pennsylvania
DEPARTMENT OF MILITARY AND VETERANS AFFAIRS

WRIGHT COMMISSIONING

Independent Technical Commissioning Services
DGS Project No. 964-64 Phase 1

Gettysburg Readiness Center -
Renovate the Facility
Pennsylvania DMVA
1200 Fairfield Road
Gettysburg, Adams County, PA

TECHNICAL SUBMISSION

June 7, 2024

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Springfield, PA 19064

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June 7, 2024

Sherri Hankal
PA Department of General Services
Arsenal Building
1800 Herr Street
Harrisburg, PA 17103

RE: Independent Technical Commissioning Services
DGS Project No. 964-64 Phase 1
Gettysburg Readiness Center – Renovate the Facility
Pennsylvania DMVA
1200 Fairfield Road – Gettysburg, Adams County, PA

Dear Sherri:

Thank you very much for presenting Wright Commissioning (WCx) with the opportunity to provide independent technical building systems commissioning services for the design and construction phases of the Gettysburg Readiness Center – Renovate the Facility project, located at 1200 Fairfield Road in Gettysburg, Adams County, PA.

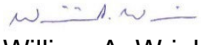
WCx strives to be committed and responsive to our clients by meeting their needs and exceeding all expectations. Our team is ideally suited to provide commissioning services for this project and has proven capabilities on programs and projects similar to this one. We are confident that our team will deliver superior, value-added services through our emphasis on team collaboration and a proactive approach to problem-solving.

Our qualifications include:

- We are a truly independent representative whose core business is commissioning. We do not practice design or engage in contracting. Therefore, we have no conflicts with the design or construction. Our focus is to understand the design objectives and deliver sustainable systems that meet and exceed those objectives, while maintaining the highest level of quality.
- WCx is a NEBB certified commissioning firm. As managing member of the firm, I am a NEBB certified Commissioning Professional with over 25 years of building commissioning experience.
- Our experience with the commissioning of various Readiness Center facilities, some of which are highlighted in this proposal.
- Successful project experience with our acoustics sub-consultant, Metropolitan Acoustics.
- Our experience working within the e-Builder system platform on various Pennsylvania DGS projects.
- WCx is authorized by various agencies to provide professional commissioning services, including being a Federal GSA schedule holder, a commissioning provider for the Pennsylvania DGS and PASSHE (Pennsylvania State System of Higher Education), the New Jersey DPMC and SDA, and the Maryland Stadium Authority (MSA).
- WCx is a certified Minority Business Enterprise (MBE) and Woman's Business Enterprise (WBE).

On behalf of the WCx team, thank you again for your interest and consideration. If you should require additional information, please don't hesitate to contact me directly. My office phone is ext.135, cell phone is 267-414-3150 and e-mail is will.wright@wrightcx.com.

Sincerely,



William A. Wright, LEED AP, ASHRAE CPMP, NEBB CP, CEM, CQM
Commissioning Authority

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SECTION 1: RELEVANT PROJECT EXPERIENCE

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RELEVANT PROJECT EXPERIENCE (scope, size, building type and complexity)

1. Lewisburg Readiness Center Rehabilitation (*2016 - 2019*) – size, building type and complexity

   The project involved major rehabilitation of approximately 34,000 square feet of an existing Readiness Center facility. The work included modifications and improvements to HVAC, electrical, plumbing, IT and fire alarm systems. The bathrooms and showers were renovated, and architectural improvements were made to the ceilings, walls and floorings. Site improvements were also made, including a storage building. A two-to-five KW photovoltaic system was installed to offset electric consumption and cost.

   Construction Cost: $4,900,000

   Cx Fee: $93,860.74

   Frank Petulla
   (814) 863-0197
   fpetulla@pa.gov

   Sam Eddinger
   (814) 863-0197
   sameddinge@pa.gov

2. Lehighton Readiness Center (*2019 - 2021*) – size, building type and complexity

   The proposed project involved replacements and upgrades to building systems, including HVAC, electrical, plumbing and fire alarm systems, at the Lehighton Readiness Center building, located at 1000 Bridge Street in Lehighton, Carbon County, PA. The existing Readiness Center facility is approximately 18,445 square feet. Improvements and repairs were also made to the existing parking lot and access road. Both men's and women's restrooms were completely renovated.

   Construction Cost: $2,407,664

   Cx Fee: $31,355.14

   Daniel Polzer
   (610) 871-0233
   dpolzer@pa.gov

3. Fort Indiantown Gap Readiness Center Rehabilitation (*2020 - present*) – size, building type and complexity

   The project involved replacements and upgrades to building systems, including HVAC, electrical, plumbing and fire protection systems, as well as communications and security systems, at Fort Indiantown Gap (FTIG) Readiness Center in Annville, Lebanon County, PA. The existing building has Basement and 1st Floor levels and consists of approximately 122,600 square feet.

   Construction Cost: $8,349,581

   Cx Fee: $94,907.62

   Richard Sariano
   (717) 787-6984 rsariano@pa.gov

4. JBMDL National Guard Readiness Center (*2020 - present*) – size, building type and complexity

   The project involved design and construction of a new, approximately 40,795 gross square foot, masonry and steel building to house training, administrative and logistic requirements, at the JB-MDL (Naval Air Engineering Station), Lakehurst, New Jersey, with a project budget of $15 million. The facility will be comprised of training, administrative and logistic areas, 35,862 square feet; an unheated storage facility, 4,493 square feet; a controlled waste facility, 330 square feet; and a flammable materials facility, 110 square feet. The entire Readiness Center was designed and constructed to achieve a minimum LEED Silver rating.

   Construction Cost: $15,000,000

   Cx Fee: $65,650

   Arturo Domingo
   (609) 530-6784
   arturo.domingo@dmava.nj.gov

5. Hiller Readiness Center Rehabilitation (*2022 – present*) – size, building type and complexity

   Hiller Readiness Center is a federally owned facility being leased by the Commonwealth for the PA National Guard. This project includes the renovation and new construction that will address space and code deficiencies along with modernization of the existing facilities. The Hiller Readiness center consists of two facilities; the Readiness Center Building and a Vehicle Maintenance Training facility, both of which were originally constructed in 1963.

