Michael Baker
INTERNATIONAL

We Make a Difference

March 31, 2021

Mr. David H. Pauline
West Virginia Department of Administration
Purchasing Division
2019 Washington Street, East
Charleston, West Virginia 25305

Subject: **CEOI 0603 ADJ2100000010**
Wheeling AASF2-Shower-Restroom Renovation Design

Dear Mr. Pauline:

The Charleston office of Michael Baker International, Inc. (Michael Baker) is pleased to respond to the subject Expression of Interest for the WV Army National Guard. We have relevant experience with many of the design elements necessary for this assignment from recent projects including Mechanical, Plumbing and Architectural Renovations to many Military accessits.

Michael Baker is well positioned to assemble a comprehensive design team (in-house) including: Mechanical, Plumbing, Electrical, Structural, Civil and Architectural expertise. Our diverse team of professionals are well versed in the preparation of construction documents, bid specifications, and the application of required construction permits. Michael Baker can also provide assistance during the Bidding process and the appropriate level of Construction Administration.

We thank you for your consideration and look forward to meeting with the selection committee in order to share our thoughts and ideas for this exciting opportunity!

Should you have any questions or require additional information, please feel free to contact me at my office (304) 769-2152 (or cell phone 304-539-8356) or by e-mail at dhilliard@mbakerintl.com

Very truly yours,

Michael Baker International, Inc.

David Hilliard

Enclosure

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Purchasing Division Forms

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

State of West Virginia
Centralized Expression of Interest
Architect/Engr

Proc Folder:	854626		Reason for Modification:
Doc Description:	EOI- Wheeling AASF2-Shower-Restroom Renovation Design		
Proc Type:	Central Purchase Order		
Date Issued	**Solicitation Closes**	**Solicitation No**	**Version**
2021-03-11	2021-03-31 13:30	CEOI 0603 ADJ2100000010	1

BID RECEIVING LOCATION

BID CLERK
DEPARTMENT OF ADMINISTRATION
PURCHASING DIVISION
2019 WASHINGTON ST E
CHARLESTON WV 25305
US

VENDOR

Vendor Customer Code:

Vendor Name : Michael Baker International, Inc.

Address : 400 Washington Street East, Suite 301

Street :

City : Charleston

State : West Virginia **Country :** USA **Zip :** 25301

Principal Contact : David Hilliard

Vendor Contact Phone: 304-769-0821 **Extension:** 2152

FOR INFORMATION CONTACT THE BUYER
David H Pauline
304-558-0067
david.h.pauline@wv.gov

Vendor Signature X  **FEIN#** 25-1228638 **DATE** March 31, 2021

All offers subject to all terms and conditions contained in this solicitation

ADDITIONAL INFORMATION
The West Virginia Purchasing Division, for the agency, the West Virginia Army National Guard, Construction and Facilities Management Office, is soliciting Expressions of Interest from qualified firms to provide professional engineering design services for the Wheeling AASF2 Shower-Restroom Renovation at the Wheeling Army Aviation Support Facility #2, located in, Wheeling, WV, per the attached documentation.

INVOICE TO	SHIP TO
ADJUTANT GENERALS OFFICE 1707 COONSKIN DR CHARLESTON WV 25311 US	WHEELING AASF 2 538 GIRTYS POINT RD WHEELING WV 26003 US

Line	Comm Ln Desc	Qty	Unit Issue
1	EOI- Wheeling AASF2 Shower-Restroom Renovation Design		

Comm Code	Manufacturer	Specification	Model #
81101508			

Extended Description:
EOI- Wheeling AASF2 Shower-Restroom Renovation Design per the attached documentation.

SCHEDULE OF EVENTS		
Line	**Event**	**Event Date**

	Document Phase	Document Description	Page 3
ADJ2100000010	Draft	EOI- Wheeling AASF2-Shower-Restroom Renovation Design	

ADDITIONAL TERMS AND CONDITIONS

See attached document(s) for additional Terms and Conditions

DESIGNATED CONTACT: Vendor appoints the individual identified in this Section as the Contract Administrator and the initial point of contact for matters relating to this Contract.

(Name, Title)
David J. Hilliard, P.E., Senior Mechanical Engineer
(Printed Name and Title)
400 Washington Street East, Suite 301, Charleston, WV 25301
(Address)
304-769-2152 / 304-769-0822
(Phone Number) / (Fax Number)
dhilliard@mbakerintl.com
(email address)

CERTIFICATION AND SIGNATURE: By signing below, or submitting documentation through wvOASIS, I certify that I have reviewed this Solicitation in its entirety; that I understand the requirements, terms and conditions, and other information contained herein; that this bid, offer or proposal constitutes an offer to the State that cannot be unilaterally withdrawn; that the product or service proposed meets the mandatory requirements contained in the Solicitation for that product or service, unless otherwise stated herein; that the Vendor accepts the terms and conditions contained in the Solicitation, unless otherwise stated herein; that I am submitting this bid, offer or proposal for review and consideration; that I am authorized by the vendor to execute and submit this bid, offer, or proposal, or any documents related thereto on vendor's behalf; that I am authorized to bind the vendor in a contractual relationship; and that to the best of my knowledge, the vendor has properly registered with any State agency that may require registration.

Michael Baker International, Inc.
(Company)

(Authorized Signature) (Representative Name, Title)

Patrick W. Fogarty, P.E., Senior Associate
(Printed Name and Title of Authorized Representative)

March 31, 2021
(Date)

304-769-0821 / 304-769-0822
(Phone Number) (Fax Number)

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

CONSTRUCTION CONTRACTS: Under W. Va. Code § 5-22-1(i), the contracting public entity shall not award a construction contract to any bidder that is known to be in default on any monetary obligation owed to the state or a political subdivision of the state, including, but not limited to, obligations related to payroll taxes, property taxes, sales and use taxes, fire service fees, or other fines or fees.

ALL CONTRACTS: Under W. Va. Code §5A-3-10a, no contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and: (1) the debt owed is an amount greater than one thousand dollars in the aggregate; or (2) the debtor is in employer default.

EXCEPTION: The prohibition listed above does not apply where a vendor has contested any tax administered pursuant to chapter eleven of the W. Va. Code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

DEFINITIONS:

"Debt" means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

"Employer default" means having an outstanding balance or liability to the old fund or to the uninsured employers' fund or being in policy default, as defined in W. Va. Code § 23-2c-2, failure to maintain mandatory workers' compensation coverage, or failure to fully meet its obligations as a workers' compensation self-insured employer. An employer is not in employer default if it has entered into a repayment agreement with the Insurance Commissioner and remains in compliance with the obligations under the repayment agreement.

"Related party" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceed five percent of the total contract amount.

AFFIRMATION: By signing this form, the vendor's authorized signer affirms and acknowledges under penalty of law for false swearing (*W. Va. Code* §61-5-3) that: (1) for construction contracts, the vendor is not in default on any monetary obligation owed to the state or a political subdivision of the state, and (2) for all other contracts, that neither vendor nor any related party owe a debt as defined above and that neither vendor nor any related party are in employer default as defined above, unless the debt or employer default is permitted under the exception above.

WITNESS THE FOLLOWING SIGNATURE:

Vendor's Name: Michael Baker International, Inc.

Authorized Signature: _____ Date: March 31, 2021

State of West Virginia

County of Kanawha, to-wit:

Taken, subscribed, and sworn to before me this 31 day of March, 2021.

My Commission expires AUGUST 09, 2023

AFFIX SEAL HERE

OFFICIAL SEAL
NOTARY PUBLIC
STATE OF WEST VIRGINIA
Mohiuddin Shaik
53 Roanoke Trce
Charleston, WV 25314
My Commission Expires August 09, 2023

NOTARY PUBLIC _____

PROPOSAL

Michael Baker
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PROJECT LOCATION

The proposed Shower and Restroom Renovation Design project for the West Virginia Army National Guard - Army Aviation Support Facility #2 (AASF2), is located at the Wheeling Ohio County Airport (HLG) near Wheeling, West Virginia.

PROJECT BACKGROUND

The West Virginia Army National Guard (WVARNG), Construction and Facilities Maintenance Office (CFMO) is seeking a highly qualified architectural/engineering firm to provide design services and bid documents for renovations at the flight facility for new restrooms and shower areas. The facility currently supports soldiers and elements of the WV Army National Guard Command. The selected firm will be responsible for evaluation of the existing conditions at the sites, to make recommendations with cost opinions, and to prepare design and construction documents and provide construction administration services as specified in the Expression of Interest (EOI).

Michael Baker is extremely interested in continuing our professional relationship with the West Virginia Army National Guard, Construction and Facilities Maintenance Office

Michael Baker International, Inc. (Michael Baker) is a highly qualified firm with extensive experience in providing the type of services required for this project, and we are extremely interested in continuing our professional relationship with the West Virginia Army National Guard, Construction and Facilities Maintenance Office.

QUALIFICATIONS & EXPERIENCE

FIRM/TEAM QUALIFICATIONS

Michael Baker's proposed team of experienced professionals has demonstrated the ability to deliver quality work products to our clients, on-time and within budget. Michael Baker can provide the entire depth of services necessary to complete the project without the need for costly sub-consultants. Each individual on this project team has extensive experience in their field of expertise and have demonstrated success on projects of similar size and scope.

The Principal-In-Charge will ensure that all required resources including staff and equipment are available to the project manager to execute the project successfully. Team resumes and project profiles provide a brief discussion of team member's experience base relevant to this project.

Management and Staffing
Michael Baker International, Inc.
Principal-in Charge - Russell Hall, Vice President
400 Washington Street East, Suite 301, Charleston WV 25301
304-769-0821 | RHall@mbakerintl.com

Persons Assigned to the Project *(Resumes Provided in Appendix 1)*

NAME	ROLE
PATRICK FOGARTY, P.E., P.S., LEED GA	Project Manager / Civil Engineering
JESSE RANGEL, AIA	Architectural Design
DAVID HILLIARD, P.E., LEED AP BD+C	Plumbing and Mechanical Engineering
OWEN MILLIGAN, P.E.	Electrical Engineering
WAYNE AIRGOOD, P.E.	Structural Engineering

According to our understanding of the project scope as stated in the EOI, no additional sub consultants will be required. Michael Baker will execute the entire project with our current staff.

FIRM CAPACITY

Michael Baker is a full-service A/E firm. Our local office in Charleston, WV is a "single-stop resource" capable of providing comprehensive professional services, from Environmental Studies, Mechanical/Electrical and Structural Engineering to Architecture, Planning, final design, and construction management through operational support. Michael Baker will provide the hands-on services needed for this project, from Client meetings. site surveys, design, and construction Administration/Inspection. With over 30 in house professionals locally, and over 200 regionally, Michael Baker can react quickly and efficiently to the needs of your project.

Michael Baker's local clients for facilities development and renovation projects include, but are not limited to, colleges and universities, counties, parishes, cities, townships, local municipalities, state departments of transportation, military facilities, airport complexes, and private sector clients. Michael Baker's geographic location and extensive experience enables us to quickly respond to wide-ranging scopes of service in order to meet our client's needs.

Michael Baker is a leading global provider of engineering and consulting services which includes planning, architectural, environmental, construction, program management, and full life cycle support services as well as information technology and communications services and solutions. Michael Baker provides its comprehensive range of services and solutions in support of U.S. federal, state, and municipal governments, foreign allied governments, and a wide range of commercial clients. With more than $1.3 billion in annual revenue, Michael Baker has more than 5,000 employees in over 90 offices located across the U.S. and internationally. Michael Baker seamlessly integrates architecture, planning, landscape architecture, engineering, and project management. Internationally recognized with a portfolio spanning over half a century, the team provides excellence in solutions: superior technical ability, creative design, and collaborative integration.

