



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: 153038

Procurement Type: Central Contract - Fixed Amt

Vendor ID: 000000160331

Legal Name: MICHAEL BAKER JR INC

Alias/DBA:

Total Bid: \$0.00

Response Date: 02/25/2016

Response Time: 11:49

SO Doc Code: CEOI

SO Dept: 0506

SO Doc ID: HHR1600000002

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Status: Closed

Solicitation Description: Addendum 01 EOI for professional engineering services

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 : 153038

Solicitation Description : Addendum 01 EOI for professional engineering services

Proc Type : Central Contract - Fixed Amt

Date issued	Solicitation Closes	Solicitation No	Version
	2016-02-25 13:30:00	SR 0506 ESR02251600000003915	1

VENDOR
000000160331 MICHAEL BAKER JR INC

FOR INFORMATION CONTACT THE BUYER
 Beth Collins
 (304) 558-2157
 beth.a.collins@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	Professional engineering services				

Comm Code	Manufacturer	Specification	Model #
81100000			

Extended Description : 4.1 Project A: Hopemont Hospital

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
2	Professional engineering services				

Comm Code	Manufacturer	Specification	Model #
81100000			

Extended Description : 4.2 Project B: Mildred Mitchell-Bateman Hospital



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

State of West Virginia
 Centralized Expression of Interest
 02 – Architect/Engr

Proc Folder: 153038

Doc Description: EOI for professional engineering services

Proc Type: Central Contract - Fixed Amt

Date Issued	Solicitation Closes	Solicitation No	Version
2016-01-14	2016-02-24 13:30:00	CEOI 0506 HHR1600000002	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 International, Inc.
5088 West Washington Street
Charleston, West Virginia 25313

FOR INFORMATION CONTACT THE BUYER

Beth Collins
 (304) 558-2157
 beth.a.collins@wv.gov

Signature X

FEIN # **25-1228638**

DATE **February 24, 2016**

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

ADDITIONAL INFORMATION:

The West Virginia Purchasing Division, for the Agency, the West Virginia Department Health and Human Resources, is soliciting Expressions of Interest for professional engineering and design services for the Hopemont Hospital Boilers and Mildred Mitchell-Bteman Hospital Generator, per the attached bid requirements and specifications.

INVOICE TO		SHIP TO	
BUYER - 304-957-0209 HEALTH AND HUMAN RESOURCES OFFICE OF PROPERTY MANAGEMENT ONE DAVIS SQUARE STE 100, RM 106 CHARLESTON WV25301-1613 US		BUYER - 304-957-0209 HEALTH AND HUMAN RESOURCES OFFICE OF PROPERTY MANAGEMENT ONE DAVIS SQUARE, STE 106 CHARLESTON WV 25301 US	

Line	Comm Ln Desc	Qty	Unit Issue
1	Professional engineering services		

Comm Code	Manufacturer	Specification	Model #
81100000			

Extended Description :

4.1 Project A: Hopemont Hospital

INVOICE TO		SHIP TO	
BUYER - 304-957-0209 HEALTH AND HUMAN RESOURCES OFFICE OF PROPERTY MANAGEMENT ONE DAVIS SQUARE STE 100, RM 106 CHARLESTON WV25301-1613 US		BUYER - 304-957-0209 HEALTH AND HUMAN RESOURCES OFFICE OF PROPERTY MANAGEMENT ONE DAVIS SQUARE, STE 106 CHARLESTON WV 25301 US	

Line	Comm Ln Desc	Qty	Unit Issue
2	Professional engineering services		

Comm Code	Manufacturer	Specification	Model #
81100000			

Extended Description :

4.2 Project B: Mildred Mitchell-Bateman Hospital

SCHEDULE OF EVENTS

Line	Event	Event Date
1	Question Submittal Deadline at 5:00 PM, EST	2016-02-01

HHR160000002	Document Phase Final	Document Description EOI for professional engineering services	Page 3 of 3
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ADDITIONAL TERMS AND CONDITIONS

See attached document(s) for additional Terms and Conditions

ADDENDUM ACKNOWLEDGEMENT FORM
SOLICITATION NO.: CEOI HHR160000002

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

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

Addendum Numbers Received:

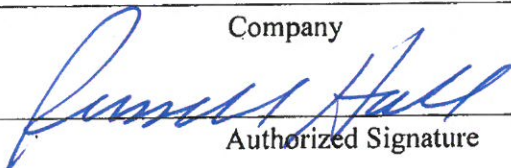
(Check the box next to each addendum received)

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

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

Michael Baker International, Inc.

Company



Authorized Signature

February 24, 2016

Date

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

State of West Virginia

VENDOR PREFERENCE CERTIFICATE

Certification and application* is hereby made for Preference in accordance with West Virginia Code, §5A-3-37. (Does not apply to construction contracts). West Virginia Code, §5A-3-37, provides an opportunity for qualifying vendors to request (at the time of bid) preference for their residency status. Such preference is an evaluation method only and will be applied only to the cost bid in accordance with the West Virginia Code. This certificate for application is to be used to request such preference. The Purchasing Division will make the determination of the Vendor Preference, if applicable.

