



# West Virginia Purchasing Division

2019 Washington Street, East  
Charleston, WV 25305  
Telephone: 304-558-2306  
General Fax: 304-558-6026  
Bid Fax: 304-558-3970

The following documentation is an electronically-submitted vendor response to an advertised solicitation from the *West Virginia Purchasing Bulletin* within the Vendor Self-Service portal at ***wvOASIS.gov***. As part of the State of West Virginia's procurement process, and to maintain the transparency of the bid-opening process, this documentation submitted online is publicly posted by the West Virginia Purchasing Division at ***WVPurchasing.gov*** with any other vendor responses to this solicitation submitted to the Purchasing Division in hard copy format.

## Header

List View

**General Information** | Contact | Default Values | Discount | Document Information

Procurement Folder: 92163

Procurement Type: Central Purchase Order

Vendor ID:

Legal Name: MICHAEL BAKER JR INC

Alias/DBA:

Total Bid: \$0.00

Response Date:

Response Time:

SO Doc Code: CEOI

SO Dept: 0708

SO Doc ID: ABC1500000001

Published Date: 5/26/15

Close Date: 6/16/15

Close Time: 13:30

Status: Closed

Solicitation Description:

Total of Header Attachments: 0

Total of All Attachments: 0



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

**State of West Virginia  
 Solicitation Response**

**Proc Folder :** 92163

**Solicitation Description :** ADDENDUM #2 - EOI FOR ABCC FIRE PREVENTION RENOVATIONS

**Proc Type :** Central Purchase Order

Date issued	Solicitation Closes	Solicitation No	Version
	2015-06-16 13:30:00	SR 0708 ESR06161500000004379	1

<b>VENDOR</b>
000000160331 MICHAEL BAKER JR INC

**FOR INFORMATION CONTACT THE BUYER**  
 Evelyn Melton  
 (304) 558-7023  
 evelyn.p.melton@wv.gov

**Signature X** **FEIN #** **DATE**

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

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
1	Architectural/Engineering Design -Fire Prevention Renovation				

Comm Code	Manufacturer	Specification	Model #
81101508			

<b>Extended Description :</b>	ARCHITECTURAL/ENGINEERING DESIGN FOR THE FIRE PREVENTION RENOVATION OF ABCC WAREHOUSE LOCATED IN NITRO, WV.
-------------------------------	---

**Proposal for CEOI ABC1500000001  
State of West Virginia  
DEPARTMENT OF ADMINISTRATION  
ABCC FIRE PREVENTION RENOVATIONS**



HUB Industrial Park, 97 Independent Avenue  
Nitro, West Virginia 25143



**Michael Baker**  
INTERNATIONAL



# Table of Contents

## Mandatory Proposal Submission Forms

<b>1. Project Location</b>	<b>1</b>
<b>2. Project Background</b>	<b>1</b>
<b>3. Firm/Team Qualification &amp; Experience</b>	<b>1</b>
<b>3.1 Firm/Team Qualification</b>	<b>1</b>
<b>3.2 Project Organization</b>	<b>4</b>
<b>3.3 Demonstrated Experience</b>	<b>5</b>
<b>4. Project and Goals</b>	<b>5</b>
<b>4.1 Concept</b>	<b>5</b>
<b>4.2 Design</b>	<b>6</b>
<b>4.3 Design/Bidding Documents</b>	<b>6</b>
<b>4.4 Review</b>	<b>7</b>
<b>4.5 Construction Documents</b>	<b>7</b>
<b>4.6 Project Drawings</b>	<b>7</b>

**APPENDIX 1 – Resumes**

**APPENDIX 2 – Project Profiles**

**APPENDIX 3 - References**



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

State of West Virginia  
 Centralized Expression of Interest

Proc Folder: 92163

Doc Description: EOI - ABCC FIRE PREVENTION RENOVATIONS

Proc Type: Central Purchase Order

Date Issued	Solicitation Closes	Solicitation No	Version
2015-04-29	2015-06-16 13:30:00	CEOI 0708 ABC1500000001	1

**BID RECEIVING LOCATION**

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

**VENDOR**

Vendor Name, Address and Telephone Number:

Michael Baker Jr., Inc.  
 5088 West Washington Street  
 Charleston, West Virginia 25313  
 (304) 769-0821

**FOR INFORMATION CONTACT THE BUYER**

Evelyn Melton  
 (304) 558-7023  
 evelyn.p.melton@wv.gov

Signature X

FEIN # 25-1228638

DATE June 16, 2015

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

INVOICE TO		SHIP TO	
PROCUREMENT OFFICER		ABCA WAREHOUSE	
ALCOHOL BEVERAGE CONTROL COMMISSION		HUB INDUSTRIAL PARK	
4TH FLOOR		97 INDEPENDENT AVE	
900 PENNSYLVANIA AVE			
CHARLESTON	WV25302	NITRO	WV 25143
US		US	

Line	Comm Ln Desc	Qty	Unit Issue
1	Architectural/Engineering Design -Fire Prevention Renovation		

Comm Code	Manufacturer	Specification	Model #
81101508			

**Extended Description :**

ARCHITECTURAL/ENGINEERING DESIGN FOR THE FIRE PREVENTION RENOVATION OF ABCC WAREHOUSE LOCATED IN NITRO, WV.

THE WEST VIRGINIA PURCHASING DIVISION IS SOLICITING EXPRESSIONS OF INTEREST ON BEHALF OF THE WV ALCOHOL BEVERAGE CONTROL COMMISSION FROM QUALIFIED FIRMS TO PROVIDE DESIGN SERVICES AND BID DOCUMENTS TO UPGRADE THE WATER SERVICE TO THE EXISTING SPRINKLER SYSTEM, REMOVAL OF THE EXISTING WATER TANK AND OTHER NECESSARY FIRE SYSTEM UPGRADES FOR THE ABCC WAREHOUSE LOCATED AT 97 INDEPENDENT AVENUE, NITRO, WV 25143.

<b>ABC1500000001</b>	<b>Document Phase</b> Final	<b>Document Description</b> EOI - ABCC FIRE PREVENTION REN OVATIONS	<b>Page 3</b> <b>of 3</b>
----------------------	--------------------------------	---	------------------------------

**ADDITIONAL TERMS AND CONDITIONS**

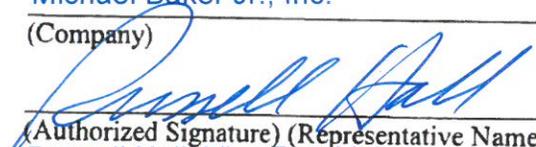
See attached document(s) for additional Terms and Conditions

**CERTIFICATION AND SIGNATURE PAGE**

By signing below, or submitting documentation through wvOASIS, I certify that I have reviewed this Solicitation in its entirety; understand the requirements, terms and conditions, and other information contained 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 Jr., Inc.

(Company)

  
 (Authorized Signature) (Representative Name, Title)

Russell Hall, Vice President

304.769.0821, 304.769.0822, June 16, 2015

(Phone Number) (Fax Number) (Date)

ADDENDUM ACKNOWLEDGEMENT FORM  
SOLICITATION NO.: CEOI\_ABC150000001

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

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

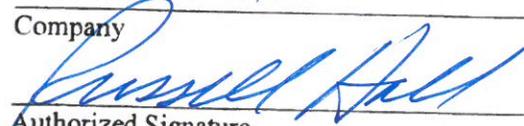
Addendum Numbers Received:  
(Check the box next to each addendum received)

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

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

Michael Baker Jr., Inc.

Company \_\_\_\_\_

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

June 16, 2015  
Date \_\_\_\_\_

NOTE: This addendum acknowledgement should be submitted with the bid to expedite document processing.

STATE OF WEST VIRGINIA  
Purchasing Division

**PURCHASING AFFIDAVIT**

**MANDATE:** 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 exceeds 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 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 Jr., Inc.

Authorized Signature: *Russell Hall* Date: June 16, 2015

State of West Virginia

County of Kanawha, to-wit:

Taken, subscribed, and sworn to before me this 16<sup>th</sup> day of June, 2015.

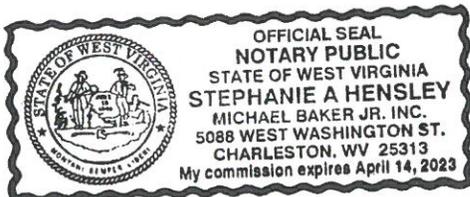
My Commission expires April 14, 2023.

**AFFIX SEAL HERE**

**NOTARY PUBLIC**

*Stephanie A Hensley*

*Purchasing Affidavit (Revised 07/01/2012)*



# ABCC Warehouse Fire Protection Renovation

## CEOI ABC1500000001

### 1. Project Location

WV ABCC Agency location: 900 Pennsylvania Avenue, 4<sup>th</sup> Floor, Charleston, West Virginia 25302

WV ABC Warehouse location: HUB Industrial Park, 97 Independent Avenue Nitro, West Virginia 25143

### 2. Project Background

West Virginia Alcohol Beverage Control Commission is seeking a highly qualified engineering firm to provide design services and bid documents to upgrade the fire sprinkler water service to the existing ABC Warehouse sprinkler system and to specify the demolition and removal of the existing 300,000 gallon water tank and pump house. The firm will be responsible to evaluate the existing load on the system, make recommendation and present options for upgrades or renovations as specified in the EOI - Section Three, page 11. Michael Baker International (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 establishing a professional relationship with the WV ABCC (the ABCC).

