



**West Virginia Science & Cultural Center Building (#9)
Exterior Cleaning and Renovations**

**1900 Kanawha Boulevard, East
Charleston, West Virginia**



Request for Qualifications: GSD106450

August 12, 2009

WJE No. 2009.3285



Prepared for:

**Krista Ferrell, Senior Buyer
State of West Virginia**

Purchasing Division
2019 Washington Street, East
Building 15
Charleston, WV 25305-0130

RECEIVED

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Prepared by:

Wiss, Janney, Elstner Associates, Inc.

9655 Sweet Valley Drive, Suite 3
Cleveland, OH 44125
216.642.2300 tel | 216.642.6288 fax

WV PURCHASING
DIVISION



With:

Behnke Associates, Inc.

1215-B West 10th Street
Cleveland, OH 44113-1291
216.589.9100 tel | 216.589.8560 fax

**GENERAL TERMS & CONDITIONS
REQUEST FOR QUOTATION (RFQ) AND REQUEST FOR PROPOSAL (RFP)**

1. Awards will be made in the best interest of the State of West Virginia.
2. The State may accept or reject in part, or in whole, any bid.
3. All quotations are governed by the *West Virginia Code* and the *Legislative Rules* of the Purchasing Division.
4. Prior to any award, the apparent successful vendor must be properly registered with the Purchasing Division and have paid the required \$125 fee.
5. All services performed or goods delivered under State Purchase Order/Contracts are to be continued for the term of the Purchase Order/Contracts, contingent upon funds being appropriated by the Legislature or otherwise being made available. In the event funds are not appropriated or otherwise available for these services or goods, this Purchase Order/Contract becomes void and of no effect after June 30.
6. Payment may only be made after the delivery and acceptance of goods or services.
7. Interest may be paid for late payment in accordance with the *West Virginia Code*.
8. Vendor preference will be granted upon written request in accordance with the *West Virginia Code*.
9. The State of West Virginia is exempt from federal and state taxes and will not pay or reimburse such taxes.
10. The Director of Purchasing may cancel any Purchase Order/Contract upon 30 days written notice to the seller.
11. The laws of the State of West Virginia and the *Legislative Rules* of the Purchasing Division shall govern all rights and duties under the Contract, including without limitation the validity of this Purchase Order/Contract.
12. Any reference to automatic renewal is hereby deleted. The Contract may be renewed only upon mutual written agreement of the parties.
13. **BANKRUPTCY:** In the event the vendor/contractor files for bankruptcy protection, the State may deem this contract null and void, and terminate such contract without further order.
14. **HIPAA BUSINESS ASSOCIATE ADDENDUM:** The West Virginia State Government HIPAA Business Associate Addendum (BAA), approved by the Attorney General, and available online at the Purchasing Division's web site (<http://www.state.wv.us/admin/purchase/vrc/hipaa.htm>) is hereby made part of the agreement. Provided that, the Agency meets the definition of a Cover Entity (45 CFR §160.103) and will be disclosing Protected Health Information (45 CFR §160.103) to the vendor.
15. **WEST VIRGINIA ALCOHOL & DRUG-FREE WORKPLACE ACT:** If this Contract constitutes a public improvement construction contract as set forth in Article 1D, Chapter 21 of the West Virginia Code ("The West Virginia Alcohol and Drug-Free Workplace Act"), then the following language shall hereby become part of this Contract: "The contractor and its subcontractors shall implement and maintain a written drug-free workplace policy in compliance with the West Virginia Alcohol and Drug-Free Workplace Act, as set forth in Article 1D, Chapter 21 of the West Virginia Code. The contractor and its subcontractors shall provide a sworn statement in writing, under the penalties of perjury, that they maintain a valid drug-free work place policy in compliance with the West Virginia and Drug-Free Workplace Act. It is understood and agreed that this Contract shall be cancelled by the awarding authority if the Contractor: 1) Fails to implement its drug-free workplace policy; 2) Fails to provide information regarding implementation of the contractor's drug-free workplace policy at the request of the public authority; or 3) Provides to the public authority false information regarding the contractor's drug-free workplace policy."

INSTRUCTIONS TO BIDDERS

1. Use the quotation forms provided by the Purchasing Division.
2. **SPECIFICATIONS:** Items offered must be in compliance with the specifications. Any deviation from the specifications must be clearly indicated by the bidder. Alternates offered by the bidder as **EQUAL** to the specifications must be clearly defined. A bidder offering an alternate should attach complete specifications and literature to the bid. The Purchasing Division may waive minor deviations to specifications.
3. Complete all sections of the quotation form.
4. Unit prices shall prevail in case of discrepancy.
5. All quotations are considered F.O.B. destination unless alternate shipping terms are clearly identified in the quotation.
6. **BID SUBMISSION:** All quotations must be delivered by the bidder to the office listed below prior to the date and time of the bid opening. Failure of the bidder to deliver the quotations on time will result in bid disqualifications: Department of Administration, Purchasing Division, 2019 Washington Street East, P.O. Box 50130, Charleston, WV 25305-0130



State of West Virginia
 Department of Administration
 Purchasing Division
 2019 Washington Street East
 Post Office Box 50130
 Charleston, WV 25305-0130

Request for Quotation

RFQ NUMBER
GSD106405

PAGE
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ADDRESS CORRESPONDENCE TO ATTENTION OF
KRISTA FERRELL
304-558-2596

VENDOR

RFQ COPY
TYPE NAME/ADDRESS HERE

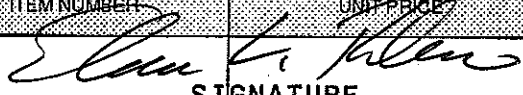
Wiss, Janney, Elstner Associates, Inc.
 9655 Sweet Valley Drive, Suite 3
 Cleveland, OH 44125

SHIP TO

DEPARTMENT OF ADMINISTRATION
 GENERAL SERVICES DIVISION
 BLDG. 9 - CULTURE & HISTORY
 1900 KANAWHA BOULEVARD, EAST
 CHARLESTON, WV
 25305 304-558-2317

DATE PRINTED	TERMS OF SALE	SHIP VIA	FOB	FREIGHT TERMS
07/21/2009				

BID OPENING DATE: **08/13/2009** BID OPENING TIME **01:30PM**

LINE	QUANTITY	UOP	CAT NO.	ITEM NUMBER	UNIT PRICE	AMOUNT
				 SIGNATURE Elwin C. Robison . Wiss, Janney, Elstner Associates, Inc. COMPANY August 12, 2009 DATE		
REV. 11/96						
BANKRUPTCY: IN THE EVENT THE VENDOR/CONTRACTOR FILES FOR BANKRUPTCY PROTECTION, THE STATE MAY DEEM THE CONTRACT NULL AND VOID, AND TERMINATE SUCH CONTRACT WITHOUT FURTHER ORDER.						
NOTICE						
A SIGNED PROPOSAL MUST BE SUBMITTED TO:						
DEPARTMENT OF ADMINISTRATION PURCHASING DIVISION BUILDING 15 2019 WASHINGTON STREET, EAST CHARLESTON, WV 25305-0130						
THE PROPOSAL SHOULD CONTAIN THIS INFORMATION ON THE FACE OF THE ENVELOPE OR THE BID MAY NOT BE CONSIDERED:						
SEALED PROPOSAL						
BUYER:				KRISTA FERRELL-FILE 21		

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE	TELEPHONE	DATE
TITLE	FEIN	ADDRESS CHANGES TO BE NOTED ABOVE

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'



State of West Virginia
 Department of Administration
 Purchasing Division
 2019 Washington Street East
 Post Office Box 50130
 Charleston, WV 25305-0130

Request for Quotation

RFQ NUMBER
GSD106405

PAGE
4

ADDRESS CORRESPONDENCE TO ATTENTION OF
**KRISTA FERRELL
 304-558-2596**

VENDOR

**RFQ COPY
 TYPE NAME/ADDRESS HERE**

Wiss, Janney, Elstner Associates, Inc.
 9655 Sweet Valley Drive, Suite 3
 Cleveland, OH 44125

SUB TO

DEPARTMENT OF ADMINISTRATION
 GENERAL SERVICES DIVISION
 BLDG. 9 - CULTURE & HISTORY
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LINE	QUANTITY	UOP	CAT. NO.	ITEM NUMBER	UNIT PRICE	AMOUNT
				RFQ. NO. : GSD106405		
				BID OPENING DATE: 08/13/2009		
				BID OPENING TIME: 1:30 PM		
				PLEASE PROVIDE A FAX NUMBER IN CASE IT IS NECESSARY TO CONTACT YOU REGARDING YOUR BID: 216-642-6288 (Fax)		
				CONTACT PERSON (PLEASE PRINT CLEARLY): Elwin C. Robison 216-642-2300 erobison@wje.com		
				***** THIS IS THE END OF RFQ GSD106405 ***** TOTAL:		

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE _____ TELEPHONE _____ DATE _____

TITLE _____ FEIN _____ ADDRESS CHANGES TO BE NOTED ABOVE

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

VENDOR OWING A DEBT TO THE STATE:

West Virginia Code §5A-3-10a provides that: No contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and the debt owed is an amount greater than one thousand dollars in the aggregate.