1. Application is made for 2.5% vendor preference for the reason checked:

- Bidder is an individual resident vendor and has resided continuously in West Virginia for four (4) years immediately preceding the date of this certification; or, Bidder is a partnership, association or corporation resident vendor and has maintained its headquarters or principal place of business continuously in West Virginia for four (4) years immediately preceding the date of this certification; or 80% of the ownership interest of Bidder is held by another individual, partnership, association or corporation resident vendor who has maintained its headquarters or principal place of business continuously in West Virginia for four (4) years immediately preceding the date of this certification; or, Bidder is a nonresident vendor which has an affiliate or subsidiary which employs a minimum of one hundred state residents and which has maintained its headquarters or principal place of business within West Virginia continuously for the four (4) years immediately preceding the date of this certification; or,

2. Application is made for 2.5% vendor preference for the reason checked:

Bidder is a resident vendor who certifies that, during the life of the contract, on average at least 75% of the employees working on the project being bid are residents of West Virginia who have resided in the state continuously for the two years immediately preceding submission of this bid; or,

3. Application is made for 2.5% vendor preference for the reason checked:

Bidder is a nonresident vendor employing a minimum of one hundred state residents or is a nonresident vendor with an affiliate or subsidiary which maintains its headquarters or principal place of business within West Virginia employing a minimum of one hundred state residents who certifies that, during the life of the contract, on average at least 75% of the employees or Bidder's affiliate's or subsidiary's employees are residents of West Virginia who have resided in the state continuously for the two years immediately preceding submission of this bid; or,

4. Application is made for 5% vendor preference for the reason checked:

Bidder meets either the requirement of both subdivisions (1) and (2) or subdivision (1) and (3) as stated above; or,

5. Application is made for 3.5% vendor preference who is a veteran for the reason checked:

Bidder is an individual resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard and has resided in West Virginia continuously for the four years immediately preceding the date on which the bid is submitted; or,

6. Application is made for 3.5% vendor preference who is a veteran for the reason checked:

Bidder is a resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard, if, for purposes of producing or distributing the commodities or completing the project which is the subject of the vendor's bid and continuously over the entire term of the project, on average at least seventy-five percent of the vendor's employees are residents of West Virginia who have resided in the state continuously for the two immediately preceding years.

7. Application is made for preference as a non-resident small, women- and minority-owned business, in accordance with West Virginia Code §5A-3-59 and West Virginia Code of State Rules.

Bidder has been or expects to be approved prior to contract award by the Purchasing Division as a certified small, women- and minority-owned business.

Bidder understands if the Secretary of Revenue determines that a Bidder receiving preference has failed to continue to meet the requirements for such preference, the Secretary may order the Director of Purchasing to: (a) reject the bid; or (b) assess a penalty against such Bidder in an amount not to exceed 5% of the bid amount and that such penalty will be paid to the contracting agency or deducted from any unpaid balance on the contract or purchase order.

By submission of this certificate, Bidder agrees to disclose any reasonably requested information to the Purchasing Division and authorizes the Department of Revenue to disclose to the Director of Purchasing appropriate information verifying that Bidder has paid the required business taxes, provided that such information does not contain the amounts of taxes paid nor any other information deemed by the Tax Commissioner to be confidential.

Under penalty of law for false swearing (West Virginia Code, §61-5-3), Bidder hereby certifies that this certificate is true and accurate in all respects; and that if a contract is issued to Bidder and if anything contained within this certificate changes during the term of the contract, Bidder will notify the Purchasing Division in writing immediately.

Bidder: Michael Baker International, Inc.

Signed: [Signature]

Date: February 24, 2016

Title: Vice President

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 International, Inc.

Authorized Signature: *[Signature]* Date: February 24, 2016

State of West Virginia

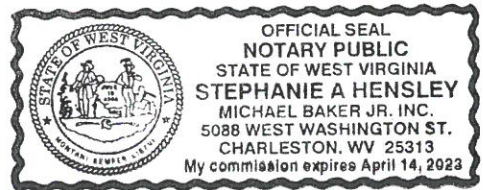
County of Kanawha, to-wit:

Taken, subscribed, and sworn to before me this 24th day of February, 2016.

My Commission expires April 14, 2023

AFFIX SEAL HERE

NOTARY PUBLIC *[Signature]*
Purchasing Affidavit (Revised 07/01/2012)

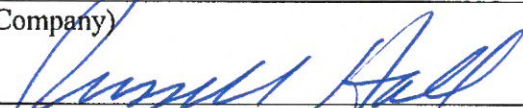


CERTIFICATION AND SIGNATURE PAGE

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

Michael Baker International, Inc.