   The Hiller Readiness Center is undersized and requires renovations and new construction, to maximize the requirements of the Owner's Project Requirements to the greatest extent possible. A new vehicle maintenance building is part of the scope for this project.

   Construction Cost: $7,600,000

   Cx Fee: $35,000.00

   Ronald Veyo
   (412) 302-7190
   rveyo@pa.gov

6. Harrisburg Military Post Rehabilitation and Modernization (*2020 - present*) – size, building type and complexity

   The project involved replacements and upgrades to building systems, including HVAC, electrical, plumbing and fire alarm systems, at the Harrisburg Military Post, located at 14th and Calder Streets in Harrisburg, Dauphin County, PA. The Harrisburg Military Post (HMP) is owned by the Commonwealth of Pennsylvania and is home to the Headquarters of the 28th Infantry Division of the Pennsylvania Army National Guard (PANG). The Department of Military and Veterans Affairs (DMVA) is the state agency responsible for managing PANG and, within DMVA, the Office of Facilities and Engineering (OFE) is responsible for managing the facilities and infrastructure required to support the state and federal mission of PANG.

Construction Cost: $11,250,000

Cx Fee: $50,000

Stephen Bernadyn
(717) 346-0319
sbernadyn@pa.gov

7. 2nd Police District Building (*2018 - 2021*) – scope, building type and complexity

   LEED fundamental and enhanced commissioning, including building envelope commissioning, for the complete renovation of an existing, two-story, office/retail building of approximately 11,600 square feet into a new police district headquarters for the City of Philadelphia.

   Construction Cost: unknown

   Cx Fee: $46,500

   Todd Woodward, SMP Architects
   (215) 985-4410
   tkw@smparchitects.com

8. 1st Police District Building (*2020 - 2021*) – scope, building type and complexity

   The project involved retro-commissioning services to evaluate, test, adjust and correct facility HVAC systems to meet the owner's current facility requirements, optimize operation and efficiency, and assist with the basis of design (BOD) for any remedial repair projects for the City of Philadelphia. This process involved site investigation, analysis and corrective actions.

   Construction Cost: N/A

   Cx Fee: $25,000

   Michael Drury, Seiler + Drury Architecture
   (610) 272-4809
   mdrury@sdarc.com

9. Engine 38 (*2021 - 2023*) – scope, building type and complexity

   LEED fundamental commissioning for a new 12,200 SF fire station for the Philadelphia Fire Department. Commissioning and test and balance verification for HVAC system components including cooling and energy recovery units, lighting controls, domestic hot water generator and rainwater harvesting system.

   Construction Cost: unknown

   Cx Fee: $28,000

   Eric Leighton, Cecil Baker + Partners
   (215) 928-0202
   eleighton@cecilbakerpartners.com

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10. Palmyra Borough Police Building (*2020 – 2021*) – scope, building type and complexity

    The project involved building system and envelope assembly retro-commissioning services to evaluate, test, adjust and correct facility HVAC systems to meet the owner's current facility requirements, optimize operation and efficiency, and assist with the basis of design (BOD) for any remedial repair projects for the Borough of Palmyra, PA. This process involved site investigation, analysis and corrective actions.

    Construction Cost: N/A

    Cx Fee: $24,000

    Roger Powl, Palmyra Borough
    (717) 838-6361
    rpowl@palmyraborough.org

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METROPOLITAN ACOUSTICS RELEVANT PROJECT EXPERIENCE (Acoustical Consulting, Sound and Vibration Testing)

1. World Café Theater/World Café Live, Philadelphia, PA

   Architect: DAS Architects

   Metropolitan Acoustics was responsible for the interior room acoustics design for the main performance theater (Downstairs Live) and café theater (Upstairs Live) at the World Café Live in Philadelphia, PA. The World Café is a renovation of an existing 40,000 sq. ft. Art Deco warehouse building known as the Hajoca Building.

   The Downstairs Live theater seats 300 people in its normal seating capacity and 650 standing room only configuration. It is a two-story space with a mezzanine in the rear and a bar below the mezzanine. Our recommendations included approximately 2,000 sq. ft. of 3″ thick acoustic panels on the walls and ceiling over the audience area to provide an optimal reverberation time.

   Upstairs live accommodates 100 people in an intimate café setting. The recommended finishes include an acoustic tile ceiling in various planes and an adjustable curtain on the rear wall.

2. Venice Island Performing Arts and Recreation Center, Philadelphia, PA

   Architect: Buell Kratzer Powell

   Located in the Manayunk section of Philadelphia between the Schuylkill River and Manayunk Canal, this ambitious project – 10 years in the making – is a reconstructed public space with a theater, outdoor amphitheater, playground, basketball courts, and a spray park.

   Metropolitan Acoustics provided the acoustical and audio visual consultation on the new performing arts theater. Working with the architects, Buell Kratzer Powell, we designed acoustical treatments for the interior finishes; provided recommendations for partition construction to minimize sound transmission between the auditorium/stage and adjacent areas; and worked with the mechanical engineers to design recommendations for noise and vibration attenuation measures of the HVAC systems. Additionally, we designed a performance sound system for all uses of the auditorium.

   Venice Island Performing Arts and Recreation Center was awarded the Environmental Project of the Year by the Construction Management Association of America's Mid-Atlantic chapter. The award recognizes the environmental aspects of the project and Philadelphia Water's commitment to green storm water management initiatives.

3. Lincoln University – International Cultural Arts Auditorium, Lincoln University, PA

   Architect: SaylorGregg Architects

   Metropolitan Acoustics consulted on the room acoustics, mechanical system noise control and A/V system for this $17.5 million, 1000+ seat auditorium. The space is meant to be used for both speech and musical performances and can be sub-divided into a smaller space by a curtain.

We recommended suspended clouds over the stage and seating to help project sound to the audience. Additionally, we recommended absorptive panels on the balcony face and sound and lighting booths to minimize slap echoes.