PUBLIC IMPROVEMENT CONTRACTS & DRUG-FREE WORKPLACE ACT:

If this is a solicitation for a public improvement construction contract, the vendor, by its signature below, affirms that it has a written plan for a drug-free workplace policy in compliance with Article 1D, Chapter 21 of the *West Virginia Code*. The vendor must make said affirmation with its bid submission. Further, public improvement construction contract may not be awarded to a vendor who does not have a written plan for a drug-free workplace policy in compliance with Article 1D, Chapter 21 of the *West Virginia Code* and who has not submitted that plan to the appropriate contracting authority in timely fashion. For a vendor who is a subcontractor, compliance with Section 5, Article 1D, Chapter 21 of the *West Virginia Code* may take place before their work on the public improvement is begun.

ANTITRUST:

In submitting a bid to any agency for the state of West Virginia, the bidder offers and agrees that if the bid is accepted the bidder will convey, sell, assign or transfer to the state of West Virginia all rights, title and interest in and to all causes of action it may now or hereafter acquire under the antitrust laws of the United States and the state of West Virginia for price fixing and/or unreasonable restraints of trade relating to the particular commodities or services purchased or acquired by the state of West Virginia. Such assignment shall be made and become effective at the time the purchasing agency tenders the initial payment to the bidder.

I certify that this bid is made without prior understanding, agreement, or connection with any corporation, firm, limited liability company, partnership or person or entity submitting a bid for the same materials, supplies, equipment or services and is in all respects fair and without collusion or fraud. I further certify that I am authorized to sign the certification on behalf of the bidder or this bid.

LICENSING:

Vendors must be licensed and in good standing in accordance with any and all state and local laws and requirements by any state or local agency of West Virginia, including, but not limited to, the West Virginia Secretary of State's Office, the West Virginia Tax Department, West Virginia Insurance Commission, or any other state agencies or political subdivision. Furthermore, the vendor must provide all necessary releases to obtain information to enable the Director or spending unit to verify that the vendor is licensed and in good standing with the above entities.

CONFIDENTIALITY:

The vendor agrees that he or she will not disclose to anyone, directly or indirectly, any such personally identifiable information or other confidential information gained from the agency, unless the individual who is the subject of the information consents to the disclosure in writing or the disclosure is made pursuant to the agency's policies, procedures and rules. Vendor further agrees to comply with the Confidentiality Policies and Information Security Accountability Requirements, set forth in <http://www.state.wv.us/admin/purchase/privacy/noticeConfidentiality.pdf>.

Under penalty of law for false swearing (*West Virginia Code* §61-5-3), it is hereby certified that the vendor affirms and acknowledges the information in this affidavit and is in compliance with the requirements as stated.

Vendor's Name: Wiss, Janney, Elstner Associates, Inc.

Authorized Signature:  Date: August 12, 2009

Purchasing Affidavit (Revised 01/01/09) Elwin C. Robison

August 12, 2009

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

Re: RFQ: GSD-106405
West Virginia Science & Cultural Center Building (#9)
Exterior Cleaning and Renovations
WJE No. 2009.3285

Dear Ms. Ferrell:

Thank you for the opportunity to submit our qualifications for the Masonry Repair and Cleaning of the West Virginia State Cultural Center. We believe we possess the unique qualifications and skill sets to best guide this work to successful completion in partnership with General Services Division and the occupants of the Cultural Center; the State Museum, Archives, Library, Arts Commission, and the State Preservation Agency.

Wiss, Janney, Elstner Associates, Inc. (WJE) has unique strengths in combining materials analysis with historic preservation. Our architects, engineers, and architectural conservators have distinguished themselves in solving difficult problems on historic buildings while respecting the aesthetics of the building and complying with the *Secretary of the Interior Standards for Preservation*. We have an especially strong record of work on Indiana limestone buildings, and museum quality restoration. We invite you to review the projects highlighted in our supporting materials.

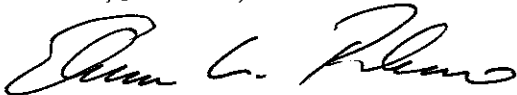
Our team partner, Behnke Associates, Inc., has extensive experience with gardens, plazas, water features, and working within ADA parameters to create meaningful and delightful visitor experiences.

We are ready and able to meet all requirements listed in the RFQ section 4.2.2, with the exception of the NFPA references which we believe to have been erroneously included in the RFQ.

We know we can make a positive contribution to the maintenance and renovation of the West Virginia State Cultural Center and appreciate your time in reviewing our team's qualifications.

Sincerely,

WISS, JANNEY, ELSTNER ASSOCIATES, INC.



Elwin C. Robison, PE
Project Manager

Team Qualifications

Lead Firm - Wiss Janney Elstner Associates, Inc. (WJE)

Wiss, Janney, Elstner Associates, Inc. has fifty years' experience in solving complex building problems with specific expertise in masonry, stone, and mortars; windows; roofs; concrete; and archaic structural systems. By combining the efforts of structural engineers, architects, architectural engineers, architectural historians, petrographers, and chemists, WJE has the capability to quickly identify and solve challenging building problems. Eighty percent of our professional staff hold advanced degrees, and many are leaders in their fields, actively publishing, and serving on committees that set industry standards.

WJE has extended the life of countless structures, and improved the construction industry's understanding of why structures fail and the ways they can be preserved. This experience with a wide range of industrial, architectural, and transportation structures gives WJE tremendous insight into details of maintenance, repair, conservation, and restoration of historic buildings.

WJE's staff has special knowledge, expertise, and interest in the preservation of historic structures specializing in investigation, analysis, and design services for historic buildings. Special services include:

- Masonry analysis and repair
- Cleaning of Facades
- Investigations of architectural and structural systems
- Materials conservation analysis
- Field and laboratory testing and analysis
- Construction documents preparation
- Maintenance planning
- Architectural and structural repair design
- On-site monitoring and testing
- Historical, technical, and materials research
- Historic Structure Reports
- Historic American Buildings Survey (HABS) and Historic American Engineering Record (HAER) documentation
- Historic site surveys and inventories

A significant asset to WJE is the Jack R. Janney Technical Center which has more than 25,000 square feet of laboratory space for testing and evaluation of structural components and materials. Among the areas that can be addressed in the lab are accelerated weathering tests, and specialized chemical analysis of materials and deposits. In addition to the Technical Center, the Cleveland Office of WJE has its own petrography lab, providing rapid in house responses to problems involving stone, concrete, brick, and tile.

In addition to providing services in historic preservation, WJE has also distinguished itself through successful forensic studies of collapses and failures, earthquake assessment and analysis, and building envelope evaluation and repair. The overlapping skill sets required by these disciplines has direct application to historic preservation. WJE is uniquely qualified to respond to the technical and aesthetic needs of architecturally significant and historic structures, offering full services from planning and investigation through design implementation.

Our clients for historic preservation projects have included the UNESCO, U.S. Department of State, National Park Service, Department of the Navy, General Services Administration, National Trust for Historic Preservation, ICOMOS, Smithsonian Institute; Getty Conservation Institute, World Monuments Fund, numerous State Governments, and many universities, institutions, and other public and private clients.

Landscape Architect - Behnke Associates, Inc.

Behnke Associates, Inc. has its origins in the firm of Behnke, Szunyog and Ness, established in 1958.

Behnke has always felt that recognition for design excellence is extremely important. Experience has proven that a designer alone cannot cause award-winning solutions, and that the client is a necessary member of the design team. In partnership with our clients, we have produced many award-winning projects. The firm/client combination has received nine awards at the White House from the first ladies of four presidents, five national awards from the professional awards program of the American Society of Landscape Architects, and numerous design awards at the state and local levels.

The firm has demonstrated abilities in large scale planning, site planning, design and construction documents, construction services and observation. Firm members are landscape architects and planners, and work with specialists for support in areas such as economics, architecture, engineering, natural science, archaeology, horticulture, etc., as necessary to a particular project.

For over 50 years, Behnke has provided its clients with a broad range of services, both as leaders and as members of consulting teams. Important areas of firm experience include

- Community Center Planning
- Park and Recreation Planning and Design
- Public Garden and Arboreta Planning and Design
- Institutional Planning and Design
- School Planning and Design
- Comprehensive Athletic Facility Planning and Design
- Commercial and Industrial Site Planning
- Historic Landscape Restoration
- Healthcare Facility Site Planning

Project Organization

Cultural Center

The West Virginia State Cultural Center is primarily clad with Indiana limestone and cast in place concrete, with storefront glazing systems recessed underneath the projecting limestone building mass. Some facade issues that WJE has identified to date include:

- Biological growth
- General soiling
- Failed sealant joints
- Open mortar joints

Although this Request for Qualifications does not include construction period services, design of repairs necessitates taking the total project into consideration, and on that basis WJE makes the following observations.