(Company)



(Authorized Signature) (Representative Name, Title)

Russell Hall, Vice President

304.769.0821, 304.769.0822

(Phone Number) (Fax Number) (Date)

February 24, 2016

**Expression of Interest for
CEOI HHR1600000002
State of West Virginia**

HOPEMONT HOSPITAL BOILER



**MILDRED MITCHELL-BATEMAN HOSPITAL
GENERATOR**



Michael Baker
INTERNATIONAL



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Hopemont Hospital Boiler & Mildred Mitchell-Bateman Hospital Generator

CEOI HHR1600000002

1. Project Location

Hopemont Hospital is located at: 150 Hopemont Drive, Terra Alta West Virginia 26764 and Mildred Mitchell-Bateman Hospital is located at: 1530 Norway Avenue, Huntington, West Virginia 25705

2. Project Background

West Virginia Department of Health and Human Services is seeking a highly qualified engineering firm to provide design services and bid documents for Project A: the replacement of boiler systems at Hopemont Hospital and Project B: the addition of transfer switches and other necessary components to fully utilize the existing emergency generator at Mildred Mitchell-Bateman Hospital. The firm will be responsible to evaluate the existing conditions at each site and make recommendation and present options for upgrades or renovations as specified in the Expression of Interest (EOI). Michael Baker International (Baker) is a highly qualified firm with extensive experience in providing the type of services required for these projects, and we are extremely interested in establishing a professional relationship with the WV DHHR and the two facilities.

“ . . . we are extremely interested in establishing a professional relationship with the WV DHHR ”

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, Charleston WV 25313
Phone number: 304-769-0821
Email Address: RHall@mbakerintl.com

PERSONS ASSIGNED TO THE PROJECT – Resumes provided in Appendix 1

Name	Role
Patrick Fogarty	Civil Engineer/Project Manager
David Hilliard	Senior Mechanical Engineer
David Hurd	Mechanical Engineer / Technical Manager
Kris Blanch	ME Steam Specialist
Owen Milligan	Electrical Engineer
Wayne Airgood	Structural Engineer

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 DHHR 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

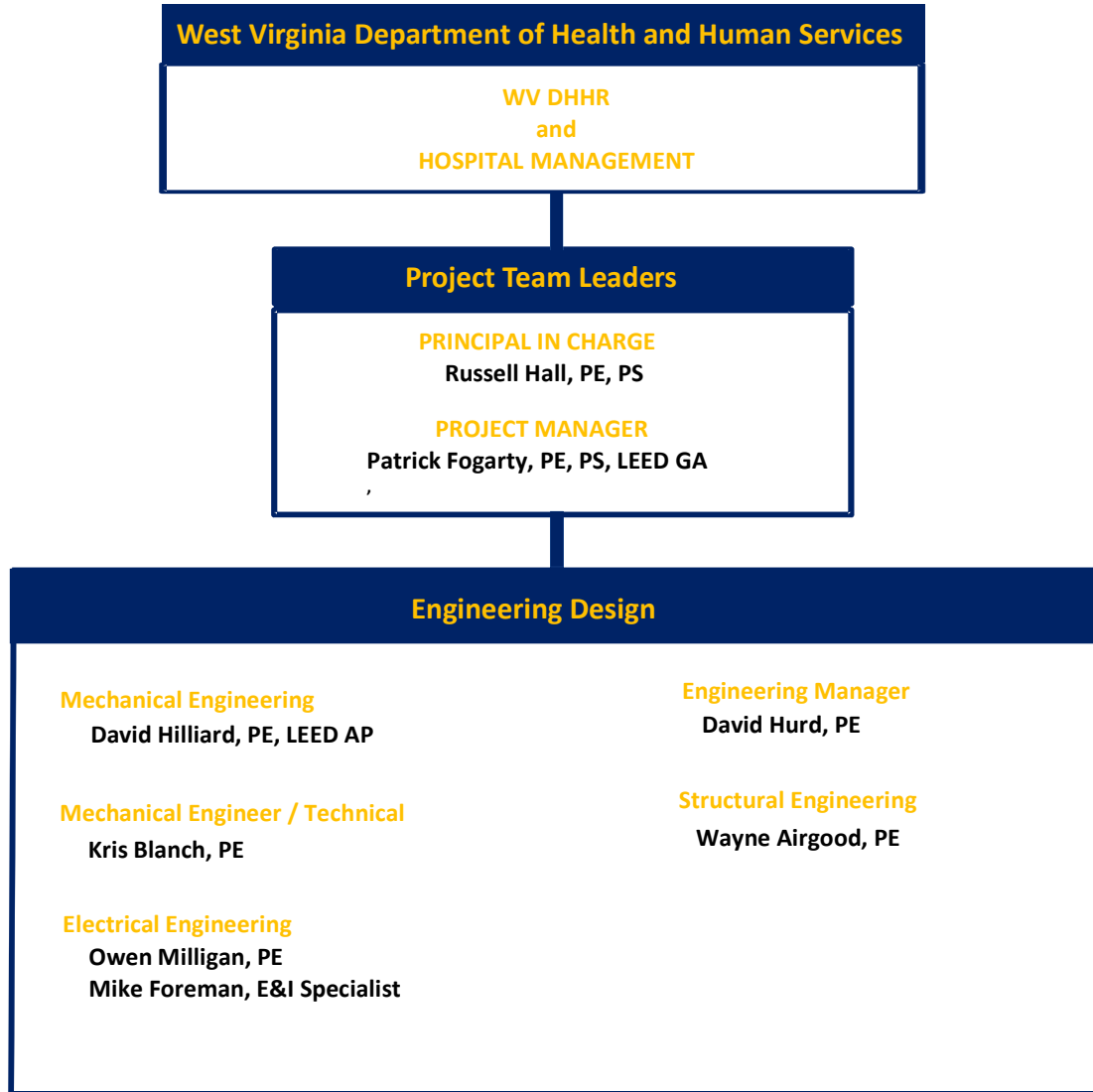
Baker will provide to the DHHR or other appropriate agencies, electronic copies of all required submittals through the various design stages and will provide final AutoCAD drawings at the completion of the project if requested.

