EXPRESSION OF INTEREST
For

Buckhannon Readiness Center-
Commissioning Services
Buckhannon, WV

PREPARED FOR

West Virginia Purchasing Division
Charleston, WV

Prepared by:

H.F. LENZ COMPANY
1407 Scalp Avenue
Johnstown, PA 15904
Phone: 814-269-9300
FAX: 814-269-9301

HFL File No. 2020-8005.74

September 3, 2020

H.F. LENZ
COMPANY

Engineering

1407 Scalp Avenue
Johnstown, PA 15904
Phone: 814-269-9300

September 1, 2020

WV Department of Administration
Purchasing Division
2019 Washington Street East
Charleston, WV 25305-0130

Subject: Expression of Interest
Buckhannon Phase II Addition - Commissioning Services
HFL File No. 2020-8005.74

Purchasing Division:

H.F. Lenz Company (HFL) is enthusiastic about the opportunity to provide the Commissioning Services for the Buckhannon Readiness Center Phase II Addition. Our firm has the technical capabilities, qualified and experienced personnel, and similar project experience necessary to successfully accomplish the work. Our Team is fully prepared to bring the following strengths and benefits to this project:

- Multi-discipline capability—Our Commissioning Team is well versed in Mechanical, Electrical, Life Safety, Fire Protection, Communications and Structural Engineering systems without the need for subconsultants.
- Extensive commissioning experience with projects that require detailed phasing plans for facilities to remain operational during construction.
- High-level involvement—our Principal-in-Charge and Commissioning Project Manager will remain involved with the project throughout its duration.
- Commissioning Technicians experienced in both design and construction, who understand the design intent of the systems they are commissioning.
- Firm Stability. This is our 74th year in business. We have one of the lowest rates of employee turnover in our industry.
- Proven ability to work in collaboration with Owners and other consultants throughout the project while placing the Owner's interests first.

Thank you for the opportunity to submit this Expression of Interest. We look forward to the next steps in the selection process, including a possible oral presentation. In the meantime, we will be happy to answer any questions you may have regarding our submission.

Sincerely,

H.F. LENZ COMPANY

Robert J. Ford, Jr., P.E., LEED AP
Principal

H. F. LENZ COMPANY

Paul E. Petrilli, P.E.,BCxP, LEED BD+C
Commissioning Project Manager

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TAB 1 – Firm Profile/Qualifications

Firm Profile

Currently in its 74th year, the H.F. Lenz Company is a multi-discipline engineering firm offering a full range of engineering services for building systems, critical facilities, and land development. Each market sector—education, corporate, government, healthcare, and industry—is served by a team of specialists who understand the unique needs of the clients they serve. Our 50 professional engineers are registered in all 50 states and the District of Columbia.

Commissioning Services

H.F. Lenz Company has been providing commissioning services for over 25 years and is a Full Member Provider Firm with the Building Commissioning Association. We believe it is essential for commissioning to be included on every building project in order to maximize energy efficiency over the life of the building.

As a full-service engineering firm, our Commissioning Authorities and Agents are Professional Engineers with extensive experience in building systems design, energy modeling, control system design, and troubleshooting. Our Commissioning Technicians are system designers or field inspectors that have as much as 35 years practical "hands-on" experience at H.F. Lenz Company or from their previous employment as trades people for mechanical and electrical contractors.

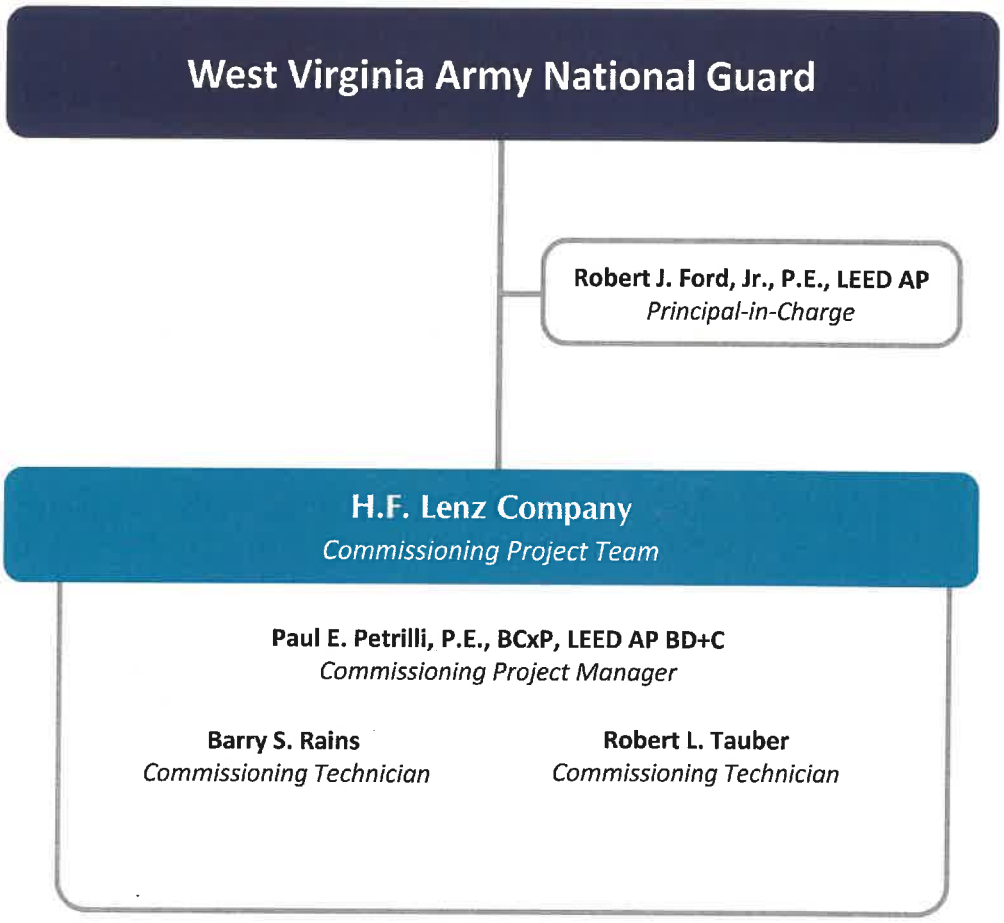
In addition to new construction commissioning, H.F. Lenz Company provides Retro-Commissioning and Re-Commissioning services for existing buildings to maintain or return them to their peak operating efficiency. The project sizes are as small as one room to campus-wide systems.