Cleaning

The cleaning portion of the project will require the identification of each cause of soiling. Specific techniques will be developed for each condition, as there is no single technique that will address every cause. The gentlest procedures possible for each condition will be determined and specified. A general outline of the role various professions will play in the design process is outlined below.

West Virginia State Cultural Center Masonry Repair and Cleaning Task Matrix					
Task	Architects	Engineers	Architectural Historians	Petrographers	Architectural Conservators
Design					
Visual survey	*	*	*		
Estimate quantities	*	*			
Limited close-range survey	*	*			
Diagnose stone damage causes	*	*	*	*	
Determine stone soiling causes	*	*	*	*	*
Develop construction documents	*	*	*		
Provide bidding services	*	*			
Repointing and Repair					
Pre-qualify masons for cutting joints and repointing	*	*			
Provide periodic inspection	*	*			
Cleaning					
Develop list of acceptable cleaners			*	*	*
Evaluate cleaning mockups	*	*	*	*	
Provide periodic inspection	*	*			

Note that the various designations of architects, engineers, and architectural historians are primarily conceptual. Many of the personnel involved are identified by multiple designations. For example, Mr. Kelley is a registered architect and a registered engineer, while Mr. Robison is a registered engineer and an architectural historian.

Masonry Repairs

Repairs to masonry will include repointing, evaluation of the stone anchors, evaluation of coping flashing, and replacement of sealants. The repointing portion of the project will require precise cutting of existing joints and installation of new repointing mortar in multiple lifts to minimize water infiltration caused by mortar shrinkage. Pre-qualification of masons and extracting mortar samples to provide quality control for the repointing process are important in producing a quality product. Evaluation of masonry anchors may require the use of a borescope to visually access existing anchors.

Plaza Renovation

Although symmetrically located to each side of the Cultural Center building, the two sunken courtyards address different conditions: the north plaza abuts a parking area and major pedestrian traffic route, while the south plaza is surrounded by vegetation and is more removed from the business of the capitol grounds. Successful introduction of ADA access and water features will require an understanding of the use patterns of the plazas and their surroundings, and fully developing the potential of each site.

Team Experience

Kentucky State Capitol (WJE)

The National Register designated Kentucky State Capitol was the result of a 1904 competition and was constructed in accordance with design of Frank Mills Andrews. It is a classically styled edifice faced with Indiana limestone and surmounted by a dome of terra cotta.

In a team with Louisville-based K. Norman Berry Architects, WJE consulted on the restoration of the dome in 1996. In 2000 WJE served as architectural conservator and Preservation Consultant for the same on the preparation of an Historic Structures Report and Master Plan. Tasks include comprehensive visual inspection, laboratory analyses and development of the most appropriate cleaning system. The project implementation awaits funding.

Nebraska State Capitol (WJE)

The National Register designated Nebraska State Capitol, the result of a design competition, was designed by Bertrand Grosvenor Goodhue and constructed from 1922 to 1932. Melding the traditional State Capitol typology with the skyscraper form, Goodhue created a distinctly American architectural style that was heralded by architects of the day as the future of American architecture.

WJE served as project architect for a comprehensive exterior investigation that was completed in 1996, and now serves as special consultant for the Lincoln-based firm of Bahr, Vermeer & Haecker Architects for the restoration of the Indiana limestone exterior façade, bronze and steel windows, and copper roofs. An important part of the project is the selection and augmentation of cleaning and biocide treatments for the limestone façade. Restoration of the Capitol exterior will tentatively conclude in 2012.

Governor Nelson A. Rockefeller Empire State Plaza (WJE)

The Empire State Plaza is considered one of the most ambitious urban renewal projects in modern U.S. history. It was designed by Wallace K. Harrison and Max Abramovitz and built between 1965 and 1979. The complex consists of ten buildings set on a six-story platform which forms the plaza. The plaza, with three reflecting pools along its length, is bordered on the west by four Agency buildings and on the east by the tall Tower and the so-called "Egg." The Cultural Education Center, raised on its own platform, is at the south end while the nineteenth-century State Capitol closes off the north end.

WJE was retained by the New York OGS Design & Construction Group to perform an investigation to determine the cause of the marble cladding distress and develop repair recommendations. Approximately 125,000 marble panels were inspected over a 35 acre site, and detailed repair documents were developed to address the conditions observed. The project was completed in 2002.

Renaissance Ballroom and Exhibit Hall (WJE)

The Renaissance Ballroom and Exhibit Hall is a 1960s limestone veneer block structure sited adjacent to the 1915 hotel designed by D. H. Burnham and Company. Like the West Virginia Cultural Center, it is a limestone veneer cubic mass unrelieved by windows or openings, with a cantilever projecting over a recessed ground level.

WJE mapped the locations of distress in the limestone cladding, and then analyzed the structure in order to determine the cause of the distress. WJE demonstrated the cost effectiveness of repairing the existing limestone instead of overcladding the structure with a new material as had been recommended by other consultants. WJE made recommendations for limestone cleaning and evaluated cleaning mock ups via on-site petrographic examination to ensure that limestone surfaces were not damaged by cleaning. The project was completed in 2002 for CTF Hotels and Resorts. WJE continues to work on the adjacent



ENGINEERS
ARCHITECTS
MATERIALS SCIENTISTS

RFQ: GSD106405
West Virginia Science & Cultural Center Building (#9)
August 12, 2009

historic hotel replacing terra cotta cornices and brickwork, with phased repairs scheduled to be completed in 2015.

The Ohio State University Main Library (WJE)

The Ohio State University Main Library was originally constructed in 1913 with subsequent additions to the building in 1951 and 1977. The facade of the original building utilizes 6-inch thick limestone masonry and clay brick bearing walls that support the steel floor beams and roof trusses. The building additions are clad with 4-inch thick limestone facade panels typically tied back to the concrete structure with strap anchors and with dowels installed between panels.

WJE was retained to perform a condition assessment of the facades and provide conceptual repair recommendations so that necessary repairs and preventative maintenance work items can be incorporated into a major renovation project. WJE's services were completed in 2003.

FirstMerit Tower (WJE)

The FirstMerit Tower is a 28 story Art Deco skyscraper clad with Indiana limestone, glazed brick, and decorative terra cotta. Still the tallest building in Akron, Ohio, it has been the flagship building of the central business district since its construction.

WJE performed inspection services on the masonry facades, and developed construction documents for repair and cleaning of the terra cotta, brick, and Indiana limestone. Damage to the building necessitated rebuilding the parapets, repairing damaged terra cotta, and replacing outlook roofs. In addition WJE developed the National Register nomination for the building and is assisting the client to take advantage of federal tax credits on the project. This multi-year project is currently seventy percent complete, and will have a total cost of approximately eight million dollars.

Expedition Station (WJE)

This mountain top condominium in Snowshoe, West Virginia is a modular built wood framed structure with significant exposure to weather. It is clad with cement-board siding and conventional double hung windows.

WJE was initially retained by the contractor to diagnose the cause of buckled trim pieces which were believed to show evidence of structural failure. WJE identified wood shrinkage as the cause of the buckled trim, and was then retained to identify the causes of the water infiltration in the building. WJE identified deficient windows and flashing design, and assisted the contractor in selecting new windows and developing installation procedures and repairs to the flashing systems. WJE provided consulting services from 2006 through 2008.

The Cleveland Botanical Garden - Terrace Garden (BA)

The Cleveland Botanical Garden recently dedicated a \$47 million expansion/renovation project including a new conservatory, offices, classrooms, dining service, parking garage, and gardens. Behnke Associates was responsible for all of the site design related to this major expansion and renovation. A major portion of the work involved the design of the Terrace Garden. All of the design work was completed by Behnke Associates. The Terrace Garden features a lily pool, jet fountain, dining, and container plantings. It is a traditional favorite with visitors to the garden. The project was completed in 2003.

Hershey Children's Garden (BA)

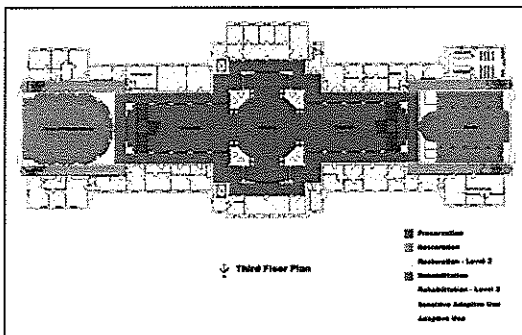
This is a fully accessible, award-winning, learning garden designed to a "Child's Scale!" Behnke Associates collaborated with EDAW on the design concept; prepared construction drawings; and then provided construction period services. Major purposes of this garden include 1) having fun; 2) learning about gardening; 3) learning about nature. Natural landscape elements include a pond, wetlands, stream, peat bog, coppice, hill, forest, stone cliff and cave. An interactive water feature is a popular attraction for young visitors. The project was completed in 1999.