*“ . . . we are extremely interested in continuing our professional relationship with the State of West Virginia ”*

### 3. Qualifications & Experience

#### 3.1 FIRM/TEAM QUALIFICATIONS

Baker's proposed team of experienced professionals has demonstrated the ability to deliver quality work products to our clients, on-time and within budget. 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 Contact Person

Name: Russell Hall, Principal-In-Charge

Address: 5088 West Washington Street

Phone number: 304-769-0821

Email Address: [RHall@mbakerintl.com](mailto:RHall@mbakerintl.com)

Signature: \_\_\_\_\_



**PERSONS ASSIGNED TO THE PROJECT – Resumes provided in Appendix 1**

<b>Name</b>	<b>Role</b>
Patrick Fogarty	Civil Engineer/Project Manager
David Hilliard	Mechanical Engineer
Kevin Spangler	Fire Protection Engineer
P. Daniel Manns	Electrical Engineer
Wayne Airgood	Structural Engineer
Steve Frazer	Surveyor

**PROVIDE INFORMATION ON ALL OTHER PROJECT CONSULTANTS, SUB-CONSULTANTS, AND FIRMS PROPOSED TO BE EMPLOYED BY THE LEAD FIRM FOR THIS PROJECT**

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

**STATEMENT OF FIRM’S ABILITY TO HANDLE THE PROJECT IN ITS ENTIRETY**

**Locally**

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

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. 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.

**Corporate Capabilities**

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. 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, Baker has more than 6,000 employees in over 90 offices located across the U.S. and internationally. Baker seamlessly integrates architecture, planning, landscape architecture, engineering and management. Internationally recognized with a



*Institute for Scientific Research  
Fairmont, WV*

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.

Baker has extensive resources and the required qualifications to provide planning, engineering and design services for the ABCC on this important project. We have local and nationally recognized experts with the technical experience necessary for this assignment. In addition, 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, 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 (Civil, Mechanical, Fire Protection, Plumbing 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, 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 AGENCY AND CAN BE USED OR SHARED BY THE AGENCY AS DEEMED APPROPRIATE**

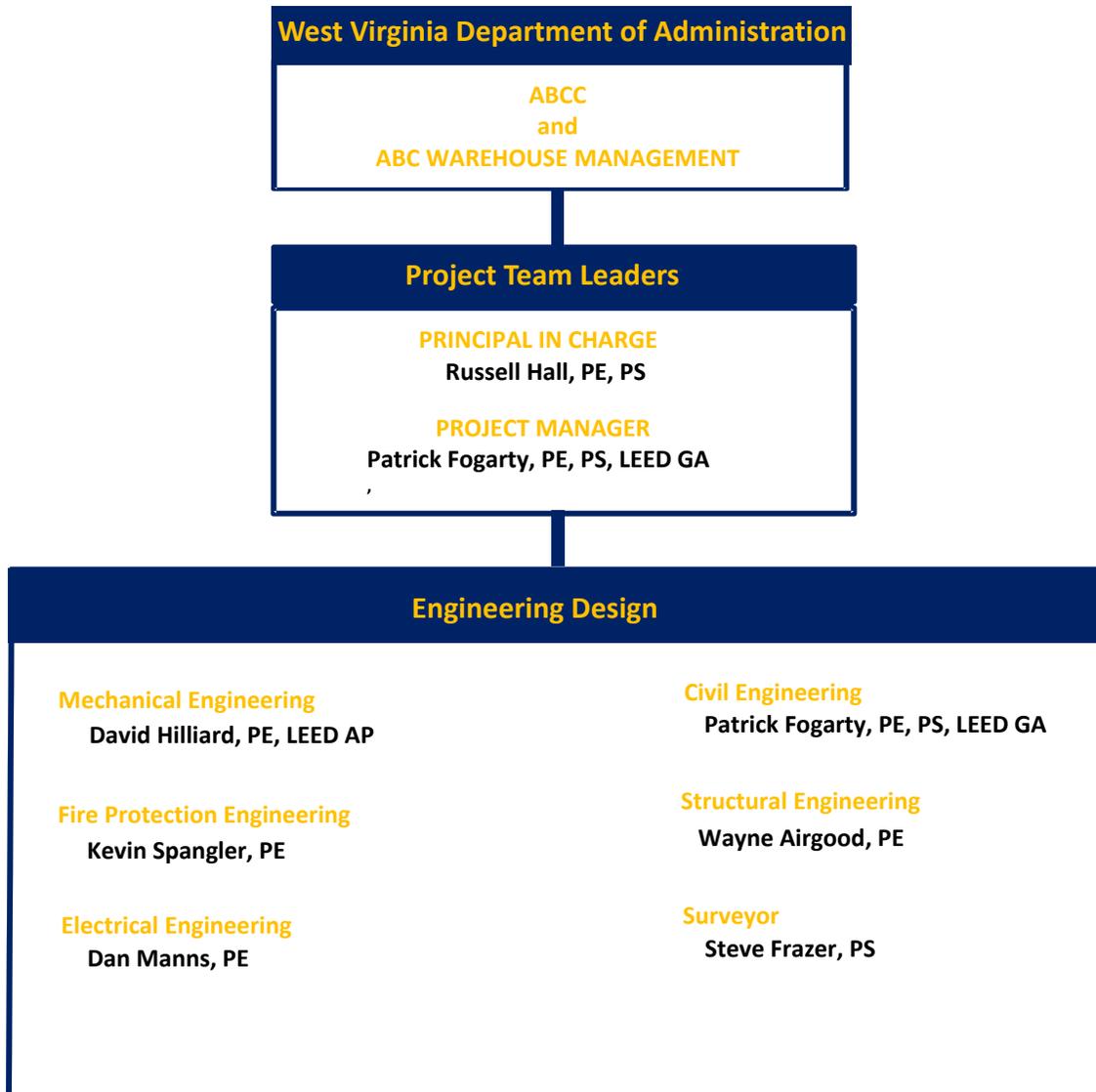
Baker will provide to the ABCC or other appropriate agencies, electronic copies of all required submittals through the various design stages and will provide final AutoCAD drawings at the completion of the project if requested.

**DESCRIPTION OF ANY LITIGATION OR ARBITRATION PROCEEDINGS**

Baker is involved in such claims, arbitration proceedings and suits as is typical for the work it performs. Baker's legal department may provide certain non-confidential details relating to any such individual matter after receipt of a specific written request. Baker is not involved with litigation or arbitration proceedings, including vendor complaints filed with the West Virginia Purchasing Division or disputes with other Agencies and the State of West Virginia that involved legal representation by either party relating to Baker's delivery of design services.

### 3.2 PROJECT ORGANIZATION

#### PROJECT ORGANIZATION CHART INCLUDING KEY PERSONNEL



#### 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 will be engaged on an as need basis

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

### 3.3 DEMONSTRATED EXPERIENCE IN COMPLETING PROJECTS OF A SIMILAR SIZE AND SCOPE

Eight (8) Project Profiles are included in **Appendix 2**. They were selected as a representative group of various kinds of related projects. These include local projects in the City of Nitro, the State of West Virginia, and other relevant projects around the country.

Five (5) References are provided in **Appendix 3**.

## 4. Project and Goals

### 4.1 GOAL/OBJECTIVE 1: CONCEPT

Baker understands that the existing fire sprinkler system located within the ABC warehouse shall be connected to a new public 12 inch water line to be located along Independence Avenue. The current existing 8 inch private fire service water line, pump house and water storage tank will be disconnected. The approach of the project would be holistic in nature to help understand the system demands and requirements, and provide/design the most cost effective system to achieve the demand requirements.

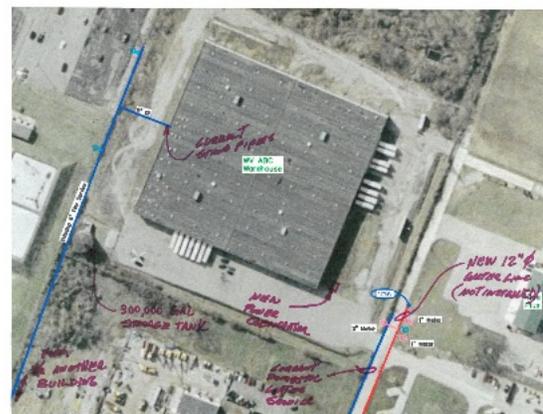
The first step of the project analysis would be to understand the current system demands. This would include the pressure and flow requirements of the existing sprinkler system and the designed fire hydrant demands. This information would be identified through site investigation and analysis of as-built drawings.

The new water supply would be analyzed to determine the available water flow and pressure that would be provided to the connection point. This could be achieved with the performance of a fire hydrant flow test of the new water service line. Baker fire protection engineers (FPEs) are experienced in performing hydrant flow tests and have all required equipment. The local water authority would be contacted and the test would be performed in conjunction with their personnel. A Fire Protection Professional Engineer's signature and seal will be provided on the prepared flow test.