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

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 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 PROJECT A

Understanding

Baker understands that the existing steam boiler system located within Hopemont Hospital Patient Care and Administrative Building require an up-grade to meet the current codes. The available information Baker was able to obtain for this project is listed below:



- Low pressure steam, less than 15psig (<34.5 Ft H₂O)
- A Dual-fuel boiler system is desired. (Assume Fuel Oil and Natural Gas)
- Underground storage tanks and fuel system would be required
- System efficiency would be improved by updating parts of the steam piping system, as well as system equipment and controls

Morgan Hall Administration Building

- 4.5MMBH - HE Smith Boiler system leaks and is installed in a pit.

Patient Care

- Buildings are interconnected via an underground steam line system
- The main header has two boilers one was replaced +-3 years ago (new Peerless)
- The Peerless boiler can handle 60-70% of the load for one building
- The 15-20 year old Weil McLain boiler has had burners replaced in the past few years

Note: This information could change based on an actual field investigation.

Efficiency Issues

Steam Systems:

The boiler control system must be able to meet the facility's peak heating load while operating efficiently under part-load conditions. One of the best indicators of a boiler's combustion efficiency is the flue-gas composition. Anytime a retrofit, or replacement of a gas or oil heating system is undertaken, a concern with the air quality of the combustion air is needed by all oil and gas heating systems to support the combustion process. Flue-gas trim controls constantly monitor the temperature and the chemical composition of the flue gas, making changes to the combustion controls to limit the quantity of excess air brought into the boiler, the annual energy savings from flue-gas trim controls is significant. Another issue is the sequencing of the facility's



boilers, depending on the load will help the operating efficiency of a boiler. The highest efficiency is when it is operating at or near full load, this practice can waste a significant amount of energy. Automatic sequencing controls examine the load conditions and determine which boiler or combination of boilers that will meet that load most efficiently.



Approach

The approach of the project would be holistic in nature. An open minded approach would be undertaken to help understand the system demands and Client requirements. Baker would then provide/design the most cost effective system to achieve those requirements.

The first step of the project analysis would be to understand the current steam system. This would include analysis of the pressure and flow requirements and the current load and system layout. This information would be identified through site investigation, discussion with facility's personnel and analysis of as-built drawings. Baker has a variety of services with extensive experience in many fields of expertise, this allows the core team member's access to expertise in all areas necessary for the design of the preferred option. A selected team of experts will be responsible for identifying existing site conditions and locating all piping and appropriate components in the project area. This team will consist of Baker employees which are Licensed Professional Mechanical, Electrical and Civil Engineers.

Based on the information obtained from the project investigation and a code review; system calculations shall be performed and available equipment options analyzed to determine the best available options for a new or upgraded system.

A structural engineer will be engaged to discuss building structural issues and determine possible placement options or new equipment. The structural engineer will be able to provide expert knowledge and experience related to the equipment placement and pipe routing, including the structural load of the new pipe on the building, anchoring, support and other challenges associated with this 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 Hopemont Hospital and the WV DHHR with the ability to choose the most cost effective approach for the project.

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 engineers will be involved in all aspects of the existing condition assessment and system design. This includes required testing, analyzing the existing steam heating system, performing calculations, proposing design options, writing specifications and providing the final system design. An electrical engineer will be responsible for the design of the electrical system associated with the project. The design engineer of record will provide final sealed drawings and specifications for the project.

4.2 PROJECT B

Understanding

Baker understands that the existing steam boiler system located within Mildred Mitchell-Bateman Hospital require new emergency generator automatic switch gear. The available information Baker was able to obtain for this project is listed below:

- There are two diesel Cat generators; one for the Clinical Building (800 KW/60Hz/480V) and one for the Cafeteria (600 KW/60Hz/480V).
- The DHHR is looking to replace/upgrade the switch gear and automatic transfer switches at the hospital.
- The new gear should operate safely with a seamless transfer from utility power to generator power.
- Hospital emergency power code requirements shall be met.
- A foundation the automatic switch gear will likely be required.

Approach

The approach of this project would also be holistic in nature to help understand the hospital's need and the client requirements. Baker would then provide and design the most cost effective system to achieve the project's requirements.

The first step of the project analysis would be to understand the current system. This would include the current switching system and generator electrical system layout. This information would be identified through site investigation, discussion with facility's personnel and analysis of as-built drawings. A selected team of experts will be responsible for identifying existing site conditions and locating all pertinent utility connections for the generator electrical system.



Based on the information obtained the project investigation calculations shall be performed to determine the best available options for new generator switch gear.