To meet an appropriate background sound level we provided recommendations to the mechanical engineers including duct silencers, duct lagging and appropriate damper positions. Our recommendations were designed to reduce the background sound level to NC-24.

We designed a performance sound system for both theatrical and music reinforcement. The true L-C-R system included delay speakers above and below the balcony, digital audio routing and a digital console for performance use. Additionally, the system includes full automatic settings for lectures and large group instruction.

4. Curtis Institute of Music – Lenfest Hall (Philadelphia, PA)

Architect: VSBA Architects

The Curtis Institute of Music in Philadelphia, Pennsylvania, doubled the size of their campus with the addition of Lenfest Hall, designed by renowned Philadelphia architects Venturi, Scott Brown and Associates. The new building includes 32 studios, practice spaces, classrooms, student housing, a fifth floor garden terrace, dining facilities, and a rehearsal hall. Curtis desired a building that did not just provide them with teaching and housing space, but embraced all of the experiences that Curtis has to offer its students. VSBA's design for Lenfest Hall incorporates contemporary features and 21st-century technology yet recognizes Curtis's long standing heritage and the architectural landscape of the neighborhood. Lenfest Hall includes Curtis Institute's first venture into on-campus student housing; there are 18 suites providing room for 80 students. The result is a building that is inviting and inspirational.

Incorporating today's Audio/Visual technology along with expansion for tomorrow into a space as architecturally significant as Lenfest Hall was the challenge that Metropolitan Acoustics' A/V system design team was tasked with. The 3200 sq.ft. Gould Rehearsal Hall serves as the primary rehearsal space for the Curtis Symphony Orchestra. It can also facilitate large group instruction, special events, and advanced audio and video recording sessions. Curtis wanted to provide their students and staff with a feature-rich A/V system that was extremely flexible, easy for the staff to operate and manage, and that did not take away from the focus of the space – music education. The system includes a high- brightness, high-definition video projector that retracts above the acoustic clouds when not in use; an 8 ½-ft. tall by 14-ft. wide projection screen that descends 12-ft. from the 28-ft. high ceiling as needed; multiple audio and video interface locations around the room to connect cameras for recording and broadcasting; a basic digital audio recording system for daily operations; and a touch screen interface to manage it all. The system also includes several hundred audio, video, data, and fiber tie lines that connect the surrounding classrooms and practice spaces to a third floor control room.

To minimize the architectural impact that the A/V system has on the Gould Rehearsal Hall, the speakers were painted black and mounted above and between the acoustic clouds, and all of the local A/V system equipment is housed within custom casework. These efforts to minimize the aesthetic impact of the A/V system were reflected in the other spaces at Lenfest Hall, including the classrooms, larger practice rooms, a dining hall, and the Locks Board Room. Thanks to advances in A/V technology, the spaces are equipped with

projection systems that feature a “wireless connect” option, which allows anyone in the room with a wireless network connection to transmit their presentation directly to the projector without connecting a single cable. All of the A/V systems installed at Curtis are managed and monitored 24/7 by an A/V management software and hardware package. This provides maintenance data, room statuses, remote helpdesk information, and troubleshooting capabilities to Curtis’s A/V staff from on and off campus.

5. University of the Arts – Caplan Center for the Performing Arts, Philadelphia, PA

   Architect: VSBA Architects

   South Broad Street in Philadelphia is known as the “Avenue of the Arts” and is home to many world-class performance venues such as the Academy of Music and Kimmel Center, as well as the University of the Arts. A South Broad Street presence for over 130 years, the school is solely dedicated to higher education for 2,100 talented students interested in careers in the visual and performing arts and design.

   The Caplan Center for the Performing Arts is located on two floors of the University’s Terra Hall. Metropolitan Acoustics designed all the acoustical and performance audio visual system for 130-seat recital hall and the 100-seat black box theater. These venues are used by students in both the Ira Brind School of Theater Arts and the School of Music.

SECTION 2: PROJECT UNDERSTANDING AND APPROACH

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PROJECT UNDERSTANDING

The Gettysburg Readiness Center is a former U.S. Armed Forces Reserve Center and is currently the home station for Company F, Forward Support Company (FSC), 328th Brigade Support Battalion (BSB), 56th Stryker Brigade, 28th Infantry Division. The primary facility is approximately 14,430 S.F. and was constructed in the early 1960's and expanded in the early 1970's. The site includes parking for personally owned vehicles as well as Military Equipment Parking. The site also includes a separate building used for maintenance /storage. The facilities and site (approximately 3.7 acres) are undersized and insufficient to meet the requirements of the FSC which is scheduled to move to the new Carlisle Readiness Center that is currently in design.

The 28th Infantry Division Band currently stationed at the Torrance Readiness Center is scheduled to move to the Gettysburg Readiness Center after renovations are complete. In order fulfill the mission of the 28th Infantry Division Band, the existing facilities will require extensive interior renovations and upgrades of the existing Readiness Center. These upgrades will include modifying the existing Readiness Center facility to accommodate and facilitate acoustic requirements of the Band, architectural building envelope systems, architectural ADA accessibility upgrades, architectural interior finishes, mechanical system upgrades, plumbing system upgrades, and electrical service consolidation and system upgrades. The extent of the renovations and upgrades will be prioritized by the available funding and space authorization / allocation, and other applicable requirements.

The project values are:

- Provide ability to practice, record, play, and hear music effectively as a band in the main rehearsal hall, (2) small rehearsal rooms, and individual practice rooms.
- Provide proper Instrument storage environmental conditions including relevant humidity.
- Provide adequate music library space.
- Address all facility systems deficiencies including sufficient facilities for female soldiers within the building as a part of the project.

The purpose of the independent technical commissioning services is to provide systematic documented confirmation that the building systems and assemblies achieve the highest level of functional integrity and reliability and are in compliance with the design intent and performance requirements of the owner and occupants. This process covers design, installation, start-up and operation of the building's systems and assemblies, and is accomplished through coordination and efforts of the owner, designers, contractors and commissioning authority.