The success of our multidisciplinary approach to *"built"* environments results from the expertise of our design professionals. We solve challenges from multiple vantage points providing unsurpassed holistic, sustainable, and innovative solutions that benefit our diverse clients, including institutions, governmental agencies, corporations, developers and builders.

Michael Baker has extensive resources and the required qualifications to provide the required design and support services for the WVARNG on this important project. We have local and nationally recognized experts with the technical experience necessary for this assignment. In addition, Michael Baker's team of experienced professionals have an established record of delivering quality work products to our clients, on schedule and within budget.

In summary, Michael Baker's staff can provide documentation of our extensive experience in the following areas for this project:

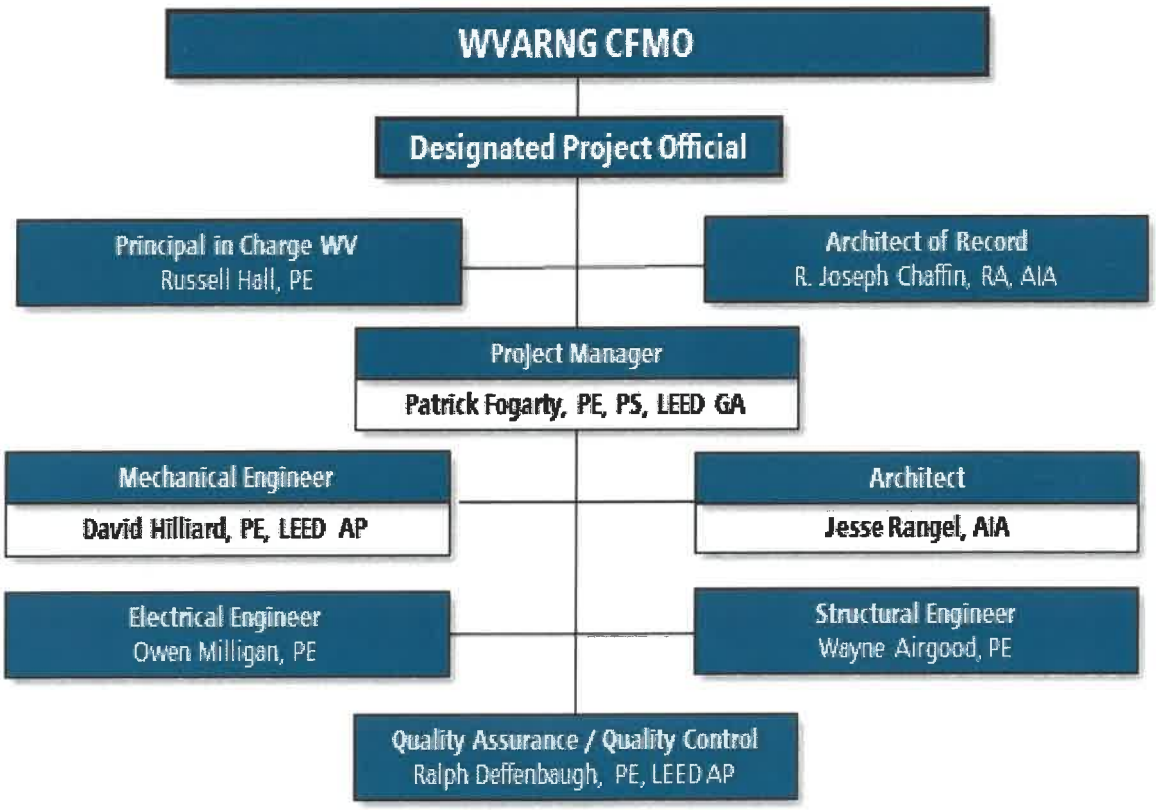
- Nationally recognized expertise in Assessing, Programing and Planning
- Facilities Engineering (Transportation, Civil, Mechanical, Structural and Electrical)
- Construction Administration and Construction Monitoring
- Coordination with State and Federal Agencies, as required

From major new or renovated building facilities, infrastructure and aviation, to oil and gas pipeline design, bridges and roadway designs, and water resource projects, Michael Baker has evolved into one of the leading engineering and energy services firms by consistently providing targeted solutions for its clients most complex challenges.

STATEMENT OF FIRM'S ACCEPTANCE AND FULL UNDERSTANDING THAT ANY AND ALL WORK PRODUCED AS A RESULT OF THE CONTRACT WILL BECOME PROPERTY OF THE WVARNG-CFMO AND CAN BE USED OR SHARED BY THAT AGENCY AS DEEMED APPROPRIATE

Michael Baker will provide to the WVARNG or other appropriate agencies, electronic copies of all required submittals through the various design stages and will provide final AutoCAD drawings at the completion of the project if requested.

PROJECT ORGANIZATION



STATEMENT OR EVIDENCE OF THE FIRM OR TEAM'S ABILITY TO PROVIDE SERVICES

This team was selected based on the current Project understanding. Additional team support members can be engaged on an as needed basis

See Resumes for more details on team members in **Appendix 1.**

DEMONSTRATED EXPERIENCE IN COMPLETING PROJECTS OF A SIMILAR SIZE AND SCOPE

Project Profiles are included in **Appendix 2**. They were selected as a representative group of various kinds of related Department of Defense projects. These include various projects in-state and from across the country.

Additionally, we have included six (6) References which are provided in **Appendix 3.**

PROJECT GOALS and OBJECTIVES

APPROACH AND METHODOLOGY FOR MEETING GOALS AND OBJECTIVES

It is Michael Baker's understanding that shower and restroom renovations /upgrades at the AASF #2 facility, located near Wheeling, West Virginia are desired by the WVARNG. The key design elements of the project could include the both internal aesthetic solid surface wall materials and plumbing fixtures utilizing cost effective energy conserving, and maintenance friendly features. Additional considerations could include mold and mildew remediation and abatement All electrical, LED lighting and mechanical systems will be provided within the design to support the renovated areas of the facility. Existing underground and above ground utilities locations will be researched and investigated as required to support the project scope. Additional plans and specification can also be provided as needed or as directed by the WVARNG and/or state agency, utility company or other authority having jurisdiction.

As necessary, Michael Baker will include provisions for security and Anti-Terrorism / Force Protection (AT/FP).

The approach of the entire project would be holistic in nature. A kickoff meeting with all stakeholders is recommend to help us understand the full scope of the WVARNG project requirements, criteria, schedule and budget. From the information gathered at this meeting, Michael Baker will develop a formal Scope of Work, AIA Agreement and Fee Proposal for review and negotiation. Once these elements have been approved, a Purchase Order will be issued which will constitute Notice to Proceed (NTP) on the design.

The first step of the project would be to help prioritize work and develop time schedules for the project tasks. This process would include identification of existing conditions through information obtained by a review of the facilities' available as-built drawings and a general site walk through. Michael Baker may plan for a more detailed site visit/condition assessment during the first weeks of the project to assess the limits of the needed renovations and before beginning development of schematic design concepts. Our Engineers and Architects will be involved in all aspects of the existing condition assessment and will carry that understanding into the project design. Open discussions of our findings, of all related work and any recommendations will be held with the WVARNG staff. This will help determine

and finalize the extent of all related work required to provide for the most cost-effective systems to achieve the project requirements.

In order to meet the goals and objectives of the WVARNG, Michael Baker will review perinate codes and standards and will design in accordance with all current Federal, State and local building codes and permit requirements as well as WVARNG and DoD design guides.

Michael Baker is very familiar with the UFC system having recently completed Full Facility Assessments of Army Reserve Centers (both in and out of state), and projects the at the Charleston WVARNG facility; the Coonskin Complex Perimeter Fence and the Base Access Control Facility for the WVNG Joint Forces Headquarters.

GOAL/OBJECTIVE 1: DEVELOP DRAWINGS AND SPECIFICATIONS

Michael Baker's site investigation will proceed as follows; A survey team will be responsible for identifying existing building condition and renovation issues, building and room measurements as required, location of utilities, plumbing piping and sizes, and other pertinent components in the project area. This team will be led by a Licensed Professional Engineer. The survey data, photos and measurements will be studied, and then developed into a base map drawing with floor plans and building sections. This documentation will include the location of affected existing on-site equipment, utilities, structural components and service lines.

Based on the site investigation and facility-specific information, Michael Baker will develop schematic design concepts for review and approval by the WVARNG. The project will be studied in a systematic way to analyze the existing conditions, Client needs, and the facility's projected occupancy loads. Appropriate solutions will then be defined to meet all these requirements. More than one layout option will be considered at this stage of design. Analyzing multiple solutions provides the Client the ability to choose the most cost effective and sustainable approach for the project.

Upon approval of a preferred design concept, Michael Baker will proceed to develop all necessary design documents in accordance with UFC directives and all applicable codes for all aspects of the design. Specifications for the installation of all required products or components will be provided as part of the Design submittals.

GOAL/OBJECTIVE 2: FULL DESIGN SERVICES

Michael Baker provides a variety of services and therefore has extensive experience in many fields of expertise. This will allow the core team members access to expertise in all areas of study which pertain to the project. For this project Michael Baker will provide Architectural, Plumbing, Mechanical, Electrical and Structural Engineering along with support from our Fire protection engineers. If building exterior work is necessary or desired, civil engineering and landscape architecture services can also be provided.

Design and schedule coordination meetings and/or site visits, as required, will be provided as a normal part of the **design development/construction document** process. This will help to ensure that the WVARNG is receiving exactly the facility upgrades that they need in the time frame that they require. A project phasing plan may be provided with the construction documents. This will help to ensure limited disruptions to staff members working at the facility. Also included will be plans to show the limitations and requirements for the demolition and removal of the existing components and systems to facilitate the new work. Documentation will include the location of "affected" existing piping and service lines, as well as on-site utilities, if necessary.

Formal Submittals for client review will be provided at 35% schematic design, 65% design development, 95% prefinal Construction Documents and 100% "Bid Ready" Construction Documents, or as otherwise directed by the WVARNG.

For each of the design submittal, a separate cost opinion will be provided for review and in order to keep the project within budget.

GOAL/OBJECTIVE 3: CONSTRUCTION DOCUMENTS AND BIDDING ASSISTANCE

Upon approval of the 65% Design Development submittal, Michael Baker will finalize the Construction Documents including Construction Plans, Details and Specifications and then submit for review and approval. The documents will be of sufficient detail to bid and construct all elements of the work. As previously stated, a project phasing plan can be included with the construction documents, which could include preservation and protection of existing elements and temporary barricades and devices as necessary. Consideration will be given to partial or full Owner occupancy as required. Demolition drawings will be provided for the removal of existing components affected by the design including the temporary rerouting of existing elements designated to remain.

Cost opinions will be updated upon the completion of the **Construction Document** plans and specifications. Final sealed drawings and specifications for the entire project will be provided.

Michael Baker personnel will provide assistance during the bidding process, as requested by WAARNG. This could include attending the Pre-Bid Meeting and preparing responses to technical questions that arise for incorporation into Addenda.

GOAL/OBJECTIVE 4: CONSTRUCTION ADMINISTRATION

Once the construction contract is awarded, Michael Baker will provide support to the WVARNG for the duration of construction. Shop drawings provided by the Contractor will be reviewed by Michael Baker to ensure that they meet all code requirements, specification criteria and are appropriate for the project. All products intended to be installed on the project shall be submitted to and approved by Michael Baker. Michael Baker will also provide review for progress payment applications, requests for information (RFIs), work directive changes and change order requests. Michael Baker will attend regular progress meetings and provide as-needed site inspections.

The team members that start the project will be the same professionals providing the regular onsite inspections during construction.

After the system installations are complete, Michael Baker will perform a final inspection and develop a corrective measure punch list and will coordinate with regulatory agencies to assure prompt award of the Certificates of Occupancy for the facility as required.

