construction.

The South Wing HSR was developed according to National Park Service (NPS) guidelines, and the essential organizational scheme for this and subsequent volumes was developed to include chapters on project methodology, building construction and later modifications to the exterior, interior, and building systems. The HSR offered information concerning research into historic and contemporary documentation on federal and state fire safety, heating, ventilating and air conditioning (HVAC), egress codes relating to the Capitol, as well as code exemptions made for the building in 1989. Further, with the recent passage of the Americans with Disabilities Act (ADA), the HSR provided an exhaustive

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**Existing Condition**

- **Cracks greater than 1/16" in width**
- **Looks greater than 1/16" in width**
- **Wood grain, chip, or chisel, and drawing at left for location**
- **Scratches on base**
- **Deep carvings**
- **Tarnished**
- **Heavily tarnished**
- **Part of item missing**

**Repair Notes**

- **Indicates number present.**
- **Fire frame.**
- **Sheetmetal cover.**
- **Water damage.**
- **Invented from drawing.**
- **Moderate**
- **Severe**

**All removed items to be stored in basement rotunda area. For specific item number location, see key plan located on Sheet 2 of this manual.**

**Methodology • 3-11**
study of accessibility conditions with recommendations for compliance. This analysis resulted in creative solutions for architectural, structural and engineering noncompliance issues and provided a basis for understanding both code and ADA issues in later projects. Preservation recommendations were made based upon an evaluation of the integrity of the original design and the historic context of the wing; the conclusions established were compared to planning directives issued in the 1987 Master Plan.

Data on the existing condition of architectural elements were gathered through the use of a variety of surveys, many of which were similar to those implemented in the West Wing project. The systematic examination of the South Wing and Southeast and Southwest Pavilions involved measuring spaces to produce accurate floor and reflected ceiling plans as well as sections and elevations. Using forms typically developed with a graphic representation of the object, the type, condition, material, and dimensions of elements including brass grilles, doors, door hardware, borrowed lights, light fixtures (including those stored in the Capitol brass room), marble, wood trim, ceilings and interior and decorative finishes for all spaces in the wing and pavilions were recorded. The decorative finish contractor Garland Guild completed the paint probes and analyses and submitted the results of its evaluation in a two-volume report in February 1996. Constance S. Silver of Preserver and Professor Richard Wolbers of the Winterthur Museum Conservation Department completed technical examinations of some of the more complex finishes and fine artwork in the wing for Garland Guild and prepared a two-volume study entitled Wisconsin State Capitol: Analysis of Mural Paintings and Architectural Finished [sic] of the South Wing and Southeast and Southwest Pavilions issued in February 1996. DFD combined information from both sets of reports to produce supplemental information for the decorative finish contractor.

Information on the architectural and decorative features gathered by the A/E and its consultants was integrated into the HSR. Further, the surveys were used to create construction documents with schedules that indicated the items to be removed, tagged, repaired and stored during Selective Removal and to guide reinstallation of the items during New Construction. A separate project involving the survey of original Capitol furniture was undertaken by DFD interns concurrent with the South Wing project. It began in June 1994 and continued to October 1995; its purpose was to identify, document and photograph existing original furniture for restoration and possible reuse in the Capitol. The study identified furniture that had been designed for the Capitol but was found both in that building and in twenty other state office buildings. The result of the research was presented in a nine-volume binder series in October 1995.

Central Portion

The Central Portion Historic Structure Report provided a repository for information drawn both from historical research and building surveys. Research gathered from the Wisconsin Historical Society Library and Archives, University of Wisconsin-Madison campus libraries, University of Wisconsin-Madison Archives and DFD's renovation and restoration records provided architectural and historical information, as did information gathered previously from the New-York Historical Society and Columbia University's Avery Library. For the HSR, special attention was given to understanding the influences on Post's design of the Wisconsin Capitol Dome and the prominent artists involved with the artwork commissioned for the Dome and Rotunda. Basic history and repair information on Kenyon Cox's pendentive mosaics and Edwin Blashfield's oculus mural, The Resources of Wisconsin, was gathered to provide contextual data that would contribute to the findings of art conservators who would assess the condition of the work once scaffolding was in place. Architectural, structural and engineering options for code compliance were also included in the HSR based on research into federal and state requirements for fire safety, heating, ventilating and air conditioning (HVAC) and egress codes. Early study into the impact of existing codes in the Central Portion led to the 1989 code exemption established for the Capitol since compliance would have required fire safety walls separating the wings from the Rotunda and the enclosure of the stairs, as well as exits from upper floors at the ends of each wing. Consistent with the directives pre-
sented in the 1987 Master Plan, the entire Central Portion (excluding the utilitarian areas, such as the surfaces of the open space between the inner and outer domes) was recommended for restoration, the most exacting and historically sensitive type of preservation treatment. A disposition list containing ten categories of materials and equipment and recommendations for reuse, disposal or storage also was included.

Two types of building surveys were conducted; one was completed as a part of the research associated with the HSR and a second was done after the upper reaches of the Rotunda were made accessible by scaffold. The vertical nature of the interior space made the two-level approach necessary, and this process was distinguished from that taken in the wings. The first level of surveys evaluated items easily accessed from the basement through the sixth level, including corridor ceilings, decorative stonework, doors, hardware and wood trim, grilles, furniture and lighting each were itemized and its condition assessed. Survey forms were used to record condition, dimensions, location and tracking numbers for the accessible architectural elements, furnishings and finishes. The results were compiled to document existing conditions and to produce drawings with directions for removal, repair and reuse of items. Photographic documentation was also completed throughout the process.

After scaffolding was installed, contractors and conservators examined the mosaics, decorative finishes, scagliola columns, grilles and windows located in the Rotunda above the fourth level. Decorative finish and artwork surveys were the main focus of this work. DFD completed a paint probe between August 1997 and April 1998 and compiled a report consisting of the worksheets along with location maps and color formulas. Architectural conservator Ronald Koenig of Lansing, Michigan undertook a study of the scagliola columns and produced a report with treatment recommendations in December 1997. Preservar, Inc. analyzed the Rotunda Basement finishes and mural paintings and included the results in a February 1998 report. Preservar also completed a technical examination of Blashfield’s oculus mural and a description of its findings and commentary on treatment is included in Preservar’s The 1998 Conservation Treatment of The Resources of Wisconsin, ‘A Monumental Mural Painting in the Rotunda of the Wisconsin State Capitol. A number of conservators examined and produced reports on the Kenyon Cox pendentive mosaics. Jerry Podany of the J. Paul Getty Museum in Los Angeles produced a condition report and made conservation recommendations for the mosaics in March 1998. In September 1998, Seeborn provided the results of his preliminary study of the mosaics and in January 1999 released Initial Testing and Stabilization Report for the Kenyon Cox Monumental Mosaics Wisconsin State Capitol Madison, Wisconsin. Garland Guild examined decorative ceiling panels on the ground floor and submitted its results in its January 1999 Central Portion Project: Report of Examination and Conservation Treatment of Decorative Ceilings, 32 Panels on Ground Floor and 12 Panels on North Grand Stairs.