Based on the existing fire sprinkler system demands and the new water service test results, hydraulic calculations shall be performed to determine available options for supporting the sprinkler system.

Baker FPEs utilize HRS systems' HASS computer program to perform detailed hydraulic analysis of the sprinkler and water service systems. The program will be used to determine if the existing sprinkler system can be supported by the new fire water line without the use of a fire pump.

If the water supply flow and pressure is determined to be insufficient or are less than those required by NFPA 20 and local codes, the use of a fire pump will be addressed. The fire pump will be sized based on the sprinkler demand and the water supply available. The system will be reassessed if a fire pump alone will not



be capable of supporting the load. A pump would be required if the new water supply line is capable of providing an adequate amount of flow, but the pressure is not sufficient to support the system. The fire pump would boost the pressure to adequately supply the fire sprinkler system.

The routing of the water supply pipe line will also be investigated and options discussed. Based on the location of the new water line on the north side of the building and the fire protection entrance line located on the opposite side of the building, two potential possibilities for the pipe routing are currently identified. One could be underground around the building or the other routed through the building, possibly overhead. A structural engineer will be engaged to discuss the possibility of routing the new fire line through the building. The structural engineer will be able to provide expert knowledge and experience related to the interior pipe routing, including the structural load of the new pipe on the building, anchoring, support and other challenges associated with this option.



Baker will provide cost estimating services. Once the different options are identified from a technical standpoint, the cost estimating group would be engaged to provide the financial feasibility of each option.

Baker will approach the project in a systematic way to analyze the system demands and determine the appropriate solutions to meet those demands. Analyzing multiple solutions will provide the ABCC with the ability to choose the most cost effective approach for the project.

#### **4.2 GOAL/OBJECTIVE 2: DESIGN**

Baker has a variety of services with extensive experience in many fields of expertise. This allows the core team members access to expertise in all areas necessary for the design of the preferred option.

A survey team will be responsible for identifying existing site conditions and locating all underground utilities in the project area. This team will consist of Baker employees which are Licensed Professional Surveyors and Registered Professional Civil Engineers.

Baker currently employs three Registered Fire Protection Engineers (FPEs). The FPEs will be involved in all aspects of the existing condition assessment and system design. This includes conducting the fire hydrant flow test, analyzing the existing fire suppression system if desired by the Client, performing hydraulic calculations, proposing design options, writing specifications and providing the final system design. The FPE designer of record will be able to provide final sealed drawings and specifications for the project.

The Baker electrical engineer of record will be responsible for the design of the electrical system associated with the fire pump, should one be required. The electrical system will be analyzed and the power feeds and generator will be sized appropriately for the new systems if need be.

#### **4.3 GOAL/OBJECTIVE 3: DESIGN/BIDDING DOCUMENTS**

Baker will provide all necessary design and bidding documents in accordance with WV Purchasing Division for all aspects of the design. Specifications will be provided for all required products for the

underground water line, fire pump or other components as required. Drawings and documentation will be provided based on the site survey and the verified dimensions of existing facilities. This documentation will include the location of existing on-site utilities and service lines. Design documents will include the location of relocated lines and information regarding the limitations and requirements for project demolition. Demolition details will include any required underground utilities, the existing fire pump, existing fire water storage tank and existing generator as necessary.

The bidding documents will include any required information associated with the new fire water supply system. This documentation includes specifications and drawings. The specifications will be prepared as performance-based specifications unless specific products are requested by the ABCC. A complete fire pump design (if required) will be provided, but shall permit a performance-based design by the selected Contractor.

#### **4.4 GOAL/OBJECTIVE 4: REVIEW**

The final shop drawings provided by the selected contractor will be reviewed by the engineer-of-record to ensure that all code requirements are met and that specification criteria is appropriate for the project. All products intended to be installed on the project shall be submitted to and approved by the engineer-of-record. The products will be approved based on meeting the prepared specifications, current code requirements and contract requirements.

After the system installation is complete, the engineer-of-record shall be contacted and will perform a final inspection. The inspection shall include approval of installation in accordance with approved product data and approved shop drawings. Once installation is accepted, final acceptance testing will be conducted. Final testing shall include; hydrostatic testing of the newly installed underground piping in accordance with NFPA 24, final fire pump commissioning testing in accordance with NFPA 20 and (if required) final tank inspection and testing in accordance with NFPA 22. Final testing may be certified by the engineer-of-record and/or any local authorities.

#### **4.5 GOAL/OBJECTIVE 5: CONSTRUCTION DOCUMENTS**

Demolition drawings will be provided for the removal of the existing 300,000 gallon fire water storage tank, the existing fire pump house, all related piping, the existing diesel motor and associated control panel. Phasing will be provided with the construction documents, which will include the demolition and removal of the existing systems to be completed after the new water supply system is installed and commissioned.

#### **4.6 GOAL/OBJECTIVE 6: PROJECT DRAWINGS**

The drawings will be prepared in AutoCAD format. All files will be provided to the ABCC upon completion of the project for future use. The drawings will be 'bound', such that the files will not require external references and allows for easy future use and alteration. Paper copies and AutoCAD format drawings will be provided to the ABCC at the close out of the project.

# APPENDIX 1 –Team Resumes

## Russell E. Hall, P.E., P.S.

### Assistant Vice President and Charleston Office Manager

#### General Qualifications

Mr. Hall currently serves as Assistant Vice President of Michael Baker International as well as Office Manager of our Charleston, WV office. He is an experienced transportation engineer who has been involved in numerous bridge and highway design projects in West Virginia for over 28 years. His project management responsibilities involve overseeing staff from project inception through completion, and ensuring that the clients' needs and requirements are met.

He also has over nine years of office management experience. His office management responsibilities include financial oversight and accountability for a staff of over 40 engineers, scientists, and administrative personnel for Baker's Charleston office. His major strengths include organizing and managing a project team, quality control and quality assurance, and problem resolution. He provides overall direction and maintains direct communications with all clients. Mr. Hall is very proud of the fact that he has been able to spend his entire career in West Virginia working to address West Virginia's transportation needs.

#### Experience

**Kanawha River Bridge, Charleston, West Virginia.** *Brayman Construction Company.* Principal-In-Charge. Responsible for oversight of Project Management. Baker's Charleston, West Virginia office redesigned seven piers for the contractor and performed a complete analysis of the superstructure and substructure to properly size the piers.

**US 35/I-64 Interchange Post Design, West Virginia.** *West Virginia Department of Transportation, Division of Highways.* Principal-In-Charge. The design phase of this project provided for the preparation of construction and right of way plans for approximately three miles of 4-lane divided highway. The construction plans were separated into three construction contracts and included the design of two interchanges, two bridges, numerous box culverts and a vehicular underpass. The post design phase of this project provided for the review and approval of shop drawings and responding to Requests for Information. Baker designed the original post-tensioned concrete box bridge. Contractor value engineered the superstructure to a steel girder bridge. Foundation for piers and abutments were as designed. Baker reviewed pile testing, mass concrete results, and MSE wall calculations provided by the contractor.

**Fort Pleasant Access Road Project, Moorefield, West Virginia.** *Fort Pleasant Farms, Inc.* Principal-In-Charge. Responsible for oversight of project finances, schedules and quality control. Baker prepared contract construction plans and related documents for a 3-lane access road connecting Corridor H to private property in Moorefield, WV.

**Years with Michael Baker:** 10

**Years with Other Firms:** 18

#### Degrees

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

#### Licenses/Certifications

Professional Engineer - Civil/Structural, West Virginia, 1990

Professional Surveyor, West Virginia, 1996

**WVDOH Six-Year Bridge Inspection Program, Various Locations, West Virginia.** *West Virginia Department of Transportation, Division of Highways.* Principal-In-Charge. Responsible for oversight of project finances, schedules and quality control. Baker was responsible for performing the inspection services and report writing for the New River Gorge Bridge, Veteran's Memorial Bridge, Fort Hill Bridge, Fort Henry Bridge and Wheeling Tunnels.

**Fort Pleasant Farms Two Lane Road Design, Moorefield.** *Fort Pleasant Farms, Inc.* Principal-In-Charge. Responsible for oversight of project finances, schedules and quality control. This project involved the study, design and final construction plan development for a new two-lane access road approximately 1500' in length. This access road was designed to connect a commercial/residential development to the Moorefield Interchange on Corridor H in Moorefield, West Virginia.

**Town of Moorefield-Maple Avenue Streetscape, Moorefield.** *Town of Moorefield.* Principal-In-Charge. Responsible for oversight of Project Management. The Town of Moorefield was in need of a pedestrian-friendly way of connecting the downtown area with the highly utilized nearby community park. Maple Avenue was a secondary street connecting the two areas, but had no sidewalks and deep ditches along most of the corridor. Moorefield tasked Baker with the planning and design of improvements that would both upgrade existing facilities and create a unified community linking the downtown with the community park.

