

04/26/18 14:52:02  
WV Purchasing Division



PROPOSAL FOR A/E SERVICES  
CEOI 0211 GSD1800000003 for WV State  
Capitol Building Fire Protection & Sprinkler Design



PREPARED FOR

STATE of WEST VIRGINIA  
GENERAL SERVICES DIVISION

BID RECEIVED LATE

BUYER *Linda Harper*  
WITNESS *John [Signature]*

April 26, 2018

DISQUALIFIED

**ADDENDUM ACKNOWLEDGEMENT FORM**  
**SOLICITATION NO.: CEOI 0211 GSD1800000003**

**Instructions:** Please acknowledge receipt of all addenda issued with this solicitation by completing this addendum acknowledgment form. Check the box next to each addendum received and sign below. Failure to acknowledge addenda may result in bid disqualification.

**Acknowledgment:** I hereby acknowledge receipt of the following addenda and have made the necessary revisions to my proposal, plans and/or specification, etc.

**Addendum Numbers Received:**

(Check the box next to each addendum received)

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Addendum No. 1 | <input type="checkbox"/> Addendum No. 6  |
| <input type="checkbox"/> Addendum No. 2            | <input type="checkbox"/> Addendum No. 7  |
| <input type="checkbox"/> Addendum No. 3            | <input type="checkbox"/> Addendum No. 8  |
| <input type="checkbox"/> Addendum No. 4            | <input type="checkbox"/> Addendum No. 9  |
| <input type="checkbox"/> Addendum No. 5            | <input type="checkbox"/> Addendum No. 10 |

I understand that failure to confirm the receipt of addenda may be cause for rejection of this bid. I further understand that any verbal representation made or assumed to be made during any oral discussion held between Vendor's representatives and any state personnel is not binding. Only the information issued in writing and added to the specifications by an official addendum is binding.

Perfido Weiskopf Wagstaff + Goettel (PWWG)

\_\_\_\_\_  
Company



Alan Weiskopf, AIA (Managing Principal)

\_\_\_\_\_  
Authorized Signature

April 24, 2018

\_\_\_\_\_  
Date

**NOTE:** This addendum acknowledgement should be submitted with the bid to expedite document processing.  
Revised 6/8/2012

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PWWG

FireLogix

The Preview Group



Linda B. Harper, Buying Supervisor  
Department of Administration, Purchasing Division  
2019 Washington Street East  
Charleston, WV 25305-0130

April 26, 2018

Re: CEOI 0211 GSD1800000003 for WV State Capitol Building Fire Protection & Sprinkler Design

Dear Ms. Harper and Members of the Evaluation Committee:

In behalf of our entire team of specialized consultants, PWVG is pleased to submit our qualifications in response to CEOI 0211 GSD1800000003. I would like to use this cover letter to provide a concise summary of why we believe that our team of professionals, and how we are organized, makes us an excellent fit for this project. Elsewhere in this response, our specialty consultants will dig deeper into the specific approach and methodology.

This project calls for a unique approach to fire safety that blends state-of-the-art techniques for alternative fire safety systems with the knowledge of experts in life safety codes. By knowledge of the codes, I mean knowledge of the underlying concepts that have led to the formulation of the code, not just memorization of the written code requirements. By selecting **FireLogix Engineering Ltd.** as fire protection engineers and **The Preview Group** as code consultants, we have done just that. These firms have collaborated with each other for years on highly complex fire safety projects, on a national basis, for which unique and inventive solutions have been derived. In some cases, FireLogix has been a subcontractor to The Preview Group, so their working relationship is seamless. FireLogix will be responsible for the design and documentation of all fire suppression and fire alarm systems.

Add to these consultants **Barge Design Solutions**, a multi-discipline engineering firm that will provide MEP engineering for the project. The MEP engineers for this project will implement all of the HVAC, Electrical and Plumbing (if any) designs that are precipitated by the life safety systems developed by FireLogix and The Preview Group. This includes all mechanical and electrical engineering except the fire systems noted above. Barge and FireLogix have partnered on many projects with successful outcomes and the individuals who will work on this project are on a first name basis.

PWVG, a regional leader in historic preservation projects for governmental institutions, municipalities and the private sector, will manage the project and provide architectural design. We will be responsible for protecting the historic design by making decisions and producing designs that will have an impact on the architecture of the Capitol resulting from the life safety decisions. PWVG has worked extensively with both State Historic Preservation Offices and Capitol Preservation Committees in many states, including West Virginia. In this case, we will be an advocate for the architecture and serve as a 'partner' with the WV Capitol Building Commission and the State Fire Marshall. Our experience in historic projects is described elsewhere in this EOI.



Finally, let me add that, except for Barge, the firms responsible for the project are smaller firms that have proven capabilities to handle very large projects. As a result, the specific individuals who will be assigned to this project have been directly responsible for many of the relevant projects depicted in this EOI.

The Cass Gilbert designed Capitol Building is arguably the most important and treasured building in the state of West Virginia. Our team will respect that, and I am confident that we can achieve the mutually successful outcome of improving life safety and preserving the important character defining features of the building.

Thank you,

A handwritten signature in black ink, appearing to read 'A. Weiskopf', written in a cursive style.

Alan Weiskopf, AIA

Managing Principal of PWWG and Principal-in-Charge of the Project

# Project Team / Organizational Chart

Perfido Weiskopf Wagstaff + Goettel



These experienced design professionals will be dedicated to your project throughout the duration of the work. They have the skill to both manage and execute design tasks from preparation of design options to creation of construction documents, to the coordination of construction, and public presentations. We will lead the design process with integrity and will deliver results that exceed expectations.



## Architectural, Interior Design, and Project Management Services

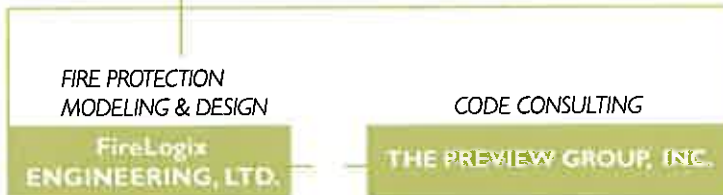


Alan Weiskopf, AIA  
Principal-in-Charge and  
Preservation Architect



Jessica Stuck, AIA  
Project Manager

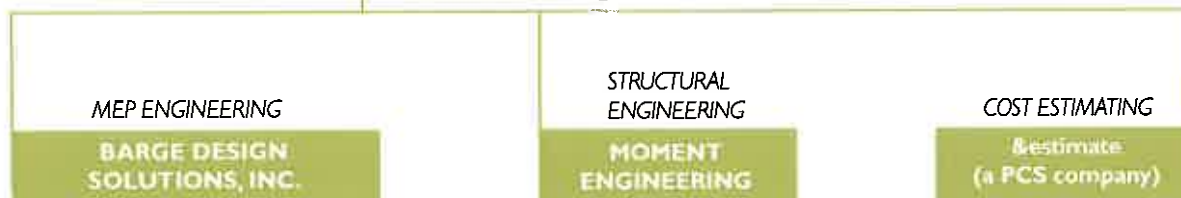
## Fire Protection Engineering



*FIRE PROTECTION  
MODELING & DESIGN*  
**FireLogix  
ENGINEERING, LTD.**  
Bobby Patrick, P.E., MSFPE  
Principal-in-Charge

*CODE CONSULTING*  
**THE PREVIEW GROUP, INC.**  
Sarah Rice, CBO  
Principal-in-Charge  
Gregory Nicholls, AIA  
Project Manager  
David Collins, FAIA, NCARB  
Project Manager

## Other Consulting Services



*MEP ENGINEERING*  
**BARGE DESIGN  
SOLUTIONS, INC.**  
Aaron Powell, P.E., LEED AP BD+C  
Lead Mechanical & Plumbing Engineer  
Mike Williams, P.E., LEED AP BD+C, ATD  
Lead Electrical Engineer

*STRUCTURAL  
ENGINEERING*  
**MOMENT  
ENGINEERING**  
Douglas Richardson, PE,  
LEED AP  
Principal Structural Engineer

*COST ESTIMATING*  
**Estimate  
(a PCS company)**  
Brandon Lawlor, LEED AP  
Principal Cost Estimator  
Michael J. Adams, LEED AP BD+C  
Vice President / Lead MEP/T Estimator

## FireLogix Firm Overview

Role in the WV Capitol Project: Fire Protection Modeling & Design



### Introduction

FireLogix Engineering, Ltd. specializes in fire protection engineering, life safety, and code consulting. FireLogix engineers are registered in multiple states under the NCEES Fire Protection Engineering Exam. Our consultants hold advanced degrees in Fire Protection Engineering. FireLogix personnel are active in the Society of Fire Protection Engineers (SFPE), National Fire Protection Association (NFPA), and International Code Council (ICC). Our consultants have published numerous fire and life safety articles and spoken at major universities. FireLogix Engineering, Ltd. has completed projects across the US and abroad. These projects include design and design / build ranging from a few thousand square feet to over a million square feet. FireLogix approaches fire and life safety design in a holistic manner. We understand that everything is connected. Fire suppression and fire alarm systems work with the building construction, means of egress, and fire rated construction to provide a complete, holistic fire and life safety solution. FireLogix regularly teams with The Preview Group.

### Code Consulting

FireLogix Engineering provides complete life safety and building code consulting services. The firm regularly provides consulting on federal standards and national standards such as those published by National Fire Protection Association (NFPA) and International Code Council (ICC). FireLogix provides complete building evaluations which designate rated construction, egress requirements, emergency lighting and exit lighting requirements, height and area evaluation, and construction type. FireLogix reviews all trades for fire and life safety code compliance. During the design process, we review architectural, civil, mechanical, and electrical drawings to ensure all life safety code requirements are met.

### Fire Suppression

The firm has extensive experience with all types of fire suppression systems. Examples include fire sprinkler systems, standpipes, clean agent fire suppression, foam fire suppression, and other specialized systems. FireLogix has extensive experience evaluating water supplies and designing water storage and fire pump systems to meet fire demands.

### Fire Alarm and Mass Notification

FireLogix Engineering has designed numerous fire alarm and mass notification systems. We have experience with systems ranging from simple single building fire alarm to multiple building campus type combined fire alarm and mass notification systems. FireLogix has extensive experience designing systems for audibility and intelligibility to meet the requirements of NFPA 72 (Fire Alarm), and federal guidelines such as UFC 4-021-01 (Mass Notification). In challenging environments, we employ specialized acoustic analysis and computer modeling to ensure intelligibility requirements are met.

### Specialized Capabilities

FireLogix Engineering, Ltd. has unique capabilities in the fields of fire and smoke modeling and egress modeling. We use the latest software and approaches to model challenging cases which the applicable codes do not fully address. We can develop realistic models of fire scenarios to determine exactly how a fire may develop in a space and render it untenable. These sophisticated models can be used to see how heat, smoke, and toxic by-products may spread through a space. By coupling the fire modeling capabilities with sophisticated egress modeling capabilities, we can determine how long it will take occupants to egress a space and compare it to how long the space remains tenable. This information is used to design better, more holistic fire protection in challenging scenarios not fully addressed by the applicable codes and standards.



### Consulting Services

- International Building Code (IBC)
- Life Safety Code (NFPA 101)
- NFPA Codes / Standards
- International Fire Code (IFC)
- Unified Facilities Criteria (UFC)
- Public Buildings Service (PBS)
- Occupancy Classification
- Mixed Use Analysis
- High Rise Consulting
- Height / Area Analysis
- Fire Resistive Construction
- Egress Analysis
- Atrium Code Requirements
- Code Variances / Alternatives
- Fire Protection Systems
- Fire Alarm / Voice Evac
- Smoke Control Systems
- Renovations and Occupancy Change

FireLogix Engineering, Ltd.  
215 North Broadway St.  
Lebanon, OH 45036  
Ph. 513.206.9654  
Fx: 513.206.9652  
Web: [www.FireLogix.com](http://www.FireLogix.com)



**Bobby Patrick**

Principal | FireLogix Engineering, LTD.

Role in the WV Capitol Project: Principal-in-Charge, Fire Protection Modeling &amp; Design

**Professional Experience**

Mr. Patrick has over 17 years of experience in fire protection engineering and life safety consulting worldwide. He is a registered fire protection engineer (FPE) in multiple states and holds an advanced degree in Fire Protection Engineering. Mr. Patrick has provided code consulting for such high-profile projects as MGM Grand, Burj Dubai (UAE), and Silhouette Towers (Qatar).

He has extensive experience with International Building Code (IBC), NFPA standards, Factory Mutual (FM), and Unified Facilities Criteria (UFC). Mr. Patrick has significant experience on government projects for agencies such as Army Corps of Engineers (COE), Naval Facilities (NAVFAC), General Services Administration (GSA), Department of Energy (DOE), National Air and Space Administration (NASA) and others.

He has extensive experience with computational fluid dynamics (CFD) fire and smoke modeling as well as advanced egress modeling. Mr. Patrick has completed advanced coursework in Fire Modeling (Master's level) and has extensive experience applying these principles on projects throughout the world.

Mr. Patrick has extensive experience designing and commissioning fire protection systems including fire sprinkler, fire pumps, water storage tanks, special suppression systems, fire alarm, fire detection, smoke control, smoke exhaust, and mass notification.

**Contact**

FireLogix Engineering, Ltd  
215 North Broadway Street  
Lebanon, OH 45036  
[bpatrick@firelogix.com](mailto:bpatrick@firelogix.com)  
(513) 206-9654 (Direct)

**Project Experience****Museum of the US Air Force - Wright Patterson Air Force Base, OH**

Design / build of hangar 4 at the Museum of the Air Force. This facility is approximately 220,000 square feet. Mr. Patrick served as the Fire Protection Engineer of Record. He provided code consulting on NFPA, UFC, and IBC. Mr. Patrick prepared life safety plans, height and area calculations and egress analysis. He designed wet pipe sprinkler systems, fire alarm and mass notification systems. Mr. Patrick designed specialized air sampling smoke detection. He evaluated the water supply and designed a fire pump system to support the sprinkler system demands. Cost: \$35,426,000

**University of Mississippi Medical Center - Jackson, MS**

Served as Fire Protection Engineer / Code Consultant for this new 5 story 150,000 square foot school of medicine. The facility has numerous classrooms, meeting areas, auditoriums, offices, and assembly spaces. Mr. Patrick provided code consulting, fire modeling, and egress analysis. This included ensuring compliance with IBC, NFPA 101, and other codes and standards. He was responsible for preparing code analysis and life safety plans. Mr. Patrick designed smoke exhaust for a complex atrium. He prepared computational fluid dynamics fire models and egress models to ensure a tenable environment was maintained during egress.



**Bobby Patrick**

Principal | FireLogix Engineering, LTD.



**Meijer Warehouse 84 - MI**

Mr. Patrick served as the fire protection engineer for this massive 500,000 square foot distribution warehouse for Meijer Stores. The facility included rack storage of Group A Plastics and Class IV Commodities in racks under 80 foot and 34 foot roof decks. Mr. Patrick provided design and consulting for the fire sprinkler systems, water supplies, life safety, means of egress, and smoke evacuation. He prepared advanced egress models and computational fluid dynamics fire models to demonstrate that roof smoke and heat vents were not necessary.

**Design/Build Building 71 Laser Threat and Protection Lab - Wright Patterson Air Force Base, OH**

This design/build project involved the renovation of two stands within Building 71. The space was once used to test jet propulsion engines and this project retrofitted it for laser laboratories. In addition to laboratory spaces, the facility also includes offices, an open office area, utility space, restroom, and shower. Mr. Patrick served as the Fire Protection Engineer of Record. In this role he provided code consulting on NFPA, UFC, and IBC. He prepared life safety plans, height and area calculations and egress analysis. Mr. Patrick prepared a complete code study to ensure compliance with the latest version of UFC 3-600-01, NFPA 101 and IBC. Mr. Patrick designed a new automatic fire sprinkler system and fire alarm and mass notification. Cost: \$2,500,000

**Starship Building 5422 Barracks and Company Operations Facility, Fort Benning, GA**

Design / build renovation of Starship building 5422. This was a Phase II renovation of barracks and company operations facilities. The renovation was over 200,000 square feet. Mr. Patrick served as the Fire Protection Engineer of Record. He provided code consulting on NFPA, UFC, and IBC. He prepared life safety plans, code analysis, and egress analysis. He designed dry fire sprinkler systems, wet pipe sprinkler systems, and dry manual standpipes. Mr. Patrick designed the fire alarm and mass notification systems. During construction, he provided inspections to identify construction issues and ensure the installation complied with design documents. Cost: \$29,800,000.

**Defense Logistics Agency Secure Data Center, Columbus, OH**

This project was a design / build renovation of a facility to develop a new mission critical data center. Mr. Patrick served as the Fire Protection Engineer of Record. He provided code consulting on NFPA, UFC, and IBC. He prepared life safety plans, code analysis, and egress analysis. Mr. Patrick designed to special requirements of NFPA 75 (Standard for the Fire Protection of Information Technology Equipment) and ICD 705 for highly secure facilities. This required special consideration for fire rated walls, protection of openings, and arrangement of the means of egress. Mr. Patrick designed clean agent fire suppression systems (Novec 1230), specialized air sampling smoke detection systems, and preaction automatic fire sprinkler systems. He evaluated cold aisle containment systems and developed fire protection strategies to ensure that the mission critical operation was effectively protected.

