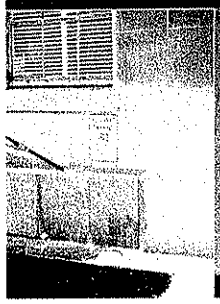

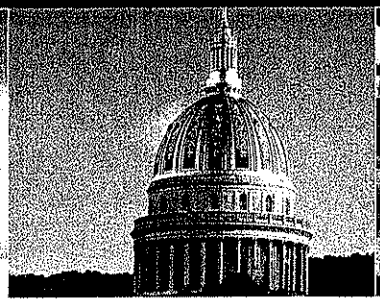

Response to Request for Expression of Interest:

Preservation Architectural/Engineering Services for Masonry Repair and Cleaning of the State Capitol - Charleston, WV

Req#: GSD066429

July 25, 2006

SWANKE HAYDEN CONNELL ARCHITECTS

SWANKE HAYDEN CONNELL ARCHITECTS

295 Lafayette Street, New York, New York, 10012
212 226 9696, Fax 212 219 0059

July 25, 2006

Ms. Krista Ferrell, Buyer
State of West Virginia
Department of Administration, Purchasing Division
2019 Washington Street, East
Charleston, WV 25305-0130

Re: Masonry Repair & Cleaning of the State Capitol
Response to Expression of Interest

Dear Ms. Ferrell,

Swanke Hayden Connell Architects (SHCA) is pleased to submit our response to the Expression of Interest for the Masonry Repairs & Cleaning of the West Virginia State Capitol. As the architects for the **West Virginia State Capitol Dome restoration**, SHCA prepared masonry cleaning and repair documents for restoration of the limestone base of the dome. As part of that effort SHCA tested a variety of masonry cleaning products and prepared preliminary scope documents for the cleaning and repair of the limestone façade on the balance of the State Capitol building. As such SHCA is familiar with the condition of the limestone façade and understands the required products and scope of work necessary to prepare prescriptive biddable construction documents. **This puts SHCA in the position to expeditiously meet the aggressive project schedule to complete this project in 2006.**

Firm Background
SHCA is the continuation of the architectural practice founded in New York City in 1906 as Walker & Gillette. Over the years the firm has grown to approximately 300 professionals worldwide located in ten international offices: New York City; Newark, NJ; Washington DC; Miami, FL; Stamford, CT; London, UK; Sheffield, UK, Instanbul, Turkey; Paris, France, and Moscow, Russia. The New York and Washington DC offices will be utilized for your project and are staffed with a combined total of over 100 professionals, organized on a team basis, with nearly all our professionals working in every area of the practice. SHCA can therefore respond to project requirements from a broad base of experience within a single team, allowing us to explore with our client the best solutions for *Historic Preservation*, *Materials Conservation*, *Interior Design*, and *New Building Design*. We are proud of this feature of our organization for it distinguishes us from others, and has been a vital element contributing to our longstanding success.

Firm Experience
SHCA has an impressive portfolio in the rehabilitation and preservation of significant public buildings. Our initial work in this field began in 1956 with the restoration of the Old Supreme Court Chambers, the Old Senate Chambers and the extension of the east front of the **United States Capitol**. As the architects for the **Statue of Liberty** Restoration, the firm was responsible for perhaps one of the most visible restoration projects ever undertaken. SHCA's prominence in the field led RS Means Co. to request that we author the first comprehensive guide to historic preservation project planning, the +700 page *Historic Preservation – Project Planning & Estimating*, published in October, 2000.

Our work in West Virginia includes restoration of the **West Virginia State Capitol dome, 1st Presbyterian Church** façade and the **Holly Grove Mansion** all in Charleston. We have extensive experience working with public sector clients. In addition to the **State of West Virginia General Services Division** we have term

contracts with the **NYC Department of Design & Construction** involving work for the FDNY, the NYC Health Unit and the School Construction Authority; and the **NYC Department of Citywide Administrative Services** for which we are performing **limestone façade restoration** and interior rehabilitation for eleven city-owned historic municipal buildings in Lower Manhattan that house the full variety of city agencies, including municipal courts, surrogates courts, mayor's offices, sanitation and health department and the municipal archives. In addition we are presently the architects for the rehabilitation, restoration and interior design of two significant monumental buildings; the **U.S. Post Office** at 90 Church Street in Manhattan and the **IRS Headquarters Building** in the federal triangle of Washington DC.

Façade Rehabilitation
SHCA has extensive experience assessing, restoring and rehabilitating period facades for public agencies in New York City. We recently completed the façade rehabilitation of **PS 112, PS 157** and **Fort Hamilton High School** in Brooklyn. These project involved assessment, rehabilitation, restoration and selective replacement of roofing systems, parapets, masonry façade materials, windows and doors. The work was accomplished on an aggressive schedule for the NYC Department of Design and Construction while the buildings remained occupied and fully operational. In February 2002 we have completed Local Law 11 *Critical Examination Reports* on eleven buildings at the New York City Civic Center in downtown Manhattan for the *NYC Department of Citywide Administrative Services*. These reports required an overall visual assessment with a representative close inspection noting conditions that are unsafe or that require maintenance within the next five years. These buildings range from the 38-story landmark 1912 **Municipal Building** at 1 Centre Street, to the 24-story 1940 **Manhattan Criminal Courts Building** at 100 Centre Street to the 1961 **Municipal Court Building** at 111 Centre Street. SHCA coordinated the entire effort including provision of staging for the close inspection, coordinating contractors to immediately remediate conditions which threatened life safety, and the subsequent probe investigations to expose underlying conditions and configurations. Our team of rehabilitation experts performed all inspection work and are certified to perform examinations from hanging scaffolding.

Consultant Experience
We have included **CAS Structural Engineers** on our team as SHCA's consulting engineer for the **WV State Capitol Dome Restoration** and who was also responsible for the **WV State Capitol Parapet Reconstruction project** currently underway. As such CAS will not only act as SHCA's **local representative** for the project but will also provide **coordination with the ongoing parapet reconstruction** work. CAS also has extensive experience in the structural evaluation of existing buildings throughout the State including masonry rehabilitation of **State Capitol Building #3** as well as acting as SHCA's structural consultant for **façade restoration** of Charleston's **1st Presbyterian Church** and the **Holly Grove Mansion**.

Design Approach
An essential element of the SHCA approach to design is the understanding that the best project is produced when a variety of perspectives are joined together into a single design solution. Clarity of process engenders an elegant finished product where multiple perspectives are seamlessly combined. With meticulous care in research, materials analysis, conservation techniques, and experience, all details can be flawlessly recreated while at the same time cleverly integrating modern technology and building systems. Using this approach, we are able to achieve performance and budget targets, and to provide for future flexibility and value. The high caliber of our design work is demonstrated by the successful completion of numerous award-winning historic preservation projects. Most famous for the restoration of the Statue of Liberty, SHCA's preservation work has been honored by the Presidential Historic Preservation Award, the New York City Municipal Art Society Award, the Preservation League of New York, and the New York State AIA. In addition to the prestigious awards cited above, we also have received recognition for more modest and less well-known buildings. The firm recently restored the historic 1908 building façade of New York City Public School 157, winner of the

New York Landmarks Conservancy, Lucy G. Moses Preservation Award (2001) and the Preservation League of New York State's Excellence in Historic Preservation award (2001).

Historic Materials & Finishes Conservation
SHCA's expertise in materials conservation for all period building types includes investigation and conservation of stone brick, terra cotta, cast stone, stucco, plaster, ornamental metals and decorative finishes. The firm's thorough investigative approach to historic materials and their degradation mechanisms allow identification of appropriate solutions for restoration and conservation. Utilizing the methods recommended by the New York City Landmark Preservation Commission for testing prior to the implementation of rehabilitation work on historic structures, testing is performed in accordance with ASTM standards.

Project Approach
SHCA takes a comprehensive approach to the rehabilitation of existing buildings structured around a methodical series of tasks that minimizes unforeseen conditions. This methodology provides a well-informed basis for developing alternatives and selecting the most appropriate repair treatment for the physical aspects of the building enabling the project to move forward on an expeditious schedule within budget. Executing comprehensive historic preservation services in-house is a fundamental aspect to this approach. SHCA's historic preservation experts perform hands-on inspections and utilize our in-house laboratory to develop *prescriptive* repair solutions and project documents. We have developed relationships with engineers and other consultants specialized in historic building systems and we coordinate all aspects of project development. Through careful documentation of a building's exposed and concealed conditions and a thoughtful dialogue within our project team we develop innovative solutions to meet the client's objections with the highest level of design integrity. This ability to bring together specialized consultants, contractors and perform in-house analyses sets us apart from our competitors.

I hope that the following credentials demonstrate our enthusiasm and superior capability to successfully assist the Department of Administration in planning and executing the façade repair and cleaning of the West Virginia State Capitol. Again, our team has essentially already completed a draft of the required repair and cleaning documents and is in the best position of any consulting team to complete the job within the required schedule in accordance with the highest standards for quality. I look forward to the opportunity to present our project team and work plan in person.

Sincerely,

SWANKE HAYDEN CONNELL ARCHITECTS

Robert Vail Cole, AIA
Associate Principal
Director of Historic Preservation

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- Personnel
- Organization Chart
- Team Resumes

Additional Information

- Relevant Articles

Firm Introduction

Swanke Hayden Connell Architects(SHCA) is an international design firm with offices in New York, Miami, Washington DC, London, Sheffield, Paris, Moscow and Istanbul. The firm has completed a significant number of projects and design assignments that vary in size and services performed. From large multi-million dollar projects to small on call assignments, the company provides the management skills, design talent, necessary resources, and appropriate expertise in the following range of services:

- Architecture and Master Planning
- Interior Design and Facilities Planning
- Workplace Consulting
- Historic Preservation and Materials Conservation
- Graphic Design

SHCA was founded in 1906 as the firm of Walker and Gillette, and we have been in continuous operation ever since.

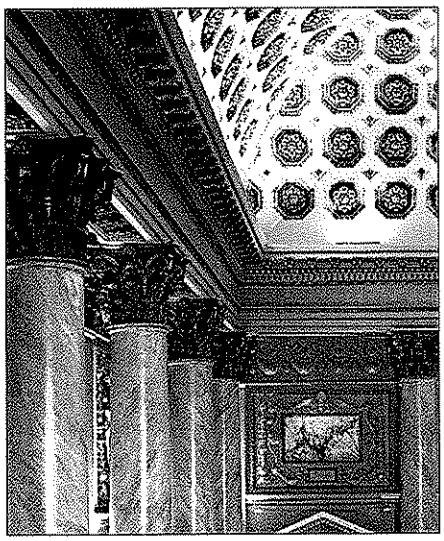
Architecture

Over the past 40 years, SHCA's architectural commissions have expanded to global proportions and across many sectors (commercial, educational, health-care, hospitality, residential, and retail). The firm's buildings and works-in-progress can currently be found in the United Kingdom, Europe, Africa, India, Turkey, South America, the People's Republic of China, and Russia. With more than 50 commercial building projects totaling some 27 million sq. ft., the work is valued at more than $2 billion. The size and diversity of the work ranges from multi-purpose building complexes, high-rise and low-rise building designs, to renovations of building interiors and exteriors.

Interior Design

As an architectural practice, SHCA was one of the first firms to embrace the emerging field of corporate interior design in the US some 4-decades ago. Since then, SHCA has designed and built in excess of 40 million sq. ft. of corporate interiors. Commissions range from 5,000 sq. ft. to 2.3 million sq. ft. with a diversified public and private sector client base throughout the world.

Our design is driven by client interaction and participation in its development. This explains the variety of our designs and reflects our ability to work within a highly-traditional context or a modern, high-tech design vernacular as well as a utilitarian office environment.



Historic Preservation

SHCA takes an active role in rehabilitating and restoring our built environment. In 1958 the firm began restoring the U.S. Capitol; the first of many significant historic restorations. The restoration of the Statue of Liberty is probably the firm's best known preservation project. SHCA has additional experience in all period building types including residential, commercial and governmental buildings and religious structures, as well as educational and cultural institutions. SHCA's preservation work has been honored by the Presidential Historic Preservation Award, the NYC Municipal Arts Society Award, the Preservation League of New York, and the NYS AIA Award for Excellence in Design.

SHCA's comprehensive Historic Preservation services include investigation documentation, planning, design and construction administration in the areas of Preservation, Restoration, Rehabilitation, Reconstruction, Research, Conservation Reports, Material Conservation Testing, Adaptive Re-use, and Masterplanning.

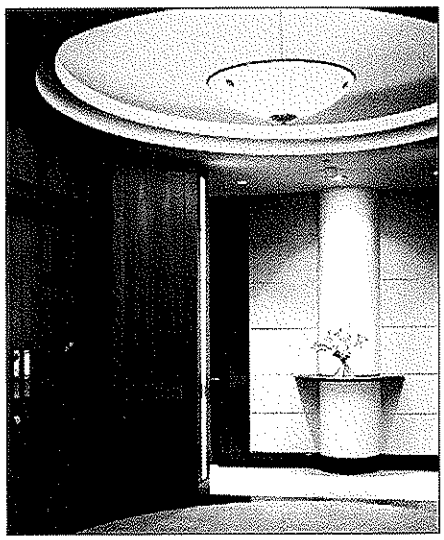
Graphic Design

Design360 was formed as an independent affiliate of Swanke Hayden Connell Architects to acknowledge the importance of graphic design with regard to designed space. Our firm has more then twenty-five years of experience in Environmental Graphic Design, Exhibit Design, Corporate Identity and Branding, Print Design, Web and New Media Design. We believe that clear, concise and informative graphics are the key visual communicators needed to understand our increasingly complex environment.

SHCA integrates all of these practice areas in-house and can provide clients with streamlined, efficient professional design services, resulting in a seamless coordination of efforts and instantaneous communication.

Such a long and distinguished history is credited to 3 fundamental principles:

- We are responsible for realizing the explicit and implicit goals of our clients.
- We are committed to achieving the complete expression of the functional needs of our clients by means of the most pleasing visual and spatial expression.
- This is to be accomplished while satisfying economic requirements.



Swanke Hayden Connell & Partners LLP is a limited liability partnership registered in the State of New York. The firm has the following affiliated companies:

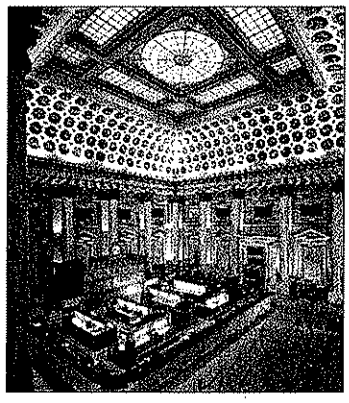
Swanke Hayden Connell International Ltd.
25 Christopher Street
London, England EC2A 2BS
Tel: (44207) 454.8200
Fax:(44207) 454.8400

Swanke Hayden Connell Mimarlik, A.S.
Kore Sehitleri Cad. No. 34/2 Deniz Is Hani
Zincirlikuyu, Istanbul, Turkey 80300
Tel: (90) 212 275.4590
Fax:(90) 212 288.3780

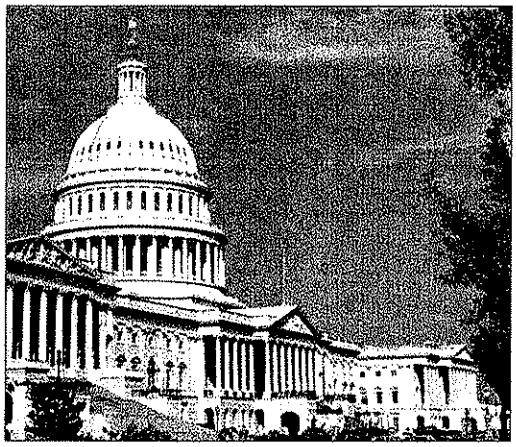
Design 360
295 Lafayette Street
New York, NY 10012
Tel: (212) 219.6700
Fax:(212) 219.6799

Swanke Hayden Connell Architects, SARL
17 Rue Campagne Premiére
75014 Paris, France
Tel: (33) 1 56 54 14 90
Fax: (33) 1 56 54 14 94

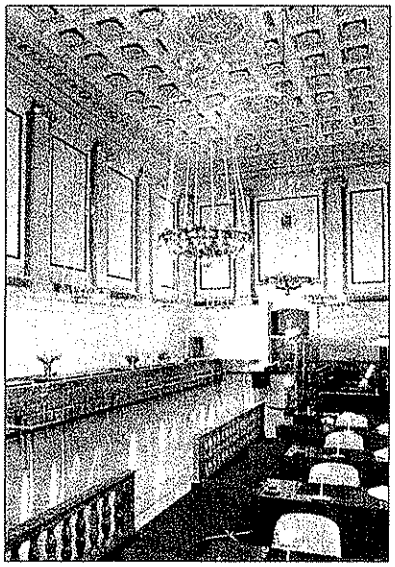
HISTORIC PRESERVATION



Bowery Savings Bank; New York, NY



US Capitol; Washington, DC



American Security Bank; Washington, DC

Statue of Liberty; New York, NY

As successors to the architectural practice of Walker & Gillette, established in New York in 1906, SHCA takes an active role in rehabilitating and restoring our built environment. In 1958 the firm began restoring the U.S. Capitol; the first of many significant historic restorations. The restoration of the Statue of Liberty is probably the firm's best known preservation project. SHCA has additional experience in all period building types including residential, commercial and governmental buildings and religious structures, as well as educational and cultural institutions.

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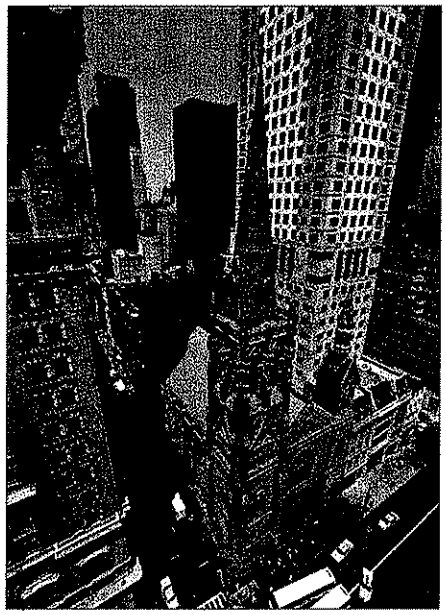


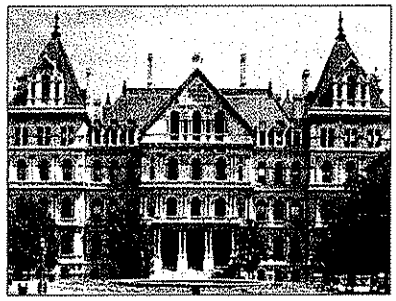
Fifth Avenue Presbyterian Church; New York, NY

SHCA's comprehensive Historic Preservation services include investigation documentation, planning, design and construction administration in the areas of:

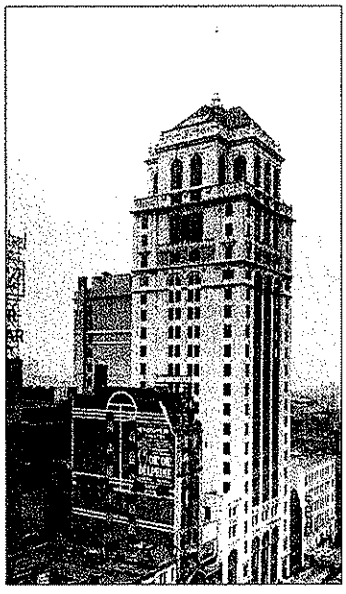
- Preservation
- Restoration
- Rehabilitation
- Reconstruction
- Research
- Conservation Reports
- Material Conservation Testing
- Adaptive Re-use
- Master Planning

Internal Revenue Service; Washington, DC

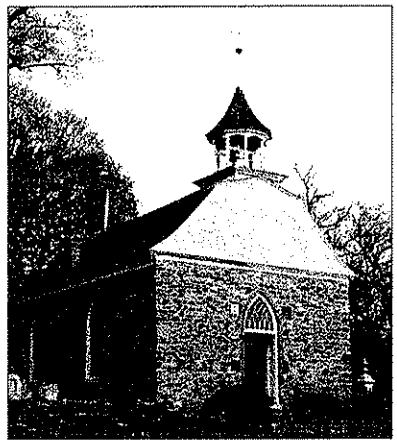
US Senate Chambers; Washington, DC



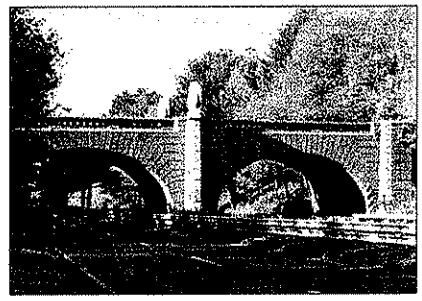
New York State Capitol; Albany, NY



Candler Building; New York, NY

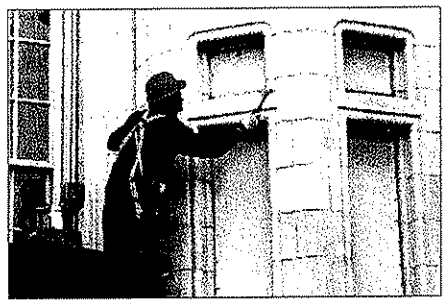


Old Dutch Church; North Tarrytown, NY



Merritt Parkway Bridges; State of Connecticut

MATERIALS CONSERVATION

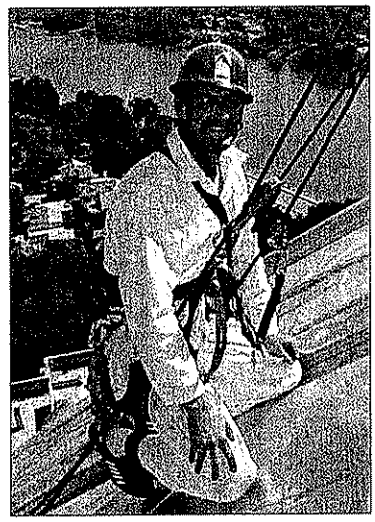


P.S. 157, New York, NY

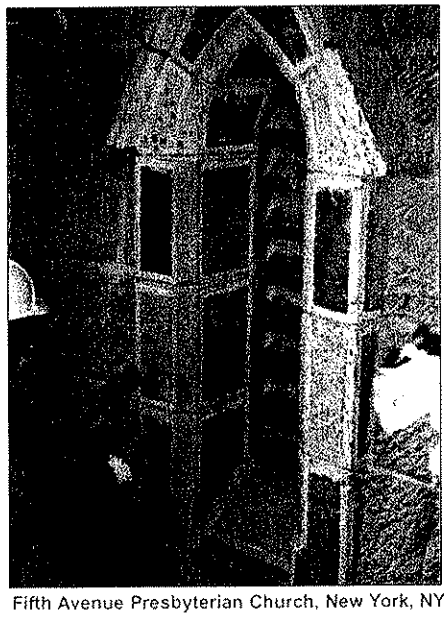
SHCA's expertise in materials conservation for all period building types includes investigation and conservation of brick, terra cotta, cast stone, stucco, plaster, ornamental metals and decorative finishes. The firm's thorough investigative approach to historic materials and their degradation mechanisms allows identification of appropriate solutions for restoration and conservation. Utilizing the methods recommended by the New York City Landmark Preservation Commission for testing prior to the implementation of rehabilitation work on historic structures, testing is performed in accordance with ASTM standards.

SHCA's materials conservation projects include a comprehensive cleaning testing program as well as mortar analysis and replication mixes for the IRS Headquarters Building in Washington DC, a paint removal and anti-graffiti study for the New York City School System, and conservation of the Merritt Parkway concrete bridges in Connecticut, as well as significant restorations to the façade and steeple of New York's Fifth Avenue Presbyterian Church.

IRS Headquarters, Washington DC



West Virginia State Capitol, WV

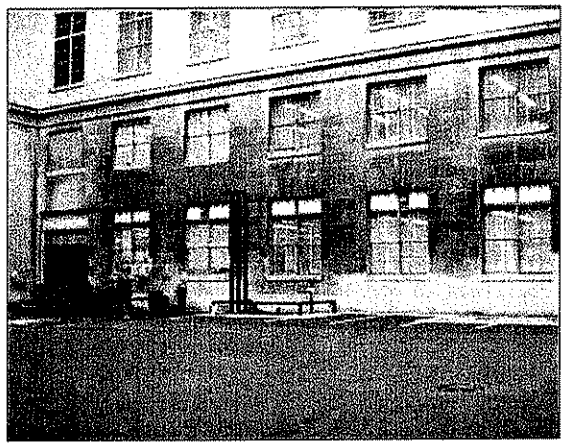


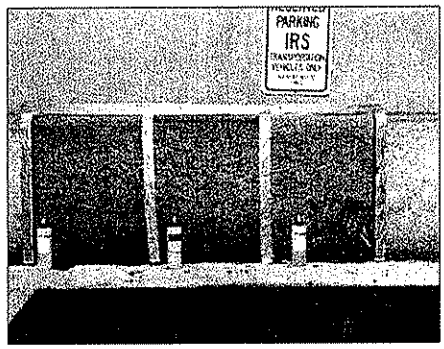
Fifth Avenue Presbyterian Church, New York, NY

Merritt Parkway, CT

Conservation testing services include:

- Paint color investigations
- Mortar and concrete analysis and replication mixes
- Exterior masonry cleaning and paint removal
- Water vapor transmission and absorption
- Depth of carbonation of concrete surfaces
- Petrographic analysis
- Compressive strength of brick and stone investigations





Images on this page:
Cleaning process on the IRS Headquarters, Washington DC

CAS Structural Engineering, Inc.

Firm Profile

CAS Structural Engineering, Inc. – CAS Structural Engineering, Inc. is a West Virginia Certified Disadvantaged Business Enterprise structural engineering firm located in the Charleston, West Virginia area.

Providing structural engineering design and/or analysis on a variety of projects throughout the state of West Virginia, CAS Structural Engineering has experience in excess of 17 years on the following types of building structures:

- Governmental Facilities (including Institutional and Educational Facilities)
- Industrial Facilities
- Commercial Facilities

Projects range from new design and construction, additions, renovation, adaptive reuse and historic preservation (including use of The Secretary of the Interior's Standards for Rehabilitation) to evaluation studies/reports and analysis.

CAS Structural Engineering utilizes AutoCAD for drawing production and Enercalc and RISA 3D engineering software programs for design and analysis. Structural systems designed and analyzed have included reinforced concrete, masonry, structural steel, light gauge steel and timber.

Carol A. Stevens, PE is the firm President and will be the individual responsible for, as well as reviewing, the structural engineering design work on this project. While CAS Structural Engineering, Inc. has only been in business for four years, Carol has over 17 years of experience in the building structures field, working both here in West Virginia and in the York, Pennsylvania vicinity. Her experience has included a number of governmental office building projects, including those underway at the Capitol Complex in Charleston.

CAS Structural Engineering, Inc. is covered by a $1 million errors and omissions liability policy.

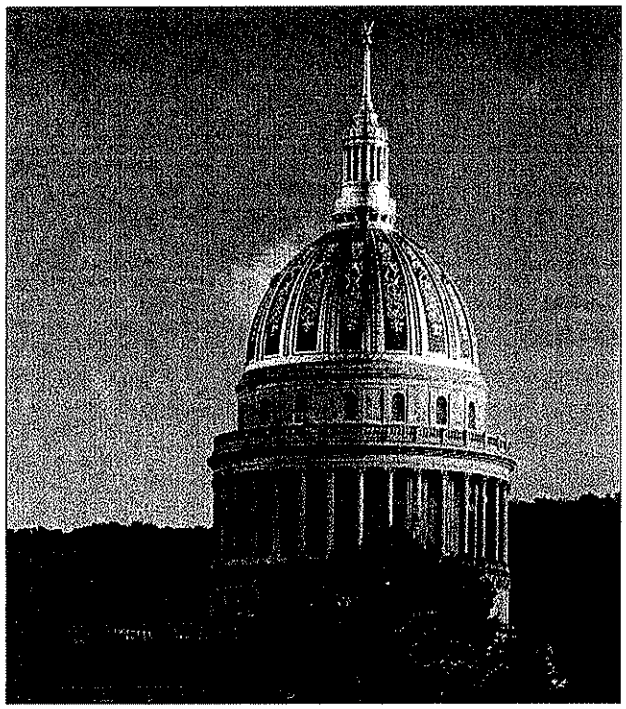
P.O. Box 469 Alum Creek, WV 25003-0469 (304) 756-2564 (voice) (304) 756-2565 (fax)
A West Virginia Certified DBE Consultant
Structural Engineering Certification Board

West Virginia State Capitol
State Capitol Complex
Charleston, WV

Owner:
State of West Virginia
Department of Administration
Robert Ferguson, Cabinet Secretary
(304) 558-4331

Building Area: 550,000 sf

The West Virginia State Capitol, designed by Cass Gilbert in 1922, was completed in 1932. The dominant feature on the building is the gilded dome, based on the 17th century dome of the Hotel des Invalides in Paris. This building is considered one of the architect's finest achievements.



Project Description:
Since its completion in the early 1930's, the dome's applied surface coatings have repeatedly failed after five different restoration campaigns. The dome was abrasively blasted and painted in the 1940s, 1960s and 1970s, resulting in a bimetallic coating of exposed copper and lead beneath the coatings. Each time, the coatings failed within a few years. By 2000, the existing gold leaf finish suffered from unsightly black streaking and loss due to poor application techniques. The dome also exhibited mechanical failure of the sheet metal cladding. The underlying structural steel had seriously corroded due to water infiltration.

SHCA assessed the last gilding campaign in order to make repair and maintenance recommendations. The work scope included evaluating the past performance of the previous gilding and coating campaigns to determine the exact causes for the various failures, and preparation of specifications reflecting current technology and monitoring requirements.