East Wing

A different approach to presentation of historic and architectural research was taken in the East Wing project. A Historic Structure Report (HSR) for the East Wing and Northeast Pavilion was removed from the scope of work early in 1998. Historical information instead was packaged into a series of binders, and photocopies of historic documents were organized thematically and chronologically to document construction chronology, original design intent and to provide information on the original materials, finishes and artwork. Summary sheets were prepared to simplify use of the material. The research effort gathered information from the Wisconsin Historical Society Library and Archives, Madison newspaper accounts, DFD documentation describing remodeling projects, the Madison Public Library capitol files, Legislative Reference Bureau files and historic photographs from a variety of sources. The research and design team used this information to aid in the development of the Preservation Plan for the wing while the contractors used it to learn about original materials and earlier processes. Additional research was completed on an as-needed basis throughout the design and construction phases of the project.

3.13 Mosaic condition survey, Central Portion, 1998

During restoration of the Central Portion, conservators discovered the mosaics were delaminating and that ten tessele were in danger of falling from the pendentives. Extensive testing and a peer review were held to assist DFD in formulating the best restoration technique.
In most cases, the contractors rather than the architects completed the survey of building elements in the East Wing and Northeast Pavilion. This method was used because most of the team was already familiar with conditions in the Capitol and the processes necessary to evaluate, remove and refurbish specific systems and elements. Each contractor developed its own survey to assess interior finishes, doors and hardware, borrowed lights, plaster, stonework, radiator enclosures, artwork and decorative finishes, furniture, grilles and the exterior. The survey process was simplified by the use of portable computers loaded with a database that eliminated the need to key handwritten notes into another form for use in construction documents. Photographic surveys were used to record existing conditions, and special documentation was completed in the Governor’s Conference Room and the Supreme Court Hearing Room to provide a base for construction documents. The survey data were used to produce construction schedules that identified items for tagging, removal, restoration and reinstallation during construction. EWA and Cullen & Sons compiled cost estimates based on the survey data, which were used by prospective subcontractors in submitting bids to Cullen & Sons, who managed contracts and participants.35

A number of art conservators were engaged to provide analysis and treatment recommendations for the Hugo Ballin murals in the Governor’s Conference Room and those of Albert Herter in the Supreme Court Hearing Room. Four separate reports were prepared on the Ballin murals, with conflicting findings. Preservar submitted a report following the examination of the paintings in October 1998. During the year that followed, Cunningham-Adams of Sandy Hook, Connecticut was contracted to provide a second opinion and issued its report in November 1999. Its findings provided the argument that the murals had not been damaged by overpainting to the degree asserted by Preservar. Preservar countered in another report that was submitted at nearly the same time and then wrote the final word to date in July 2001, when it completed the two-volume The Governor’s Reception Room of the Wisconsin State Capitol: Analysis of the Mural Paintings by Hugo Ballin and Prospects for Conservation Treatment. The differences in the findings provided by these respected authorities have delayed the restoration of the twenty-eight murals. Preservar was asked under contract to provide its analysis of the Herter murals and submitted its report in October 1998. In May 2001, Richard Wolbers of the Winterthur Museum also was contracted to do a finish study on the cornice elements in the Supreme Court. His report was submitted in May 2001.

After the East Wing project was underway, DFD made a commitment to document the research and architectural work that had taken place during the Capitol project to inform the future caretakers of the building about its construction and subsequent architectural interventions. EWA was awarded a contract in May 2000 to complete the multiple-volume HSR earlier planned for the Capitol, rounding out the effort begun with the South Wing and Central Pavilion. Volumes were authorized for the East Wing and Northeast Pavilion, the North Wing and the West Wing and Northwest Pavilion. Additionally, a comprehensive volume, intended to give an overview of the entire Capitol project and address subjects not specifically covered in the other volumes was contracted. The East Wing and Northeast Pavilion Historic Structure Report was completed in October 2001. This volume drew upon the research gathered earlier and was supplemented with project-related materials. The content and organization was based on the earlier volumes and topics included East Wing project methodology related to building research and surveys, preservation recommendations, an overview of original construction and discussion concerning modifications to the exterior, interior, structure and building systems, code analysis also was provided in this volume.

Programming, Design Development and Construction Documents

In addition to historical research and architectural documentation, the more traditional pre-design practice of ascertaining the needs of the building occupants, or programming, became increasingly refined as the team gained experience working in the building with the legislature and other occupant groups. Discerning the functional requirements of the occupants and integrating them with the findings generated by historical and architectural research allowed the design team to develop realistic architectural solutions early in the process, which decreased the likelihood that costly changes would be required once construction was underway. The complexity of the Capitol project demanded highly detailed construction documents; the increasingly sophisticated Pre-Design and Design Development procedures facilitated this process.

North Wing

The recommendations made in the 1987 Master Plan provided the basis for programming the North Wing, supplemented by information gathered from assembly and Capitol Police representatives. The Master Plan outlined the division of space within the wing, prescribing two-room office suites for the legislators and an additional hearing room. Offices for legislators were to be larger and better furnished than spaces designated for staff, but the suites all were intended to be similar in size and finish. Disagreement arose over the needs expressed by the Capitol Police to maintain a ground floor office, an idea that conflicted with the renovation of this space into legislative offices. An ad hoc committee of the State of Wisconsin Building Commission settled the dispute by deciding that the information counter in the Rotunda provided sufficient security presence. A Capitol Police dispatch center was created instead in the basement of the Northwest Pavilion in a space that originally was the barbershop. Already with the North Wing project, Programming represented just a part of the Pre-Design effort, the other being research into documents and photos at the Wisconsin Historical Society and into the original Post & Sons’ Capitol drawings and specifications held by DFD. A two-pronged effort of programming and historical research created a foundation of information to support Design Development and the production of construction documents.

The design team submitted its Design Report on 24 October 1989. The report outlined an intended scope of work that included the renovation of the basement and office spaces from the ground through fourth floors with the upgrade of systems throughout the wing plus the basement of the Northwest Pavilion. Additionally, the restoration of artwork and the restoration and recreation of decorative finishes in the North Hearing Room, public corridors and the GAR Memorial Hall were included in the project. Although the hall was to be renovated into a hearing room, the report called for the restoration of the hall’s original artwork and decorative finishes. On the same day that the Design Report was released, the Building Commission gave the Department of Administration authority to undertake the North Wing project. With its report approved, the design team began to produce documents to guide construction.

The design team, which included multiple architectural and mechanical consultants, issued a document set for each of two distinct phases, Selective Removal and New Construction. Selective Removal involved removing architectural and mechanical features and readying the space for rehabilitation or restoration. Asbestos Abatement took place simultaneously. Detailed plans, schedules and specifications developed during the design phase guided both phases of construction, directing the storage and reinstallation of original architectural features as well as installation of newly fabricated elements. A combined Selective Removal and Asbestos Abatement specification and drawing set was released for bidding on 23 November 1989 with four addenda released in December 1989 and a fifth in January 1990. The New Construction drawing set and specification, using the terms renovation and restoration in its title, was released for bidding on 29 November 1990. Addenda were issued in December 1990 and January 1991. Using the research gathered by FACS on the decorative finishes, DFD produced its specifications for the decorative finishes of public spaces in the North Wing and released the project for bidding on 17 June 1991. A revision was issued on 3 September 1991 that reduced the scope of work by having the state supply labor, materials and scaffolding. Decorative finishes for legislative offices were addressed in an internal document circulated 28 February 1992 that proposed three options for treatment: replicating historic stencils, replicating only the original wall striping with a two-color scheme,
or implementing paint patterns based on the original work. None of these were selected. Instead, it was determined that the offices would be painted plainly; therefore no bid documents were produced. Related projects included the installation of temporary heat in the wing and DFD had AEI prepare the bid materials which were released on 8 November 1990. Nearly two years later, Kahler Slater prepared the bid package for the preservation of the windows; the documents were set to bid on 20 August 1992.