SYSTEMS AND ASSEMBLIES TO BE COMMISSIONED

- Acoustical design consulting and construction administration
- Building Assembly Systems including Building Shell, Exterior Wall Assemblies, and Roof Assemblies. Building exterior includes Anti-Terrorism Force Protection (ATFP) measures.
- Protective Systems including Fire Suppression and Fire Alarm Systems. This scope is limited to the points of interface between the HVAC and Fire Alarm Systems.

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- Plumbing Systems including Domestic Hot Water and Pumping Systems.
- Heating, Ventilating, Air Conditioning and Refrigeration Systems (HVAC) including Heat Generation, Heat Pump, Ventilation, and Building Automation Systems.
- Electrical Systems including Power Distribution, Lighting and Controls.
- Communications Systems including Voice/Data and Sound/Video Systems.
- Electronic Safety and Security Systems including Security, Alarm, and Detection Systems.

DESIGN PHASE

1. Develop the Owner's Project Requirements (OPR) document and criteria provided to the design team.
2. Review the Basis of Design (BOD) document for consistency with the OPR. Provide written comments.
3. Prepare a preliminary commissioning plan that outlines the extent of the commissioning process to accomplish the OPR.
4. In coordination with the project design professionals, prepare and format the required specification sections for systems to be commissioned and submit to the design professionals for inclusion in their final submission.
5. Perform design review of MEP/FP and building envelope concepts for the design document submissions (drawings, specifications).
6. Perform back-checks and design reviews of MEP/FP and building envelope concepts for subsequent design document submissions (drawings, specifications).
7. Participate in (1) design team meeting every two weeks, (3) hours each, virtually, totaling (15) meetings.
8. Participate in (1) job review conference, in person, totaling (8) hours.

CONSTRUCTION AND ACCEPTANCE PHASES

1. Prepare and submit a construction phase commissioning plan to the owner and the project commissioning team, before the first construction phase commissioning meeting. Execute the commissioning process as described in the contract documents and approved commissioning plan. This includes preparation of agendas, attendance lists, arrangements for meeting facilities and advance notice to participants for each commissioning event. The commissioning authority will act as chair at commissioning events and ensure execution of the agenda items. The commissioning authority shall prepare meeting minutes for commissioning events and send a copy to the owner, commissioning team members and attendees within five business days of the event.

2. Schedule the construction phase commissioning coordination meeting at the owner or construction field office at a time that is suitable to the contractors, the design professionals and the owner. At this meeting, the complete commissioning process and construction phase commissioning plan will be reviewed in detail. Tentative schedules will be established for building systems orientation and installation verifications, O&M submittals, owner training seminar, pipe and duct system flushing and testing requirements, start-up, test and balance (TAB) work and performance verification testing.

3. Receive and review the equipment submittals for systems to be commissioned. Provide written comments.

4. Receive and review the installation, operations and maintenance (O&M) manuals submitted by the contractors for systems to be commissioned. Ensure that they follow the specified outline and format. Request revisions to achieve accuracy. Provide written comments.

5. Check equipment installation against contract documents for adequate accessibility for maintenance and component replacement or repair. Provide and complete field installation verification reports for each component and system. Maintain a master issues log and installation record, indicating status for each item. Provide written progress reports. Provide assistance in issue resolution.

6. Witness equipment, subsystem and system installation, start-up and testing for systems to be commissioned. Develop and perform functional performance test reports for start-up of systems to be commissioned.

7. The functional performance tests will include point-to-point tests for automatic control systems. Prior to these tests, the controls contractor shall complete the installation and conduct a test and calibration of each point on the system. The commissioning authority and controls contractor shall verify the system point-to-point test. Each point shall be verified as to its operational status and recorded on the functional test report.

8. Maintain a master issues log for any deficiencies, indicating status for each item. Provide written progress reports. Provide assistance in issue resolution.

9. Prior to the field test and balance work, meet with the TAB contractor. The TAB contractor is to outline the TAB procedures and get agreement from the HVAC design professional and the commissioning authority. Ensure that the TAB contractor has the forms required for proper data collection and understands their importance and use. Ensure that the TAB contractor is certified and will be using calibrated instrumentation. Ensure that the TAB contractor is clear on the expectations for commissioning TAB observation and reporting.

10. The commissioning authority will select up to 100 percent of the balance readings for repeatability by the TAB contractor. If more than three of the first ten readings on any system do not repeat, the TAB contractor shall rebalance the system before re-verification of the TAB work. The TAB contractor shall mark all damper settings, record all pressure settings and mark all target grilles used in proportional balancing to assure repeatability of the readings. The TAB contractor shall be prepared to provide current calibration certificates for all instrumentation used in the TAB work.

11. Develop and conduct the performance verification tests for systems to be commissioned. The test data, along with the installation verification, start-up and functional test sheets, will

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be included in the commissioning report. The performance verification tests are designed to demonstrate that each system performs to the design intent and owner's requirements. Each test includes data trends or data logs that record operating conditions during set point and other changes to the system. Tests are documented on the performance verification reports.

12. Receive and review record drawings for accuracy with respect to the installed and commissioned systems. Request revisions to achieve accuracy. Provide written comments.

13. Participate in (1) meeting every (2) weeks, (3) hours each, totaling (30) meetings. Onsite commissioning meetings will coincide with onsite job construction meetings.

OCCUPANCY AND OPERATIONS PHASES

1. Ensure that O&M manuals and other as-built records for commissioned systems have been updated to include modifications made during the construction phase. Request revisions to achieve accuracy. Provide a report detailing any discrepancies found.

2. Training coordination for commissioned systems and documented verification of operator training. The training sessions are to be attended by the facilities staff and end users, the commissioning authority and the contractors and equipment vendors as required by the contract documents. The format will follow the outline in the specifications and commissioning plan, with partial classroom and partial hands-on training in the field.

3. Assist in the development of the Systems Manual for commissioned systems. This manual provides for a standardized arrangement of O&M documents verified for application to the actual equipment installed. The documentation is integrated into one package to facilitate building operation and maintenance. The commissioning authority shall issue a complete electronic, bookmarked PDF book of the Systems Manual for use by the facilities staff.