LEED Commissioning

H.F. Lenz Company has been a member of the United States Green Building Council since 2000 and currently has twenty (20) LEED Accredited Professionals on staff. Our commissioning personnel have an in-depth knowledge of green design principals with a particular focus on energy conservation strategies. This knowledge gives them the unique advantage of being able to effectively communicate with the project's design professionals as well as the contractor's personnel.

We have performed the Fundamental Commissioning of the building energy systems as well as the Enhanced Commissioning required by Energy & Atmosphere Credit 3 (EA Credit 3). We have performed LEED commissioning services and certification services for 100+ projects totaling nearly 20 million square feet.

TAB 2 – Team Resumes and Certifications


West Virginia Army National Guard
Robert J. Ford, Jr., P.E., LEED AP
Principal-in-Charge
H.F. Lenz Company
Commissioning Project Team
Paul E. Petrilli, P.E., BCxP, LEED AP BD+C
Commissioning Project Manager
Barry S. Rains
Commissioning Technician
Robert L. Tauber
Commissioning Technician

Education
Bachelor of Science, Electrical Engineering Technology, 1991, University of Pittsburgh

Experience
H.F. Lenz Company 1996-Present • Dynamic Design Engineering 1992-1996 • US Army and PA National Guard 1987-2007

Professional Registration / Certification
Licensed Professional Engineer in Pennsylvania, Arizona, Colorado, Connecticut, Delaware, Georgia, Maine, Maryland, New Hampshire, New Mexico, Nevada, New York, Ohio, Texas, Vermont, Virginia, Washington, and West Virginia • LEED Accredited Professional

Professional Affiliations
Pennsylvania Society of Professional Engineers (PSPE) • National Society of Professional Engineers (NSPE) • 7x24 Exchange International • National Eagle Scout Association

Robert J. Ford, Jr., P.E., LEED AP
Principal-in-Charge

Mr. Ford has over 28 years of experience as a project/design engineer in M/E consulting firms and more than 20 years of hands-on military construction experience as both a noncommissioned and commissioned officer in the Army National Guard.

Mr. Ford has a wide range of engineering experience with mechanical and electrical infrastructure projects for commercial and governmental facilities. His background includes accomplishments in project planning, facility design, security measures, estimating, bid document preparation, construction management, commissioning, and operations support. He is also experienced in the preparation of project and fee cost estimates along with projected completion schedules.

Project Experience

West Virginia Army National Guard – Charleston, West Virginia

› Principal–in-Charge for upgrading the fiber and copper cabling infrastructure at the Joint Forces Headquarters Building 1703 in Charleston, West Virginia

Veterans Affairs Medical Center – Lebanon, Pennsylvania

› Principal–in-Charge of E/A Team for campus-wide IT study and design for fiber optic upgrade and capacity expansion and renovate the main computer room/data center building

The Vanguard Group – Malvern, PA and Scottsdale, AZ

› Principal–in-Charge and Project Manager for the restacking of 10 corporate office buildings totaling 1.2 million sq.ft. involved upgrades/ replacement of electrical systems including lighting and UPS systems

Progressive Insurance Company – Highland Heights, Ohio

› Principal–in-Charge of the renovation of the Omega North Building including 37,000 sq.ft. of print shop and 17,000 sq.ft. of support space, project required specialized space temperature and humidity control

Discover Financial Services – Various Locations

› Office building fit-out, Fairport, NY
› Branch bank renovation & upgrades, Greenwood, DE
› Office building M/E renovations, New Castle, DE
› Processing center M/E upgrades, Salt Lake City, UT
› Contact center M/E upgrades, Phoenix, AZ

West Virginia State Board of Registration for Professional Engineers

ROBERT J. FORD JR
WV PE [redacted]

This is to certify that the above named PROFESSIONAL ENGINEER has met the requirements of the law, is duly registered and is entitled to practice engineering in the State of West Virginia.