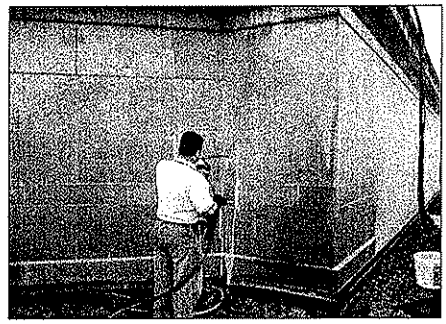
Investigative work included a detailed hands-on inspection of the dome and an accelerated testing and monitoring program of the recommended coating systems. The project returned the dome to its original appearance using a durable coating system, while making necessary repairs to underlying architectural and structural deficiencies. Due to the specified environmental enclosure the ***project was finished nine months ahead of schedule***. Likewise, the project came in ***10% under budget*** allowing additional exterior work to be performed including ***cleaning, repair and restoration of the dome drum's limestone*** ashlar walls and balustrade.

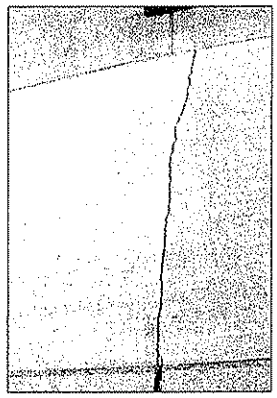
Mortar characterization of the limestone mortar was undertaken to develop an appropriate new mortar and open joints at the balustrade were filled using lead caps. ***Cleaning testing*** was performed at the dome drum and, due to logistical limitations, at the ground ***on the main building façade*** itself. A variety of chemical cleaners were tested and a palette of cleaners specified to remove the variety of soiled conditions that were evident. SHCA subsequently prepared ***construction documents for exterior stone cleaning and restoration*** which was performed on an expedited basis in time for the project's unveiling in October, 2005.

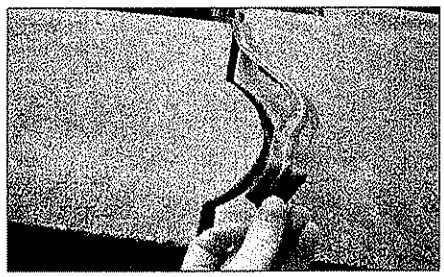
Date of Award: February, 2001
Completion Date: October, 2005

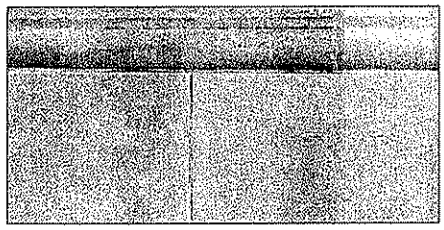
Project Cost: $4,687,000

Public/Agency Review:
- West Virginia State Capitol Planning Commission
- West Virginia State Historic Preservation Office

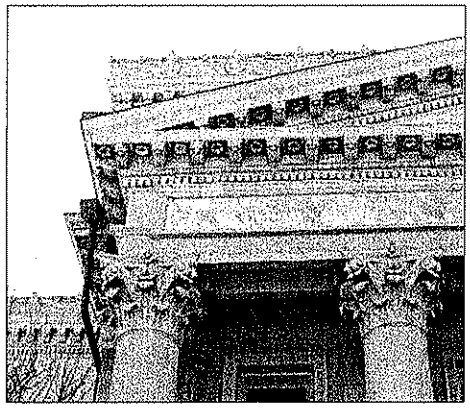








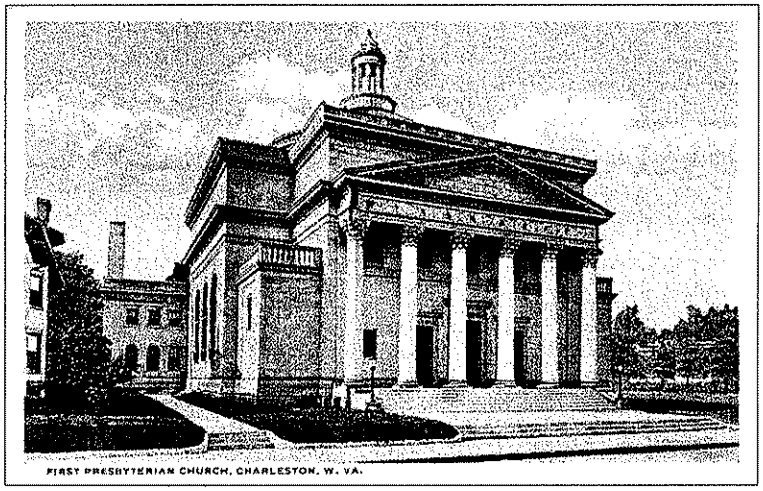
First Presbyterian Church
Charleston, WV



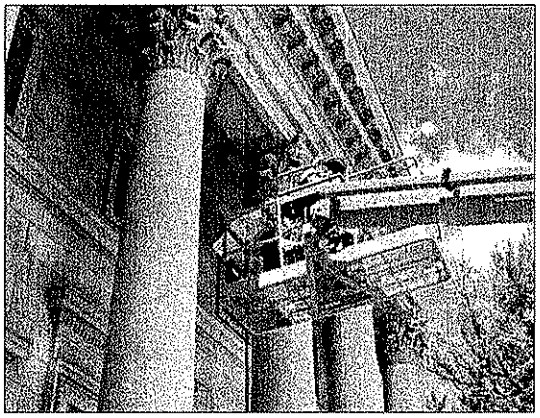
Owner:
First Presbyterian Church
Session Buildings Committee
Mike Abernethy, Member (ZMM Engineering)
(304) 342-0159

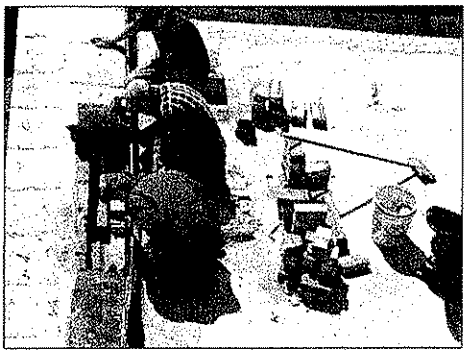
Building Area: 98 feet high

The 1st Presbyterian Church in Charleston, West Virginia is a classical style brick, ***limestone***, terra cotta and clay tile structure designed by Weber, Werner & Adkins with construction completed in 1915.

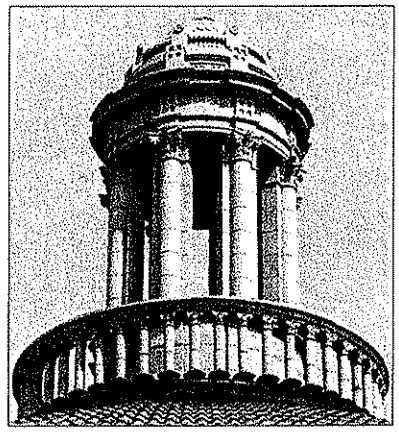


Project Description:
The project is for exterior repairs and restoration principally to the cupola, dome roof, parapets and stained glass windows in addition to miscellaneous masonry repairs to the original building facades. The cupola is seriously deteriorated and there have been leaks in the dome and porch roofs due to failures of the masonry elements and roofing systems. These breeches in the building envelope have also lead to corrosion of the structural steel. SHCA undertook a comprehensive investigation documenting all extant exterior deficiencies. As part of the evaluation an invasive probe investigation was undertaken to determine the source of water infiltration and the concealed condition of materials at the roof parapets.

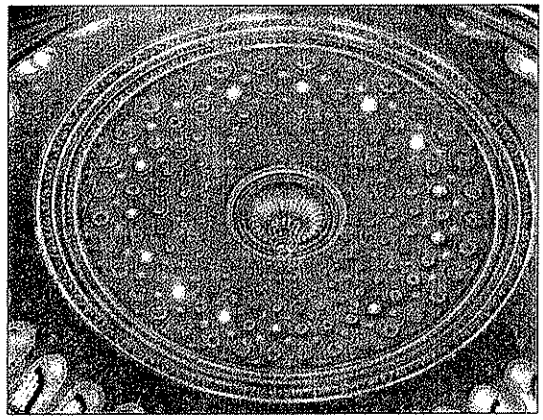




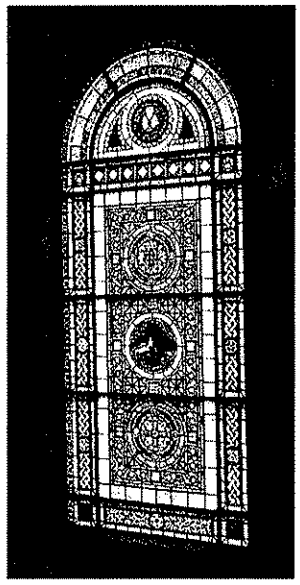
The resultant *Exterior Evaluation Study* identified recommendations for repair and restoration with an associated cost estimate. The scope of work and costs were broken down by facade location to allow phasing of construction in the event adequate funds are not available for th full project. Therefore, this report enabled the church to prioritize the work in order to execute a long range plan and raise the necessary funds to return the building to its original splendor.



The work scope includes roof membrane re-placement, replication of ornamental architectural terra cotta and roof tiles, ***limestone masonry repairs, cleaning and repointing,*** parapet reconstruction, stained glass restoration, associated structural repairs, replication of missing elements and redesign of access ladders and incorporation of new roof hatches to facilitate future inspection and maintenance.

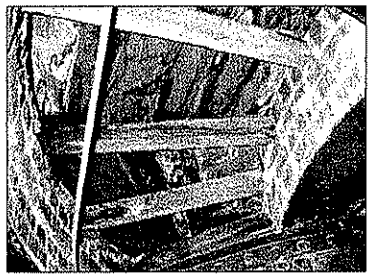


The study was completed in 2005 and construction documents are presently being prepared. Construction work for the full exterior envelope rehabilitation will be completed in December 2006 with commencement of construction in Spring 2007.

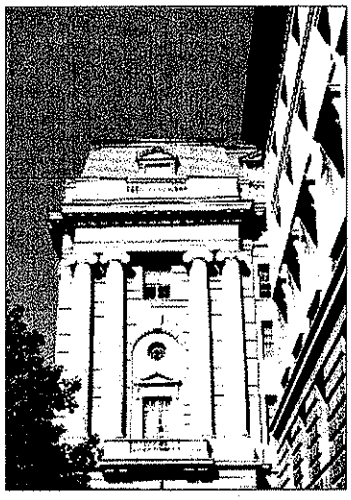


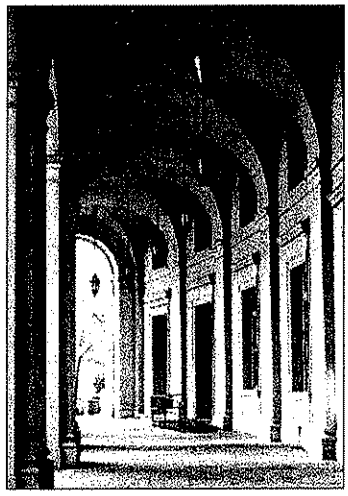
Date of Award: 02/05
Completion Date (Construction): 11/07

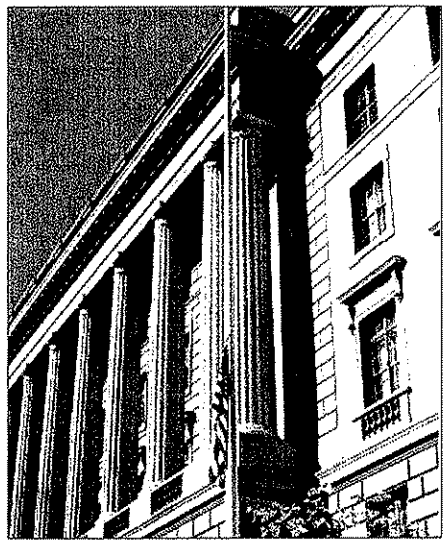
Project Cost (Estimated): $2,850,000



Internal Revenue Service
Headquarters Building
1111 Constitution Avenue
Washington, DC







Owner:
U.S. General Services Administration
Triangle Service Delivery Team (WPZ)
National Capitol Region
Jag Bhargava, Project Executive
(202) 708-6944

Building Area: 7 stories, 1,400,000 sf

The IRS Headquarters Building is a monumental 1.4M gross sq. ft. seven-story, ***limestone***, brick and marble-clad building. This ***Beaux Arts-style structure, built between 1928 and 1936,*** houses 2,700 IRS employees including the Office of the Chief Counsel of the Treasury Dept.

Project Description:
Selected under GSA's Design Excellence Program, SHCA is responsible for the restoration and modernization of the Internal Revenue Service (IRS) building-a historical landmark of national significance in Washington DC's federal triangle. Restoration and modernization occurred while the building was fully occupied and existing systems remained continuously operational. The project required upgrading and replacement of mechanical, electrical, plumbing, and life safety systems and demolition and reconstruction of the existing floor slabs throughout the entire lower level.

Exterior renovation included the repair and restoration of the exterior windows (including security glazing), ***repointing repair and cleaning of limestone***, marble and brick, and resetting limestone coping. All restoration work and improvements were designed to preserve the historic characteristics of this 60-year-old building.

Mortar and Masonry Cleaning Testing - Following a ***close inspection and documentation of the façade conditions*** extensive analysis was performed to determine the appropriate ***repair, repointing and cleaning restoration*** techniques. Original stone mortars were analyzed at SHCA's ***in-house laboratory*** to determine their original constituents so a compatible matching mortar could be specified. An ***exhaustive cleaning testing program*** was undertaken in order to identify the gentlest means for cleaning the limestone façade. Cleaning techniques including continuous low-pressure wash, chemical cleaners and state-of-the-art micro-abrasive cleaning technologies were all tested enabling a cost-effective solution to clean the limestone to an acceptable appearance within the required schedule constraints and environmental considerations.

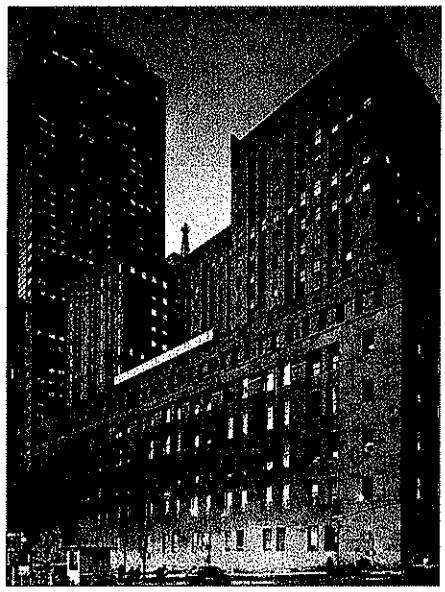
Having completed the Historic Building Preservation Plan for the building in 1993, SHCA is pleased to have lead the effort to maximize the building's functional capacity and return it to its intended level of dignity.

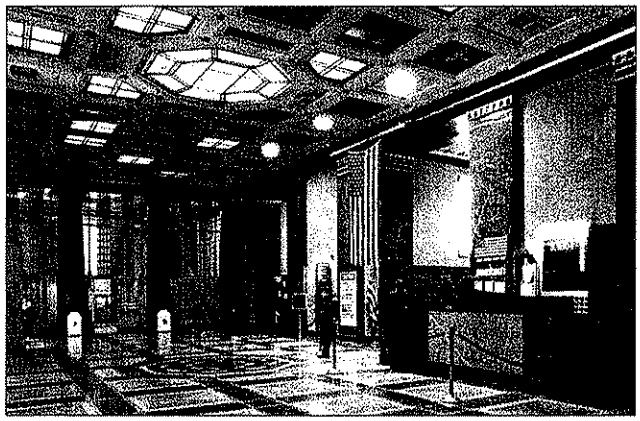
Date of Award: 12/99
Completion Date (Construction): 10/05

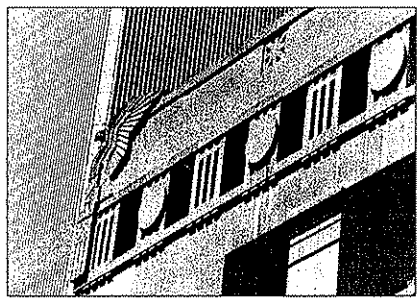
Project Cost: $45,000,000

Public/Agency Review:
- District of Columbia State Preservation Office
- General Services Administration
- District of Columbia Commission of Fine Arts
- National Capitol Planning Commission

United States Post Office
90 Church Street
New York, NY







Owner:
Boston Properties
Robert Schubert,
Senior Vice President in Charge of Construction
(212) 326-4055

Building Area: 15 stories, 1,200,000 sf

The 1933-37 Federal Office Building and Church Street Station Post Office, located at 90 Church Street in lower Manhattan, was designed by Cross and Cross Architects, in association with Pennington, Lewis and Mills. This 1.2M square foot ***limestone-clad building*** occupies an entire city block. The stylized classical revival building consists of a six-story base supporting a nine-story H-shaped office tower. Listed on the National Register of Historic Places, 90 Church Street is a reflection of the New Deal municipal government.

Project Description:
In keeping with the federal government's policy to maximize their property values, the United States Postal Service, in conjunction with a developer, commissioned SHCA to restore and modernize the building and postal facility into a Class A office building. SHCA focused on restoring the building's distinctive architectural characteristics and finishes, particularly in the entrance lobby with its imposing marble columns, marble and terrazzo floors and art deco metal grilles and doors. Upgrades to the core and shell, electrical, mechanical, and vertical transportation systems were discreetly incorporated. Interior fit-outs to the upper floors, and renovation of the postal facility were carried out through SHCA's phasing of the work. The

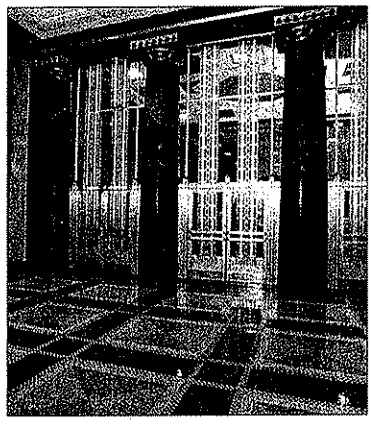
building has been made fully ADA-compliant. Phasing of the work allowed both the building and the post office facility to be operational during the course of the renovation.

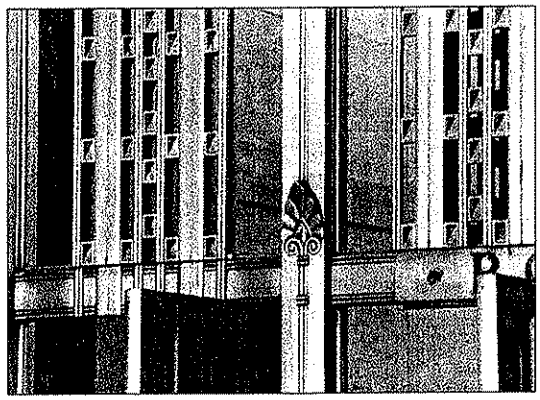
Exterior Restoration - As part of the comprehensive building modernization and restoration, SHCA performed an ***exterior inspection*** of the limestone facade. Restoration documents were prepared to ***repair stone spalls, cracks and displaced units*** along with ***repointing and cleaning specifications.***

90 Church Street was directly impacted by the 911 collapse of the World Trade Center Complex and sustained considerable damage. Airplane wreckage punctured its roof, over 800 windows were broken and the interiors were subject to fire. Consequently the USPS and tenants were forced to relocate to temporary quarters. Once the building was cleared and decontaminated SHCA redesigned the USPS's occupancy. The project was on a very fast track and went from initial design to move in, in a little over a year.

As a Federally owned landmark, the building falls under the provision of Section 106 of the National Historic Preservation Act requiring State Historic Preservation Office review to ensure conformance with the *Secretary of the Interiors's Standard for Rehabilitation of Historic Buildings.*

The project was completed on schedule and on budget. The completed building is a state-of-the-art, accessible office building sympathetically installed within a historic envelope.





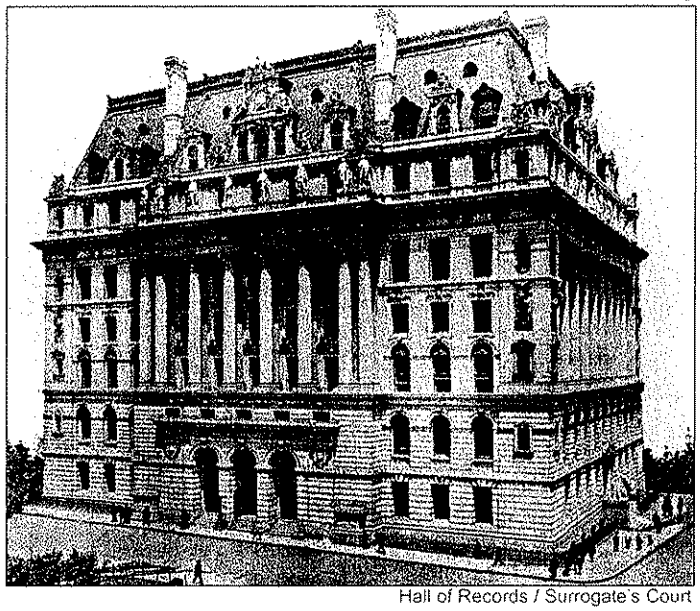
Date of Award: 01/93
Completion Date:
~ Base Building): 09/01
~ Post 9/11 Repairs: 12/02
~ Tenant Improvements: 12/05

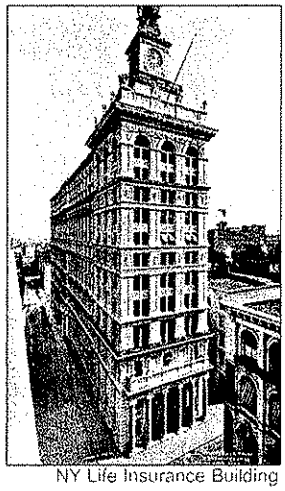
Project Cost: $45,200,000

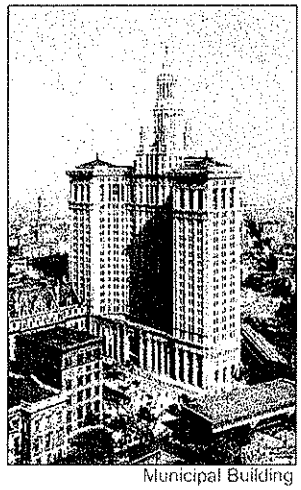
Public/Agency Review:
• New York State Historic Preservation Office
• United States Postal Service

Exterior Evaluations - Local Law 11 Reports
Various Buildings in the Vicinity of Foley Square and City Hall Park
New York, NY


Postal Telegraph
Home Life Insurance Co. Building


Hall of Records / Surrogate's Court


NY Life Insurance Building


Municipal Building

Owner:
The City of New York
Department of Citywide Administrative Services
Division of Facilities Management Design
Jordan Barnes, Project Manager
(212) 669-8103

Building Area: 11 Buildings (8 - 40 stories high)

Project Description:
As a requirement of the New York Building Code SHCA performed exterior inspections and prepared Critical Examination Reports (CER) for eleven buildings in the vicinity of Foley Square and City Hall Park. These reports were prepared for the New York City Department of Citywide Administrative Services in compliance with Local Law 10/11 for the 2002 cycle. The eleven buildings lie within the confines of New York's Civic Center and include some of the most historically significant City-owned buildings:

- Postal Telegraph Building, 253 Broadway; Harding & Gooch, 1894
- Home Life Insurance Company Building, 256 Broadway; Napoleon Le Brun, 1894
- New York Life Insurance Company Building, 346 Broadway; McKim, Meade & White, 1894
- Hall of Records/Surrogate's Court, 31 Chambers Street; John R. Thomas, 1907
- Municipal Building, 1 Centre Street; McKim, Meade and White, 1914
- Excelsior Building, 137 Centre Street; 1923
- New York State Office Building, 80 Centre St.; Sullivan Jones & Wm. Haugaard, 1930
- Court Square Building, 2 Lafayette Street; Buchman & Kahn; 1925
- Department of Health Building, 125 Worth Street; Charles Meyers, 1935
- Criminal Courts Building, 100 Centre Street; Harvey Corbett & Charles Meyers, 1940
- Civil Courts Building, 111 Centre Street; William Lescaze, 1959

For the inspections and evaluations necessary to prepare the CER's SHCA used an in-house methodology consistent with standards employed for all our façade restoration work. This included systematic conditions documentation beginning with a preliminary field survey to visually document the building configuration and identify the overall extant conditions. These preliminary inspections also served as the basis for determining the location for the required representative close inspections that followed. These hands-on inspections were performed by SHCA's in-house historic preservation experts, all trained and certified in the use of swing stage scaffolding. In documenting the conditions, a prescriptive format of uniform condition codes was used enabling the efficient translation of the CER into construction drawings for the repair of façade deterioration and damage. Ultimately, contract documents were prepared for the restoration of each building's façade.

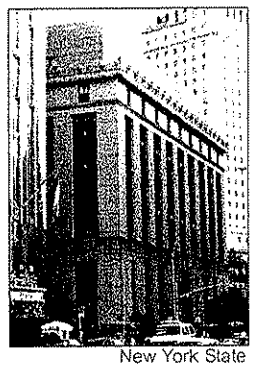
SHCA subsequently prepared construction documents for the corrective work required to restore the facades to their original appearance. ***On all buildings this work included repair, repointing and cleaning of exterior masonry including limestone facing.*** Construction is being performed in phases with all work to be completed by February, 2007.

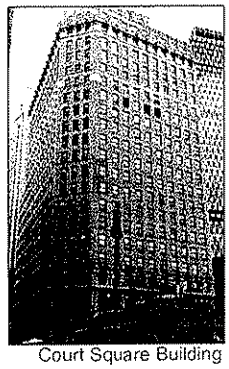
Date of Award: 07/01
Completion Date (CER's): 02/02
Completion Date (Construction): 02/07

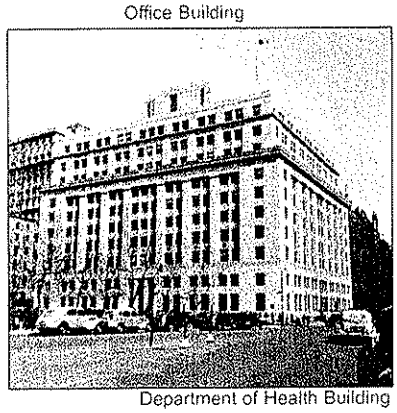
Project Cost (Fee): $138,000
Project Cost (Construction): $30,400,000

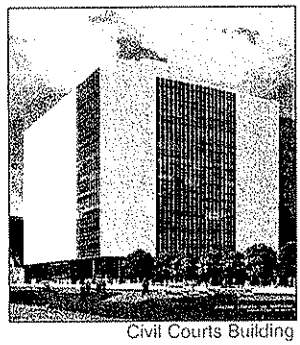
Public/Agency Review:
- NYC Landmarks Preservation Commission (for repairs to designated buildings)


Criminal Courts Building

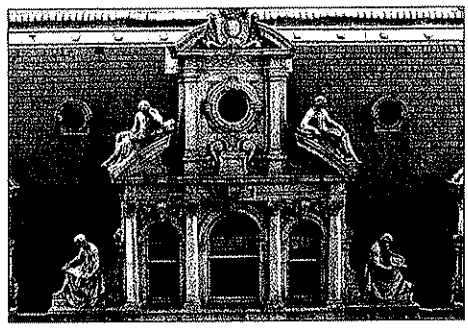

New York State Office Building

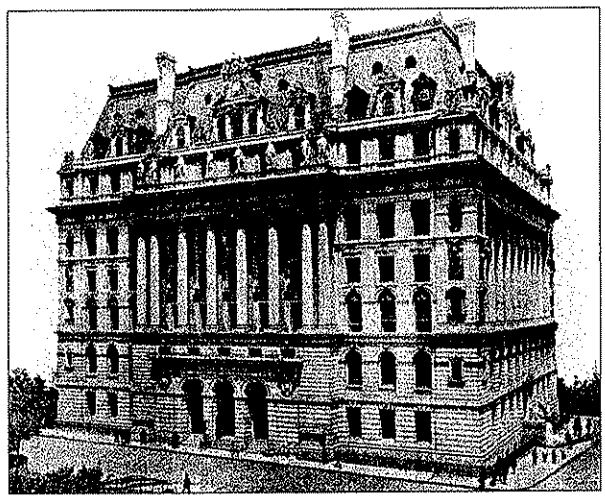

Court Square Building

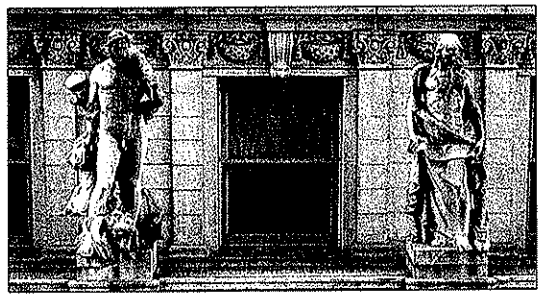

Department of Health Building


Civil Courts Building

Hall of Records / Surrogate's Court
Department of Cultural Affairs
31 Chambers Street
New York, NY







Owner:
The City of New York
Department of Citywide Administrative Services
jordan Barnes, Project Manager
(212) 669-8103

Building Area: 8 stories, 250,000 sf

The construction of the Hall of Records began in 1899 and was designed by architect J.R. Thomas. In addition to housing public documents, the Hall of Records accommodated other city departments such as the County Clerk, Surrogate Court, Corporation Counsel, and the Tax Department.

The Hall of Records was designed in an impressive and ***monumental 19th C. Beaux-Arts French Renaissance-style*** appropriate for civic buildings. The ***exterior is constructed of stone*** with a profusion of statuary and a steep two-story mansard roof clad in gray slate.

The interior is recognized for its outstanding design, lavish materials, and elaborate detail. The entrance foyer and the main lobby are grandly conceived, a double height space illuminated by an elliptically arched bronze skylight and walls faced with yellow Sienna marble. A majestic staircase rises to the second floor, where an arcaded gallery opens to the lobby below. The rooms at the 2nd floor Piano Nobile are monumental spaces finished with ornamental plaster and elaborate marble wainscot, fireplaces, and door and window surrounds.

Project Description:
SHCA conducted an exterior restoration program and a 2nd floor interior rehabilitation for offices for the NYC Department of Cultural Affairs.