**Blennerhassett Island Bridge, Appalachian Corridor D, Washington County, Ohio and Wood County, West Virginia.** *West Virginia Department of Transportation, Division of Highways.* Principal-In-Charge. Responsible for oversight of project finances, schedules and quality control. The 878' – 6" long network tied arch was ranked as the longest of its type in the United States and one of the longest in the entire world. Baker provided project management, environmental and location studies, permitting, preliminary and final design as well as construction phase services.

**Town of West Milford Sidewalk Improvements, West Milford, West Virginia.** *Town of West Milford.* Principal-In-Charge. Responsible for oversight of Project Management. Baker performed complete planning, design and construction management services for new sidewalks along U.S. Route 270 (Main Street) for the Town of West Milford. The improvements included concrete sidewalks with integral concrete curbs, driveway curb cuts, ADA accessible curb ramps with truncated domes, "ladder-style" crosswalks and storm drainage design. Baker provided Construction Administration and resident inspection services as well as periodic site review during construction.

**City of Charleston Bridges-Engineering Consulting Services, Charleston, West Virginia.** *City of Charleston, West Virginia.* Principal-In-Charge. Responsible for oversight of Project Management. Baker's Charleston, West Virginia office provided various services for the City of Charleston. Baker reviewed existing inspection reports, performed bridge inspections and recommended and prioritized repairs for 13 bridges owned by the city. Kanawha-Putnam Bike/Pedestrian Plan, Phase I, South Charleston. Regional Intergovernmental Council. Principal-In-Charge. Responsible for oversight of Project Management. Baker performed a cursory inventory of existing bicycle and pedestrian facilities, identified areas with a high level of bicycle and pedestrian activity, collected existing resources and performed a broad base public outreach effort to identify bicycle and pedestrian issues in Kanawha and Putnam Counties for the Regional Intergovernmental Council (RIC). All data, survey results and preliminary findings were compiled for analysis and incorporation into the final plan during Phase II of the study.

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

## Civil Engineer , Facilities Practice Manager

### 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 is leading a planning study for the renovation of 31 restrooms in the historic West Virginia Capitol Building. The planning study will 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. Baker will provide design, construction sequence, and scheduling recommendations. Upon approval of the design, Baker will prepare construction documents and provide construction administration services for the renovation of three restrooms on the basement level.

**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.

**Years with Michael Baker:** 9  
**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

**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.

## David J. Hilliard, P.E., LEED® AP

### 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 a senior engineer for Baker. His recent design experience has included the design of new campus water lines and other service utilities at West Virginia State University, 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 plumbing renovation design on the historic State Capitol Building. His resume covers over 30 years of real world work in engineering, design, fabrication and construction in the mechanical, electrical 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 ASME, ASHRAE, ASPE, USGBC, and other pertinent organizations

#### Experience

**West Virginia State University - Open-End Architectural/Engineering Services, Institute, West Virginia.** 10 year IDIQ. Mechanical/Electrical and Plumbing Designer and Engineer of Record for on demand projects at West Virginia State University. Some recent tasks have included programming, planning, design development, construction documentation, systems evaluations, and feasibility studies and cost estimating. Mapping, evaluation and design services for storm and sewer line systems, a campus wide domestic water loop system design, football field upgrades and overall facility maintenance support as requested by the University. He has also been involved with the development and acquisition of WVDEP permits for both MS4 and Air Perming.

**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.

*Years with Michael Baker: 6*

*Years with Other Firms: 20*

#### 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, West Virginia 2011

LEED AP, bd+c, 2010

#### Professional Affiliations

American Society of Plumbing Engineers

American Society of Heating, Refrigerating, and Air-Conditioning Engineers

American Society of Mechanical Engineers

**Good News Mountaineer Garage, Charleston, West Virginia.** Mechanical Engineer. Responsible for the Mechanical, Electrical and Plumbing Design, MEP Document Preparation, and Construction Administration for newly renovated Auto Repair garage and administrative office facility for this non-profit organization. The Good News Mountaineer Garage accepts donations of vehicles that are repairable for a reasonable amount of money. These donated cars are then distributed to families with low incomes for transportation to work.

**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. And will provide Construction Administration during construction

**Army National Guard Headquarters Renovations, Charleston, West Virginia.** *State Army National Guard Headquarters.* Mechanical Engineer. Responsible for all mechanical design oversight and construction management. 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 a complete renovation and replacement of the HVAC system with a Loop Heat Pumps, new acoustical ceilings, flooring, energy-saving light fixtures, several new wall partitions, 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.

**Advanced Individual Training Barracks and Company Operations Facility, Fort Gordon, Richmond, Jefferson, McDuffie, and Columbia Counties, Georgia.** *U.S. Army Corps of Engineers, Fort Worth District.* Mechanical Engineer. Responsible for exhaust & outdoor air system review and development. Baker served as the designer of record for the design-build for a new, design-build, 93,000-gross-square-foot advanced individual training barracks and a three-story training barracks that is designed to house 300 single soldier trainees. The facility is designed to meet achieve Gold LEED® rating. Baker's services included architectural, engineering, landscape, and interior design services.

#### **Other pertinent experience**

**Heart and Vascular Center - CAMC Memorial Hospital, Kanawha City, West Virginia.** Mechanical Engineer. Performed design calculations, layout of Plumbing, HVAC ductwork, piping and components for three floors of the Clinical Teaching Center; Lobby, Cath Labs and patient rooms. This work was all done in affiliation with BSA Life Structures

**Fairmont State University, Student Activities Center; Fairmont West Virginia.** For this project, Mr. Hilliard worked on the HVAC Design, coordination and construction of the student recreation center for Fairmont State. The HVAC systems included large packaged rooftop units with VAV zone control, a pool area with fabric duct system, locker room exhaust, exposed spiral ductwork in exercise and gym areas and a building smoke evacuation system.

**Ashland Community and Technical College; Ashland, Kentucky.** Mr. Hilliard worked on Design Evaluation and Coordination of the Medium Pressure VAV Mechanical System. He prepared shop drawings and coordination drawings. His duties also included Construction Administration.

**Mountain State University School of Business and Applied Technologies; Beckley West Virginia.** Mr. Hilliard worked on Design Evaluation and Coordination of the Mechanical System. He prepared shop drawings and coordinated construction.

## Kevin Spangler, P.E.

### Fire Protection Engineering Manager

#### General Qualifications

Mr. Spangler is a registered fire protection engineer experienced with fire protection and detection systems for new building designs and renovation projects, domestically and internationally. Responsibilities include provision of design services and performance of independent technical quality reviews for fire protection designs including sprinklers and fire alarms, and review of life safety analysis. Project types include Department of Energy and Department of Defense facilities such as laboratories, fuel cell and corrosion control hangars, shipping and receiving facilities, storage facilities and warehouses, administrative and office buildings, training centers, vehicle maintenance facilities, and hotel, dormitories, and barracks.

#### Experience

**Fire Pump Replacement.** *Allegheny County Airport Authority – Pittsburgh International Airport.* Mr. Spangler was the fire protection engineer designer of record for the project. He completed detailed field measurements of the existing systems and finalized the design for the newly installed fire pumps. The project included the installation of 4 new, electric motor driven fire pumps in two (2) separate fire pump houses (2 pumps per fire pump house). The fire water tanks and existing water supply were analyzed to meet code requirements and the existing piping rerouted as necessary to provide appropriate pump recirculation. The challenges that were faced and solved during in the project included the installation of previously purchased fire pumps into an existing system. The project was successful due to the attention to detail in field measurements of the existing systems and the detailed design of the new system.

**Private Corporate Client.** *Hangar located at Allegheny County Airport.* Michael Baker was responsible for the building design for a renovation of a historic hangar located at the Allegheny County Airport. Mr. Spangler was the Fire Protection Engineer responsible for the design of fire protection systems throughout the building including sprinkler system, foam system, and fire alarm system. Two fire pumps were designed and retrofitted into the building to provide the adequate flow and pressure for the suppression systems. Detailed hydraulic calculations were performed and discussed with the local Authority Having Jurisdiction in order to remove the existing fire water storage tanks from the project. As part of the project, a site survey of existing building and final inspections of the final systems installations were performed.

**Design of Central Issue Facility, Fort McCoy, Wisconsin.** *U.S. Army Corps of Engineers, Louisville District.* Mr. Spangler was the fire protection engineer of record for the building and was responsible for fire protection design including sprinklers, fire alarm and mass notification systems to meet the requirements of the RFP, UFC and NFPA

**Years with Michael Baker:** 6

**Years with Other Firms:** 1

#### Degrees

M.S., 2008, Fire Protection Engineering, University of Maryland, College Park Campus

B.S., 2006, Agricultural and Biological Engineering, The Pennsylvania State University

#### Licenses/Certifications

Professional Engineer, California, 2011, [REDACTED]

Professional Engineer, Virginia, 2012, [REDACTED]

Professional Engineer, Pennsylvania, 2012, [REDACTED]

Professional Engineer, Illinois, 2013, [REDACTED]

Professional Engineer, Idaho, 2014, [REDACTED]

Professional Engineer, New York, 2014, [REDACTED]

codes for the building. The building was a 62,553 square foot warehouse building, which required the design of a fire pump to support the sprinkler system. He performed an on-site fire hydrant flow test according to NFPA 291 to determine the available pressure for the building. Michael Baker is the designer of record for the design-bid-build delivery of an approximately 62,553-square-foot large-sized Central Issue Facility (CIF) to expedite the shipping and receiving, distribution, processing, and exchange of soldier equipment. The project includes ancillary site improvements and demolition design for five buildings. Tasks are being performed under an indefinite quantity-indefinite delivery engineering agreement. Michael Baker is designing the CIF to meet LEED Silver certification. Michael Baker's services include architecture, surveys, environmental investigation, geotechnical investigation, all site and building engineering, cost estimating, value engineering, and LEED certification administration.