As-built drawings will be prepared in AutoCAD format. The as-built drawings and operation and maintenance manuals will be provided to the Client upon completion of the project for future use. The documents will be 'bound', such that the files will not require external references and allows for easy future use and alteration. Paper and electronic format documents will be provided to the Client with all copyright control for the documents.

ADDITIONAL INFORMATION

QUALITY CONTROL

Michael Baker has vast experience in technically sensitive renovations as well as from the ground up design and construction. The scope of this project, as presented, poses challenges that are exciting for our team of problem solvers. Between our Charleston West Virginia and Moon Township Pennsylvania offices, we bring diverse expertise and hundreds of years of experience to this progressive endeavor.

Michael Baker provides an Internal Technical Review (ITR) as part of our normal quality assurance process. This is performed on every prior to submittal delivery and is part of "The Baker Way". This ITR is performed by professionals that are not part of the design team but are experts in the respective fields that they review. This ensures a nonbiased and critical review of the project documents. This process helps to minimize small errors and omissions and yields a smoother bidding/construction process.

COST CONTROL

The use of prioritized phasing and additive or deductive alternates during the bidding and construction process can provide flexibility and help control project cost. This allows the Owner to better choose how they wish to spend their resources. Also to control cost, Michael Baker professional staff will review the plans at each milestone and make comments or make recommendations to the project based on comparison with the Owner's Project Requirements, the current plans and specifications, and the current project cost opinion. If need be, Michael Baker is very familiar with the value engineering process and can work productively with the WVARNG to determine cost saving alternatives. If bids come in over budget or, if during construction, contractor staffing or schedules are reduced, value engineering can help keep the project on tract. These considerations, along with open discussion with the WVARNG staff, will determine whether we move forward with the current design or make agreed-upon adjustments to the design.

DESIGN AND CONSTRUCTION TIME FRAME

Michael Baker has the resources to deliver the project on time and within budget. Michael Baker has a proven track record of working closely with our clientele and bringing projects to fruition within the structured timeline and the Client's desired budget.

NO PROJECT IS TOO LARGE OR TOO SMALL !

APPENDIX 1 – Resumes

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Patrick W. Fogarty, P.E., P.S., LEED®GA

Civil Engineer , Facilities Practice Manager

Years with Michael Baker: 13
Years with Other Firms: 20

Degrees

B.S., 1985, Civil Engineering, West Virginia University Institute of Technology

Diploma, 1993, Surveying and Mapping, International Correspondence Schools

Coursework, Business Administration, Heriot-Watt University, Edinburgh College of Art

Licenses/Certifications

Professional Engineer - Civil/Structural, West Virginia, 1990
Professional Surveyor, West Virginia, 1993

Construction Documents Technologist, 1996

General Qualifications

Mr. Fogarty has over 29 years of civil engineering project design and management experience. He is responsible for the technical and management aspects of civil design and surveying projects within Baker's Charleston, West Virginia office. Mr. Fogarty has designed and managed projects in numerous disciplines including civil, structural, and transportation engineering; site development planning; and surveying. These projects have included retail/commercial site preparation, airports, streets/highways, bridges, parking lots, buildings, retaining walls/foundations, sanitary systems and structures, as well as boundary and topographic and photogrammetric surveys. Duties included field surveying, drawings and specification preparation, design, design drafting, construction inspection, quality control testing, shop drawing review, project management, contract administration and report preparation.

Experience

West Virginia State Capitol Restroom Renovations. *State of WV General Services Division.* Project Manager. Responsible for the overall management of the project including the coordination of the subconsultant. Baker lead a planning study for the renovation of 31 restrooms in the historic West Virginia Capitol Building. The planning study assessed the facility's plumbing infrastructure and the restroom conformance to current code requirements and code-required capacities, compliance with Americans with Disabilities Act (ADA) requirements, quantification of the building occupancy during normal and peak periods, and an evaluation of gender distribution of restrooms within the capitol. Baker then provided design, construction documents, and scheduling recommendations for the phased Construction of 11 Restrooms for the House of Delegates wing. Baker also provided construction administration services for this 2020 construction project.

Nitro Bank Street Streetscape Improvements, Nitro, West Virginia. *City of Nitro.* Project Manager. Responsible for concept planning, detailed design, construction document generation, and construction administration. Baker provided design, bid-phase support, and construction services for streetscape improvements to Bank Street, located in the city's business district. Baker's services include base mapping, background data collection, design plans, construction document preparation, bid-phase support, construction management, and construction inspection.

A/E Services for the Office of the Adjutant General, West Virginia Army National Guard, Division of Engineering and Facilities, Charleston, West Virginia. *State Army National Guard Headquarters.* Project Manager. Responsible for the management and coordination of all activities. The Facilities Management Officer (FMO) for the State of West Virginia, Division of Engineering and Facilities (DEF), West Virginia Army National Guard (WVARNG) selected Baker for a lump sum/fixed fee contract for architectural and engineering services. Baker was selected by the Division of Engineering and Facilities to provide complete design and construction administration services for the renovation of the first floor of the entire wing of the Office of the Adjutant General (TAG). The Owner requested the need for modernization of approximately 12,000 square feet of existing outdated office space - project elements included new acoustical ceilings, flooring, energy-saving light fixtures, duplex outlets, communications jacks, alterations to the existing floor plan, exterior door replacements, new interior doors and hardware, new wall finishes and asbestos removal.

Lost Creek Train Depot Rehabilitation, Lost Creek, West Virginia. *Town of Lost Creek.* Project Manager. Responsible for the management and coordination of all activities as well as all engineering design. The Town of Lost Creek retained Baker for the planning and design of the rehabilitation of a historic train depot adjacent to the Harrison County Rail Trail. Baker prepared a plan to raise the structure, make repairs to the deteriorated timber, excavate and place the concrete foundation system, then lower the structure to rest on the new foundation. Baker provided construction administration and inspection services as well as periodic site review during construction.

Little Kanawha Bus Facility, Calhoun County, West Virginia. *WV Division Of Public Transit.* Project Manager. Responsible for the civil, site and structural engineering components of the project. Baker is providing architectural and engineering services, landscape architecture, and construction-phase support for a new, 9,900-square foot, pre-engineered, metal and brick bus maintenance and transit operations facility. The 5,100-square-foot administrative area will include offices, a conference room, a money-counting room, and a driver-training room, and the 4,800-square-foot bus maintenance area will include storage for seven buses. The facility will be ADA-compliant and is being designed to achieve LEED® certification. Services include site survey and design, geotechnical testing, environmental compliance, utility coordination, bid documents, bid-phase support, and as-built drawings.

West Virginia Army National Guard - TAG Wing Improvement, Charleston, West Virginia. *State Army National Guard Headquarters.* Project Manager. Engineer of Record responsible for the coordination of all activities. Baker performed complete planning, design, and construction management services for renovations to the Office of the Adjutant General at the State Army National Guard Headquarters in Charleston, West Virginia. Project elements included new acoustical ceilings, flooring, energy-saving light fixtures, duplex outlets, communications jacks, several new wall partitions, exterior door replacements, new interior doors and hardware, new wall finishes and asbestos removal. Baker provided Construction Administration and inspection services as well as periodic site review during construction.

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R. Joseph Chaffin, R.A., A.I.A.

Lead Design Architect

Years with Baker: 11

Years with Other Firms: 17

Education

B.Arch., 1990, Architecture, University of Cincinnati

Certificate, 1988, Architecture, Ecole d'Art Americaines - Ecole des Beaux Arts

Licenses/Certifications

Registered Architect, West Virginia, 2011

NCARB, 1999

Registered Architect, Pennsylvania, 2001

General Qualifications

In balancing creative, organizational, and technical strengths, Joseph Chaffin's professional experience demonstrates a broad practice of architecture from residential through complex institutional projects. He challenges current capabilities, cultivates leadership, and develops new strengths through his position at Baker. As Director of Architecture, Mr. Chaffin is responsible for the daily operations, design quality, and project execution of the architectural and interior design staff. He performs interdisciplinary technical reviews for all designs and oversees coordination of related engineering disciplines. Ensuring the highest quality design services within budget and schedule parameters, he also emphasizes a "world view," or comprehensive perspective, within which professional services are delivered prioritizing and maintaining client expectations.

Experience

Renovations to Classroom Building, Beckley, West Virginia. *WVU Tech/ West Virginia University. Architect of Record.* Responsibilities included facilitating complete design package and collaboration with WVU Tech staff for the 31,000 S.F. facility. This fast track design and construction project stemmed from a feasibility study produced by request of the Client. The deficiencies found during the Study were remedied during the design phase with a compressed time frame in mind. Coordination of new and old HVAC designs were a large component of this project. University branding elements were incorporated into the interior design to bring new life to a defunct campus. Special consideration was given to coordination with the University's existing door hardware products as well as the design and product specifications for a nationally accredited psychological laboratory within the Project. This project is currently under construction.

Renovations to the Benedum Center, Beckley, West Virginia. *WVU Tech/ West Virginia University. Architect of Record.* A sister project to the above referenced Classroom Building, this 21,000 S.F. project ran concurrent and also stemmed from a Feasibility Study requested by the Owner. Primarily an interior design heavy project, this building required new retrofitted ADA toilet facilities as well as door hardware and HVAC systems coordination. This project is currently under construction.

Aviation Science Center Renovation, Community College of Beaver County, Monaca, Pennsylvania. Architect of Record. Responsible for design/technical quality and project execution provided by the architectural and interior design staff. The Project consisted of architecture, engineering, construction administration and cost estimates to design the auditorium renovations and replacement the HVAC system. Preliminary design services included research of applicable building codes; on site project assessment and verification, measurements, and documentation of the project areas, including a comprehensive field survey of the existing conditions, and the development and prioritization of preliminary scopes of work, schedule development, and oversite of estimates of probable cost. He directed the completion of pre-final 90 percent construction documents and the final construction and bid documents, including architectural, mechanical, electrical, and communications engineering drawings, and specifications. Mr. Chaffin also coordinated with the vendor of the air traffic control simulator throughout the design phase.

Nursing Simulation Renovation and Laboratory Design, Clarion University, Clarion, Pennsylvania. Director. Responsible for design/technical quality and project execution provided by the architectural and interior design staff. This state-of-the-art nursing education facility, included a simulation laboratory with four high-technology mannequins and a control room, related classrooms and skills lab spaces, offices, conference rooms, social lounge, and study lounge. His role also included interdisciplinary technical reviews for all design/construction documents. Baker's tasks included architectural design, building systems engineering, construction cost estimate development, and as-built plans development.

Building 12 Defense Logistics Agency Headquarters Renovation Design, Tobyhanna, Pennsylvania. *Tobyhanna Army Depot.* Director. Responsible for design/technical quality and project execution provided by the architectural and interior design staff. Role also included interdisciplinary technical reviews for all design/construction documents. Baker prepared design documents for the partial renovation of Building 12 to serve as the new Defense Logistics Agency headquarters building. Work was performed under a three-year indefinite delivery-indefinite quantity contract. Baker's tasks included architectural design, building systems engineering, construction cost estimate development, and as-built plans development.

Restroom Renovation Design, TISCOM, Alexandria, Virginia. *U.S. Coast Guard, CEU Cleveland.* Director. Responsible for design/technical quality and project execution provided by the architectural and interior design staff. Role also included interdisciplinary technical reviews for all design/construction documents. Baker is developing specifications, construction drawings, a detailed cost estimate, and a projected construction schedule to renovate two male and two female restroom areas in the Telecommunication and Information Systems Command Navigation Center. The renovated restrooms will be compliant with the Americans with Disabilities Act and will include new plumbing fixtures, toilet partitions, floor coverings, wall coverings, electrical fixtures, and exhaust fans.