Exterior Restoration - SHCA conducted a comprehensive exterior inspection using a team of repellers to ***inspect the building at close range***. Exterior damage and deterioration were recorded serving as the basis for the repair documents. The stone facade ***suffered from cracking, spalling, failed mortar joints and was extremely soiled.*** The ornamental copper mansard roof exhibited tears, open seams, holes and missing ornamental elements and the cast iron railings were seriously displaced with localized areas of missing components and corrosion. The roofing and flashing also exhibited deterioration but was serviceable.

2nd Floor Rehabilitation - The 2nd floor had been inappropriately upgraded with excessive amounts of surface-mounted electrical conduit, panels and fluorescent light fixtures. Improvements required replacement of the 2nd floor infrastructure including provision of air conditioning and partitioning of the rooms to support the new tenant uses. An extensive probe investigation was undertaken to uncover opportunities in the floors, walls and ceilings for concealing the utility infrastructure improvements. An unconventional approach using fan coil units for heating and cooling was utilized by concealing the piping in floor trenches in order to preserve the original room volumes. Partitioning has been designed in a contemporary reversible manner that will allow for future flexibility while preserving the integrity of this significant historic resource.

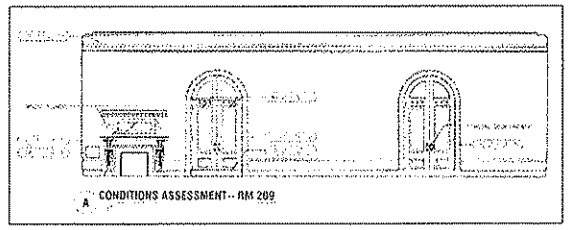
Date of Award: November, 2001
Completion Date (Exterior): December, 2006
Completion Date (2nd Floor): July, 2006

Project Cost (Exterior): $1,700,000
Project Cost (2nd Floor): $4,500,000

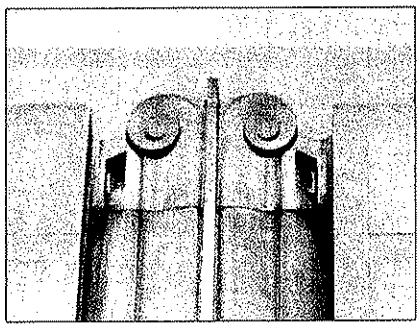
Before Renovation, 2001

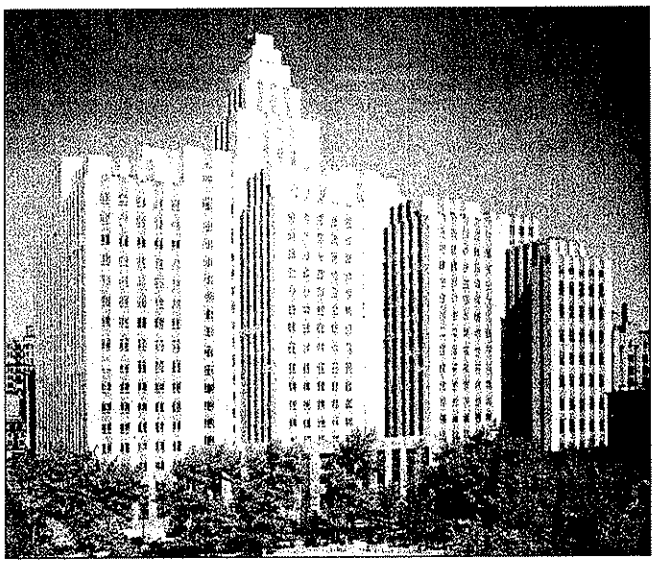
Before Renovation, 2001

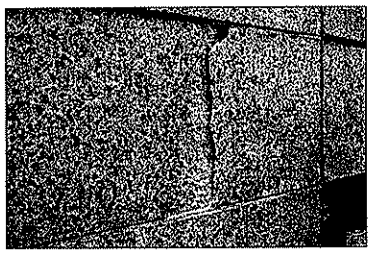
Before Renovation, 2001

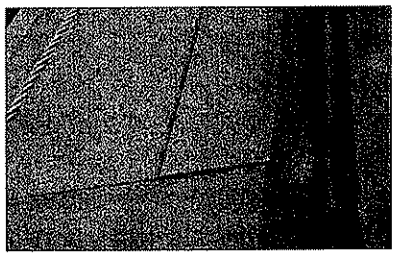


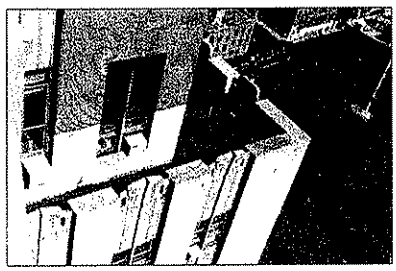
Manhattan Criminal Courts Building
New York, NY











Owner:
The City of New York
Department of Citywide Administrative Services
Archibald Mbatt, Project Manager
(212) 669-8114

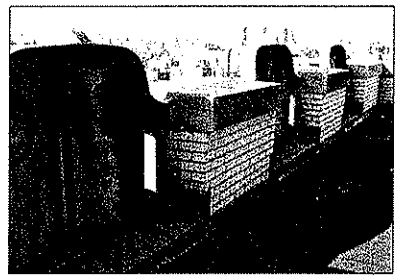
Building Area: 24 stories, 850,000 sf

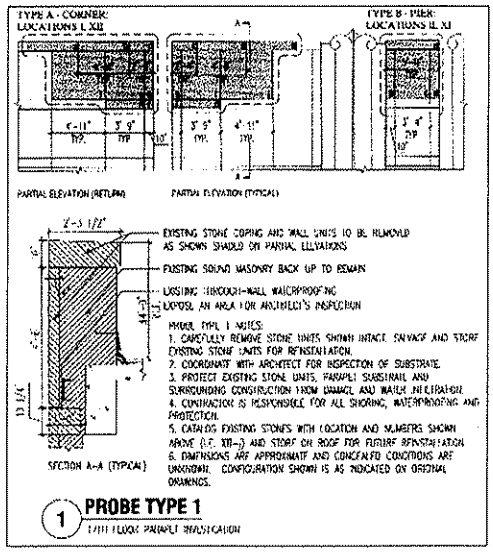
By the first quarter of the twentieth century, New York City was in dire need of a new building to replace the decrepit and outdated Criminal Courts and Prison, famously known as "The Tombs". Partially financed by a Federal Grant for P.W.A. funds, acquired through the efforts of Mayor Fiorello LaGuardia, a new building was designed for an adjacent site extending the civic center north beyond Foley Square. 100 Centre Street, the Criminal Courts Building and Prison, located between Hogan Place and White Street was designed by Wiley and Corbett in 1939. It is a twenty four-story Art Deco-influenced structure with a monumental ziggurat-shaped tower. Devoid of classical ornamentation, the Criminal Courts Building's ***ashlar limestone walls*** harmonize materially with the Foley Square buildings.

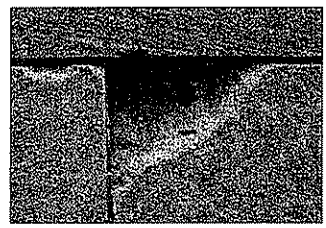
Composed of three wings on the east and west elevations creating deep light wells, the Criminal Courts Building is faced with buff-colored limestone above a polished blackish green granite three-story base. These light wells create two monumental entrance courts with flanking granite pylons at the Centre Street façade leading to the principal lobbies in the building. Vertical strips of windows with cast aluminum spandrel panels and ornamental caps alternate between the ***flat ashlar limestone piers***. Multiple setbacks begin at the 17th Floor culminating in the 24-story central tower.

Project Description:
The building façade suffers from deferred maintenance. Breaches in the building envelope, particularly at parapets and at ***deteriorated mortar joints*** has lead to serious water infiltration. This water infiltration has lead to ***corrosion of stone anchors*** exacerbated by the freeze/thaw movement of trapped moisture. As a result, the stone façade materials exhibit ***displaced units, and conspicuous pattern of cracks and spalls*** at the corner of units, primarily at the parapet levels. In addition the building has never been cleaned and suffers from unsightly ***atmospheric staining of its limestone facade.***

SHCA conducted an exterior evaluation to restore the building façade. As part of this effort the building exterior was visually surveyed with binoculars followed by a ***close inspection*** of one bay from swing stage scaffolding. ***Exterior damage and deterioration were recorded*** and served as the basis for the repair documents presently being prepared. Due the patterns discerned as part of the initial inspection a comprehensive investigative probe campaign was conducted. The underlying configurations and conditions at each parapet level were examined at locations with evident distress. Based upon the information revealed as part of this probe investigation, prescriptive construction documents were prepared identifying the extent of work required to return the building to a safe and dignified condition. This work included identification of ***appropriate repointing mortars and cleaning technologies.***

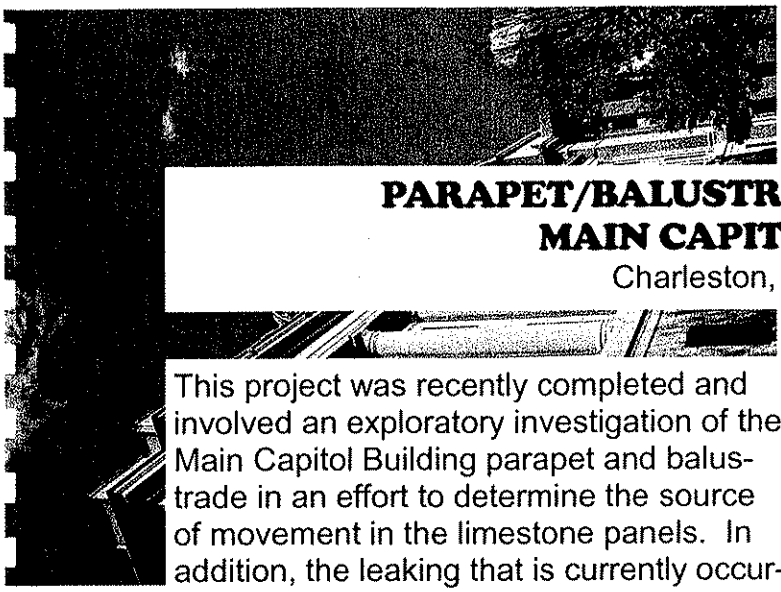






Date of Award: September, 2001
Completion Date (Phase I): December, 2006
Completion Date (Phase II): May, 2006

Project Cost (Phase I): $1,300,000
Project Cost (Phase II): $8,300,000



PARAPET/BALUSTRADE INVESTIGATION
MAIN CAPITOL BUILDING

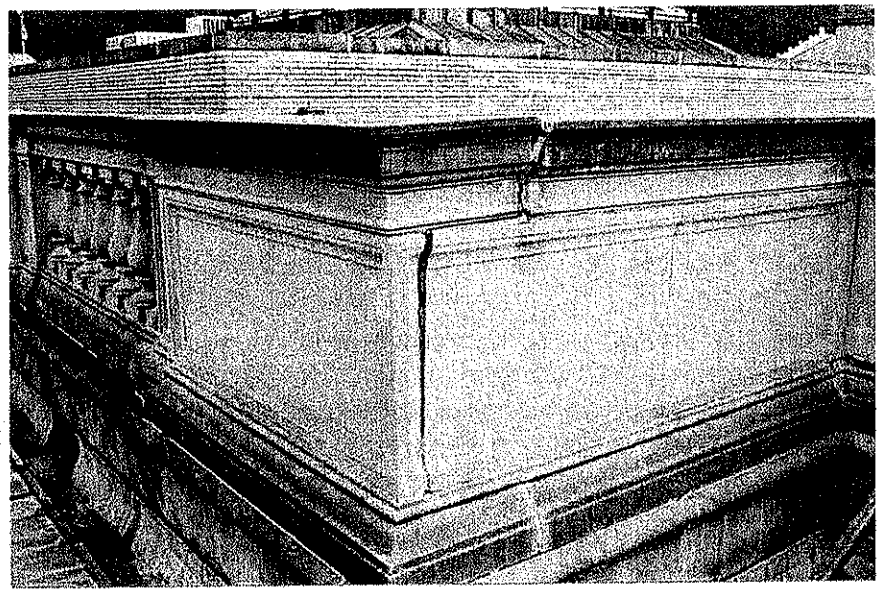
Charleston, West Virginia

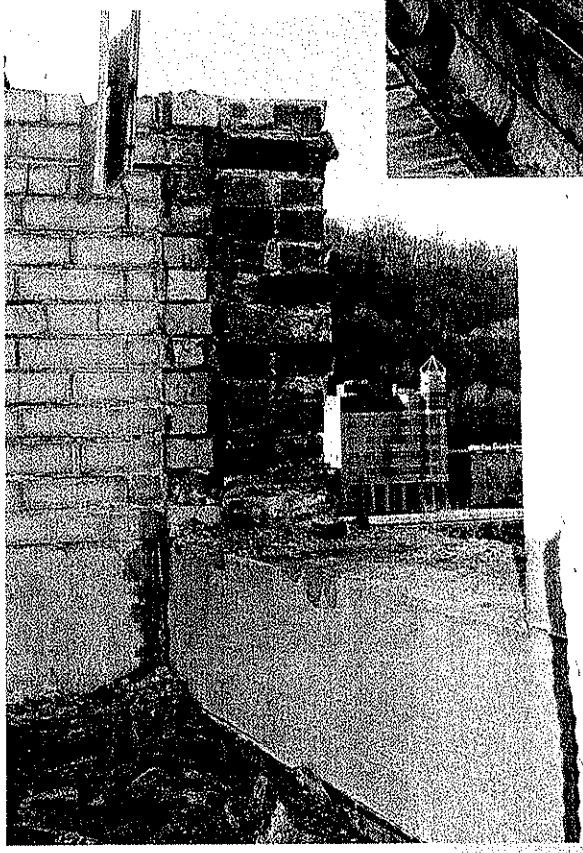
This project was recently completed and involved an exploratory investigation of the Main Capitol Building parapet and balustrade in an effort to determine the source of movement in the limestone panels. In addition, the leaking that is currently occurring in the upper floor ceilings was addressed.

There are a number of locations around the parapet where limestone panels or joints exhibit cracks and significant movement.

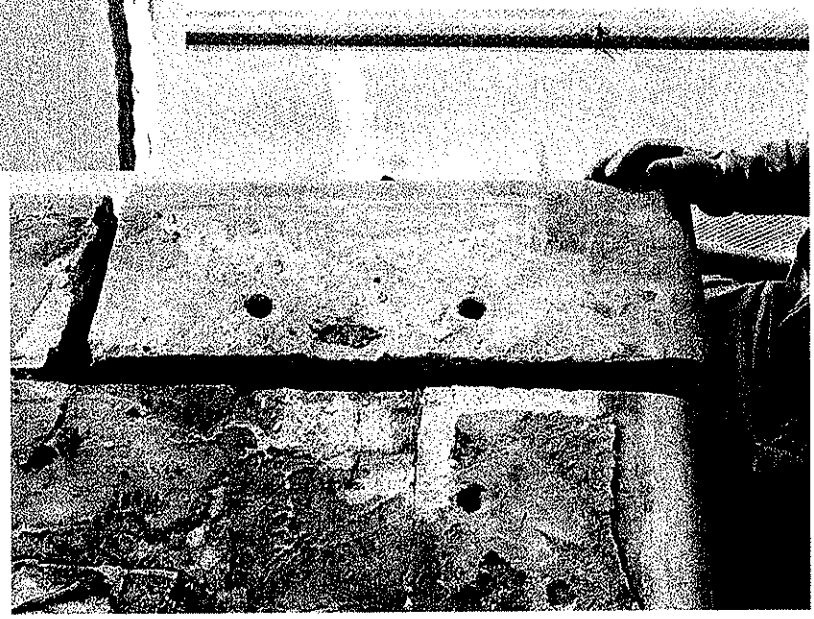
There is evidence of minor efflorescence within the ceiling space as well.

CAS
Structural Engineering, Inc.





The exploratory investigation involved removing limestone and brick at several locations, documenting the findings, and developing a budget estimate for repairs to the parapet.



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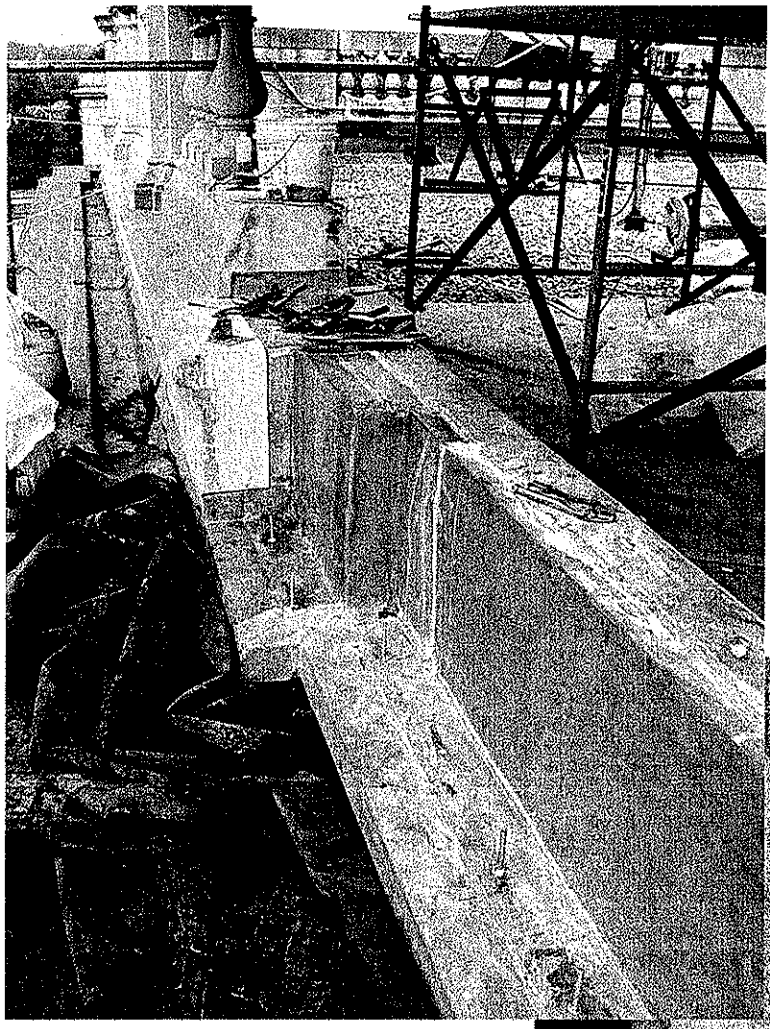
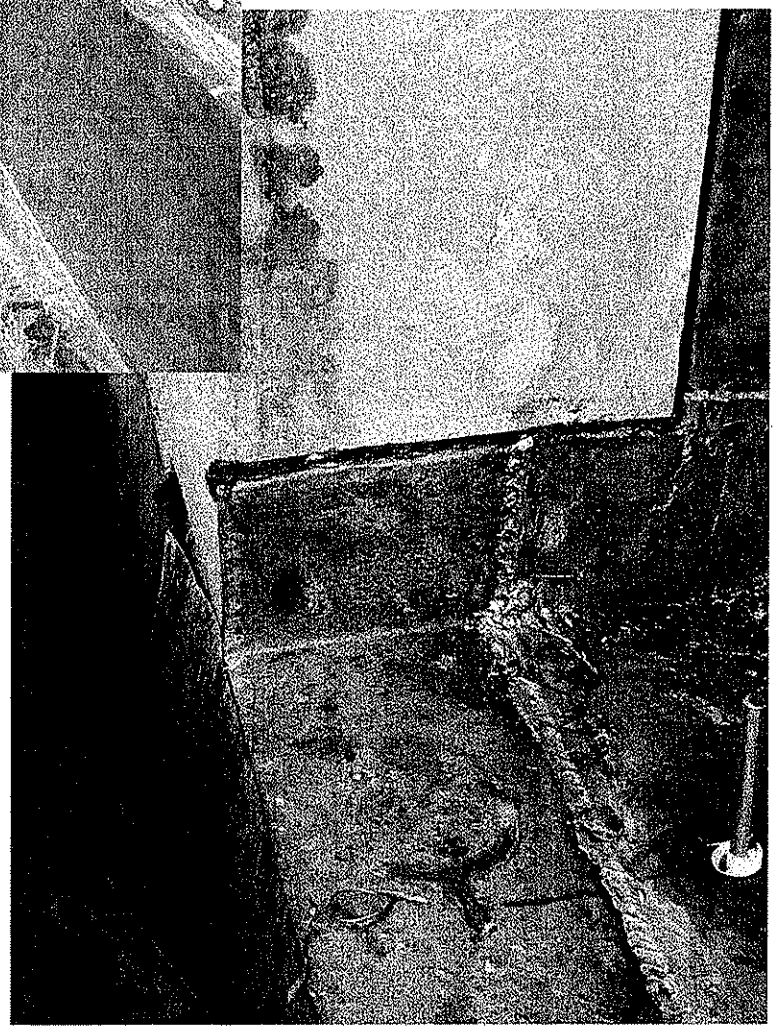


Once the stonework was removed and the source of water infiltration and subsequent deterioration was discovered, plan and specs were developed to make the appropriate repairs. A contract for these repairs was recently awarded and work is currently underway.



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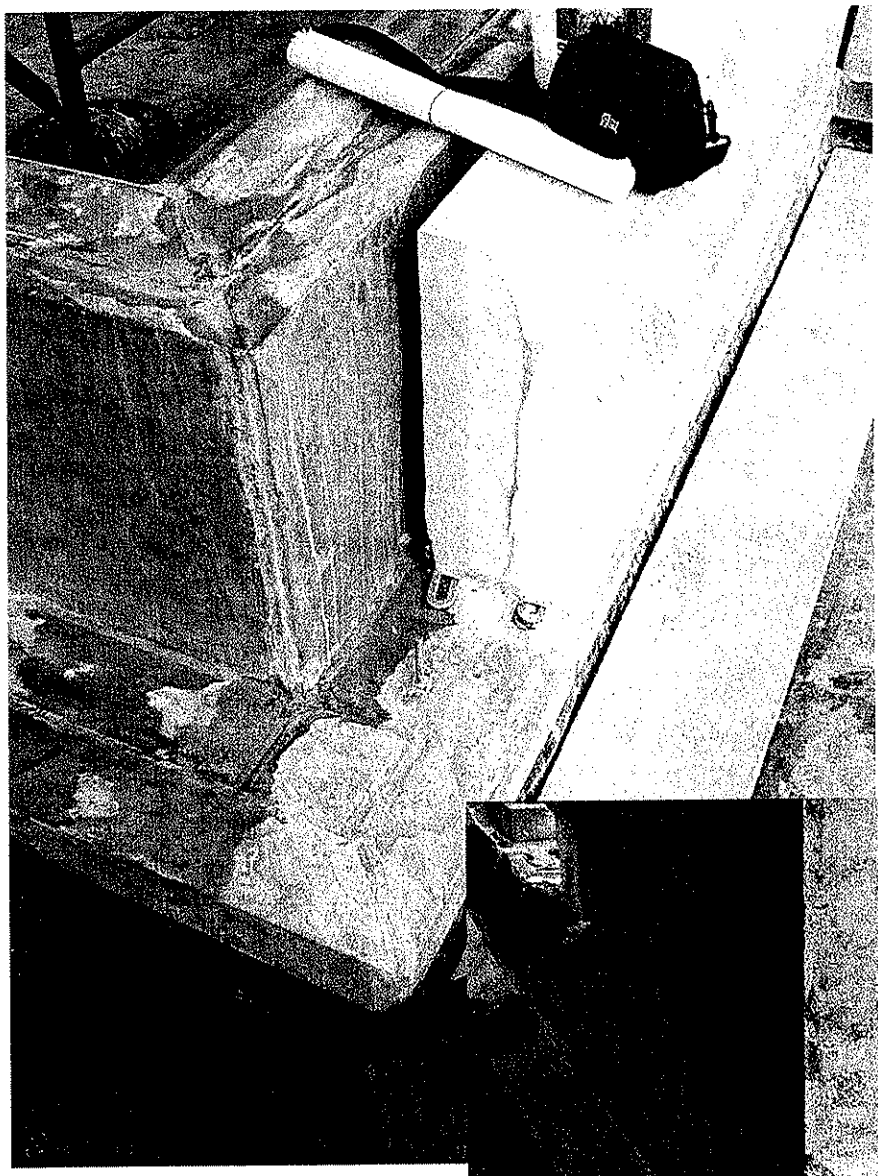
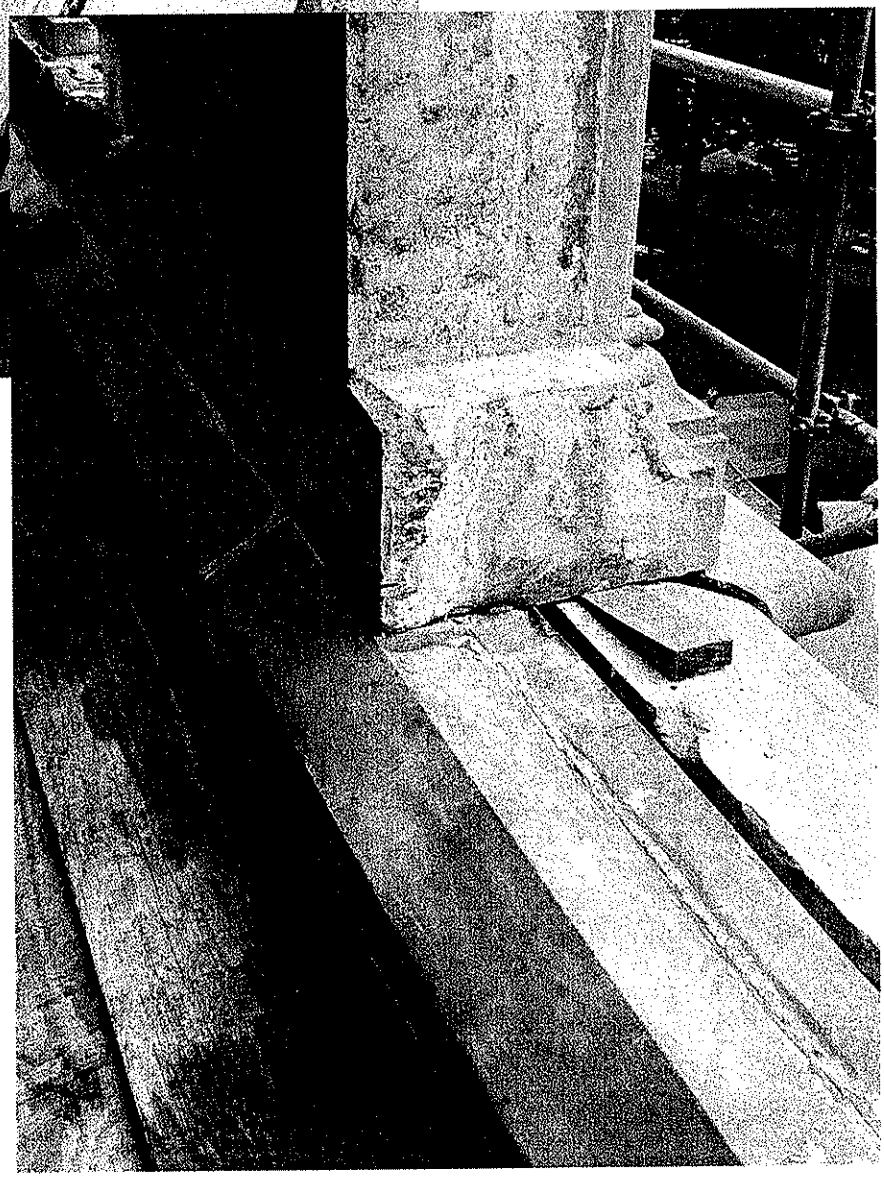
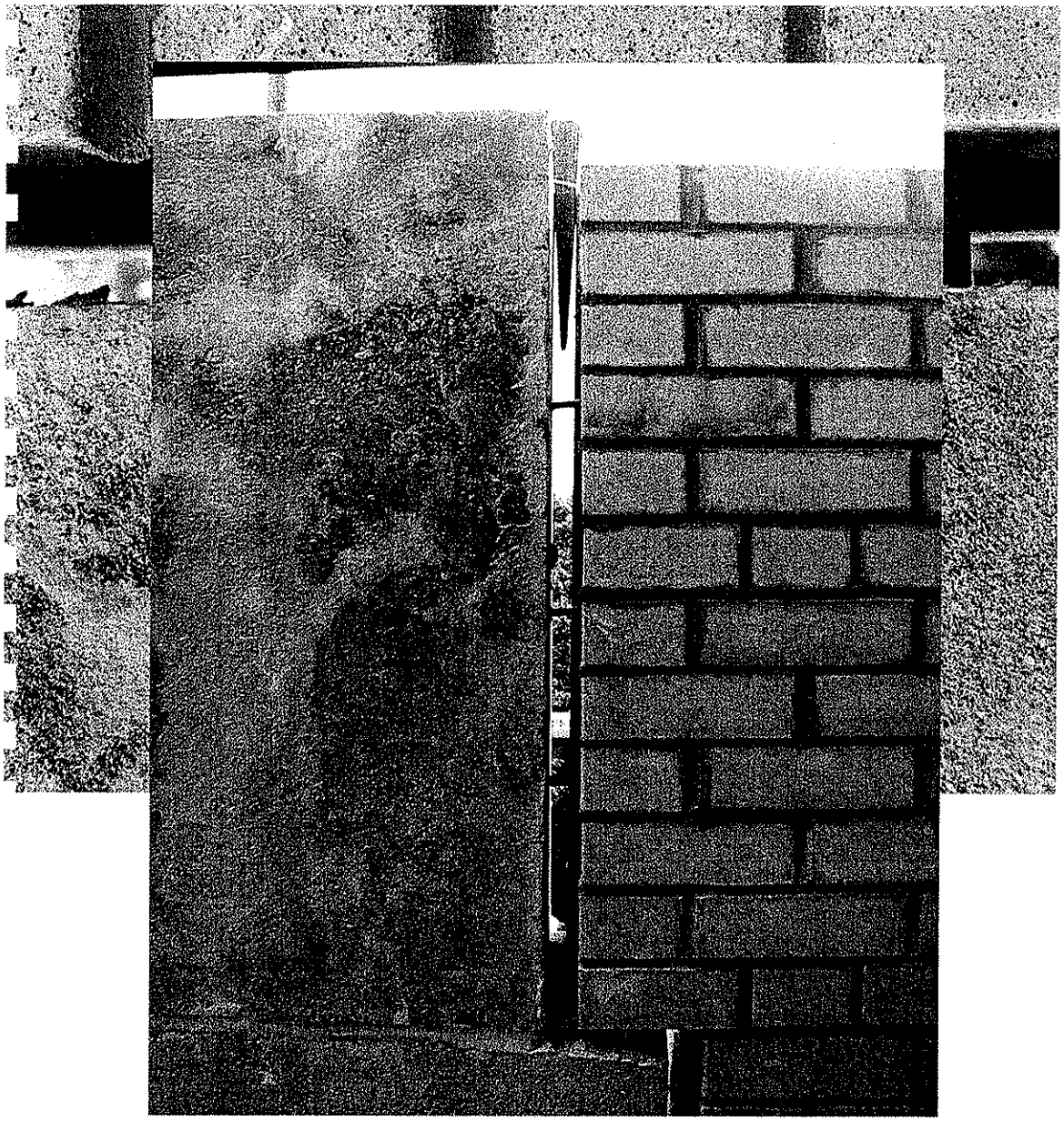
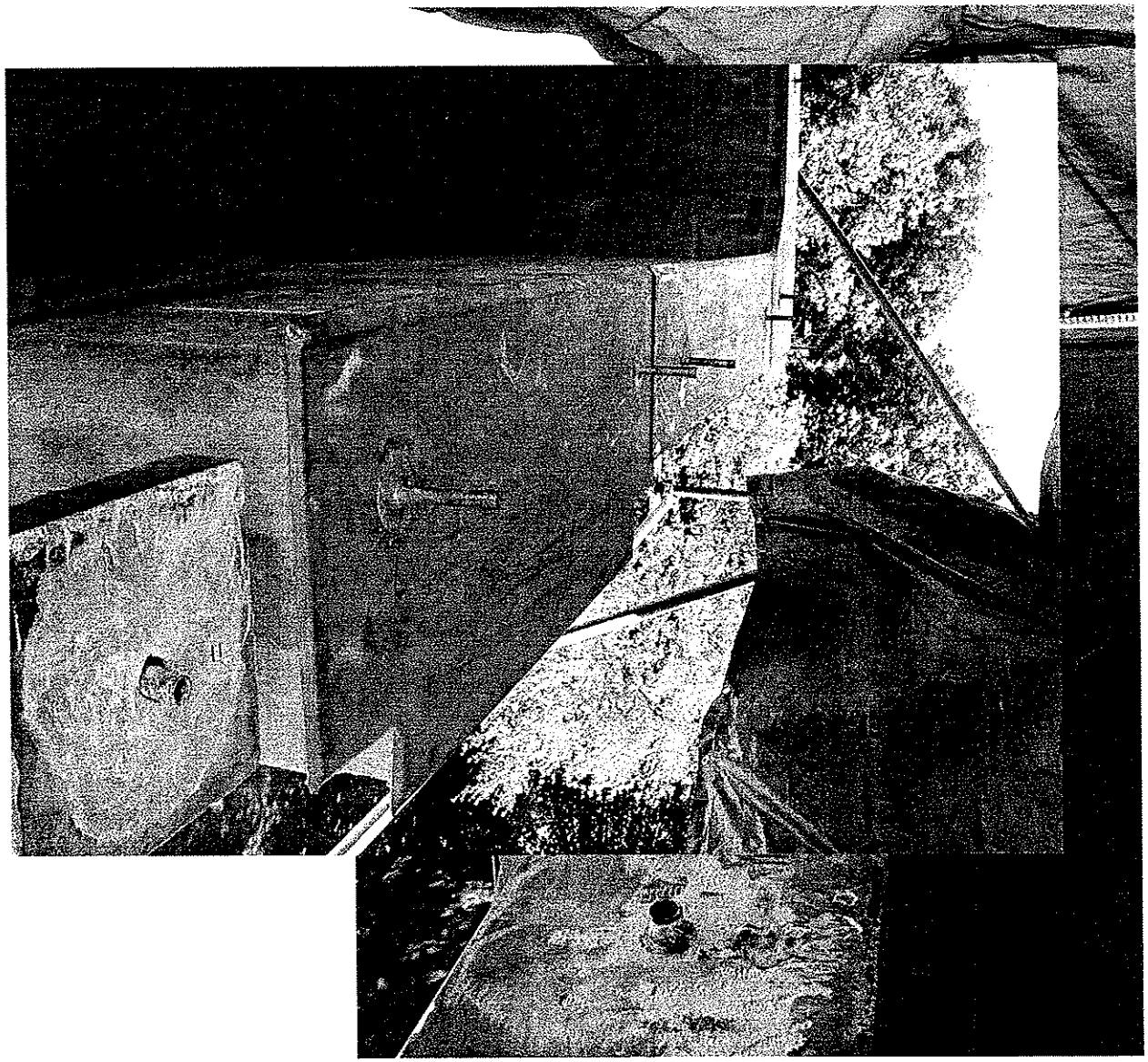