EXPIRES December 31, 2020

Education
Bachelor of Architectural Engineering 1987, Mechanical/Electrical Systems in Buildings, Pennsylvania State University

Experience
H.F. Lenz Company 1987 – Present

Professional Registration / Certification
Licensed Professional Engineer in Pennsylvania, Alabama, Connecticut, Georgia, Iowa, Louisiana, Maryland, Michigan, Minnesota, Missouri, New Jersey, Ohio, Rhode Island, South Carolina, Virginia, West Virginia, Washington, DC • ASHRAE Certified Building Commissioning Professional • LEED Accredited Professional (BD+C)

Professional Affiliations
ASHRAE Member of Society Board of Directors and Region III Regional Chair • Member ASHRAE TC 7.9 Building Commissioning • Building Commissioning Association, past member of the BCA Mid-Atlantic Region Board of Directors • American Society of Plumbing Engineers • US Green Building Council • Pittsburgh Green Building Alliance, past member of the GBA Education Committee

Paul E. Petrilli, P.E., BCxP, LEED AP BD+C
Commissioning Project Manager

Mr. Petrilli has served as the Commissioning Project Manager on numerous projects and is responsible for the development and review energy audits and plans; commissioning project plans and specifications; system performance testing; review of design documents; site visits; preparation, review and submittal of O&M manuals; preparation of systems manual; training of Owner's staff; and Owner interviews. He has experience commissioning progressive mechanical systems including dedicated outdoor air systems, energy recovery, geothermal systems, photovoltaics, and building automation systems.

Project Experience

U.S. Army Corps of Engineers, Letterkenny Army Depot – Chambersburg, Pennsylvania

› Commissioning services for a new, 44,985 sq.ft., Component Rebuild Facility housing industrial processes including sanding, blast booths, wash bays, and dip tanks

Gateway National Recreation Area-Floyd Bennett Field – Brooklyn, New York

› Commissioning of the Ryan Visitor Center, a two-story, 26,640 sq.ft. historic former air terminal. The Visitor Center was restored to its late 1930's appearance

Ohio County Development Authority (OCDA) Sports Complex – Triadelphia, West Virginia

› Commissioning of a newly constructed, 180,000 sq.ft. facility that houses a full size soccer field, six basketball/volleyball courts, a second floor mezzanine viewing area, a fitness center and an indoor play climb area

Fannie Mae Reston Gateway – Reston, Virginia

› LEED-CI Fundamental & Enhanced Commissioning for 850,000 sq.ft of tenant improvements in a new, 22 story, multi-office tower. Commissioned systems include centralized UPS, critical cooling systems, kitchen/servery air handling systems, standby power generators, and office space air distribution.

Cohon University Center, Carnegie Mellon University – Pittsburgh, Pennsylvania

› Commissioning services for a $16.5 million 62,000 sq.ft. addition to the University Center, LEED Certified

ASHRAE Certified

Be it known that

PAUL PETRILLI, BCxP

I.D. [redacted]

having successfully completed all requirements and criteria has been certified as a

Building Commissioning Professional

and has accordingly been awarded all the rights, honors, and privileges thereunto appertaining. The BCxP certification, recognized by the U.S. Department of Energy (DOE) as meeting the Better Buildings Workforce Guidelines (BBWG), validates competency lead, plan, coordinate and manage a commissioning team to implement commissioning processes in new and existing buildings.

Bjarne W. Olesen, Ph.D., Fellow ASHRAE, Life Member, AS HRAE President 2017-2018

ANSI ACCREDITED

Jeff Littleton
Executive Vice President

02-26-2018 / 12-31-2021

Effective Date/Expiration Date

Barry S. Rains

Commissioning Technician

Mr. Rains is experienced in the commissioning of heating, ventilating, air conditioning, plumbing, fire protection, electrical, building management, automatic temperature control, and site utility projects. His responsibilities include performance testing; review of design documents; site visits; review of O&M manuals; preparation of systems manual; and analysis of energy using systems.

He also has a thorough knowledge of system design concepts, and as a Field Representative is responsible for carrying out the company standard of quality during construction.

Education

AAS HVAC/R Technology, 1996, Pennsylvania College of Technology, Penn State

Commercial Plumbing Certification, 1996, Pennsylvania College of Technology, Penn State

Experience

H.F. Lenz Company 2005-Present

Project Experience

Fannie Mae UTC – Urbana, Maryland

- Commissioning services for replacement of Generator #3 that had been rebuilt due to a catastrophic failure
- Commissioning services for replacement of day tanks and fuel oil piping serving all generators
- Commissioning services for condenser water system

Fannie Mae RTC – Reston, Virginia

- Commissioning services for a new UPS system, switchgear, and modified UPS system

Fannie Mae Worldgate – Herndon, Virginia

- Commissioning services for two new life safety generators and modified switchgear

Altoona Area School District – Altoona, Pennsylvania

- Commissioning services for a high school renovation and addition. Construction is currently ongoing and scheduled to be complete prior to the beginning of the 2020-21 school year.

Mount Nittany Medical Center – State College, Pennsylvania

- Commissioning services for a new four-story, 68,000 sq.ft. Perioperative Services addition; included five new operating rooms and 19-bed post-anesthesia care unit

Mount Nittany Medical Center – Reedsville, Pennsylvania

- Commissioning services for IT Disaster Recovery Center

Children's National Medical Center – Washington, DC

- MEP Engineering Services for Implementation of a $100M Master Plan including a 150,000 sq.ft. Patient Tower and Various Renovations and Additions throughout the existing 800,000 sq.ft. facility

Education

Associates Degree in Specialized Electronic Technology, Penn Technical Institute, 1985

General Electronic Courses, Greater Johnstown Area Vocational-Technical School, 1984

Experience

H.F. Lenz Company 2010–Present • PA State Fire Academy, Suppression Instructor 1995 –Present (Part-time) • West Hills Regional Fire Department/Hilltop Ambulance, Deputy Chief/EMT 1989 - Present (Part-time) • The Trane Company Inc., PA District 2003–2010 • L.W. Straw & Company, Inc. 1995–2003 • Gary's Entertainment 1987–1989 • Gruss Electronic Repair 1986–1987 • Sortech Communications Company 1986

Robert L. Tauber

Commissioning Technician

Mr. Tauber has over 20 years of experience in the HVAC industry as an Application Engineer as well as a Project Manager. He is intimately familiar with the proper control and operation of automatic temperature control systems. He had extensive experience in the design, installation, operation, and checkout of large control systems, including dedicated O/A system, energy recovery, geothermal systems, and building automation systems.