U.S. Armed Forces Reserve Center, Rutland, Vermont. *U.S. Army Corps of Engineers, Louisville District.* Director. Responsible for design/technical quality and project execution provided by the architectural and interior design staff. Responsibilities also included detailed interdisciplinary reviews of the RFP design criteria documents with an emphasis on architecture. Baker developed design-build RFP documents for a new 600-member Armed Forces Reserve Center meeting Silver LEED® standards. A 97,634-square-foot training building (AFRC), a 14,600-square-foot multi-use classroom, a 7,302-square-foot Organized Maintenance Shop (OMS), and a 3,113-square-foot unheated storage (UHS) building were included in the RFP package. The center accommodates training and mobilization, and provides for the storage, inspection, maintenance, and repair of combat and tactical vehicles and equipment associated with the regional deployment of Vermont Army National Guard and Army Reserve units. RFP development consisted of conducting a design charrette; providing a topographical survey and geotechnical investigation; performing a utility survey; developing conceptual site plans, floor plans, and building elevations; developing RFP specifications; preparing DD Form 1354 – Transfer of Real Property; and providing a PACES construction cost estimate.

Design of U.S. Army Reserve Center Renovation and Expansion, Homewood, Illinois. *U.S. Army Corps of Engineers, Louisville District.* Director. Responsible for design/technical quality and project execution provided by the architectural and interior design staff. Role also included interdisciplinary technical reviews for all design/construction documents. As designer of record, Baker provided architectural and engineering services for the renovation and expansion of a 400-member U.S. Army Reserve Center to provide a 60,374-square-foot Training Building, including an approximately 3,500-square-foot Unheated Storage Building. The project also includes construction of a 22,300-square-foot parking area for military equipment, and 130 parking spaces for privately owned vehicles. Tasks were performed under an indefinite quantity-indefinite delivery engineering agreement. Baker designed the training facility to meet LEED® Silver certification. Baker's services included architectural design, surveys, environmental and geotechnical investigation, all site and building engineering, cost estimating, value engineering, and LEED® certification administration.

Michael Baker
INTERNATIONAL

We Make a Difference

David J. Hilliard, P.E., LEED AP BD+C

Mechanical Engineer

General Qualifications

Mr. Hilliard has a wide range of "hands on" design, engineering, and construction experience. From his beginnings as a carpenter he has expanded his professional abilities to become a senior mechanical engineer for Michael Baker. His recent design experience has included the complex mechanical design of such projects as a large Charleston, West Virginia hospital, a Bus Maintenance Garage and office building for the West Virginia Department of Transportation, an Army National Guard Armory HVAC/Electrical renovation, master planning and engineering at the West Virginia Capitol Complex including a design for a comprehensive restroom renovations at the historic State Capitol Building. His resume covers over 30 years of real world work in engineering, design, fabrication and construction, and covers the mechanical, electrical, plumbing and general trades.

Over the years, while practicing his profession, Mr. Hilliard continued his education by studying mathematics, civil and mechanical engineering, finally taking degrees in both mathematics and mechanical engineering. He has continued his professional development through his involvement with ASHRAE, ASME, ASPE, USGBC, and other pertinent organizations.

Years with Michael Baker: 11
Years with Other Firms: 19

Degrees

B.S.M.E., 2005, Mechanical Engineering, West Virginia University Institute of Technology

B.S., 2002, Mathematics and Science, West Virginia State College

Licenses/Certifications

Professional Engineer - Mechanical, West Virginia, 2011, 19488

Professional Engineer - Mechanical, Kentucky, 2017, 32902

LEED Accredited Professional BD+C, West Virginia, 2012, 10649992

Electrical System Design, 35 hour course University of Wisconsin, Madison Wisconin.

Mr. Hilliard is proficient with the following design programs: AutoCAD, Revit, Trane Trace 700 (HVAC load program), Cook Compute-a-Fan (equipment selection program), Greenheck CAPS (equipment selection program), Price, All-in-One (equipment selection program), Excel Spreadsheets, Bluebeam Revu (pdf editor), and Adobe Photoshop

Sample PROJECT Experience

West Virginia State Capitol Restroom Renovations. *State of WV General Services Division.* Mechanical Electrical and Plumbing Engineer. Mr. Hilliard provided the State of West Virginia General Services Division a comprehensive MEP plan for the renovation and renovation of the 33 restrooms of the West Virginia State Capitol Building. He helped provide design, construction sequence, and scheduling recommendations. The Baker team then provided design, construction documents, and scheduling recommendations for the phased Construction of 11 Restrooms for the House of Delegates wing. Baker also provided construction administration services for this 2020 construction project.

Renovations of two existing buildings at the WVUTech Campus. *West Virginia University.* Mechanical Engineer. Provided project management, mechanical, electrical, and plumbing engineering for the renovation of a 31,000 SF building for engineering labs and a 21,000 SF building for offices and student government.

West Virginia Schools for the Deaf & Blind, Various Building Renovation Projects, Romney WV. Project Engineer and Engineer of Record. Responsible for project team coordination and management, mechanical engineering and electrical design in the renovation of various buildings on the WVSDB campus, work included: HVAC, life safety, electrical, fire alarm, and fire sprinkler projects. One project includes HVAC renovations in one building and the installation of a campus wide Life Safety System for the deaf and blind. A second project includes new sprinkles in one building and sprinkler modifacations in two other building. A third project includes complete HVAC renovation of the schools Physical Education Building, which includes a swimming pool, Gym, weight rooms, locker rooms. These projecs are ongoing and include Construction Administration services which Mr. Hilliard oversees.

Capitol Flood Study. *State of WV General Services Division.* Project Engineer. Responsible for providing site evaluation, video of underground sanitary piping systems, research of rainfall events, corrective measure recommendations, and developed a report of the findings.

A/E Services for the Office of the Adjutant General, West Virginia Army National Guard, Division of Engineering and Facilities, Charleston, West Virginia. *State Army National Guard Headquarters.* Mechanical Designer. Responsible for all mechanical design oversight and construction management. The Facilities Management Officer (FMO) for the State of West Virginia, Division of Engineering and Facilities (DEF), West Virginia Army National Guard (WVARNG) selected Michael Baker International for the renovation of the first floor of the entire wing of the Office of the Adjutant General (TAG). The Owner requested the need for modernization of approximately 12,000 square feet of existing outdated office space - project elements included new acoustical ceilings, flooring, energy-saving light fixtures, duplex outlets, communications jacks, alterations to the existing floor plan, exterior door replacements, new interior doors and hardware, new wall finishes and asbestos removal.

Renovations to Building 2, Bay 4, Tobyhanna, Pennsylvania. *Tobyhanna Army Depot.* HVAC Engineer. Designed HVAC systems for general offices, latrines, a large work room with humidification and a computer/office areas. Also detachable AC systems were designed for a number of removable Mobile Computer Control Shelters. Michael Baker served as the designer of record on a design-bid-build project to renovate Building 5, Bay 1 at the Tobyhanna Army Depot. Work was performed under a three-year indefinite delivery-indefinite quantity contract. The scope of work involves adding HVAC capacity, installing a drop-ceiling system, expanding existing restrooms, and enhancing door systems. Michael Baker prepared design and construction plans and construction cost estimates.

Little Kanawha Bus, Calhoun County, West Virginia. *WV Division of Public Transit.* Mechanical Engineer. Responsible for the Mechanical, Electrical and Plumbing Design, MEP Document Preparation, and Construction Administration for a new bus maintenance and office facility for Gilmer County. Duties include the design of the vehicle storage, cleaning and maintenance mechanical systems, as well as oil pumping and collection systems. The design of an energy efficient HVAC system for the entire building is also part of his responsibilities. The facility was designed as a LEED® project.

Fort McCoy, Fort McCoy, Wisconsin. *Army Corp of Engineers, Omaha District.* Mechanical Engineer. Responsible for the Mechanical engineering and final inspection and commissioning oversite. **The Project was a** Design-build delivery of an approximately 58,000-square-foot, two-story modified large Tactical Equipment Maintenance Facility (TEMF) and an approximately 44,000-square-foot, one-story Equipment Concentration Site (ECS) Warehouse, The building was designed to meet a LEED Silver certification

Michael Baker
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We Make a Difference

Jesse Rangel, AIA, NCARB

Project Architect

Years with Michael Baker: 1
Years with Other Firms: 12

Degrees

M.Arch., 2009, Architecture, Morgan State University

B.S., 2007, Architecture, Morgan State University

Licenses/Certifications

Registered Architect, Maryland, 19680

General Qualifications

Mr. Rangel is a capable, licensed architect with more than a decade of comprehensive, professional expertise in the successful management and design of public and private projects. His strengths lie in good interpersonal skills, development, oversight and management of budgets and schedules. He possesses skills and technical capabilities necessary to interact positively with customers, subconsultants, staff, and coworkers to guide projects from inception through construction.

Experience

Comprehensive Design Services Contract IX, Baltimore/Washington International Thurgood Marshall (BWI) & Martin State (MTN) Airports. *Maryland Aviation Administration.* Project Architect. Currently serving as Michael Baker's architect and task manager for architectural tasks. The task orders include construction phase services for current on-going projects, repairs and improvements to existing terminals and hangars, consultant management, project management, and general task orders.

On-Call Aviation Services, Tipton Airport (FME). *Tipton Airport Authority.* Project Architect. Currently serving as Michael Baker's architect and task manager for architectural tasks. The task orders include construction phase services for current on-going projects, repairs and improvements to existing hangars, consultant management, project management, and general task orders.

Dover Maintenance Hangar Construction Phase Services. *Dover Airfield Base.* Project Architect. Provide on-going construction administration engineering services as follow-on to the design work recently completed. Provide engineering support and assist with coordination of requested aspects of Engineering During Construction, including but not be limited to; Contractor Submittal Package reviews; Engineering Considerations and Instructions for Field Personnel; Request for Information (RFI) reviews/responses; Site Visits, Engineering Revisions and Value Engineering Change Proposal reviews, during the construction phases and as requested by the USACE Project Engineer.

Bladensburg Bus Maintenance Facility. *Washington Metropolitan Area Transit Authority.* Project Architect. Assisted with design services up to a 60% level for a new Bus Operations and Maintenance facility sized for a fleet of 300 transit vehicles at the Bladensburg Bus Operating Garage. The proposed Bus Operations and Maintenance facility is planned to operate 24 hours a day, 7 days a week and designed to include; Bus Maintenance, Body Repair, Paint, Bus Operations, Bus Fuel and Wash, Bus Parking, Employee and Visitor Parking in a parking deck.

Tipton Hangar 80 84 85 Improvements. *Tipton Airport Authority.* Project Architect. Developed a procurement strategy and to identify the scope of professional design services and related fees that would be necessary to meet FAA procurement requirements. Provided architectural and engineering services for design, bidding, and construction administration services for various improvements to three existing corporate hangars.

Chesterfield CCR Wastewater Treatment Plant. *Dominion Energy.* Project Architect. Via Design-Build, provided architectural services for the design of two new buildings for Dominion Energy at the Chesterfield Water Treatment Complex. The two buildings were identified as the Administration Building and the Process Building.

Non-Michael Baker Project Experience

Piscataway WRRF Bio-Energy Project, Accokeek, Maryland. Project Manager / Architectural Design-Lead. Responsible for all architectural tasks which include early work packages, code analysis, life safety, design, coordination with construction estimating and design teams. $250 Million Construction Budget.

Back River Wastewater Treatment Plant: Headworks Improvement and Wet Weather Flow Equalization, Baltimore, Maryland. Project Manager / Primary Architectural Reviewer. Responsible for complete review of all architectural related construction management tasks. $430 Million Construction Budget.