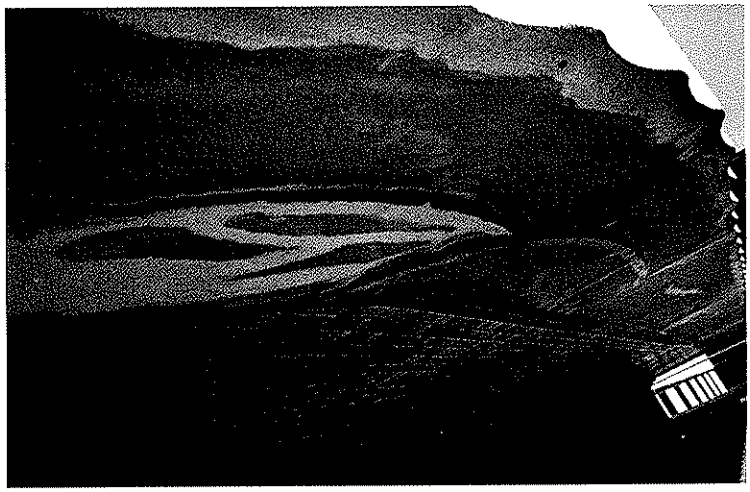


DIVISION OF MOTOR VEHICLES—BUILDING 3
CAPITOL COMPLEX

Charleston, West Virginia

The limestone at the canopy was deteriorated to the point that pieces were loose and ready to fall. The project included an investigation to determine the support conditions for the stone.

During the investigation, it was determined that the support structure was not as shown on the original construction documents.



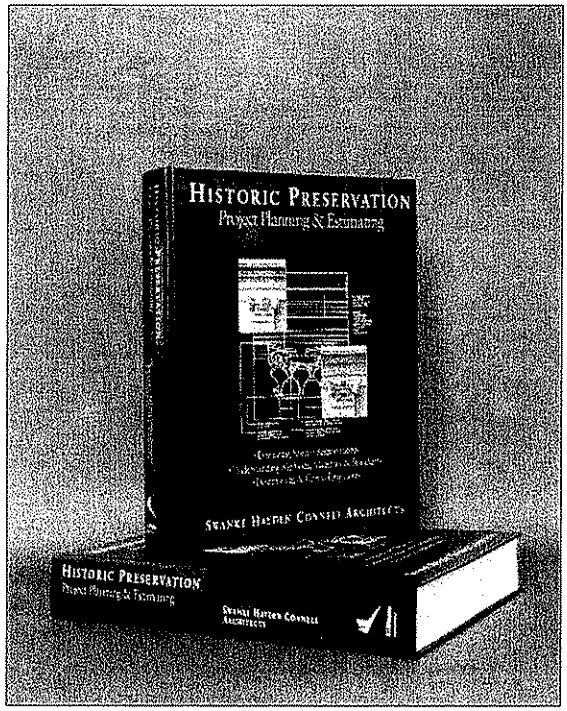
The repair of this element was completed in 2002.

CAS Structural Engineering, Inc.

"Historic Preservation - Project Planning & Estimating"

Author: Swanke Hayden Connell Architects

Publisher: RS Means Company



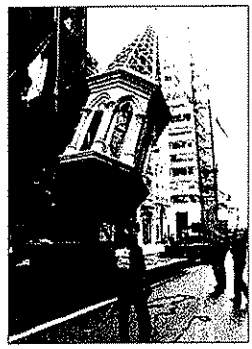
As a logical outgrowth of SHCA's continuing involvement in the field of historic preservation, we have authored the first comprehensive book on historic preservation project planning. This 700-page book, *Historic Preservation - Project Planning & Estimating*, was published in October 2000 by RS Means Co., the preeminent publisher of construction reference and cost estimating publications in North America. This book provides a comprehensive overview of historic preservation project planning, development and execution referencing sources for required standards and technical information. It sets forth the unique requirements for historic building projects and how to estimate and control their costs.

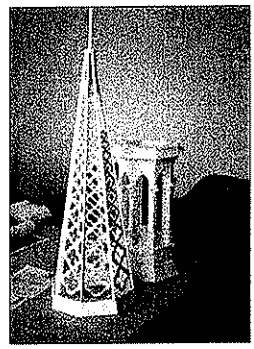
"It is hard to come across such a wealth of information that is as instructive and illustrative as that found in *Historic Preservation: Project Planning & Estimating* by Swanke Hayden Connell Architects. A book that appeals to history buffs and architecture enthusiasts...as well as specialty contractors, developers and engineers, this hefty volume accomplishes what every textbook and resource book should accomplish. It is aesthetically laid out and expertly written to appeal to all audiences regardless of their technical expertise. And, as if that were not enough, it is a true pleasure to read."

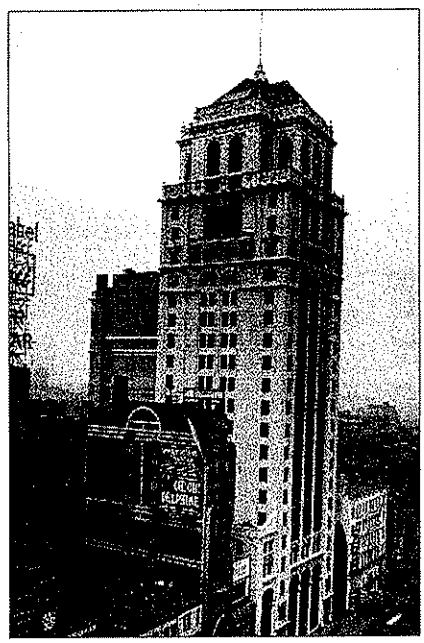
Review by David A. Pogorilich for Cost Engineering Magazine.

"We lose sight sometimes of the singular challenge of architectural preservation - balancing its many moving parts. This new volume seeks to highlight the interconnectedness and diversity of all those moving parts: the project team, history, construction and material technology, zoning, finance, review agencies, philosophical approach, condition surveys, decision-making processes, bidding strategies, factors affecting the progress of construction, implementation, scheduling, ongoing maintenance, and so forth. It is fun and useful reading, reminding us that we are not alone in dealing with the crazy-quilt drama that projects often present."

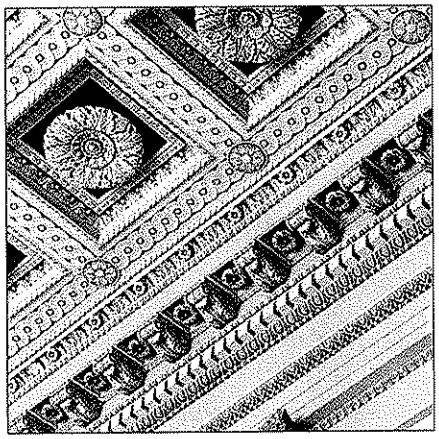
Review by Walter Sedovic, AIA for Traditional Building Magazine.







Project Methodology

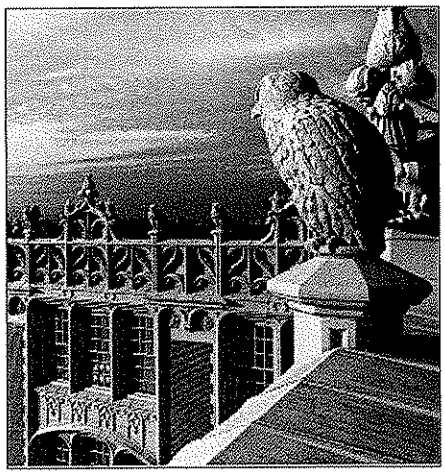


SHCA has a long and impressive history in Historic Preservation. As the architects for the Statue of Liberty restoration the firm was responsible for the direction of a vast team of consultants. The project was perhaps one of the most "visible" undertakings of the firm meeting a schedule of which the whole county was aware not to mention a budget scrutinized monthly by the National Park Service. SHCA also provided historic preservation services for the restoration of the Fifth Avenue Presbyterian Church. Both projects received the nation's highest honor in historic preservation: The President's Award. SHCA has received recognition at the local and state levels for the restoration of New York City Public School 157. It was a 2001 recipient of the New York Landmarks Conservancy's Lucy G. Moses award and Preservation League of New York State organizational award.

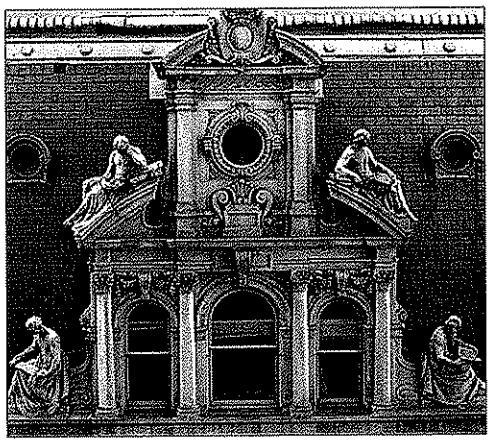
SHCA uses the *Secretary of the Interior's Standards for the Treatment of Historic Properties* as the firm's internal design guidelines for our work on historic buildings. Following this criterion has enabled the firm to execute historic preservation projects at a high standard not only meeting but exceeding the requirements of the Secretary's Standards. This philosophy is also followed by SHCA's core team of historic preservation experts who individually meet the professional qualifications established by the National Park Service in each of their respective positions.

In order to keep abreast of the most recent innovations and issues in the field SHCA maintains memberships in the following architectural and historic preservation organizations:

- American Institute of Architects
- Association for Preservation Technology International
- The Beaux Arts Alliance
- Brownstone Revival Coalition
- Construction Specifications Institute
- DOCOMOMO
- Greenwich Village Society for Historic Preservation
- Historic Districts Council
- Municipal Arts Society
- National Trust for Historic Preservation
- New York Landmarks Conservancy
- New-York Historical Society
- Partners for Sacred Spaces
- Society for Commercial Archeology
- Society for Industrial Archeology
- US ICOMOS



Supporting this commitment our historic preservation staff remains personally active on various boards of preservation organizations including: the New-York Historical Society: both New York City and Washington DC chapters of the Association for Preservation Technology International; and the Gansevoort Market Task Force of the Greenwich Village Society for Historic Preservation.

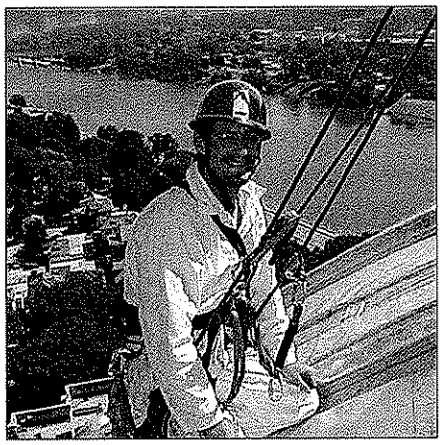


Project Approach

As a firm practicing architecture for nearly 100 years SHCA has developed the resources and expertise necessary to successfully complete the restoration and rehabilitation of any building type. The breadth of our experience ranges from restorations of highly visible landmark structures such as the Statue of Liberty, to re-skinning of mid-20th Century curtain-wall skyscrapers such as 600 Third Avenue in Manhattan, to the rehabilitation of masonry schools for the New York City Board of Education. The key to SHCA's success is based upon our ability to cultivate a thorough understanding of the existing conditions enabling the development of prescriptive rehabilitation documents. This approach ultimately limits potential unforeseen conditions reducing financial risk and resulting in a high caliber end product.

Historic Preservation is the process of researching, documenting, assessing, safeguarding, communicating about and insuring the perpetuation of valued places. Projects are initiated by understanding the values inherent in and ascribed to cultural properties and from the basis of these values we conduct our work. Though treasured for their multiple values, the viability of historic resources depends on planning bringing them to full use, enjoyment, and sustainability for people today and tomorrow. Therefore, our preservation projects not only involve a detailed articulation of the historic record and existing conditions, but also address the historic significance, integrity and character analysis, development of sound alternatives, selection of the appropriate preservation approach, development of implementation strategies and interpretation of the resources to the public.

Our project approach and work scope for Historic Preservation projects is structured as a methodical series of tasks that provides a well-informed basis for developing alternatives and selecting the most appropriate preservation treatment for the physical aspects of the historic building and site. Establishing the Preservation Architect as a key part of the lead consultant on a project team ensures that a historic preservation-based evaluation and design are carried out. SHCA is in a unique position to coordinate and satisfy the requirements of these efforts. As a full-service architecture firm with disciplines in Historic Preservation, Architecture and Interiors, SHCA's staff is fully integrated with both specialized and overlapping expertise in each discipline. This overlapping internal structure allows for progressive project development advancing the project efficiently towards an appropriate palette of project opportunities and design solutions.



Exterior Rehabilitation Methodology

Our team of rehabilitation experts take a hands-on approach to ensure development of prescriptive construction documents minimizing the potential for unforeseen conditions and the resulting cost over runs and schedule delays.

In order to provide comprehensive restoration and rehabilitation services SHCA has established relationships with structural engineers, rigging specialists, specialty subcontractors and cost estimators for the examination and evaluation of:

- Roofing Systems
- Masonry Wall Assemblies
- Wood Wall Assemblies
- Sheet and Cast Metal Assemblies
- Curtain Wall Systems
- Window and Door Assemblies
- Interior Ornamental Finishes

SHCA uses a comprehensive in-house methodology to ensure a systematic progression of the historic building evaluation, construction document development and project execution. This holistic approach is tailored to the specific programmatic requirements within the parameters of the project budget and schedule.

Specific Project Work Plan

SHCA along with our Structural Engineering Consultant, CAS Engineering, completed masonry repair documents for the restoration of the limestone base of the State Capitol Dome as part of the Dome restoration project. At that time, due to logistical considerations, cleaning testing was performed at the ground level of the Capitol's West Wing. Repair details and technical specification were prepared for that work and in order to gain a full understanding of the limestone conditions a cursory façade inspection of the entire State Capitol was performed in Fall, 2006. As such SHCA has already prepared the technical specifications and construction details anticipated for this project. This will enable SHCA to have a jump start on the work and to complete the full construction effort in 2006.

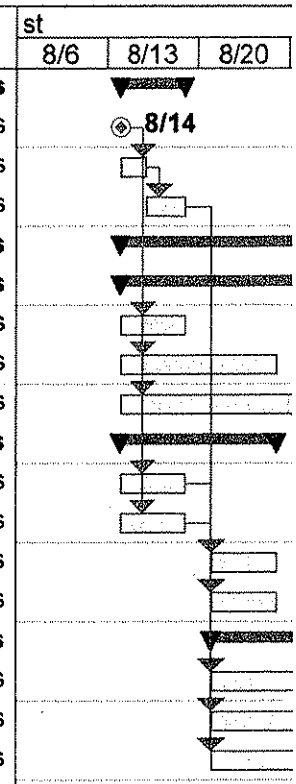
Following are the specific tasks we will undertake. Time frames for each task are identifid in the corresponding project schedule:

- Documentation Review - Review SHCA's previously prepared repair documents and verify the additional scope of required investigation.
- Construction Budget & Bid Solicitation - Establish a construction budget and determine the bid solicitation requirements so that opportunities to fast track the work can be determined immediately.
- Agency Review - Act as liaison with the Capitol Planning Commission and Division of Culture and History to ensure conformance and cooperation from agencies with purview.
- Visual Field Inspection - Perform close inspection of exterior facades utilizing our relationship with contractors for provision of staging to access the facade. We will perform the inspection of the main facades floors of the building from a man lift. The dome will be inspected with the aid of binoculars from the building roof. We anticipate the provision of two man lifts and will provide two teams of inspectors to accomplish the inspection in two weeks.
- Mortar Analysis - Utilizing our in-house laboratory perform a mortar analysis of the original pointing mortar on the main building facades.
- Field Testing - Perform field testing of cleaning technologies supplementing the testing we have performed to date. A low pressure water rinse and a testing of a second manufacturer of chemical cleaners are recommended. Recommendations of a particular cleaning technology will be based upon efficacy, schedule considerations and environmental limitations.
- Construction Drawings - Update the plans, elevations, sections and details previously prepared for masonry restoration work. The drawings will accurately and prescriptively describe the building configuration and scope of work.
- Technical Construction Specifications - Update the technical specifications previously prepared for masonry restoration work identifying subcontractor competency, specific products and prescriptive methods for executing the work.
- Bid Documents - Prepare front-end specifications clearly incorporating strategies for selecting qualified contractors, pricing alternates, negotiating additional work and ensuring quality work-manship.
- Emergency Repairs - Identify and coordinate the immediate stabilization, removal and/or repair of hazardous facade components that threaten the life and safety of individuals.
- Construction Administration - Ensure that preservation-sensitive work is being performed during construction in conformance with the specific project requirements, including quality control and field mock-ups prior to execution of work.

Swanke Hayden Connel Architects
Proposed Project Schedule

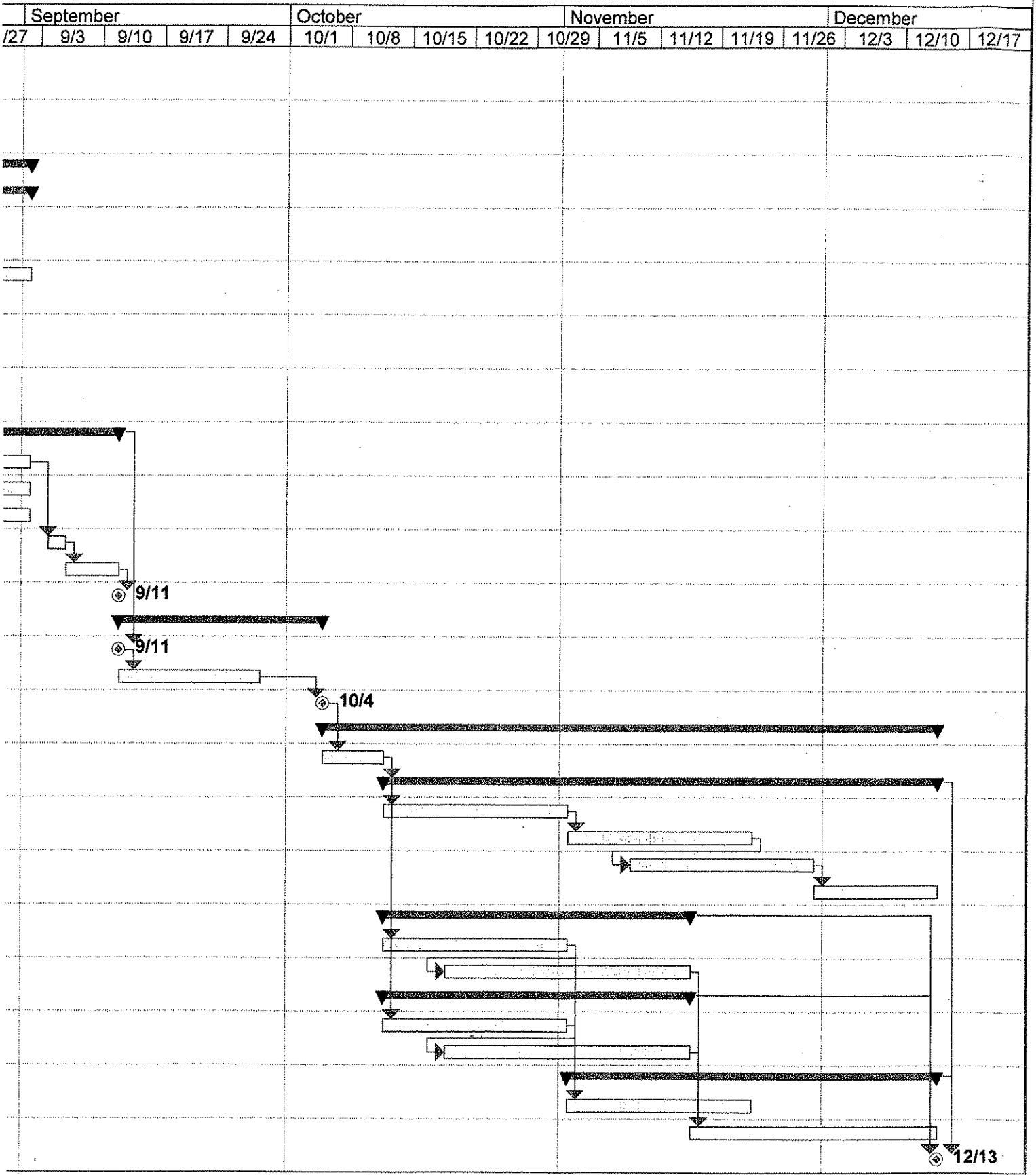
WEST VIRGI
Exterior Masonry

ID	Task Name	Duration
1	**TASK 1 - REVIEW BACKRGOUND INFORMATION**	**5 days**
2	1.1 Notice-to-Proceed	0 days
3	1.2 Compile / Review Background Information	2 days
4	1.3 Establish Construction Budget & Solicitation Req's	3 days
5	**TASK 2 - FIELD TESTING & CONDITIONS SURVEY**	**15 days**
6	**2.1 Field Testing**	**15 days**
7	2.1.a Perform Mortar Analysis	5 days
8	2.1.b Further Testing of Test Chemical Cleaners	10 days
9	2.1.c Test Low Pressure Water Spray	15 days
10	**2.2 Exterior Inspection**	**10 days**
11	2.2.a Inspect Dome Drum / Tower / Base - Binoculars	5 days
12	2.2.b Inspect Main Building - Man Lift Inspection	5 days
13	2.2.c Inspect East Wing - Man Lift Inspection	5 days
14	2.2.d Inspect West Wing - Man Lift Inspection	5 days
15	**TASK 3 - CONSTRUCTION DOCUMENTS**	**16 days**
16	3.1 Update Construction Drawing Elevations & Details	10 days
17	3.2 Update Technical Specifications	10 days
18	3.3 Prepare Front-End Specifications & Bid Instruction	10 days
19	3.4 Prepare Cost Estimate	2 days
20	3.5 Client Review of CD's	4 days
21	3.6 Client Sign-off on CD's	0 days
22	**TASK 4 - BIDDING**	**17 days**
23	4.1 Issue for Bid	0 days
24	4.2 Bid Period	12 days
25	4.3 Bid Award	0 days
26	**TASK 5 – CONSTRUCTION**	**50 days**
27	5.1 Construction Mobilization	5 days
28	**5.2 Main Building Entrances & Dome Tower**	**45 days**
29	5.2.a Scaffold Entrance Porticos & Dome Tower	15 days
30	5.2.b Clean Entrance Porticos & Dome Tower	15 days
31	5.2.c Masonry Repairs to Entrances & Dome Tower	15 days
32	5.2.d Dismantle Scaffold	10 days
33	**5.3 Main Building**	**25 days**
34	5.3.a Clean Main Building	15 days
35	5.3.b Masonry Repairs to Main Building	20 days
36	**5.4 East Wing**	**25 days**
37	5.4.a Clean East Wing	15 days
38	5.4.b Masonry Repairs to East Wing	20 days
39	**5.5 West Wing**	**30 days**
40	5.5.a Clean West Wing	15 days
41	5.5.b Masonry Repairs to West Wing	20 days
42	5.6 Construction Complete	0 days



A STATE CAPITOL
epair & Cleaning Project

July 25, 2006



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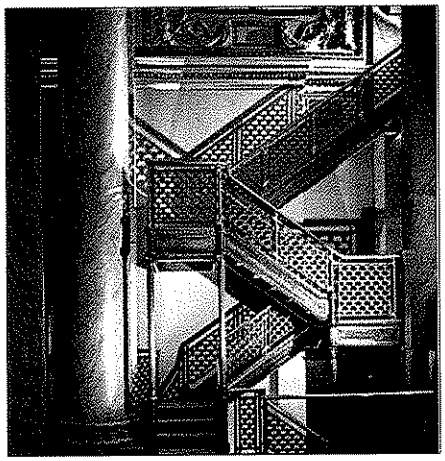
Personnel



Project Team

Organized on a team basis, SHCA professionals approach a project's requirements with a broad base of experience. We explore with our clients, the best solutions for new building design, interior design, and ***building rehabilitation***. SHCA is proud of our team approach and considers it a distinguishing and vital element of the firm's international success.

SHCA encourages a healthy dialogue between all team members. Our project team meetings lean towards productive working sessions where each consultant's input is recognized and incorporated to develop a comprehensive understanding of the project's constraints and opportunities. However, this team effort cannot progress without the invaluable input from the Client. The team will openly discuss project issues with the client soliciting and integrating feedback into the evolving design.

The proposed SHCA "core team" members have been selected because of their experience in their particular roles of responsibility, and their skills to operate as a team. These professionals will retain overall responsibility for their individual areas of work, and will also overlap to ensure secondary coverage for all aspects of the project's work.