West Wing and Northwest Pavilion

Programming began early in 1992 with the building occupant representative providing information on the anticipated space needs of the members of the state assembly, which was the primary resident of the wing. Linda Anderson represented the assembly during the West Wing work, as she had during the North Wing project. The Master Plan called for the creation of two-room offices for assembly members, assigned space in the wing and pavilion to assembly leaders, the assembly chief clerk, the sergeant at arms and the caucus staff, and directed that the Assembly Parlor be restored. In general, the assembly concurred with these directives, but requested the elimination of caucus offices and the Legislative Reference Bureau from the wing and the addition of the recently remodeled assembly leadership offices to the scope of work. Historical research was not a major part of the pre-design process, although an awareness of its importance was later manifested in a controversy that ensued following the release of Selective Removal documents.

Kahler Slater with AEI and its consultants submitted Design Development drawings and room programming guides to DFD on 1 May 1992. The documents represented a synthesis of programming data, mechanical and communication systems upgrade recommendations with heavy consideration extended to the general directives of the Master Plan. Requests made by the building occupants throughout Design Development and even into the subsequent construction processes included the suggestion that a spiral staircase be installed in the assembly leadership office and that a press room doorway be cut through a load bearing wall in the basement. Both ideas were considered and abandoned. Selective Removal and Asbestos Abatement documents were issued on 25 November 1992. The Selective Removal documents included drawings and specifications as well as the results of the condition survey of doors and borrowed lights and schedules for door, brass, hardware and borrowed lights. An addendum to the Selective Removal documents was released on 29 December 1992. The Asbestos Abatement package was produced internally by DFD; an addendum was released on 23 December 1992. Both bid packages required that a high level of attention be given to work performance, and that quality materials and excellent workmanship be provided. For the Assembly Parlor Wood Preservation and Restoration, Selective Removal and New Construction were bid as a single contract with documents released 12 February 1993. Following the release of the Selective Removal documents, and as the work was beginning in the wing, questions were raised concerning the level of proposed modification to the original interior walls, which were slated for nearly complete removal. Public debate over Selective Removal recommendations led to a careful review of the preservation methodology, and in response to the public debate, DFD issued its preservation recommendations to the State Capitol and Executive Residence Board (SCERB) on 9 March 1993. In addition to outlining the history of the Capitol, DFD's document described previous alterations to the building and offered information concerning the methodology used in establishing directives for Selective Removal, New Construction and decorative finish work. This episode led ultimately to a heightened commitment that historical research and thorough building analysis be in place and lead to a more informed decision-making process on the part of the design team in this and subsequent work in the Capitol.

New Construction bid documents were released on 16 September 1993 with three addenda issued in October. The documents included a two-volume drawing set, specifications, schedules for brass, hardware and borrowed lights, and highly detailed guides to finishing the offices and marble and stone restoration. Additionally DFD released supplemen-

State of Wisconsin

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June 4, 1987

TO: INTERESTED PERSONS

At its June 4, 1987 meeting, the Joint Committee on Legislative Organization approved this Capitol Master Plan for the restoration, preservation and improvement of the State Capitol Building and grounds.

The Capitol Master Plan provides a blueprint for the continued restoration of the Capitol Building to assure that the state government functions housed in the Capitol can be performed efficiently and effectively, while preserving Wisconsin's premier architectural and historical structure.

On behalf of all Wisconsin citizens, the Joint Committee looks forward to the implementation of this Plan.

Sincerely,

[Signatures]

3.14 Joint Committee on Legislative Organization cover letter, Capitol Master Plan, 1987

Released in 1987, the Capitol Master Plan provided preservation planning guidelines in calling for the preservation or restoration of public spaces and the renovation of private spaces. Although its recommendations were adapted from wing to wing, the Master Plan remained the principal planning tool for the project.
tual information for prospective decorative finish contractors on 18 October 1993. Separate bid packages containing drawings and specifications were created for furniture and finishes, stone procurement and carpeting. The furniture and finishes package was released on 12 May 1994 with an addendum issued 9 June 1994. The bid set for stone procurement was issued on 8 June 1994. The bid documents for carpet were made available 11 August 1994 with addenda released on 7 September and 6 October 1994.

South Wing and Southeast and Southwest Pavilions

During the programming of the South Wing, the design team worked closely with the Wisconsin State Senate to gather information concerning space needs from individual senators and the offices of the senate chief clerk and the senate sergeant at arms. Roxanne Nelson of the senate chief clerk’s office was assigned to assist the design team in ascertaining the requirements of the occupants. It was generally agreed that the 1987 Master Plan’s recommendations for two-room office suites on the ground and first floors were appropriate, but the senate sought modifications to the Master Plan for the second through fourth floors with the goal of providing additional offices. Senate leadership offices would stay on the second floor, where caucus rooms would be added, and the chamber and parlor would continue to accommodate traditional functions. More two-room office suites were requested for the third and fourth floors, in addition to a hearing room on the fourth floor. Basement programming also involved resolving space claims advanced by the assembly and building maintenance staff. The senate sergeant at arms was located in the basement and the senate chief clerk’s office was moved out of the Capitol and eventually was relocated in the Rissler Justice Center. In addition to space needs, the senate was concerned with the careful conservation, restoration and re-creation of artwork and decorative finishes in the wing as well as furnishings and historic lighting.77 The September 1995 South Wing and Southeast and Southwest Pavilions Historic Structure Report was an important tool in assisting with the establishment of programmatic objectives. It provided a synthesis of historic information and preservation recommendations, and the comprehensive architectural and decorative finish surveys were valuable as planning documents that addressed the senate’s desire that a relatively high level of preservation take place in the wing.

Although the preliminary room programming guide was issued in September 1992, Design Development did not begin in earnest until March 1994 with the release of floor plans illustrating recommended space configurations.48 Providing a hearing room for the Joint Committee on Finance and offices for the Legislative Fiscal Bureau Director and staff, as recommended in the Master Plan, was debated throughout the design process. Ultimately, the hearing room and Legislative Fiscal Bureau offices were dropped from the scope of work for the South Wing. The Capitol press corps lobbied to have their offices in the West Wing basement reassigned to the second floor Southwest Pavilion, a request that was accommodated during Design Development. Office configurations were not finalized until after the release of the Selective Removal documents due to changes proposed by the office of the senate chief clerk. Furniture programming was given much greater consideration than it had in previous wings.49 A temporary suite of offices for the governor also had to be worked into the plans for the ground floor after he indicated a desire to remain in the Capitol while his office was restored as a part of the East Wing project, scheduled to follow.49

Selective Removal and Asbestos Abatement documents were released for bidding on 4 January 1996. The document set included specifications and drawings. Selective Removal schedules, organized in two separate volumes, were provided for doors, door hardware, borrowed lights, transoms and light fixtures, and the results of the marble and stone condition survey also were packaged and made available to contractors. Addenda were released in January and February 1996. The Asbestos Abatement specifications and drawings were issued by DFD at the same time, also with addenda released in January and February 1996. The design team issued its preservation recommendations, especially as pertaining to decorative finishes in the South Wing, on 23 February 1996. The team’s recommendations were based on
historical research that was expanded to include the Capitol Commission records at the Wisconsin Historical Society, reconnaissance probes undertaken in December 1993 and an extensive decorative finish survey completed between August 1995 and February 1996. The approach advocated was in conformity with the findings presented in the 1995 South Wing HSR. The recommendations were approved and became integrated in the specifications for the restoration of decorative finishes.