St. Joseph Healing Garden (BA)

The client desired a contemplative garden where cancer patients and their families could gather, rest, pray, and meditate. Accommodating patients with physical disabilities was a key feature to the design as many patients are confined to wheelchairs or have other physical limitations. The use of water, rock, and native plant materials that attract birds and butterflies is prevalent in the design. Sculpture was incorporated to help create the desired contemplative mood. The project was completed in 2005.

Kentucky State Capitol

Historic Conservator for Restoration Master Plan
Frankfort, Kentucky



CLIENT

K. Norman Berry Architects

STRUCTURE

The Kentucky State Capitol, constructed in 1906, was designed in the Beaux Arts Style by Ohio architect Frank Mills Andrews. With visual links to the Parisian Hôtel des Invalides and Opera, the Capitol develops the classical Beaux Arts motif surmounted by a dome. While the exterior is clad with limestone with a dome of terra cotta, the interior is festooned with various types of granite and marble, exotic woods, and "scagliola" plaster surfaces. The public and legislative spaces are finished with a high degree of craftsmanship that is indicative of the era in which it was completed.

CHALLENGE

The Commonwealth of Kentucky made specific recommendations for outlining a strategy for the restoration and preservation of the Kentucky State Capitol. The breadth of the Master Plan included the Capitol Building, Capitol Annex, Parking Structure, Site Improvements and a new Executive Office Building. The intent of the work was to preserve the Capitol and to allow it to serve the people of Kentucky through the next millennium. The Louisville firm of K. Norman Berry Architects was awarded the contract to prepare a Master Plan for the Capitol complex. WJE served as the Project Conservator to the team.

SCOPE OF SERVICE

- Conduct all historical research
- Perform condition assessment of all exterior and interior building systems and materials
- Prepare an Historic Structures Report on findings

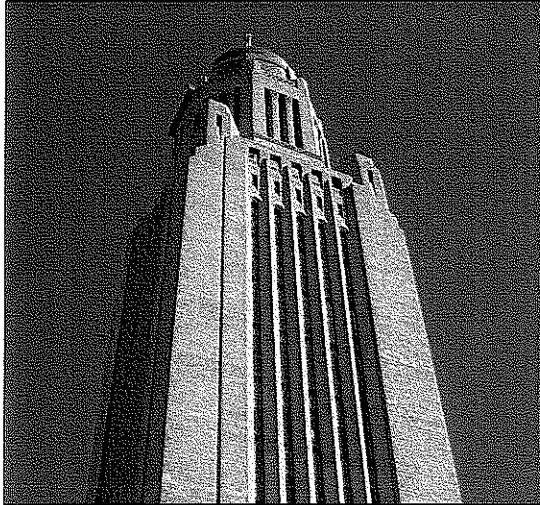
SOLUTION

- Multi-disciplinary, in-house WJE team incorporated difficult access techniques to perform an in-depth condition assessment of roofing, facade, and windows
- Managed subconsultants for interior condition survey of MEP, wood, metals, plaster, and paint finishes
- Performed field and laboratory studies
 - Accelerated weathering testing was used to evaluate the terra cotta
 - Biological treatment studies were performed on the building exterior
- Served as the Preservation component of the team

Nebraska State Capitol

Exterior Facade Investigation and Restoration Design

Lincoln, Nebraska



CLIENT

State of Nebraska

STRUCTURE

The historic Nebraska State Capitol is a 400-foot tall monument designed by Bertram Grosvenor Goodhue, and constructed between 1922 and 1932. A result of a national design competition, the building follows the Beaux-Arts design tenets and melds the traditional domed state capitol building with a post World War I skyscraper.

CHALLENGE

WJE provided specialized architectural and conservator services for the restoration of the building facade, including limestone masonry, ceramic tile dome, clay tile arches, sculptural elements, windows, roofing, and related structural systems.

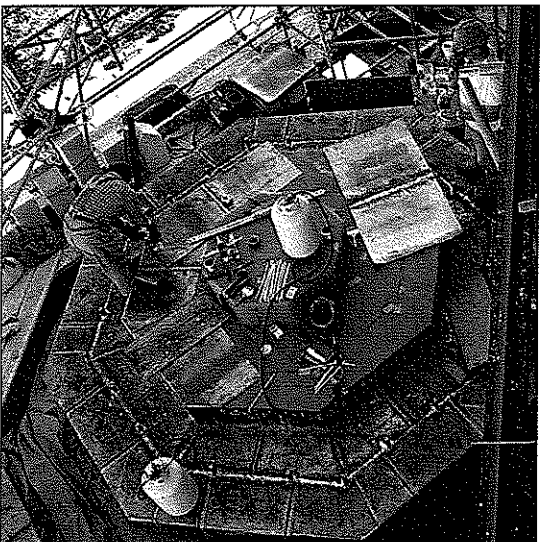


SCOPE OF SERVICE

- Comprehensive investigation of the exterior building systems including the dome, facades, promenades, windows, copper roofing system
- Rapelling techniques for inspection of dome and difficult access areas
- Petrographic analysis of the limestone masonry
- Evaluation of cleaning and biocide treatments
- Repair drawings and specifications
- Construction observation services
- Continuing laboratory analysis on an as-needed basis

SOLUTION

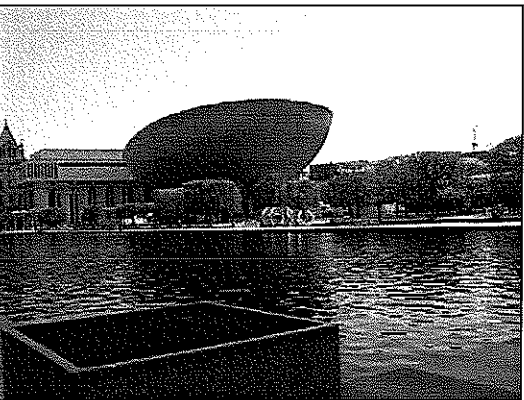
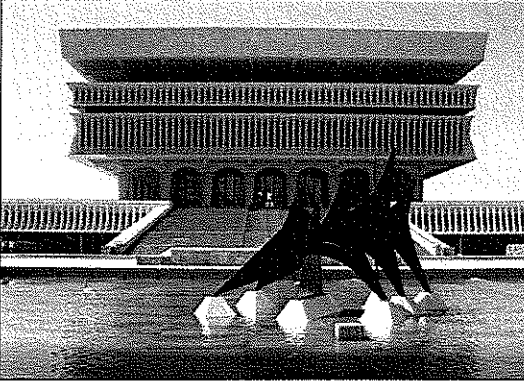
- In cooperation with Bahr, Vermeer & Haecker, developed restoration drawings and specifications for the restoration of the historic structure
- Performed all work in strict accordance with the *Secretary of the Interior Standards*
- Restoration follows “conservation philosophy” and salvages and respects historic building fabric whenever possible
- Redesigned inconsistencies in the original design and construction to give the building fabric increased durability
- Provided construction observation services during restoration
- Observation work entails continued laboratory analysis of building conditions as they become apparent during the multi-phase project set for completion circa 2010



Governor Nelson A. Rockefeller Empire State Plaza

Facade Restoration

Albany, New York



CLIENT

State of New York, Office of General Services

STRUCTURE

The Empire State Plaza is considered one of the most ambitious urban renewal projects in modern U.S. history. It was designed by Wallace K. Harrison and Max Abramovitz and built between 1965 and 1979. The complex consists of ten buildings set on a six-story platform which forms the plaza. The plaza, with three reflecting pools along its length, is bordered on the west by four Agency buildings and on the east by the tall Tower and the so-called "Egg." The Cultural Education Center, raised on its own platform, is at the south end while the nineteenth-century State Capitol closes off the north end.

CHALLENGE

WJE was retained to perform an investigation to determine the cause of the marble cladding distress and develop repair recommendations.

SCOPE OF SERVICE

- Close-up inspection
- Documentation of existing conditions
- Laboratory testing
- Structural analysis

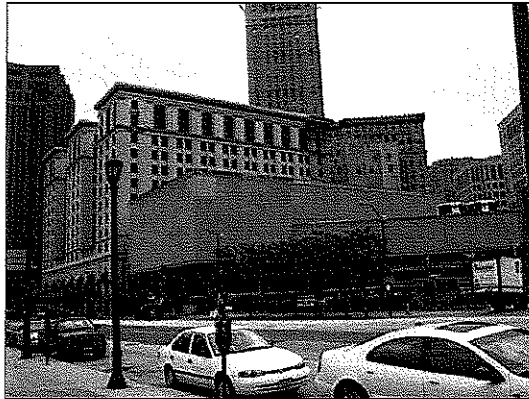
SOLUTION

- Inspected approximately 125,000 marble panels
- Used handheld devices to record a wide range of exterior distress conditions, and created a database assigning each facade panel a unique number
- Developed repair recommendations based on laboratory testing of removed marble panels and structural analysis of the marble panel system
- Used the captured data on panel conditions to prepare detailed repair documents, corresponding each facade panel's unique database number to the AutoCAD drawings

Renaissance Cleveland Hotel Ballroom and Exhibition Hall

Limestone Facade Rehabilitation

Cleveland, Ohio



CLIENT

CTF Hotels and Resorts

STRUCTURE

The Ballroom and Exhibition Hall annex of the Renaissance Cleveland Hotel was constructed in the 1960's. The exterior is clad with limestone panels with a concrete masonry backup wall. The north end of the building cantilevers approximately fifteen feet beyond the parking garage structure below.