Richard S. Hayden, FAIA, Principal-in-Charge

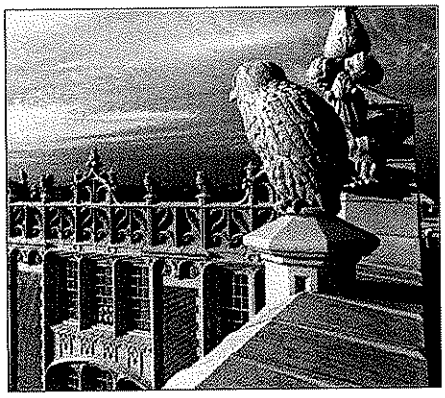
Responsibilities:

- Determines project implementation strategy
- Directs resource management
- Conducts project reviews to ensure conformance with Scope of Services

Robert Cole, AIA, Project Director

Responsibilities:

- Senior client contact
- All contractual, financial, staffing issues
- Coordinates and monitors development of project with the project team
- Oversight of technical and design development
- Controls all multiple phasing activities (if required)



Rosanne Dube, RA, Project Architect

Responsibilities:

- Provides the primary day-to-day client contact
- Coordinates design and technical disciplines
- Directs overall project administration including the construction document preparation
- Leads field survey, probe investigation, and consultant coordination efforts
- Prepares and monitors budgets and schedules

Elizabeth Moss, Architectural Conservator

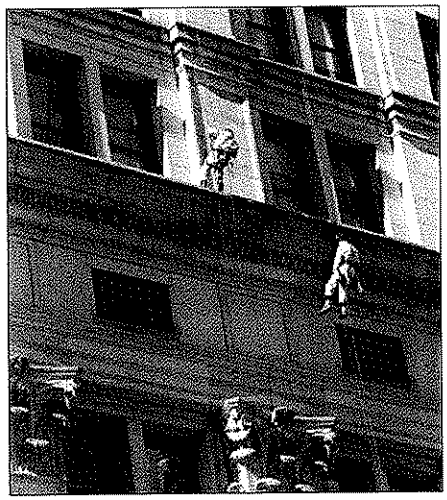
Responsibilities:

- Conducts field survey activities and facade evaluation
- Identifies existing materials and their constituents
- Evaluates architectural integrity of impacted archaic materials
- Directs materials testing and conservation program
- Performs mortar analysis and cleaning testing
- Prepares technical preservation specifications
- Oversees shop drawing and construction submittal review process
- Attends field meetings and liaises for construction issues
- Conducts construction field inspections

Stuart Johnson, Historic Preservation Specialist

Responsibilities:

- Conducts field survey activities and facade evaluation
- Coordinates compilation of field survey information
- Prepares construction documents
- Coordinates the work of consultants with that of SHCA construction documents
- Assists in construction supervision



Sub-Consultant Team

We have carefully assembled a highly qualified team of recognized professionals to participate in and successfully complete this project based on the following criteria:

- Capability in their area of expertise
- Overall performance on other projects
- Cost management on other projects
- Time management on other projects
- Cooperation with client
- Cooperation with other consultants and contractors

CAS Structural Engineering, Inc.

~ Structural Engineers

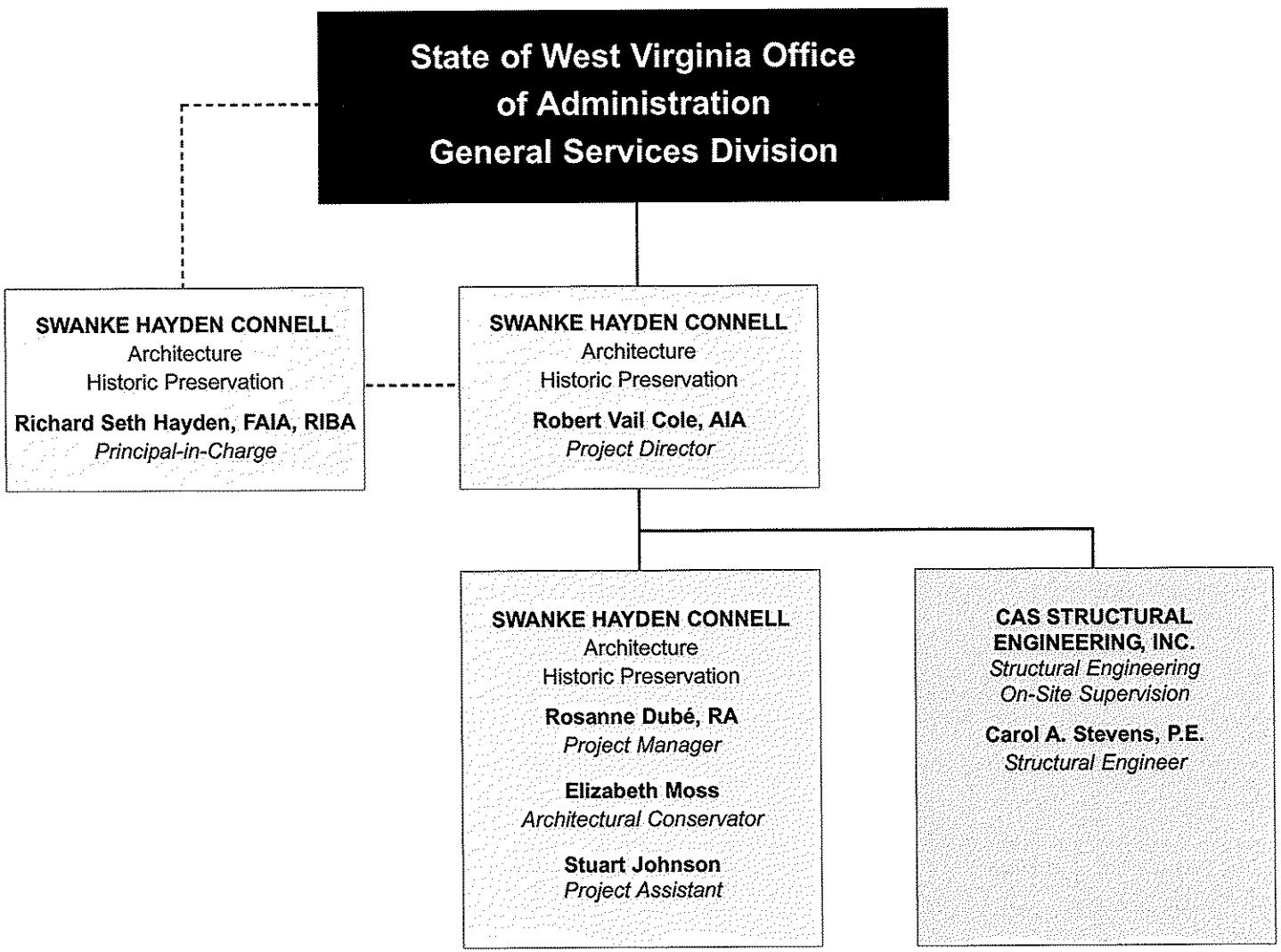
CAS Structural Engineering builds on the 16 years of experience of Carol Stevens, President, in providing structural engineering services for both building rehabilitation and new construction projects. Her rehabilitation projects include historic structures located in West Virginia and southern Pennsylvania. The breadth of these projects comprise experience on governmental, commercial and residential period buildings of masonry, steel and wood structural assemblies. CAS's relevant experience includes:

- York County Government Center, York, PA
- Farrell Law Building, Huntington, WV
- State Capitol, Charleston, WV
- Department of Motor Vehicles, Charleston, WV

Responsibilities:

- Participates in field survey activities and facade evaluation
- Design & coordination of any required structural repairs
- Coordination of project with parapet State Capitol repair project
- Conducts construction field inspections
- Day-to-day on-site presence as required

Team Organizational Chart



ROBERT VAIL COLE, AIA
Associate Principal
Director of Historic Preservation

Mr. Cole is an accomplished architect specializing in research, building evaluation, design, construction documentation, and construction management on historic structures. His 21 years of experience has been spent solely in restoration, preservation, rehabilitation and adaptive reuse of existing educational, institutional commercial, civic, religious and residential buildings. He is experienced in all phases of the design and construction process and is an expert in the evaluation and conservation of historically-significant structures.

Mr. Cole's experience on historic monumental buildings is extensive. He acted as the preservation architect on the award-winning restorations of San Francisco's City Hall and War Memorial Opera House and Oakland City Hall as well as the Internal Revenue Service Building in Washington, DC, and the West Virginia State Capitol; projects with a construction value exceeding $530,000,000.

Education

University of Oregon School of Architecture & Allied Arts
Bachelor of Architecture

Work Experience

Swanke Hayden Connell Architects
Carey & Co., Inc., San Francisco, CA
Fitzpatrick Karren Associations, Oakland, CA

Principal Projects (Partial List)

RS Means Co. Publishers, "Historic Preservation - Project Planning & Estimating"
Principal author of 700+ page technical book on planning and cost estimating for historic preservation projects

West Virginia State Capitol, Charleston, WV
Restoration of dome, grilles, exterior masonry, doors, chandeliers and select interiors spaces of 1932 Cass Gilbert landmark state capitol

Internal Revenue Service Headquarters, Washington, D.C.
Building modernization, façade and window restoration and infrastructure upgrade of a 1.4 million square foot 1928 Beaux Arts federal office building

U.S. Post Office, 90 Church Street, New York, NY
Building restoration, infrastructure upgrade of 800,000 sf 1930's post office and federal office building

First Presbyterian Church, Charleston, WV
Exterior envelope evaluation & restoration of 1915 historic church.

Local Law 11 Critical Examination Reports, New York, NY
Facade evaluation of eleven landmark municipal buildings around Foley Square and City Hall Park in Manhattan

Hall of Records / Surrogates Court, 31 Chambers Street, New York, NY
Facade restoration of 1899 Beaux Arts landmark; 2nd floor rehabilitation, building systems upgrade and tenant improvements for NYC Dept of Cultural Affairs

New York Life Insurance Building, 346 Broadway, New York, NY
Facade and main lobby restoration of 1899 McKim, Meade and White landmark office building

Louis J. Lefkowitz State Office Building, 80 Centre Street, New York, NY
Masonry facade restoration of 1930s Moderne municipal building.Manhattan.

Manhattan Criminal Courts Building, 100 Centre Street, New York, NY
Facade restoration, bird control and masonry cleaning of landmark 17-story 1940 municipal building

Columbia University Off-campus Properties, Morningside Heights, New York, NY
Roofing assessments, exterior rehabilitation and lobby restoration of 88 circa 1900 buildings for Columbia University

Candler Building, New York NY
Facade restoration and base building renovation of historic 1913 Times Square office building

Solomon R. Guggenheim Museum, New York, NY
Facade rehabilitation study of 1959 Frank Lloyd Wright landmark museum

Heinz Chapel, University of Pittsburgh, Pittsburgh, PA
Evaluation and restoration of the spire fleche and stain glass windows of 1932 landmark chapel

Holly Grove Mansion, Charleston, WV
Interior and exterior evaluation and restoration of historic 1815 mansion. San

Francisco City Hall, San Francisco, CA
Seismic upgrade, infrastructure replacement, building restoration and tenant improvements of 510,000 sf 1916 Beaux Arts landmark

War Memorial Opera House, San Francisco, CA
Seismic upgrade, infrastructure replacement, building restoration and tenant improvements of 1932 Beaux Arts landmark

Oakland City Hall, Oakland, CA
Seismic upgrade, infrastructure replacement, building restoration and tenant improvements of 320,000 sf 1912 Beaux Arts landmark

ROBERT VAIL COLE, AIA

Professional Qualifications & Affiliations

Registered Architect, State of California
Member, American Institute of Architects
New York City Department of Buildings Scaffold Training Certification

Project Awards

New York Council Society of American Registered Architects
2003 Award of Merit for Public School 157
Preservation League of New York State Preservation Awards
2001 to NYC DDC for Public School 157
New York Landmarks Conservancy, Lucy G. Moses Award
2001 for Public School 157
AIA Honor Award for Interior Architecture
1999 for San Francisco City Hall
National Trust for Historic Preservation, Honor Award
1999 for San Francisco City Hall
1998 for War Memorial Opera House
1996 for Oakland City Hall
NEA Presidential Design Awards, Federal Design Achievement Award
1995 for Spreckels Temple of Music
California Preservation Foundation, Annual Design Award
1999 for San Francisco City Hall
1997 for War Memorial Opera House
1995 for Spreckels Temple of Music
1994 for San Francisco City Hall, Historic Structure Report
1993 for Shell Building
1993 for Oakland City Hall, Earthquake Evaluation Report
1993 for St. Francis Lutheran Church
1991 for Oakland City Hall, Historic Structure Report
1991 for Winkle Farm Structures, Historic Structure Report
Foundation for San Francisco's Architectural Heritage
1994 for Shell Building
1994 for St. Francis Lutheran Church

Articles and Publications

"Historical Ceilings", *American School & University*, February, 2005
"More than Meets the Eye", *Contract Magazine*, November, 2004
"The Test of Time - Rehabilitating an older school's facade can erase past abuses", *American School & University*, July, 2004

"Saving History and (Sometimes) Money - PS 157, An Historically Significant New York City Public School", *School Planning & management*, May, 2002

"New Uses for Surplus Army Buildings", *Architectural Record*, June 2001

"Understanding the Conditions, Reducing the Risk", *The Construction Specifier*, May 2001

Historic Preservation - Project Planning & Estimating, RS Means Company, October, 2000

"Wall and Ceiling Finishes: Plaster Restoration Challenges", *The Construction Specifier*, June, 2000

"San Francisco Unreinforced Masonry Buildings - Design Guidelines", San Francisco AIA/Preservation Committee

Lectures

"Cost Control - Understanding the Conditions, Reducing the Risk", Project Management Symposium, Association for Preservation Technology National Conference, October 2005

"Historic Preservation Design Methodology - The Manhattan Criminal Courts Building," guest lecturer, Social and Political Issues in Historic Preservation, The New School, New York, NY, July 2002

"Case Studies in Assessing Conditions and Risks", Construction Specifications Institute 2002 National Conference, June 2002

"The Test of Time - A Design Philosophy for Discreet Intervention", Association for Preservation Technology National Conference, October 2001

"Understanding the Conditions, Reducing the Risk", Construction Specifications Institute 2001 National Conference, June 2001

"Large Scale Considerations - Small Scale Elements," Guest Lecturer, The History of Historic Preservation in the United States, The New School, New York, NY, December 2000

"The Facility Manager's Role in Historic Preservation," Association for Facilities Engineering (AFE), Facilities America 2000 National Conference

"Seismic Technology Enhances Historic Preservation," AIA National Convention Seminar, 1998

"San Francisco City Hall Retrofit, Using Performance Design Equivalency - Historic Preservation," AIA Conference, October 1997

Public Service

Greenwich Village Society for Historic Preservation, Member, Gansevoort Market Task Force

San Francisco Civic Center Tour, Docent, AIA National Convention, 1998

San Francisco Chapter, American Institute of Architects, Chair, Preservation Committee, 1992, 1993

ROSANNE DUBÉ, RA

Project Architect

Ms. Dubé is a licensed architect specializing in Historic Preservation. Her combined architectural and historic preservation background gives her a thorough understanding of the challenges in renovating and restoring historic properties. Her professional background includes building documentation, evaluation, design and construction administration for some of the most historically significant civic buildings in the United States and Canada. Actively involved in the field of preservation, Ms. Dubé is a long time member of the Association for Preservation Technology and is Co-chair of the Publications Committee.

Ms. Dube has significant experience on the rehabilitation and restoration of historic public buildings. She has held positions with the federal Canadian Department of Public Works, responsible for upgrading the building infrastructure and tenant improvements on the Federal Parliament and Archives Buildings. Currently Ms. Dube is the project manager for the restoration of the Manhattan Hall of Records / Surrogates Court Building as well as Manhattan's Criminal Courts Building.

Education

University of Pennsylvania
MS Historic Preservation
McGill University, Montréal, Québec, Canada
Bachelor of Architecture
Bachelor of Science

Work Experience

Swanke Hayden Connell Architects
Long-Term Architectural Planning Office, House of Commons, Ottawa, Ontario, Canada
Heritage Conservation Services, Public Works and Government Services Canada, Hull, Québec, Canada
Provencher Roy et Associés Architectes, Montréal, Québec, Canada

Principal Projects

West Virginia State Capitol, Charleston, WV
Restoration of dome, grilles, exterior masonry, doors, chandeliers and select interiors spaces of 1932 Cass Gilbert landmark state capitol.
Hall of Records / Surrogates Court, 31 Chambers Street, New York, NY
Facade and interior restoration of 1906 Beaux Arts landmark; building systems upgrade and tenant improvements for NYC Dept of Cultural Affairs.

ROSANNE DUBÉ, R.A.

Columbia University Off-campus Properties, Morningside Heights, New York, NY
Roofing assessments, exterior rehabilitation and lobby restoration of 88 circa 1900 buildings for Columbia University.

Heinz Chapel, University of Pittsburgh, Pittsburgh, PA
Evaluation and restoration of the spire fleche and stain glass windows of 1932 landmark chapel.

St. Johns University, Queens, NY
Exterior repairs and cleaning of five circa 1950 buildings around the main campus quadrangle.

Hamilton Avenue School, Greenwich, CT
Exterior envelope restoration of 1932 school and new addition.

First Presbyterian Church, Charleston, WV
Exterior envelope evaluation and restoration of 1915 historic church.

Holly Grove Mansion, Charleston, WV
Interior and exterior evaluation and restoration of historic 1815 mansion.

Solomon R. Guggenheim Museum, New York, NY
Facade rehabilitation study of 1959 Frank Lloyd Wright landmark museum.

Louis J. Lefkowitz State Office Building, 80 Centre Street, New York, NY
Masonry facade restoration of 1930s Moderne municipal building.Manhattan.

Criminal Courts, 100 Centre Street, New York, NY
Facade restoration, bird control and masonry cleaning of landmark 17-story 1940 municipal building.

Liberty Theatre, New York, NY
Preservation of historic 1906 theater auditorium for adaptive re-use as a restaurant.

House of Commons Committee Room Mock-up, Parliament Hill, Ottawa Canada
The Committee Room Mock-up project was a full-scale constructed study for the design for 12 new House of Commons committee rooms.

West Block, Parliament Hill, Ottawa, Canada
Rehabilitation and expansion of a 1859 Gothic Revival parliament building, including tenant improvements, infrastructure upgrades and integration of IT and security systems including construction of a mock up of a typical legislator's suite.

Justice Building, Parliament Hill, Ottawa, Canada
Rehabilitation of building systems and tenant improvements to a 1938 Château style parliament building for Canadian House of Commons.

ROSANNE DUBÉ, R.A.

Centre Block Building Underground Services, Parliament Hill, Ottawa, Canada
A two-story 13,000 sf underground facility housing new high-voltage electrical transformers, emergency power generators, space for advanced computer and communications facilities, storage space and delivery reception facilities.

Former Ottawa City Hall, Ottawa, Canada
Conservation guidelines for systems upgrades and interior improvements of a 1958 Modern landmark building.

Public Archives and National Library of Canada Building, Ottawa, Canada
Introductory conservation guidelines for interior improvements of the 1959 modern masonry federal archives building.

Stuyvesant Town, New York, NY
New storefront upgrades and cellar egress improvements to 1948 residential complex.

6 Sutton Square, New York, NY
Interior restoration of 1922 historic townhouse.

28 Middagh Street Brooklyn, NY
Facade restoration of historic c. 1870 townhouse.

75 West End Avenue, New York, NY
Interior apartment remodeling of historic c. 1910 apartment building.

Eastern State Penitentiary, Philadelphia, PA
Building analysis and condition assessment of a 1829 National Historic Landmark building

Mesa Verde National Park Cliff Dwellings, CO
Digitalization of survey conditions and conservation treatment plan for the architectural surface finishes of thirteenth century cliff dwellings

Professional Qualifications & Affiliations

Order of Architects of Quebec, 1998
New York City Department of Buildings Scaffold Training Certification
Member of Heritage Canada
Association for Preservation Technology International,
Co-editor for APT Communiqué
Conference Speaker and Workshop Coordinator Toronto 2002 Conference

ELIZABETH MOSS
Associate
Architectural Conservator

Ms. Moss is an architectural conservator, specializing in masonry, metals and historic finish investigation and evaluation. Since 1996, she has used her technical abilities on historic buildings primarily in the Northeast and Mid-Atlantic Regions of the United States. She is experienced in historic archaic materials investigation, testing, and the subsequent preparation of conservation studies, historic structure reports, specifications, construction documents, and construction administration. Her technical training and research abilities enable her to perform detailed hands-on field surveys and investigation as well as in-house laboratory research.

Ms. Moss is a leading authority on masonry cleaning, repair and repointing. She has performed characterizations of hundreds of historic mortars, spanning from Roman archaeological samples through recent historic examples. As a member of the US/ICOMOS Committee of Brick and Ceramics, Ms. Moss has lectured internationally as to the effects of hydrofluoric acid-based chemical cleaners on masonry surfaces. In addition to brick, granite, and terra cotta cleaning and repair programs, she has been responsible for the cleaning and repair programs of dozens of limestone-clad buildings. She has demonstrated her superior technical abilities on award-winning projects such as the evaluation and repair of limestone facades for PS 157 in Brooklyn, the IRS Headquarters Building in Washington DC, 4 East 79th Street Townhouse in New York City, New Jersey's Essex County Courthouse and the West Virginia State Capitol.

Education

University of Pennsylvania
Master of Science, Historic Preservation, 1998
Vassar College
Bachelor of Arts, Latin, 1992

Work Experience

Swanke Hayden Connell Architects
SUPERSTRUCTURES Engineers + Architects, New York, NY
Jablonski Berkowitz Conservation, New York, NY
ECR Antiques Conservation & Restoration, New York, NY

Principal Projects

West Virginia State Capitol, Charleston, WV
Gilding & coating testing program, masonry cleaning testing, mortar characterization and chandelier conservation as part of restoration of 1932 Cass Gilbert landmark building

ELIZABETH MOSS

Essex County Courthouse, Jersey City, NJ
Limestone cleaning testing & mortar characterization as part of a comprehensive facade restoration of this 1916 Cass Gilbert landmark courthouse

Internal Revenue Service Headquarters, Washington, D.C.
Masonry cleaning testing, marble and limestone evaluation and mortar characterization as part of restoration of a 1.4 million square foot 1928 Beaux Arts federal office building

Court Square Building, 2 Lafayette Street;New York, NY
Masonry facade restoration of 1930s Moderne municipal building

Louis J. Lefkowitz State Office Building, 80 Centre Street, New York, NY
Masonry facade restoration of 1930s Moderne municipal building

Department of Health Building, 125 Worth Street, New York, NY
Masonry facade restoration of 1935 Moderne municipal building

Manhattan. Criminal Courts, 100 Centre Street, New York, NY
Facade restoration, bird control and masonry cleaning of landmark 17-story 1940 building

Hall of Records, 31 Chambers Street, New York, NY
Facade restoration of 1899 Beaux Arts landmark building

Municipal Building, 1 Centre Street, New York, NY
Emergency repairs and facade restoration of 1907 McKim Meade & White landmark building

Postal Telegraph Building, 253 Broadway, New York, NY
Facade restoration of 1893 14-story municipal landmark building

Home Life Insurance Company Building, 256 Broadway New York, NY
Facade restoration of 1893 17-story municipal landmark building

New York Life Insurance Building, 346 Broadway, New York, NY
Facade and main lobby restoration of 1899 historic landmark

Excelsior Building, 137 Centre Street, New York, NY
Facade restoration and building envelope rehabilitation of 1923 municipal building

Manhattan Municipal Courts, 111 Centre Street , New York, NY
Exterior envelope rehabilitation and facade restoration of 1960 municipal building

Heinz Chapel, University of Pittsburgh, Pittsburgh, PA
Evaluation and restoration of the spire fleche and stain glass windows of 1932 landmark chapel

Columbia University Off-campus Properties, Morningside Heights, New York, NY
Roofing assessments, exterior rehabilitation and lobby restoration of 92 circa 1900 buildings for Columbia University including Cycle 6 Local Law 11 *Critical Examination Reports* for various buildings

Solomon R. Guggenheim Museum, New York, NY
Concrete conservation analysis and coatings investigation of 1959 Frank Lloyd Wright landmark museum

Time Life Building, New York NY
Building modernization, plaza, lobby and infrastructure upgrade and restoretion of 1959 landmark building

United Jewish Appeal Federation of New York, New York, NY
Facade evaluation, new curtain wall and comprehensive base building improvements

Public School 157, Brooklyn, NY
Masonry cleaning testing, masonry evaluation, mortar characterization and exterior maintenance manual for historic 1907 school; Research reports on coating removal & graffiti resistant coatings

Public School One, Long Island City, NY
Masonry materials investigation and testing program

FDNY Manhattan Communication Offics, New York, NY
Historic preservation specifications and selected historic paint color investigation for the rehabilitation of four 1912 - 1923 historic fire alarm buildings

Empire, Liberty and Harris Theatres, 42nd Street, New York, NY
Exterior materials investigation and testing program of three c. 1905 landmark theaters

Caesarea, Israel, UPenn Archaeological Excavation
Site supervision and excavation of King Herod's Promotory Palace

Casa Grande Ruins National Monument, Coolidge, AZ
National Park Service and University of Pennsylvania; detailed condition survey of the Casa Grande Ruins National Monument

Training Courses

JOS Microabrasion Cleaning System Training and Manufacturer Certification

Asbestos Awareness Training, Environmental Management Solutions

McCrone Research Institute; Microscopy for Art Conservators, Institute of Fine Arts, New York, NY

ELIZABETH MOSS

Awards and Honors

Preservation League of New York State Preservation Awards
2001 to NYC DDC for Public School 157

New York Landmarks Conservancy, Lucy G. Moses Award
2001 for Public School 157

Samuel H. Kress Fellowship; "Effects of Hydrofluoric Acid-Based Cleaners on Unglazed Terra Cotta", US/ICOMOS Brick Masonry and Ceramics Committee representative; 5th International Colloquium, Esslingen, Germany, 1999

Samuel H. Kress Fellowship; 1994, 1996, 2001 field seasons at Caesarea, Israel

Samuel H. Kress Fellowship; 1997 field season at Catalhoyuk, Turkey

Professional Qualifications & Affiliations

Association for Preservation Technology, Northeast Chapter, Board of Directors

US/ICOMOS, Brick Masonry and Ceramics Committee

New York City DOB Scaffold Training Certification

Lectures

"Notwithstanding the Test of Time - The Dilemma of the New York City Public School System", Association for Preservation Technology, National Conference, October 2001

CAS Structural Engineering, Inc.

Carol A. Stevens, P.E.
Structural Engineer

EDUCATION

West Virginia University, BSCE, 1984
Chi Epsilon National Civil Engineering Honorary
The Pennsylvania State University, ME Eng Sci, 1989

PROFESSIONAL REGISTRATION

P.E.	1990	Pennsylvania
P.E.	1991	West Virginia
P.E.	1994	Maryland

BACKGROUND SUMMARY

2001 – Present	President, Structural Engineer CAS Structural Engineering, Inc.
1999 – 2001	Structural Engineer Clingenpeel/McBrayer & Assoc, Inc.
1996 – 1999	Transportation Department Manager Structural Engineer Chapman Technical Group, Inc.
1995 – 1996	Structural Engineer Alpha Associates, Inc.
1988 – 1995	Structural Department Manager Structural Engineer NuTec Design Associates, Inc.
1982 – 1988	Engineer AAI Corporation, Inc.

PROFESSIONAL ASSOCIATIONS

American Society of Civil Engineers
National Society of Professional Engineers
American Concrete Institute
American Institute of Steel Construction
West Virginia University Department of Civil and Environmental Engineering Advisory Committee
West Virginia University Institute of Technology Department of Civil Engineering Advisory Committee

CIVIC INVOLVEMENT

ASCE Christmas in April Project
Engineer's Week Speaker

EXPERIENCE

West Virginia, State Capitol Complex, Governor's Mansion: Structural analysis and design in addition to evaluation report for modifications and renovations to several areas of mansion. Building is on State Historic Register.

West Virginia, State Capitol Complex, Holly Grove Mansion: Structural evaluation report for preliminary condition assessment of building structure. Building is on State Historic Register.

West Virginia, State of West Virginia Office Building #21, Fairmont, WV: Preliminary structural observation report for condition assessment of building structure.

West Virginia, State Capitol Complex, Building 3: Structural design and construction administration of repairs to limestone canopy. Building is eligible to be placed on State Historic Register.

West Virginia, State Capitol Complex, Main Capitol Building Parapet: Exploratory investigation of limestone/brick parapet/balustrade of Main Capitol Building to determine cause of movement/cracking/leaks. Construction contract for repairs has been awarded and work is progressing. Building is on State Historic Register.

West Virginia, State Capitol Complex, Main Capitol Building Dome: Exploratory investigation of structural steel components of Lantern Level of dome and development of contract documents for repairs. Construction is currently under contract. Building is on State Historic Register.

West Virginia, Historic Putnam-Houser House (Parkersburg): Designed system for stabilization and upgrades to floor framing.

West Virginia, Upshur County Courthouse: Developed construction documents for structural repairs to main entrance and dome of 1899 structure. Work is currently under contract.

West Virginia, Hampshire County Courthouse: Structural design for new elevator for existing historic building.

P.O. Box 469 Alum Creek, WV 25003-0469 (304) 756-2564 (voice) (304) 756-2565 (fax)
A West Virginia Certified DBE Consultant
Structural Engineering Certification Board

PREVIOUS EXPERIENCE

West Virginia, State Capitol Building, North Portico Steps: Designed structural system to replace deteriorated reinforced concrete slab at landing on north side of Capitol steps. Building is on State Historic Register.

West Virginia, Upshur County Courthouse Annex: Performed structural evaluation and design for repairs to existing multi-story Annex addition.

West Virginia, Farrell Law Building: Performed analysis of existing deteriorated structural sidewalk over parking area. Recommended repair solutions for reinforced concrete and aged terra cotta façade of 1920's building.

West Virginia, Canaan Valley Resort and Conference Center: Structural feasibility study to upgrade lodging units.

West Virginia, Morgantown High School Additions: Designed steel framing and foundations for science classroom, cafeteria and gymnasium additions to existing education complex.

West Virginia, Grafton High School Addition: Designed steel framing and foundations for new science classroom addition to existing high school.

Pennsylvania, York County Government Center: Structural analysis and design of 1898 former department store converted to county government offices. Interior renovations included adding floor framing at mezzanine level, analyzing and redesigning deficient floor framing, and adding new elevators. Exterior renovations included complete façade rework to recreate original appearance.

Pennsylvania, Metropolitan Edison Company, Headquarters: New 80,000 SF two-story office addition to existing complex.

Pennsylvania, Defense Distribution Region East: Structural engineering and design for a 33,000 SF Hazardous Materials Storage Warehouse.

Maryland, U.S. Army Corps of Engineers, Baltimore District, Administration Building: Seismic design of new 10,000 SF masonry building.