Through his previous experience working for an automatic temperature controls company and with an equipment manufacturer's representative, he was responsible for component selection, systems layout and point-to-point diagrams of ATC systems, as well as coordination of construction activities, resolution of field issues and supervision of start-up and checkout of controls systems. He was also responsible for equipment submittals and provided technical support to interface various controls system communication protocols with his specific equipment. His Commissioning responsibilities include site visits and on-site testing.

Project Experience

Franklin County Public Facilities Management – Columbus, Ohio

› LEED Fundamental & Enhanced Commissioning services for new 300,000 sq.ft. county courthouse; Project is LEED Gold

Temple University South Gateway – Philadelphia, Pennsylvania

› LEED Fundamental Commissioning for a new $216 million, 660,000 sq.ft. residence hall/ dining complex; LEED Silver

Hilton Columbus Downtown – Columbus, Ohio

› Fundamental and Enhanced LEED Commissioning for a 14-story, $95 million hotel for the Franklin County Convention Facilities Authority including atrium smoke evacuation system, fire alarm, and BAS system; Project is LEED Certified

State Correctional Institute (SCI) Benner – Benner Township, Pennsylvania

› Fundamental Commissioning of the HVAC systems serving a new 590,000 sq.ft. facility; 26 individual buildings strategically placed on 88 acres; $179 million in construction. HVAC systems included the Central Utility Building housing the chillers, boilers, cooling tower and distribution pumps.

TAB 3 – Staffing Plan

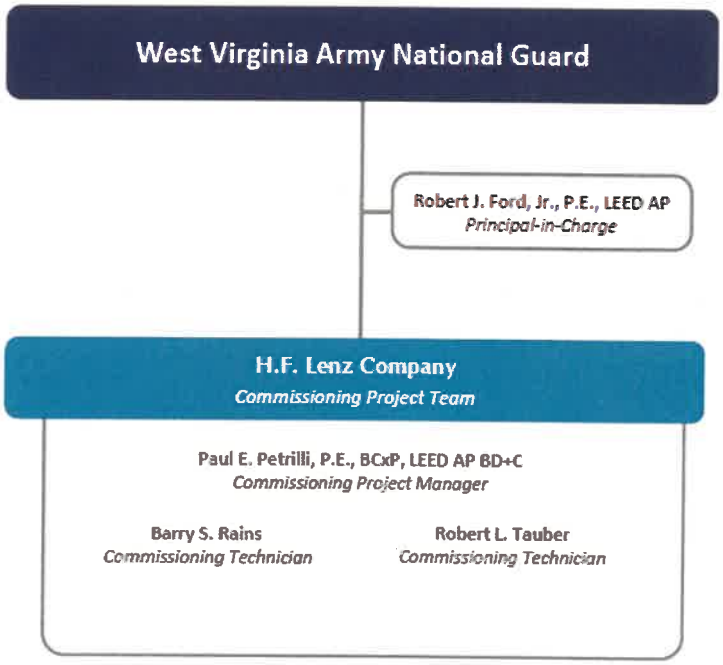
Management & Staffing Plan

As a full-service Engineering Firm, our Commissioning Staff includes Professional Engineers with extensive experience in building systems design, energy modeling, control system design, and troubleshooting. Our Commissioning Technicians are system designers or field inspectors that have as much as 35 years practical "hands-on" experience at H.F. Lenz Company or from their previous employment as trades people for mechanical and electrical contractors.

The Commissioning Team

The Principal-in-Charge will be **Robert J. Ford, Jr., P.E., LEED AP**. Mr. Ford has more than 20 years of hands-on military construction experience as both a noncommissioned and commissioned officer in the Army National Guard. **Paul E. Petrilli, PE, BCxP, LEED AP BD+C,** as the Commissioning Project Manager will lead the project from design through operations and occupancy. Paul is a Registered Professional Engineer with 33 years' experience, and an ASHRAE Certified Building Commissioning Professional (BCxP). He is also a LEED Accredited Professional BD+C. Paul has over twenty years of experience in the role of Commissioning Project Manager for various project types including military, institutional, and office/commercial.

Robert Tauber and Barry Rains, as Commissioning Technicians, will assist Paul during construction. Robert and Barry have 10 and 16 years of commissioning experience respectively.



Commissioning Tasks and Experience

Design Review

Paul Petrilli will lead the design reviews and be directly involved as the primary reviewer. The design reviews focus on the following:

1. The documents are coordinated and have the appropriate level of completeness.
2. On verifying the OPR/BOD relative to facilitating Cx Process, including:
   - Training, O&M documentation and Ongoing Cx
   - Access points, test ports, monitoring capabilities and control features
   - Verify energy efficiency operation, control sequences and maintenance
3. Thorough review of control logic

In addition, with their extensive construction experience, Rob and Barry will review the documents for:

1. Maintenance (access for normal maintenance or required replacement)
2. Constructability

O&M Experience

Many of our commissioning engineers and technicians have "hands-on" experience in operations & maintenance procedures along with a facilities management background. Some of our clients find it difficult to hire qualified operations personnel, thus they have asked our firm to review their mechanical and electrical operations. As an example, we assisted a major insurance company in conducting a nationwide Facilities Operations Program for their various sites. The program involved H.F. Lenz Company personnel conducting site audits to review standard operating procedures, preventive maintenance programs, and service agreements. A major part of the program involved the commissioning of critical mechanical and electrical systems to confirm proper operation. The systems were put through various operational and failure scenarios, results documented, improvements recommended, and final reports issued. We then conducted training workshops with the owner's personnel to review findings and provide training on proper system operation.