**Camp Geiger East Infantry Training Complex, Marine Corps Base Camp Lejeune, North Carolina.** *Naval Facilities Engineering Command, Mid-Atlantic.* Mr. Spangler was the fire protection engineer of record for Academic Building, CIF and Warehouse buildings. He was responsible for fire protection design of protection systems including sprinklers, fire alarm and mass notification systems to meet the requirements of the RFP, UFC and NFPA codes. He performed life safety analysis for complete compliance with NFPA 101, IBC and the UFC criteria. This includes classifying occupancies, occupant load calculations, egress analysis and rated separations. He also performed an on-site fire hydrant flow test according to NFPA 291 to determine the available water supply. This information was used to perform detailed hydraulic calculations for the building sprinkler systems. He worked directly with the NAVFAC fire protection engineer to analyze the water system and remove the need for a fire pump for each of the buildings. Michael Baker served as the lead designer for the design-build delivery of a 137,850-square-foot infantry training complex on five acres at Camp Geiger. The project included the construction of a two-story headquarters and academic building, a warehouse, a consolidated issue facility, an armory building, and an emergency weather center, the demolition of five buildings and various electrical distribution upgrades. The project was designed to meet the requirements for LEED Silver certification.

**Design-Build U.S. Army Reserve Center, Panama City, Florida.** *U.S. Army Corps of Engineers, Louisville District.* Mr. Spangler was the fire protection engineer of record responsible for the design of the fire protection systems at the Panama City Army Reserve Center. The project consisted of two new, fully sprinkered buildings supported by a single exterior fire pump house. The fire pump was a single, electrically driven fire pump designed based on the demand of the two buildings. The city water supply was analyzed to determine the need for fire water storage tanks, based on hydraulic data. Mr. Spangler also represented the contractor as a witness to the final fire pump testing. He oversaw that the testing was performed in accordance with NFPA 20, and prepared the final testing report.

**King Khalid Air Base.** *Gilbane.* Mr. Spangler was the Fire Protection Engineer of record responsible for the design of life safety systems, fire alarm and mass notification systems, fire sprinkler systems, hangar foam system, and fire pump system for the KKAB air base. The design included 13 buildings and the base-wide fire pump system. The fire pumps were sized based on the most demanding system hydraulic calculations that were performed for all buildings throughout the new construction area. The fire water storage tanks were sized based on the fire suppression system demand and the rating of the fire pumps. The fire pumps were located in an exterior fire pump house and served the base through a looped underground distribution system.

## Paul D. Manns, P.E.

### Technical Manager

#### General Qualifications

Mr. Manns is a senior electrical engineer with extensive experience providing engineering planning, programming, and design services for numerous military installations, and commercial, industrial, and institutional facilities. Mr. Manns has successfully completed projects from Alaska to Florida while living in Pennsylvania. In addition, Mr. Manns has supported many international projects and has traveled projects located in various locations in Afghanistan and Qatar including the Afghan National Army Academy master planning; Bagram Air Base Master Planning; Electrical Feasibility Study for ANA Garrisons; BAF Planning & Programming project; the FY08/10 Planning Charrettes Eastern FOBs; and a three-month assignment providing Forward Engineer Support for RC-E Afghanistan, 168th Engineer Brigade, FOB Sharana, Afghanistan.

#### Experience

**Findlay Township Municipal Engineering Services, 1998 - 2014, Clinton, Pennsylvania.** *Findlay Township.* Mr. Manns was the electrical engineer and designer of record for a standby generator upgrade. The existing generator was a life safety generator supporting some of the existing egress lighting systems in the building. The client wanted to increase the size and the reliability of the existing generator and support other critical equipment as part of the 911 call center. Michael Baker provided designs, estimates, and supported construction services for the installation of a new consolidated electrical building service, providing new self-contained egress lighting system, Automatic Transfer Switch, and Standby Generator capable of handling the present load and the planned future expansion. Michael Baker provided direction and estimates for the client to select the desired extent of renovation. Michael Baker is the retained municipal engineer for Findlay Township and has maintained a relationship with the Township since 1998. As the Township's municipal engineer, Michael Baker has provided on-call, as-requested consulting engineering services to support the operations of the Township.

**Design and Construction-Phase Services for Rotary Wing Aircraft Parking Aprons, Phase III, Camp Bastion, Helmand Province, Afghanistan.** Mr. Manns was the electrical engineer and designer of record responsible for the lighting calculations, location of the poles, the quantity of the fixtures, generators selection, and the connections to the vault. The project consisted of the expansion of an existing Rotary Wing Apron and the Addition of a new Rotary Wing Apron. These additions to an existing airfield required modifications and additions to the existing taxiway edge, with additions of new taxiway edge, new apron edge, high mast apron lighting and grounding systems. All of the aprons are located at remote locations and required three stand-alone generators to support the high mast lighting and small tool power loads. All of the edge lighting was connected to existing or new CCRs located in the existing Aviation Lighting Vault.

**Design and Construction-Phase Services for Taxiway H Reconstruction, Camp Bastion, Helmand Province, Afghanistan.** Mr. Manns was the electrical engineer and designer of record responsible for the lighting

**Years with Michael Baker:** 3

**Years with Other Firms:** 20

#### Degrees

B.S., 1990, Electrical Engineering,  
Grove City College

#### Licenses/Certifications

Professional Engineer,  
Pennsylvania, 1996, [REDACTED]

Professional Engineer, Ohio, 2005,  
[REDACTED]

Norfolk Southern Roadway Worker  
On-Track Safety Certification, 2013

calculations, location of the poles, the quantity of the fixtures, signage layout and connection, generator selection, and the connections to the vault. The project consisted of a single apron for parking and refueling six aircraft for a 24/7 operation. The requirement for night time operation included the installation of a high mast lighting system operated from a stand-alone generator and the modifications to the existing taxiway edge and the addition of apron edge lighting which was connected to equipment mounted in the aviation lighting vault. The other key element of the project was the addition of more than 100 Aviation Guidance Signs (AGS) on the existing airfield and integrating the signs with the existing AGS system.

**Close Air Support (CAS) Design, Camp Bastion, Helmand Province, Afghanistan.** Mr. Manns was the electrical engineer responsible for the lighting calculations, location of the poles, the quantity of the fixtures, generator selection, and the connections to the vault. The project consisted of two remote Arm/Dearm Pads and one Close Air Support Apron. These additions to an existing airfield required modifications and additions to the existing taxiway edge, taxiway edge, new apron edge and high mast apron lighting systems. All of the aprons are located at remote locations and required stand-alone generators to support the high mast lighting and small tool power loads. All of the edge lighting was connected to existing or new CCRs located in the Aviation Lighting Vault.

**Fuel Operations and Storage Design, Camp Bastion, Helmand Province, Afghanistan.** Mr. Manns was the electrical engineer responsible for the lighting calculations, location of the poles, the quantity of the fixtures, and generator selection. The project consisted of a remote fuel storage facility with adjacent parking. These additions to an existing airfield required modifications and additions low mast parking and roadway lighting systems. Due to the remoteness of the location the site required a stand-alone generator to support the low mast lighting and small tool power loads.

**Rotary Wing Aprons and Taxiway Design, Camp Bastion, Helmand Province, Afghanistan.** Mr. Manns was the electrical engineer responsible for the lighting calculations, location of the poles, the quantity of the fixtures, generators selection, and the connections to the vault. The project consisted of three remote Rotary Wing Aprons, FARP, Unarmed Helo and Armed Helo Aprons. These additions to an existing airfield required modifications and additions to the existing taxiway edge, with additions of new taxiway edge, new apron edge and high mast apron lighting systems. All of the aprons are located at remote locations and required three stand-alone generators to support the high mast lighting and small tool power loads. All of the edge lighting was connected to existing or new CCRs located in the existing Aviation Lighting Vault.

**Expedient Cleveland Data Center, Garfield Heights, Ohio.** Mr. Manns was the electrical engineer of record for the project, which involved the upgrade of the standby generator and service for the existing Expedient Cleveland Data Center. In addition the proper selection for the standby generators, the primary element of the renovation was the phasing and implementation of the service upgrade while minimizing or eliminating all unnecessary service outages.