**Fixed Wing Aircraft Hangar Two – Tyndall Air Force Base, FL**

This project included the renovation of a fixed wing aircraft hangar at Tyndall Air Force Base. Mr. Patrick served as the fire protection engineer of record. In this role he prepared life safety plans. He evaluated the water supply to ensure it could support the high expansion foam system for the hangar. Mr. Patrick designed and specified the overall fire protection, mass notification, and life safety. He designed fire sprinkler systems and high expansion foam systems. Mr. Patrick designed fire alarm and mass notification systems. He provided construction services to review high expansion foam system shop drawings, fire alarm / mass notification shop drawings. Mr. Patrick providing commissioning for the specialized high expansion foam suppression systems.

**Bobby Patrick**

Principal | FireLogix Engineering, LTD.

<b>Professional Affiliations</b>	Society of Fire Protection Engineers (SFPE) (Past President) International Code Council (ICC)	National Fire Protection Association (NFPA) Society American Military Engineers (SAME)
<b>Education</b>	<b>MSFPE, Worcester Polytechnic Institute, Worcester, MA</b> Master of Science, Fire Protection Engineering (MSFPE)  <b>MBA, Xavier University, Cincinnati, OH</b> Master of Business Administration (MBA)  <b>BSEE, University of Florida, Gainesville, FL</b> Bachelor of Science, Electrical Engineering (BSEE)	
<b>Publications</b>	"Protecting High Value Property With Sprinklers", B. Patrick, P.E. International Fire Protection, October 2006, pp. 37-42 (Publication)  "Integrated Fire Protection", B. Patrick, P.E., Miami University School of Architecture (Speech)  "Unique Challenges of High-Rise Buildings", B. Patrick, P.E., Fire Middle East, April 2008 (Publication)  "Performance Based Fire Protection", B. Patrick, P.E., SFPE Tri-State (Speech)  "Survivability of Fire Alarm Systems: A High Rise Case Study", B. Patrick, P.E. International Fire Protection, February 2009 (Publication)  "Design and Installation of Fire Sprinkler Systems Abroad", B. Patrick, P.E., Sprinkler Age, February 2009	
<b>Registration</b>	Professional Engineer PE - <b>Fire Protection Engineering</b> – AL, GA, IL, IN, KS, KY, OH, MI, MS, NB, SC, TN	
<b>Technical Expertise</b>	Code Consulting (NFPA, IBC, UFC, FM Global) Human Behavior in Fire / Egress Systems Fire Alarm and Detection Foam Fire Suppression Smoke Control systems / CFD Modeling	Performance Based Fire Protection Water Based Fire Suppression Clean Agent Fire Suppression Fire Protection Water Supplies Fire Rated Construction
<b>Occupancy Type Experience</b>	Mixed Use (separated and non separated) Assembly Educational High Hazard Mercantile Special – Data Centers	Storage Business Factory / Industrial Institutional Residential Special – Artifacts and precious items

# The Preview Group Firm Overview

Role in the WV Capitol Project: Code Consulting



The Preview Group, Inc. is an architectural consulting firm specializing in building regulations and regulatory issues affecting construction. The genesis of the firm was the desire to become involved with the creation of design solutions that fit within the regulatory framework of a particular project. With over 30 years' experience, and offices in Cincinnati and the San Francisco Bay Area, Preview serves clients throughout the United States, from one-person firms to large practices, from public entities to private companies.



Preview provides regulatory assistance to those having general design and construction questions to others with specialty concerns such as those related to healthcare or ADA compliance. Our staff includes both architects and engineers, with experience as designers, code officials, trade organization representatives, and consultants – and all of our staff professionals have regulatory experience at the local, state, and/or national levels. Our goal is to assist our clients in achieving regulatory compliance in the most straightforward way. **The Preview Group regularly teams with FireLogix.**

## Special Service Areas

- Strategy development and implementation for building regulations-related problem resolution
- Building and zoning appeals process support and representation
- Consultation and support services on regulatory, building regulations and specification issues including specialty areas.
- Ordinance, zoning, building regulations and regulatory development and processing
- Liaison/representation for private sector processing of development applications
- Expert witness testimony
- Development and implementation of training and educational seminars for users of building regulations in both the public and private sectors
- Contract plan review services for municipal and county jurisdictions



All members of Preview's technical staff participate in a wide variety of regulatory-related activities, including the development of the ICC family of codes (e.g., IBC, IFBC, etc.), the NFPA codes and standards (e.g., NFPA 101, 5000, etc.) and construction-related standards at both the national and local levels. With active membership and participation in the developmental stage of regulations provides Preview with a unique level of insight and expertise in regulatory issues which allows Preview to bring a value to a project that others cannot. Preview applies the most current technical information and state-of-the-art design/construction concepts to every phase of a project which in turn results in a smoother permitting process and construction phase, which often provides an economic benefit.

## Fire Protection

The extensive experience of Preview's consultants with current building and fire code regulations as well as their knowledge of the codes' historical development are key to their ability to assist clients in the development of fire protection and life safety programs. Preview's input includes development of alternative design solutions, often using performance-based design features, integration of fire alarm and suppression systems, and coordination or enhancement of fire protection features within a building, ultimately achieving code compliance for the client in a cost-conscious manner. As part of the process, Preview's assistance also includes discussion with local code officials and third-party peer reviews.

**The Preview Group, Inc.**  
632 Race Street  
Cincinnati, Ohio 45202

# The Preview Group Firm Overview

Role in the WV Capitol Project: Code Consulting



## Design Code Consulting

Preview's approach to design code consulting originates from the partners' extensive background in architecture, civil engineering, and code enforcement. Preview works with clients to arrive at timely solutions to code problems early in the design phase rather than trying to undo the pitfalls of incorrect decisions later in design or permitting process. Our clients include architects, designers, developers, builders, and owners, all of whom are looking to achieve regulatory compliance in the most straightforward way. We offer those solutions through various methods: investigating design options, negotiating with code authorities, taking issues to appeal, or finding a solution through code changes.



## Code Development

Preview's consultants provide guidance to governmental agencies by participating on administrative and national committees, which review and make recommendations on code changes. Preview has represented local government, professional associations, trade organizations, and code organization committees at national code change hearings. These organizations include the American Institute of Architects (AIA), the International Code Council (ICC), the National Fire Protection Association (NFPA), the American National Standards Institute (ANSI), and the National Institute of Building Sciences (NIBS). Preview's consultants are currently serving on more than 30 codes and standards committees or subcommittees for these and other code organizations.

## Publications

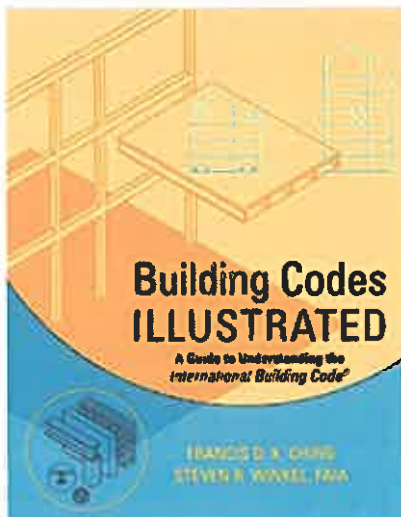
The architectural partners of The Preview Group, Inc. are all published authors of code-related books, publications, and articles. Steven RWinkel, FAIA, PE and David S. Collins, FAIA co-authored the well received *Building Codes Illustrated* series published by John Wiley and Sons, illustrated by the nationally renowned Francis D.K. Ching along with Steven Juroszek. The Preview team is currently working with Steven Jusosek on a new *Residential Codes Illustrated* book. From 1995 to 2005, Dave and Gregory N. Nicholls, AIA co-authored *Know Your Code, A Guide to the OBC*.

## Training

The Preview Group offers customized training for design professionals, building officials, and project owners in the use and interpretation of applicable codes (building, fire, mechanical, plumbing, energy conservation, existing buildings, and accessibility). Preview's courses range from introductory sessions to in-depth, all-day seminars, customized for a particular audience. Preview's seminars not only present relevant code information but also provide an interactive experience for the participants. The Preview Group, Inc. is a Registered Continuing Education Provider under the AIA Continuing Education System and may grant CES credits for AIA membership and license renewal.

## Legal Consulting

Preview's legal consulting services include case document review, researching relevant code materials, preparing reports of findings, and providing expert witness testimony. The extensive code experience of Preview's consultants has been vital in the resolution of numerous legal cases. Case experience and references are provided upon request.



# The Preview Group Firm Overview

Role in the WV Capitol Project: Code Consulting



## Accessibility

Preview's partners have monitored the development of ANSIA 17.1 standard and jurisdictional regulations since the mid-1980's, and the Federal Americans with Disability Act (ADA) legislation since its enactment in 1992 [including the original Americans with Disabilities Act Accessibility Guidelines (ADAAG) and the 2010 Accessible Design Standards]. Preview's team members have long-term personal and professional experience with the evolution of accessibility requirements and their application to new and existing situations. This exceptional understanding of the barriers to access allows the firm to prepare facility reviews that take into account federal and local regulations necessary for compliance. Preview's experience with accessibility issues extends beyond client reports to include seminars and publications on the subject.



## Contract Plan Review

Preview's founding partners were design architects and building officials. Today's staff includes architects and engineers, several of whom are certified building officials and/or plans examiners. This combination of design and technical expertise coupled with an understanding of the government process allows Preview to bring a unique perspective to the contract plan review services it provides to jurisdictions and clients, and the code-related input it gives to architects, owners, and designers. Public agencies and private sector clients alike appreciate the partners' extensive code knowledge of egress, structural, mechanical, electrical, plumbing, fire protection, and accessibility compliance requirements.



## Peer Review – QA/QC

Preview provides peer review of plans and specifications for design professionals and project owners to help assure construction document quality. These reviews occur at critical stages of each design phase, ideally at the 80-90% completion stage of each phase. This schedule allows each phase to be complete enough for meaningful review of the project documents while leaving enough time for the incorporation of Preview's comments into the documents at the completion of each phase. Preview's consultants typically review the architectural plans and specifications page by page in detail for internal consistency, detailing, and completeness. Preview also reviews the work of other project design disciplines for coordination and consistency between their work scope and architectural documents.



## Hazardous Material Assessment

Preview's consultants provide assistance in the identification and classification of hazardous materials in order for its clients to achieve compliance with applicable regulations. Buildings used to store, dispense or process hazardous materials ("hazmat") are governed not only by unique building and fire code regulations, but also by NFPA standards, OSHA and insurance underwriters. Preview works closely with clients to ensure that there is a thorough understanding of the materials, the risks they may present, and the applicable regulations that govern their storage or processing. Preview's assistance may include working with the client to develop an enhanced building design or heightened fire protection features, and coordination with the local fire department.



## Sarah Rice, CBO

Principal | The Preview Group, Inc.

Role in the WV Capitol Project: Principal-in-Charge, Code Consulting

The Preview Group, Inc.  
632 Race Street  
Cincinnati, Ohio 45202

tel 513.621.2109  
fax 513.621.7297  
email [srice@preview-group.com](mailto:srice@preview-group.com)



### Profile

Sarah joined the firm in 2009 in the Cincinnati office. Ms. Rice has been actively involved in the regulatory arena for more than 25 years, addressing a broad spectrum of project issues ranging from life safety and fire protection to hazardous material assessment. Sarah's engineering experience includes working as technical staff for one of the three legacy model code organizations and as a project manager for one of the nation's leading fire protection engineering firms. Sarah's understanding of the risks and hazards associated with the various aspects of a project, allows her to formulate credible solutions taking into account the intricacies of construction. Sarah is very active in the code development process at the local, state, and national level sitting on various technical and development committees for both the International Code Council (ICC) and the National Fire Protection Association (NFPA). With her extensive codes and standards development background, Sarah has and continues to not only assist the design community in the development of projects, but also develops and delivers seminars on building and life safety code topics.

### Certifications/Registrations

#### International Code Council (ICC)

Certified Building Official – 5136563

### Affiliations and Memberships

American Institute of Architects (AIA)  
American Society of Healthcare Engineers (ASHE)  
American Society of Civil Engineers (ASCE)  
International Code Council (ICC)  
National Fire Protection Association (NFPA)  
Society of Fire Protection Engineers (SFPE)

### Code and Regulatory Activities

#### International Code Council

##### Code Technology Committee (CTC)

Unenclosed Exit Stairs Study Group (2007-Present)

Balanced Fire Protection Study Group/Vertical Openings Task Group (2007-2010)

##### International Building Code (IBC)

General Code Development Committee (2004-2011)

Building Code Action Committee (2017 Present)

##### International Fire Code (IFC)

Code Development Committee (2011-Present)

Liaison to International Existing Building Code Ad-hoc Committee (2004-2006)

Liaison to International Performance Code Ad-hoc Committee (2000-2003)

Sarah Rice, CBO

Principal | The Preview Group, Inc.



### **Code and Regulatory Activities (cont.)**

632 Race Street  
Cincinnati, Ohio 4 5202

tel 513.621.2109  
fax 513.621.7297  
email srice@preview-group.com

#### **National Fire Protection Association**

NFPA 101 Technical Committee on Mercantile and Business Occupancies (BLD-MER, SAF-MER) (2010 – Present)

NFPA 203 Technical Committee on Building Construction; Roof Coverings and Roof Deck Constructions (2004–Present)

NFPA 220 Technical Committee on Building Construction; Types of Building Construction (2004–Present)

NFPA 221 Technical Committee on Building Construction; High Challenge Fire Walls and Fire Barrier Walls (2004–Present)

NFPA 703 Technical Committee on Building Construction; Standard for Fire-Retardant Treated Wood and Fire-Retardant Coatings for Building Materials (2004–Present)

NFPA 5000 Technical Committee on Building Construction; Building Construction and Safety Code (2002–Present)

NFPA 720 Technical Committee on Carbon Monoxide Detection; Standard for the Installation of Carbon Monoxide(CO) Detection and Warning Equipment (2000–2007)

#### **National Institute of Standards and Technology (NIST)**

National Construction Safety Team (NCST) Advisory Council (2011 – Present)

#### **Ohio Board of Building Standards**

Education Ad-Hoc Committee (2010 – 2013)

### **Seminars**

#### **ICC International Codes**

##### **ICC International Building Code (IBC)**

Introduction to the IBC (2000 - 2012 editions)

IBC Update seminars (2003-2012 editions)

Special and Mixed Occupancies in the IBC

IBC Non-structural Plan Review / Structural Plan Review

Fire Protection Aspects of the International Building Code

Fundamentals of Means of Egress

IBC – UBC, BOCA & NFPA 101 Comparison

##### **ICC International Fire Code (IFC)**

Introduction to the IFC (2003-2012 editions)

Update seminars (2006-2015 editions)

Hazardous Materials in the IFC

Introduction to Fire Protection Features and Systems

Existing Building Provision in the IFC

##### **ICC International Energy Conservation Code (IECC)**

2009 IECC – The Path to Compliance (State of NJ)

2007 ASHRAE 90.1 – The Path to Compliance (State of NJ)

Special and Mixed Occupancies

Non-structural & Structural Plan Review

Special Inspections

Accessibility

Fire Protection Aspects of the Building Code

Overview of Hazardous Materials

##### **Fire Prevention Code (BNFPC)**

Update seminars

Overview of the Fire Prevention Code

##### **Existing Building Code (BNEBC)**

Overview of the Existing Building Code

Sarah Rice, CBO

Principal | The Preview Group, Inc.



### **Professional History**

#### **The Preview Group, Inc.**

Project Manager (2009-present)

- Life Safety/Fire protection assessment & Accessibility compliance
- Development of equivalencies/performance-based solutions & AHJ negotiations
- NFPA Fire Safety Evaluations (FSES)
- Hazardous material evaluation and assessment
- Development and delivery of educational seminars

#### **Schirmer Engineering Corporation**

Director of Professional Development (2008-2009)

Project Manager/Engineering (1999-2008)

- Liaison to ICC & NFPA Code Development Activities
- Life Safety/Fire protection assessment & Accessibility compliance
- Development of equivalencies/performance-based solutions
- AHJ negotiations
- NFPA Fire Safety Evaluations

#### **International Code Council (ICC)/Building Officials and Code Administrators Intl. (BOCA)**

Manager – Standards & Code Development (1988-1999)

- Technical production of the ICC International Codes and Commentaries
- Technical production of the BOCA National Codes and Commentaries

Professional Development (1986-1999)

- Development and delivery of educational seminars (BNBC ICC-Codes)

Technical Staff (1984-1988)

- BOCA Evaluation Services
- Development and delivery of educational seminars (BOCA)

#### **Brighton Engineering**

Transportation Engineering (1983-1984)

#### **Baldwin Engineering**

Clinton Nuclear Power Plant Engineering Maintenance (1982-1983)

### **Education**

**University of Illinois**, BS/Civil Engineering, Structural(1982)

**Rock Valley College (Rockford, IL)**, AS (1980)





## Gregory Nicholls, AIA

Principal / Vice President | The Preview Group, Inc.

Role in the WV Capitol Project: Project Manager, Code Consulting

The Preview Group, Inc.  
632 Race Street  
Cincinnati, Ohio 45202

tel 513.621.2109  
fax 513.621.7297  
email [gnicholls@preview-group.com](mailto:gnicholls@preview-group.com)



### Profile

As a founding member of the firm, Greg has handled much of the plan review and research services for many of the firm's projects. His expertise on the life safety code and national fire codes has been instrumental in many of the large assembly projects. Maintaining a major presence within the enforcement community and working to expand cooperative solutions for our firm and our clients, Greg offers insight and a perspective rarely found in an architectural firm.