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, if desired will provide the Mildred Mitchell-Bateman Hospital and the WV DHHR with the ability to choose the most cost effective approach for the project.

Baker engineers will be involved in all aspects of the existing condition assessment and system design. This includes required functional testing and analysis of the existing system, performing calculations, proposing design options, writing specifications and providing the final system design. The Baker electrical engineer of record will be responsible for the design of the electrical system associated with the project. The electrical power feeds and generator will be analyzed and sized appropriately for the new systems.

A structural engineer will be engaged to design structural components and determine possible placement options for new equipment. The structural engineer will be able to provide expert knowledge and experience related to foundation and other challenges associated with the project.

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.



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/Electrical/Plumbing 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.

Kris Blanch, P.E., LEED Green

Associate

Mechanical Engineer

General Qualifications

Mr. Blanch is a mechanical engineer with more than 7 years of building design and construction support experience. His project assignments include design of plumbing, fire protection, and HVAC systems, calculations for building heating and cooling loads, and analyses of pumps and piping systems.

Experience

Office Building Design, West Mifflin, Pennsylvania. *Confidential Client.* Mechanical Engineer. Responsibilities include design of hydronic cooling system and HVAC systems, calculations for building heating and cooling loads, and analyses of pumps and piping systems. Michael Baker is serving as the lead designer for the design-build delivery of two 40,000-square-foot Office Buildings on a previously developed research laboratory campus. The project includes two identical, mirrored-surface, three-story buildings and adjoining courtyard constructed on the existing parking area, with significant utility infrastructure clearance requirements. Each building will achieve LEED® Gold certification.

Remote Handled-Low Level Waste, Idaho National Laboratory, Idaho. *AREVA Federal Services, LLC.* Mechanical Engineer. Responsibilities include design of HVAC system, heating only systems, and plumbing systems that included calculations for building heating and cooling loads, and analysis of pumps and piping systems.

Service Life Extension, Idaho National Laboratory, Idaho. *Confidential Client.* Mechanical Engineer. Responsibilities include recommendations for upgrading systems to extend the life of the building.

Building Guiding Principles, Idaho National Laboratory, Idaho. *Confidential Client.* Mechanical Engineer. Responsible for recommendations pertaining to building upgrades. Michael Baker provided an evaluation of two buildings to meet DOE Guiding Principles requirements. The evaluation involved reviewing the buildings and providing suggestions for required upgrades to meet the requirements of ASHRAE 55 and ASHRAE 62.1. The evaluation also reviewed water usage and energy efficiency to determine whether these buildings require additional upgrades to meet requirements.

Replacement Boiler Tie-in, Idaho National Laboratory, Idaho. *Confidential Client.* Mechanical Engineer. Responsibilities include design of steam boiler utility tie-ins for a future replacement boiler.

Emergency Diesel Generator Revetment System, Idaho National Laboratory, Idaho. *Confidential Client.* Mechanical Engineer. Responsibilities include design of fuel oil piping system, fuel oil storage tank, and leak detection system meeting the requirements of IBC 2012 and NFPA standards.

Years with Michael Baker: 7

Years with Other Firms: 0

Degrees

B.S., 2008, Mechanical Engineering,
Idaho State University

Licenses/Certifications

Professional Engineer -
Mechanical, Idaho [REDACTED]

LEED Green Associate, Idaho, 2011,
10691894-GREEN-ASSOCIATE

Steam System Evaluation, Idaho National Laboratory, Idaho. *Confidential Client.* Mechanical Engineer. Responsible for providing recommendations for upgrading the boilers and steam/condensate system for further continued use. Michael Baker provided services pertaining to the evaluation of an existing steam system, comprised of steam boilers and an above ground distribution system.

Unaccompanied Enlisted Personnel Housing (UEPH), Fort Polk, Louisiana. *U.S. Army Corps of Engineers, Fort Worth District.* Engineering Technician. Responsible for design of a plumbing system for a three story military barracks. As part of a design-build project delivery team, Michael Baker provided professional design services for new military housing for single soldiers at Fort Polk. The project included developing approximately 8.4 acres with the new building that is three stories in height and 98,820 gross square feet in area. The building contains 135 dwelling units for 270 residents utilizing the USACE prototype design of each dwelling, which consists of two bedrooms, a shared bathroom, and shared kitchen/dining/living area.

Ventilation System Review and Recommendations, Idaho National Laboratory, Idaho. *Confidential Client.* Mechanical Engineer. Responsibilities included writing a report for the ventilation study providing recommendation for maintaining a radiological facility building at negative pressure. Michael Baker provided a review and recommendations for the ventilation system used to filter radiological exhaust at a large spent fuel processing facility. Michael Baker reviewed methods of achieving and maintaining facility design differential pressure, evaluated ventilation system airflow concerns, evaluated installation of instruments used to measure differential pressure, and recommended ways to simplify ventilation system controls.

Advanced Test Reactor Complex Common Support Building Design, Idaho National Laboratory, Idaho. *U.S. Department of Energy.* Mechanical Associate. Responsibilities include design of plumbing and HVAC systems, calculations for building heating and cooling loads. Michael Baker provided architecture, engineering, and construction phase services as part of a design-build project to construct a 17,000-square-foot common support building. A primary design objective was to maximize the use of space to accommodate functional needs. The support building will house 92 offices and will include space for electronic control development. The building achieved LEED® NC v2.2 certification.