Energy-efficient design and control strategy optimization

Our Commissioning team has valuable experience in all aspects of control system optimization. Paul Petrilli has been involved with sustainable design for over 25 years, while others are previous employees of major controls and contracting companies. While the typical project's controls are written to simply "turn equipment off and on", we work with the design team, along with the equipment manufacturers, to determine the "sweet spots" in operation and perform computer systems modeling to look at the control sequence's effect on the whole system and not just a single component.

Troubleshooting

All of our commissioning personnel have extensive experience in the installation, operation, repair, preventive maintenance, and commissioning of HVAC Systems and Building Automation Systems for institutional and commercial buildings. This allows our team members to assist the contractors during the testing phase to quickly and efficiently determine operating problems and implement resolutions. When possible, we prefer to resolve issues in lieu of forming a list of items to be resolved sometime in the future. This is just another attribute, which enables our commissioning team to provide a superior service compared to others.

Cost & Quality Control

Cost and Quality Control as related to commissioning begins with the owner's project requirements (OPR). In addition to providing a project schedule and budget, the OPR should include a commissioning process scope and budget.

The scope of the commissioning process will vary from one project to another, and the commissioning team (owner, design professionals, and commissioning provider) should develop the scope for the commissioning process. Our extensive commissioning experience with similar and previous projects can aid the owner in developing a scope and budget for the process that is right for each project.

The commissioning budget is distributed by phase, activity, and entity. Typically an owner will focus the commissioning process on selected systems or assemblies based on the budget, systems and assemblies where the owner has experienced previous problems, on complex systems and assemblies, or on the criticality of the system or assembly in providing for the OPR.

We work with the owner to identify priorities in the OPR to allocate budget for commissioning. For example, having adequate space for service and maintenance is often forgotten when developing a space program. If a system and equipment cannot be maintained, the objectives of good environmental control, energy conservation, and indoor air quality will quickly become compromised.

We are able to provide high quality, cost effective commissioning services through our use of technology. Through the use of virtual meetings and our collaborative, cloud based commissioning program, CxAlloy, we are able to provide experienced commissioning personnel on our projects while providing our clients with real-time reporting that allows the entire project team to work together to achieve the goals and objectives of the OPR.

TAB 4 – Relevant Past Projects/References

Letterkenny Army Depot

Chambersburg,

Commissioning - Building 350 Component Rebuild Facility

Building 350 at Letterkenny Army Depot is a new, 44,985 sq.ft., 1-story facility housing industrial processes including sanding, blast booths, wash bays, and project dip tanks.

H.F. Lenz Company provided building commissioning services as the "Commissioning Specialist", as a sub-contractor to the prime contractor. H.F. Lenz Company's responsibilities included development of preliminary and final construction phase Commissioning Plans, pre-functional checklists and functional performance tests; performed site observation visits to verify system installation and readiness for testing; reviewed contractor submissions of completed pre-functional and start-up documentation; scheduled, directed, and witnessed functional performance testing; conducted commissioning meetings; documented and maintained an issues log through resolution; observed training of government personnel; and developed a System Manual.

The commissioned systems and equipment included:

HVAC Systems

- Air Handling Units
- Split System A/C Units
- Exhaust Fans
- Automatic Control Dampers
- Gas Fired Radiant Heaters
- Unit Heaters
- Controls Sequences of Operations
- DDC Controls Graphics

Plumbing Systems

- Domestic Water Heating & Controls
- Emergency Eye Wash Systems

Electrical Systems

- Lighting Controls
- Photovoltaic System
- Electrical Distribution

Industrial Process Systems

- Steam System (boilers, pumps, valves and controls)
- Blast Booth
- Flame Spray Booth and Make-up Air Unit
- Dip Tanks and Exhaust Systems
- Dust Collection
- Industrial Controls

Project Reference:

Carl Copeland
801.497.1530
carlcopeland@odyint.com

West Virginia University

Commissioning for Plant Pathology Environmental Microbiology Research Facility

H.F. Lenz Company provided the Mechanical, Electrical, Plumbing/Fire Protection, Structural and Commissioning Services for a project that involved the relocation of Plant Pathology Environmental Microbiology (PPEM) from the Downtown Campus of West Virginia University to a new facility on the Evansdale Campus. The project consisted of a 38,000 sq.ft., two-story addition to the Agriculture Science Building, which reunited PPEM with the remainder of their department in the College of Agriculture and Forestry. The new space includes research labs, research support areas, office functions, and wet bench teaching labs. The addition also included a 250 station tiered classroom.