New Construction bid documents were released on 8 July 1996. They included specifications and a drawing set, two volumes of schedules pertaining to doors, hardware, borrowed lights and transoms, a guide to the repair of marble and stone, and two volumes of the room finishing guide. A single addendum was released on 24 July 1996. Revised versions of the room finishing guide for ground, first and second floors was released on 20 January 1997 and for basement, third and fourth floors on 24 January. Drawings and specifications for the South Wing decorative finishes were released on 27 January with addenda made available in February and March. A separate set of documents was produced for the Senate Chamber, Parlor and Vestibule furniture that contained provisions for the manufacture of reproduction furniture and the restoration of historic furniture. Documents for outfitting Room 411S with audiovisual/video systems were made available for bidding on 17 September 1998 with an addendum released on 9 October.

Central Portion

Since occupancy demands in the Central Portion were minimal, formal programming was not required. However, because the Rotunda is the premier public space in the Capitol, the Guidelines and Master Plan called for its restoration, the highest level of preservation treatment. The Rotunda, particularly its upper reaches, had been spared the sort of maintenance to which much of the building had been subjected. However, the original color scheme had been altered and varnish applied to the artwork in the years between construction and project planning. The Rotunda was to be restored to reinstate fully its historic and architectural integrity based on research, compiled in the HSR, about the original execution, installation and care of the artwork and decorative finishes. This research was intended to inform the design team and conservators in establishing recommendations and moving forward with appropriate treatments. The mosaics provided a unique challenge and required extensive study and testing due to delamination of the tessere. This prompted a gathering of art conservators in October 1998 to discuss the stabilization and restoration of the mosaics. Once scaffolding was in place, architectural elements, such as decorative plaster and stone, windows and scagliola, were evaluated and plans made for cleaning and restoration.

DFD finalized a scope of work and preliminary cost estimates in May 1995, but the design team did not begin formal meetings until two years later, in August 1997. The restoration, planned to include the Rotunda from the basement through the lantern at the top of the Dome, also included outer corridors defined by the podium wall, the outer wall of the Rotunda that enclosed the structural mass bearing the weight of the Dome. A fairly complex part of the work included the restoration of the artwork. Plans were made for the preservation of Edwin Blashfield's oculus mural, Resources of Wisconsin, Kenyon Cox's four monumental mosaics and the oil-on-canvas murals on the Rotunda Basement ceiling and decorative finishes, including patterns and gilding. Architectural elements, such as the cathedral windows, scagliola columns and marble, would be cleaned and repaired as necessary. Lighting would be restored to replicate the historic lighting throughout the Rotunda, although a new lighting system for television also was planned as well as a new sound system for public events. The North Grand Stair was added to the scope of the Central Portion project early in the design process, and the recreation of decorative finishes and rehabilitation of architectural elements, such as the barrel vault glass ceiling extending into the North Wing, was planned for accordingly. Because the project affected a highly visible area in the building, DFD felt that it was important to keep the public informed about its progress. A visitor information station was created with a viewing window cut into a construction barrier; two video monitors focused
on areas of activity providing the public an opportunity to view the work of the restoration team. Display cases with historical information and explanations about restoration also were constructed for the public. The team continued to organize and plan even though the project was put on hold briefly in August 1997 until the legislature passed a budget and the governor signed it. The Central Portion bid documents, including specifications and drawings, were released on 4 October 1997. Cullen & Sons already had negotiated its contract with DFD as the single prime contractor, and proposals for the different divisions of work, such as the architectural woodwork and decorative finishes, were to be made by subcontractors to Cullen & Sons. The design team created separate documents for the divisions of work and designated each as “Modification No. 1,” “Modification No. 2,” etc., in the order in which they were released. These documents were not addenda, nor were they considered change orders, but rather as clarifications to the bid documents. The design team produced as many as fifteen different “modifications” between October 1997 and March 1998 for divisions such as decorative finishes, electrical, plumbing, plaster, and furniture and finishes. Addenda were issued for the modifications when necessary.

East Wing

Programming the East Wing involved accommodating the occupancy needs of eight user groups in the wing. Workshops and interviews were conducted to assess occupant needs. “Occupant project representatives” from each of the eight groups participated during Programming and continued to represent their respective groups through Design Development. The Master Plan again was used as a starting point to discuss space allotments in the wing, although changes were made. The most significant involved placing the Joint Committee on Finance Hearing Room and a Legislative Fiscal Bureau office in the wing as they had been omitted from the South Wing in the earlier project. Occupancy data was compiled and made available on 6 October 1998 for use in Design Development. The furniture program also was released for review and approval on that day. While occupancy data was being assembled, the design team held a meeting on 5 October 1998 to establish recommendations for levels of preservation treatment to be implemented in the East Wing and Northeast Pavilion. The design team used National Park Service criteria to assess conditions objectively and make recommendations. This effort led to the production of the Preservation Plan, released on 16 October 1998. Occupancy data in combination with the recommendations of the Preservation Plan provided the information base upon which Design Development proceeded.

The team produced a series of floor plans, representative of different spatial configurations as a part of the Schematic Design effort. The architect worked closely with the occupant groups, which were required to review and respond to the floor plans. This aspect of the design process proceeded through much of 1999 as final approval for the schematic design was delayed due to unresolved differences among the wing’s occupants. Cullen & Sons and DFD managers insisted the design work proceed using the “Six-Revised” (“6R”) floor plan, a hybrid scheme, as a basis for continuing with the work, despite the lack of complete approval, in an attempt to meet the schedule. The occupant project representatives continued to influence Design Development and alter the “6R” floor plan due to the lack of consensus. Design Development drawings were finally issued on 25 February 1999. The drawings led to more cost analysis and served as a basis for Selective Removal and New Construction documents.

Selective Removal contract documents were issued on 21 June 1999, although in the interest of maintaining a compressed schedule, the Selective Removal process had already begun with contractors relying upon a 75 percent review set to guide their work. The survey database with information on architectural features, such as doors and hardware, was used to create documents that included supplementary books on the condition and location of the surveyed items. This
information was used for cost analysis in preparing bids and to guide removal, storage and repair of doors, hardware, grilles and other items. New Construction contract documents were released on 26 October 1999. A room finishing guide, and special books detailing radiator enclosures, doors and wainscoting were also included in the bid set, along with schedules for paint, decorative finishes, doors, hardware and grilles. Bid documents, however, required considerable revision following new programmatic directives later issued by the Governor’s office. Five separate packages were released for special areas and items, including the Governor’s Conference Room and Supreme Court Package issued on 21 September 1999. In this instance, the design team used rectified photography to produce a set of photographic elevations containing condition information. The carpet package, issued 31 January 2000, the drapery and furniture packages, both released on 15 March 2000 and the Teleconferencing Systems package, issued on 7 November 2000, all came after the release of the New Construction documents.