Cask Shipping and Receiving Facility Design, Idaho National Laboratory, Idaho. *Confidential Client.* Mechanical Associate. Worked with the Senior Mechanical Engineer with HVAC design. Michael Baker provided architecture, engineering, and construction phase services as part of a design project for a new large facility to handle spent nuclear fuel for a facility. The project included three connected buildings, including a building to store large overpacks containing spent nuclear fuel that are moved with an air pallet, a large building to provide shipping/receiving and processing of spent nuclear fuel casks delivered by railcars, and an office support building.

CWI Integrated Waste Treatment Unit (IWTU) Project Support Services, Idaho National Laboratory, Idaho. *CH2M-WG Idaho, LLC (CWI).* Mechanical Associate. Responsibilities included the design of pipe supports, field engineering which includes aiding construction resolving issues in the field, and piping design. Michael Baker provided mechanical and structural engineering support for the CWI Integrated Waste Treatment Unit project at the INL. Specific tasks included: piping and vessel stress analysis; design of mechanical components and systems; determination and application of design basis seismic load combinations to piping and vessel systems; design, and code compliance verification, and on-site field support in the form of Vendor Data review and resolution of field problems/questions.

Site Energy Conservation Audit, Idaho National Laboratory, Idaho. *Confidential Client.* Mechanical Engineer. Responsibilities included field walk downs of two facility site-wide buildings for energy and water usage. Michael Baker performed energy and water conservation audits at four multi-building facilities to meet the intent of Section 432 of the Energy Independence and Security Act of 2007 (EISA). The audits identified and evaluated assets for re-commissioning or retro-commissioning, a prioritized listing of recommended energy conservation measures (ECM), ECM-projected energy savings with an emphasis on greenhouse gas (GHG) emission reductions, renewable energy projects, and project cost. Michael Baker prepared evaluation reports identifying ECMs including cost estimates for implementation. The reports also identified short- and long-term measures to be taken and renewable energy projects to be considered.

Shield Cask Chiller Final Design, Idaho National Laboratory, Idaho. *Confidential Client.* Mechanical Engineer. Responsibilities include design of hydronic cooling system and HVAC systems, calculations for process and facility heating and cooling loads, and analyses of pumps and piping systems.

Boiler House Fuel Transfer Station Redesign, Idaho National Laboratory, Idaho. *Confidential Client.* Mechanical Engineer. Responsible for design of a fuel oil piping system and pipe supports to provide fuel from fuel oil storage tanks to oil burning boilers that provide heating. Michael Baker is currently developing a design for the fuel oil transfer station located in the client's boiler house. The boiler house fuel transfer station was originally designed to support type 5 fuel but was converted several years ago to use a diesel fuel blend. Several components in the old transfer system were no longer required and a significant numbers of mechanical joints have required frequent repairs to maintain leak tightness. The design simplifies the fuel transfer system by reducing mechanical connections as much as practical, providing isolation valves for maintaining redundant pumps, resizing piping to ensure that it is sufficient to deliver fuel to 2 boilers operating at capacity, minimize in-place welding, and provide for reuse of some of the existing components. Additionally Michael Baker provided a Pump Evaluation that investigated replacing the motors and pumps with newer ones to reduce noise and provide improved seals to prevent or improve leak tightness.

Firewater Upgrade Design, Idaho National Laboratory, Idaho. *Confidential Client.* Mechanical Engineer. Responsibilities include design of plumbing, fire protection, and HVAC systems, and analyses of pumps and piping systems. Michael Baker developed pre-conceptual, conceptual, and final designs to supply 150,000 gallons of fire water storage and additional pumping capacity for the client's Firewater Supply System. The design included 150,000 gallons of increased firewater above-ground storage capability, an additional 200 hp, 2,000 gpm fire pump with equivalent, a pressure maintenance pump (500 gpm, 125 psi) to maintain a stable pressure of the system, and a pump house to hold this equipment. The design included drawings, specifications, and a test plan for in-progress and final acceptance testing/inspections for each system and major component.

Water Pool Leakage Evaluation, Idaho National Laboratory, Idaho. *Confidential Client.* Mechanical Engineer. Responsibilities included conceptual design of pump and piping system to prevent leakage from a water pool from entering the inside of the building. Michael Baker developed conceptual design alternatives and cost estimates for various options for stopping leakage from the client's water pool and a recommendation of the preferred option. Alternatives consisted of various methods filling the entire water pool with concrete or other material to permanently evacuate water from the pool.

Owen Milligan, P.E.