### Certifications/Registrations

Registered Architect, State of Ohio - Certificate No. [REDACTED]

#### State of Ohio, Board of Building Standards

Building Official, Master Plans Examiner, Residential Building Official & Inspector  
CABO Certificate No. 1010

#### ICC Plan Exam Certifications (current)

Building	Electrical
Mechanical	Plumbing

### Significant Awards

#### Southwestern Ohio Building Officials Association

2003 Code Official of the Year

Ohio Board of Building Standards Constituent Code Scoring Advisory Group  
Certificate of Service, 2010 and David Denison Award

### Affiliations and Memberships

#### American Institute of Architects (AIA)

AIA Ohio

AIA Cincinnati

#### International Code Council (ICC)

#### Ohio Building Officials Association (OBOA)

#### Southwestern Ohio Building Officials Association (SWOBOA)

### Code and Regulatory Activities

#### International Code Council

International Building Code General Committee (2008-2017)

International Building Code – Means of Egress Committee (2018 – present)

Building Code Interpretation Committee (2006-2007) (2014-present)

#### Ohio Building Officials Association

International Codes Council Means of Egress Committee

Chairman (1998-2004)

Code Change Committee, Chairman (1994-1997)

Board of Directors, (1994-1996)

#### AIA National

Codes and Standards Committee (1988-1997)

Codes and Standards Task Unit (1988-1990)

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email [gnicholls@preview-group.com](mailto:gnicholls@preview-group.com)

### **Publications**

#### **Thomson West**

*Know Your Code: A Guide to the OBBC*, Co-author (1995-2005)  
*OBBC*, Index and Cross References, (1989, 1994)  
*Ohio Accessibility Guidelines* (1993)

#### **Ohio Department of Human Services**

Child Care Manual, Co-author

### **Seminars**

#### **The Preview Group, Inc.**

Ohio Board of Building Standards Certified Instructor for:

- Ohio Code Academy
- Ohio Building Code (2002)
- Ohio Accessibility Guidelines
- OBBC Updates (1986, 1989)
- Mechanical Code Review
- Overview of the OBBC
- Existing Buildings

### **Experience**

#### **The Preview Group, Inc.**

Vice-President (1986-present)

#### **City of Mason, Ohio**

Chief Building Official, retired (1995-2014)

Project Manager, Mason Municipal Building, Mason Community Center Addition,  
Mason Service Center Renovation

#### **City of Cincinnati Building Department**

Senior Plans Examiner (1984-1995)

#### **Hamilton County Building Department**

Plans Examiner (1983-1984)

#### **Palantir Designwerks, Inc.**

Owner (1981-1986)

#### **Henry A. Lurie & Associates, Inc.**

Architect (1981-1983)

#### **Robert W. Doran & Associates**

Architect (1980-1981)

#### **HAI Architects/HCM Construction Co.**

Intern Architect/Construction Assistant (1978-1980)

### **Education**

**University of Cincinnati**, BS/Arch (1980)



## David Collins, FAIA, NCARB

Principal / President | The Preview Group, Inc.

Role in the WV Capitol Project: Project Manager, Code Consulting

The Preview Group, Inc.  
632 Race Street  
Cincinnati, Ohio 4 5202

tel 513.621.2109  
fax 513.621.7297  
email dcollins@preview-group.com



### Profile

A founding member of the firm, Dave has had a hand in most major projects, particularly the large university and building development projects. His extensive experience in numerous code-related organizations and activities, as well as his work on a wide spectrum of projects, is not only an invaluable asset to the firm and its clients, it has also garnered him a national reputation as an expert in codes and regulations. As consultant to the Codes Advocacy Program for The American Institute of Architects since 2000, he has participated in committee work for the International Code Council, National Fire Protection Association, Green Building Institute, Underwriters Laboratories, and the National Institute of Standards and Technology, among others. Dave's active involvement at all levels of the code development process allows him the opportunity to influence decisions that affect the regulatory environment throughout the United States, both now and in the future.

### Certifications/Registrations

**Registered Architect, Ohio, Kentucky, Washington, DC**

**State of Ohio, Board of Building Standards - Building Official,**

ICC Certificate No. [REDACTED] Plans Examiner

**National Council of Architectural Registration Boards - Certificate No. [REDACTED]**

### Significant Awards

**International Code Council – Bobby J. Fowler Award (2017)**

**National Institute of Building Sciences (NIBS) – President's Award (2016)**

**AIA Ohio - Gold Medal (1996)**

**Architectural Foundation of Greater Cincinnati - Distinguished Service Award (1995)**

**Fellow of the American Institute of Architects (1994)**

**AIA State and Local Government Affairs Department - Award for "A Comprehensive Effort in Support of Qualifications-Based Selection" (1993)**

**AIA Ohio - President's Award (1992)**

**AIA Cincinnati - President's Award (1987)**

**Cincinnati Editors Association (1980 Publication Contest)**

First Place, Graphics, Entire Publication, Other Publications for

"Fascinating, Spirited Cincinnati" (1980 AIA Convention Guidebook)

**International Code Council (ICC) - Affiliate Award (2003), Honorary Member (2011)**

**Building Officials and Code Administrators (BOCA) - Albert H. Baum Award (2001)**

**Code Administrators Association of Kentucky - Patron of the Year (1994)**

**Ohio Building Officials Association - Associate Member of the Year (1992)**

**Southwestern Ohio Building Officials - Certificate of Appreciation (1985)**

**Building Officials of Northeast Ohio - Certificate of Appreciation (1984)**

## David Collins, FAIA, NCARB

Principal / President | The Preview Group, Inc.



The Preview Group, Inc.  
632 Race Street  
Cincinnati, Ohio 4 5202

### **Code and Regulatory Activities**

#### **National Green Building Standard (NGBS)**

Consensus Committee (2012)

#### **International Code Council (ICC)**

Sustainability Energy High Performance Committee (2013-present)

Committee Chair 2016-Present

Industry Advisory Committee (2000-present)

Code Technology Committee (2005-2016)

International Existing Building Code Ad-hoc Committee (2004-2005)

International Existing Building Code Change Committee (2002-2003)

International Existing Building Code Development Committee (2000-2001)

#### **National Fire Protection Association (NFPA)**

NFPA 101 - Technical Committee on Means of Egress (2010-present)

Committee Chair 2015-Present

NFPA 220 & 221 - Technical Committee on Building Construction (2000-present)

NFPA 730 & 731 - Technical Committee on Premises Security (2002-present)

NFPA 5000 - Technical Correlating Committee (2000-present)

NFPA 5000 - Technical Committee on Structures & Construction (2000-present)

#### **American National Standards Institute (ANSI)**

GBI - 01/2005 General Committee (2006)

#### **Underwriters Laboratories Inc. (UL)**

Fire Council of Underwriters Laboratories (2004-2008)

#### **National Institute of Standards and Technology (NIST)**

National Construction Safety Team Advisory Committee (2003-2007)

High Performance Building Council (2006-present)

#### **Building Officials and Code Administrators International (BOCA)**

Ethics Committee (1994-1997, 2000-2003)

Ad-Hoc Committee on Loads (1993-1998)

Code Interpretations Committee/One & Two Family Dwelling

Code Subcommittee (1995, 1997)

Ad-Hoc Committee on CABO Comparison (1991-1997)

Ad-Hoc Committee on Existing Structures (1991-1996)

Ad-Hoc Committee on High Hazard Uses (1988-1996)

Ad-Hoc Committee on Fire Protection Systems (1988-1989)

Ad-Hoc Committee on Mixed Building Uses (1986-1989)

Existing Structures Code Change Committee (1983-1984)

Code Interpretation Committee (1982-1983)

#### **Ohio Board of Building Standards**

Member of the Board (2014-Present)

Codes/Education/Certification Committees

Education Ad-hoc Committee (2002-2005)

Residential Construction Advisory Committee - Chairman (2002)

Ohio State University DACUM Panel - Building Officials Curriculum (1989-1993)

Sprinkler System Design Advisory Board - Chairman (1982-1985)

#### **Ohio/NIBS (Ohio Council of the National Institute of Building Sciences (1980-present)**

Board of Directors (1998-1999)

President (1982-83)

Treasurer (1981)

## David Collins, FAIA, NCARB

Principal / President | The Preview Group, Inc.



The Preview Group, Inc.  
632 Race Street  
Cincinnati, Ohio 4 5202

### **American Institute of Architects (AIA)**

#### **National**

Honorary AIA Jury (2003 & 2008)

Secretary (1999-2000)

Codes Task Force - Chairman (1999-2000)

Interior Design Task Force (1999)

IDP Committee (1996-1998) - Co-chairman (1996-1998)

Licensing Committee (1996-1998)

Regional Director (1995-1997)

Universal Accessibility Conference Planning Committee (1997)

AIA/ACEC Joint Committee (1996)

BP&R Committee Liaison (1996)

Building Performance and Regulations Committee (1980-present)

BCMC Liaison (1988-1991)

Task Group on Code Uniformity (1990)

Steering Committee (1985-1987) - Chairman (1987)

CABO Task Unit (1984)

BOCA Task Unit (1981-1983)

Committee on the Environment (1993-present)

#### **State/AIA Ohio**

Seal Law Task Group (1994-1995)

PAC Chairman (1993-1996)

President (1992); President-Elect (1991); Secretary (1989-1990)

Codes and Standards Committee (1979-1991, 1993-1995)

Chairman (1983-1985, 1989)

Technical Advisor (2000-present)

Ohio Governors Ad-Hoc Committee on Access for the Disabled

Architect Member (1987-1988)

Ohio Board of Building Standards Review Committee (1987-1988)

AIA Ohio Representative

#### **Local/AIA Cincinnati**

Historic Rehabilitation Guidelines Committee (1992-1993)

ADA Teleconference, Moderator (1992)

President (1987); Vice President (1986); Secretary (1984-1985)

Bookstore Committee Chairman (1981-1983)

1980 National Convention Committee

Tour Book Committee Chairman (1978-1980)

Design Committee Co-Chairman (1975-1977)

#### **Publications**

##### **John Wiley & Sons, Inc.**

*Architects Guide to Professional Practice, Fourteenth Edition* – 15.2 Building Codes and Standards (2010, 2012, 2017)

*Building Codes Illustrated for Healthcare Facilities* (2007)

Co-authors; Steven R Winkel, FAIA; David S. Collins, FAIA and Steven P. Juroszek, AIA

*Building Codes Illustrated for Elementary and Secondary Schools* (2007)

Co-authors; Steven R Winkel, FAIA; David S. Collins, FAIA and Steven P. Juroszek, AIA

## David Collins, FAIA, NCARB

Principal/President | The Preview Group, Inc.



tel 513.621.2109  
fax 513.621.7297  
email dcollins@preview-group.com

### **Thomson West**

#### *Ohio Basic Building Code*

Editorial Advisory Board (1982-2005), Chairman (1990-2005)

#### *Code News*

Editor-in-Chief (1990-2005)

*Know Your Code: A Guide to the OBC*, Co-author (1995-2005)

*Ohio Accessibility Guidelines* (1993)

#### **Ohio Department of Human Services**

Child Care Manual, Co-author

#### **Architectural Record**

Practice Matters: "One building code . . ." (August 2001)

#### **Construction Specifier**

"Framing Arguments" (April 1993)

**The Building Official and Code Administrator Magazine** (March/April 1995)

**Southern Building** (March/April 1995)

**Building Standards** (May/June 1997)

"Wood Construction: A Reliable System of Standards and Quality Control", Co-author

### **Seminars**

#### Department of Energy

Codes, Codes and More Codes for Existing Buildings (2015)

AIA Webinar – IgCC Next Steps (2014)

NFPA Convention – Building Heights and Areas (2014)

AIA St. Louis – Introduction to the IgCC (2013)

Gray Construction – Height and Areas, UBC vs. IBC (2012)

AIA Cincinnati

Fundamentals of Mixed Use and Occupancy (2013)

Means of Egress (2012)

Code Conundrums Parts I, II & III (2012-2017)

AIA National Convention – IgCC Effects on Practice (2012)

IgCC Workshop – Kentucky/Ohio (2012)

### **Experience**

#### **The Preview Group, Inc.**

President and CEO (1986-present)

#### **American Forest & Paper Association (AF&PA)**

Midwest Regional Manager (1986-2000)

#### **Portland Cement Association (PCA)**

Regional Representative to BOCA (1984-1985)

#### **Hamilton County, Ohio**

Deputy Chief Building Official (1977-1983)

**Glaser and Myers Architects** (1975-1977)

**Baxter Hodell Donnelly Preston, Inc.** (1973-1975)

### **Education**

**University of Cincinnati**, BS/Arch (1973)

**Purdue University/Indianapolis**, AAS/Arch (1968)

# PWWG Firm Overview

Perfido Weiskopf Wagstaff + Goettel

PERFIDO  
WEISKOPF  
WAGSTAFF +  
GOETTEL

## About Us

PWWG is a diverse, versatile architectural practice, with experience in a wide variety of building types. Our portfolio includes projects, large and small, for cultural institutions, higher education, government, businesses, and individuals.

PWWG has an extensive portfolio of design for new buildings and adapting existing buildings for new uses. We find creative solutions to architectural challenges where the historic, cultural, and social attributes of the built environment meet with physical space and place. PWWG's practice is characterized by meticulous and innovative programming, an urban sensibility that results in a highly contextual approach to design, thoughtful and perceptive application of architectural styles, and a focus on sustainability and materiality as critical design elements.

With design expertise and technical knowledge from 40+ years of experience, PWWG offers clients the production capabilities of a large firm with the personal attention that only a mid-size firm can consistently offer. The partners lead an interdisciplinary studio comprising 21 staff members including highly skilled architects, with special interest areas from preservation and adaptive reuse, to sustainability and interior design.

PWWG has been recognized with numerous awards that celebrate the firm's design excellence, creative expertise, and high level of client service.

## Areas of Specialization

While PWWG's portfolio is diverse, we offer specific expertise in projects of the following types:

- Facilities for higher education (labs, classrooms, offices, administrative, and workforce training buildings).
- Rehabilitation, preservation, and adaptive reuse of historic architecture and existing buildings.
- Multi-family residential design (affordable and market rate, student and senior housing, and luxury condominiums).

We also design hotels, theatres, galleries, retail, and parking structures. Repeat clients include non-profit institutions, private businesses, public/private partnerships, and government.

## Size of Projects

PWWG provides comprehensive architectural services for projects ranging from small feasibility studies to construction projects between \$1M and \$40M. Our largest project to date is the comprehensive renovation of Cincinnati Music Hall, completed in September 2017, with total project costs of approximately \$143M.

## Work Process

Every project at PWWG is led by a Principal and a seasoned Project Manager. Both are committed to the work from the earliest conceptual stages through construction and occupancy.



Office visit to one of PWWG's current projects restoring a historic library for new use as a Maker Lab for the Pittsburgh Children's Museum.

# PWWG Firm Overview

Perfido Weiskopf Wagstaff + Goettel



## Established

1975

## Principals

Alan Weiskopf, AIA  
Lisa Carver, AIA, LEED AP  
Sheldon Goettel, AIA, LEED AP  
Brent Houck, AIA, LEED AP  
Anthony Pitassi, AIA, LEED AP  
Kevin Wagstaff, AIA, LEED AP

## Structure

Limited Liability Company

## Current Staff

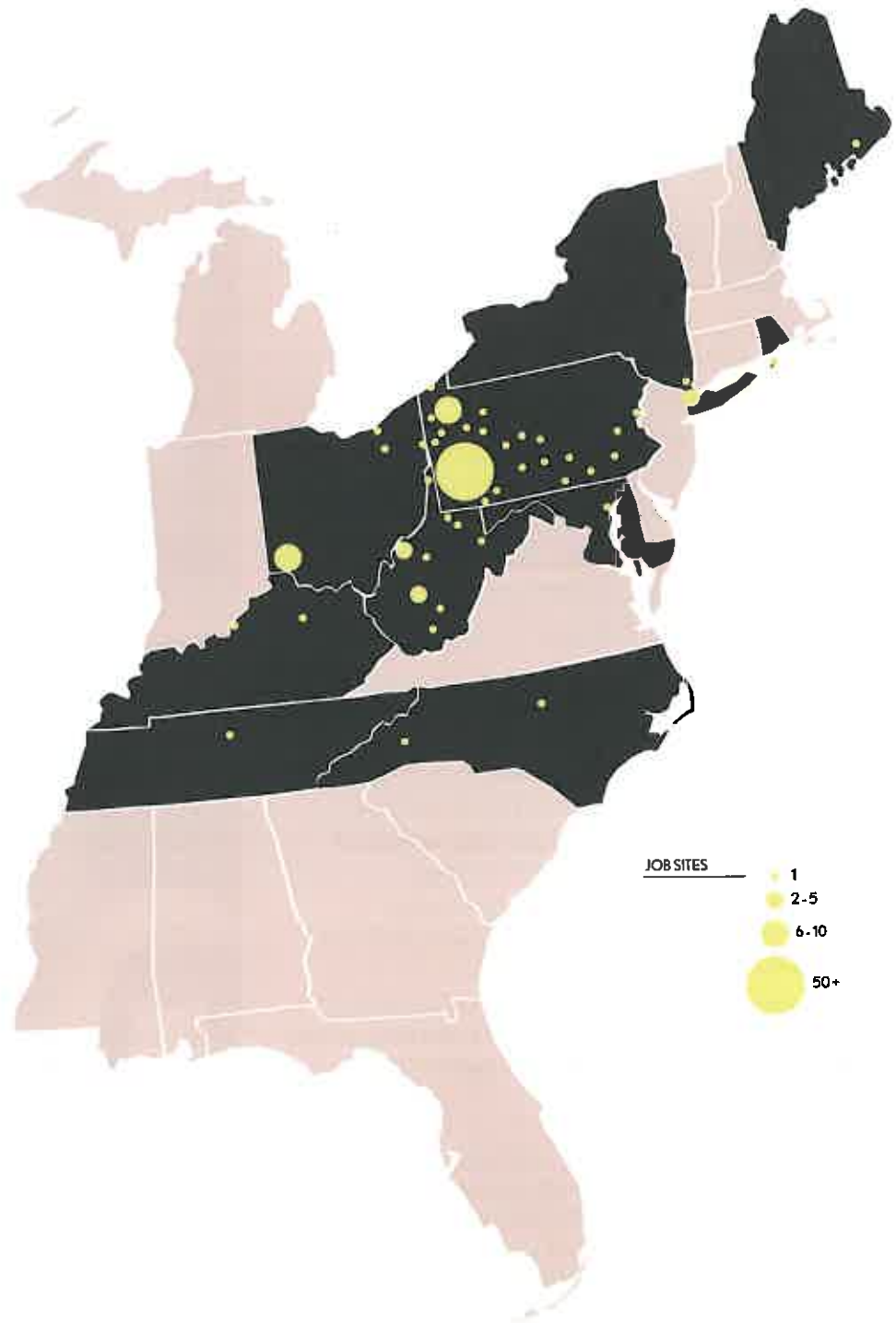
21 Professionals  
10 Registered Architects  
9 LEED AP  
3 Administrative and Support

## Main Office

PWWG Pittsburgh  
408 Boulevard of the Allies  
Pittsburgh, PA 15219

## Branch Office

PWWG Cincinnati  
432 Evanswood Place  
Cincinnati, OH 45220





## Alan Weiskopf, AIA

Managing Principal | Perfido Weiskopf Wagstaff + Goettel

Role in the WV Capitol Project: Principal-in-Charge & Preservation Architect



Alan joined PWWG in 1981 as an associate and became a principal of the firm in 1986. He has served as the project architect or principal-in-charge of many of the firm's most significant projects. He has a wide range of experience in terms of project type and size, with particular emphasis on higher education, restoration and adaptive reuse, renovation and preservation of culturally significant structures, and hospitality projects. He has also managed several of the firm's joint venture relationships. Alan is a past President of AIA PA. He is a past member of the Board of Code Review and of the Board of Standards and Appeals for the Department of Permits, Licenses and Inspections in the City of Pittsburgh.