CHALLENGE

Significant distress in the form of cracking and displacement was prevalent in the limestone panel cladding. Removal of several limestone panels had previously been performed and prior consultants had proposed a complete over cladding of the building. WJE was retained to conduct a feasibility study to strengthen the walls from the interior to meet code requirements and to design repairs to restore the integrity of the existing facade system. Several areas of the limestone facade exhibited significant atmospheric staining and required cleaning.

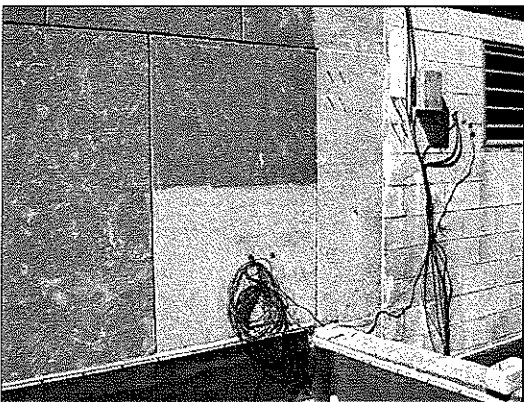
SCOPE OF SERVICE

- Review and documentation of existing conditions
- Design of repair scheme
- Preparation of construction documents
- Petrographic evaluation
- Construction period services



SOLUTION

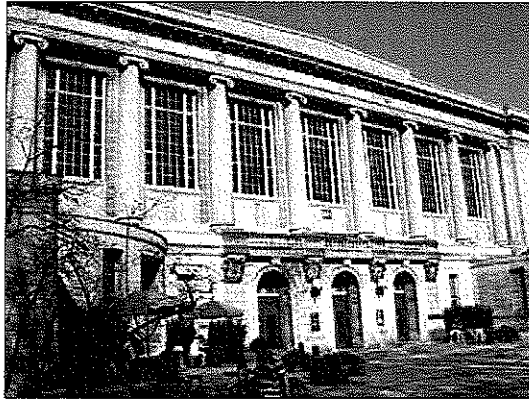
- Determined that distress was the result of thermal movement of the limestone facade relative to the structure and creep deflection of the cantilevered concrete floors at the north end
- Performed structural analysis, which revealed that by reducing the effective height of the walls system through installation of supplemental interior support members, the masonry system would be capable of resisting lateral loads
- Restored the integrity of the facade system by rebuilding the concrete masonry back-up and limestone panel walls at removed and displaced panel locations, restoring the expansion joints, and repainting the mortar joints between the limestone panels
- Determined cleaning methods based on the type of staining observed and the sensitivity of the material to be cleaned
- Evaluated trial repair methods of the cleaning by on-site petrographic evaluation to verify that the limestone panels were not compromised by the cleaning procedures



Ohio State University Main Library Building

Facade Condition Assessment

Columbus, Ohio



CLIENT

Acock Associates Architects

STRUCTURE

The Ohio State University Main Library was originally constructed in 1913 with subsequent additions to the building in 1951 and 1977. The facade of the original building utilizes 6-inch thick limestone masonry and clay brick bearing walls that support the steel floor beams and roof trusses. The building additions are clad with 4-inch thick limestone facade panels typically tied back to the concrete structure with strap anchors and with dowels installed between panels.

CHALLENGE

WJE was retained to perform a condition assessment of the facades and provide conceptual repair recommendations so that necessary repairs and preventative maintenance work items can be incorporated into a major renovation project.

SCOPE OF SERVICE

- Document Review
- Comprehensive visual condition survey to document existing patterns of distress
- Metal detector survey at representative locations to locate and document existing lateral ties and inter-panel connections

SOLUTION

- Noted small, isolated areas of distress throughout the limestone elements of the building.
- Determined that the cracks and spalls were the result of thermal expansion of the walls and corrosion of the metal anchors
- Identified failed mortar joints of the original building and 1951 addition and recommended that repointing be performed to limit water infiltration and corrosion of the metal anchors
- Recommended installing expansion joints at the corners of the tower addition to accommodate thermal movement of the cladding
- Provided conceptual scope of work items for maintenance and restoration of the window units and cleaning of facade elements based on the level of degradation observed from the assessment



FirstMerit Tower

Terra cotta, Glazed Brick, and Limestone Facade and Storefront Rehabilitation

Akron, Ohio



CLIENT

FirstMerit Bank

STRUCTURE

The FirstMerit Tower, historically known as the First National Bank of Akron, is a 1931 Art Deco skyscraper which anchors downtown Akron. Still the tallest building in Akron, it features decorative terra cotta parapets, Indiana limestone and glazed brick veneer, and a cast aluminum cornice above storefront enclosures with bold Art Deco designs and motifs.

CHALLENGE

Deterioration of the parapets prompted the bank to restore the building envelope. Initial visual survey of the building identified brick veneer which had separated from the backup on the northeast corner, necessitating emergency stabilization. Corrosion of the steel support plates and outriggers damaged brick and terra cotta where moisture had compromised the building envelope. Exposure had soiled terra cotta and limestone veneers. Corrosion had damaged the original storefront windows, and roofs above these storefronts leaked.

SCOPE OF SERVICE

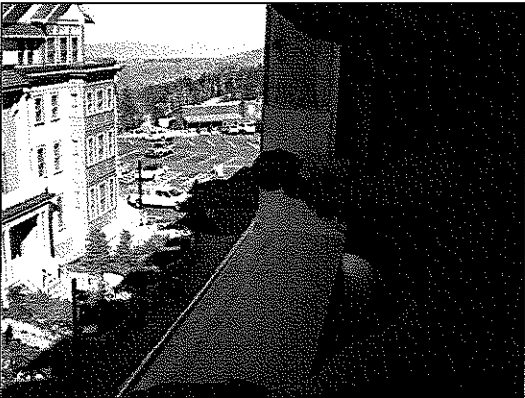
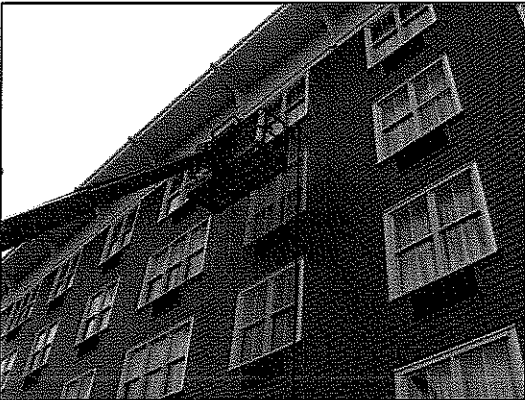
- Review and documentation of existing conditions
- Design of repair scheme
- Preparation of construction documents
- Petrographic evaluation
- Construction period services
- Preparation of National Register nomination and Tax Credit certification

SOLUTION

- Designed parapet repairs with an internal flashing system with weeps and end dams to protect structural steel
- Worked with the contractor to safely support scaffolding on sidewalk vaults and setback roofs
- Designed new roofs above storefronts and repairs to the Art Deco cast aluminum cornice
- Provided construction period services to work with contractor to adapt design details to building elements that do not match original construction documents
- Successfully presented the building for inclusion on the National Register of historic places.

Expedition Station

Investigation of Water Infiltration through Windows and Cladding
Snowshoe, West Virginia



CLIENT

Branch & Associates, Inc.

STRUCTURE

Expedition Station is a residential condominium located in an extreme mountain top environment. It was constructed from wood framed premanufactured modules stacked on top of a steel and concrete base. It is clad with fiber cement siding nailed over a weather-resistant barrier on oriented strand board (OSB) sheathing. The building's windows are vinyl double-hung units which are often ganged into double or triple configurations.

CHALLENGE

The contractor initially asked WJE to investigate buckled trim and deteriorated siding that was perceived as evidence of structural distress. WJE determined that the cause was not structural in nature, but rather a combination of moisture infiltration and wood swelling and shrinkage. The client retained WJE to determine the source of water leakage in windows, consult on the required performance level of replacement windows, and aid the contractor in detailing the weather-resistive barrier and sill flashings at window openings.