Electrical Engineering Manager

General Qualifications

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

Experience

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

On-Call Multi-Discipline Services, Pittsburgh International, and Allegheny County Airports (PIT/AGC), Pittsburgh, Pennsylvania. *Allegheny County Airport Authority.* Technical Advisor. Provided technical direction to electrical design staff and performed a technical quality review of the construction documents. Designs were required to meet NEC standards. Since 1989, Baker has provided multidiscipline, on-call services to the Allegheny County Airport Authority (ACAA). The ACAA owns and operates Pittsburgh International Airport (PIT) and Allegheny County Airport (AGC). Baker acted as an extension to the ACAA's staff, providing the depth of resources and experience of the entire company when called upon by the ACAA. Baker provided a full range of services to ACAA on an "On-Call/As-Needed" basis, including architecture, civil, structural, mechanical, electrical and environmental engineering, general engineering administration, construction support, and other areas.

Years with Michael Baker: 7

Years with Other Firms: 20

Degrees

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

Computer Aided Drafting, Putnam
County Technical Center, 1995

Licenses/Certifications

Professional Engineer, California,
2003

Professional Engineer,
Pennsylvania, 1999

Professional Engineer, Montana,
2001

Professional Engineer, Kentucky,
2005

Professional Engineer, Oklahoma,
2008

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

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

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

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

Non-Baker Project Experience

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

Chester Engineers / US Filter Corporation, Pittsburgh, Pennsylvania. Electrical Project Engineer. Responsibilities included the following:

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

Industrial Design Corporation, Pittsburgh, Pennsylvania. Electrical Engineer III. Responsibilities included the following:

- Staff engineer for a large, Class-1 single-level clean space fabrication building, designing all motor control centers, building and equipment grounding, roadway lighting, and generator and UPS sizing.
- Lead electrical engineer for a chemical distribution center of a large electronics manufacturer. Responsibilities included client meetings, bill of materials, budget proposals, project staffing and producing detailed construction drawings where in-house tradesmen could build right from the prints, no shop drawings required.
- Lead electrical engineer for a \$30 million upgrade to a new semiconductor manufacturing facility. Responsibilities included design staff supervision, unit substation and motor control center modifications, scheduling of critical process tool shutdown, client coordination, and replacement of approximately 160 existing panelboards.

Continuing Education/Training

Ground Fault and Short Circuit Analysis, offered by CJL Engineering, January 2004, 7 week course.

Grounding Course, offered by CJL Engineering, March 2004, 6 week course.

Power Distribution Course, offered by Duquesne Light, September 2000, 12 week course.

Computer Skills

Autodesk AutoCAD
Bentley MicroStation
Dr. Checks
Microsoft Excel
Microsoft Outlook
Microsoft Windows
Microsoft Word
SKM PowerTools

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.

APPENDIX 2 –Project Profiles

Related Project Performed by Baker

Fuel Storage Revetment Design:

Michael Baker performed a design to remove two existing fuel tanks for storage of diesel fuel #1 and replace them with concrete double wall storage tanks. Also included in the design was the replacement of the existing aboveground and underground diesel fuel piping. The new piping designed was to be double walled and have a leak detection system.

Boiler Tie-in Design:

Michael Baker performed a design to connect existing steam boiler utilities (Steam (250 psig), Feed Water, Condensate, Make-Up Water, Propane, Fuel Supply, and Fuel Return) located inside a boiler house to a future portable boiler located outside the building. This required designing utility pipe routings, pipe supports, heat trace on exterior piping to prevent freezing, and a condensate filtration system.

Fuel Transfer Design:

Michael Baker performed a design to replace a leaking diesel fuel transfer station piping for a steam boiler system. This transfer system is utilized for transferring diesel fuel from exterior fuel storage tanks to fuel burning steam boilers. This design simplified the fuel transfer system by reducing mechanical connections as much as practical, providing isolation valves for maintaining redundant pumps, resizing piping to ensure that it is sufficient to deliver diesel fuel to steam boilers operating at capacity, and minimize in-place welding. Additionally a pump evaluation was completed that investigated replacing the motors and pumps with newer ones of a better design to reduce noise and provide improved seals to prevent or improve leak tightness.

Steam System Evaluation Study:

Michael Baker provided an evaluation of a future replacement of an existing central fuel oil boiler steam system. This system was comprised of a three central steam boilers and an above ground steam and condensate distribution system. The evaluation consisted of comparing two potential electric boiler systems, a central boiler system and a distributed boiler system. A distributed boiler system consists of multiple boilers located throughout a facility as to reduce the overall sites overhead steam and condensate piping. The evaluation determined the electric boiler system with the lowest life cycle cost.

The following is a listing of past projects that team members have worked on with steam systems/boiler replacements....

Pittsburgh Public Schools - Boiler Replacements

- Central Food Kitchen
- Dilworth Elementary
- Perry High School
- South High School Tech
- Langley High School
- Allegheny Middle School
- Beechwood Elementary School
- Arlington Elementary School
- McKelvy School Pittsburgh Gifted Center
- Allderdice High School
- Oliver High School
- Homewood School

Federal Reserve Bank of Cleveland – Pittsburgh Branch

- Steam System Study

Verizon

- Uniontown Central Office Building

Westmoreland County Pennsylvania

- Courthouse
- Manor Skilled Nursing Facility
- County Prison

WVARNG Charleston Armory HVAC & Architectural Renovations Facility

Grantsville, West Virginia

The existing building/facility started as the Coonskin Armory constructed in 1961. The Headquarters Building was constructed simultaneously with the Coonskin Armory and occupied the second floor. Also in 1961, as a separate structure, the Adjutant General's Wing (TAG Wing) was constructed nearby. Later, in 1984 the Coonskin Armory/Headquarters Building was physically connected to the TAG Wing with an area of administrative offices. This final major construction project connected all the buildings into one major facility of over 50,000 square feet, referred to as the Charleston Armory.