### Historic Renovations

- **Main Capitol Rotunda**, Charleston, WV — Historic restoration of rotunda interior.
- **Pennsylvania Capitol Restoration**, Harrisburg, PA — Multi-phase restoration of the 1906 state capitol building on the National Register, including the roof, domes, cupolas, masonry, windows, and exterior paving, and regilding of the ornate "Commonwealth" statue atop the main dome.
- **Pennsylvania Capitol Peristyle Deck Restoration**, Harrisburg — Investigation, analysis and design for waterproofing the exterior peristyle walkway at the base of the 52M ton ornate dome of the 1906 state capitol building on the National Register.
- **Cincinnati Music Hall Renovation and Expansion of Cincinnati Symphony Orchestra Offices**, Cincinnati, OH — After coordinating the client's competitive application for \$25M in "Catalyst Grant" funding, the firm lead the restoration and upgrade of this iconic performance venue. 225,000 sf.
- **West Virginia State Capitol Building Three**, Charleston, WV — Renovation and reuse of a historic office building. 165,000 sf.
- **Old Main Building Selective Renovations**, West Virginia University, Montgomery, WV — Exterior, interior, Life Safety, and Accessibility renovations and upgrades to this Historic Register building. Size: N/A (roof only).
- **Oglebay Hall & Ming Hsieh Hall**, West Virginia University, Morgantown, WV — 55,000 sf historic renovation and 20,000 new building, LEED.
- **21c Museum Hotel**, Cincinnati, OH — Rehab of Historic Register downtown hotel for new upscale 170 room hotel. 159,000 sf.
- **21c Museum Hotel**, Lexington, KY — Conversion of Historic Register 15-story First National Bank Building in downtown Lexington to an upscale 90 room hotel. 103,500 sf.
- **21c Museum Hotel**, Durham, NC — Conversion of Historic Register 17-story Hill Building in downtown Durham to an upscale 120 room hotel. 134,000 sf.
- **21c Museum Hotel**, Nashville, TN — Conversion of Historic Register 7-story Gray & Dudley Hardware Building in downtown Nashville to an upscale hotel. 120,000 sf.
- **575 Broadway**, New York, NY — Adaptive reuse of historic urban building for office and museum uses. 160,000 sf.
- **PA Historic & Museum Commission**, PA — Three 5-year open-end contracts for historic restoration work at sites throughout the Commonwealth.

### Additional Projects in West Virginia and Large Office Building Design

- **Utilities and Infrastructure Improvements & Quad Design**, WVU, Evansdale, WV — PWVG led a team of engineers developing and implementing an infrastructure plan for 5 facilities on 150 acres on the campus.
- **Campus Parking Expansion**, West Virginia University, Evansdale, WV — New parking capacity on the campus, as a component of the Utilities and Infrastructure Improvements project.
- **FORE Systems Campus**, Warrendale, PA — High tech office and manufacturing campus—5 buildings. 574,000 sf.

### Education

University of Cincinnati  
Bachelor of Architecture, 1975

Years in Architectural Practice: 42

Years with Firm: 36

### Registration

Registered Architect in PA, WV, MD, OH, IN, KY, NC & SC, MO

### Professional Associations

NCARB Certification  
American Institute of Architects

Chairman, City of Pittsburgh Board of Appeals

AIA Pittsburgh Board of Directors (1990-1996)

AIA PA Board (1997-2001)

Member, Urban Land Institute Member, CEO's for Cities

## Jessica Stuck, AIA

Associate | Perfidio Weiskopf Wagstaff + Goettel

Role in the WV Capitol Project: Project Manager. Architecture



Jessica began her professional career in upstate New York working on historic preservation projects including rehabilitation of the iconic Rotunda at the University of Virginia, rehabilitation of the Vanderbilt Mansion exterior, and restoration of historic churches in eastern New York and western Massachusetts. Since joining PWWG in 2014, Jessica has maintained her focus in preservation, restoration, and the adaptive reuse of existing buildings as Project Architect or Project Manager on several landmark structures. She has also applied her skills in 3D modeling, document production, and coordination to the firm's higher education, contemporary housing, and workforce training projects. Jessica is active in teaching architecture at the university level, mentoring intern architects, and presenting her preservation research at national conferences. She volunteers in various capacities with local organizations in the building and preservation trades.

### Education

Kent State University  
Master of Architecture,  
2013  
B.S. in Architecture,  
2012  
B.A. in History, 2012

### Registration OH

### Professional Associations

American Institute of Architects  
CSI Construction Documents Technologist (CDT)  
Kent State University, Instructor in Preservation courses and Critic for Undergraduate and Graduate Studios, 2013-present  
Pittsburgh History and Landmarks Foundation, Mentor for High School Students  
Association for Preservation Technology Conferences Presenter

### Historic Renovations

- **Allegheny County Courthouse Facilities Planning**, Pittsburgh, PA – Worked with a team of experts to define projects to preserve, restore, and renew this Historic Register building designed by H. H. Richardson for another century of use; scope included interior and exterior work, and integrating new, sustainable systems.
- **Allegheny County Courthouse Roof Replacement and Tower Renovation**, Pittsburgh, PA Restoration of masonry on the main and courtyard towers and replacement of the original, historic clay tile roof in kind and low slope roof with copper roofs.
- **21c Museum Hotel**, Nashville, TN – conversion of the 7-story 120,000 sf historic Gray & Dudley Hardware Building in downtown Nashville to a boutique hotel and art museum.
- **Roxian Theatre Restoration and Adaptive Reuse**, McKees Rocks, PA – Forensic investigation and comprehensive rehabilitation of an Art Deco theater to a live music venue.
- **Old Economy Village**, Ambridge, PA – A variety of projects to restore and preserve facilities at a Harmonist village designated as a National Historic Landmark.
- **Union Trust Building Restoration and Adaptive Reuse**, Auditorium Restoration Study, Pittsburgh, PA – Restoration and adaptive reuse of 11-story Historic Register building for office space.

### General Renovations & Forensic Assessments

- **Porter Hall Classroom Renovations, Carnegie Mellon University**, Pittsburgh, PA – Modifications to existing layouts, upgrades to finishes, electrical, mechanical, and A/V systems in 19 registrar classrooms.
- **Adamson Wing Renovation, Carnegie Mellon University**, Pittsburgh, PA – Complete demolition and renovation to an existing underground 2,000 sf lecture hall and entrance lobby in Baker Hall.
- **Lecture Hall Renovation Studies, Carnegie Mellon University**, Pittsburgh, PA – Study to evaluate prospects for interior renovations to lecture halls in three historic buildings on campus.
- **Resnik and West Wing Dormitories Forensic Investigation and Repairs, Carnegie Mellon University**, Pittsburgh, PA – Worked with a structural engineer to determine causes of leaks and failure of roof plaza over occupied space between two dormitory buildings on campus. Prepared construction documents for all necessary remedial work following study.

# Barge Design Solutions Firm Overview

Role in the WV Capitol Project: MEP Engineering



## OFFICE LOCATIONS

### TENNESSEE

Nashville  
Knoxville  
Chattanooga  
Memphis  
Kingsport

### ALABAMA

Birmingham  
Dothan  
Huntsville

### GEORGIA

Atlanta  
Columbus  
Gwinnett County  
Savannah

### OHIO

Dayton  
Cincinnati

### TEXAS

Houston

## QUICK FACTS:

- Founded in 1955
- Over 370 employees serving clients nationwide from 15 locations
- Annual revenue exceeds \$79 million
- Firm is employee-owned
- Consistent ranking in top 500 multidisciplinary A/E firms in U.S. (ranked 199 in 2017)
- Marketplace organization – Land Resources, Environment & Water Resources, Facilities, Water Services, and Transportation

Barge Design Solutions, Inc. (Barge) is a professional services firm that includes engineers, architects, landscape architects, geologists, environmental scientists, planners, surveyors, engineering technicians, and CADD and GIS specialists. Our staff of over 370 serves clients nationwide from 15 offices located in Alabama, Georgia, Tennessee, Ohio, and Texas.

Barge provides multidisciplinary engineering (civil, transportation, mechanical, electrical, structural, hydrologic/hydraulic, and environmental) and architectural services from concept to completion for utilities, roads, buildings, airports, and environmental reclamation and restoration projects.

Founded in 1955, Barge is a multidisciplinary engineering consulting firm that places a strong focus on providing cost-effective, high-quality solutions to our clients' short-term and long-term needs. We have been providing planning, design, and construction administration services in the Southeast for 63 years. Barge provides services from conception to completion for a wide variety of public and private infrastructure projects. An employee-owned company, Barge is ranked 199 in ENR's 2017 list of Top 500 Design Firms. Our annual revenue exceeds \$75 million.

We are committed to bettering the lives of our clients, employees, and regions across our footprint.

## MARKETPLACE ORGANIZATION

Our company uses a marketplace organization that consists of five business units:

- **Land Resources**
- **Environment & Water Resources**
- **Facilities**
- **Water Services**
- **Transportation**

# Barge Design Solutions Firm Overview

Role in the WV Capitol Project: MEP Engineering



## SELECTED WEST VIRGINIA PROJECT EXPERIENCE

- BPD Renovation, Parkersburg, WV
- C-5 Corrosion Control Hangar, Martinsburg, WV
- Mechanical Evaluation, Parkersburg, WV
- Survey Report, Parkersburg, WV
- Grant County Airport, WV

## PROJECTS WITH FireLogix

- Design-Build Special Operations Forces Hangars, USACE Louisville District Fort Campbell, KY
- US Army Corps of Engineers, Fairfield ARC, Concord, CA
- Design-Build 19th Engineering Battalion Complex, USACE Louisville District Fort Knox, KY
- P676 CH-53K Maintenance Training Facility MCAS New River, Camp Lejeune, NC
- Unmanned Aerial System COF and TEMF, Fort Campbell, KY
- US Army Corps of Engineers Savannah District, Repair Maintenance Hangar Building 4909 and Fuel System Dock Building 4828, Seymour Johnson Airforce Base, NC
- Design-Build Detroit Arsenal Child Development Center Addition USACE Louisville, Detroit Arsenal, MI
- US Army Corps of Engineers, ARC Roanoke, VA
- US Army Corps of Engineers, Design-Build Addition to the National Museum of the U.S. Air Force, Wright-Patterson Airforce Base, OH



**Aaron Powell, PE, LEED AP BD+C**

Mechanical Engineer | Barge Design Solutions

Role in the WV Capitol Project: Lead Mechanical &amp; Plumbing Engineer

**EDUCATION**

Bachelor of Science, Mechanical Engineering, Wright State University, 2003

**PROFESSIONAL REGISTRATIONS**

Professional Engineer in OH, IL, TX

**CERTIFICATIONS**

LEED Accredited Professional BD+C

**AFFILIATIONS**

American Society of Heating and Refrigeration Engineers

American Society of Plumbing Engineers

Mr. Powell has 15 years experience serving as Lead Mechanical Engineer on many federal projects involving new construction, renovations, repairs, and facility additions. He is skilled in design software, including Revit, AutoCAD and MicroStation.

**RELEVANT EXPERIENCE**

**Advanced Power and Thermal Research Laboratory Renovation** *Wright-Patterson Air Force Base, OH* Lead Mechanical Engineer for project to renovate a building constructed in 1934, with the goal to provide a modern laboratory facility, where state-of-the-art research is conducted for energy, power, and thermal management to support Air Force applications. Three floors were involved in the renovation, with new spaces for materials processing, data acquisition, clean room operations, dry room operations, and fabrication facilities. Partial building demolition, interior demolition, hazardous material abatement, and site work was included. Engineering services included design for HVAC, plumbing, steam, lighting and power distribution, communications and security, utilities, storm drainage, lightning protection, and fire protection. The laboratory spaces are heated and cooled by means of a variable air volume handling system with hot water reheat. Two process piping loops, one 42°F and the other an 85°F loop, have been designed to support future and anticipated equipment within the laboratories. Systems supporting two ISO 6 (Class 1000) clean rooms and a dry room capable of maintaining 1% relative humidity at 68°F were also designed. The building required specialized plumbing systems to serve the laboratory spaces. A looped domestic tempered water system (110°F) and a looped tepid water system (85°F) were designed in addition to a 3 Megaohm reverse osmosis water system. A compressed air system was also designed throughout the building.

**Building 41 Restoration and Life Safety Modernization, Naval Surface Warfare Center** *Crane, IN* Mechanical Designer/CADD Technician for project to consolidate numerous Naval Research and Repair Labs that were located in various buildings scattered around the Base. This huge former Ordnance Manufacturing Facility was adaptively reused to house all of these scattered labs under one roof. This work was necessary to correct existing deficiencies as well as to provide new office and laboratory areas to consolidate functions. A new three-story main entrance element creates a focal point for the entrance into the renovated building. Life safety upgrades involved new space planning throughout Building 41, including new exit/access corridors, stairs, elevators, labs, and offices. ADA accessibility requirements were addressed in the design.

**Millington Energy Improvement Project** *Millington, TN* Lead Mechanical Engineer for Mechanical and Plumbing Designs for energy upgrade project including retrofit day-lighting controls and lighting replacements, retro-commissioning of HVAC systems, and solar water heating systems for eight office buildings totaling over 500,000 square feet.

**Mike Williams, PE, LEED AP BD+C, ATD**

Electrical Engineer | Barge Design Solutions

Role in the WV Capitol Project: Lead Electrical Engineer

**EDUCATION**

Bachelor of Science, Electrical Engineering, Christian Brothers College, 1983

**PROFESSIONAL REGISTRATIONS**

Professional Engineer in AL, AR, AZ, CT, DE, FL, GA, IL, IN, IA, KS, KY, LA, MO, MN, MS, NC, NV, OH, OK, OR, PA, SC, SD, TN, TX, UT, VA, WV

**CERTIFICATIONS**

LEED Accredited Professional BD+C

Accredited Tier Designer

**AFFILIATIONS**

Instrument Society of America

Institute of Electrical and Electronics Engineers

National Council of Examiners for Engineering and Surveying

Illuminating Engineering Society of North America

National Society of Professional Engineers

Mr. Williams has 35 years of experience in planning and design of electrical systems for Barge's industrial facilities design teams. He designs systems for power generation, lighting, communications systems, life safety systems, power distribution, lightning protection, process equipment, and utilities, and provides construction administration services. He emphasizes design for energy-efficient lighting and controls systems.

**RELEVANT EXPERIENCE**

**Advanced Power and Thermal Research Laboratory** *Wright-Patterson Air Force Base, OH* Electrical Engineer on a design-build team for the renovation of Building 23, originally constructed in 1934 as an aircraft hangar and aircraft component test facility. The renovation provides a modern laboratory facility, where state-of-the-art research is conducted for energy, power, and thermal management to support Air Force applications. Provided site civil design and Stormwater Pollution Prevention Plan to return a portion of the site to an open space after building demolition.

**National Museum of the United State Air Force** *Wright-Patterson Air Force Base, OH* Electrical Designer of Record for the 250,000-SF expansion. A Revit BIM following USACE CADBIM polices was used to coordinate design development with field construction activities. The project incorporated energy efficient design, sustainable design practices, and AT/FP requirements. Designed the lighting and power systems. The lighting systems included general purpose overhead lighting as well as specialized theatrical lighting system to enhance and highlight exhibit displays. Both systems use LED technology and computerized lighting controls systems.