Johns Hopkins Hospital: North Power Plant and Bayview Campus Power Plant, Baltimore, Maryland. Project Manager. Provided professional services for the complete replacement of an existing chiller system. The project was phased and required close coordination with the owner, operations, and facilities to keep the plant operational during construction.

Freedom Readiness Center, Sykesville, Maryland. Project Manager / Co-Architect. Assisted in creating a functional, aesthetically pleasing, and budget conscious interior design. Involved from concept to construction documents and construction administration. $24.5 Million Construction Budget.

Druid Finished Water Tanks, Baltimore, Maryland. Project Manager. Assisted a senior project architect / landscape architect with design through construction documents of the site to accommodate a new secure 54-million-gallon finished water tanks and pumping / hypo-chlorination facility. $140 Million Construction Budget

Replacement of Loch Raven Dam Environmental Operation Facility, Baltimore, Maryland. Project Manager. Evaluation of two sites within the watershed property for a new environmental operations facility. The study led to full architectural design services. $10 Million Construction Budget.

Fort Worthington Elementary School, Graceland, and Holabird Elementary/Middle Schools, Baltimore, Maryland. Project Manager. Assisted in providing landscape architecture and interior design services for three new schools.

Consolidated Rental Center Facility Conditions Assessment, Baltimore Washington Thurgood Marshall Airport, Maryland. Project Manager. Performed a facility assessment to determine maintenance and capital needs. The report provided a thirty-year outlook for each facility. Additionally, a year-by-year analysis for the first five years were provided for each individual building.

State Emergency Operations Center at Maryland Emergency Management Agency, Reisterstown, Maryland. Architectural Designer III. Responsible for the renovation of the State Emergency Operations Center used to manage emergency situations for the State of Maryland.

City Schools Facility Conditions Assessment (Jacobs Report), Baltimore, Maryland. Architectural Designer III. Responsible for the assessment of 50 schools as part of the school system's ongoing maintenance and improvement program. Proposed $2.45 Billion Budget in Funding Over a 10-year Period

Michael Baker
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Owen Milligan, P.E.

Electrical Engineering Manager

Years with Michael Baker: 8
Years with Other Firms: 20

Degrees

B.S., 1988, Electrical Engineering, Gannon University

Computer Aided Drafting, Putnam County Technical Center, 1995

Licenses/Certifications

Professional Engineer, West Virginia, 2013

Professional Engineer, Pennsylvania, 1999

Professional Engineer, Kentucky, 2005

Professional Engineer, Oklahoma, 2008

General Qualifications

Mr. Milligan is an electrical engineer who is experienced working with consulting engineering firms in the study and design of electric distribution and control systems, emergency power for process plants and facilities, water/wastewater treatment plants, government and commercial projects, ASHRAE energy-efficient building design, coordination with vendor and contractors, and approval of vendor drawings. He has a strong knowledge of distribution equipment and designs, motor control center layouts and design, and start-up and services during construction. He is capable of handling multiple projects from conception to final design, working as a team member toward meeting project goals. His work includes management of Baker's electrical engineering department, supervising and providing technical advice to designers and coordinating design and construction work with engineers, contractors, vendors, and clients.

Experience

Design/Build SATOC for Military Facilities in the Southwest Region, Various Locations in Southwestern U.S., AR,AZ, CA, LA, NM, NV, OK, TX. *U.S. Army Corps of Engineers, Tulsa District.* Electrical Engineer. Provided design assistance to the electrical engineering subconsultant, and performed a technical quality review of the construction documents for the TEMFs located at Fort Bliss. Electrical systems included lighting, lightning protection and grounding, power distribution, telecommunications, fire alarm, and unique voltage and frequency requirements. Designs were required to meet UFC and military design standards. Projects constructed under this contract include Brigade Combat Team (BCT) Tactical Equipment Maintenance Facilities (TEMF). TEMFs provide facilities for the purpose of maintaining and repairing vehicles, complete with equipment and parts storage, and administrative offices. Task orders awarded to date include the following: Two TEMFs at Fort Bliss in El Paso, Texas to be shared by five Battalions and one Company; and a Unit Operations Facilities consisting of a TEMF and an Organizational (Deployment) Storage facility, at Fort Bliss in El Paso, Texas. Facility designs are required to meet or exceed a Silver LEED® certification.

Little Kanawha Bus, Calhoun County, West Virginia. *WV Division of Public Transit.* Electrical Engineer. Responsible for the Electrical Design, Electrical Document Preparation, and Construction inspection for electrical components for a new bus maintenance and office facility for Gilmer County. Duties include the design of the vehicle storage, cleaning and maintenance systems, as well as oil pumping and collection systems. The design of an energy efficient systems for the entire building is also part of his responsibilities. The facility was designed as a LEED® project.

On-Call Multi-Discipline Services, Pittsburgh International, and Allegheny County Airports (PIT/AGC), Pittsburgh, Pennsylvania. *Allegheny County Airport Authority.* Technical Advisor. Provided technical direction to electrical design staff and performed a technical quality review of the construction documents. Designs were required to meet NEC

standards. Since 1989, Baker has provided multidiscipline, on-call services to the Allegheny County Airport Authority (ACAA). The ACAA owns and operates Pittsburgh International Airport (PIT) and Allegheny County Airport (AGC). Baker acted as an extension to the ACAA's staff, providing the depth of resources and experience of the entire company when called upon by the ACAA. Baker provided a full range of services to ACAA on an "On-Call/As-Needed" basis, including architecture, civil, structural, mechanical, electrical and environmental engineering, general engineering administration, construction support, and other areas.

Rescue Swimmer Training Facility, U.S. Coast Guard Support Center, Elizabeth City, North Carolina. *U.S. Coast Guard, Facilities Design & Construction Center Atlantic.* QA/QC. Performed a technical quality review of the electrical design for this building renovation project, including lighting and electrical receptacles. Baker prepared Design/Build RFP Documents for a new Rescue Swimmer Training Facility (RSTF) for the Aviation Technical Training Center (ATTC), a tenant of and located on the SC Elizabeth City, NC. The $13.3 million RSTF is a dedicated aquatic trainer for the purpose of supporting the Aviation Survival Technician (AST) School and recurrent water survival training requirements. Sized appropriately for the curriculum and student loading, the RSTF contained elevated platforms, pool temperature controls, adequate wet and dry storage, male and female locker/shower facilities, classrooms, and office space.

Gymnasium Locker Room Rehabilitation, USCG Training Center Cape May, New Jersey. *U.S. Coast Guard.* QA/QC. Performed a technical quality review of the electrical design for this building renovation project, including lighting and electrical receptacles. Baker prepared the design, construction documents, and cost estimate for the interior rehabilitation of an existing facility to combine two women's locker rooms into one large room.

Relocation and Improvements to the Front Gate, USCG Training Center Cape May, New Jersey. *U.S. Coast Guard.* QA/QC. Performed a technical quality review of the electrical design for this building renovation project, including lighting and electrical receptacles.

Route 52, Contract - "B", Somers Point & Ocean City, New Jersey. *New Jersey Department of Transportation.* Electrical Engineer. Responsible for the electrical systems design to meet NEC standards for a new Visitor's Center, bridge and site lighting, power distribution, and a supplemental photovoltaic solar system.

Non-Baker Project Experience

Siemens Government Services, Inc (formerly SD Engineers), Pittsburgh, Pennsylvania. Senior Electrical Project Engineer. Responsibilities included Senior Electrical Engineer in charge of all electrical work at the Department of Energy's Naval Reactor Facility in West Mifflin, Pennsylvania. Duties included complete electrical design including multiple new office building designs and construction, light industrial type facilities for confidential DOE projects, retrofitting and relocation of existing laboratories, power studies, arc flash calculations, and site power distribution.
Chester Engineers / US Filter Corporation, Pittsburgh, Pennsylvania. Electrical Project Engineer. Responsibilities included the following:

- Lead electrical engineer for multiple site water and wastewater treatment projects for a large automobile manufacturer.
- Lead electrical engineer for design of water treatment plants for several large steel manufacturers.
- Lead electrical engineer on design of numerous remote cellular telephone communication sites for a large, wireless Telecommunications Company.
- Assisted a Senior Electrical Engineer on a Short Circuit and Coordination Study using CAPTOR/DAPPER analysis program.
- Responsible for several large detailed constructions cost estimates.

Michael Baker
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Wayne Airgood, P.E.

Structural Engineer

Years with Michael Baker: 9
Years with Other Firms: 23

Degrees

B.S.C.E., 1984, Structural Engineering, Geneva College

Licenses/Certifications

Professional Engineer, Pennsylvania, 1999, PE054344E

Professional Engineer, Maryland, 2013, 43414

Professional Engineer, North Carolina, 2014, 041701

General Qualifications

Mr. Airgood is a practicing structural engineer with experience in the design of commercial, institutional, light industrial building structure, and foundation systems.

Experience

Design of Central Issue Facility, Fort McCoy, Wisconsin. *U.S. Army Corps of Engineers, Louisville District.* Mr. Airgood was the senior structural engineer of record responsible for design of the building structure and foundation systems from concept through construction of an approximate 62,553-square-foot large-sized Central Issue Facility (CIF) to expedite the shipping and receiving, distribution, processing, and exchange of soldier equipment. The structural system consisted of steel joist and girder framing supported by interior steel columns and exterior precast, insulated concrete load-bearing walls. Foundations were soil supported, isolated and continuous, reinforced spread footings.

Container-Loading Facility Design, Fort McCoy, Wisconsin. *U.S. Army Corps of Engineers, Louisville District.* Mr. Airgood was the senior structural engineer of record responsible for the design of a clear span steel roof framing system to achieve column-free interior warehouse space of a 30,862-square-foot Container-Loading Facility. Roof framing system is supported by interior steel columns and exterior precast, insulated concrete load-bearing walls. Foundations were soil supported, isolated and continuous, reinforced spread footings.

Montgomery County Public Schools Foodservices Facility. *Montgomery County, Department of General Services.* Mr. Airgood was the senior structural engineer of record responsible for the development and design of structural framing and foundation systems for 70,000-square-foot food production, warehouse and distribution facility. His responsibilities included coordination with owner/user and other engineering disciplines throughout design, performing and overseeing of production structural design calculations and documents and construction administration services such as review of structural product submittals and periodic site visits.

West Haven Commuter Rail Station Engineering Design, West Haven, Connecticut. *Connecticut Department of Transportation.* Mr. Airgood was the senior structural engineer responsible for the structural framing and foundation design of a two story passenger train station building. The station building featured a two story, glass curtain wall enclosed passenger waiting area with exposed to view curved roof structure. The design also included a 75 foot span, glass curtain wall enclosed pedestrian bridge spanning over the four rail line track bed to connect the station building with a new two story stair and elevator tower. His responsibilities included coordination with engineering and architectural disciplines during design, performing and overseeing of production structural design calculations and documents, and review of fabrication shop drawings and other construction administration services as related to the building structural systems.

Penn Hills Operations Center Addition, Penn Hills, Pennsylvania. *Duquesne Light Company.* Mr. Airgood was the senior structural engineer of record responsible for the development, design, and detailing of a load bearing masonry wall and steel framing addition to an existing facility.

Design-Build Tactical Equipment Maintenance Facilities, 31st ADA Brigade, Fort Sill, Oklahoma. *U.S. Army Corps of Engineers, Tulsa District.* Mr. Airgood was the senior structural engineer responsible for the design of the foundation systems to support an 18,000-square-foot, 35,200-square-foot, and 57,031-square-foot pre-engineered steel Tactical Equipment Maintenance Facilities (TEMF), and a 20,000-square-foot Supply Support Activity facility supply support activity warehouse (SSA). Because of existing expansive soil conditions, the ground floors of each building were designed as reinforced concrete floor systems with a void space between the expansive soil and floors. The concrete floor system and PEMB structural columns were supported by a deep foundation system of drilled concrete piers extending to rock. His responsibilities included review of structural fabrication drawings, attending design coordination meetings and periodic site visits during construction.