Pennsylvania, Carlisle Syntec: Design of foundation supports for 800,000 lb rubber vulcanizing machine; enlargement of foreman's office including new framing to support mechanical equipment on roof; new monorail installation; extension of existing gantry rail.

Pennsylvania, Engel Worldwide: Steel framing and foundations for new 12,000 SF two-story office building; design of crane beams and columns for adjacent 60,000 SF crane building.

Pennsylvania, AMP IMF: Structural design for the renovation and conversion of a stamping facility into an integrated manufacturing facility (IMF) housing operations for stamping as well as blow molding processes.

Texas, York International: Structural survey of existing building structure for modifications to incorporate large testing and manufacturing areas for mechanical equipment.

Maryland, Columbia 100: Design of structural steel framing for new two-story 43,000 SF office building.

Pennsylvania, York Federal Savings and Loan Association/New Service Corporation: Design of steel framing, reinforced concrete retaining wall and foundations for new 14,400 SF two-story office building.

Pennsylvania, Yorktowne Parking Garage: Study of 1950's reinforced concrete/steel framed parking garage.

Pennsylvania, Blakey Yost Bupp & Schaumann: Re-construction of a 3-story 10,200 SF, fire damaged urban building and conversion into law offices.

Pennsylvania, Queensgate Theaters: Structural analysis of existing mall area for conversion to movie theaters.

Pennsylvania, College Misericordia: Structural design of new 50,000 SF student resident hall utilizing precast concrete planks and masonry bearing walls.

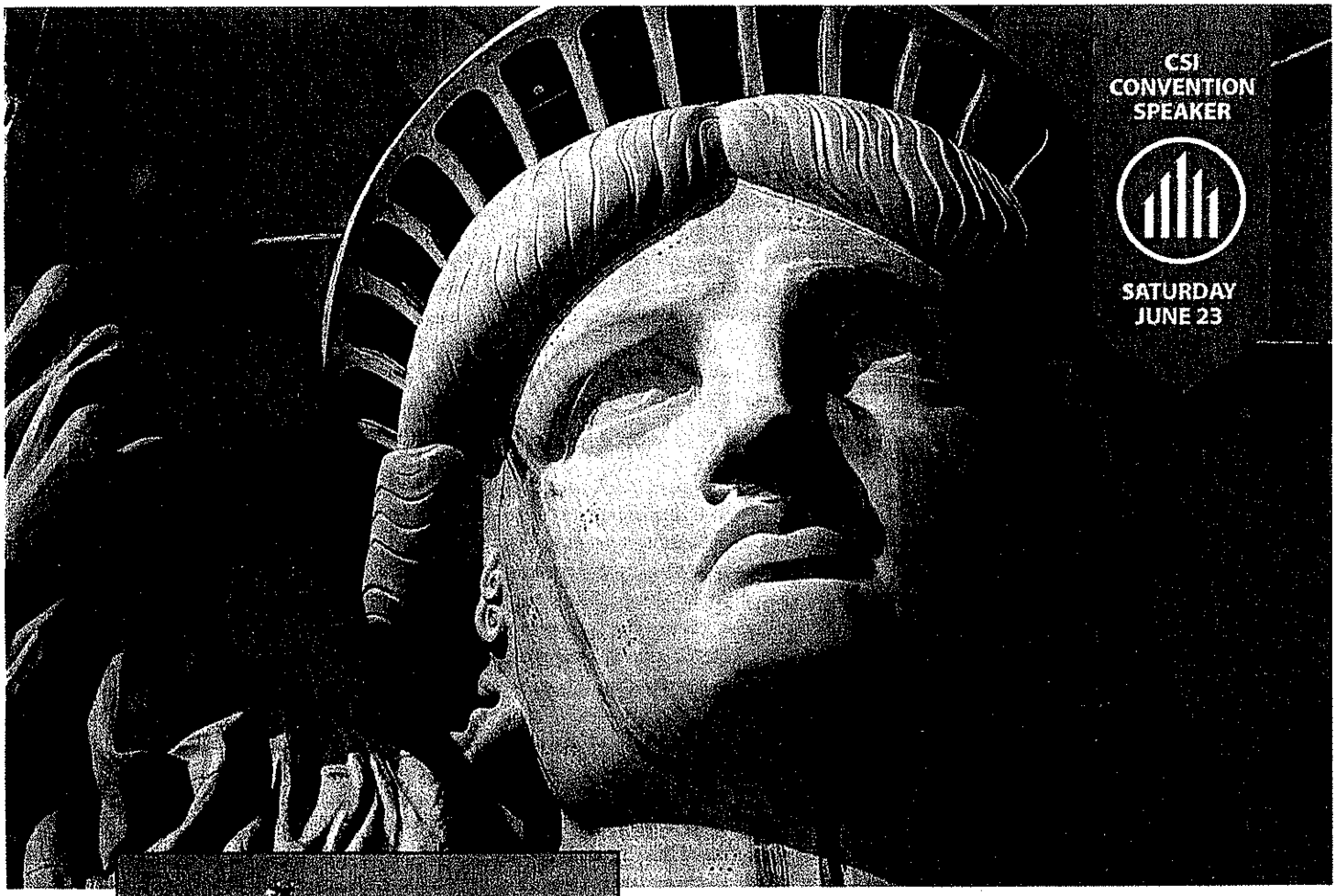
Pennsylvania, Homewood Suites: Structural and foundation design for new two-story hotel.

Pennsylvania, Comfort Inn: Structural and foundation design of new 5-story hotel.

Pennsylvania, Glatfelter Insurance: Design of steel framing and foundations for new 30,200 SF building.

Pennsylvania, M&M Mars: Multi-level steel structure to support dust collectors positioned over existing building, steel framing for motor control center within existing silo building, design of 4-story Alkalizing and Roasting Addition with accommodations for existing functioning railroad siding which remained operations beneath new building.

Pennsylvania, York City Ice Arena: Design of heavy timber exposed roof trusses and foundations for new 6,500 SF masonry wall bearing building.



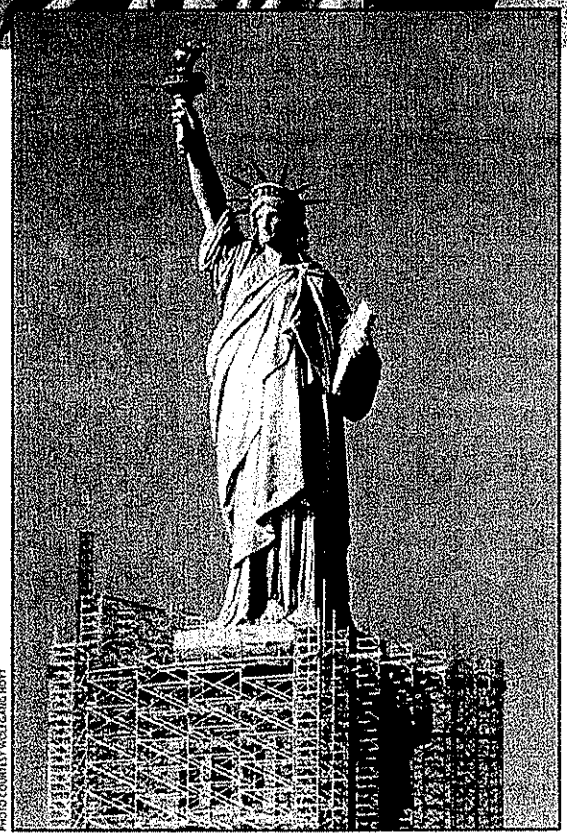


PHOTO COURTESY WOLFGANG HOYT

Historic Preservation:

Understanding Conditions, Reducing Risk

by Robert Vail Cole

Historic buildings provide a tangible connection to the past and contribute to a community's identity and stability. They allow visitors to experience a particular period's social, economic, and aesthetic values. Many historic structures represent the highest architectural achievements. Others reveal extraordinary construction technologies and craftsmanship. Still others are significant because they represent a vernacular building type or offer a unique perspective on historical people or events.

ADDITIONAL INFORMATION

Author

ROBERT VAIL COLE, AIA, is a historic architect and director of historic preservation at Swanke Hayden Connell Architects in New York City. He is the primary author of *Historic Preservation—Project Planning and Estimating*, published by RS Means Company, in which greater detail regarding information presented in this article can be found. Additional information can also be found in Standard TD-2-8, "A Guide to Preparing Design and Construction Documents for Historic Projects."

MasterFormat No.

01350—Special Procedures

Key Words

renovation
historic research
Existing Conditions Survey

Abstract

Comprehensive investigation and documentation is the foundation for a successful historic building project, and failure to properly document a building's existing conditions invariably results in additional design work, schedule delays, and cost overruns. It can also lead to the loss of historic fabric, diminishing a building's historic integrity. This article explains the proper surveying, research, and testing steps to take when preparing historic buildings—which provide tangible connections to the past and contribute to a community's identity and stability—for repair or renovation.

Comprehensive investigation and documentation is the foundation for a successful historic building project. Failure to properly document a building's existing conditions at the project's outset invariably results in additional design work, as well as schedule delays and cost overruns. It can also lead to the unintentional loss of historic fabric, diminishing a building's historic integrity. CSI, along with The Association for Preservation Technology International (APT), has developed Standard TD-2-8, "A Guide to Preparing Design and Construction Documents for Historic Projects." This document is the industry standard for design and construction document preparation for historic preservation projects. It is based on the phases for conventional architectural projects' development and includes special historic preservation projects' requirements. This article focuses on the initial tasks required for the successful completion of Phase 1—Investigation and Documentation. This initial phase for project development includes Historic Research and an Existing Conditions Survey.

Historic Research

Historic Research is a data-gathering effort that provides interesting anecdotal information on a building's development and useful technical data on architectural conditions, material compositions and sources, and building systems. Information collected during this effort serves as the basis for documenting existing physical conditions on-site. A thorough search for historical documentation (such as the original plans, specifications, and construction photographs) should take place prior to a field inspection. Resources discovered in this search can provide valuable information on the original architectural assemblies, materials, and their compositions. Records documenting a building's history are also useful in describing what modifications have occurred and any recurrent building deficiencies. It is important to note that the original construction drawings and specifications may not reflect the actual construction, as unrecorded field changes or substitutions may have been made during construction. The documents serve as the basis for the visual inspection confirming, refuting, or augmenting the recorded information.

This research phase is a critical first step toward a successful historic preservation project. Define project goals before beginning research, so the search for documentation focuses on information relevant to the work. Developing a logical sequence for the search prevents duplicating efforts. Historic landmark nomination forms should always be obtained (from the local or state public historic preservation agencies) and reviewed first, as they may already document the building history and have a bibliography and source list identifying resource locations.

Potential sources for retrieving archival historic documentation include

- the building owner and building maintenance engineering office,
- the Municipal Building Department,
- the national register and national landmark nomination forms,
- the local and state public historic preservation agencies,
- the local and state institutions,
- the subcontractor and material supplier archives,
- survey and building documentation efforts,
- sanborn maps,
- oral history, and
- trade publications.

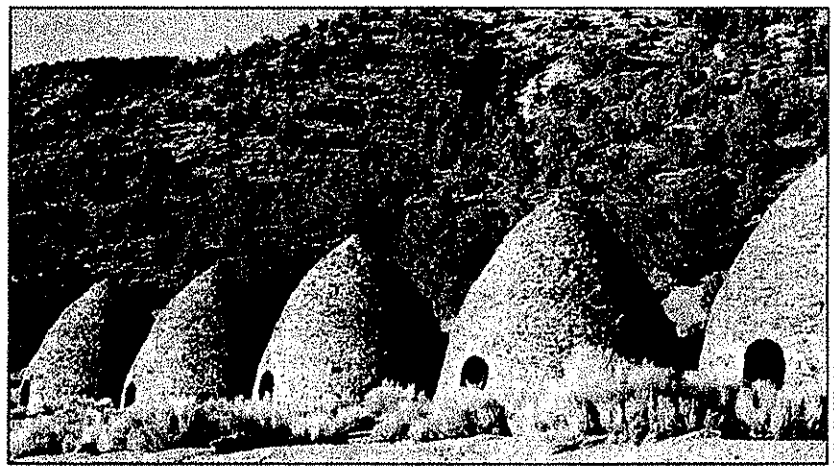


PHOTO COURTESY THE AUTHOR

Photo 3. The Wildrose Charcoal Kilns built in 1873 in Death Valley, California, are administered by the National Park Service.

Compiling Archival Information

Project researchers should create an archival compilation of all sources discovered and reviewed. Each source examined should be chronicled as part of an annotated list and bibliography. It is important to identify historic photographs explicitly before adding them to the compilation with other pertinent images' reproductions. The compilation should include property title/copies and permits for both original construction and later alterations. Relevant articles from newspapers, trade and technical publications, and architectural journals should also be part of this collection.

Document Storage

All documents reproduced as part of the research effort (along with as-built drawings and photographic documentation, final contract documents, and pertinent construction records) should be stored according to accepted archival standards, ensuring that historical and current project documents will be preserved for the historic structure's future needs. Archival formats include ink drawings prepared on Mylar, written records copied onto acid-free paper, and record photographs printed on archival acid-free print paper.

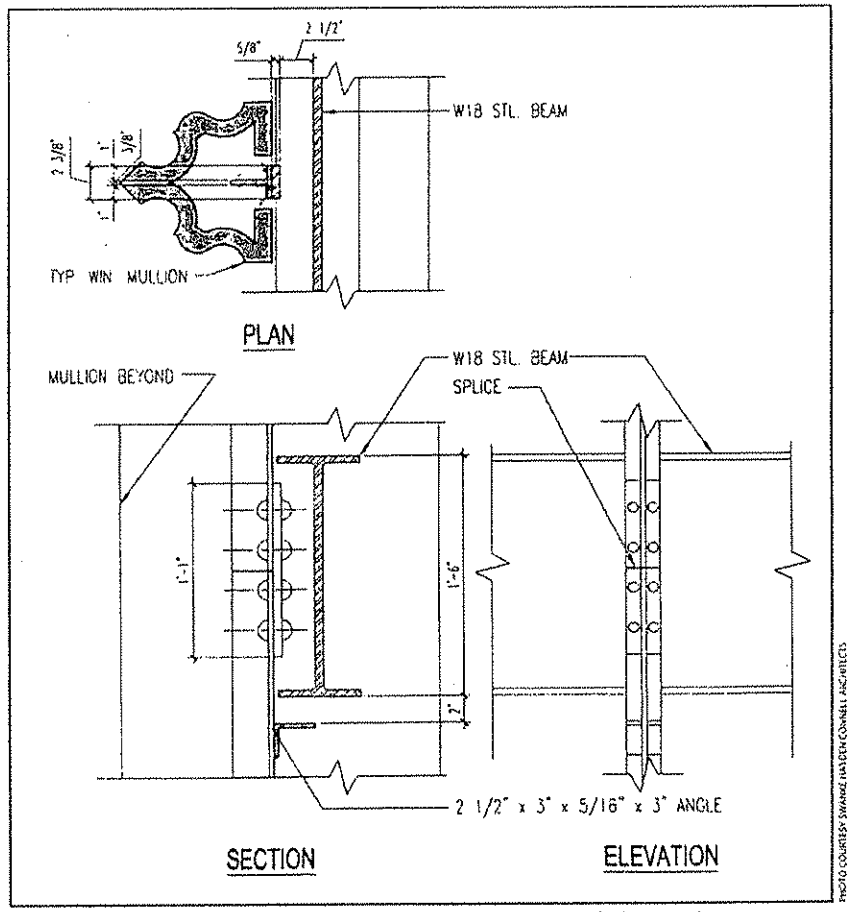


Photo 4. Documentation of a mullion cross section uncovered during a probe investigation

Existing Conditions Survey

The Existing Conditions Survey involves inspecting and documenting the building's composition, configurations, and as-built conditions. The survey includes visual inspection and laboratory analysis and may also require more invasive or destructive investigational procedures. The Existing Conditions Survey examines and documents extant materials and construction assemblies and conditions through a search for available historical documentation, a visual field inspection, and material testing. Thoroughly understanding the building, its components, and the deterioration process is critical to developing a successful project. The survey identifies the extent of the property's damage and deterioration, as well as the property's overall condition. The survey should also uncover any conditions that are either hazardous or may lead to the irreparable loss of features or finishes. This information is needed to stabilize, protect, and perform remedial or permanent repair, arresting further degradation.

Comprehensively documenting and evaluating existing conditions serves as the basis for developing a precise scope of work. The result is more accurate contract documents and bids. The Existing Conditions Survey makes the client more aware of, and prepared for, potential costs. The survey can also prevent unplanned expense for correcting unforeseen conditions once construction is in progress. The ultimate goals of the Existing Conditions Survey should be to

- serve as a record of the building's condition at a point in time;
- document the building's overall configuration;
- identify all damage and deterioration; and
- document the configuration of architectural and building system assemblies.

Level of Documentation

Although it would be desirable to measure and record every building component's configuration and its condition so the building could be reconstructed exactly as it existed, an endeavor of that magnitude is not practical for any existing structure. The degree to which a building is documented should be commensurate with its accessibility. The extent of documentation should also be consistent with the scope of work that must be designed and described in the construction documents. If only cosmetic repairs are to be performed on an interior plaster wall, for example, the extent of cracking and other damage, along with the plaster's composition, are the only conditions that must be documented. If, on the other hand, the wall

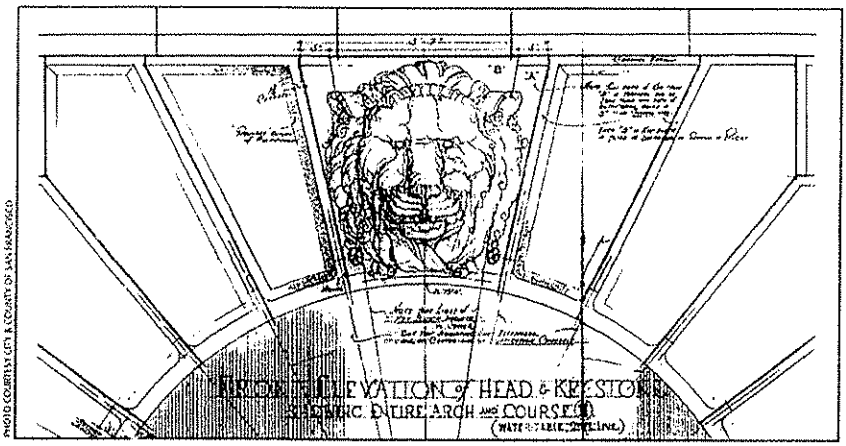


Photo 5. Original 1932 detail for exterior Lion's Head keystone by Bakewell & Brown Architects.

must be partially demolished in an effort to conceal new electrical wiring, the wall assembly and substrate conditions would require documentation. When the work's scope is not completely developed, it is best to document existing conditions in greater detail. The extra time spent on such documentation will more than pay for itself when compared to the time required for further site visits or the cost of potential inaccuracies in the construction documents because of incomplete information.

Visual Field Inspection

Comprehensive planning and budgeting cannot commence without a detailed survey of a building's existing conditions. Information gathered during the Documentation Search forms the basis but cannot supplant the need for a comprehensive field inspection. Those who plan to conduct a field investigation should first review the archival documentation, enhancing their understanding of the existing construction. The original drawings, specifications, and historic research provide important information, but they may be inaccurate because of changes—both during the initial construction and in later modifications. Photographs taken during original construction or modifications are especially useful in revealing concealed conditions. Researching other construction of the same period can also provide insight into the potential conditions and construction techniques. If building permits were not required when historic structures were first erected, there may be no archives or record drawings. In such situations, even more extensive field investigation and documentation may be needed. While every effort should be made to find a building's original drawings, they may, in some cases, no longer exist.

The field inspection involves examining all available existing conditions to identify deterioration and distress causes, then documenting the findings. The inspection should address site features; architectural elements; and building systems, including structural, mechanical, and electrical. Visual observations are generally documented in drawings, field notes, and photographs. Copies of building drawings obtained during the documentation search can facilitate note-taking in the field. Information gathered during this investigation

- helps define the scope of repairs,
- determines whether components and systems are serviceable or must be replaced, and
- uncovers opportunities to conceal new improvements.

An investigation usually begins with a walk-through survey of the entire site and structure. The survey, performed from grade and accessible building areas using binoculars, ascertains the building's overall condition and configuration, as well as helps develop a plan for a more detailed inspection of areas with visible distress signs. A close inspection can then take place, documenting all or selected areas of the building. This is the time to plan further inspections to expose concealed conditions.

Building system inspections may address all or some of the building's elements and features, including site and subsurface conditions; mechanical, electrical, plumbing, and structural systems; the superstructure; exterior wall enclosures, including roofs, chimneys, and drainage systems; wall, floor, and ceiling finishes; and interior and exterior architectural components. The inspection can be organized with both elevation drawing documentation and in an element-based schedule format for elements such as windows, doors, and hardware. The as-built drawings, photographic documentation, and schedules generated from the inspection can subsequently serve as the basis for planning and design, as well as for preparing construction documents.

Field Testing

Information gathered in the field survey enables the design team to formulate the scope of work for further field testing. Field testing uses probes to examine concealed conditions, providing potentially valuable information on the existing conditions and the nature, causes, and extent of building deficiencies. Field-testing methods may be invasive or noninvasive.

Nondestructive Investigation Techniques

Nonintrusive, or Nondestructive, Evaluation Techniques use methods that do not require openings or destroying historic fabric. For example, metal detectors can be used to locate hidden or embedded structural members and anchors. Sounding with a rubber mallet is an effective way to identify subsurface delamination areas of materials, such as terra-cotta and stone. Water and air infiltration studies can be used to locate leaks in roofing systems, in mechanical ducts, and through doors and windows. Noninvasive testing is generally cost effective, as finish materials are not disrupted or do not require repair.

Destructive Evaluation Techniques

Intrusive, or Destructive, Evaluation Techniques require opening or removing

building components to reveal hidden conditions. This type of testing might be required to determine the corrosion on concealed structural elements or to document structural anchor configurations. Intrusive evaluation would also be used to document wall and ceiling assemblies for the purpose of concealing new building system improvements, such as mechanical ductwork or fire sprinklers. A boroscope, a fiber-optic cable attached to a light source to allow viewing of concealed spaces, only requires a 19 mm (0.75 in.) diameter opening. Larger inspection openings are needed to view concealed conditions with the naked eye.

Invasive inspections are most useful at areas with evident distress, such as cracked and spalled stone or terra-cotta with adjacent rust staining. (Both conditions indicate deterioration of the embedded steel anchors.) Although destroying materials should always be avoided, removal of damaged material is prudent as extensive repair (and possibly replacement) would be required anyway, and hazardous and irreparable harm can result if underlying conditions are not determined and addressed. For example, if distress is observed at brick and stone masonry above window openings, and if drawings indicate metal lintels were used in construction, the embedded metal corrosion may contribute to the adjacent masonry's deterioration. In this situation, an inspection opening may be made at one or more affected locations to determine the embedded metal lintel condition, which may require repair before exterior masonry can be restored.

During the investigation, field testing may be performed by removing material samples for laboratory analysis. Removing samples for paint analysis is an intrusive technique that provides information from small paint fragments.

Laboratory Testing and Materials Analysis

Laboratory evaluation most often requires material sacrifice in the form of material samples removed for analysis. Therefore, the test's purpose must be justified, and material should be removed from a discrete location.

Laboratory testing determines specific material properties and identifies evident mechanisms for failure or deterioration of the material and assembly. Testing also identifies material types and composition to determine the presence of hazardous elements and the cause of current distress. Identifying material properties is also useful for matching or replacement.

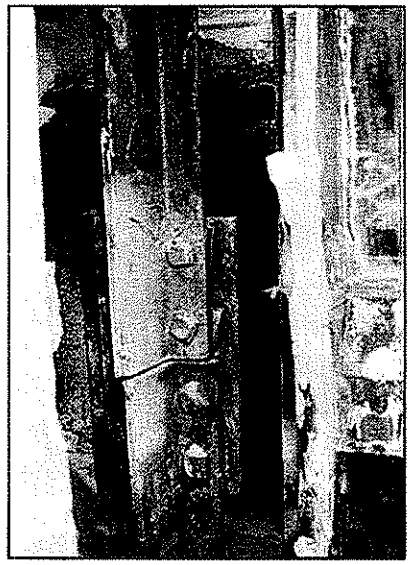


PHOTO COURTESY SWANKE HAYDEN CONNELL ARCHITECTS

Photo 7. Documentation of a mullion cross section uncovered during a probe investigation.

Another use for laboratory studies is to determine the future performance of potential repairs. Testing performed in structural and materials laboratories includes structural evaluation, as well as petrographic and chemical analysis. For some archaic materials, such as cast iron, there may not be a current standard for evaluation. In such cases, older codes or standards, or current standards used for testing comparable contemporary materials, may be useful.

Conclusion

Thoroughly executing the Investigation and Documentation Phase is crucial to a historic preservation project's success. Particular emphasis has been given to the investigation and crucially important documentation of existing conditions. Careful forethought and execution of a comprehensive research and an Existing Conditions Survey effort will not only give a person a more intrinsic understanding of a historic building, but it will also ensure that a historic preservation project starts off on the right foot.

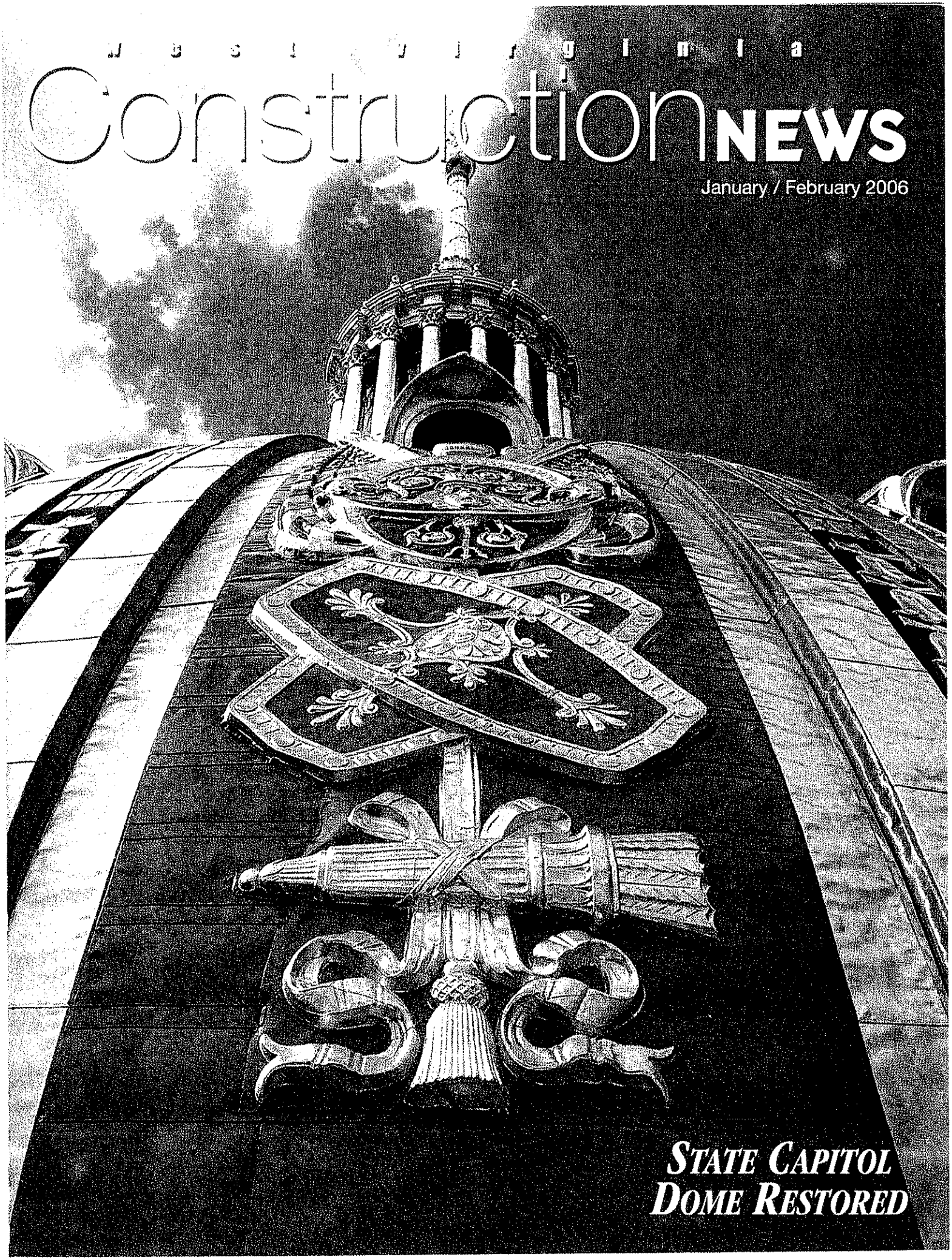
PHOTO COURTESY THE AUTHOR

Photo 6. Failure to identify that existing structural steel pipe columns were filled solid with tar required the complete redesign of structural reinforcement during construction.

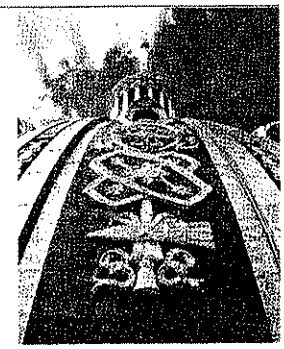
Captions:

Page 75. Bottom Photo. The deteriorated exterior of the Statue of Liberty was repaired and restored as part of a historic preservation project by Swanke Hayden Connell Architects.