**Design-Build Training Support Center** *Ft. Campbell, KY* Lead Electrical Engineer for a new 75,000-SF Training Support Center. The facility is used to fabricate, maintain, store, and issue training devices such as the Multiple Integrated Laser Engagement System. The facility houses multi-purpose classrooms, simulation rooms and the administrative space for the training support division management staff, and includes warehouse space for device fabrication, general repair, storage, sensitive item storage (arms vaults), maintenance, and issuance of training devices and components.

**U.S. Army Corps of Engineers - Louisville District - Human Performance Wing Infrastructure Upgrade and Building Site Plan Development Design-Build RFP** *USACE Louisville District, Wright-Patterson AFB, OH* Lead Electrical Engineer for preparation of a comprehensive design-build RFP and master plan for a 700,000-SF facility in multiple buildings which include wet and dry chemistry, and biology teaching and research labs, USAF School of Aerospace Medicine, a vivarium, entomology lab, emergency medical training, temporal labs, spatial disorientation research, centrifuges, night vision research, and associated infrastructure and utility upgrades.

## &estimate Firm Overview

Role in the WV Capitol Project: Cost Estimating



One of our greatest strengths is estimating. &estimate has developed over \$10 billion of construction project cost estimates on all types of construction nationally and internationally. As an independent service, we provide in-house architectural, civil, structural, mechanical, electrical, plumbing, and fire protection estimating to Owners and architectural firms nationally. Our in-house capabilities in estimating are of particular significance when the Value Engineering process is undertaken because of our first-hand knowledge of all aspects of the building construction.

Accurate and well-defined cost estimates are critical to the success of every project. Our estimators specialize in providing accurate construction cost estimates from the initial programming phase through the detailed design and construction phases. Our estimating procedures are developed to ensure that each element of the project is well defined and accounted for in the estimate format.

Our estimating efforts begin with the Program Level estimates of the proposed project. These estimates serve as our "Cost Models" for the project and will be updated to reflect the additional information and details included on the Schematic, Design Development, and Construction Documents. We work with the design team and the Owner throughout the design phase to ensure design components align with available funds. Our final estimate, prior to bidding, is used to evaluate the competitive bids received for the various elements of work.



### What We Will Do For You

&estimate offers construction consulting services from your idea moment through completion when the owner is handed the keys. For over 30 years, our clients have depended on us to provide the equilibrium between the owner's budget and the design.

#### Services we offer:

- Owner's Representation
- Probable Cost Estimating
- Value Engineering
- Building Assessments
- Constructibility Review
- FFE Estimating and Procurement
- Scheduling
- Cost Segregation
- Life Cycle Costing

#### Our Areas of Expertise:

- Education, both Public and Private
- Healthcare
- Governmental
- Community/Recreation Centers
- Corporate
- Performing Arts
- Museums
- Historical Restoration
- Senior Living
- Hospitality
- Housing
- Religious
- Non-Profit
- Mixed-Use
- High Performance/Energy Efficient Construction

## Firm at a glance

**Legal Name**  
&estimate LLC

Established  
1988 - 30 years in business

**Website**  
[www.pcscompanies.com](http://www.pcscompanies.com)

<b>Employees</b>	
Project Executives	3
Project Managers	6
Project Engineers	2
Project Superintendents	4
Cost Estimators	5
Others	5

#### Office Locations

Cleveland  
1301 E9 St., #2100  
Cleveland, OH 44114  
216.619.1700

West Virginia  
Fifth Third Building  
700 Virginia St., E, #240  
Charleston, WV 2301  
304.346.2710

# &estimate Firm Overview

Role in the WV Capitol Project: Cost Estimating



## Selected WV Cost Estimating Experience

- Harrison-Taylor 9 | Center, Clarksburg, WV
- Martinsburg VA Medical Center, Martinsburg, WV
- West Virginia State Office Building, Clarksburg, WV
- West Virginia State University, Fleming Hall, Institute, WV
- West Virginia University Medicine
  - Clinical Lab Building
  - Heart Lab - Foundating Pricing
  - New Ambulatory Surgery Center
- West Virginia University, Morgantown, WV
  - Basketball Practice Facility
  - Colson Hall
  - Downtown Housing Project
  - Evandale Campus Redevelopment
  - Healthcare Outpatient Surgery Center
  - Heart and Vascular Institute Renovations
  - Maclin Hall
  - Nursery School
  - Physical Education Building
  - Student Health Center and College of Physical Activity and Sport Science (CPASS)

## Selected Historic Renovations and Government Clients

- Architect of the Capitol (AOC)
  - Capitol Power Plant
  - James Madison Memorial Building
  - John Adams Building
  - Library of Congress
  - Thomas Jefferson Building
- Cincinnati Music Hall Restoration, Cincinnati, OH (with PWWG)
- General Services Administration (GSA)
  - A.J. Celebrezze Federal Building, Cleveland, OH
  - Carl B Stokes Federal Courthouse, Cleveland, OH
  - Harry S. Truman Federal Building, Washington, DC
  - John W. Bricker Federal Building, Columbus, OH
  - J.W. Peck Federal Building, Cincinnati, OH
  - J.P. Kinneary U.S. Courthouse, Columbus, OH
  - Howard M. Metzenbaum Federal Building, Cleveland, OH
  - Potter Stewart United States Courthouse, Cincinnati, OH
  - Toledo Municipal Courthouse, Toledo, OH
- City of Parma Municipal Courts, Parma, OH
- Federal Reserve Bank, Cleveland, OH—20 different renovation, upgrade, and planning projects
- Medina County Courthouse and Jail, Medina, OH



**Brandon Lawlor, LEED AP**

President | &estimate (a PCS Company)

Role in the WV Capitol Project: Principal Cost Estimator



**Education:**

Bachelor of Science  
Bowling Green State University

**Registrations:**

LEED Accredited Professional  
Bloodborne Pathogens  
Fire, Safety & Emergency Procedures  
Hazard Communications  
Intro to Electrical Safety - OSHA 29  
CFR 1929  
Personal Protective Equipment

**Memberships:**

American Society of Professional  
Estimators (ASPE)

**Speaking Engagement Passion:**

Master Planning and benefits of the  
conceptual estimate

Brandon joined PCScompanies in 2004 as a Project Estimator/Engineer and today is President of &estimate. He is our Chief Estimator with over 17 years of vast experience in MEP. He has advanced training and strong knowledge base in Architectural, Structural and Civil Engineering. Brandon is the primary contact for all our clients and his responsibilities include all estimating oversight. In addition he provides third party legal opinions as well as project or cost estimating audits and maintains security clearances with the Department of Defense. Brandon has estimated over \$10 Billion of construction projects.

**Interesting Fact:**

He can accurately project from the conceptual stage of design, any project cost. His accuracy creates the roadmap for project success. Brandon is our #1 cocktail napkin estimator!

**Relevant Project Experience:**

- Air Force Bases:
  - Lackland AFB, San Antonio TX
  - Little Rock AFB, Jacksonville, AR
  - Randolph AFB, Universal City, TX
  - Vance AFB, Enid, OK
  - Wright Patterson AFB, Dayton, OH
- Schofield Barracks Army Bases, Oahu, HI
- Architect of the Capitol, Washington, DC:
  - Library of Congress
  - John Adams Building
  - Thomas Jefferson Building
  - James Madison Memorial Building
  - Capitol Power Plant
- Avon Lake Safety Center, Avon Lake, OH
- Bay Village City Hall, Bay Village, OH
- Bedford Fire Station, Bedford, OH
- Bedford New Municipal Complex, Bedford, OH
- Cuyahoga County Administrative Headquarters, Cleveland, OH
- Cuyahoga County Juvenile Justice Center, Cleveland, OH
- Federal Reserve Bank, Cleveland, OH:
  - Entry Steps Replacement
  - Water Heater Tank Replacement
  - East 6th Street Entrance Repair/Replacement
  - Tele-Presence Room
  - Learning Center Restroom
  - Cash Department Renovation
  - Lobby Security/Secure Screening Vesibule
  - Perimeter Security
  - 6th Floor Tenant Fit-out
  - Protection Department Renovations
  - Conference Center Space Planning
  - Conference Center Space Planning; 9M and 10th Floors
  - SDS Department Space Planning Concept
- Cash Portal Renovations
- SCS Modernization Project
- Law Enforcement Unit
- Paying and Receiving Area
- Hydraulic Barriers Upgrade
- Research Department Renovations
- Multi-Year Plan
- GCRTA, Cleveland, OH
- General Services Administration (GSA):
  - A.J. Celebrezze Federal Bldg., Cleveland, OH
  - Carl B. Stokes Federal Courthouse, Cleveland, OH
  - J.P. Kinneary U.S. Courthouse, Columbus, OH
  - J.W. Peck Federal Building, Cincinnati, OH
  - Howard M. Metzger Federal Building, Columbus, OH
  - John W. Bricker Federal Bldg., Columbus, OH
  - Potter Stewart Courthouse, Cincinnati, OH
  - Toledo Public Library, Toledo, OH
  - Toledo Municipal Courthouse, Toledo, OH
  - Harry S. Truman Building, Washington, DC
- NASA John H. Glenn Research Center, Cleveland, OH
  - Security Enhancements
  - Warehouse 35 I East Addition
  - Warehouse 35 I West Addition
  - Intrusion & Institutional Plumbing Repairs
- Parmadale Juvenile Center, Parma, OH
- Parma Library, Cuyahoga County Public Library System, Parma, OH
- Ricerca Bioscience Campus Upgrades, Concord, OH
- Russell Twp. Fire Station, Russell Township, OH
- Shaker Hts. Fire Station No. 1, Shaker Heights, OH
- Westlake Recreational Center, Westlake, OH
- West Virginia State Office Bldg., Clarksburg, WV

## Mike Adams, LEED AP BD+C

Vice President | **&estimate** (a PCS Company)

Role in the WV Capitol Project: **Principal Cost Estimator**



### Education:

Westside Institute of Technology  
Lake Health Systems

### Registrations:

LEED Accredited Professional  
Certified Journeyman  
Bloodborne Pathogens  
Fire, Safety & Emergency Procedures  
Hazard Communications  
Intro to Electrical Safety - OSHA 29  
CFR1929  
Personal Protective Equipment

### Memberships:

American Society of Heating,  
Refrigerating and Air Cond.  
Engineers, Inc. (ASHRAE)  
Construction Specifications Institute  
(CSI), Past President  
Association of the Advancement  
Cost Engineers International  
(AACE International)

### Speaking Engagement Passion:

Building Automation

Mike leveraged his hands-on maintenance and repair experience with plant operation systems including HVAC, electrical, plumbing and technology systems, gained from 11 years as a Facility-Services Technician with Lake Health Systems, to make a career leap into the world of cost estimating. He joined PCScompanies in 1997 as an estimator. Mike is a Certified Environmental Journeyman and Certified Refrigeration and Air Conditioning Technician and possesses additional certifications dealing with design, programming, graphics and repair of energy management systems. His invaluable experience and knowledge combined with his willingness to mentor make him an asset on all **&estimate** endeavors. Today Mike is our Lead Estimator and is responsible for the oversight of all mechanical, electrical and technology system estimates. Mike has estimated over \$10 Billion construction projects worldwide and maintains security clearances through the Department of Defense.

### Interesting Fact:

Mike prefers to work on multiple projects simultaneously as he believes many projects keep him sharp.

### Relevant Project Experience:

- Air Force Bases:
  - Lackland AFB, San Antonio TX
  - Little Rock AFB, Jacksonville, AR
  - NAS Pensacola, FL
  - Randolph AFB, Universal City, TX
  - Vance AFB, Enid, OK
  - Wright Patterson AFB, Dayton, OH
- Schofield Barracks Army Bases, Oahu, HI
- Allen Correctional Institution, Lima, OH
- Architect of the Capitol, Washington, DC:
  - Library of Congress
  - John Adams Building
  - Thomas Jefferson Building
  - James Madison Memorial Building
  - Capitol Power Plant
- Arizona Army National Guard, AZ
- Avon Lake Safety Center, Avon Lake, OH
- Bay Village City Hall, Bay Village, OH
- Bedford Fire Station, Bedford, OH
- Bedford New Municipal Complex, Bedford, OH
- Cuyahoga County Admin. Headquarters, Cleveland, OH
- Cuyahoga County Port Authority, Cleveland, OH
- Federal Reserve Bank, Cleveland, OH:
  - Entry Steps Replacement
  - Water Heater Tank Replacement
  - East 6th Street Entrance Repair/Replacement
  - Tele-Presence Room
  - Learning Center Restroom
  - Cash Department Renovation
  - Lobby Security/Secure Screening Vesibule
  - Perimeter Security
- 6th Floor Tenant Fit-out
- Protection Department Renovations
- Conference Center Space Planning
- Conference Center Space Planning; 9M and 10th Floors
- SDS Department Space Planning Concept
- Cash Portal Renovations
- SCS Modernization Project
- Law Enforcement Unit
- Paying and Receiving Area
- Hydraulic Barriers Upgrade
- Research Department Renovations
- Multi-Year Plan
- General Services Administration (GSA):
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  - Carl B. Stokes Fed. Courthouse, Cleveland, OH
  - J.P. Kinneary U.S. Courthouse, Columbus, OH
  - J.W. Peck Federal Building, Cincinnati, OH
  - Howard Metzenbaum Federal Bldg., Columbus, OH
  - John W. Bricker Federal Bldg., Columbus, OH
  - Potter Stewart Courthouse, Cincinnati, OH
  - Harry S. Truman Building, Washington, DC
- GCRTA, Cleveland, OH
- IRS (Internal Revenue Service), Brooklyn, NY
- Medina County Jail, Medina, OH
- NASA John Glenn Research Center, Cleveland, OH
  - Security Enhancements
  - Warehouse 35 I East Addition
  - Warehouse 35 I West Addition
  - Intrusion & Institutional Plumbing Repairs
- Parmadale Juvenile Center, Parma, OH
- Russell Township Fire Sta., Russell Township, OH
- West Virginia State Office Building, Clarksburg, WV

# Moment Engineers, Inc. Firm Overview

Role in the WV Capitol Project: Structural Engineering



**Firm Name/Location:** Moment Engineers, Inc.  
179 Summers Street  
Charleston, WV

**Firm Structure:** Corporation

**Years In Business:** 12

**Principal:** Douglas Richardson, PE, LEED AP

## Firm Philosophy

Moment Engineers, Inc. is a professional consulting firm specializing in structural engineering, serving the architectural and building construction communities throughout West Virginia.

During his 30 years of experience, Mr. Richardson has had sole responsibility for the structural engineering design of more than 7 million square feet of built space, with construction costs in excess of a half billion dollars. His experience, ranging from small to very large multi-phase projects, is invaluable in providing the technical expertise and creative flexibility to deliver results in a prompt and reliable manner.

**Building sectors served:** WV higher education, WV state government, medical facilities, and commercial office buildings

**Firm Capabilities:** Design, forensics, and structural analysis for steel, concrete, masonry, and wood structures, for a variety of building types; construction administration services

## Selected WV Projects

- WVU Parkersburg Child Development Center (with PWWG)
- WVU Parkersburg Applied Technology Center (with PWWG)
- WVU Tech Engineering Lab Building Foundation Assessment
- Marshall University Stadium Concourse Expansion
- Kappa Alpha Fraternity House, WVU
- West Liberty University Health Sciences Bldg (with PWWG)
- Mountaineer Challenge Academy
- Robert C. Byrd Regional Training Institute
- Advantage Valley Advance Technology Center
- WV State University Ferrell Hall Structural Assessment/Repair
- WV State University Jones Hall Structural Assessment/Repair
- Alderson Federal Prison Dormitory
- Judge Donald F. Black Courthouse Annex
- Pratt & Whitney Test Cell
- WV Hospital Association Office Building
- Camp Dawson - Regional Training Institute
- Glen Jean - AFRC
- Camp Dawson - AFRC
- Greenbrier Resort Golf Clubhouse Renovation



West Liberty University Campbell Hall Health Sciences Building (with PWWG)

## Douglas Richardson, P.E., LEED AP

Principal | Moment Engineers, Inc.

Role in the WV Capitol Project: Principal Structural Engineer



### Relevant Experience — Renovations and New Construction

- West Liberty University Campbell Hall Health Sciences Bldg
- WVU Parkersburg Child Development Center
- WVU Parkersburg Applied Technology Center
- WVU Tech Engineering Lab Building Fnds
- Marshall University Stadium Team Store
- Mountaineer Challenge Academy
- Robert C. Byrd Regional Training Institute
- Advantage Valley Advance Technology Center
- WV St. University Ferrell Hall Structural Assessment/Repair
- WV St. University Jones Hall Structural Assessment/Repair
- Alderson Federal Prison Dormitory
- Judge Donald F. Black Courthouse Annex
- Pratt & Whitney Test Cell
- WV Hospital Association Office Building
- Camp Dawson - Regional Training Institute
- Glen Jean - AFRC
- Camp Dawson - AFRC
- Greenbrier Resort Golf Clubhouse Renovation

### Education

North Carolina State University, Masters of Science in Civil Engineering, Minor in Structures and Construction, 1989

West Virginia University, Bachelor of Science in Civil Engineering, 1987

Registration: PE in West Virginia [REDACTED]

### Professional Associations

LEED Accredited Professional

American Society of Civil Engineers

American Institute of Architects, Professional Affiliate

Structural Engineering Institute



# 2

## APPROACH / METHODOLOGY FOR LIFE SAFETY AND FIRE PROTECTION SYSTEMS

# Approach / Methodology

Perfido Weiskopf Wagstaff + Goettel



Historic buildings, such as the West Virginia Capitol building, represent a significant part of our cultural heritage as they provide insight into the building techniques, artistry and even the way of life in a particular period during the history of the region. It is our duty to take care of our historical buildings and works of art so that our children and our children's children will also be able to appreciate them.