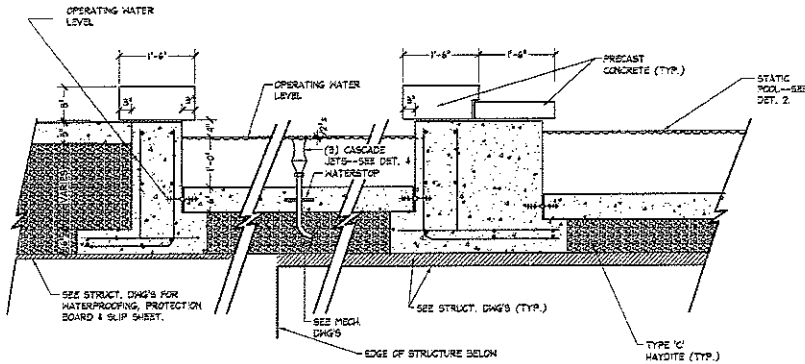
SCOPE OF SERVICE

- Document review
- Conducted infrared thermal scanning of walls to locate wet areas and water leakage testing of windows and the surrounding cladding
- Inspected and documented as-built conditions at probe openings
- Construction period services

SOLUTION

- Determined, through water leakage testing, that the vinyl windows were not thermally welded where the jamb meets the sill, providing a water pathway into the building
- Found that the lack of end dams in the flashing contributed to deterioration of fiber cement siding
- Replaced all double-hung windows in the building
- Assisted the contractor in coordinating window installation, siding replacement, insertion of new end dams, sill flashings, and weather-resistant barrier tapes with the extant wall system
- Added end dams in metal siding trim to prevent deterioration of adjacent fiber cement siding

THE CLEVELAND BOTANICAL GARDEN
- TERRACE GARDEN



The Cleveland Botanical Garden recently dedicated a \$47 million expansion/renovation project including a new conservatory, offices, classrooms, dining service, parking garage, and gardens. Behnke Associates was responsible for all of the site design related to this major expansion and renovation.

A major portion of the work involved the design of the Terrace Garden. All of the design work was completed by Behnke Associates. The Terrace Garden features a lily pool, jet fountain, dining, and container plantings. It is a traditional favorite with visitors to the garden.



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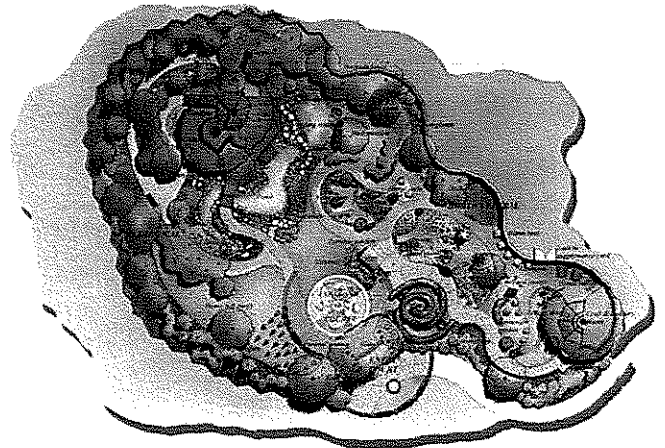
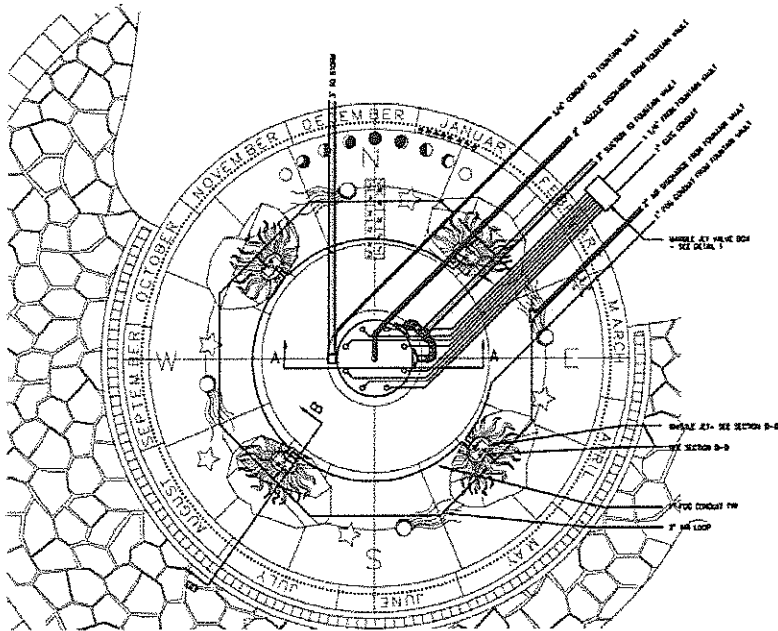
CONSTRUCTION COST:
\$500,000

CLIENT REPRESENTATIVE:
Natalie Ronayne, Director
Cleveland Botanical Garden
Cleveland, OH
216.707.2056

HERSHEY CHILDREN'S GARDEN

This is a fully accessible, award-winning, learning garden designed to a "Child's Scale!" Behnke Associates collaborated with EDAW on the design concept; prepared construction drawings; and then provided construction services.

Major purposes of this garden include 1) having fun; 2) learning about gardening; 3) learning about nature. Natural landscape elements include a pond, wetlands, stream, peat bog, coppice, hill, forest, stone cliff and cave.



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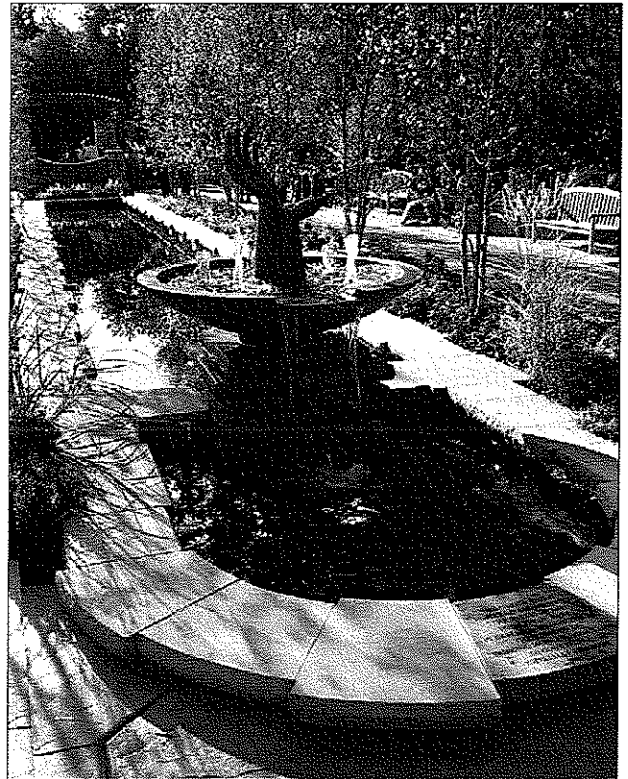
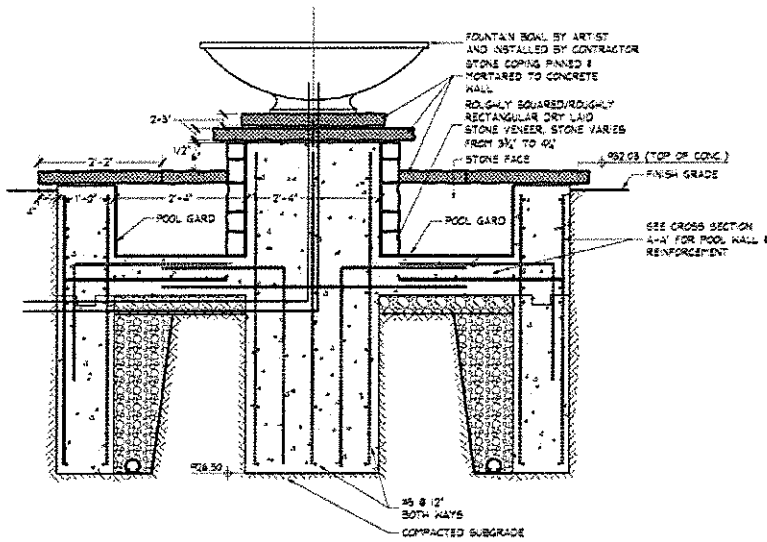
CONSTRUCTION COST:
\$1 Million, 1999

CLIENT REPRESENTATIVE:
Botanical Garden
Natalie Ronayne, Director



ST. JOSEPH HEALING GARDEN

The client wanted a contemplative garden where cancer patients and their families could gather, rest, pray, and meditate. The use of water, rock, and native plant materials that attract birds and butterflies is prevalent in this design. Sculpture was incorporated to help create the desired contemplative mood.



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CONSTRUCTION COST:

\$500,000

CLIENT REPRESENTATIVE:

Mr. Edward Toth Jr.
St. Joseph Development Foundation

330.841.4198

Key Design Team Members

Elwin Robison, PE, will serve as Project Manager. As both an engineer and architectural historian, Dr. Robison combines technical expertise with historic preservation understanding. He specializes in working with historic structures: writing Historic Structures Reports (HSR's), re-engineering old buildings to meet new uses, and conservation of historic materials. He has extensive experience with investigation, repair, and cleaning of historic masonry.