Buildings 200 & 250 of Imperial Business Park, Imperial, Pennsylvania. Mr. Airgood was the lead structural engineer responsible for the development and design of the structure and foundation systems for two, 250,000-square-foot warehouse facilities. Responsibilities also included construction administration services such as review of structural product submittals and periodic site visits. Each building consisted of steel joist and joist girder roof framing supported by interior steel columns and exterior precast concrete bearing and shear walls. Foundations were soil supported, isolated and continuous, reinforced spread footings.

ABB Manufacturing and Office Facility, Mt. Pleasant, Pennsylvania. Mr. Airgood was the lead structural engineer of a high-bay manufacturing, testing and warehouse facility for electric transformer equipment, including an attached two-story office area. The structural systems consisted of precast concrete wall panels enclosing a steel framed interior column and roof structure, including the support of numerous under-hung crane systems throughout the facility ranging from 5- to 20-ton capacities. The lateral framing system was a combination of steel braced and moment frames, and foundations were soil supported isolated and continuous, reinforced spread footings.

Fuel Cell Facility, Pittsburgh, Pennsylvania. *Siemens Westinghouse.* Mr. Airgood was the lead structural engineer of a high-bay manufacturing facility, warehouse and two-story attached office area. The structural systems consisted of precast concrete wall panels enclosing a steel framed interior column and roof structure. The lateral framing system was a combination of steel braced and moment frames, and the structural design included support of various top running bridge crane systems ranging from 10- to 40-ton capacities. The foundations were soil supported isolated and continuous, reinforced spread footings.

APPENDIX 2 – Project Profiles

Michael Baker
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We Make a Difference

West Virginia State Capitol Restroom Renovations

Charleston, West Virginia

Baker led a team of experts in a planning study for the restoration or renovation of 31 restrooms in the West Virginia Capitol Building. The planning study was intended to assess the facilities and their conformance to current code requirements and code-required capacities, compliance with Americans with Disabilities Act (ADA) requirements, quantification of the building occupancy during normal and peak periods, and an evaluation of gender distribution of restrooms within the capitol. The infrastructure of the plumbing and associated systems was also assessed in the course of the study including; water and sewer, fire protection, ventilation, electrical and structural as it related to the restrooms.

The capitol building was built in three phases between 1925 and 1932 and is on the National Register of Historic Places.

Client

State of WV General Services Division
Department of Administration
1900 Kanawha Boulevard East
Building 1, Room MB-60
Charleston, WV 25305

Completion Date

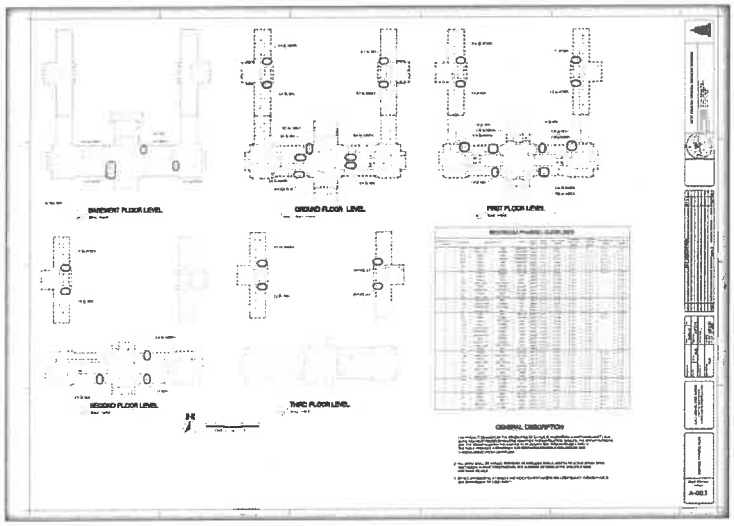
February 2021

Michael Baker's Role

- Feasibility studies
- Architecture
- Plumbing engineering
- Mechanical engineering
- Fire Protection Engineering
- Electrical engineering
- Cost estimates

The study and subsequent design addressed the design framework for the renovation of the selected restrooms, provided an overall project cost, and propose a logical sequence of design, construction, and schedule of implementation over three years. The study portion identified and verified physical characteristics, including room layouts; fixture counts; location of all mechanical, electrical, and plumbing (MEP) devices; current level of ADA compliance; and location and condition of vitrolite and carrara glass panels. The study also included an analysis of building population issues, building code issues, and the potential impacts of construction.

The findings and recommendations were presented and accepted, and a complete set of construction documents were developed with **construction sequencing and scheduling.**
Eleven (11) of the 33 restrooms designed were completely renovated on the east side of the Capitol in 2021.



Michael Baker
INTERNATIONAL

We Make a Difference

West Virginia Schools for the Deaf and the Blind

Romney, West Virginia

Michael Baker provided general Architectural and Engineering services to the West Virginia Schools for the Deaf and the Blind in Romney, WV for three different Bid Packages. The first Bid Package included three main tasks.

TASK 1 - School for the Deaf - Multipurpose Room HVAC Upgrades.
Design for the replacement of the Existing HVAC System serving the Multipurpose room. Design will include provisions for Fresh Air in accordance with ASHARE 62.1 Guidelines. Some structural, architectural, ductwork and electrical modifications were included.

TASK 2 - School for the Deaf - Life Safety System (this was expanded to the entire campus).
Design plans and specifications for the installation of an integrated Life Safety System that include:

a. Mass notification hardware and software for Deaf as required for a complete system
b. Design and specify new hardware as required
c. Integration with existing campus systems as practical

Client

West Virginia Schools for the Deaf and the Blind
301 E Main Street
Romney, WV 26757

Completion Date

March 2021

Michael Baker's Role

- Feasibility studies
- Architecture
- Mechanical engineering
- Fire Protection Engineering
- Electrical engineering
- Plumbing engineering
- Cost estimates
- Construction Administration

TASK 3 – School for the Deaf - Fire Alarm Upgrades.
Upgrade existing Fire Alarm System to meet current codes and interface with New Life Safety System.
Complete design for a building wet sprinkler system and that may include any affected building components. Existing sprinkler line entrance is provided. Only interior work provided. Design to include Hazard Classifications, riser detail, hydraulic calculations, basic pipe routing.

The second Bid Package included adding a Sprinkler System to the Instructional Resources Center and sprinkler modifications and upgrades to various other building to comply with BRIM and Fire Marshal requirements.

The third Package was a client requested a feasibility study of the Physical. Education building, which laid the groundwork for the third task; the HVAC renovation of the entire building; including a gymnasium, indoor swimming pool, exercise rooms and locker rooms.
Each formal submission will include a cost opinion for the proposed work. Construction on all projects were completed by March 2021.

Michael Baker
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Squadron Operations Building 249 Renovation Design

McEntire Joint National Guard Base, Eastover, South Carolina

Client

USPFO for South Carolina
9 National Guard Road
Columbia, South Carolina 29201-4763

Completion Date

Estimated: 2016

Michael Baker's Role

- Building renovation design
- Mechanical and electrical engineering
- Energy efficiency design

Michael Baker provided architectural services for the complete renovation of the 23,000-square-foot Building 249, Squadron Operations Center, at McEntire Joint National Guard Station.

B249 provides the 169th fighter wing with a consolidated pilot and mission support center. The existing building dates back to 1975 and subsequently has been expanded three times as mission support operations have expanded. The building houses life support operations, mission planning, flight operations, weather center, training, office support, and additional space for staff on reserve weekend. The facility was deemed inadequate to continue support operations and contained a significant amount of wood framing in violation of current facilities guidelines.

The project will remove all wood framing and existing hazardous materials. New space planning will increase accessibility for the disabled, upgrade work flow and occupant comfort, and improve morale by increasing the amount of windows to allow for views and daylight. The building envelope will be renovated by a complete roof replacement, cleaning and repair of the masonry veneers, and replacement of aging doors and windows. The exterior improvements will increase energy efficiency and the interior acoustic environment.

Deficiencies also existed in the energy efficiency of the existing mechanical equipment and subsequent indoor air quality. As part of the renovation, **a new variable refrigerant flow mechanical system** will be installed. The system will allow for better control of the air quality and adjustment to meet the demands of the environment during peak and drill weekend occupancies. A completely new lighting, electrical, and communication systems will further improve the operations of the facility. The project will also add fire protection systems to the building and make antiterrorism and force protection (ATFP) improvements to the building and surrounding site.

The goal is to provide a facility that improves daily operations for the support staff of the 169th as well as operational effectiveness and cost. LEED® Silver Certification is desired.

Michael Baker
INTERNATIONAL

We Make a Difference

Building 355 Renovation Design

Joint Base McGuire-Dix-Lakehurst, Lakehurst, New Jersey

Michael Baker provided construction documents for all work necessary to selectively demolish and renovate the first floor, perform exterior renovations, and construct a new elevator core/tower of the south side lean-to of Building 355 in the NAVAIR Test Area along Taxiway Four.

The building was built as a hangar in 1957 and was converted to Test Department operation and labs. The three floors of the lean-to were carved up in to a warren of small dysfunctional spaces. This project included exterior renovations, first floor renovations, and a new elevator/stair/egress tower to comply with Americans with Disabilities Act (ADA) Standards for Accessible Design and Department of Defense regulations. It also included new restroom facilities and replacement of finishes, floors, walls, electrical, plumbing, fire protection, windows, and telephone and computer networking systems. The first floor included a coffee bar area/kitchenette sized for the occupants of all three floors.

Michael Baker developed construction documents for the demolition of all first floor interior spaces and all vertical exiting elements to accommodate a new "collaborative" type open office space on the first floor, and pre-planned elements to facilitate renovations on the upper floors in an upcoming project. Michael Baker provided designs for all systems to be removed and replaced and for construction of a new hydraulic and pit-less elevator core with emergency egress.

Client

U.S. Army Corps of Engineers,
Philadelphia District
Wanamaker Building, 100 Penn Square East
Philadelphia, Pennsylvania 19107

Completion Date

2015

Michael Baker's Role

- Construction documents
- Structural engineering
- Demolition design
- Office space design
- HVAC design
- Electrical design
- Lighting design
- Fire alarm system design
- Telephone and computer systems design
- Environmental health and safety compliance permitting

Michael Baker designed interior office spaces; structural systems, including live loads and wind loads; heating, ventilation, and air conditioning (HVAC) systems; and electrical systems. Michael Baker's designs also included energy efficient LED lighting throughout all spaces, exit and emergency lighting, fire alarm systems, telephone systems, and local area network (LAN) systems.

Michael Baker developed construction documents in compliance with all applicable state and federal regulations and Air Force instructions regarding environmental and occupational safety and health to address areas of known asbestos-containing floor tile on the first floor in accordance with all regulations. Michael Baker also coordinated required permits regarding air quality, land use, waters and water supply, and fuel storage.

Value-Added

Based upon the client's budget limitations, Michael Baker designed a three-story addition with alterations to the full exterior plus a complete renovation of the existing first floor office space. With budgeting for the 2nd and 3rd floors available in the near future, Michael Baker designed utility runs and finalized exit pathways for the future renovations of the upper floors. This was accomplished within the project budget and will save both construction time and dollars during the next and final phase of the project.