4. Prepare a commissioning report for commissioned systems. Installation, start-up, functional test and performance verification reports shall be included in the report, along with an up-to-date commissioning issues log. The report will also contain an executive summary.

POST OCCUPANCY/WARRANTY PHASE

1. Repeat performance verification tests to accommodate opposite-season testing and supervise any corrections of performance deficiencies. Publish an addendum to the commissioning report.

2. Perform ongoing post-occupancy visits as required to address space use needs, system issues, and to verify performance of commissioned systems. These scheduled visits will be coordinated with facilities personnel in order to review any issues, function of the systems, and to continue to optimize the systems based on end-usage and seasonal affects.

3. Publish a 10-month-post-occupancy warranty report detailing current status of the commissioned systems, including any performance issues.

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BUILDING ENVELOPE COMMISSIONING

DESIGN PHASE

1. BECx kick-off conference call with the owner and architect to establish the building enclosure specific OPR.

2. Provide written functional performance testing plan for A.O.R. review.

3. Review and comment on the design documents for air, water, vapor barrier effectiveness and thermal barrier integrity.

4. Electronically mark up the drawings and specifications to convey opinions regarding the design's ability to meet the performance goals of the OPR. Provide recommendations for the development of additional details and drawings and technical matters.

CONSTRUCTION PHASE

1. Field monitor installation of exterior enclosure components.

2. Site visits to observe field testing of building enclosure components.

3. Update field report log.

TESTING AND VERIFICATION PHASE

1. Perform two (2) site visits to complete infra-red inspection.

2. Provide infra-red inspection report, with photographs.

SECTION 3: PROJECT TEAM

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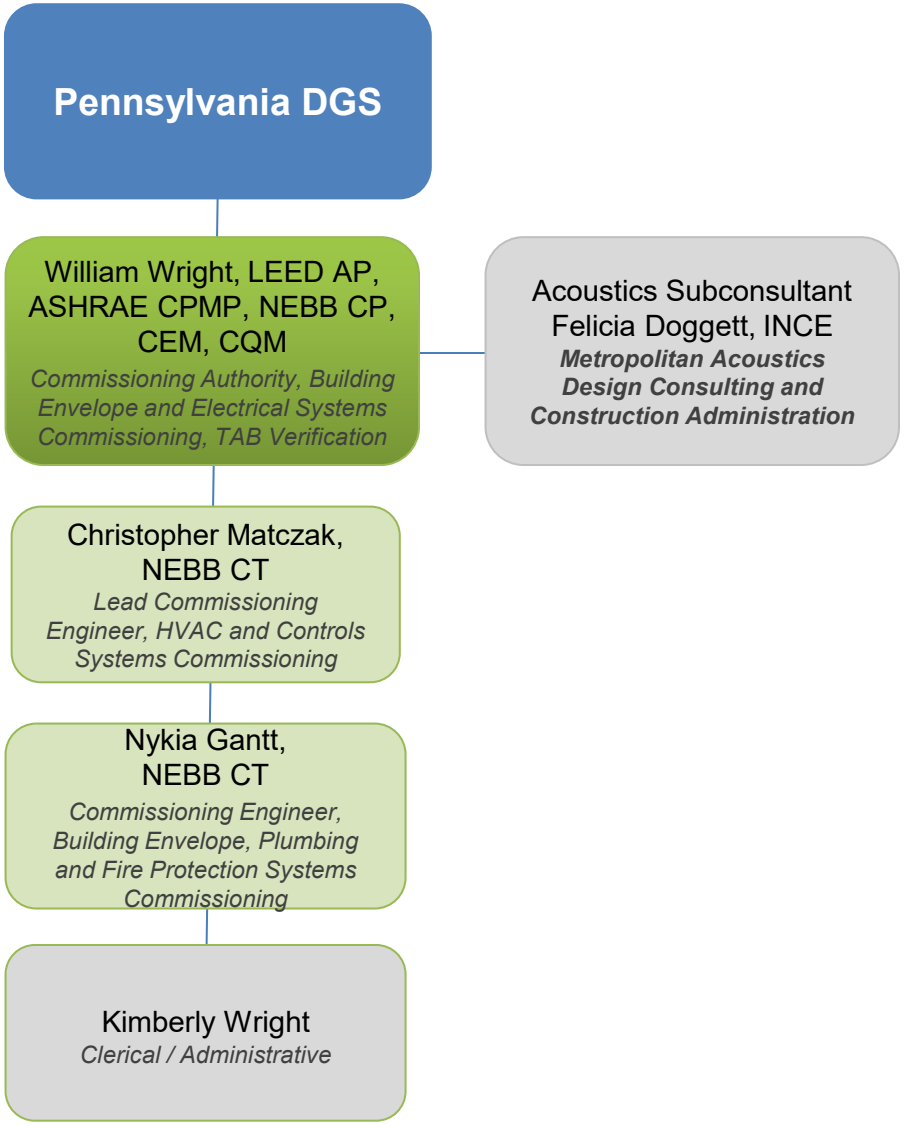


WILLIAM WRIGHT, LEED AP, ASHRAE CPMP, NEBB CP, CEM, CQM
Commissioning Authority, Building Envelope and Electrical Systems Commissioning, TAB Verification

William has more than 25 years of direct industry experience in building systems commissioning and retro-commissioning, LEED commissioning and administration, HVAC test and balance and energy management. His experience includes testing and certifying Class 1 cleanrooms for one of the world's largest semiconductor manufacturers, as well as operating a commissioning and HVAC test and balance franchise in Hawaii. Previously, Will held a management position at a prominent engineering firm in Dallas, Texas that performed building commissioning, IAQ testing and HVAC test and balance for major construction projects.