Project Amenities Include

- Eight Research Laboratories
  - Environmental Microbiology Lab
- Plant Pathology Lab
- Constant temperature rooms
- Radioactive work room
- Prep lab/specimen storage room
- Greenhouse
- Faculty offices
- Graduate student offices
- Seminar/lecture room
- Library/conference room
- Equipment storage rooms

Systems/Components Commissioned

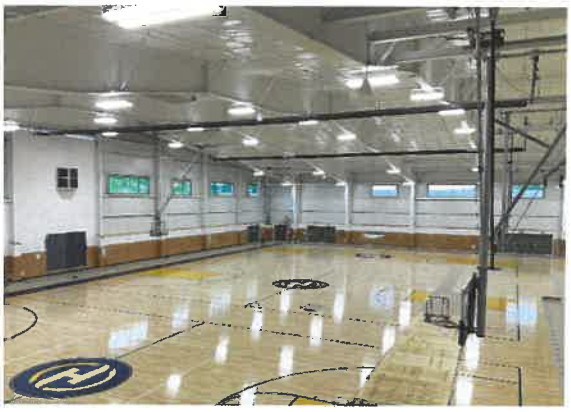
- Laboratory exhaust and hood systems
- Laboratory vacuum
- Laboratory/process gases
- Constant volume terminal boxes
- Air handling units
  - AHU dampers, smoke detector interface and temperature control
- Air cooled chiller
- Chilled water pumps and piping system
- Automatic Temperature Control system-verification of points and control algorithms
- Steam to water heat exchangers
- Hot water heating system, reheat controls, space temperatures

Project Reference:

Mr. John Sommers
304.293.2856
john.sommers@mail.wvu.edu

Ohio County Development Authority

Commissioning for Highlands Sports Complex



The Highlands Sports Complex is a newly constructed, 180,000 sq.ft. facility that houses a full size soccer field, six basketball/volleyball courts, a second floor mezzanine viewing area, a fitness center and an indoor play climb area.

H.F. Lenz Company provided MEP systems commissioning services as a sub-contractor to Building Performance Architects, who provided building envelope commissioning services. H.F. Lenz Company's responsibilities included contributing MEP systems components to the Commissioning Plan, pre-functional checklists and functional performance tests; reviewed MEP submittals for the equipment being commissioned; performed site observation visits to verify system installation and readiness for testing; reviewed contractor submissions of completed pre-functional and start-up documentation; scheduled, directed, and witnessed functional performance testing; conducted commissioning meetings; documented and maintained an issues log through resolution.

The commissioned systems and equipment included:

HVAC Systems

- Instrumentation & Controls for HVAC
- Air Handling Units
- Air Rotation Units
- Ductwork
- Exhaust Fans
- Hot Water Boilers
- Hydronic Hot Water Piping Systems
- Pumps
- Split System Cooling Equipment
- TAB Verification
- Terminal Boxes
- Terminal Heating Equipment

Plumbing Systems

- Domestic Water Heating & Controls
- Domestic Water Cleaning & Disinfection

Electrical Systems

- Lighting Controls
- Standby Generators
- Automatic Transfer Switches
- Industrial Controls

Project Reference:

Rob Hosken
412.576.3743
rhosken@buildperformarch.com

Carnegie Mellon University

Pittsburgh Pennsylvania

Commissioning for New University Center Addition

H.F. Lenz Company was selected to provide LEED Fundamental and Enhanced Commissioning for a new $16.5 million, 62,000 sq.ft., 4 floors addition containing free-weight, studio theatre, cardio fitness, fitness and training rooms, cycling, space for student organizations, a pool spectator balcony, additional locker rooms, and renovated dining facilities with courtyard seating.

The project is LEED Certified.

Systems / Components Commissioned:

Mechanical

- Central Station Air Handling Units
- Piping Systems
- Ductwork
- Testing, Adjusting and Balancing
- Domestic Hot Water System
- Hot and Chilled Water Distribution Pumps
- Air Terminal Devices
- Terminal Heating Equipment

Electrical

- Lighting Controls
- Daylight Harvesting
- Power Monitoring

Building Envelope

- Component Installation Inspection
- Witness Field QC Testing
- Thermal Image Scanning

Commissioning Services Provided:

Fundamental Commissioning

- Commissioning Plan Development
- Commissioning Design review
- Commissioning Related Specifications
- Construction Submittal review
- Site Observations
- Piping System flushing observation
- Piping Pressure testing observation
- Testing, Adjusting, and Balancing (TAB) verification
- Witnessing of equipment startup and checkout
- Developed Pre-Functional Checklists
- Functional Performance Testing
- Commissioning Issues Log / Tracking
- Final Commissioning Report

Project Reference:

Adam Homer
412.268.3879
ahomer@andrew.cmu.edu

Fannie Mae

Project Reference:

Raphael Witt
540.486.6664
raphael_witt@fanniemae.com

New High-Rise Commissioning at Reston Gateway

Reston Gateway is a new 4.8 million sq.ft. mixed use development near Reston Town Center that will feature new high-rise offices, residences, hotels, shops and restaurants. Phase I of the project includes a 28-story office building and a 22-story office building. Fannie Mae, as a tenant, is occupying 850,000 sq.ft. over 22 floors of Tower A and 6 floors of Tower B. The Fannie Mae space also includes the podium floor that connects the two towers at level 7. This connecting podium floor will house most of the amenities including training rooms, kitchen, servery, dining areas, and collaboration spaces. The office floors will consist of open office space along with meeting rooms and huddle rooms.

H.F. Lenz Company is providing the LEEDv4 Fundamental and Enhanced commissioning services for the Fannie Mae space for all mechanical, electrical systems, equipment, and controls including:

- CRAC units serving IDF rooms, MDF room, UPS room and AV equipment rooms
- AHUs and WSHPs serving floors 7, 8 and 9
- Kitchen and servery HVAC systems including make-up air units and exhaust filtration and ventilation systems and fans
- Central UPS system
- Emergency generators and fuel systems
- Emergency generators transfer systems
- Fire suppression systems for UPS, MDF and emergency generator spaces
- Building load shedding
- Lighting systems
- Motorized windows shades systems
- Building Management System functionality as a comprehensive and integrated system for base building and tenant interiors

Final pull the plug testing will be a part of the Level 5 integrated system commissioning for all electrical and mechanical equipment and Building Automation systems with the focus on Fannie Mae equipment and systems.