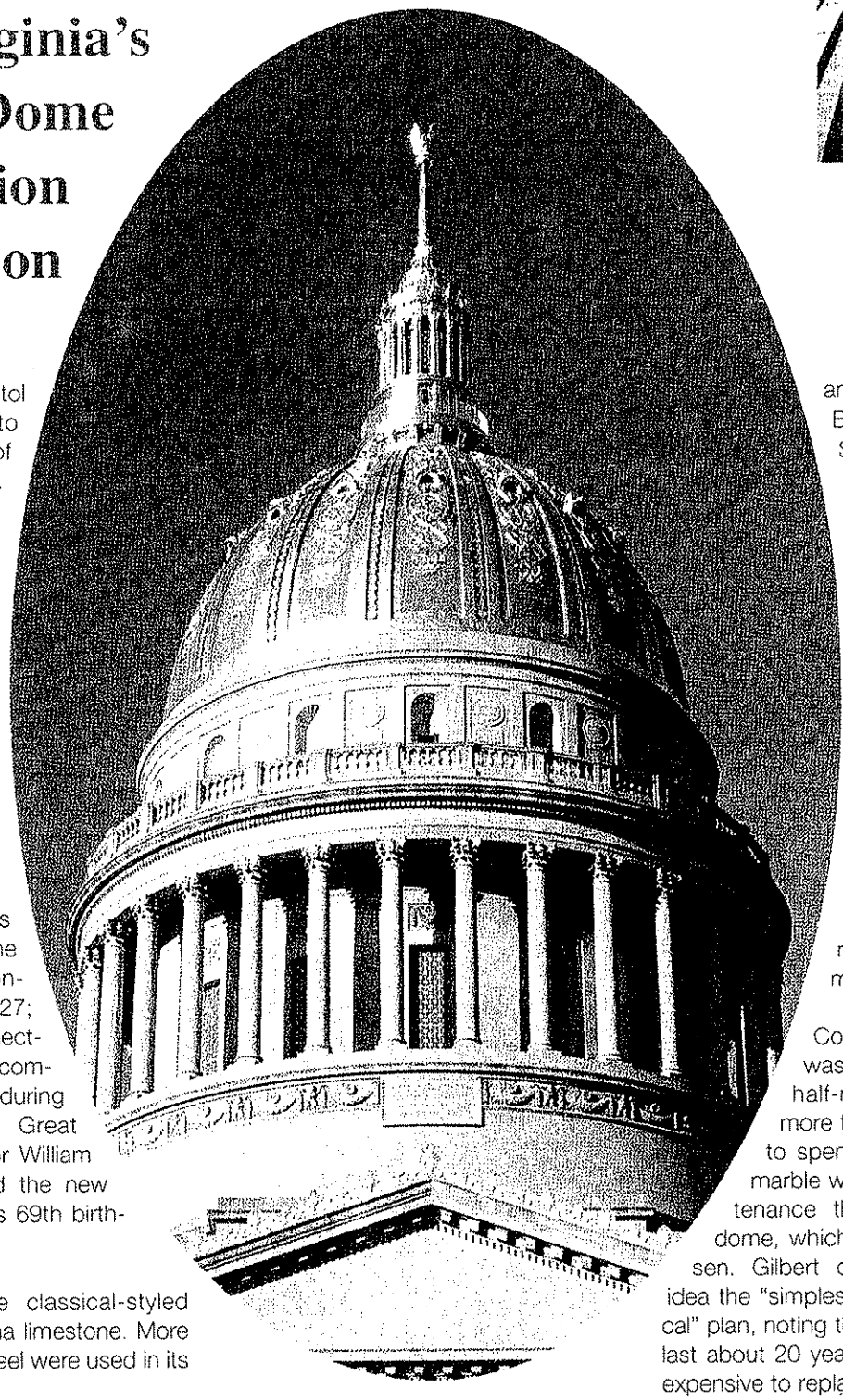
West Virginia
Construction NEWS
January / February 2006



State Capitol Dome Restored



West Virginia's Capitol Dome $4.5 Million Restoration



West Virginia's Capitol took eight years to complete at a cost of just under $10 million.

Two-thirds of the interior of the Capitol is marble - Imperial Darby, Italian Travertine, Tennessee and White Vermont. Consisting of 535,000 square feet of floor space, the building has 333 rooms in its main unit and two wings.

The west wing was built in 1924 - 25; the east wing was constructed in 1926 - 27; and the rotunda connecting the wings was completed in 1930 - 32, during the height of the Great Depression. Governor William G. Conley dedicated the new Capitol on the state's 69th birthday, June 20, 1932.

The exterior of the classical-styled building is buff Indiana limestone. More than 4,640 tons of steel were used in its construction.

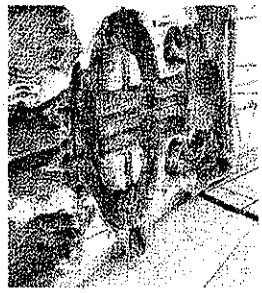
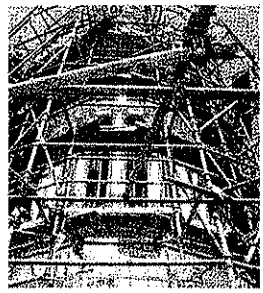
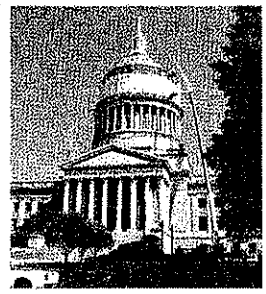
The structure's dome, which at 293 feet is five feet higher than the dome of the U.S. Capitol and the highest capitol dome in the nation, was also to be marble but costs and future maintenance requirements caused Capitol architect Cass Gilbert to reconsider his design.

Gilbert, born in Zanesville, Ohio in 1859, studied architecture at the Massachusetts Institute of Technology. In 1912, he designed the world's first skyscraper, the Woolworth Building in New York City. His other works included the state capitols in Minnesota and Arkansas, and the U.S. Treasury Building and U.S. Supreme Court Building in Washington, D.C. Gilbert died in 1934, just two years after West Virginia's State Capitol was completed.

In a letter to then-Governor William Conley, Gilbert wrote, "It was my hope when the contract for the first building was let that we would receive bids that would permit the use of marble."

Cost of a marble dome was estimated at about a half-million dollars then, more than the state wanted to spend. Gilbert also noted marble would take more maintenance than the gilded lead dome, which was eventually chosen. Gilbert called the alternative idea the "simplest and most economical" plan, noting the gold gilding should last about 20 years and would be less expensive to replace.

The design was based on several domed European structures, including the dome of the Hotel National des Invalides in Paris, constructed in 1708, which is a military museum and the home of the tomb of Napoleon I. Gilbert noted that several states, including New

Jersey and Massachusetts, have gilded capitols.

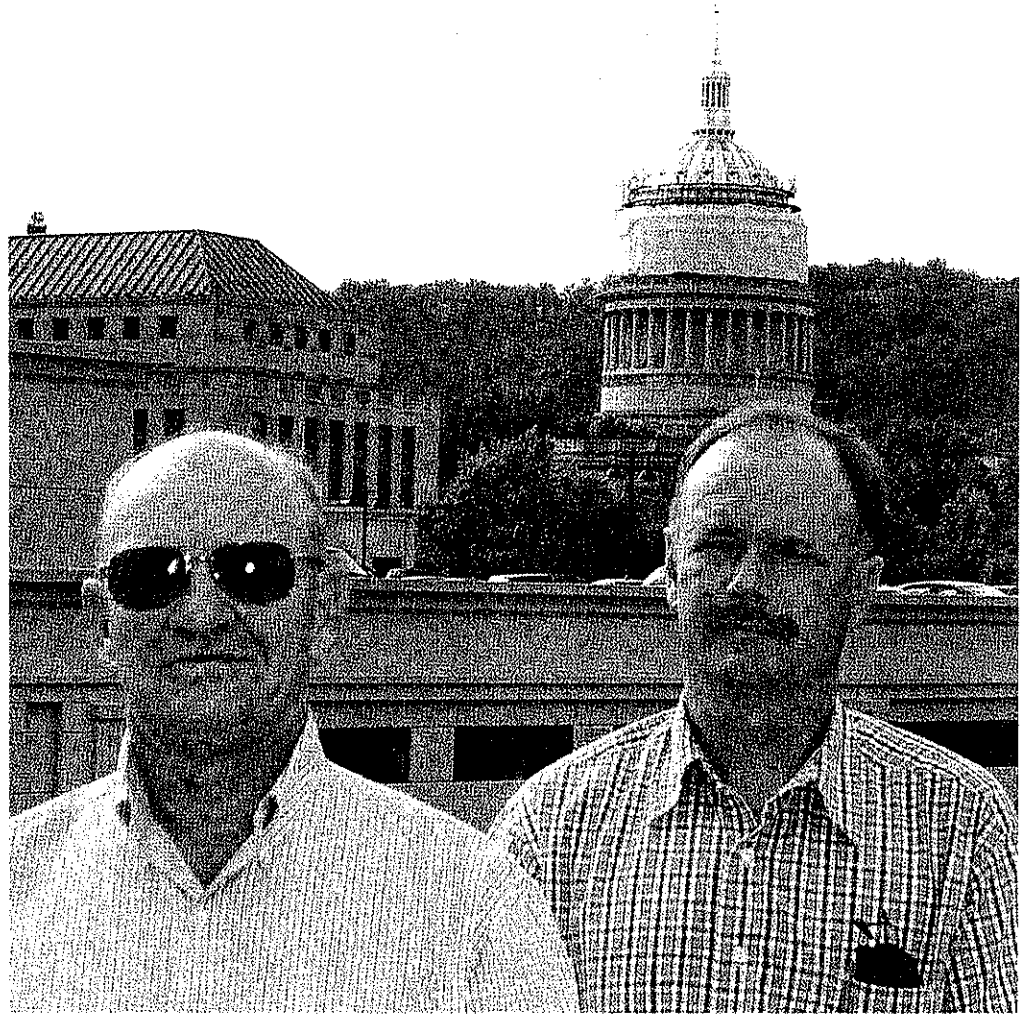
While the dome immediately became a living piece of West Virginia history, problems with the dome were first noted in 1931, the same year the original gilding was applied.

Bonner H. Hill, then-secretary of the Capitol Building Commission, reported that spots had formed on the dome's surface and dirt was lodged against its ornaments. The gilding was removed in 1946 and the dome was painted, but the paint started to fail within five years. The dome has gone through several looks since its completion in 1931. In 1961, it was painted blue and a bright "state road yellow," but this paint also began deteriorating within five years. Another blue and gold paint job was done in the late 1970s.

The dome received its last gilding between 1988 - 1991 when gold leaf was applied at a cost of about $500,000. About 40 percent of that gold leaf failed. Also, adhesive used to apply the gold leaf didn't set properly, allowing dirt to stick to the building. Black streaks soon formed on the dome which was a combination of dirt and the dome's lead outer lining bleeding through the gold.

The New York architectural preservation firm, Swanke Hayden Connell Architecture, was selected to design a project to replace the paint and gold leaf that layered the dome.

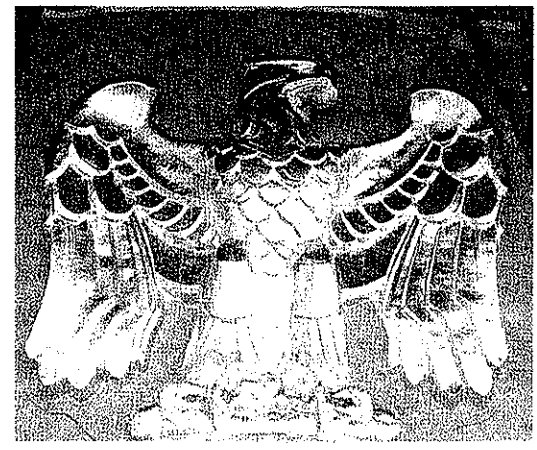
In a 2004 newspaper article, Frank Drobot, a former architect with the state General Services Division, noted that the underlying surface of the dome had been damaged by years of sandblasting during previous regilding efforts that pitted the surface of the dome.



John Wiseman and Mark Pack, Wiseman Construction Company, coordinated the $4.5 million capitol restoration project. The plastic cover on the dome, background, resulted in no lost days due to weather.

On August 6, 2004, Wiseman Construction Company, Inc., Charleston, was low bidder on the contract to make structural repairs and regild the dome, part of the $5 million restoration project designed by Swanke Hayden Connell Architecture. Wiseman's bid was $4,425,160.

The scope of work included removal of the gold leaf and structural repairs, including installation of new sheet metal and copper. Some of the decorative designs on the dome had come loose



Photos by Dick Hanlon and John Wiseman

The scope of the project included removal of gold leaf and structural repairs, including the installation of new sheet metal and copper, as shown above and below.

and were repaired or replaced. Also, the lantern attached to the top of the dome had been damaged by weather and rust and required extensive repair.

"This project was the most satisfying of my 30 years in contracting," said John Wiseman, president of Wiseman Construction. "I had seen past dome projects fail to achieve the quality of workmanship that was performed by Wiseman employees and those of our subcontractors."

One of the first activities was the erection of the scaffold and installation of a plastic cover. The cover allowed crews to create a weather-controlled environment so work could continue during the winter months.

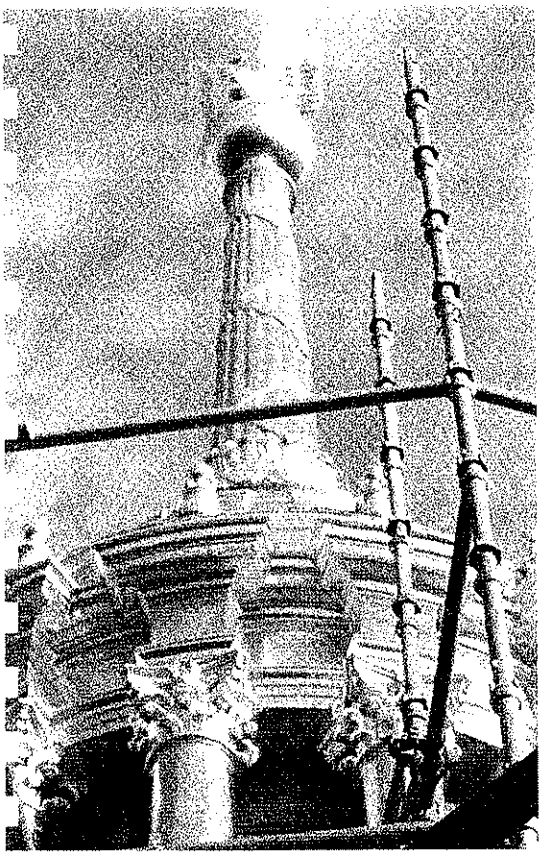
"We never missed a day due to weather," said Wiseman.

Wiseman Construction was responsible for the coordination of subcontractors, material testing, cataloging removed items for replacement and miscellaneous concrete work.

"This project was the most satisfying of my 30 years in contracting," said John Wiseman, president of Wiseman Construction.

"We conducted a number of structural repairs," Wiseman noted. "We had to replace steel in the lantern area, walkway and spire." There was also structural damage to the steel but repair was confined to windbracing and to the steel designed to hold the copper sheeting.

W.Q. Watters Company, Charleston, was a subcontractor on the project. They removed the existing coatings, acid etched the existing copper sur-



face and applied epoxy primer, epoxy top coat and clear coat.

"Coating removal was accomplished by chemical stripping using an environmentally safe chemical stripper," said Ken Bowen, W.Q. Watters' vice president. "The chemical stripper was spray applied and then removed by a combination of hand cleaning and high pressure water washing to achieve a bare metal substrate. We next applied a base coat of polyamide epoxy primer to the entire dome."

The scope of the project changed when citizens of West Virginia were asked to vote on whether to cover the dome entirely in gold, or opt for a lead-gray background with gilded highlights, Cass Gilbert's original design.

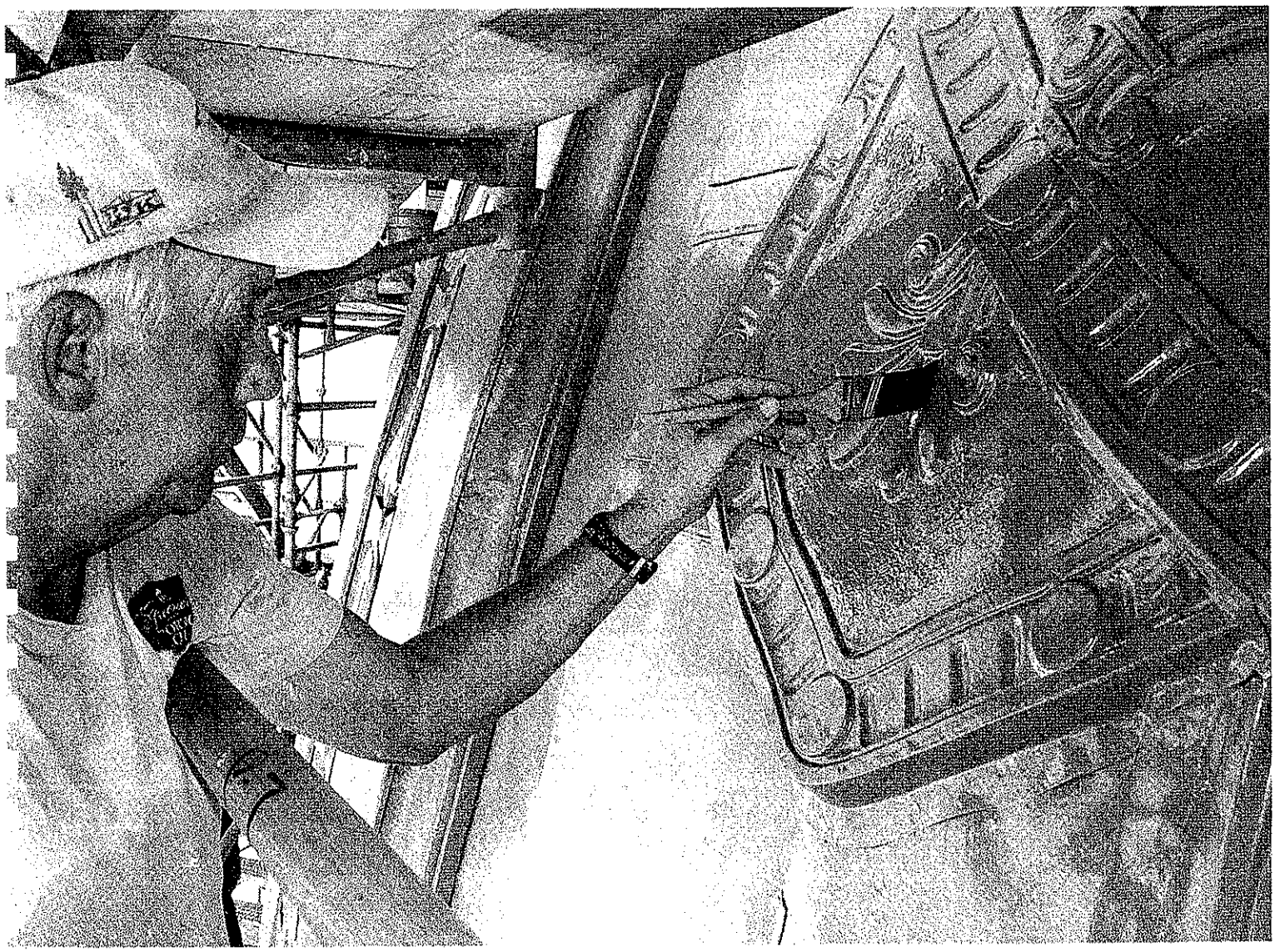
Governor Joe Manchin saw renderings of Gilbert's design, which was to create a transition between the Capitol's limestone color and gold-leafed lanterns on the dome, drawing the eye upward from the dome base to the lanterns.

The governor put the two designs on his website. About 80 percent of the 12,225 people who voted by computer and telephone chose Gilbert's original design.

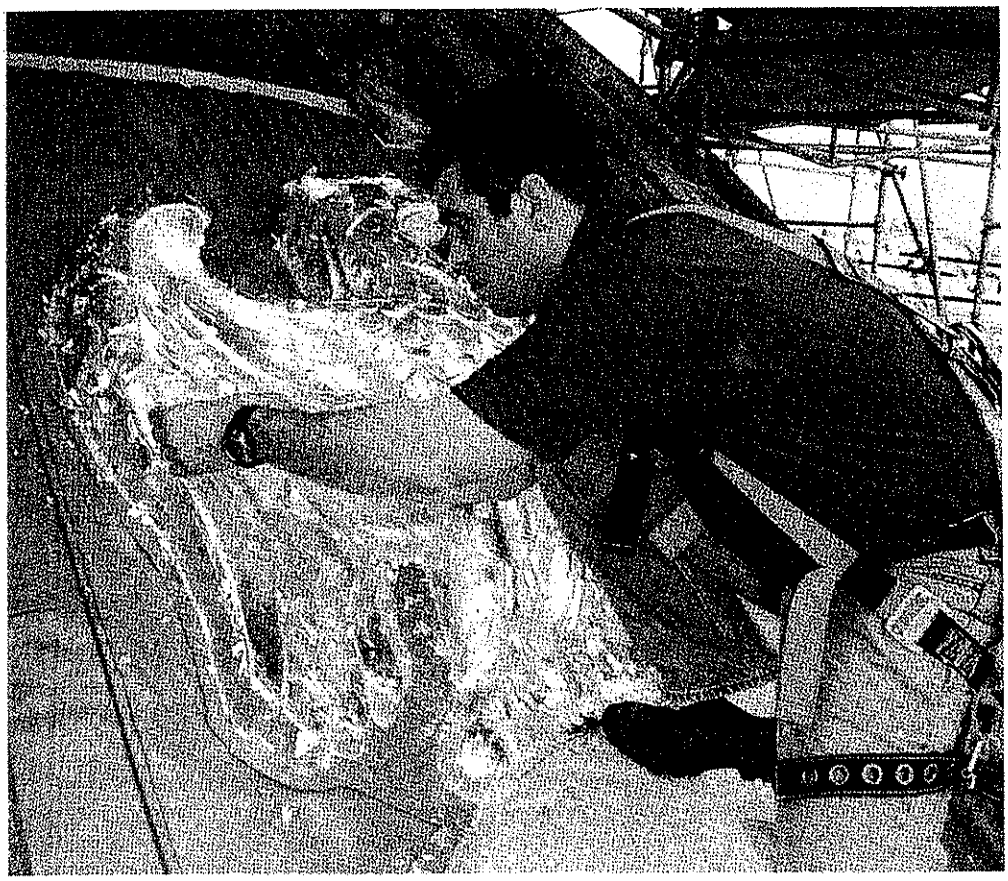
"The original design is my choice as well," the governor stated when releasing the poll results. "Now that voting has concluded, I am pleased to report that it is also the least expensive of the two restoration options, by approximately $214,500," he said.

"For the background areas to be left ungilded, a gray color, Tnemec's No. 2

Pencil acrylic polyurethane enamel intermediate coat, was applied," said Bowen. "We then applied a clear acrylic polyurethane enamel finish coat for UV protection."



Workers had to lightly brush the 4″ x 4″ sheets of gold leaf to the dome's surface.



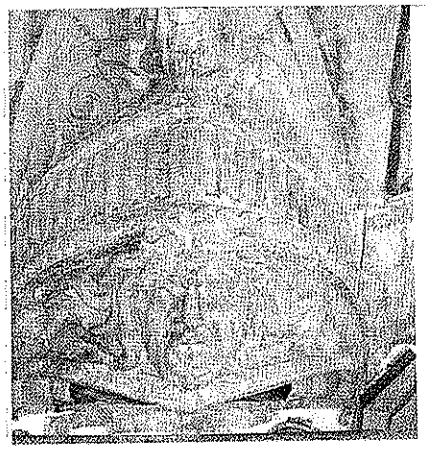
For exposed areas where regilding was specified, subsequent layers of an organic acrylic polyurethane and gilding were applied.

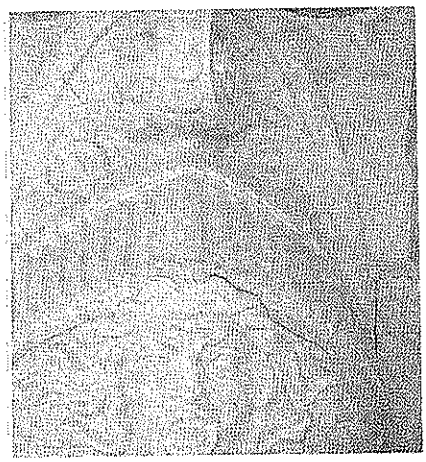
John Canning Company of Cheshire, Connecticut installed the gold layering.

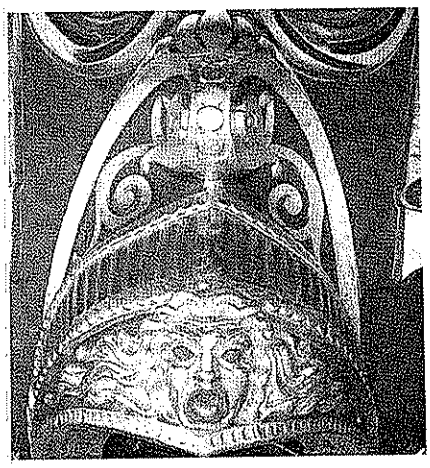
KTA-Tator, Inc. was the independent third party inspection agency on the regilding project.

"My main responsibility, along with KTA's inspector, Mark Hunt, was to assure that the contractors applied the coating and the gold leaf in conformance with the specification," stated KTA project manager Dick Hanlon. "I have been involved with numerous projects over my career, but this was unique in the cooperation between all parties to obtain the best final project."

Hanlon remarked that the state, the architectural firm, the prime contractor, the subcontractors and the independent third party inspection firm all worked







Work on the Medusa started with removal of the original coatings, etching with acid, a coat of epoxy primer, epoxy top coat and applying the gold leaf.

together in a concerted effort to provide a quality project.

"Our part of the project was a success because of great team work," Bowen noted. "Swanke Hayden Connell Architects, Project Manager Robert Cole and Architectural Conservator Elizabeth Moss were readily available for hands-on supervision to assure the job progressed without delay."

Bowen gave the most credit to Wiseman Construction.

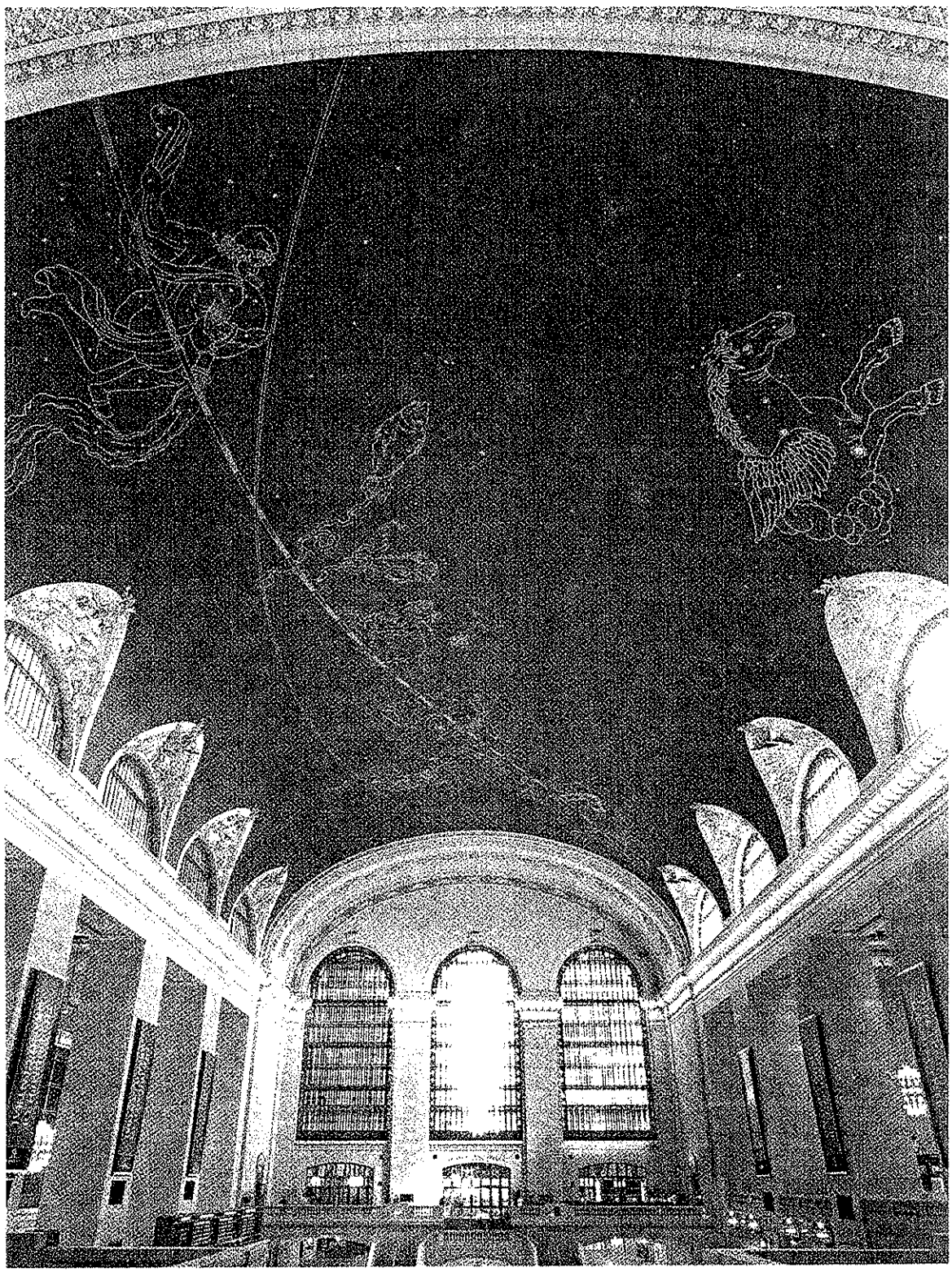
"We were very fortunate to have had John Wiseman and his superintendent, Mark Pack," he said. "John selected a team of skilled subcontractors who worked together to accomplish a job the entire state of West Virginia can be proud of."

The Governor said it was good Wiseman brought the project ahead of schedule and under budget, finishing nearly a year early. "This is a project in which all West Virginians can be proud."