Construction

As reflected in the organization of the construction documents, except for Central Portion, construction took place in two distinct phases, Selective Removal and New Construction. Selective Removal involved removing architectural and mechanical features, some of which were slated for disposal and some for reuse, and readying the space for rehabilitation and restoration. Asbestos Abatement, a more highly specialized form of Selective Removal, typically took place simultaneously. Surveys, schedules, detailed plans and other construction documents developed during the research and design phases guided both phases of construction, directing the storage and reinstallation of original architectural elements as well as installation of newly fabricated elements in the wings, Central Portion and pavilions. To the greatest degree possible, original fabric was reused.

North Wing Renovation and Restoration (1990-92)

The construction phase of the North Wing began in March 1990 with Selective Removal and Asbestos Abatement. While these two processes took place at nearly the same time, abatement and removal were done separately for safety reasons. Two contracts were awarded for Selective Removal on 16 January 1990, one for the removal of architectural and some mechanical elements and the other for the removal of electrical fixtures. The Asbestos Abatement contract was awarded on 19 February 1990. A pre-construction meeting for both Selective Removal and Asbestos Abatement was held on 23 February 1990, with 1 March 1990 given as a projected start date for the work. However, Asbestos Abatement could not begin until the occupants had moved out of the wing and the ventilation system was shut down. Abatement began in early April and the majority of the work was completed by October 1990. Later, additional asbestos containing material (ACM) was located, and another firm was contracted to remove it from the fourth and fifth floors through December and into early 1991.

The Selective Removal contractor in charge of removing architectural and mechanical elements began installing floor protection in late February 1990. Before work started, DFD surveyed and inventoried items such as doors, hardware and grilles to record and track them for reinstallation. Contractors removed these items as well as the library stacks, metal stairs, exhaust fans and ceiling plaster. Elements designated by DFD for reuse were stored in the Rotunda basement. Additional tasks added to the scope of work through change orders included the excavation and lowering of the North Wing and northwest pavilion basement floors to accommodate new mechanical and plumbing systems. A portion of the west wing basement floor also was lowered for a new telephone system, and an opening was created in the northwest pavilion foundation wall as one of two firefighters’ entrances. Also, the Selective Removal contractor cut underfloor duct chases in preparation for the electrical, telecommunications and data wiring that would be installed as part of New Construction. The process led to some concerns for the irreplaceable marble in the north hearing room; with the removal of structural elements, the marble in the two-story room was starting to shift. Bracing and protection

3.18 Preservation Plan, East Wing, 1998

In the early part of the East Wing Restoration and Rehabilitation, team members used National Park Service criteria to assess existing conditions in the wing and recommend the appropriate level of preservation treatment. The resulting Preservation Plan was used with programming data to serve as a basis for design development and subsequent construction documents.
were added to the room in November 1990 to prevent damage to the stone. The final Selective Removal and Asbestos Abatement meeting was held on 11 March 1990. When the A/E declared that abatement was almost finished, the Selective Removal contractor said work would end on the last change order that week.

Five prime contracts for new construction were let on 22 January 1991 (general contractor, HVAC, electrical, universal wiring, and plumbing and fire protection). A few additional contracts were issued on specific items throughout New Construction. Two contracts were let, one in February 1990 and the other in October 1991, for additional Asbestos Abatement. Contracts for furniture selection consultation; mechanical systems testing, testing and balancing; and relocation of telephone cables and installation of network interfaces were also let. The A/E held a pre-construction meeting on 4 March 1991 and a construction start date was set for 11 March 1991. As New Construction progressed, inventories and construction documents guided the work. On the fourth floor, two rooms were used to secure tenant approvals for test paints and the installation of trim and fixtures. Also on the fourth floor, the GAR Memorial Hall was redesigned as a hearing room with its decorative finishes restored, where possible, or otherwise re-created. Skylights were opened on the third and fourth floors and the marble in the North Hearing Room was cleaned and its mortar repaired. New carpet and a sound system were installed.

On all floors, office suites were reconfigured and new mechanical systems, including central air conditioning, heating, plumbing and electrical wiring, were installed. A contract was let on 16 October 1991 for mural conservation in the North Hearing Room, GAR Memorial Hall and third floor vaulted ceilings in the public corridors. Work was completed by the end of November 1992. Although most offices received only flat paint without decorative features, the contract for decorative finishes in the public corridors and hearing rooms was let on 25 March 1992. The work began on 15 May 1992 and was completed by 7 November. A public ceremony marking the completion of work in the wing was held on 30 November. However, a few items remained incomplete including the window preservation contract, let in September 1992, which was not completed until mid-December 1992. The furniture arrived in December, allowing occupants to move back into the wing in late December 1992. The North Hearing Room audio system was completed on 4 January 1993.

West Wing and Northwest Pavilion Restoration and Renovation (1993-95)

On 15 January 1993 contracts were made for West Wing and Northwest Pavilion construction with the general, Selective Removal, plumbing, HVAC and electrical contractors, as well as an Asbestos Abatement contractor. A pre-construction meeting was held on 24 February 1993, and the removal of light fixtures took place on 1 March 1993. Architectural elements were removed from the wing and pavilion and either stored or, if nonhistoric, damaged beyond repair, or if cost prohibitive to save, were discarded. A "documentation space" was created on the ground floor where the elements were carefully removed and the process documented to gain a clear understanding of the building's historic fabric. The furniture was removed from the Assembly Chamber during this phase, and the room protected for use as a storage and staging area. Areas in the basement were excavated and lowered for installation of mechanical and plumbing systems, similar to the process in the North Wing. As Selective Removal progressed through the spring and summer, SCERB halted the removal of items from the secretary of state's private offices and the removal of the treasurer's vault door. The board decided to keep the secretary of state's space intact and to restore architectural elements and re-create the original decorative finishes. Plans called for Selective Removal to be completed by 27 August 1993, and the final project meeting was held on 15 September. Asbestos Abatement began after elements not containing or touching ACM were removed in a space. The Asbestos Abatement plans and specifications indicated where asbestos containing materials (ACM) were located, and the contractor could pinpoint areas to abate. The abatement contract also grew to include HEPA vacuuming and disposal of lead paint chips from the Assembly Parlor. As of 8 September 1993, approximately two weeks of abatement work remained.
The scope of the Assembly Parlor Wood Preservation and Restoration contract included both Selective Removal and New Construction phases. The Asbestos Abatement contractor completed removal of ACM as part of the general abatement contract, using drawings and specifications prepared by DFD. Work began on 26 April 1993 with the stripping, cleaning and sanding of the wood panels. The paneling was then removed, protected and stored while abatement and other work took place in the parlor. Reinstallation, staining, finishing, gilding and glazing of the wood was begun in September 1994 and the project was completed by June 1995.