Michael Baker
INTERNATIONAL

We Make a Difference

Indefinite Delivery-Indefinite Quantity Contract for Architectural and General Engineering Services

Tobyhanna Army Depot and, North-Atlantic, Division Locations

Client

Tobyhanna Army Depot
11 Hap Arnold Boulevard
Building 18
Tobyhanna, Pennsylvania 18466

Completion Date

Estimated: 2021

Michael Baker's Role

- Project management
- Planning and design charrette coordination
- Planning and programming
- Space planning
- Architecture
- Multidiscipline engineering services
- Antiterrorism and force protection analysis
- Cost estimation
- RFP Wizard implementation
- Sustainable design – Silver LEED certification
- On-site investigation
- DD Form 1391 parametric cost estimation

Michael Baker is providing planning, architecture, and general engineering services under a three-year indefinite delivery-indefinite quantity contract for projects at U.S. Department of Defense installations within the North-Atlantic division.

Michael Baker's services address virtually every aspect of facility planning and design. Tasks including coordinating and implementing planning charrettes, conducting on-site investigations, conducting antiterrorism and force protection analyses, performing programming, performing space planning and interior design, developing building systems designs **(including HVAC, electrical, and plumbing and fire protection systems)**, developing construction cost estimates, reviewing construction submittals, responding to contractor requests for information, and preparing as-built plans.

Assignments include developing designs for building renovations as well as new construction.

Representative projects awarded to date are summarized below.

Renovation Design of Building 2, Bay 4 Renovation, Tobyhanna Army Depot, Tobyhanna, Pennsylvania. Michael Baker is serving as the designer of record on a design-bid-build project to fully renovate Building 2, Bay 4. Michael Baker performed architecture and engineering for building systems design and develop construction cost estimates. The modifications enabled relocation of offices, warehouse storage and work assembly and packing facilities for mission support. The work was also necessary to comply with building codes and Americans with Disabilities Act requirements.

On-Call HVAC Engineering Support Services, Tobyhanna Army Depot, Tobyhanna, Pennsylvania. Michael Baker provided on-call HVAC engineering support to client staff. Michael Baker's HVAC engineering duties as a technical consultant involved field survey, feasibility study, engineering report, design and layout, and construction support services. Michael Baker provided an on-site mechanical engineer for assignments, as necessary. Projects were accomplished by in-house personnel or contractors. Assignments included modifications of HVAC design for extensive interior renovations to Building 3, the back-ramp-area of Building 1-A, and the first-floor of Building 11, and for the construction of an addition to Building 17; evaluation of HVAC system needs and management of

construction for Building 30 – a new 78,000-square-foot facility – and for two new officer-grade family housing facilities; and the design of new or upgrade of existing HVAC systems as part of renovations to numerous warehouses throughout the depot.

Design and Construction Phase Services for Family Housing Unit Renovations, Tobyhanna Army Depot, Tobyhanna, Pennsylvania. Michael Baker developed designs and construction cost estimates, performed construction submittal reviews, responded to contractor requests for information, and prepared as-built plans for the installation of new front-porch roofs and rear-patio privacy fences for 10 buildings containing 40 family housing units (Buildings 501 through 509).

Barracks Restroom Renovation Design, Tobyhanna Army Depot, Tobyhanna, Pennsylvania. Michael Baker performed design and construction phase services for barracks restroom renovations. Michael Baker's tasks included developing designs for the demolition of the existing second- and third-floor east-end enlisted personnel restrooms, expansion of the shower area to include additional showers, and complete replacement of all plumbing fixtures, lighting fixtures, exhaust components, and floor and wall finishes.

Renovations to Building 5, Bay 1, Tobyhanna Army Depot, Tobyhanna, Pennsylvania. Michael Baker is serving as the designer of record on a design-bid-build project to renovate Building 5, Bay 1. The scope of work involves adding HVAC capacity, installing a drop-ceiling system, expanding existing restrooms, and enhancing door systems. Michael Baker will prepare design and construction plans and construction cost estimates. Michael Baker will investigate options to enhance HVAC performance and increase cooling in work room 155 of Building 5. Individual dedicated air-conditioning units will be designed for the TYQ-23 testbed room and two TYQ-23 mobile shelters to replace the field HVAC units currently being used. A drop-ceiling system with T8 lighting fixtures will be designed for work room 170 of Building 5. Michael Baker will design an air handling unit that provides full HVAC and humidity control for the work room to replace the existing unit heater that serves the space. Restroom renovation design will involve the installation of additional fixtures to increase capacity and replace the existing fixtures. Door system modifications include reconfiguring the double vestibule at the main north entrance and the adjoining office and corridor to maximize the usable space as well as replacing four existing roll-up door installations with automatic sliding glass door systems.

Renovation Design of Building 10, Bay A and Bay C, Tobyhanna Army Depot, Tobyhanna, Pennsylvania. Michael Baker is serving as the designer of record on a design-bid-build project t o fully renovate Building 10 A and partially renovate 10-C at Tobyhanna Army Depot. Michael Baker will perform architecture and building systems design, develop construction cost estimates, and prepare as-built plans. The modifications will enable relocation of the client's Environmental Control Branch repair shop and fabric application shop from other locations at the depot and reconfiguration of the carpenter shop operations that currently exist in Building 10-A. The work is also necessary to comply with building codes and Americans with Disabilities Act requirements.

Erected in the 1950s, Building 10 is of permanent construction and consists of a single-story, steel-frame structure with CMU walls with an EFIS exterior finish on the north and east sides. It is divided into three bays. 10-A encompasses a 200-foot by 134-foot area currently used solely for the carpenter shop. 10C contains approximately 500 square feet of office space that will be demolished and replaced with a two-story, freestanding, in-plant office tower. Work within 10A will entail the demolition of the compressed air and steam stations; demolition of light fixtures and upgrading of the lighting system; upgrade of electrical systems to conform with NEC 2005 and client specifications; establishment of adequate compressed air supply and air drops to machines and work benches; installation of two new steel-stud-and-gypsum-board walls to divide the bay into three separate shops; installation of sliding glass electric doors in the new walls; removal of exterior windows and closure of the openings using CMU

and an EFIS finish system; painting of the interior CMU walls; replacement of overhead and personnel doors; renovation of the office near the mezzanine; renovation of the mezzanine to accommodate two additional offices, with full HVAC; and installation of two modular-office mezzanines with stairwells, one in the Environmental Control Branch repair shop and one in the fabric application shop, with full HVAC. Work within Bay C will entail the installation of a new in-plant modular office tower, which will feature two offices on the upper level with walk-through access and a conference room and copy/print room on the lower level, with full HVAC.

Design and Construction Phase Services for Elevator Installation, Tobyhanna Army Depot, Tobyhanna, Pennsylvania. Michael Baker is providing architectural and engineering services for the installation of a new elevator and related equipment in Building 12. The new elevator will provide access to the proposed second-floor mezzanine that will be installed as part of the Building 12 office renovation project and is necessary to comply with building codes and Americans with Disabilities Act requirements. Elevator installation must also be coordinated with other concurrent Building 12 projects, which include restroom, administrative, and testing area renovations. The scope of work entails installation of ceiling, flooring, and permanent walls and all finishes; modification of the roof to accommodate the elevator penthouse, installation of the elevator pit, modification of foundations, and installation of a hoist beam; installation of a sump pump; demolition of the existing interior wall to enable access to the proposed second floor mezzanine and installation of a lintel for the new wall opening; repair and upgrade of the HVAC system to serve the mechanical equipment room; repair and upgrade of electrical distribution and lighting systems; potential modifications to the existing fire sprinkler system; and installation of common access card readers for elevator access. Michael Baker's services include architecture; mechanical, electrical and fire protection engineering, construction cost estimation, and as-built plans development.

Design and Construction Phase Services for Renovation of Building 12 Administrative Space, Tobyhanna Army Depot, Tobyhanna, Pennsylvania. Michael Baker is serving as designer of record on a design-build project to renovate the administrative space on the east side of Building 12. The project involves renovating the existing administrative space and relocating the majority of functions to the planned new second-floor mezzanine, which will be constructed as part of the office renovation on the west side of the building. The undertaking is necessitated by the transfer of the depot's Test, Measurement, and Diagnostic Equipment testing area from Building 1-A to the east side of Building 12 and must also be coordinated with other concurrent Building 12 projects, which include restroom, elevator, and testing area renovations. The scope of work entails installation of a drop ceiling, flooring, permanent walls, all finishes, and cubicle systems; development of the basic furniture and cubicle layout; repair and upgrade of the existing HVAC system to serve the second-floor space; demolition of existing high-pressure steam lines to accommodate the new layout; repair and upgrade of the building electrical distribution, telecommunications, and lighting systems; modification of the existing Public Address and Audio Visual Information System system to serve the new space; modification of the fire sprinkler system to serve the new space; installation of common access card readers for exterior doors, the elevator, and stairwell areas; and provision of access to the proposed second-floor restrooms that are part of the office renovation project and future access to restrooms from unfinished space on the second-floor mezzanine. Michael Baker will convene and conduct a planning charrette and develop design and construction plans and construction cost estimates. Michael Baker's tasks encompass architecture; interior design; mechanical, electrical and fire protection engineering; construction cost estimation; and as-built plans development.

Michael Baker
INTERNATIONAL

We Make a Difference

Design of U.S. Army Reserve Center Renovation and Expansion

Homewood, Illinois

As designer of record, Michael Baker provided architectural and engineering services for the renovation of a 400-member U.S. Army Reserve Center (ARC) and construction of two single-story additions totaling 35,694 square feet–a 34,294-square-foot Training Building and a 1,400-square-foot ancillary structure–along with a 3,500-square-foot Unheated Storage Building. The project also includes parking spaces for 140 privately owned vehicles (POV) and approximately 22,000 square yards for military equipment parking (MEP).

Tasks were performed under an indefinite quantity-indefinite delivery engineering agreement.

The project involved complete renovation of the 24,680-square-foot, single-story Vietnam Veterans' Memorial ARC, which was erected in 1985, using the existing footprint. While the ARC had reliably served south Chicago, the structure's building systems were nearing the end of their design life. Replacement was required to enable the facility to accommodate growing U.S. Army Reserve Unit Brigade Combat Team training needs, optimize operations, and achieve mission goals. The client chose renovation as it was a much more cost-effective alternative than replacement.

The 34,294-single-story Training Building addition accommodates core training functions and establishes the main point of entry for the ARC. This new structure includes offices and administrative areas, an assembly hall, classrooms, a library, a learning center, and an assembly hall with a kitchen. The approximately 1,400-square-foot ancillary addition houses a mail room and staging area. The renovated portion of the ARC houses utilitarian areas, including unit storage and heated storage spaces, a physical readiness room that features a 1,643 -square-foot fitness center with a full complement of athletic equipment and is served by adjacent showers and locker rooms, a weapons simulator room, an arms vault, mechanical and electrical rooms, and a janitor's closet. A free-standing wash rack is provided near the Unheated Storage Building to meet vehicle cleaning needs.

The Unheated Storage Building provides space for storage of user operational equipment that requires no temperature or humidity control.

Client

U.S. Army Corps of Engineers,
Louisville District
Room 972
600 Dr. Martin Luther King, Jr. Place
P.O. Box 59
Louisville, Kentucky 40202

Completion Date

2016

Michael Baker's Role

- Planning
- Environmental investigation
- Hazardous materials surveys
- Sustainable design
- Site and civil engineering
- Geotechnical investigation
- Architecture
- Interior design
- Structural engineering
- Mechanical engineering
- Plumbing design
- Fire protection engineering
- Electrical engineering
- Communications design
- Cost estimation
- LEED® credit template documentation

Supporting project elements include environmental investigation prior to renovation of the existing ARC; grading, paving, fencing, and signage; force protection measures; exterior lighting; utility and storm drainage system connections; fire protection and fire alarm and mass notification systems; and security lighting. Structures provide access for disabled individuals. The project expanded existing parking facilities by approximately 68,800 square feet to accommodate equipment and serve reservists and visitors.