## Wayne Airgood, P.E.

### Structural Engineer

#### 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.

**Years with Michael Baker:** 8

**Years with Other Firms:** 23

#### Degrees

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

#### Licenses/Certifications

Professional Engineer, Pennsylvania, 1999, [REDACTED]

Professional Engineer, Maryland, 2013, [REDACTED]

Professional Engineer, North Carolina, 2014, [REDACTED]

**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.

## J. Steve Frazer, P.S.

### Surveyor/Civil Associate

#### General Qualifications

Mr. Frazer is currently employed as a Civil Associate and Surveyor at the Charleston, West Virginia office. Mr. Frazer has over 26 years of diverse surveying experience that includes geomatics, topographic, aerial mapping control, research, boundary, right of way, construction stake-out, site development, volumetric, pipeline and forensic surveys.

#### Experience

##### **Sidewalk and Streetscape Improvements Projects, West Virginia.**

*Various Locations.* Professional Surveyor/Crew Chief. Coordinated and executed the development of base mapping, project control, utility location, right of way and property boundary, construction stakeout and monitoring.

Notable locations include:

Town of West Milford	City of Winfield
Town of Mason	City of Madison
Town of Parsons	<b>City of Nitro</b>

**Mart Whitt Branch Property Survey, Elliott County, Kentucky.** *Kentucky Department of Fish and Wildlife Resources.* Project Surveyor. Provided complete services for a 400 Acre Boundary Survey. Services included field surveying, courthouse research, final monumentation and assessment of the Title Commitment for the subject property.

**Various Projects.** *NiSource Corporate Services Company.* Project Surveyor.

- Gas Pipeline Survey and Mapping, Kentucky. Responsibilities included determining survey methods, cost estimates, survey coordination, and gathering and processing survey data.
- NiS Kentucky ILI Site Survey. Responsibilities included coordinating survey efforts for forensic investigation, gathering and processing survey data, preparing deliverables, and client relations.
- CPG – PM3 and NiS Phase II - Clendenin Cobb. Responsibilities included coordinating survey efforts, gathering and processing of survey data, preparing deliverables, and client relations.
- NiSource - PM-17 Line and SM80 ILI Surveys. Responsibilities included gathering and processing field data, survey coordination, and client and contractor relations.
- CPG – Clendenin Cobb. Responsibilities included coordinating survey efforts, gathering and processing of survey data, preparing deliverables, and client relations.

**Years with Michael Baker:** 4

**Years with Other Firms:** 22

#### Degrees

A.S., 1984, Civil Eng. Technology,  
West Virginia Institute of  
Technology

B.S., 1986, Civil Eng. Technology,  
West Virginia Institute of  
Technology

#### Licenses/Certifications

Professional Surveyor, West  
Virginia, 1996

# APPENDIX 2 –Project Profiles



### **Storm Drain Assessment and Repair**

Baker performed a study of storm drainage systems at the campus, including a 72-inch storm drain system, a 42-inch storm drain system, and various combined sewer and storm drains on the campus. Camera crews videotaped selected pipe sections from the outfalls back to the manholes and beyond. Smoke tests were also performed to determine arrangement, connections, pipe condition and leaks. As a result of the study, corrective measures were designed for a severely damaged 72-inch corrugated metal pipe and damaged reinforced concrete pipe. These were removed and replaced with new reinforced concrete pipe and a new wing wall at the discharge.

Baker evaluated the 42-inch storm system from S.R. 25 on the east side of campus that combines at a drop inlet east of the Hamblin Hall parking area and on Dubois Street for damage. Baker provided recommendations and estimates to the university.

Baker also evaluated the 18-inch vitrified clay pipe main sewer line serving the campus for damage due to the presence of a sinkhole that was forming behind the baseball field. Old drawings indicated that this pipe, which extends from Athletics Drive south to a lift station east of the football field, is a combined sanitary and storm sewer. Baker provided recommendations and estimates for possible upgrades of this line to the university.

### **Campus MS4 Permit**

Baker assisted the university in the preparation of their Municipal Separate Storm Sewer System permit renewal. This required close coordination with the Director of Physical Facilities and the West Virginia Department of Environmental Protection. Baker completely re-wrote the existing NPDES, MS4 permit language for compliance with current standards. This included a complete inventory of existing storm water facilities, an existing Best Management Practices Summary, specific development plans and an implementation schedule for said development and those current facilities that are out of compliance.

# Camp Geiger East Infantry Training Complex

## Marine Corps Base Camp Lejeune, North Carolina

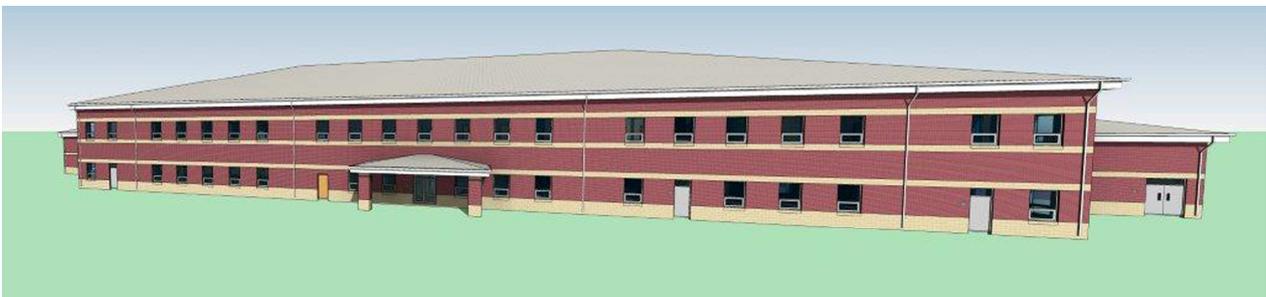
Michael Baker served as the lead designer for the design-build delivery of a 137,850-square-foot infantry training complex on five acres at Camp Geiger. The project included the construction of a two-story headquarters and academic building, a warehouse, a consolidated issue facility, an armory building, and an emergency weather center, the demolition of five buildings and various electrical distribution upgrades.

Michael Baker's services included design project management; architecture; interior design; landscape architecture; civil, structural, electrical, mechanical, plumbing, and fire protection engineering; and oversight of audio-visual design, geotechnical engineering, surveying, electrical distribution, and commissioning by subconsultants.

### ***Building Architecture***

The headquarters and academic building provides operation, administrative, classroom, and laboratory facilities for advanced infantry training. The facility is a two-story, 65,723-square-foot, load-bearing reinforced-concrete masonry unit building with spread-footing foundations and a standing-seam metal roof. The building includes instructor offices, conference rooms, open office areas, classrooms, storage rooms, lounges, showers, locker rooms, auditorium, simulator lab, multipurpose room, weapons storage, and restrooms.

The consolidated issue facility and warehouse are located on the same site as the headquarters building. The consolidated issue facility is a one-story, 37,694-square-foot facility that consists of storage and sorting areas, return and receiving areas, a break room, administrative areas, and a laundry repair room. The warehouse is a one-story, 19,980-square-foot facility that provides caged storage, private offices, administrative bullpen areas, and conferencing areas.



### ***Client***

Naval Facilities Engineering  
Command, Mid-Atlantic  
9742 Maryland Avenue  
Building N-26  
Norfolk, Virginia 23511-3095

### ***Completion Date***

Estimated: 2015

### ***Project Costs***

\$28,000,000 (Est. Construction)  
\$2,112,250 (Fee)

### ***Michael Baker's Role***

- Architecture
- Engineering
- Sustainable design
- Antiterrorism and force protection