Dr. Robison teaches Preservation Technology in the College of Architecture at Kent State University, and has published articles on historic buildings and their restoration in venues such as the *Journal of the Society of Architectural Historians*, *Association for Preservation Technology Bulletin*, and *Annali d'architettura*. Dr. Robison is a co-author of *Architectural Technology Up To the Scientific Revolution*, and author of *The First Mormon Temple: Design, Construction, and Historic Context of the Kirtland Temple*.

Stephen J. Kelley, AIA, SE, will serve as Architectural Preservation Consultant on the project. Mr. Kelley has been in practice for 30 years and is an internationally recognized preservation consultant. He specializes in the investigation and restoration of historic building and monuments. He has extensive experience in the area of skyscrapers; religious structures; façade cleaning; and stone, brick, and terra cotta masonry. He has expertise in the analysis and conservation of historic building materials including the cleaning and repair of stone facades.

Mr. Kelley is the president of the ICOMOS International Scientific Committee on the Analysis and Restoration of Structures of Architectural Heritage (ISCARSAH). Mr. Kelley is also active in the American Society for Testing and Materials (ASTM). In this capacity, he was the main author of *ASTM Standard Guide for Selection of Cleaning Techniques for Masonry, Concrete, and Stucco Surfaces*. He is past Director of Association for Preservation Technology International (APT). He has written more than 40 articles in books and journals and edited three books on the topic.

Brad Shotwell will serve as Project Materials Scientist. Mr. Shotwell has extensive experience studying stone, concrete, and mortars. He has specific expertise in studying stone failures in historic buildings and evaluating the effects of cleaning procedures. Active in the field for over 30 years, he has worked with many Indiana limestone buildings exposed to a variety of climates and environmental stresses. Mr. Shotwell is a member of ASTM Committee C09.65 - Petrography.

Joshua Freedland will serve as Project Architectural Conservator. He specializes in the cleaning, conservation, and consolidation of stone. Mr. Freedland has written preservation guidelines for cities, and conducted laboratory analyses on stone consolidants and cleaning.

P. Jeffery Knopp, ASLA will serve as the Landscape Architect responsible for the plaza and water feature design. He has designed award winning gardens and plazas for parks, museums, and public institutions.



ENGINEERS
ARCHITECTS
MATERIALS SCIENTISTS

Elwin C. Robison

Senior Associate



EDUCATION

Brigham Young University
Bachelor of Science, Civil Engineering, 1978
Cornell University
Master of Arts, Architectural History, 1983
Cornell University
Doctor of Philosophy, Architectural History, 1985

REGISTRATION

Professional Engineer in Ohio, Pennsylvania, Michigan,
Indiana, Utah, and West Virginia.

PRACTICE AREAS

Historic Preservation
Historic Structures Reports
Masonry Assessment
Repair and Rehabilitation Design
Structural Evaluation
Structural Investigation
Wood Testing and Analysis

EXPERIENCE

Dr. Robison has been affiliated with WJE since 2003 and has performed condition assessments on building envelopes in brick and terra cotta, structural analysis on steel and wood systems, and investigative services for building failures.

Dr. Robison is the engineer-of-record for National Register building restorations, and has written Historic Structures Reports for National Register and National Landmark buildings. His work has received awards from AIA Ohio and the Ohio State Preservation Office. He serves on the Advisory Board for the Ohio State Preservation Office. Dr. Robison is a co-author of *Architectural Technology Up To the Scientific Revolution* (MIT Press, 1993) and the author of *The First Mormon Temple: Design, Construction, Historic Context of the Kirtland Temple* (BYU Press, 1997). He is the author of articles on the architecture of Andrea Palladio, Guarino Guarini, early skyscraper technology, and nondestructive testing.

REPRESENTATIVE PROJECTS

Historic Preservation

- N.K. Whitney Home: Restoration of the 1826 structure as a house museum, Kirtland, Ohio
- St. Peters Church: Vibration analysis of impact from light rail system, Cleveland, Ohio

Historic Structures Reports

- John and Elsa Johnson Home: Restoration of a 1828 structure as a house museum, Hiram, Ohio
- Kirtland Temple: A three-story stone meeting house built in 1836, Kirtland, Ohio
- Salmon Carter Home: 1836 house museum of the Portage County Historical Society, Ravenna, Ohio

Structural Evaluation

- Akron YMCA: Investigation of corroded steel structure, Akron, Ohio
- Frank Lloyd Wright's Westcott House: Structural stabilization and restoration as a house museum, Springfield, Ohio

Repair and Rehabilitation Design

- Joseph Smith Memorial Building: Terra cotta restoration design, Salt Lake City, Utah
- The Chalet: Investigation of deteriorated glulam beams, Cleveland Metroparks, Cleveland, Ohio

Masonry Assessment

- Mt. Sinai Hospital complex: Conditions assessment of terra cotta, brick, and stone facades, Cleveland, Ohio
- Thompson Memorial Library: Conditions assessment of limestone building envelope, The Ohio State University, Columbus, Ohio
- FirstMerit Tower: Facade restoration of an Art Deco skyscraper of terra cotta, limestone, and glazed brick, Akron, Ohio

Wood Testing and Analysis

- Plastic Safety Systems: Analysis and repair of failed heavy timber wood trusses, Cleveland, Ohio

PROFESSIONAL AFFILIATIONS

American Society of Civil Engineers (ASCE)
Association for Preservation Technology International (APT)
Society of Architectural Historians

Stephen J. Kelley

Principal



EDUCATION

University of Illinois at Urbana-Champaign
Bachelor of Architecture, 1976
Master of Architecture, 1978

REGISTRATION

Architect in Illinois
Structural Engineer in Illinois

PRACTICE AREAS

Brick, Stone, and Terra Cotta Deterioration
Facade Cleaning
Fire Damage Investigation
Historic Preservation
Historic Structures Reports
Materials Conservation Analysis
Repair and Rehabilitation Design
Windows and Curtain Walls

EXPERIENCE

Since joining WJE in 1984, Mr. Kelley has developed expertise in the restoration of historic buildings and monuments. He has extensive experience in the area of skyscrapers; churches; facade cleaning; stone, brick, and terra cotta masonry; and curtain walls and windows. He has expertise in the analysis and conservation of historic building materials and systems including wood log buildings, plasters, and stained glass artwork. Mr. Kelley has investigated numerous historic churches that have been damaged by fire, wind, and flood.

His work in the area of preservation stretches from investigation, extensive use of laboratory techniques, coordination of all disciplines, document preparation, and construction observation. Mr. Kelley has consulted on preservation projects in the former Soviet Union, Eastern Europe, and Asia. He has lectured extensively, in the United States, Europe, and Asia on aspects of technical preservation and has written numerous articles in journals and edited books on the topic.

REPRESENTATIVE PROJECTS

Facade Cleaning

- Georgia State Capitol: Facade cleaning, Atlanta, Georgia
- Tribune Tower: Facade restoration, Chicago, Illinois
- Holy Family Church: Facade cleaning, structural stabilization, restoration of slate roofing, Chicago, Illinois

Historic Preservation

- Nebraska State Capitol: Facade cleaning, restoration of facade and windows, Lincoln, Nebraska
- St. Cecilia's Cathedral: Restoration of tile roofing, facade, and interior sanctuary, Omaha, Nebraska
- Basilica of St. Adalbert: Restoration of tile roofing, facade, stained glass, Grand Rapids, Michigan
- Church of Our Savior of Berestove: Coordinator for development of restoration plan, Kyiv, Ukraine
- Wood Log Church Survey: Development of master conservation for twenty-eight churches, Eastern Slovakia

Historic Structure Reports

- Kentucky State Capitol: Historic Structures Report, preservation planning, Frankfort, Kentucky
- Illinois State Capitol: Difficult access inspection, Historic Structures Report, Springfield, Illinois

Repair and Rehabilitation Design

- Qasr al-Bint Temple Ruin: Engineering feasibility study for seismic stabilization, Petra, Jordan
- West Baden Springs Hotel: Structural stabilization after collapse, West Baden, Indiana
- Old St. Patrick's Church: Structural stabilization of wood truss system, Chicago, Illinois

Terra Cotta

- Reliance Building: Facade cleaning, restoration of facade and windows, Chicago, Illinois
- Carbide and Carbon Building: Facade cleaning, restoration of facade and windows, Chicago, Illinois

PROFESSIONAL AFFILIATIONS

American Institute of Architects (AIA)
Association for Preservation Technology International (APT)
(Fellow and Director)
International Council on Monuments and Sites
(US/ICOMOS) (Past Director)

TECHNICAL COMMITTEES

ASTM E06.24 - Building Preservation and Rehabilitation
Technology (Chairman 1988 to 1998)
International Science Committee on Analysis and Restoration
Structures of Architectural Heritage (ISCARSAH)

L. Brad Shotwell

Associate Principal



EDUCATION

Kent State University
Bachelor of Science, Earth Science, 1971
Kent State University
Master of Science, Geology, 1973

REGISTRATION

Professional Geologist in Illinois

PRACTICE AREAS

Concrete Deterioration
Concrete Production
EIFS and Stucco
Facade Cleaning
Historic Preservation
Petrographic Examination
Precast Stone
Stone Cladding

EXPERIENCE

Mr. Shotwell joined WJE in 1985 and is responsible for providing materials testing and evaluation services. His current work includes petrography of concrete and concrete raw materials, mortars, plaster, dimension stone, and the application of petrographic techniques to solve materials problems. Mr. Shotwell has gained special expertise in petrography of early concrete structures for historic preservation. He has also been responsible for development of a computer-assisted modified point-count apparatus used for air void system analysis of hardened concrete.