Project Experience

Comcast Center, Philadelphia, PA - Provision of retro-commissioning and facility oversight services to the building engineer and operations and maintenance staff at this 1.25 million SF, 58-story tower, the tallest in Philadelphia. (Ongoing)

Monaco, Jersey City, NJ – Retro-commissioning of a newer building that has two 55-story, approximately 860,800 square foot residential towers with a total of 611 rental apartments. (Ongoing)

Rutgers University Business School, Piscataway, NJ - $85 Million, 155,000 SF Business School building. WCx was hired to provide its retro-commissioning platform of investigating and optimizing HVAC systems throughout the building to improve comfort and operation, indoor air quality and energy efficiency, as well as providing discovery and recommendations, which will include any remedial repairs and schematic basis of design and scope of work for any capital improvements. (Ongoing)

Marbella South, Jersey City, NJ - Commissioning for a new, 39-story, 360,800 SF residential tower. Commissioning services will address building controls, HVAC systems and equipment, HVAC test and balance verification, lighting controls and the domestic hot water system. (Ongoing)

The Wistar Institute, Philadelphia, PA - Commissioning services for the HVAC and building automation systems, electrical and emergency power systems, lighting controls, UPS systems, life safety systems, plumbing systems and security system. (2014)

West Pharmaceutical Services, Exton, PA - Commissioning of new 170,000 SF global corporate headquarters containing administrative and R&D space. The project is LEED registered. (2012)

1919 Market Street (project currently in construction phase)
The project involves construction of a new, mixed-use luxury multifamily tower of approximately 473,000 gross square feet. The building will have 30 floors, an attached six level parking garage and 321 residential units.

Journal Square Plaza 3 (project currently in construction phase)

The project involves constructing a new 13-story building, approximately 221,000 square foot multi-family residential tower. A total of 240 rental units are planned.

Education and Certification
Pacific University, Bachelor of Arts
ASHRAE Commissioning Process Management Professional; Associated Air Balance Council (AABC) Certified Test and Balance Technician; National Environmental Balancing Bureau (NEBB) Certified Building Systems Commissioning Professional; National Balancing Council (NBC) Certified Test and Balance Professional

Memberships
ASHRAE; Association of Energy Engineers; Building Commissioning Association; Delaware Valley Green Building Council; Green Building Association of Central Pennsylvania; NEBB Mid-Atlantic Chapter; Pennsylvania Energy Services Coalition; U.S. Green Building Council

CHRISTOPHER MATCZAK, NEBB CT
Lead Commissioning Engineer, HVAC and Controls Systems Commissioning

Chris has 10 years of professional and commissioning experience. He is experienced as a project manager and engineer, and has provided construction and start-up support on commissioning projects. Prior to joining the WCx team, Chris held a position as a controls specialist and programmer at Honeywell International, where he installed and programmed projects, reviewed drawings and specifications and coordinated with clients to design building automation systems to meet their specifications. Chris graduated from the Pennsylvania College of Technology with a B.S. in Building Automation Technology.

Project Experience

Independence Blue Cross Tower, Philadelphia, PA – Retro-Commissioning services for variable air volume, packaged air handling units and BAS. (2015-2016)

1919 Market Street, Philadelphia, PA - The project involves construction of a new, mixed-use luxury multifamily tower of approximately 473,000 gross square feet. The building will have 30 floors, an attached six level parking garage and 321 residential units. *LEED Registered* (2015-2016)

TD Bank Atrium Building, Cherry Hill, NJ – Retro-Commissioning services on two 120-ton split system rooftop air handling units, fan powered VAV terminal units, split system A/C units and BAS controls. (2016)

SugarHouse Casino Phase 1A Expansion, Philadelphia, PA – Commissioning services for a 160,000 SF casino and ballroom expansion, plus 560,000 SF parking garage facility. Systems commissioned include the automatic temperature control system, HVAC equipment, exhaust equipment, plumbing equipment, electrical systems as well as air test and balance verification. (2015-2016)

NTM Engineering, Philadelphia, PA – Commissioning services for a 15,000 SF office fit-out. Commissioning of HVAC, BAS, exhaust equipment, air and hydronic TAB verification, and electrical systems and plumbing systems, during the design, construction and post-occupancy phases. *LEED Registered with LEED Platinum Goal* (2015-2016)

PHA Collegeview, Philadelphia, PA – Commissioning services for mechanical and electrical upgrades project. Systems commissioned include new BAS, new HVAC equipment and new plumbing equipment during the construction and post-occupancy phases. (2015-2016)

400 Arlington Boulevard, Logan Township, NJ – Commissioning of HVAC, exhaust equipment, air TAB verification, electrical systems and plumbing systems in a new 210,600 SF warehouse. Services provided throughout design, construction and post-occupancy phases. *LEED Registered* (2015-2016)

Education
Pennsylvania College of Technology, Bachelor of Science in Building Automation Technology

NYKIA GANTT, NEBB CT
Commissioning Engineer, Building Envelope, Plumbing and Fire Protection Systems Commissioning

Nykia has 18 years of mechanical systems design experience, commissioning and retro-commissioning, construction methodology and trades, facilities operations and forensic investigations of critical building systems gained through hands-on experience as well as project oversight and delivery. Prior to joining the WCx team, Nykia held a position as a mechanical design engineer at CRB Consulting Engineers, where he gained extensive experience designing HVAC and plumbing systems. Nykia graduated from Drexel University with a B.S. in Mechanical Engineering.

Project Experience

Rowan Hall HVAC Retro-Commissioning, Glassboro, NJ – to optimize systems' performance of this complex building after several years' use, Rowan engaged WCx to provide technical retro-commissioning, testing and balancing, and energy consulting services. We reviewed the existing operations and maintenance documentation; interviewed users of the building; physically tested the systems under a variety of extreme conditions; and then issued a report with recommended solutions to optimize the efficiency of the building. (2016)

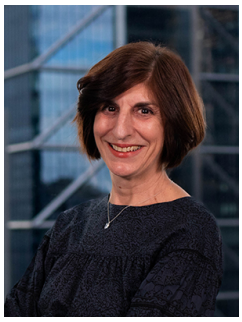
Princeton University Peyton Hall Renovation, Princeton, NJ – Peyton Hall houses Princeton's Department of Astrophysical Sciences, including laboratories, faculty offices, lecture and seminar rooms, a library and two telescopes on the roof. The University recently expanded the modern two-story building within the original footprint, and engaged WCx to commission improvements to life safety, and mechanical / electrical / plumbing systems. (2015)