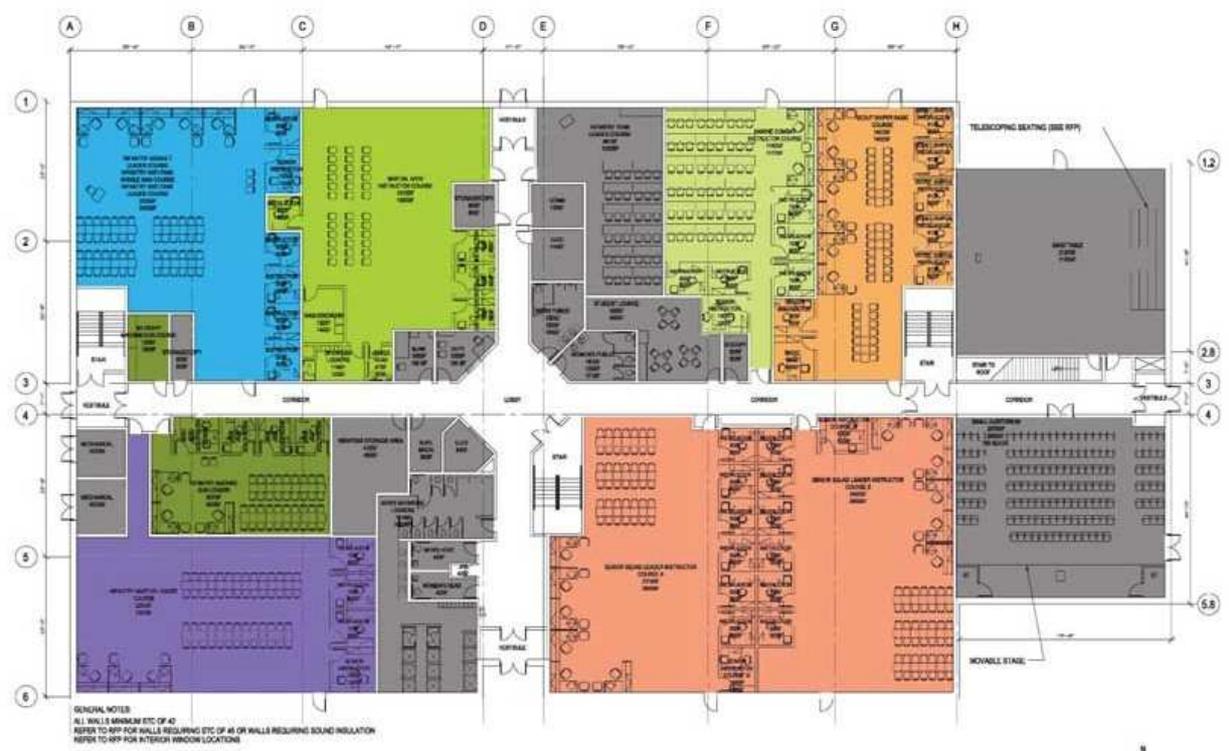
**Fire Protection Systems**

The headquarters and academic building, warehouse, and consolidated issue facility are provided with wet-pipe sprinkler systems throughout each. Multiple fire hydrant flow tests were performed around the site by Michael Baker in conjunction with the NAVFAC fire protection engineer. Tests reports were prepared and a detailed hydraulic analysis of the existing underground water supply and the building sprinkler demands were conducted. The system initially indicated that two fire pumps would be required, one for the warehouse and one for the CIF building. Hydraulic calculations and extensive discussions with NAVFAC fire protection engineers and the installing contractor achieved a design that eliminated the requirement for any fire pumps on the systems.

Michael Baker fire protection engineers provided commissioning and inspection services for the systems after the installation was completed. Testing included hydrostatic testing of the sprinkler systems, backflow preventer full flow testing, new hydrant flow testing and fire alarm system testing.

**Site Design**

The demolition of five buildings was included in this project, along with the required hazardous material abatement prior to demolition. The site design incorporated low impact development best management practices to the extent possible, in compliance with the requirements of the state and local guidelines. The civil design included new hydronic unit heaters, privately owned vehicle parking areas, grading, landscaping, utility services, and stormwater designs.



# 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).

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.

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.

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

## **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**

Estimated: 2015

## **Project Costs**

\$14,248,000 (Est. Construction)  
\$1,676,947 (Fee)

## **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

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.

### ***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.

### ***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.

### ***Fire Protection***

The facility is fully protected with an automatic wet-pipe sprinkler system with an electric motor-driven fire pump. A vertical inline fire pump was selected in order to limit the space requirements required to accommodate the fire pump system. The systems were designed and installed in accordance with UFC 3-600-01, NFPA 13, NFPA 20 and International Building Code 2006. A hydrant flow test was performed in conjunction with the local fire department. The water supply was analyzed and hydraulic calculations were performed to determine the size and necessity of the fire pump system. The analysis determined no fire water storage tanks were required because of the available water pressure.

# Design-Build U.S. Army Reserve Center

*Panama City, Florida*

Michael Baker was the designer of record for the design-build delivery of a new one-story Army Reserve Center. Michael Baker's services included planning; site civil, geotechnical, structural, mechanical, electrical, and plumbing engineering; architecture; interior space planning; fire protection design; antiterrorism and force protection design; and landscape architecture.

The project includes a 17,764-square-foot training center, a 4,613-square-foot organizational maintenance shop (OMS), a 450-square-foot unheated storage building, and associated site work.

The facility serves as a training center for the 81<sup>st</sup> Regional Support Command and houses three units, with a total capacity of two full-time personnel and 71 reservists.

The training center core areas consist of a weapons simulator room, an arms vault, physical readiness rooms with adjacent showers and locker rooms, classrooms, a library, a learning center, an assembly hall with associated kitchen and unit storage, offices, and administrative spaces. Support areas include heated storage spaces, mechanical and electrical rooms, and a janitor's closet.

The OMS is a separate facility surrounded by fenced military vehicle parking and access areas. The OMS houses two work bays and includes tools and parts storage rooms, offices, and administrative space. The structure includes a mechanical room, restrooms, and other areas that support building functions. The OMS also has a detached bi-level loading ramp and a pre-engineered covered wash bay.

## *Overall Building Construction*

The training building and OMS are of permanent construction and include reinforced concrete foundations and concrete floor slabs, with interior and exterior load-bearing walls supporting a low-slope roof system, and structural steel framing. Construction includes mechanical, electrical, information, security, and fire suppression sprinkler systems; automated building heating, ventilation, and air

## *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*

Estimated: 2014  
Actual: 2013

## *Project Costs*

\$6,353,270 (Construction)  
\$421,174 (Fee)

## *Michael Baker's Role*

- Site-civil engineering
- Geotechnical engineering
- Landscape architecture
- Antiterrorism and force protection
- Planning
- Architecture
- Interior space planning
- Structural engineering
- Mechanical engineering
- Plumbing design
- Fire protection engineering
- Electrical engineering
- Sustainable design



conditioning (HVAC) mechanical and lighting system controls; energy-efficient lighting; interior finishes; window systems; sloped metal roofing; and exterior finishes consisting of attractive masonry facades.

### ***Electrical***

The utility company provides 480V/277, three-phase, four-wire power to the training center. The training center then provides the OMS building with a 480V/277, three-phase, four-wire service. From the OMS, a 208V/120, three-phase, four-wire service is provided to the unheated storage building. These service sizes were designed to deliver the highest practical voltage for the loads within the building.



Electrical distribution 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 panel boards, and lighting and appliance panel boards for the training building and OMS for high reliability, low maintenance, efficiency, and maximum flexibility. Michael Baker selected the step-down transformers for low-energy loss and short-term overload capability.

### ***Fire Protection***

The training center and the OMS building were fully sprinkered buildings supported by a single exterior fire pump house. The fire pump was a single, electrically driven fire pump designed based on the demand of the two buildings. The city water supply was analyzed to determine the need for fire water storage tanks, based on hydraulic data. A single exterior fire pump house was proposed for the buildings in order to save the costs of independent fire pumps for each building. Water lines were located underground to connect both buildings to the fire pump house. Michael Baker fire protection engineers also represented the government for the commissioning of the fire pump. The tests were confirmed to be performed in accordance with NFPA 20, and prepared a final testing report was prepared and signed for the project.



## Design of Central Issue Facility

### *Fort McCoy, Wisconsin*

Michael Baker is the designer of record for the design-bid-build delivery of an approximately 62,553-square-foot large-sized Central Issue Facility (CIF). The project included ancillary site improvements and demolition design for five buildings.

The CIF included a queuing-orientation area with a check-in desk, equipment issue/turn-in stations, fitting booths, a final processing area, an assembly waiting area, offices, a multipurpose room, a locker room, a staff break room, a secure storage area, an equipment room, a 4,000-square-foot conditioned storage area, a 23,000-square-foot warehouse storage area with racks, combined eye wash-shower stations in the forklift charging area, repair and classification areas, information technology rooms, a mechanical systems room, a mechanical equipment mezzanine, restrooms, and a janitorial closet. Two overhead doors with adjustable docks and two at-grade overhead doors were installed in the centralized shipping-receiving area of the structure.

Extensive site civil engineering was required. Site work involved the demolition of five buildings that make up the existing CIF. New site preparation included the routing of multiple utility lines, including a sanitary sewer line, gas main, and water main; installation of new site utilities and new connections; grading of the property; installation of stormwater management systems; and protection of wetlands and cultural resource finds.

#### ***Overall Building Construction***

The building was built of permanent construction, with a reinforced concrete foundation and concrete floor slabs; structural steel frame; masonry veneer walls; mechanical, electrical, and information systems; interior finishes; window systems; a standing-seam metal roof; and exterior finishes consisting of insulated concrete and metal panels. Work included HVAC, plumbing, mechanical, security, electrical and fire protection system design. The project also included utility and storm drainage connections, and other site improvements.

#### ***Structural System***

The building consisted of exterior load-bearing precast walls and interior structural steel framing. Roof framing consisted of open-web steel joist framing spaced at approximately five feet, spanning between the exterior walls to interior steel framing. This framing system supported a structural metal deck overlaid by an insulated, modified bitumen roofing system. Rust-inhibiting primers and paint, in accordance with UFC guidelines and architectural requirements, will protect structural steel.

#### ***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***

Estimated: 2015

#### ***Project Costs***

\$1,040,921 (Fee)

#### ***Michael Baker's Role***

- Planning
- Sustainable design
- Site development
- Hazardous waste investigation
- Civil engineering
- Geotechnical engineering
- Architecture
- Interior design-space planning
- Structural engineering
- Mechanical engineering
- Plumbing design
- Fire protection engineering
- Electrical engineering
- Communications design

### *Electrical Distribution System*

Electrical distribution included power, lighting, fire alarm and mass notification, structured cabling raceway, public address, cable television distribution, telecommunications, and security systems. The main switchboard, distribution panelboards, and lighting and appliance panelboards will be selected for high reliability, low maintenance, efficiency, and maximum flexibility. Step-down transformers were selected for low-energy loss and short-term overload capability.