The General Services Division of West Virginia recognizes this, and is being proactive to ensure that the West Virginia Capitol building continues to be a functioning piece of West Virginia history through the implementation of fire protection and sprinkler project outlined in the EOI.

There are, of course, many facets to the task outlined in the EOI, with the highest priority being given to the life safety to the building occupants and visitors, and the protection against the loss and damage caused by fire. The project presents unique challenges, as not only is the building a historic structure, but it is an active, functioning building that will need to remain operational during the renovation.

The regulations for new buildings do not readily apply to this type project, but the objectives are the same – protection of historic structures and occupants from fire and security vulnerabilities while preserving the elements, spaces and features that make these structures architecturally significant. This in no way implies a lowering of safety standards but rather achieving a comparable standard by an alternative approach more suited to the needs of the building. In such cases a logical and systematic fire safety approach is needed to reveal alternative methods of achieving adequate, appropriate, and cost-effective standards of fire safety.

To accomplish this we propose using a risk based approach utilizing nationally and internationally recognized approaches, practices, methodologies and philosophies promulgated by organizations such as the National Fire Protection Association (NFPA), the International Code Council (ICC) and the Society for Fire Protection Engineers (SFPE). This approach starts with a fire risk assessment and ends with the implementation of strategies to mitigate the identified risk. At its simplest a fire risk assessment demands that the following be taken into consideration:

- Establish the context of the issue (e.g., protection of contents, safe egress, security, etc.)
- Identify the risks (e.g., what are the ignition sources or emergency situations)
- Assess/evaluate the risks (e.g., impact from the spread of fire and smoke).
- Address the risks (e.g., establish mitigation strategies)

## PHASE I

### A. Kick Off Meeting

We recommend initiating the project through a kick off meeting with key representatives from the State in which the project team would be briefed on the overall project. This meeting is intended to accomplish the following:

1. Allow the design team to gain an overall understanding of the project.
2. The designated representatives of the State would have the opportunity to clearly identify and discuss the goals and objectives associated with the project.
3. Identification of the key stakeholders. This includes (but is not limited to) facilities personnel, fire department officials, building code officials, insurance providers, security professionals, agency officials operating in the facility.
4. Scheduling of a meeting of all key stakeholders to ensure proper input from all identified stakeholders during the assessment phase.
5. Initiate a discussion of the project timeline for consideration in development of a project schedule for each Phase, including a discussion regarding the types of deliverables and timing for deliverables.
6. Administrative tasks for access to the facility and policies and procedures would be reviewed with the design team.

### B. Key Stakeholder Meeting

If the project owner and design team determine that a key stakeholder meeting should be held then the meeting will be scheduled so that all may attend to discuss the project goals and objectives. The purpose of the key stakeholder meeting is to consider the overall project goals, objectives, and performance requirements at a high level and to brief key stakeholders on the overall methodology and approach for the assessment. Certain significant deficiencies may be discussed within the meeting.

### C. Initial Assessment

#### Review of Facility Documentation

Prior to initial survey the design team will review:

1. Available documents for the building, including drawings, reports, product data, and other documents associated with the project. This may include as built drawings, annual inspections, deficiency reports, and other information.

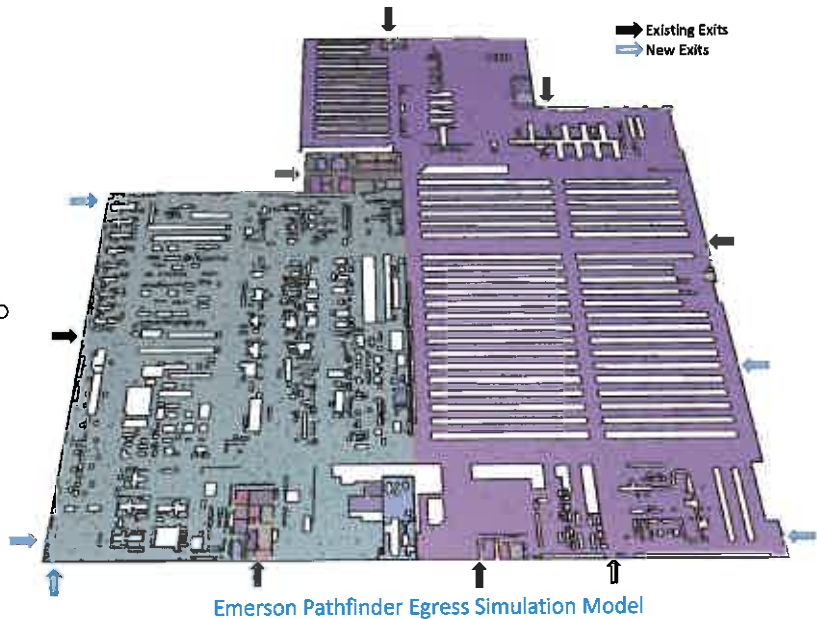
# Approach / Methodology

Perfido Weiskopf Wagstaff + Goettel



## Sample Egress Analysis Diagram

- Procedures from SFPE Handbook
- Tables, calculations, and software (PathFinder)
- Quantify evacuation time
- Considered safe upon reaching exit
- Added Exit Doors per discussions to improve egress



2. Available Information on the security, fire and life safety procedures or protocols currently in place.

Through this review the team will be able to properly focus the facility survey and inspection on key items of concern. The time necessary for this review and the overall scope of the review will be dependent on the identified objectives and deficiencies.

### Facility Survey

The time necessary for the facility survey and the overall scope of the review will be dependent on the identified objectives and deficiencies. A holistic approach would include survey of the following aspects of the facility:

1. The team will enter each space to understand the use of the facility throughout.
2. The team will interview as necessary building personnel to understand security, fire and life safety procedures or protocols currently in place.
3. The team will review the existing construction of the facility so that the construction type can be identified. Combustible and non-combustible construction would be identified.
4. Fire rated construction will be identified and its current condition will be evaluated as needed to meet the project objectives. Opening and penetration protection would be documented. Existing condition of fireproofing would be noted.
5. Interior finishes will be documented as necessary during the survey.
6. The facility site layout will be surveyed. Fire department access for fire apparatus will be reviewed and documented. Fire hydrant locations will be documented. Fire department connections (FDC) will be identified. Locations of existing key boxes (Knox boxes) will be documented.
7. Overall existing fire department access to the fire pump, fire command center, elevators, and stairs will be documented.
8. The means of egress will be field surveyed. This will include documenting existing conditions which affect code compliance. Examples include door locking arrangements, condition of pathways and stairs, travel distances, and so on.
9. Fire alarm systems will be surveyed. The existing location of notification appliances, initiating devices, and control units will be documented. Circuit configuration and survivability will be reviewed in the field. The overall system condition will be documented.
10. Fire suppression systems will be surveyed. The location, coverage, type, and condition of each system will be identified.

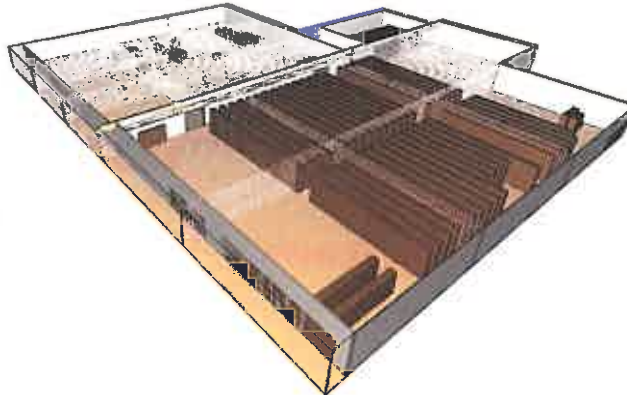
# Approach / Methodology

Perfido Weiskopf Wagstaff + Goettel



## Sample Fire and Smoke Modeling Diagram

- Computational Fluid Dynamics Model prepared by National Institute of Standards and Technology (NIST)
- Fire Dynamics Simulator (FDS)
- Pyrosim to build geometry
- Validated and verified against full scale fire testing



Emerson Fire Model.

11. The fire protection water supply will be evaluated. Hydrant flow tests will be conducted as necessary to document water supply conditions. Fire pump testing will be conducted as needed.

### D. Facility Assessment / Analysis

Once the survey is completed the design team will compile this information and conduct the analysis. The analysis will include reviewing the documented existing conditions against code requirements and stakeholder objectives. The objective of the assessment is to clearly identify existing conditions, code deficiencies, performance deficiencies, and formulate strategies for compliance (either direct or through alternate means and methods).

The assessment will document the following existing conditions as necessary:

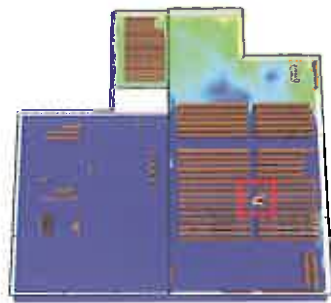
1. The facility use and occupancy will be identified since this will drive the applicable of code requirements.
2. The design team will indicate which current construction type (IBC) most closely matches the existing conditions.
3. The overall height and area of the facility will be evaluated as needed. The team will determine if the facility fits into the overall height and area limits of the occupancy and construction type.
4. The team will determine if any nearby facilities present exposure hazards.
5. Fire rated construction will be identified on floor plans. The fire ratings will be reviewed against code requirements for adequacy.
6. The means of egress will be fully evaluated. This will include arrangement of the means of egress, travel distances, common paths, dead ends, exit remoteness, exit discharge, accessibility, separation of exits, and door locking arrangements.
7. Existing fire detection and alarm systems will be evaluated for adequacy. This will include comparing existing conditions to code requirements and performance requirements. The location of initiating devices, notification appliances, and control units will be considered. Notification adequacy will be reviewed. The survivability of the existing system will be reviewed as necessary.
8. Existing fire suppression systems and standpipes will be assessed. This will include evaluation of the water supply through a hydrant flow test and hydraulic calculations as needed. The current coverage and adequacy of fire suppression systems and standpipes will be considered.
9. Fire department access will be carefully reviewed. The team will identify deficiencies with apparatus access, hydrant locations, FDC locations, key box locations, access to fire pumps, access to elevators, access to stairways, and access to the fire command center.
10. Emergency power, lighting and exit signage will be reviewed for compliance with applicable codes and standards and performance requirements.



PRELIMINARY SUBSET OF RESULTS  
VISIBILITY @13.1/13.8min

Fire Location

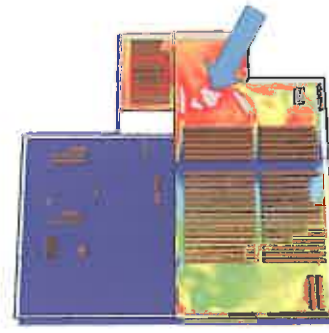
Pass Requirement:  
33 ft @13.1min Rack  
33 ft @13.8min Raw Matl



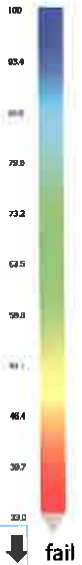
Fire Location 1 (Rack)



Fire Location 3 (Raw Matl)



Fire Location 5 (Rack)



- 1. Existing fire and/or life safety and security procedures and protocols will be assessed to determine how they may affect the effective egressing of the building.

Once existing conditions and deficiencies are clearly identified the team will develop recommendations for correction. It is important to note that deficiencies may not be limited to code violations. Deficiencies may include conditions which are not currently consistent with key stakeholder objectives or performance requirements.

Recommendations for correction will likely include compliance with prescriptive code requirements and the use of alternate means and methods to comply with the intent of the code. Where alternate means and methods are employed the team will be based upon nationally and internationally recognized approaches, practices, methodologies and philosophies promulgated by organizations such as the National Fire Protection Association (NFPA), the International Code Council (ICC) and the Society for Fire Protection Engineers (SFPE). These approaches, practices and methodologies provide a framework for performance-based design. Recommendations will be holistic in nature and will consider the full scope of fire and life safety for the facility.

A complete draft report will be prepared which documents existing conditions and identifies deficiencies.

### E. Facility Assessment Review Meeting and Final Report

Once the facility assessment is complete, the design team will meet with the key stakeholders to review the results. In this meeting the team will review detailed findings, existing conditions, and deficiencies. The team will collect feedback from the key stakeholders to incorporate into a final report. The final report may include documents, drawings, and product data.

## PHASE II

### Design and Construction

Phase II includes development of construction documents, bidding, and construction administration. The general approach is outlined here; however, the final approach will be dependent on which aspects of performance-based design are incorporated (i.e. alternate means and methods).

### Alternate Means and Methods

Where a performance-based alternate approach is used (in Phase II) the team will work with key stakeholders to identify specific requirements for the identified correction. The team will identify clear performance requirements for the system or component being corrected. A set of candidate designs will be proposed to correct the deficiency. Fire scenarios will be developed to be representative of reasonable worst-case conditions. The team will conduct analysis which may include simulations of fire scenarios using various candidate designs. The performance of each candidate design will be reviewed and documented. After the results are reviewed with key stakeholders the final design will be selected for translation into construction documents.

### Construction Documents

Construction documents will be developed according to industry and client standards. The construction documents will include drawings and specifications which will go out to bidders. Supporting information such as reports, calculations, design analysis, and product data will be provided to the State as needed.

Construction documents will proceed through a standard development process including schematic design, design development, and construction documents, in accordance with the standard AIA Agreement used by the State of West Virginia.

### Bidding and Contract Administration

The design team will provide bidding assistance and contract administration through the completion of the project in accordance with the standard AIA Agreement used by the State of West Virginia.

# 3

## PROJECT EXAMPLES

## Clifford Davis Federal Courthouse

Memphis, TN

### Professional Services

2008-2011  
(Design/CA)

### Construction

2010-2011

### Firm Responsibility

Fire Protection  
Engineer  
Life Safety Consultant

### Client

General Services  
Administration (GSA)



### Key Project Elements

- Fire Sprinkler Design
- Fire Pump Design
- Life Safety Design / Consulting
- Fire Alarm Systems Design
- Mass Notification Systems Design

This project included the replacement of a complex fire alarm emergency voice evacuation system for this high rise federal courthouse. The Clifford Davis facility houses the IRS, US Marshalls, Homeland Security, GSA, Federal Courts, Army Corps of Engineers and other federal agencies. The building was constructed in 1963. It has approximately 494,000 square feet of floor area (gross). The facility contains various occupancies including Assembly (A-3), Business (B), Institutional (holding cells), and Storage (S-1).

The facility is protected throughout with automatic fire sprinklers. It has a Class II standpipe for firefighting. The water supply pressure is boosted with an electric fire pump.

For this project the existing fire alarm system was completely replaced with a new emergency voice evacuation system. The new fire alarm system includes numerous fire alarm control units networked together throughout the facility. The system included complex interfaces to various building systems including stair pressurization, hoistway pressurization, fire pump, elevator recall, HVAC systems and various fire suppression systems. This federal courthouse has significant security and access control which is interfaced to the fire alarm systems. This interface required careful coordination with each agency to ensure that its security requirements were met with the new system. The design team had to carefully consider how to replace this system in a fully operating federal courthouse. This required careful phasing to ensure that a fire alarm system was operational throughout the replacement project.

FireLogix Engineering filled the role of Fire Protection Engineer (FPE) for this project. As the FPE of record the firm was responsible for fire protection and life safety on the project. In this role they designed the fire alarm systems. FireLogix was responsible for code consulting on building code and life safety code aspects of the project. As part of this role they prepared code summary reports and life safety plans to ensure that the building construction and layout complied with applicable codes and standards. The firm's role also included quality control and final approval of fire protection and life safety. In this role they conducted field visits and final inspections to certify that the fire protection installation was in accordance with his design and applicable codes and standards.

## Emerson Power Transmission

Florence, KY

### Professional Services

2013

### Construction

N/A

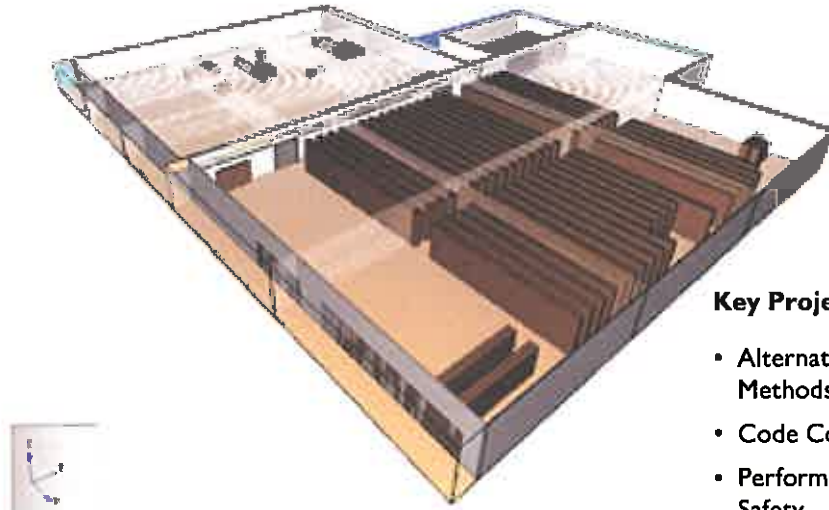
### Firm Responsibility

Fire Protection  
Engineer

\*Preview Group was  
Code Consultant

### Client

Emerson Power



### Key Project Elements

- Alternate Means and Methods
- Code Consulting
- Performance Based Fire Safety
- Fire Modeling (CFD)
- Timed Egress Analysis

### Project completed with The Code Preview Group

Emerson Power Transmission was reclassified from an S-2 occupancy to an S-1 occupancy. This reduced the allowable travel distance (to an Exit) from 400 feet to 250 feet. The existing facility has travel distances more than 250 feet. This required Emerson to act to correct this code deficiency. The building code provided three alternatives: add smoke and heat vents to the roof, construct fire rated exit passageways, or conduct an alternative means analysis of the facility to show that the intent of the code is met.