After competitive bidding, New Construction prime contracts were let on 27 October 1993 for general, electrical, HVAC and plumbing contractors. Special contracts were signed for stone procurement on 6 July 1994; furniture repair and refinishing on 6 October 1994; draperies and hangings on 6 October 1994; and restoration of decorative finishes in the Northwest ground and first floor round rooms and the third floor public corridor ceilings on 10 November 1994. A pre-construction meeting was held on 1 December 1993, and contractors and subcontractors began reconfiguring private spaces into assembly offices and restoring the public corridors and large public areas of the wing on a floor-by-floor basis. New ADA regulations were followed in the toilet rooms and in the installation of wheelchair lifts to the rear gallery of the Assembly Chamber and to the fourth floor assembly sergeant at arms office. Two new openings were cut in the north side of the ground floor corridor. In November 1994, coordination became increasingly important as work progressed simultaneously on multiple floors in an effort to meet the 30 March 1995 finish date. Additional art conservation and decorative finish work, as well as furniture and carpet replacement were ordered for the Assembly Chamber late in the New Construction phase. Work in the wing and pavilion was completed by July 1995, and occupants moved in begin-

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3.21 Granite Paver installation, Observation Deck, 1996
The Observation Deck was repaired and new granite pavers were installed at the beginning of the South Wing project. The system installed was similar to one used at the United States Capitol. However, in this application it failed and was replaced with poured concrete. The Observation Deck, like many portions of the roof, was prone to leaking.

3.22 Asbestos Containing Materials (ACM), South Wing, 1996
Since the use of asbestos as insulation for piping was common at the time of the Capitol's construction, project workers encountered ACM in pipe chases and around mechanical equipment. The general contractor subcontracted with firms that specialized in hazardous materials to remove ACM from the building.
3.23 Removal of basement floor, South Wing, 1996
Areas in the basement of each wing were excavated and lowered in order to provide more room for replacement building systems. Holes cut in the exterior foundation walls allowed dirt from the excavation and other materials to be removed from the wings.

3.24 Fire damage, South Wing, 1996
During the South Wing project a small fire broke out on the third floor, causing minor damage to wood and plaster. Because the previous capital had been badly damaged by fire in 1904, protecting the current building has been a priority since the time of initial construction. During the restoration, state-of-the-art fire protection systems were installed.

5 July. Work continued in the Assembly Chamber until August but was completed in time for the new legislative session in January 1996.

South Wing and Southeast and Southwest Pavilions Restoration and Rehabilitation (1996-98)
The design team and Selective Removal contractors met at a pre-construction meeting on 4 March 1996 to discuss general requirements and schedule. Selective Removal began with the installation of protection on marble surfaces and a construction partition enclosing the wing from the Rotunda at the South Grand Stair. Asbestos Abatement began at the same time in designated parts of the basement. Abatement was to be completed by 26 July 1996 to facilitate Selective Removal, which was to be completed in early September. Removal continued in the basement while a second area of abatement was begun on the fifth floor at the end of March 1996. Abatement began on fourth floor in April and continued down through third, second and first floors to the ground floor during May, June and July; it was completed by the end of July. An access opening was cut in the foundation wall in April 1996 to expedite dirt removal as the basement floor was excavated to be lowered. A small fire began on 24 April 1996 when original combustible material was ignited by welding activity in a wall cavity above the entrance to the Senate Chamber. The fire department responded, and the fire was extinguished. However, the Kasota stone wall, ornamental iron work and decorative plaster sustained water damage, which was repaired.

As work in the basement moved forward, Selective Removal began on the fourth floor and continued down to the ground floor. Hardware, doors, grilles, light fixtures and other architectural elements were removed, stored or discarded as directed in the construction documents. Marble was removed and stored to provide access to asbestos and pipes. The plumbing contractor removed abandoned piping on all floors. Designated plaster ceilings and walls were removed as well as concrete floor topping in preparation for new underfloor wiring. In June, the general contractor encountered difficulties removing the floor topping on the fourth and third floors due to the concrete having bonded with the structural clay tile. The contractor instead cut trenches in the areas above the Senate Parlor to prevent damage to the parlor’s decorative ceiling. Despite these efforts, some damage did occur and the decorative finish contractor removed the affected ceiling canvas so it could be repaired and the cutting could continue. Removal of the Senate Parlor wood panels began in mid-May and was completed in early June 1996. Some of the plaster capitals in the room were loose, and the contractor removed them and stored them for repair during New Construction. Basement excavation was completed by the end of July 1996, and Selective Removal in other areas of the wing and pavilions was completed in August 1996. The final Selective Removal construction meeting was held 21 August 1996.

The first New Construction project meeting was held 25 September 1996, when Cullen & Sons reported that it had begun excavating the basement for the new tunnel beneath the southeast approach and had started framing walls throughout the wing. Restoration work also was about to commence on the Senate Parlor ceiling. Typically, work progressed from the fourth floor down through ground floor, although certain contained areas, such as the basement and Senate Parlor ceiling, sometimes were dealt with out of sequence. Underfloor ductwork was placed, and new concrete floor topping was poured on the fourth floor in mid-October. Work continued on the fourth floor for the rest of 1996 and into 1997, with plastering beginning in early February 1997 and continuing on the lower floors as the new clay tile walls were completed. A mock-up room was created on the fourth floor for the testing and approval of paint and other finishes in addition to furnishings, including carpet and light fixtures. The skylights on the fourth floor roof were opened in May 1997. Installation of woodwork and doors and casings on the fourth floor began in July 1997, and windows were installed in August. The decorative finish contractor began work in September 1997 and was working on the second floor of that November; work continued into 1998. By March of 1998 door hardware, trim and wainscot were installed on the first and ground floors. New light fixtures were delivered in early October 1998 and both these and refurbished
historic fixtures were installed in October and November. The carpet for the wing also arrived and was installed that October. For the first time, furniture was a high priority, and historic furnishings received a significant budget. Furniture was delivered and installed beginning in November and the design team submitted the substantial completion form for the South Wing project the same month.

New Construction in certain areas of the South Wing did not follow the typical “top-down” sequence. Work in the second floor Senate Chamber began in late 1997 with the reinstallation of the glass ceiling and the installation of mechanical systems ductwork into the floor. The Senate Chamber sound package was bid in January 1998. The lighting package, including work on the ring of lights surrounding the glass ceiling and TV lighting, was tested in February 1998. Conservation of the murals proceeded in mid-1998 and other finishes, such as carpets and the sound system, were installed in late 1998. Construction of the new hearing room in 411S was carried out after other work on the fourth floor had been completed and did not begin until November 1997. Work on the South Wing Grand Stair began in March 1998 and the scaffolding for the project was removed in May 1998.26 Also, during construction, the west side of the first floor was designated as temporary office space for the governor during the East Wing project planned to follow. Adaptation of the space for temporary executive offices was done as construction progressed through 1998. The space was scheduled to be returned to the Senate after the East Wing project was completed.

3.26 (right) Scaffold, Central Portion, 1997
An immense scaffold erected in the Rotunda allowed conservators and contractors to reach artwork and opulent finishes for repair and conservation. The scaffold was built in its entirety; then work began at the top and continued downward as it was removed in stages.