### *Fire Protection*

The facility is fully protected with an automatic dry-pipe sprinkler system with a diesel-driven fire pump. The systems were designed and installed in accordance with UFC 3-600-01, NFPA 13, NFPA 20 and International Building Code 2006. A hydrant flow test was performed in conjunction with the local fire department. The water supply was analyzed and hydraulic calculations were performed to determine the size and necessity of the fire pump system. The analysis determined no fire water storage tanks were required because of the available water pressure. Michael Baker fire protection engineers also witnessed the testing of the fire pump and sprinkler system after installation was complete.

# Little Kanawha Bus Administrative and Maintenance Facility

*Grantsville, West Virginia*

Baker provided general Architectural and Engineering services to the West Virginia Division of Public Transit for the Little Kanawha Administrative/Maintenance Facility located in Grantsville, West Virginia.

The WV Division of Public Transit selected Baker to provide complete design and construction administration services to include the construction of a pre-engineered metal and brick building, sited on the available property allowing for future expansion needs. Parking for the buses and employee vehicles will surround the building. The site is approximately 4.55 acres.

The operations facility has approximately 10,000 square feet of which 4,500 square feet houses five offices, a conference room, and money counting room, office storage space, copier and supply room, and a driver training room that accommodates approximately 25 individuals. The remaining 5,500 square feet is dedicated to the maintenance functions and includes a Wash Water Reclaim System. The garage structural roof the overall eave height will be about 18 feet. This area also includes space for indoor bus storage for approximately seven (7) vehicles. The building is designed so that the vehicles can pull through the facility. The building was designed to employ green building practices, but was not LEED (Leadership in Energy & Environmental Design) Certified.

## **Client**

State of West Virginia  
Department of Transportation  
Division of Public transit  
Building 5, Room 906  
1900 Kanawha Blvd., East  
Charleston, WV 25305-0432

## **Contract Completion Date**

Estimated: 2012

## **Baker's Role**

- Architecture
- Renovation design
- Feasibility studies
- Cost estimates
- Civil engineering
- Surveying
- MEP engineering
- Structural engineering



## 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 were 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.

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 for construction sequencing and scheduling. The final plan incorporated the client's comments in the schematic and design development documents. The project is currently awaiting funding from the State.

### Client

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

### Completion Date

Awaiting funding

### Baker's Role

- Planning
- Architecture
- Mechanical Engineering
- Electrical Engineering
- Plumbing
- Fire Protection
- Structural engineering



## Bank Street Streetscape

*City of Nitro, West Virginia*

Baker Engineering provided planning services to the City of Nitro to develop a Master Plan. The City desired a master plan that reached out to the past, rich history of the area. Nitro was named for the primary ingredient in the manufacture of gunpowder, nitrocellulose. In 1917, when the United States entered World War I, the Federal Government identified the area now known as Nitro as an ideal location for the development of a gunpowder plant. Shortly after the completion of construction of "Explosive Plant C," the war came to an end. Many of the original buildings and company houses still exist. The plant changed ownership and mission over time. During the 1960's and 1970's, chemical manufacturing became the primary industry in Nitro and the entire Kanawha Valley. Now, with the departure of these companies, the City is embracing the historic value of the original gunpowder plant. Additionally, with the popularity of the nearby dog track, casino and gaming center, the City has realized an influx of tourists and visitors to the area. By providing the facilities as identified in the master plan, Nitro has the ability to maximize its tourism potential.

### **Client**

City of Nitro  
2009 20<sup>th</sup> Street  
Nitro, WV 25143  
*David Casebolt, Mayor*  
304-419-3322

### **Completion Date**

2012

### **Project Costs**

\$300,000 (Construction)

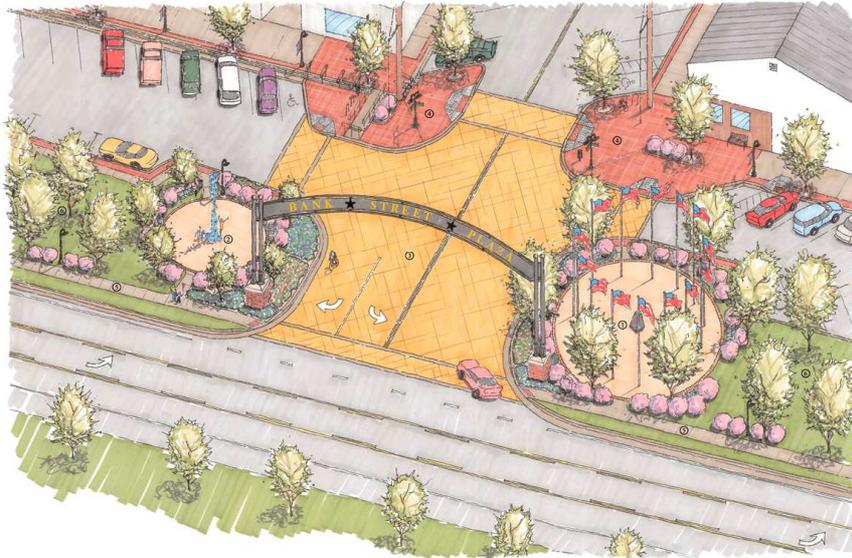
### **Baker's Role**

- Streetscape Planning
- ADA Compliance
- Storm Drainage Design
- Surveying/Mapping
- Construction Document Preparation
- Bidding and Construction

## Nitro Streetscape Master Plan

Bank Street Gateway Aerial Oblique Perspective

City of Nitro, West Virginia  
July 7, 2011



### Improvement Items

1. Existing War Memorial with proposed landscaping enhancements.
2. New plaza space with fountain and/or sculpture commemorating WWII and Explosive Plant "C".
3. New Gateway Plaza with paved in intersection, gateway arch, and landscaping enhancements. With temporary closure of part of 21st Street and Bank Street, this plaza space may be used for markets, car shows, carnivals, etc.
4. Bank Street Streetscape Phase I enhancements, including pedestrian scale period street lights, brick sidewalks, wrought-iron park benches and trash receptacles, bicycle racks, and landscaping.
5. New sidewalks with lane paint separation from First Avenue (Route 25).
6. New grass specialpark area to continue on to 20th Street to the south, and 21st Street to the north.

### General Notes

1. Local Gateway/Directional/Wayfinding signs at major intersections.
2. Business "one way" signs at corners to be relocated and reduced in scale to match architectural style of the new streetscape.
3. Wayfinding signage or "one way" signs should be provided in the Downtown Business District of Nitro, starting on and around Bank Street, then expanding outward as deemed warrant.
4. Mural to be added to some of the larger, more prominent walls in Town should add color and interest to the landscape. An excellent start point would be the old's large, white brick wall facing Bank Street.
5. Sponsored park benches with plaques and/or commemorative text could be used in the Gateway enhancements, providing a revenue generator, allowing the general public an opportunity to personalize the improvements and gain a vested interest in the streetscape.

Prepared By:



Based on historic information gathered through public meetings, WV State Archives research, and coordination with the City Council, Streetscape Committee, the Nitro Convention and Visitors Bureau and the Nitro Development Authority, Baker prepared a GIS based master plan that identified key areas of interest, areas of utilization, and access corridors. Also included was a phasing plan with construction cost estimates. One of the first projects recommended for construction was the Bank Street Streetscape improvements. This was the first phase of a multi-phased program to clean up and refurbish the downtown area of Nitro. Amenities included period street lights appropriate to the 1917 boomtown era of Nitro, and the paving pattern for the street brick was inspired by the brick work of the old Explosive Plant "C" buildings. The final product provides safe, convenient, ADA-accessible access to the many stores and businesses along Bank Street, appropriately named the "Front Porch" of Nitro.

Baker assisted the City of Nitro with a Transportation Enhancement Grant Application for Phase II Streetscape Improvements, which will continue the streetscape from Bank Street, down 21<sup>st</sup> Street toward Ridenour Lake, with more phases to follow.



# APPENDIX 3 –References

## References

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

- **WV Department of Transportation – Division of Public Transit**  
1900 Kanawha Boulevard East,  
Building 5, Room 906  
Charleston, WV 25305-0432  
*Mr. William Robinson, Division Director*  
*(304) 558-0428*
- **West Virginia State University**  
P.O. Box 1000  
Institute, WV 25112-1000  
*Mr. Marvin Smith, Facilities Director*  
*(304) 550-2839*
- **Regional Intergovernmental Council**  
315 D Street  
South Charleston, WV 25303  
*Mr. Mark Felton, Executive Director*  
*(304) 744-4258*
- **WV Division of Homeland Security and Emergency Management**  
1900 Kanawha Boulevard, East  
Building 1, Room EB-80  
Charleston, WV 25305  
*Mr. Jimmy Joe Gianato, Director of Homeland Security*  
*(304) 530-6142*
- **City of Nitro**  
2009 20<sup>th</sup> Street  
Nitro, WV 25143  
*Honorable David Casebolt, Mayor*  
*(304) 419-3322*
- **City of Winfield**  
1 Main Street  
Winfield, WV 25213  
*Honorable Randy Barrett, Mayor*  
*(304) 586-2122*