Swarthmore College NPPR Residence Hall, Swarthmore, PA – WCx is providing commissioning services for the college's 120-bed suite-style residence hall consisting of three connected "cubes" of three, four and five stories. Commissioning services include the BAS, HVAC, normal and emergency power, lighting, plumbing, fire protection, renewable energy and conveying systems. (Current)

Rutgers University Business School, Piscataway, NJ – Retro-commissioning platform of investigating and optimizing HVAC systems throughout the building to improve comfort and operation, indoor air quality and energy efficiency. B+W is providing discovery and recommendations, which will include any remedial repairs and schematic basis of design and scope of work for any capital improvements. (Current)

M1 Retro-Commissioning, Jersey City, NJ – Retro-commissioning of the 55-story East and West towers of the M1 residence buildings. Services include evaluation, testing, adjusting and correcting system operations to meet the owner's current facility requirements. Recommendations will be geared toward optimizing operating efficiency, indoor comfort and environmental quality as well as recommendations for minimizing future cost events. (Current)

Education and Certification
Drexel University, Bachelor of Science in Mechanical Engineering



FELICIA DOGGETT, INCE
Acoustical Subconsultant

Felicia's wide-ranging knowledge in acoustics, noise control and vibration is an invaluable resource to her clients and staff. Her expertise has shaped the company as a leader in the industry with some of the following accomplishments:

Grown the company from 1 to 20 employees.
Moved the company three times to accommodate growth.
Introduced additional markets including Vibration and Continuous Laboratory Monitoring.
Recognized at the Philadelphia 100 and Future50 SmartCEO awards ceremonies for the region's fastest growing companies (2015-2017).
Presenter and panelist at dozens of conferences and events nationwide.
Frequent guest lecturer at schools and universities in the Philadelphia area.
Mentor for ACE (Architecture, Construction and Engineering) program for local high school students.
Frequent counselor and judge for the Horn Center for Entrepreneurship at University of Delaware.
Author of published articles in technical magazines.
One of the founders and current Chair of the Philadelphia Chapter of the Acoustical Society of America.

Education
B.A. Acoustics
University of Delaware
Newark, DE

Professional Affiliations
Acoustical Society of America
Institute of Noise Control Engineering (INCE) USA – Board of Directors
(Term April 2021 – Sept 2024)

Certifications
INCE Board Certified

SECTION 4: CERTIFICATIONS AND CREDENTIALS

CITY OF PHILADELPHIA

COMMERCE DEPARTMENT
1515 Arch Street, 12th Floor
Philadelphia, PA 19102
P: 215-683-2055
F: 215-683-2085

LYNN T. NEWSOME
Deputy Commerce Director
Office of Economic Opportunity
Lynn.T.Newsome@phila.gov

January 31, 2024

Kim Wright
Wright Commissioning LLC DBA Wright Commissioning
1001 Baltimore Pike
Suite 303
Springfield, PA 19064

RE:

CERTIFICATION DATE: January 31, 2024
EXPIRATION DATE: April 22, 2025
CERTIFICATION STATUS: Minority/Women Business Enterprise (MWBE)
REGISTRATION NUMBER: 111794

Dear Kim Wright:

CONGRATULATIONS!!! We are pleased to inform you that Wright Commissioning LLC DBA Wright Commissioning has been placed in the City of Philadelphia Office of Economic Opportunity (OEO) Registry. Wright Commissioning LLC DBA Wright Commissioning will remain on the City's Registry as long as the certification is current and your firm remains in good standing. Please note, it is imperative that the certification/registration be renewed no later than three months after the certification expires. OEO will deactivate your OEO Registry listing three months after the certification expires. (Example - certification/registration expires 1/1/22, on 4/1/22 your business profile will be deactivated from the OEO Registry).

Your placement in the OEO Registry offers you the following competitive advantages:

1. Free Advertisement 365 days a year. Now that your company is part of the OEO Registry, your company will be viewed by over 50 City of Philadelphia departments, in addition to for-profit, non-profit and private industries.
2. The Office of Business Services (OBS) is the City's one-stop-shop for all business related services. OBS can assist you with a wide range of issues, from navigating the permit process to identifying loan programs for which you may qualify. Please call 215-683-2100 for more information on how OBS may be of service.
3. When your firm is competitively selected and utilized for City of Philadelphia contracts, based on how you are certified (either MBE,WBE or DSBE) your certification can be counted towards the MBE/ WBE/DSBEs participation ranges.
4. Contractors, subcontractors, and professionals who are seeking vibrant and capable MBE/WBE/DSBEs for contracting opportunities, use the OEO Registry. Being part of the OEO Registry increases your ability to compete for private and public procurement opportunities.

Please inform us if there are any material changes to your certification. These changes may include but are not limited to:

1. your company name;
2. contact information;
3. change in ownership, sale or dissolution of your business;
4. NAICS Codes/services that you are **certified** to provide; and/or
5. loss of certification

Please note that OEO will not list NAICs Codes for your firm unless those codes have been provided by your approved certifying entity. If you desire additional NAICs codes, you must obtain them from your approved certifying entity that will evaluate whether your firm has demonstrated requisite control and legitimate capacity for the additional type of work or supply effort. If your firm is identified for work or supply effort on a City bid without the corresponding NAICs Code in the OEO Registry, the work/supply effort will not receive credit.

In addition to being part of the OEO Registry, if your business is headquartered in Philadelphia, we strongly encourage you to apply to the City's Procurement Department to become a certified Local Business Entity (LBE) with the City of Philadelphia. Being a certified LBE provides Philadelphia based businesses with the advantage of as preferred vendor status and being eligible for a bid preference on some City contracts.

Your company will be located in our OEO Registry under the following North American Industry Classification System (NAICS) Codes:
NAICS 541990: ALL OTHER PROFESSIONAL, SCIENTIFIC, AND TECHNICAL SERVICES

For more information about what OEO and the Philadelphia Department of Commerce can do for you, please visit our website at www.phila.gov/business. Also, please visit the https://contracts.phila.gov/#/ for current City of Philadelphia contracting opportunities.