3.27 (below) Restoration of the oculus mural, Central Portion, 1997
Artwork was conserved throughout the building as a part of the restoration effort. Professionals examined, repaired and cleaned Edwin Blashfield’s Resources of Wisconsin, nearly 200 feet above the Rotunda floor, after scaffolding had been erected to allow them access.
Central Portion Restoration and Rehabilitation (1997-98)

The restoration of the Rotunda began in mid-October 1997. The Central Portion was sectioned off and plywood protection was installed on the marble floors. Erection of the scaffolding, which represented a key component of this phase, began in late October 1997. GAS designed a grillage system to distribute the weight of the scaffold, and Cullen & Sons installed 1-inch thick bearing plates to transfer the load to the beams, making it unnecessary to shore the ground floor from the basement, as had been considered. The restoration of the Rotunda, a process dependent upon the construction and dismantling of the elaborate scaffold was carried out using a three-phase approach. The first phase included the repair and repainting of the coffered of the Dome, including the conservation of the oculus painting above it and the plaster repair and painting of the interstitial space between the interior and exterior Domes. Phase two was from the sixth level to the bottom of the coffered and included the rehabilitation of the cathedral windows, restoration of the scagliola columns and re-creation of decorative finishes above the trumpeters' course. The third phase involved the rest of the rotunda from the sixth level down to the ground floor and involved the conservation and stabilization of the mosaics in addition to cleaning and pointing the marble and other decorative stone. New HVAC, electrical, lighting and sound systems were also installed.

3.28 Scagliola column repair, Central Portion, 1998
Work began on the Central Portion in 1997; careful up-close analysis of the scagliola columns positioned between the tall cathedral windows revealed minor cracks, spalls and some delamination. The only scagliola columns in the building, they were repaired by injecting adhesives.

3.29 Mosaic repair, Central Portion, 1999
Repairing the Rotunda mosaics proved to be one of the most challenging tasks of the entire Capitol restoration. Several conservators assessed the mosaics before an acceptable solution to delamination was implemented. This involved the injection of an epoxy into the cavity behind the tesserae.
The scaffold was fully in place by 1 December 1997 and reached almost 200 feet up to the oculus mural. Once the scaffold was erected, the surveyors and contractors were able to reach the upper recesses of the building and begin their work. Cullen & Sons began removing the cathedral windows in December 1997; at the same time, Preservar embarked upon its study and conservation of the oculus mural, and Cullen & Sons's subcontractors began plaster repair. Decorative finish paint probes were completed at the end of January 1998; they had revealed the original colors throughout the Rotunda and large stencils and patterns at the sixth level trumpeters' course. In the early spring of 1998, the decorative finish contractor cleaned surfaces in preparation for painting and Preservar began its cleaning and examination of the mosaics. Also, since no exact match could be made for the glazing in the cathedral windows and a mixture of the old and new glass would not satisfy the original intent that the windows provide a unified warm light, the decision was made to entirely reglaze the windows using new glass. Installation of a new lighting system began in June 1998 as the scaffold was being dismantled. The stabilization of the mosaics became an increasingly difficult issue as Preservar discovered the extent to which the tiles had started to detach from the wall. Additional investigative work was undertaken by several other well-respected conservators to identify an acceptable method of stabilization. Once an approach was established, scaffolding towers were erected and work continued on the mosaics into early 1999. The Central Portion opened to the public in October 1998, and a rededication ceremony was held on 19 October as part of Wisconsin's sesquicentennial celebration.

3.30 Asbestos Abatement preparation, East Wing, 1999
The safe removal of ACM required plastic barriers, a specially dedicated air system and continuous air monitoring. While design documents for Asbestos Abatement were prepared by DFD, work was carried out in each phase by environmental specialists.

3.31 Cutting stencils for the attorney general's office, East Wing, circa 2001
Paint probes throughout the building revealed a number of decorative patterns applied to the walls as part of the original decorative finish scheme. The design team recommended patterns appropriate to the rehabilitated spaces and the decorative finish contractor prepared new stencils that were based on historic examples found in the Capitol.
3.32 (left) Staining woodwork in the ground floor corridor, East Wing, circa 2001
Originally home to the business offices of various state departments, the first floors of the wings contained extensive wainscoting. Wood surfaces were stripped and restrung during restoration.

3.33 (below) Wood treatment in Governor's Conference Room, East Wing, circa 2001
The Governor's Conference Room had been painted off-white in the 1960s. During its restoration, the off-white paint was stripped and the wood was repaired and stained to match the original, deep reddish-brown color.

East Wing and Northwest Pavilion Restoration and Rehabilitation (1999-2001)
Selective Removal and Asbestos Abatement began in June 1999 before all the occupants moved out of the wing. Delays in moving the state law library out of the third and fourth floors had an impact on the start date; realizing the governor’s goal that he be reinstated in his office by January 2001 also affected the construction schedule. Selective Removal and Asbestos Abatement contracts were let on 21 June 1999, although contractors had already begun the work using the 75 percent review documents to guide the effort. The rigorous schedule implemented in the restoration and rehabilitation of the East Wing was predicated upon the experience that the design team and most of the contractors, including the general contractor, brought to the process. To facilitate the work, Cullen & Sons was put in charge of project coordination, overseeing contracts and managing the schedule, including expediting the participation of DFD and the architects and engineers. Asbestos Abatement, planned and managed by DFD, was the first step in the process. Then, during Selective Removal, floors, walls and obsolete mechanical and electrical equipment, was removed and saved or discarded as directed by the schedules, plans and specifications. Where possible, original materials were reused.

During New Construction, areas in the basement were lowered and new mechanical systems were installed. Concrete floors were taken up throughout the wing and relaid with the usual upgraded electrical services. Interior walls were rebuilt using the original clay tile construction method. Once the plaster walls and the floors were in place, doors, wood features and trim were reinstalled. Installation of restored or replicated fixtures, hardware, clocks and decorative finishes plus furnishings and furniture completed the process in the offices. As in the South Wing, furniture was a high priority and received a significant portion of the budget. A major effort was undertaken to recover furniture that had been removed from the building. Elaborate decorative finishes were replicated in many of the private suites as well as on the ceiling of the Supreme Court Conference Room. The murals in the Supreme Court Hearing Room were conserved and the marble cleaned and repaired. The Governor’s Conference Room was restored to its original palette; white paint applied in the 1960s was removed and the original rich, dark-red color replicated. Gold-leaved areas were refreshed or restored and the parquet floor was refinished. One of the many paintings in the room was restored, while the rest were cleaned and revarnished. The difficulty in proceeding with the restoration of the canvasses was the result of the protective coatings that had been applied in the 1950s and 1960s. These were more durable than the original media and removing the coatings created a high risk of damage to the artwork. Several of the canvasses required inpainting where they had been examined by the conservators.