Emerson was concerned that adding smoke and heat vents would negatively impact existing ESFR fire sprinkler systems. Constructing rated exit passageways would disrupt the manufacturing flow. Emerson teamed with Preview Group and FireLogix Engineering to develop alternative means and methods for compliance.

The team used the Society of Fire Protection Engineers framework for performance-based design as the methodology for the project. For this analysis FireLogix postulated that the overall height of the building would allow smoke to collect overhead while keeping the walking levels clear for sufficient time to allow evacuation.

The team employed fire modeling coupled with timed egress analysis to evaluate various scenarios. FireLogix used NIST Fire Dynamics Simulator (FDS) with PyroSim software to model fire and smoke. The firm analyzed potential combustibles and developed candidate fire scenarios for complex storage and manufacturing arrangements. This included analysis of key fire properties such as heat of combustion, smoke yield, and heat release rates. The firm used Thunderhead Engineering's Pathfinder software to conduct timed egress analysis. This involved developing occupant loads through the facility, and carefully modeling egress components in the Pathfinder software. With this information FireLogix applied expertise in egress and human behavior in fire to develop a complete analysis of the evacuation time for the facility. Using the results of the timed egress analysis along with the fire modeling FireLogix was able to successfully show that travel distances of up to 400 feet were acceptable since smoke and heat would not descend to the walking path during the time required for safe egress.

## Air Force Museum – Hangar 4

Wright Patterson Air Force Base, OH

### Professional Services

2014-2015

### Construction

2015

### Firm Responsibility

Fire Protection Engineer

Life Safety Consultant

### Client

US Army Corps of  
Engineers



### Key Project Elements

- Fire Sprinkler Design
- Fire Pump Design
- Life Safety Design / Consulting
- Fire Alarm Systems Design
- Mass Notification Systems Design

This project included the design and build of a new museum hangar at Wright Patterson Air Force Base in Ohio. The National Museum of the US Air force is the largest aviation museum in the world. The facility houses over 70 priceless aircraft with historical significance. Aircraft include presidential, research & development, spacecraft, and war fighters. The museum is approximately 230,000 square feet. The facility includes large and small display areas and classrooms. Under IBC the facility is classified as Assembly (A-3). Under NFPA 101 the facility is classified as New Assembly.

The facility is protected throughout with automatic fire sprinklers. The local water supply was not sufficient to support the sprinkler system demands. A new fire pump was designed to boost the local water pressure to support the sprinkler system. The fire sprinklers were installed to heights approaching 80 feet above the floor. This required special consideration, implementation, and use of draft curtains. The facility is also equipped with a wet standpipe system throughout.

The facility is equipped with fire alarm and mass notification systems. These are voice evacuation type systems used to warn occupants of fire or other impending danger. The systems are addressable intelligent systems with pull stations, strobes, speakers, smoke detectors, microphone stations and various other devices and appliances. Very early warning smoke detection (VESDA) was installed throughout the display floor to provide early smoke detection.

FireLogix Engineering filled the role of Fire Protection Engineer (FPE) for this project. As the FPE of record the firm was responsible for fire protection and life safety on the project. In this role they designed the fire sprinkler systems, fire alarm systems, and the fire pump. In addition FireLogix was responsible for code consulting on building code and the life safety code for the project. As part of this role they prepared code summary reports and life safety plans to ensure that the building construction and layout complied with applicable codes and standards. The firm's role also included quality control and final approval of fire protection and life safety. In this role they conducted field visits and final inspections to certify that the fire protection installation was in accordance with his design and applicable codes and standards.

# Tennessee Valley Authority Knoxville Complex

Knoxville, TN

## Professional Services

2017-2018

## Construction

2018 - ongoing

## Firm Responsibility

Fire Protection Engineer

Life Safety Consultant

## Client

Tennessee Valley  
Authority



## Key Project Elements

- Code Consulting
- Fire Sprinkler Design
- Fire Pump Design
- Life Safety Design / Consulting
- Fire Alarm Systems Design
- Smoke Control Systems

This project included substantial renovations to Tennessee Valley Authority's (TVA) high rise facility in Knoxville. TVA is the largest power company in the United States. The facility includes 2 large high-rise buildings joined at the base by 3 common levels. Renovations are phased throughout. This massive renovation included 5 construction document packages. Work is carefully phased to keep the facilities occupied and functional through construction. Work includes major architectural reconfiguration, replacement of fire pumps, replacement of major mechanical systems, and correction of existing code deficiencies.

The facility is protected throughout with automatic fire sprinklers. Fire sprinklers were reworked and extended to various areas. The complex has a Class II standpipe for firefighting. New standpipes were extended to existing stairs not properly equipped. The existing fire pump system was nearing the end of its life. A new fire pump system was designed.

The fire alarm system was reworked and extended to various areas. The system includes multiple control units networked together throughout the facility. The system has complex interfaces to building systems including stair pressurization, hoistway pressurization, fire pump, elevator recall, HVAC systems and fire suppression systems. This facility has significant security which is interfaced to the fire alarm systems. This interface required careful coordination with each agency to ensure that its security requirements were met.

FireLogix Engineering filled the role of Fire Protection Engineer (FPE) for this project. As the FPE of record the firm was responsible for fire protection and life safety on the project. In this role they designed smoke control systems, fire sprinkler systems, standpipe systems, fire alarm systems, fire pump systems and special hazard systems. FireLogix was responsible for code consulting on building code and life safety code aspects of the project. As part of this role they prepared code summary reports and life safety plans to ensure that the building construction and layout complied with applicable codes and standards. The firm's role also included quality control and final approval of fire protection and life safety. In this role they conducted field visits and final inspections to certify that the fire protection installation was in accordance with his design and applicable codes and standards.

## University of Mississippi Medical Center School of Medicine

Jackson, MS

### Professional Services

2012-2014

### Construction

2015 - 2017

### Firm Responsibility

Fire Protection Engineer

Life Safety Consultant

### Client

University of  
Mississippi



### Key Project Elements

- Code Consulting
- Life Safety Design / Consulting
- Atrium Code Consulting
- Performance Based Fire Safety
- Fire Modeling (CFD)
- Timed Egress Analysis
- Fire Sprinkler Design
- Fire Alarm Systems Design
- Site Fire Protection and Access

This project included the design of a 5 story, 151,000 square foot state of the art school of medicine for the University of Mississippi. The facility construction cost was \$76M. The facility was designed to consolidate the school of medicine which had become disjointed over decades of growth. The facility includes offices spaces, student lounge, café's, classrooms, laboratories, and assembly spaces. The facility is classified as Assembly (A-3) and Business (B) in a mixed use / non-separated arrangement. The facility was designed as Type IB Construction under the International Building Code.

The facility has a 5-story atrium at the main lobby. FireLogix Engineering provided performance-based design and consulting for the atrium fire and life safety features. Atrium smoke exhaust systems were designed using computational fluid dynamics (CFD) fire modeling in concert with timed egress analysis. FireLogix used NIST Fire Dynamics Simulator (FDS) with PyroSim software to model fire and smoke within the atrium. The firm carefully analyzed potential combustibles and developed candidate fire scenarios. This included analysis of key fire properties such as heat of combustion, smoke yield, and heat release rates. This culminated in the development of a complete fire model which considered the use of detection, suppression, and smoke exhaust within the space. The firm used Thunderhead Engineering's Pathfinder software to conduct a timed egress analysis. This involved developing occupant loads through the facility, and carefully modeling egress components in the Pathfinder software. With this information FireLogix applied expertise in egress and human behavior in fire to develop a complete analysis of the evacuation time for the facility. Using the results of the timed egress analysis along with the fire modeling enabled FireLogix to prescribe smoke detection, fire suppression, and smoke exhaust systems for the large, complex atrium space.

The facility is protected throughout with automatic fire sprinklers. The local water supply was not sufficient to support the sprinkler system demands. A new fire pump was designed to boost the local water pressure to support the sprinkler system. The facility is also equipped with a wet standpipe system throughout.

The facility is equipped with fire alarm and detection systems. These are voice evacuation type systems used to warn occupants of fire or other impending danger. The systems are addressable intelligent systems with pull stations, strobes, speakers, smoke detectors, microphone stations and various other devices and appliances.



## Project Examples — Historic Renovations Completed in the Past Three Years



**Project: Cincinnati Union Terminal, Cincinnati, OH**  
**Professional Services: 2016-Present**

**Description:** Cincinnati Union Terminal was a significant development in the history of Cincinnati transportation. One of the last great train stations built, Union Terminal is a Cincinnati icon and one of the most widely regarded examples of the Art Deco style. Since its opening in 1933, Union Terminal has had a long and storied history, from welcoming soldiers home from World War II to becoming the home of three museums, an OMNIMAX® Theater and the Cincinnati History Library and Archives. In 2016, after more

than a year of planning, intensive design work and thorough probing and analysis by preservation architects, the real construction work on Union Terminal began. The restoration of Union Terminal requires a keen understanding of science, technology, engineering, mathematics and history as modern construction and engineering and involves cleaning, rebuilding and brightening the landmark space with the goal of bringing it back to its original form.



**Project: War Memorial Veterans Building / San Francisco, CA**  
**Professional Services: 2016-Present**

**Description.** Designed by Arthur Brown Jr and built 1927, the War Memorial Veterans Building was is one of the last Beaux-Arts style structures erected in the USA, deeply rooted in SF history. It is home to the American Legion War Memorial Commission and houses the 900-seat Herbst Theater. In 2011, it underwent a renovation and seismic upgrade. Preview assisted the architect and design team to determine how each of the applicable codes and standards applied to historic buildings.



**Project: Traction Building – Cincinnati, OH**  
**Professional Services: 2018-Present**

**Description:** Designed by famed Chicago architect Daniel Burnham and completed in 1903, the Traction Building was recently added to the National Register of Historic Places. The plans call for converting the 15-story building into a hotel featuring approximately 5,000 square feet of meeting space, a signature restaurant, a rooftop bar and a fitness center. Preview is assisting the architect understand and comply with the Ohio Building Code for existing building, including fire and life safety assessments.



## Additional Project Examples — Iconic Buildings



**Project:** 84.51° / Kroger - Cincinnati, OH

**Description:** Constructed as a joint venture between the Cincinnati Center City Development Corp. (known as 3CDC) and opened in 2015, the 84.51° (formerly dunnhumby USA) building is a 9 story mixed-use high rise building located in the Central Business District of Cincinnati, OH. As the US headquarters of the firm 84.51°, the objective of the owner was to create an invigorating work atmosphere through the use of large floor openings and abundant natural light. In addition to office space, the building included both below- and above-grade parking garages, and street-level retail/commercial space. Preview's services on the project included working with the architect and owners in all phases of the project to address the regulatory issues associated with the unique design features (fire, life safety, accessibility and MEP).



**Project:** Queen City Square / Great American Tower - Cincinnati, OH

**Description:** The Great American Tower is Cincinnati's tallest building and the first within the city with Gold precertification under the LEED-Core and Shell (LEED-CS) program. The 41 story, 800,000 sf, state-of-the-art building occupies a premier location on the Cincinnati skyline, and its construction marks the finalization of the second phase of the Queen City Square project. Preview assisted the architect with the fit-out for the majority of the tenant spaces involving mechanical systems and life-safety features of the building, requiring appeals for final occupancy because of security concerns conflicting with code and life safety requirements.



**Project:** Seven at Broadway - Cincinnati, OH

**Description:** Opened in 2015, the Seven at Broadway complex is a 17-story mixed occupancy high-rise building. Constructed as an over-build above an existing 6-story parking garage, the residents are afforded expansive views of Mt. Adams and the Ohio River Valley. Preview's services on the project included working with the design team and construction management team on fire, life safety and MEP reviews in all project phases and extensive AHJ negotiations because of significant changes to regulations for high-rise buildings.



## Additional Project Examples — Iconic Buildings



**Project:** Summit Country Day School - Cincinnati, OH

**Description:** The Summit Country Day School is a private, Catholic, independent school located in Cincinnati, Ohio, educating students from preschool through high school in its Montessori, Primary, Middle School and Upper School divisions. Founded in 1890 by the Sisters of Notre Dame de Namur, the school is located on a 24 acre campus in the Hyde Park neighborhood. The school offers academics, athletics, visual and performing arts, community service, and religious studies. During a major renovation to add classroom space, Preview assisted the design team in the development of construction documents and plan review.



**Project:** University of Cincinnati Baldwin/Rhodes Hall - Cincinnati, Ohio  
**Client:** University of Cincinnati

**Description:** The Departments of Chemical, Mechanical, and Electrical Engineering in UC's College of Engineering join theory and practice through knowledge and experience. The Baldwin/Rhodes building is a primary part of the college's educational laboratory complex. Preview prepared a life safety evaluation of the existing facility in anticipation of improvements planned for the oldest part of the building and also outlined elements of the structure that did not meet current codes and standards. Preview continues to work with the University on projects throughout the facility.



**Project:** Gallagher Student Center, Xavier University - Cincinnati, Ohio  
**Client:** Xavier University

**Description:** The 75,000 sf Charles P. Gallagher Student Center is at the crossroads of the Xavier University Campus. Centered around its four-story atrium, it is a gathering place for a wide range of student activities, organizations and events. Key components include: a 400 seat performing arts center/theater; student recreation/entertainment space; information/welcome center; student activities center; meeting rooms and lounge spaces; retail services (including food outlets, bookstore, copy/graphics service and banking services); and administrative offices. Preview's long-standing work at Xavier has included fire protection and life safety assessments, design reviews and accessibility surveys.



## Additional Project Experience

- Museums/Performing Arts**
- National Underground Railroad Freedom Center - Cincinnati, OH
  - University of Texas Blanton Museum of Art - Austin, TX
  - Coyote Point Museum - San Mateo, CA
  - Computer History Museum - Mountain View, CA
  - City College of San Francisco Performing Arts Center - San Francisco, CA
  - Center for the Arts - Jackson, WY
  - Museum Center – Cincinnati, OH
  - Ensemble Theater – Cincinnati, OH
  - Shakespeare Theater – Cincinnati, OH
- Stadiums/Arenas**
- University of Cincinnati / Shoemaker Center - Cincinnati, OH
  - Nutter Center/Wright State University - Dayton, OH
  - Cleveland Municipal Stadium - Cleveland, OH
  - Riverbend Music Center - Cincinnati, OH
  - University of Cincinnati - Nippert Stadium Pavillion Addition – Cincinnati, OH
  - US Bank Arena – Cincinnati, OH
- Historical**
- The Textile Museum - Washington DC
  - Ridges Museum - Ohio University;
  - Ohio Statehouse - Columbus, OH
- ADA/Accessibility Projects**
- Oconee County Courthouse - Oconee County, South Carolina
  - Atlanta Marriott Downtown – Atlanta, GA
  - Cincinnati Mills Mall - Cincinnati, OH
  - Potomac Mills Mall – Woodbridge, VA
  - Columbus Metropolitan Housing - Columbus, OH
  - The Christ Hospital - Cincinnati, OH
  - Drake Memorial Hospital - Cincinnati, OH
  - Mercy West Hospital – Green Township, OH
  - Cincinnati Children's Hospital Medical Center – Cincinnati, OH
  - Lofts at Deerfield Crossing - Deerfield Township, OH
  - Brinley Place – Fairborn, OH
  - Seven Hills Athletic Fields – Cincinnati, OH
- Office Buildings**
- Great American Tower at Queen City Square - Cincinnati, OH
  - 555 Mission Street - San Francisco, CA
  - 120 West Gay Street - Columbus, OH
  - Fidelity - Covington, KY
  - Ciena Headquarters - Linthicum, MD
  - dunnhumby USA – Cincinnati, OH
- Recreation**
- Kids First Sports Center - Cincinnati, OH
  - Equinox Fitness Center - Paramus, NJ
  - University of Cincinnati Indoor Sports Complex - Cincinnati, OH
  - University of Missouri – Columbia, MO



## Additional Project Experience

### Residential/Lodging

The 580 Building – Cincinnati, OH  
7<sup>th</sup> & Broadway – Cincinnati, OH  
Mercer Commons - Cincinnati, OH  
Liberty Hills - Yreka, CA  
Ft. Bragg Barracks - Ft. Bragg, NC  
55 Page Street - San Francisco, CA  
The Palisades at Mt. Adams - Cincinnati, OH  
Groton Lofts - Cincinnati, OH  
Latitude on the River - Miami, FL  
The Hayes - San Francisco, CA  
Bowling Green State University – McDonald Hall, Bowling Green, OH  
Miami University – Oxford, OH  
Symmes Hall  
Dodds Hall  
Dennison Hall  
Dorsey Hall  
University of Cincinnati – Cincinnati, OH  
Dabney Hall  
Morgen's Hall  
Shriner's Burn Institute  
Science and Engineering Research Building  
University of Missouri – Columbia, MO  
Thomas Jefferson Hall  
Cherry Hall  
Northern Kentucky University  
Lakeside Terrace, Highland Heights, KY

\*Projects where an accessibility review was a fundamental part of the project scope.