Prior to joining WJE, Mr. Shotwell performed numerous petrographic studies and managed petrographic laboratories for both a major construction materials manufacturer and a national materials testing laboratory. In this capacity, he was responsible for failure analyses of concrete from a variety of structures, evaluations of aggregates for use in nuclear power plant construction, and approval of raw materials for high-performance packaged grouts and mortars.

REPRESENTATIVE PROJECTS

Concrete Deterioration

- County of Los Angeles Storm Drainage: Petrographic evaluation of concrete condition, Los Angeles, California
- NASA Vehicle Assembly Building: Petrographic evaluation of concrete, Kennedy Space Center, Florida
- New York School Construction Authority: Petrographic evaluation of self-leveling underlayments, New York, New York

Concrete Production

- Chicago Skyway Reconstruction: Quality control of replacement concrete, Chicago, Illinois

Facade Cleaning

- John F. Kennedy Center for the Performing Arts: Investigation of dimension stone staining and evaluation of facade cleaning, Washington, D.C.

Historic Preservation

- Fort Mott: Interpretation of historic mass concrete placement techniques, New Jersey
- Metropolitan Museum of Art: Field and petrographic evaluation of dimension stone and mortar repairs, New York, New York
- Pennsylvania Monument: Evaluation of historic concrete, Gettysburg, Pennsylvania

Petrographic Examination

- Hopkins Airport Expansion: Petrographic evaluation of deteriorated concrete, Cleveland, Ohio
- Jacob's Field: Petrographic evaluation of delaminated concrete repairs, Cleveland, Ohio

Stone Cladding

- Mormon Temple: Evaluation of quarry proposed as a source for dimension stone, Nauvoo, Illinois
- Renaissance Cleveland Hotel Ballroom: Evaluation of limestone cladding, Cleveland, Ohio

PROFESSIONAL AFFILIATIONS

American Concrete Institute (ACI)
American Institute of Professional Geologists (AIPG)
ASTM International (ASTM)
Geological Society of America

TECHNICAL COMMITTEES

ASTM C09.65 - Petrography

Joshua Freedland

Senior Associate



EDUCATION

Brandeis University

Master of Arts, Comparative History, 1995

Brandeis University

Bachelor of Arts, History, 1995

University of Pennsylvania

Master of Science, Historic Preservation, 1999

University of Pennsylvania

Advanced Certificate, Architectural Conservation, 2000

PRACTICE AREAS

Facade Cleaning Studies

Finishes Analysis

Historic Preservation

Historic Structures Reports

Masonry Assessment

Materials Conservation

Materials Evaluation and Research

Microscopy

EXPERIENCE

Since joining WJE in 2001, Mr. Freedland has been involved in many architectural preservation and materials conservation projects. His work has included materials analysis, historic research, building documentation, facade investigations, condition surveys, and construction observations. His work has included a variety of materials including brick, terra cotta, stone, mortar, stucco, scagliola, architectural metals, and wood. In addition, Mr. Freedland has extensive experience with the preservation of historic finishes and facade cleaning.

Mr. Freedland was previously a post-graduate research fellow with the Architectural Conservation Laboratory at the University of Pennsylvania. His professional career has also included research on new polymers for stone protection at Elf-Atochem (now Arkema), and conservation work at numerous archaeological sites in the U.S. and abroad. Mr. Freedland has published and presented on materials and site conservation including laboratory studies on desalination efficiency, stone consolidants, and masonry cleaning and preservation.

REPRESENTATIVE PROJECTS

- Museum of Science and Industry: Facade Cleaning, Chicago, Illinois
- Marquette Building: Facade cleaning, historic finishes analysis, masonry evaluation, construction documents, construction observations, Chicago, Illinois
- Carbide and Carbon Building: Facade cleaning and repairs, Chicago, Illinois
- 860-880 North Lake Shore Drive: Facade painting of steel curtain wall, Chicago, Illinois
- Eisenhower Executive Office Building: Historic finishes analysis and plaster evaluation, Washington D.C.
- LaSalle Bank Building: Facade cleaning and replacement of fire damaged windows and cast aluminum spandrels, Chicago, Illinois
- University of Chicago: Preservation guidelines for modern landmarks, Chicago, Illinois
- Marshall Field State Street Store: Facade repairs and marble evaluation, Chicago, Illinois
- Blackstone Hotel: Facade cleaning and repairs, Chicago, Illinois
- Illinois State Capitol: Historic building survey, archival research, and plaster evaluation, Springfield, Illinois
- Nebraska State Capitol: Materials conservation testing and treatment recommendations, Lincoln, Nebraska
- Marble Hall, U.S. Customs House: Marble cleaning and conservation, New Orleans, Louisiana
- New York Public Library: Facade Evaluation and stone consolidant laboratory trials, New York, New York
- Wingspread: Limestone evaluation, Racine, Wisconsin
- 30th Street Station: Facade cleaning evaluation, window evaluation, stone evaluation, and construction documents Philadelphia, Pennsylvania
- Wyoming Monuments Study: Conservation study and recommendations for 26 monuments, Wyoming

PROFESSIONAL AFFILIATIONS

American Institute for Conservation of Historic and Artistic Works -Professional Associate
Art Institute of Chicago-Program in Historic Preservation - Instructor
International Council on Monuments and Sites (ICOMOS)
International Institute for Conservation of Historic and Artistic Works (IIC)
Association for Preservation Technology International (APTI)

P. Jeffrey Knopp, ASLA

Principal/Project Manager

EDUCATION

*B.S. Landscape
Architecture,
Penn State, 1979*

*Masters Landscape
Architecture,
Syracuse University,
1981*

*B.S. Wood Product
Engineering,
SUNY, 1982*

REGISTRATIONS
*Landscape Architect,
Ohio
and Michigan*

CERTIFICATIONS
*LEED AP,
CID,
CLARB*

AFFILIATIONS
*American Society of
Landscape Architects

Irrigation Association*

*American Association
of Botanical Garden
and Arboreta*

**COMPUTER
LITERACY**
*AutoCAD 2009,
Microsoft Office
Applications*

Mr. Knopp has been with Behnke Associates since 1988. He had previously been a summer intern during his undergraduate education. Jeff has extensive background in bikeway design, public garden/arboretum design, irrigation design, site construction detailing, cost estimating, and specification writing. He is a LEED-AP and has worked on three LEED projects to date. He is a Certified Irrigation Designer with the IA and a WaterSense partner.

RELEVANT PROJECT EXPERIENCE

Cleveland Botanical Garden - Responsible for all planning, site layout, grading, planting, and irrigation for \$5 M site improvements program. The project included a Children's Garden, Horticultural Therapy Garden, Deck Walk, Woodland Garden, Dining Terrace and Entry Plaza.

Capitol Square, Ohio State Capitol Restoration - Included demolition and reconstruction of all site improvements, including streetscape. Established design guidelines for present and future improvements.
Phase I - \$5.27 M, Phase II - \$5 M.

Australian Adventure, Cleveland Metroparks Zoo - Encompassing the theme of a "walkabout" trail in the Australian outback, the exhibit is an immersion-style experience where plants and animals from Australia surround visitors along the trail. This fresh approach to zoo exhibits helps reinforce the message of preservation of habitat in the survival of all species. \$10 M

James A. Garfield National Historic Site - Also known as Lawnfield, this historic site and the surrounding 8-acre farm were restored to its late nineteenth century condition. As part of a design team, the historic farm entry road was reestablished, and documented vegetation replanted, in addition to creating visitor services and interpretive displays.

Mohican-Malabar Concept Plan - Project manager for this 804,000 acre Concept Plan completed for ODNR in 2001. As a result of this plan, major projects for the Mohican area have been budgeted for future years, including a 13-mile long bikeway.

Villa Angela Unit, Cleveland Lakefront State Park - Our responsibilities included all landscape, play equipment, specialty pavement, and signage design for this project. Additionally, Jeff designed the wood deck and boardwalk that provides ADA accessibility to the beach of this state park unit.

The Garvan Woodland Gardens, Hot Springs, Arkansas - Developed a master plan for the 209-acre site. The master plan maintained the woodland character of the steeply sloped, tree-covered site which lies on a peninsula, and included five phases: a visitor's center, chapel, education center, nature center, amphitheater, gardens, and natural areas.