Ravenswood Middle School & High School Commissioning

Commissioning for Middle School Addition and High School HVAC Renovation

The Jackson County Board of Education hired the H.F. Lenz Company to provide Independent Commissioning Services for the new Middle School Addition and HVAC renovations to Ravenswood High School. The two-story Middle School Addition added 40,000 sq.ft. to the existing 75,000 sq.ft. High School. The project had just completed bidding when H.F. Lenz Company was added to the Project's team. Construction Cost for the renovation $13.1 million.

Systems/Components Commissioned

Mechanical

- Rooftop Air Handling Units
- DOAS Ventilation Units
- VRF Air Conditioning Equipment
- Exhaust Fans

Plumbing

- Domestic Hot Water System

Electrical

- Lighting Controls

Commissioning Services Provided

- Develop OPR
- Review BoD
- Prepare Commissioning Plan
- Construction Observation
- Develop Prefunctional Checklists
- Develop Test Procedures and Forms
- Document Functional Testing
- Prepare Commissioning Record & Report
- Prepare Systems Manual
- Warranty & Operations Review

Project Reference:

Dr. Keith Burdette
304.372.7305
kburdett@k12.wv@.us

Gateway National Recreation Area-Floyd Bennett Field

Brooklyn, New York

Commissioning for Ryan Visitor Center

The William Fitts Ryan Visitor Center is an historic former air terminal, part of New York City's first municipal airport. The Visitor Center was restored to its late 1930's appearance. The Ryan Visitor Center is a 2 story, 26,640 sq.ft. facility. The project's HVAC systems are currently being upgraded to correct multiple deficiencies. This effort included commissioning the new equipment and automatic temperature controls.

H.F. Lenz Company served as the Contractor's Commissioning Representative as a sub-contractor to the prime contractor for the National Park Service. H.F. Lenz Company's responsibilities included preparing a construction phase Commissioning Plan, pre-functional checklists and functional performance tests; performed site observation visits to verify system installation and readiness for testing; reviewed contractor submissions of completed pre-functional and start-up documentation; scheduled, directed, and witnessed functional performance testing; conducted commissioning meetings; documented and maintained an issues log through resolution.

The commissioned systems and equipment included:

HVAC Systems

- Instrumentation & Controls for HVAC
- Air Handling Units
- Air Cooled Condensing Unit
- Refrigerant to Water Heat Exchanger
- Hot Water to Glycol Plate Frame Heat Exchanger
- Hot Water Boilers
- Pumps (Hot & Chilled Water)
- TAB Verification
- Terminal Boxes

Project Reference:

Dave Parker
757.297.7901
dparker@asturiangroup.com

TAB 5 – Approach to Achieving the Goals & Objectives

Approach and Methodology for Meeting Project Goals and Objectives

Project Goals and Objectives

As outlined in the Section Three of the Expression of Interest, the Project goals and objectives are based upon ASHRAE 189.1 Section 10.2.1.3 (Building Project Commissioning) and are summarized as follows:

1. Attend pre-design, design, construction and post-construction meetings
2. Conduct reviews of the design documents to ensure compliance with the OPR and BoD
3. Develop a Commissioning Plan
4. Verify installation and verification of systems to be commissioned including completion of the construction checklists and verification (functional testing)
5. Verify that a Systems Manual has been prepared
6. Provide preliminary and final Commissioning Reports.

Systems to be Commissioned

ASHRAE 189.1-2018 states that for all buildings exceeding 10,000 sq. ft. the following systems (if included in the project) shall be commissioned:

- HVAC and associated controls
- Air-curtain systems
- Lighting systems and controls
- Domestic hot-water systems and controls
- Water pumping and mixing systems over 5 hp and purification systems
- Irrigation system performance that uses more than 1,000 gallons per day
- Renewable energy systems and energy storage systems
- Energy and building management and demand-control systems.

Approach and Methodology

Our commissioning services are based on ASHRAE Guideline 0-2019 The Commissioning Process and ASHRAE Standard 202-2018 Commissioning Process for Buildings and Systems. We have integrated CxAlloy, a web-based commissioning program into our process to help manage the quality process for design and construction projects. The software application provides collaborative issue management, asset tracking, and quality verification through custom checklists and tests that we write.

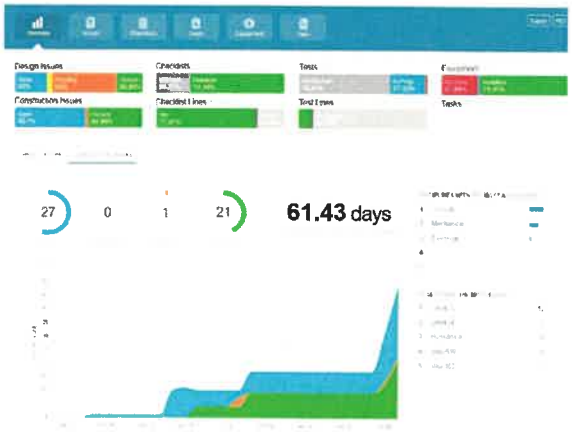
By implementing CxAlloy into our commissioning projects, all team members are provided with real-time commissioning information as design reviews, submittal reviews, construction observation visits, meetings, construction checklists and functional testing are recorded on-line, with all identified issues immediately being recorded on the issues log with notifications sent to the responsible parties to address the issues.