### Parking Garages

Washington Park Underground Garage - Cincinnati, OH  
Fountain Square Renovation - Cincinnati, OH

### Multi-Use Structures

Sharonville Convention Center - Sharonville, OH  
EpiCentre - Charlotte, NC  
Yountville Town Center - Yountville, CA  
Cincinnati Northern Kentucky International Airport/Terminal 4 - Hebron, KY  
dunnhumby USA – Cincinnati, OH

### Religious

St. Peter in Chains Cathedral - Cincinnati, OH  
Vineyard Church - Cincinnati, OH

### Manufacturing/Industrial

Robert Sinsky Winery - Napa Valley, CA  
P&G - Edwardsville Distribution Center – Edwardsville, IL  
P&G – West Bend Distribution Center – West Bend, IA  
DHL Packing Facility – Hebron, KY  
IAMS Research Facility – Dayton, OH

## Additional Project Experience



### Retail/Entertainment

Shops at Riverside - Hackensack, NJ  
Base Camp at Spruce Peak - Stowe, VT  
Macy's - New York City  
Bergen Town Center - Paramus, NJ  
Discover Mills - Gwinnett, GA  
Bloomingdales - Hackensack, NJ  
Kenwood Towne Centre - Cincinnati, OH  
Nordstrom - Various locations  
Franklin Mills - Philadelphia, PA  
Chicago Premium Outlet - Aurora, IL  
The Block at Orange - Orange, CA  
Atlantic Station - Atlanta, GA  
Potomac Mills - Woodbridge, VA  
Towson Town Center - Towson, MD  
Anne Arundel Mills - Hanover, MD

### Hospitality

Atlanta Marriott Downtown - Atlanta, GA  
Ahwahnee Hotel - Yosemite National Park, CA  
Fairfield Inn - Dayton, OH

### Healthcare

Peninsula Medical Clinic Tenant Improvements - Burlingame, California  
University of Cincinnati CARE/MSB/University Hospital - Cincinnati, OH  
Mercy Hospital West - Cincinnati, OH  
Mercy Hospital Anderson - Anderson Township, OH  
Clinton Memorial Hospital - Wilmington, OH  
The Christ Hospital Expansion - Cincinnati, OH  
The Cleveland Clinic - Weston, FL

### Publications

John Wiley and Sons  
*Building Codes Illustrated Series*; Steven R. Winkel, FAIA, PE; David S. Collins, FAIA; Steven P. Juroszek; Francis D. K. Ching  
Thomson West  
*Ohio Accessibility Guidelines*  
*OBBC Know Your Code*  
Editor - "Code News"

# CINCINNATI MUSIC HALL COMPREHENSIVE RENOVATION

Cincinnati, OH Perfido Weiskopf Wagstaff + Goettel



## Size

225,000 sf

## Construction Cost

\$100M

## PWWG Responsibility

Programming

Architectural Design

Contract Documents

Contract Administration

## Completed

2017

## Client

Cincinnati Center City Development Corp. (3CDC) / Steve Leeper, Pres. & CEO



This Cincinnati National Register landmark hadn't had a significant upgrade in 50+ years and needed extensive structural, functional, and aesthetic work inside and out to restore the building and upgrade it for 21st century use. The renovation affirms Music Hall as one of the world's greatest multi-function performance venues. PWWG was lead architect coordinating a team of national consultants with specialties in envelope restoration, structural work in historic buildings, MEP retrofits, acoustics, and others in a comprehensive rehabilitation and renovation.

## How This Project Relates to the WV Capitol Fire Protection Project

- Major accessibility, MEP, and Life Safety systems upgrades throughout are sympathetic to historic fabric



Renovated Springer Auditorium, the main stage of Music Hall, seats 2,200-2,500 patrons



Event spaces throughout Music Hall will receive architectural and systems upgrades including the Ballroom (left), and the Main Lobby (right).

- All upgrades preserved historic architectural character and conformed to SHPO and NPS standards
- Large project in scope and budget
- PWVG coordinated the work of a team of nationally recognized specialty consultants in engineering and preservation



During restoration



After

PWVG coordinated the work of artisans to restore elaborate stenciling from the 19th century at Corbett Tower.



During Construction



After

New South Lobby Stair and Escalator

# UNIONTRUST BUILDING INTERIOR RENOVATIONS

Pittsburgh, PA Perfido Weiskopf Wagstaff + Goettel



**Size:** 666,993 sf

**Construction Cost:** \$36M

## PWWG Responsibility

- Forensic Investigation
- Architectural Design
- Parking Garage Design
- Contract Documents
- Contract Administration
- LEED Documentation

## Completed

2016

## Client

The Davis Companies

## Awards

ULI Pittsburgh Placemaking Award — Excellence as a “Transformative Place”

AIA Pittsburgh, Preservation Award of Merit

“Building Design & Construction” Reconstruction Award



Design Award Winner



LEED Certified



The project involved total rehabilitation of a landmark Historic Register building in downtown Pittsburgh, with major interior renovations to bring the building into the 21st century by combining its historic features with operational and life safety needs of Class-A office buildings.

As Executive Architect, PWWG coordinated the work of all other engineering consultants retained by the Owner. Our services included work in all phases of the project from conceptual design through document and specification production, through construction administration.

## How This Project Relates to the WV Capitol Fire Protection Project

- Significant building code work to address life safety in a historic structure and to develop scenarios for multiple office tenant configurations
- PWWG responsible for core interior upgrades to serve retail and office tenants
- Created infrastructure for Class-A office space
- Major accessibility and systems upgrades throughout that are sympathetic to historic fabric
- All upgrades preserved historic architectural character and conformed to SHPO and NPS standards
- LEED Certified project

*PWWG designed a new 190 car garage in the building's 2 basement levels, with 10 ramps and 8 different elevation changes. The new vehicle entrances, altering the building's historic facade, were designed in close coordination with NPS and the SHPO.*







*PWWG designed the elegant curved glass entry off of the Atrium, typical at each floor of commercial space.*



*The redesigned Conference Room on the 11th floor features PWWG's new layout, lighting finishes, and AV systems.*



*Office and commercial spaces surround the dramatic 11-story central rotunda topped with a Tiffany stained glass dome.*

# PENNSYLVANIA CAPITOL BUILDING RESTORATION

Harrisburg, PA Perfido Weiskopf Wagstaff + Goettel / Graves / Noble Joint Venture

PERFIDO  
WEISKOPF  
WAGSTAFF+  
GOETTEL

**Size** N/A

**Construction Cost**  
\$ 25,000,000

**Firm Responsibility**  
Preservation Research  
Materials Testing/Analysis  
Design  
Contract Documents  
Contract Administration  
Completion Date 2005

**Awards**  
Keystone Assoc. Builders  
& Contractors, Award of  
Excellence, 2000  
Preservation Pennsylvania  
Historic Preservation  
Achievement, 1999

**Client**  
Pennsylvania Dept. of  
General Services



As a joint venture with Graves Architects and Noble Preservation Services, Perfido Weiskopf Wagstaff + Goettel facilitated the rehabilitation of the historic 1906 Main Capitol Building in Harrisburg for the Department of General Services. The project included all restoration, preservation, and conservation work needed to rehabilitate the roof, domes and cupolas, the masonry, the windows, and the exterior paving and steps.

One of the principal challenges of the project was restoring the building envelope consistent with sound preservation philosophy, while also introducing new elements to improve its integrity and allow it to withstand the next 50 to 75 years. Nowhere was this challenge more difficult than the roof. The glazed "Harrisburg Yellow" tiles covering the north and south domes had been installed over a steel-purlin system, without the use of a deck or membrane. The gutters at the base of the gabled roofs were promenade tile with conventional mortar joints. They leaked constantly.

The solution to the dome problem involved the installation of new, custom-made, multi-colored tile, carefully matched to the original design and installed over a new deck with a watertight membrane roof. The curvature of the domes was preserved so that their decorative copper elements could be reinstalled after repair.

The gutters were entirely redesigned, and consist of lead-coated copper drainage basins with separate roof drains for each basin. The structure of the gutters was rebuilt at a lower elevation so as to prevent water from coming into contact with the granite surfaces, and to keep it from backing up under the new gabled-roof areas.

The project was constructed in phases over the course of several seasons, and in concert with the other interior projects at the Capitol. The building was user-occupied throughout construction.



# WEST VIRGINIA STATE CAPITOL ROTUNDA RESTORATION

Charleston, WV Perfido Weiskopf Wagstaff + Goettel



**Size** Not Applicable

**Construction Cost**

\$ 1,000,000

**Firm Responsibility**

Preservation Research

Architectural Design

Contract Documents

Contract

Administration

**Completion Date**

1996

**Client**

State of West Virginia



The project involved restoration of interior surfaces of West Virginia's main capitol dome and rotunda walls, and analysis and remedial repairs to substrate conditions affecting the inner surfaces of the dome and walls. PWVWG also prepared conceptual scaffolding designs, establishing detailed criteria for the final design, and for engineering the scaffolding system.

Detailed data collection and research were required to determine the original colors and materials. Working with our preservation consultant, PWVWG conducted on-site investigations to collect paint, plaster, mortar, and sealant samples and to document field conditions. A review of the State's archives confirmed the clues we obtained in the field as to the original methods used to construct and paint the dome.

Remedial work also included removal of deteriorated exterior stone sealant joints, and replacement with lead-capped joints, as well as the relining of an interior gutter around the base of the inner plaster dome designed to shed water infiltration. The work included a detailed analysis of the hollow, clay-tile fireproofing and extensively cracked walls, and the design of appropriate remedial repair.



## Advanced Power/Thermal Research Lab Renovation

WRIGHT-PATTERSON AIR FORCE BASE, OHIO



Barge and JV partner emersion DESIGN provided design services on a design-build team with Messer Construction for a \$20 million, 53,378-SF renovation of Building 23 at Wright Patterson Air Force Base, originally constructed in 1934 as an aircraft hangar and aircraft component test facility. Structural and architectural design was intended to maintain the historical nature of the existing building while constructing a 3-story facility within the existing brick shell. The facility includes mechanical rooms, electrical rooms, communications rooms, rest rooms, and a passenger/service elevator that accommodates laboratory equipment. Partial building demolition, interior demolition, hazardous material abatement, and site work were included.

### AT/FP DESIGN

The superstructure is composed of a structural steel frame, and is designed to resist progressive collapse in accordance with AT/FP protection requirements. Several site modifications were needed to meet acceptable AT/FP requirements. The building is considered a Primary Gathering Facility and requires a standoff distance of 82 feet from uncontrolled parking and 33 feet from controlled parking. The single row of parking that was adjacent to the building was removed and a new curb provided to limit parking within the 33 feet offset. In addition, access to the parking area was designed to be limited with the use of bollards and access control gates.



In addition, an entire row of parking along the building off E Street was eliminated and five spaces south of the alley were striped as a no parking zone to meet AT/FP requirements. The existing alley south of the building had a swing gate placed off E Street and a row of removable bollards placed between the alley and the existing parking area outside the 33 foot AT/FP zone. The existing alley to the west had removable bollards placed near the entrance at 5th Street.



New concrete curb was designed along E Street and along the south side of the parking lot north of Building 23. An aisle width of 24' was provided in the parking lot. A reinforced concrete walk was designed along the north and east side of Building 23 with a width of 8', and a reinforced concrete walk from the northeast corner of Building 23 to 5th Street with a width of 4'. Parking lot striping for five existing spaces was removed to the southeast of the building within the AT/FP boundary. Parking lot striping for eight existing spaces was removed to the southwest of the building to be replaced with six ADA accessible parking spaces.

### LABORATORY SPACES

The building design has special acoustical needs due to the use of vibration sensitive equipment such as lasers and optical equipment. The laboratory spaces are heated and cooled by means of a variable air volume handling system with hot water reheat. Two process piping loops,

## Advanced Power/Thermal Research Lab Renovation (continued)

one 42°F and the other an 85°F loop, have been designed to support future and anticipated equipment within the laboratories. Systems supporting two ISO 6 (Class 1000) clean rooms and a dry room capable of maintaining 1% relative humidity at 68°F were also designed. The building required specialized plumbing systems to serve the laboratory spaces. A looped domestic tempered water system (110°F) and a looped tepid water system (85°F) were designed in addition to a 3 Megaohm reverse osmosis water system. Finally, a compressed air system was also provided throughout the building.

### **SUSTAINABILITY**

The project is designed to LEED Silver level, with sustainable design including brownfield redevelopment (asbestos abatement), alternative transportation, water-efficient landscaping (no irrigation), water use reduction to 40%, optimized energy, enhanced commissioning and refrigerant management, construction waste management, recycled and regional materials, certified wood use, increased ventilation, construction IAQ management plans, low-emitting materials, controllability of lighting systems, and thermal comfort design. The design-build was able to develop additional credits (at no cost to the government) to place the project on track to receive a LEED Gold rating.



I have worked with emersion DESIGN and Barge on multiple occasions since moving to the WP (Wright-Patterson) Area Office seven years ago and I have high regard for both firms, their staff, and for the work that we accomplished for projects that we have worked on together. The design teams I have worked with have proven to be professional, knowledgeable, effective, efficient, motivated, and highly customer oriented. Their efforts on designs, design-build, and design-bid-build projects often include innovative approaches, helpful solutions, and quick problem resolution with expert recommendations and advice when needed. I have also been involved in contracts where the Government has utilized their design services during construction and I have always received timely, concise, and effectual responses for requests for information, user change requests, requests for design changes, and other contract needs. In general – they provide a solid design with high customer satisfaction and I look forward to working with them again in the future.

**ROB LESKO, SENIOR CONSTRUCTION MANAGEMENT PROJECT ENGINEER,  
WPRO, USACE**

# Metro Nashville and Davidson County Courthouse

NASHVILLE, TENNESSEE



## KEY FEATURES

- Interior reconstruction and exterior restoration of 1937 courthouse
- Security upgrade to allow secure access for judges and public officials
- Public square plaza above new five-level parking garage for 1,440 cars
- Total cost, including plaza and parking garage, was \$75 million
- Related project was design for interim courts during construction

The historic Metro Nashville and Davidson County courthouse is the crown jewel of downtown Nashville. The center of Metro government, it rests on the public square overlooking the Cumberland River. Barge was chosen to lead the design team to restore the exterior and lobbies to their original splendor and to completely reconstruct the interior of the 1937 building, bringing it up-to-date on security, fire protection, ADA accessibility, ventilation, and energy management.

Barge's responsibilities included coordinating the temporary relocation of the building's inhabitants (judges, courts, mayor, staffs) into custom-designed space at MetroCenter, an office park three miles to the north.

The 270,400-SF, 11-story courthouse, originally designed during the 1930s by architects Frederick Hirons of New York and Emmons Woolwine of Nashville, received new interior finishes, MEP, security enhancements (including new secure elevators and stairways), life safety, office and administrative spaces. Lobby areas, courtrooms, and the central stairway were restored.

A challenge for the mechanical and electrical engineers was routing ventilation ductwork and controls throughout a building that was not originally centrally cooled. In most cases, this was accomplished without lowering the ceilings despite the low floor-to-floor heights. Mechanical design included all new air distribution systems, connection to district heating and cooling system, along with all new plumbing and fire protection systems.

Electrical work for the courthouse included all new power, lighting, telecommunications, CCTV, security, fire alarm, and standby/emergency power system. All work had to maintain the historic registry of the courthouse facility.

To allow judges secure access from the parking garage to their chambers, two column bays were removed from the basement to the roof and new elevators were installed. Secure parking and access were also provided for the mayor. Barge designed three temporary facilities so court proceedings could continue uninterrupted. The spaces were created by renovating three buildings offsite. The interim facilities include 18 courtrooms (Civil, Chancery, Trial and Traffic Courts) and support spaces. The fast-track project resulted in \$6 million in renovations designed and constructed in less than a year. The project team was recognized for their successful work with several awards and commendations.

# 4

## REFERENCES FOR SIMILAR PROJECTS

## References

Perfido Weiskopf Wagstaff + Goettel



### PWWG

- 1. West Virginia Capitol Building 3 Renovation**  
Gregory Melton, Director  
West Virginia General Services Division  
Gregory.L.Melton@wv.gov  
304.957.7150
- 2. Cincinnati Music Hall Renovation**  
Jeff Martin, VP Project Management  
3CDC  
jmartin@3cdc.com  
513.241.4400
- 3. Union Trust Building Renovation**  
Christopher Lasky, VP Development  
The Davis Companies  
clasky@thedaviscompanies.com  
412.925.4576



### FireLogix

- 1. Harry Sisson, PE (Project Manager)**  
Tennessee Valley Authority  
865.934.4125
- 2. Alvin Cox, AIA, Principal**  
Cox Allen & Associates  
502.587.3420  
(Clifford Davis Federal Courthouse, for General Services Administration)
- 3. Jim Elay, AIA, Principal**  
Elay Guild Hardy Architects  
601.354.2572  
(U. Mississippi Medical Center School of Medicine, for University of Mississippi)



### The Preview Group

- 1. Thomas Gormley AIA, LEED AP Principal**  
GBBN Architecture  
332 E 8th St,  
Cincinnati, OH 45202  
513.241.8700  
tgormley@gbbn.com
- 2. Carl F. Baldassarra, PE., FSFPE Principal**  
Wiss, Janney, Elstner Associates, Inc.  
330 Pfingsten Road  
Northbrook, IL 60062  
847.272.7400  
cbaldassarra@wje.com
- 3. Robert D. Loversidge, Jr., FAIA President/CEO**  
Schooley Caldwell Associates  
300 Marconi Blvd # 100  
Columbus, OH 43215  
614.628.0300  
rloversidge@schooleycaldwell.com



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