Michael Baker designed the ARC reconfiguration to meet LEED® NC 2009 Silver certification. Tasks for which Michael Baker was responsible include engineering feasibility evaluation, architecture, surveys, hazardous waste investigation of the existing ARC and remediation recommendation, geotechnical investigation oversight, all site and building engineering, cost estimating, value engineering, and LEED® credit template documentation. Michael Baker convened a design charrette and collaborated with the client in identifying needs and preferences and preferred design alternatives.

Designs comply with applicable federal, state, and local codes and standards, including the following: Unified Facilities Criteria ([UFC] 4-171-05); International Building Code; International Plumbing Code; International Mechanical Code; National Fire Protection Association (NFPA) standards; Uniform Federal Accessibility Standards; the Americans with Disabilities Act; the Environmental Protection Agency Clean Water and Clean Air acts; and the requirements of ASHRAE, American National Standards Institute, American Society for Testing and Materials, and OSHA.

Site Reconnaissance and Geotechnical Investigation

Before work commenced, the Michael Baker team evaluated and documented existing surface and subsurface conditions, which entailed making several visits to the site.

Michael Baker also conducted an environmental building survey of the existing ARC. Michael Baker performed a hazardous material investigation, prepared an environmental report, and developed designs to remediate issues.

To evaluate geologic conditions, Michael Baker oversaw a geophysical survey, which involved time-domain electromagnetic technology, ground-penetrating radar, and radio detection. The team identified underground utilities and excavated test pits to expose unmarked utilities, which helped to avoid project schedule delays and complications during construction. Geotechnical evaluations confirmed that shallow spread footings would be an acceptable foundation type for the Training Building and Unheated Storage Building.

Overall Building Construction

The Training Building addition is of permanent construction and includes reinforced concrete foundations, concrete masonry load-bearing walls and concrete floor slabs; structural steel framing; mechanical, electrical, information, security, and fire suppression sprinkler systems; automated building HVAC mechanical and lighting system controls; energy-efficient lighting; interior finishes; window systems; standing-seam metal roofing; and exterior finishes consisting of attractive masonry facades.

The Unheated Storage Building is a pre-engineered metal building supported by a reinforced concrete foundation with a cast-in-place concrete on-grade floor and sloped roof.

The vehicle wash rack also has a sloped roof supported by a pre-engineered metal building with steel purlins spanning between steel girders. The girders form steel rigid frames with the building columns.

Exterior Systems

Building Envelope

A structural steel framing system supported by load-bearing concrete masonry walls and steel columns, beams, and joists forms the exterior envelope of the Training Building additions and supports gravity loads. The exterior wall system of the building additions is brick masonry veneer with rigid cavity wall insulation and concrete masonry backup, and the foundation system is slab-on-grade concrete.

A concrete masonry shear wall system will resist lateral loads imposed by wind and seismic forces. The exterior walls are designed to distribute lateral forces to the roof diaphragms and then to the shear walls and foundation system.

The roofing system of each building addition consists of a modified bitumen membrane roof with one-inch-in-12 pitch, sloped towards roof drains that are connected to the site stormwater system. Each roofing system is supported on a one-inch galvanized metal roof deck spanning between open-web joists. Joist members are supported by steel girders and masonry load-bearing walls.

An expansion joint separates the existing ARC from the primary building addition; the smaller addition is directly attached to the existing ARC.

The roofing system and underlying insulation on the low-slope roof of the existing ARC were replaced with new polyisocyanurate insulation with an R-28 value and a low-slope, modified bitumen roofing system. The roofing system over the primary building addition is a low-slope roof with a modified bitumen membrane. The roof sections of the primary and ancillary building additions have integrally manufactured white reflective coating to minimize the heat island effect. The new ARC roof light monitors have standing-seam metal roofs.

The Training Building additions incorporate thermally broken, anodized aluminum, fixed windows with aluminum storefront assemblies for large expanses of glazing and light at the major building entry point. Insulated, painted metal doors in hollow metal frames serve all utilitarian areas.

The Unheated Storage Building is a pre-engineered metal building with insulated metal wall and roof panels, non-insulated exterior walls, and a slab-on-grade concrete floor.

Interior Systems

The interior design of the reconfigured ARC supports the client's functional and aesthetic needs. Painted gypsum wallboard is used for the majority of interior partitions in the Training Building. Exceptions are the vault, which consists of painted reinforced concrete walls in accordance with UFC, and the unit storage, kitchen, and mail screening room, which incorporate painted concrete masonry units. Wall color and floor coverings comply with UFC 4-171-05.

HVAC

The HVAC systems reflect an array of design solutions to serve a variety of spaces and building functions.

The Training Building is served by a central, modular, water-to-water heat pump plant, which is tied to a closed-loop geothermal wellfield, along with a closed-circuit fluid cooler for loop-heat rejection; high-efficiency, natural gas-fired boilers; variable-flow hydronics; an HW/CHW VAV air handling system; and a Unit Storage area ventilation unit

featuring direct-fired gas heating. Carbon dioxide and occupancy sensors vary the outside air quantities based on real-time occupancies for energy savings.

The design also features an antiterrorism and force protection-rated mail processing area, humidified TERs, and direct digital controls, which will regulate and monitor all building HVAC systems and monitor all building utilities.

Electrical Design

The electrical system includes power, lighting, fire alarm and mass notification, structured cabling raceway, public address, cable television distribution, telecommunications, and security systems. Michael Baker selected the main switchboard, distribution panelboards, and lighting and appliance panelboards for the Training Building for high reliability, low maintenance, efficiency, and maximum flexibility. As well, Michael Baker selected the step-down transformers for low-energy loss and short-term overload capability.

Electrical service is also provided from the reconfigured Training Building to the existing Organizational Maintenance Shop via a 480v feeder circuit and a 480v feeder circuit to the new Unheated Storage Building.

Conserving energy in interior and exterior lighting was Michael Baker's design priority for the Training Building. Interior lighting design incorporates low-maintenance fluorescent fixtures with energy-efficient electronic ballasts and T8 lamps. Interior systems include occupancy sensors and lighting control panels to turn off lights and conserve energy in office areas, corridors, and restrooms. Exterior lighting included building-mounted and site pole security lighting with energy-efficient, long-life LED lamp sources. The parking area hardstand and roadways include pole-mounted security lighting.

Michael Baker designed a photovoltaic energy system consisting of ground-mounted solar panels and DC-to-AC inverter to produce equivalent annual kilowatt hours (kWh) consumed by the site lighting system. The photovoltaic system was designed to produce a nominal peak output power of 15 kW. This "green power" was connected to backfeed the building power distribution system and supplement the utility grid power source to the site, thereby reducing peak power demand from the utility.

Michael Baker also prepared specifications for a complete building lightning protection system with UL master labeling for the Training Building. The system consists of air terminals located at the roofline with grounding cables and down-conductors and a ground loop buried below grade and routed along the building exterior. Building grounding is accomplished by an underground perimeter grounding loop with bonding of the lightning protection

system, metal underground utilities, building steel, and additional code-required items with a single neutral-ground connection point at the main switchboard grounding busbar.

Security and Communication Systems Design

Michael Baker designed separate intrusion detection systems for the arms vault and SIPRNET Caf, including raceways, junction boxes, device boxes, electrical power, and communications infrastructure. The project design included an access control system with head-end server, work station, local control panels, card readers at the site security gate and building entrances, and door contacts at all entrances and exits for the Training Building. The building entrances with card readers include electric strike and request-to-exit devices. Michael Baker designed the infrastructure for four telecommunication networks, including voice, within the Training Building, Organizational Maintenance Shop, and Unheated Storage Building and three data networks: ARNET, CAPOC, and SIPRNET. Each network involved the design of raceways, including cable tray, ladder racks and conduits, backbone cabling consisting of single-mode fiber and multi-pair copper, horizontal cabling consisting of CAT 6, outlets with RJ-45 jacks, consolidation points, racks, cabinets, protected entrance terminals, patch panels, 110 blocks, and grounding. The design of the telecommunications systems included outside-plant and inside-plant systems. A CATV system, including amplifiers, taps, splitters, RG-11 and RG-6 cabling, and outlets, was designed for the Training Building and Organizational Maintenance Shop.

Plumbing and Fire Protection

Tankless, high-efficiency, natural gas-fired water heaters located in the Training Building mechanical room and manifold provide the flow rate required for the fixtures served. The water heaters incorporate multiple controllers, a temperature and pressure-relief valve, pressure regulators, shut-off valves, and drain valves. In compliance with manufacturer instructions, a small, electrically fired water heater was installed in the re-circulating water line to maintain loop water temperature at 120 degrees F. An in-line circulating pump controlled by a time clock and aqua stat maintains water temperature in the loop to the fixtures.

To fully protect the Training Building in the event of fire, an automatic wet-pipe sprinkler system was installed in accordance with UFC 3-600-01, NFPA 72, and UFC 4-021-01. Michael Baker specified a fully addressable, intelligent fire alarm and mass notification system to serve each of the primary facilities. The annunciated system is configured for manual as well as automatic operation and electronic supervision. The signaling, initiating, and notification circuits are served by a Class B looped system. Fire alarm circuit wiring is installed in conduit.

Antiterrorism and Force Protection

Michael Baker integrated protective measures into the ARC renovation design that meet U.S. Department of Defense antiterrorism and force protection setback requirements. These include locating the ARC on the site to achieve the maximum feasible standoff distance from roads, parking areas, and vehicle loading areas; the use of blast-resistant doors and windows; and the incorporation of an emergency shutdown switch to disable all HVAC air distribution systems.

Sustainable Design

Sustainability initiatives were implemented throughout building design. Building design incorporates materials and features to reduce environmental effects, save energy, and minimize costs. Materials that are locally available and products with 20-percent recyclable content were used. Occupancy sensors reduce lighting energy consumption.

Interior building water-saving features, such as low-flow plumbing fixtures to reduce water consumption, will be used. Ozone-friendly refrigerants and refrigerant quantities will minimize ozone depletion.

Michael Baker coordinated the installation of a solar photovoltaic array and inverter system, which provides electrical energy to supplement utility provider-supplied electricity. The solar panels will offset the annual energy consumed by the new exterior lighting.

Landscaping includes native, low-maintenance, drought-tolerant plants and preserves existing trees. The landscaping design minimizes the use of potable water.

Michael Baker specified the use of measures during construction to prevent soil loss, sedimentation, and air pollution. In addition, construction waste was diverted from landfills to meet LEED® requirements. This project has achieved LEED certification.

APPENDIX 3 – References

The Project Profiles found in Appendix 2 lists Michael Baker's client and contact information for your use as a reference. Additionally, we offer the following diverse list of past local or current clients and contact information:

- **West Virginia General Services Division**
  112 California Avenue
  Charleston, WV 25305
  Mr. Greg Milton, Director
  (304) 558-2317

- **West Virginia Schools for the Deaf and the Blind**
  301 East Main Street
  Romney, WV 26757
  Phone: 304-822-4810
  Mr. Steve Triplet, Director of Facilities

- **130th Airlift Wing West Virginia Air National Guard**
  1679 Coonskin Drive, Unit 18
  Charleston, WV 25311-5005
  Captain Harry Netzer, P.E., Deputy Base Civil Engineer
  (304) 341-6649

- **West Virginia Army National Guard**
  1707 Coonskin Drive
  Charleston, WV 25311-1099
  Mr. Joe McClung, Project Manager
  (304) 561-6548

- **West Virginia Department of Transportation – Division of Highways**
  1900 Kanawha Boulevard East,
  Building 5, Room A 405
  Charleston, WV 25305
  Mr. C Elwood Penn, IV, P.E, Director of Planning
  (304) 558-9269

- **West Virginia University/ WVU Tech**
  410 Neville Street
  Beckley, WV 25801
  Phone: 304-929-0325
  Mr. Robert Moyer, Director of Facilities and Planning
  (304) 550-2839