4.1 Attend pre-design, design, construction and post-construction meetings as pertains to duties outlined in ASHRAE 189.1 Section 10.3.1.2:

Prior to the current COVID-19 pandemic, all of our commissioning meetings had been face-to-face meetings. As the virus spread, meetings switched to almost exclusively virtual format and have morphed into a blend of face-to-face and virtual according to the needs of the project. Virtual meetings have greatly improved the efficiency of our projects by cutting down the amount of time spent getting to and from meetings. As our projects have opened up, our general approach is to hold an initial face-to-face meeting as a pre-design kickoff/OPR development meeting with the remainder of the predesign/design commissioning meetings held virtually. During construction we hold a virtual construction phase commissioning kickoff meeting which allows us to train the contractors on the use of CxAlloy as we review the preliminary construction phase Commissioning Plan. We regularly participate virtually in bi-weekly job conferences and schedule face-to-

face commissioning meetings coincident with our site observation visits as required. At a minimum, commissioning meetings are required for automatic temperature controls review, scheduling, construction checklist review, and during functional testing. Post-construction meetings are generally face-to-face and occur during the warranty period and seasonal testing.

4.2 Conduct reviews of the design documents to ensure compliance with the owner's project requirements and the project specifications:



The owner's project requirements (OPR) forms the basis from which all design, construction, acceptance, and operational decisions are made. Our first commissioning task is to review the OPR to for clarity, conciseness, and comprehensiveness. Quite often, we assist the owner in developing the OPR since it will become the basis for all other reviews and acceptance testing.

After receiving the OPR, the design team moves forward with schematic design and prepared the initial basis of design (BoD) document which should define how the design team intends to meet the owner's requirements. We will review the BoD for compliance with the OPR and provide written review comments which are tracked in the design issues log in CxAlloy. The design team is expected to respond directly in CxAlloy as a means of recording the process. We will review open issues with the owner and design team to reach resolution, the BoD will be revised and issues will be closed.

It is our intent to review the design documents and specifications at the end of the design development (DD) phase and again at near complete construction documents against the OPR with CxAlloy, similar to the BoD review.

4.3 Develop a commissioning plan for testing of equipment, systems and controls as outlined in ASHRAE 189.1 Section 10.3.1.2:

The commissioning plan identifies the processes and procedures necessary for a successful commissioning process. We prepare an initial plan at the beginning of the design phase to outline the process during design and update and expand the plan to include the construction process. We recommend including the preliminary construction phase plan as an exhibit or attachment to the specifications. We maintain the current version of the plan in CxAlloy such that it remains accessible to all of the commissioning team. As submittals are received, we develop project specific construction checklists that are reviewed by the installing contractors and upload the checklist to CxAlloy such that they can be completed on-line, daily by the installing contractors.

Upon receipt of the automatic temperature controls submittal, we hold a commissioning meeting that includes the owner's O&M personnel, the design engineer, controls subcontractor where we review the submitted sequences of operation "line-by-line" to verify that the sequences meet the owner's requirement and that all required points and alarms are provided and integrated into the system graphics.

Upon approval of the controls submittal, we develop the functional test procedures which are reviewed by the owner, engineer and contractors, and upon approval are uploaded to CxAlloy. The results of all test attempts and issues are documented in CxAlloy which are then included in the commissioning plan.

4.4 Verify the installation and performance of the systems to be commissioned including completion of construction checklist and verification.

Concurrent with the design team, we review selected shop drawings and product submittals for equipment and systems being commissioned, paying special attention to substitutions and proposed deviations from the contract documents that could adversely impact the OPR. Upon review of the submittals, we develop the construction checklists that the contractors complete when installing the work.

Through virtual attendance in project job conferences and face-to-face commissioning meetings, we work with contractors to incorporate the commissioning process into the construction schedule. Major commissioning milestones will include completion of construction checklists; equipment startup; testing, adjusting and balancing; controls point-to-point checkout; completion of controls system programming and graphics; equipment and systems test plan.

Functional test procedures for terminal equipment are executed and documented by the installing contractors, and then, using a sampling process, we select equipment for the contractor to demonstrate the test procedure for approval. For larger equipment and for systems, we are present to witness and document testing. All test forms are completed directly in CxAlloy and results (pass/fail) and issues are available daily for the commissioning team's review.

4.5 Verify that a system manual has been prepared that includes Operations and Maintenance documentation, full warranty information and provides operating staff with the information needed to understand and operate the commissioned systems as design:

The Systems Manual is a document that is the responsibility of the commissioning team (commissioning authority; owner user and operation and maintenance personnel; architect and engineering professionals; contractors and sub-contractors) to create, update and maintain during the commissioning process. The Commissioning Authority is responsible to gather information from all of the commissioning team, and assemble it into the Systems Manual. We include the contractor's contributions to the Systems Manual as submittal requirements in the specifications that get reviewed and by the owner, commissioning authority and the design professionals.

4.6 Complete preliminary and final commissioning reports:

A preliminary commissioning report will be provided within 30 days of the completion of functional testing and the final commissioning report will be issued within 30 days of the completion of the post occupancy activities which include interviews with the users and O&M personnel to discuss any operation issues, warranty review, and seasonal testing. The commissioning report will include:

1. Executive summary
2. Copy of the final Cx Process plans
3. Copy of the design and submittal review reports
4. Completed copy of the approved supplier, contractor, and CxA evaluations, and Cx start-up forms, including those used during the occupancy and operations activity
5. Copy of all Cx progress reports
6. Copy of all issue and resolution logs
7. For any open issues, a resolution plan approved by the owner identifying who is responsible for resolution.