The West Virginia Army National Guard (WVARNG) Construction and Facilities Management Office (C&FMO) requested a study be conducted of the consolidated mechanical and electrical components of the consolidated facility known as the Charleston Armory. Such items were considered as the condition of existing HVAC/MEP systems and design improvements or upgrades to those systems and examination of the existing building envelope and recommend possible improvements to the Envelope, HVAC, Electrical and Plumbing systems.

HVAC issues in the Planning Study Report. A loop pipe water source heat pump system was used. With fewer pipes and a lower installation cost, the loop pipe water source heat pump system was selected as the best system for this situation. Various HVAC components included, Consoles, above ceiling AHUs, Rooftop Units and Energy Recovery Units. During the renovation process, mold was discovered growing in certain areas of the building. An investigation was undertaken, building humidity was logged and measures were implemented to install dehumidification in existing equipment in the building, building leaks were sealed and existing mold was remediated.

Baker's design also addressed the repair of the existing roofing system, addition and repairs of roof curbs for HVAC equipment, repositioning of blocking and walk pads around the roof, and installation, repair and patching of the existing EDPM roofing system and maintaining the existing warranty.

Client

West Virginia Army National Guard
Division of Engineering and
Facilities
1703 Coonskin Drive
Charleston, WV 25311-1085
Major Michael J. Beckner
Armory Facilities Manager
304-561-6333

Contract Completion Date

2012

Baker's Role

- Architecture
- Mechanical Engineering
- Feasibility studies
- Cost estimates
- Civil engineering
- Electrical Engineering
- Structural engineering
- Environmental Permitting



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

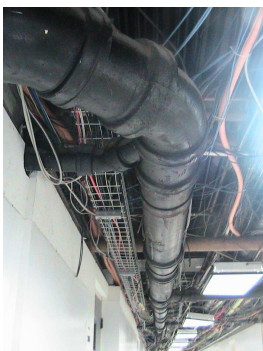
State of WV General Services
Division
Department of Administration
1900 Kanawha Boulevard East
Building 1, Room MB-60
Charleston, WV 25305

Completion Date

Awaiting funding

Baker's Role

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



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 building is provided with selective stand-by electrical power from a 50 KW natural gas generator with an automatic switch gear 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

2013

Baker's Role

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



Open-End Architectural and Engineering Services

West Virginia State University Institute, West Virginia

Baker provides architectural and multidisciplinary engineering services under a ten-year open-end agreement for the planning and design of renovations, alterations, reconstruction, or extensions of facilities. Baker's services include programming, planning, permitting, design development, construction documentation, evaluations, feasibility studies, cost estimating, and construction contract administration. Brief descriptions of a few pertinent representative tasks follow.

Campus Main Water Loop Assessment and Design

Baker mapped valves, meters, and fire hydrants in and around the main core campus in preparation for the upgrade of the district water piping. The design of a new 10-inch branch network system for the main campus was desired by the University, including a new secondary service connection from Barron Drive. Upon completion of a study of this option, it was considered to be cost prohibitive. An alternate loop design was undertaken for replacing portions of the old main water loop to be completed in phases as funding becomes available. A number of these phases have been designed and constructed to date.

Client

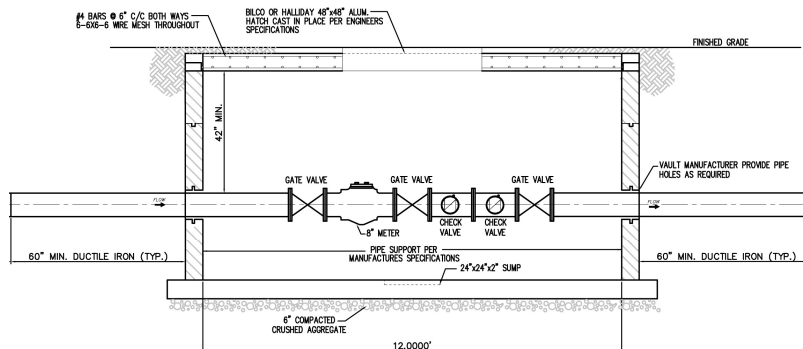
West Virginia State University
124 Ferrell Hall
Institute, West Virginia 25112

Contract Completion Date

Estimated: 2021

Baker's Role

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



Hamblin Hall Water Line Location

Hamblin Hall serves as the university's science building. The main 12-inch water line serving the campus runs under the facility and through the adjacent vacant lot. Baker located and mapped the line and the associated shut-off valve, which had been inadvertently buried and lost during fill operations that were performed around 1985. Baker's civil engineering services involved the examination of old campus mapping, a site survey, and site electronic line location technologies were utilized to help pinpoint the unknown valve and pipe location.

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.

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 20th 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