Southeast Stair
One of the principal goals of the restoration and rehabilitation of the Capitol was to provide increased office space while maintaining the building’s historic appearance. Partway through the South Wing project, DFD began planning an expanded underground addition beneath the Southeast Pavilion and its approach. The granite stairs leading to the pavilion were experiencing structural failure at the foundation and were breaking away from the building. In addition to the pressing need for repair, the Capitol Master Plan also had called for a firefighters’ entrance at the pavilion that would be the second of two. The work required to accomplish both would necessitate extensive excavation and a sizable construction effort. Completing the underground addition simultaneously represented a cost-effective and expedient solution. The addition, between the South and East Wings, was intended to provide needed office space; a new loading dock for the Capitol, replacing the dock at the Northeast Pavilion, was also planned. The new space, in combination with a tunnel that would connect the Capitol to the Risner Justice Center across the street fulfilled two long-standing goals of Capitol occupants. The tunnel provided the opportunity for freight to be unloaded at a remote location and transported to the building beneath Martin Luther King, Jr. Boulevard; it also offered a better system for the removal of trash from the Capitol. Until then it had been stored temporarily outside the East Wing.
The project team consisted of Cullen & Sons as general contractor. Architectural and engineering services were provided by East Wing Architects with GAS and AEL. Based upon programming completed by East Wing Architects, a number of potential plans were developed, including one with a loading facility beneath the Southeast Pavilion that would accommodate even semi-trailer trucks. Originally, the project was to provide space for support services that previously had quarters in the basement of the wings; the project thus consolidated support staff and materials services into one location. After the decision was made that the new loading dock would be at the Risser Justice Center at the corner of Doty Street and Martin Luther King, Jr. Boulevard, offices were included to accommodate Capitol staff displaced from other parts of the building; later part of the space was re-planned as a large storage vault for the supreme court.

With an experienced team already in place, Cullen & Sons, the single prime contractor, began issuing bid documents for subcontractors on 22 September 1998. Southeast Stair bid package “Number One” directed the selective removal of the granite stairs. Bid package “Number Two,” released on 6 November 1998, covered new footings; and package three, released on 10 May 1999, instructed on the reconstruction of the granite stairs. Drawings for the underground office facilities were completed by October 2000; bid document “Number Four” and specifications for the interior construction were released on 11 April 2001; two addenda followed, the first on 20 April 2001 and the second on 26 April 2001. Subcontractors included General Heating and Air Conditioning, which installed isolation valves and a condensate cross-connection in the steam tunnel under Martin Luther King, Jr. Boulevard to allow isolation of steam service to the Capitol, and Robinson Brothers for asbestos and lead abatement. Selective Removal began in October 1998, and New Construction on the stairs began in June 1999. Construction of the office spaces beneath the Southeast Stair occurred between May 2001 and June 2002.

The underground addition provided over 15,000 square feet of service and office area. The tunnel beneath Martin Luther King, Jr. Boulevard provided the entry point for Capitol mail and freight and opened onto a large receiving area; garbage also was removed from the building through this tunnel. Space for mail sorting, carpentry, trash compaction, tugger repair/storage and pallet storage are also located near the entrance to the tunnel. Offices finished in a contemporary manner, but with finishes consistent with the quality found throughout the original portions of the Capitol, were provided for building services and included rooms for architectural plans and staff training. The reception area for the Capitol’s building managers featured a custom desk and was lit by skylights that were constructed along the terrace wall. Unlike the firefighters’ entrance at the Northwest Pavilion, the entrance at the Southeast Pavilion contained an elevator for freight and also to provide handicapped access to the tour orientation room.

Conclusion

In meeting the goals set forth in the Capitol Master Plan and as elaborated in subsequent planning documents, the restoration and rehabilitation of the Wisconsin State Capitol was an unquestionable success. The efforts of DFD, its consultants and contractors to restore the historically and architecturally significant public areas of the building indicate the state’s commitment to historic preservation in general and to the Capitol in particular. While dedicated to a preservation ethos, the state worked to maintain the Capitol as a fully functional office complex that met the technological requirements of its occupants. The rehabilitation aspect of the project ended decades of inappropriate and aesthetically insensitive modifications and provided sound solutions to long-term problems involving air conditioning, ventilation and insufficient electrical and communication capabilities. The balance achieved between modernization and preservation fit neatly with the architect’s original vision of grand public spaces and functional private offices. The reconﬁguration of private ofﬁces was consistent with the architect’s design of a clear-span steel structure and non-load bearing clay tile partition walls. These features reﬂected Post’s realization that eventually there would be changes in the use of the
interior spaces. In implementing a methodology that became increasingly sophisticated, the Capitol restoration and rehabilitation also was successful. Although the lead architect changed from DFSM (later DFD) to Kahler Slater to East Wing Architects, a team approach remained in place, allowing a wide range of experts to participate in a coordinated architectural intervention. Engineers, architects, historians and a multitude of craftspersons brought a wealth of talent to the Capitol project, ensuring that Wisconsin’s foremost architectural treasure would retain its historic grandeur and that its history and restoration would be thoroughly documented for generations to come.
Endnotes

1 The division of the Department of Administration (DOA) responsible for the Capitol was known as the Division of State Facilities Management (DSFM) when work on the North Wing began. In 1992, the division was renamed Division of Facilities Development (DFD), and in 2003 it was renamed Division of State Facilities (DSF).


7 Donald Schraufnagel to George Gray Plosser, 19 June 1985, “Alabama” file, box 1, Restoration Methods, Capitol Archives.

8 Loftus to Gerald Slack, 29 July 1985, Pre-Design/Mobilization folder, box 1, Assembly Chamber Restoration, ibid.


10 DSFM, Restoration and Relighting Assembly Chamber Capitol Building, Madison, Wisconsin, Division Project No. 8711-19, February 1988, Construction Documents Specifications 1988 folder, box 1, Assembly Chamber Restoration, Capitol Archives.


14 Wisconsin Legislature, Laws (1979), 1:1258, 1263.


26 Department of Facilities Development, supplemental information for the decorative contractor, DOA project files.

27 “Wisconsin State Capitol Original Furniture Research and Survey,” Volume 1, October 1995, DOA project files.


32 Jerry Podany, condition report and conservation recommendations for the mosaics, March 1998, ibid.

33 All Seehohm’s reports are in DOA project files.


36 Laura M. Davis to Schneider and Nelson, 8 March 1996; Davis to Project File, 12 March and 9 April 1996, all in E.2.2.2, ibid.


43 “A Meeting of the Minds” [agenda], 17 October 1998, Binder 10, ibid.


44 Pfieehler to State Capitol and Executive Residence Board members (SCERB), 2 June 1998, Binder 9, ibid.


47 Quagliana to File, 19 November 1997, ibid.

48 Quagliana to File, 4 August 1997, both in 1995-97 Binder, ibid.

49 Division of Facilities Development, Wisconsin State Capitol Restoration and Rehabilitation Central Portion, Madison, Wisconsin, Division Project No. 97647, 4 October 1997, E.15.42, ibid.


51 Modification index sheet, 4 March 1998, Binder 6, ibid. DFD also prepared Request for Proposals for Central Rotunda Scagliola Repairs Wisconsin State Capitol Madison, Wisconsin in January 1997 (Binder 4, ibid.). It is unclear if this document was used for bidding or if it informed the modification for decorative finishes that included scagliola work.

52 Information on the East Wing restoration is based on the Methodology chapter in the East Wing Historic Structure Report, which was written during the construction phase of the project.

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