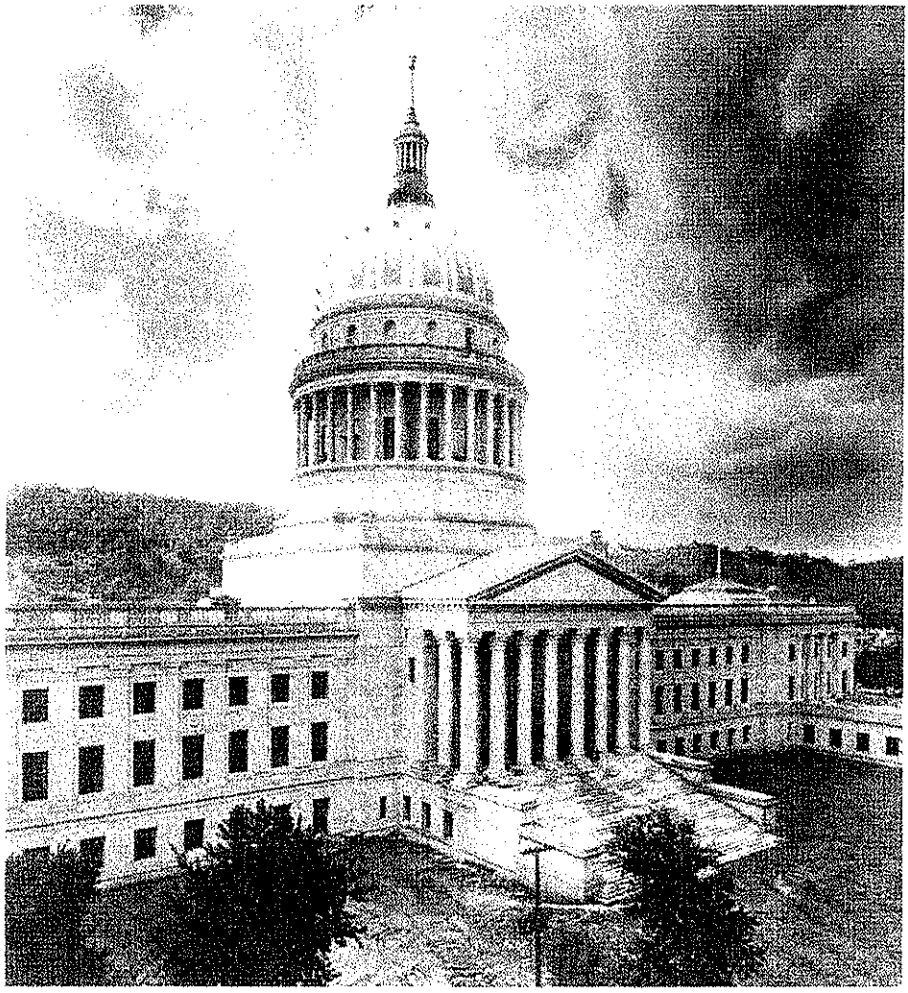
Journal of

Architectural Coatings

October 2005

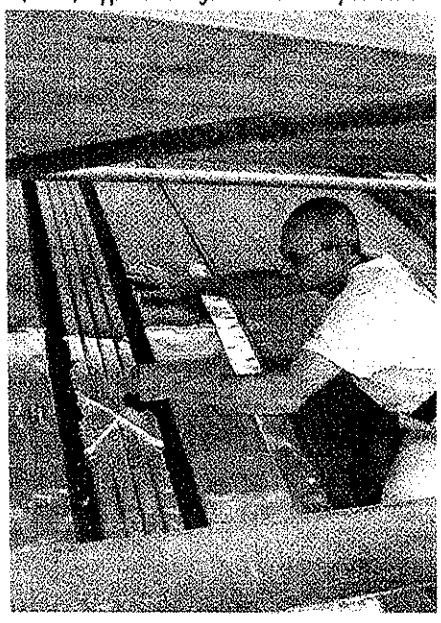


Coating Systems for Health Care Facilities



(Above): West Viginia Capitol Building, 1932
Courtesy of WV State Division of Culture & History

(Below): Application of gold leaf to the Capitol dome



Restoration Note

Only the decorative elements of the dome were gilded in the original Gilbert design, with the background dome panels left as exposed lead-coated copper to accentuate the gold leaf.

accentuate the gold leaf. But shortly after the dome's completion, deficiencies appeared. The dome was abrasive blasted and painted in the 1940s, 1960s and 1970s, but the coatings failed in a matter of a few years.

The two-tone color scheme was maintained until 1988 when state administrators decided to re-gild the entire dome. That, too, failed the test, as black biological streaks—caused by inappropriate and excessive use of linseed oil as an extender in the gilding oil size—and erosion of the gold-leaf finish marred the building's appearance.

The failure of this last coating program has been attributed to extreme weather conditions and inadequate supervision. Even more serious, some of the sheet-metal cladding of the dome exhibited mechanical failure due to corrosion of portions of the underlying structural steel, with water infiltration pinned with the blame.

Swanke Hayden Connell Architects was commissioned to undertake a detailed investigation of the problems and formulate a lasting solution. This work included a detailed, hands-on inspection of the dome and an accelerated testing and monitoring program of the recommended coatings systems.

The total project also involved sheet-metal repairs at decorative elements, repairs to underlying architectural and structural deficiencies at the (upper) Lantern Level, and returning the dome to its original appearance while employing durable, high-performance coatings.

Vertical Access, an Ithaca, NY-based company specializing in difficult-access building surveys, assisted with the inspection. Conservation Solutions Inc. of Washington, DC, was involved in the early stages of the project for its metal-conservation consulting expertise. Structural engineering services were provided by a local firm, CAS Structural Engineering Inc., of Alum Creek, WV.

Illustrating the determination to

reverse the dome's checkered past, the West Virginia General Services Division assembled a consortium of experts that includes Swanke Hayden Connell's Robert Vail Cole, the project manager, and colleague Elizabeth Moss, architectural conservator.

Also on board is the coatings inspection and consulting firm KTA-Tator, represented by Richard Hanlon of the firm's Charleston, WV, office. The exterior dome restoration and regilding contract was awarded to Wiseman Construction of Charleston, WV. All coating removal and painting was performed by the W.Q. Watters Co., also of Charleston. The gilding subcontractor is John Canning Painting and Conservation Studios, Cheshire, CT. All required sheet metal repairs were performed by Harris Brothers Roofing & Sheet Metal, Charleston, WV.

Representing the state General Services Division were Jim Burgess, project director, and Frank Drobot, project manager.

Prior to beginning construction, extensive research and testing was undertaken to determine the most appropriate surface preparation, coatings, and application methods. To facilitate a testing program outlined for the project, Swanke Hayden Connell supervised the removal of approximately eight square feet of original lead-coated copper sheet metal from the lantern base and the subsequent installation of a new lead-coated copper patch. The sheet metal removed from this area was sent to Conservation Solutions Inc. to be stripped of all existing coatings in preparation for application of coatings proposed for the project.

Epoxy urethane-based coatings systems submitted by two major manufacturers were identified for potential use and were applied to the sample panels by the respective manufacturers. These coated samples were tested by both the manufacturers and KTA-Tator, the third-party independent testing company.

A final decision on the coating systems specified was dependent on the results of an accelerated weathering test program undertaken as part of Swanke Hayden Connell's design effort. Included was a battery of ASTM standard accelerated testing for adhesion, abrasion resistance, cyclic salt fog/UV exposure, flexibility, and color and gloss retention.

During application, the contractors were required to employ an enclosed scaffolding system that allows temperature and humidity to be tightly controlled within an ideal range for proper surface preparation and coating application.

Because of the inconsistencies in the sheet metal surfaces caused by previous sandblasting campaigns—resulting in a bimetallic coating of lead and copper—the entire dome surface required a protective basecoat to achieve uniform appearance and performance objectives prior to the application of gilding. Removal of all old coatings was carried out using environmentally safe chemical stripping materials.

Based on the results of the testing program, the project managers specified coatings materials supplied by Tnemec Co., Inc. A basecoat of polyamide epoxy primer was applied to the entire dome surface. For background areas to be left ungilded, a gray-colored (Tnemec "No. 2 Pencil") acrylic polyurethane enamel intermediate coat and a clear aliphatic acrylic polyurethane enamel finish coat for UV protection, were applied. For exposed areas where regilding was specified, subsequent layers of an aliphatic acrylic polyurethane and gilding were applied.

Once the surfaces were sufficiently prepared, gilding was applied. The gilding process involves two simple steps, but requires skilled application methods. First, the surfaces to be gilded were coated with slow-set (12-hour) exterior oil size, which was tinted yellow. Size, with an alkyd resin base, looks and handles very much like varnish.

The size must be dry to the touch but still tacky before the gold can be applied. To determine the correct tack, the surface is gently brushed with the back of the hand. It should feel dry and smooth, but make a slight squeaky noise. Size should never be touched with an open hand or pressed with fingers. Body oils and dirt, even in the smallest amount, can result in failure of those areas.

When the proper tack is achieved, there is a window of up to 72 hours (depending on environmental conditions) during which to apply the gold.

For this project, rolls of 23-karat gold (weighing 21 grams per 1,000 sheets) were applied to the sized surfaces by hand. Excess gold flakes (skewing) were burnished away with soft, camel hair brushes. Unacceptable areas were resized and gilded as needed.

Commenting on the project, Swanke Hayden Connell says that because the dome was properly prepared and a high-quality, chemically compatible coating system was used, the gilded dome is expected to easily last for decades. "Durable and glistening, the West Virginia dome will once again be a beacon of pride for its residents," the firm says.

WEDNESDAY
APRIL 27, 2005
FINAL EDITION
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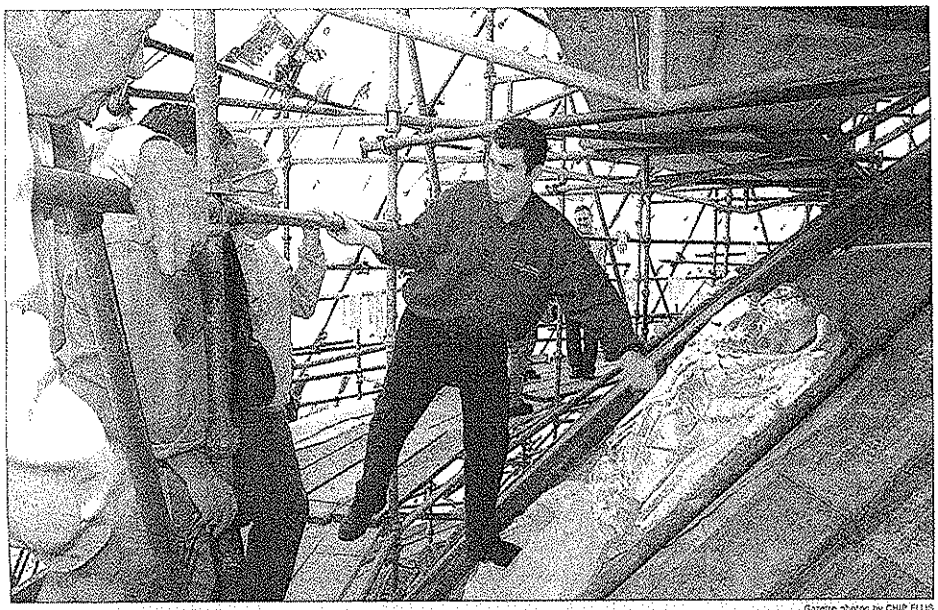
CHARLESTON, WEST VIRGINIA

the Charleston Gazette

THE STATE NEWSPAPER

Showers
High 58, low 40
Details, 13A

New leaf



Gazette photos by CHIP ELLIS

David Riccio of John Canning Studios in Connecticut shows state officials and media members the gilding that will be used on the State Capitol dome. The project's general contractor says the work on the dome should be finished by the end of the year.

Capitol gilding ahead of schedule

By Scott Finn
sfinn@wvgazette.com

What shade of gray should be the background for the state's Capitol dome?

Project architect Rob Cole asked first lady Gayle Manchin for her opinion Tuesday, during a tour of the tarp-covered dome.

Workers had refurbished three of the Capitol's gold eagles for the tour, each in a slightly different way. They're trying to make the eagles stand out to people viewing the dome from hundreds of feet below.

Manchin agreed that "No. 2 pencil" was the best shade of gray — not too dark, not too light. She also agreed that only part of each eagle should be gilded instead of the entire thing, for a more dramatic effect.

The first lady learned that the project to refurbish the state Capitol dome is ahead of schedule and on target to meet its $5 million budget, according to general contractor John Wiseman.

First lady Gayle Manchin talks with architect Rob Cole about the project.

The plastic tarps and scaffolding that have been the butt of many jokes should begin to come down in September, Wiseman said, with the project being completed no later than Christmas.

Those tarps have allowed contractors to work in all sorts of weather, which has sped up the process. When they started, more than 60 percent of the gilding had fallen off the dome.

In addition, workers had to make structural repairs to the copper roofing itself. At least 20 people a day work in the dome. Almost all are local, union construction laborers, Wiseman said.

Cole said without the Manchins' support and decisiveness, the project could have taken much longer to complete.

One important turning point was the decision to let state voters decide whether to regild the entire dome, as had been done most recently, or only gild certain features, like the eagles, human heads and wreaths that surround the base of the dome. Voters

Please see **CAPITOL, 13A**

CAPITOL

Continued from 1A

overwhelmingly chose the second option, which was how the Capitol looked before the last dome repair in the late 1980s.

The Cass Gilbert-designed building is one of his finest, Cole said. Gilbert patterned the dome after the Hotel des Invalides in Paris, where Napoleon is buried.

"The setting is spectacular, away from downtown with the hills and the river nearby," Cole said. "This is a world-class building."

"It's a wonderful project," Gayle Manchin said. "We're so excited about getting the historical integrity of this building preserved."

A NEW GUIDE TO HISTORIC-PROJECT DEVELOPMENT & ESTIMATING

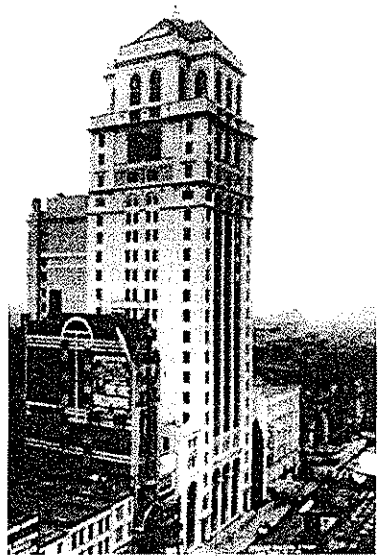
Historic Preservation *Project Planning & Estimating*
Swanke Hayden Connell Architects
R.S. Means Company, Inc., Construction Publishers & Consultants
63 Smiths Lane, Kingston, MA 02364
Phone: (781) 585-7880
Hardcover; 681 pp.; ISBN 0-87629-573-1

by Walter Sedovic, AIA

I am going to do something I don't think I have ever done before: I'm going to give away the ending . . . In the last chapter of *Historic Preservation Project Planning & Estimating* the authors selected as a case study the rehabilitation of the Candler Building in New York City, succinctly weaving into it nearly 600 preceding pages and demonstrating just how complex preservation projects tend to be. We lose sight sometimes of the singular challenge of architectural preservation — balancing its many moving parts. This new volume seeks to highlight the interconnectedness and diversity of all those moving parts: the project team, history, construction and material technology, zoning, finance, review agencies, philosophical approach, condition surveys, decision-making processes, bidding strategies, factors affecting the progress of construction, implementation, scheduling, ongoing maintenance, and so on. It is fun and useful reading, reminding us that we are not alone in dealing with the crazy-quilt drama that projects often present.

The fusion of so many issues is the book's strength — and its weakness. Lots of ground is covered by several outstanding contributing authors and via the inclusion of reference material published by leading agencies that govern various code-related issues. A consequence of this approach is lack of unity: functional, philosophical, and technical. The past two decades have provided some very fine comprehensive guides to historic preservation, each catering to a specific audience. This new volume is a worthy addition, to be sure, but it may be that its apparent audience — architects or engineers developing complex projects — will probably not benefit as much from this book as, say, facility managers, civic leaders, or developers. These are people who often shape the course of preservation within a community, but who may find preservation itself to be quite unfamiliar territory. I would love to present this book — and know that it'd be read — to some members of local review boards that I have encountered, for instance. While it is terrific to find in one place reference materials running the gamut from rehabilitation tax credits to material science to ADA requirements and more — in fact, much more — it is likely that most of this information is already in the toolbox of serious practicing professionals.

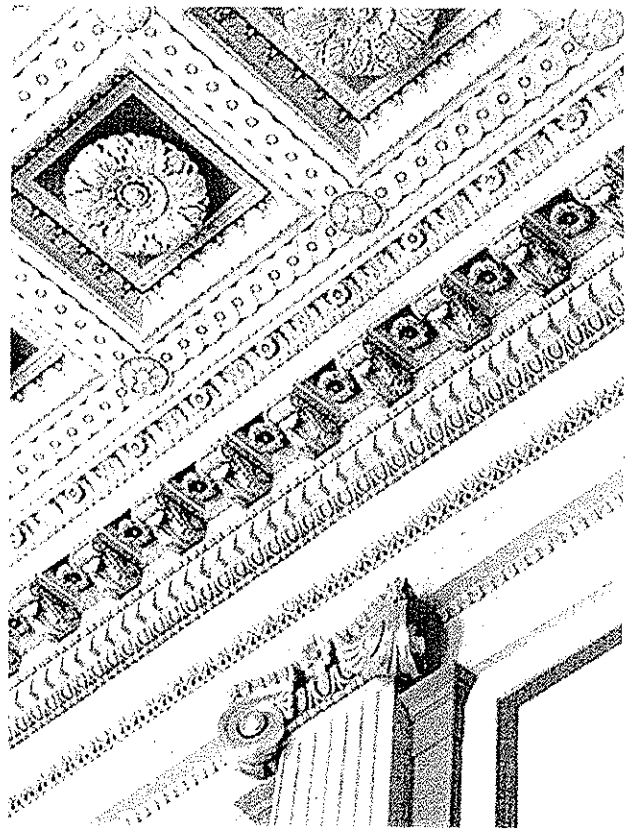
The notable exception is Part IV, comprised of Chapters 21 through 24, which reflects the book's title: Project Planning & Estimating. I found the sections within Chapter 24, which referenced forecasts, annual building reviews, preventive maintenance systems, and 20-year spreadsheets, to be of great use. In fact, my excitement — perhaps my bias — related to this book is its promise on a topic not widely covered: real issues relating to cost estimating, fiscal planning, and anticipating pitfalls within the process. It's unfortunate that after decades of permeating the construction industry and our communities in general, historic preservation still carries with it the stigma of costing more — ostensibly because of the emergence of unforeseen conditions at the most inopportune times, namely in the midst of construction. In fact, by anticipating and mitigating unforeseen conditions through careful planning, bidding, and management practices, preservation costs less than comparable new construction or replacement. This subject is clearly critical, yet unforeseen conditions as a specific topic received minimal discussion. Similarly, I would have loved a lengthy discussion on the application of software programs to the specific tasks of project management.



The commercial rehabilitation of the 25-story Candler Building in New York City — seen here in a historic photo from 1915 — is a case study which is examined in detail in the pages of *Historic Preservation Project Planning & Estimating*. *Photo: Irving Underhill: Office for Metropolitan History*

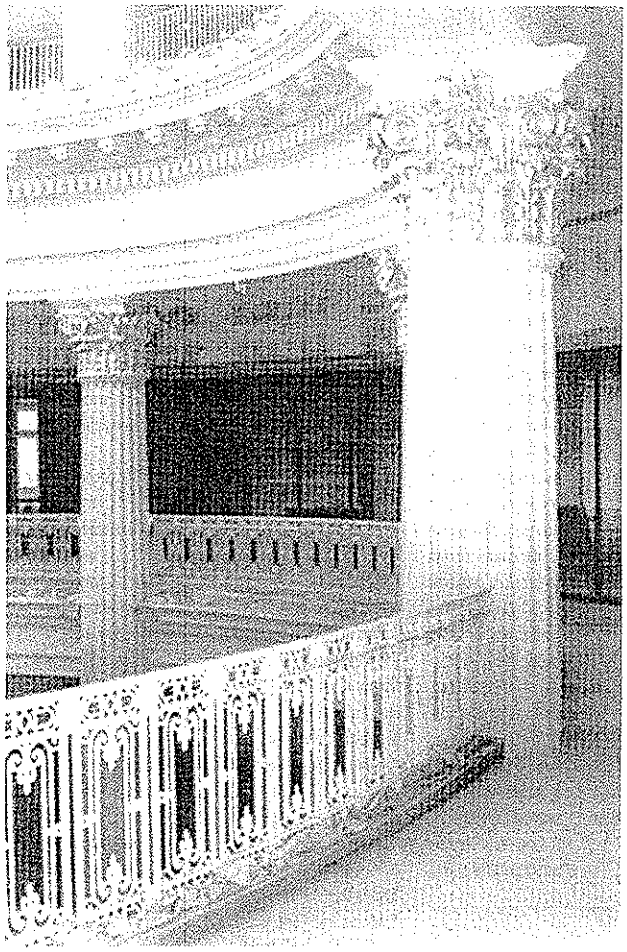
But I may be getting a little ahead of myself. Let's explore what the book *does* offer: Five parts made up of 25 chapters. You already know that the last is "Case Study"; the first is "Special Considerations of Historic Preservation Projects." This Part identifies some of the characteristics that make a property "historic." It includes widely varying vintages and types — the Comanche Motel is cited alongside notables such as the Statue of Liberty — and this is as it should be. Discussion of the project team seeks to be inclusive, and there is a very fine section within Chapter 2 on non-destructive testing and field documentation techniques for the newly initiated. The approach to hazardous-materials identification and abatement is similarly balanced, and I was heartened by the thoughtful, non-knee-jerk approach to mitigation of some of these materials likely to be encountered.

Once beyond the "Codes & Standards" chapter, the logic of the remaining chapters of Part I began to escape me. For instance, Chapter 6, "Upgrading Building Systems," and Chapter 8, "Mechanical/Electrical Systems," were bisected by Chapter 7, "Access to & Protection of the Site." Chapter 5, "Restoring Archaic Materials," seemed like it would have been much more at home with the subsequent Part II: Historic Building Materials: Assessment & Repair.

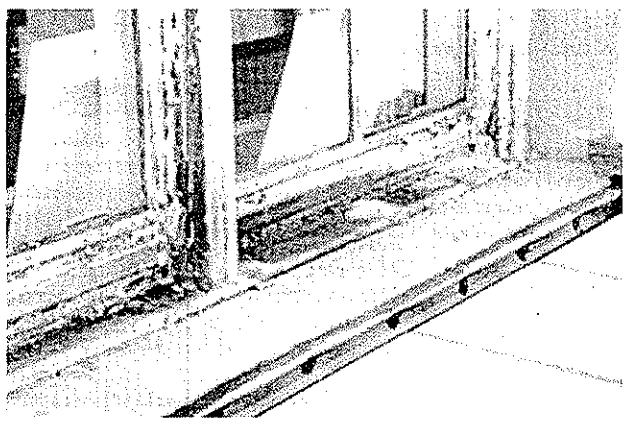


The book's chapter on "Wall & Ceiling Finishes" includes references to the spectacular ornamental plasterwork which adorns the ceiling of the American Securities Bank in Washington, D.C. *Photo: Swanke Hayden Connell Architects*

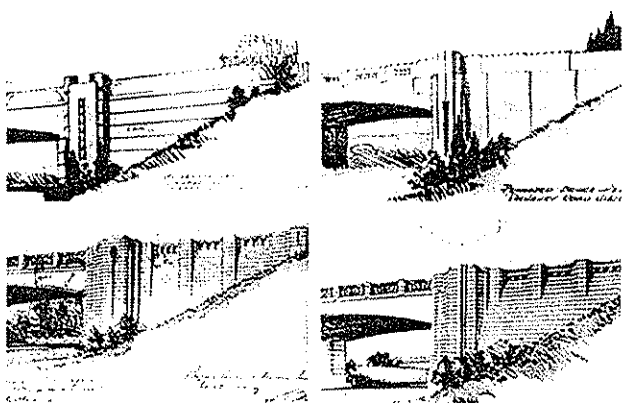
This cast-in-place, concrete relief statue of a Native American, part of the Comstock Hill Road Bridge, was an additional element that required special consideration in the restoration of the Merritt Parkway in Connecticut. *Photo: Swanke Hayden Connell Architects*



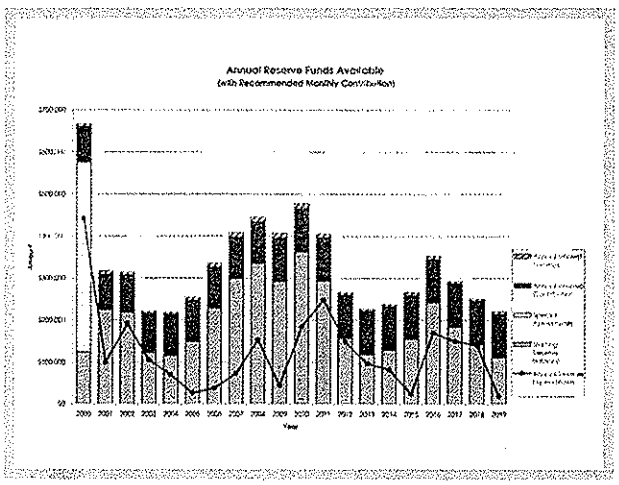
The Rotunda in Oakland, Calif., had its missing railing replaced with a less expensive, mild-steel reproduction of the cast-iron original. *Photo: Robert Vail Cole*



Repairing this steel window meant not just correcting the failure of its exterior paint job, but also dealing with the corrosion of the steel sill and sash components. *Photo: Swanke Hayden Connell Architects*



The task of restoring 65 bridges along Connecticut's historic Merritt Parkway involved returning to the conceptual design sketches by the original architect of the Danbury Road Bridge (top) and the Merwins Lane Bridge (above). *Courtesy of ConnDot*

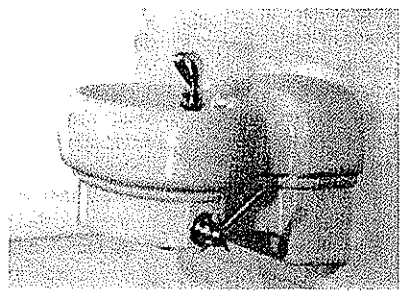


A spreadsheet's graphic layout simplifies the job of dealing with large groups of numbers. Here, the Annual Reserve Funds Available are plotted to show the Recommended Monthly Contribution funds available each year, along with the recommended monthly contribution.

Information contained in each of the referenced chapters had a tendency to be redundant, if not conflicting.

Granted, in nearly 700 pages some conflicting information is bound to present itself. Sometimes, though, it can be significant. For instance, a notation on p. 448 states, "taking into account the limited options and craftsmen for repairing slate roofs, asphalt shingles were recommended by the architect." This claim actually defies some earlier statements and is rather misleading: There in fact are abundant qualified slate-roofing contractors, particularly in Massachusetts, where the cited project was located.

Further, the same section states that the decision to recommend asphalt instead of slate, in turn, "triggered a HUD review," and that the "SHPO ... required the team to rebuild the slate roof — or lose funding." The cost differential stated was $400,000 vs. $200,000 for asphalt. One problem with that statement — and approach — is that, projected over the life of the material (and an historic building is worthy of the long view), a slate roof actually would be cheaper. And besides, isn't this a book about preservation and cost estimating? Where is the option of selective restoration (as discussed within an earlier chapter)? In this case, the roof in general was noted as being in good condition; it was the gutters and flashings that were worn. In a well-crafted approach, only the deteriorated sections would need replacement. This reference reflected a flawed philosophy and technical approach, blended with an attempt to blame the State Historic Preservation Office for doing things correctly. The most apparent drawbacks of the book are its inconsistency and the potential to disseminate, however inadvertently, some misconceptions.



This historic drinking fountain in the San Francisco War Memorial Opera House was made ADA-compliant by adding a painted sheetmetal extension (which matched the porcelain original). The spout was also lowered 2-1/2 in. and a lever was added to the control. *Photo: Robert Vail Cole*

That said, such issues shouldn't detract from the overall benefit the book provides. Part II: Historic Building Materials, while not exhaustive, still is undoubtedly one of the most complete descriptions of historic materials assembled. One improvement that would have linked this section to a previous reference is if the materials were ordered according to MasterFormat divisions (1 through 16). Otherwise, I found this section to be thoroughly fun to read, and I appreciated the range of buildings and structures used as illustrations (if not always the quality of the photographs themselves).

Contract Administration, Part III, while general, should be meaningful for those who are unfamiliar with the construction process. It might have been far more useful for a seasoned professional if the authors' significant experience had been brought to bear on common pitfalls or obstacles related to contract administration. For instance, there was a glaring statement on p. 425 that "Liquidated damages may be impossible to enforce if extensive design changes are required due to unforeseen conditions, a likely scenario on a historic preservation project." Unforeseen conditions — and some of the effective ways of managing them — should be, one would hope, at the core of this volume. Clearly, *Historic Preservation Project Planning & Estimating* seeks to define a standard; how successfully it accomplishes that goal is best answered by each reader. Could any single volume on such a complex subject hope to become the definitive desktop reference for historic-preservation practitioners? Maybe not. Still, this volume is formidable in its breadth, focused on a high-quality process, and, in general, a welcome addition to a body of knowledge which often seems to be growing far too slowly. Keep it coming! ■

All art and photos taken from Historic Preservation Project Planning & Estimating

Walter Sedovic, AIA, is an experienced preservation architect and is principal of Walter Sedovic Architects in Irvington, N.Y.

JOE MANCHIN III
GOVERNOR

STATE OF WEST VIRGINIA
DEPARTMENT OF ADMINISTRATION
OFFICE OF THE CABINET SECRETARY

ROBERT W. FERGUSON, JR.
CABINET SECRETARY

February 6, 2006

Mr. Robert Vail Cole, AIA
Associate Principal
Director of Historic Preservation
Swanke Hayden Connel Architects
295 Lafayette Street
New York, NY 10012

Dear Mr. Cole:

On behalf of the state of West Virginia, I wish to express our appreciation and satisfaction with your participation in the recent renovation of our State Capitol dome in Charleston, West Virginia.

The major role your firm played in this historic restoration project contributed to the successful outcome which many of us are fortunate to view on a daily basis. Your representatives worked in a cooperative manner with our team of experts, both internal and external, in creating *to perfection* our desired outcome.

The restoration of our State Capitol dome, based on the design originated by architect Cass Gilbert and erected in the early 1930s, has received widespread attention by our state residents as well as those individuals outside of West Virginia. It is truly a landmark for all to enjoy.

As this project is now successfully completed, our compliments are extended to you and your staff on a job well done.

Sincerely Yours,

Robert W. Ferguson, Jr.
Cabinet Secretary

RWF:dmh

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