If you have any questions, feel free to give us a call at 215-683-2071.

Sincerely,

Alice Dungee-James, MCA
Director of Registration and Outreach

C: Michelle Price, Director, Office of Business Services (OBS)
LaShawnda Tompkins, Director of Administration, Procurement Department
Marla Hamilton, Vice President, Philadelphia Industrial Development Corporation (PIDC)

NOTICE OF SMALL DIVERSE BUSINESS VERIFICATION

pennsylvania
DEPARTMENT OF GENERAL SERVICES

The Department is pleased to announce that

WRIGHT COMMISSIONING LLC

has successfully completed the Pennsylvania Department of General Services' process for self-certification as a small business under the Commonwealth's Small Business Contracting Program, and is verified as a Small Diverse Business with the following designation(s):

BUSINESS TYPE(s):

Building Design Services

CERTIFICATION NUMBER: **410911202311-SDB-MW**

CERTIFCATION TYPE: **SMALL DIVERSE BUSINESS**

ISSUE DATE: **11/17/2023** EXPIRATION DATE: **11/14/2025**

RECERTIFIED DATE:

Kerry L. Kirkland

Kerry L. Kirkland, Deputy Secretary
Bureau of Diversity, Inclusion & Small Business Opportunities

NOTICE OF SMALL BUSINESS SELF-CERTIFICATION

pennsylvania
DEPARTMENT OF GENERAL SERVICES

The Department is pleased to announce that

WRIGHT COMMISSIONING LLC

has successfully completed the Pennsylvania Department of General Services' process for self-certification as a small business under the Commonwealth's Small Business Contracting Program, with the following designation:

BUSINESS TYPE(s):

Building Design Services

CERTIFICATION NUMBER: **410911202311-SB**

CERTIFCATION TYPE: **SMALL BUSINESS**

ISSUE DATE: **11/14/2023** EXPIRATION DATE: **11/14/2025**

RECERTIFIED DATE:

Kerry L. Kirkland

Kerry L. Kirkland, Deputy Secretary
Bureau of Diversity, Inclusion & Small Business Opportunities

THIS CERTIFIES THAT

Wright Commissioning, LLC

NMSDC
National Minority Supplier Development Council

* Nationally certified by the: **EASTERN MINORITY SUPPLIER DEVELOPMENT COUNCIL**

*NAICS Code(s): 541330; 238220; 541350; 561210

* Description of their product/services as defined by the North American Industry Classification System (NAICS)

03/31/2024		PT01853
Issued Date		**Certificate Number**
	Joset B. Wright-Lacy	
03/31/2025		
Expiration Date		**Valarie J. Cofield, President/CEO**

By using your password (NMSDC issued only), authorized users may log into NMSDC Central to view the entire profile: http://nmsdc.org

Certify, Develop, Connect, Advocate.

* MBEs certified by an Affiliate of the National Minority Supplier Development Council, Inc.®

WBENC
WOMEN'S BUSINESS ENTERPRISE NATIONAL COUNCIL
JOIN FORCES. SUCCEED TOGETHER.

hereby grants

National Women's Business Enterprise Certification

to

Wright Commissioning LLC DBA Wright Commissioning

who has successfully met WBENC's standards as a Women's Business Enterprise (WBE).
This certification affirms the business is woman-owned, operated and controlled and is valid through the date herein.

Certification Granted: April 22, 2024
Expiration Date: April 22, 2025
WBENC National Certification Number: WBE2200912

WBENC National WBE Certification was processed and validated by Women's Business Enterprise Center - East, a WBENC Regional Partner Organization.

Elizabeth M Walsh

Authorized by Elizabeth M. Walsh, President
Women's Business Enterprise Center - East

WBEC EAST
WOMEN'S BUSINESS ENTERPRISE CENTER
JOIN FORCES. SUCCEED TOGETHER.

NAICS: 541990
UNSPSC: 72154000

Center for Women & Enterprise · Great Lakes Women's Business Council · Greater Women's Business Council · Women's Business Council Southwest · WBEC Metro NY · WBEC Greater DMV · WBEA · WBEC Florida · WBEC ORV · WBEC Pacific · Women's Business Development Center · WBEC South · WBEC West

Firm Certification

WRIGHT COMMISSIONING, LLC

HAS MET ALL REQUIREMENTS FOR NEBB CERTIFIED STATUS IN THE FOLLOWING DISCIPLINE

Whole Building Technical Commissioning of New Construction

3452

NEBB Certification Number

December 31, 2024

Expiration Date

NEBB President

NEBB President-Elect

Certification

WILLIAM A. WRIGHT

HAS MET ALL REQUIREMENTS FOR NEBB CERTIFIED PROFESSIONAL STATUS IN THE FOLLOWING DISCIPLINE

Whole Building Technical Commissioning of New Construction

This Certificate, as well as individual affiliation with a NEBB Certified Firm and associated NEBB Certification Stamp are REQUIRED to provide a NEBB Certified Report. Participation in the NEBB Quality Assurance Program requires the Certificant be affiliated with a NEBB Certified Firm

CP-23651

NEBB Certification Number

December 31, 2024

Expiration Date

NEBB President

NEBB President-Elect

Firm Certification Number: 3452

Firm Name: Wright Commissioning, LLC

Certification: Whole Building Technical Commissioning of New Construction

Certified Professional Name: WILLIAM A. WRIGHT

Expiration Date: 12/31/24

GBCI

GREEN BUILDING CERTIFICATION INSTITUTE

HEREBY CERTIFIES THAT

William Anson Wright

HAS ACHIEVED THE DESIGNATION OF

LEED® ACCREDITED PROFESSIONAL

BY DEMONSTRATING THE KNOWLEDGE OF GREEN BUILDING PRACTICE REQUIRED FOR SUCCESSFUL IMPLEMENTATION OF THE LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN (LEED®) GREEN BUILDING RATING SYSTEM™.

LEED AP™

Robert L. Flora
Chairman

October 31, 2008
Date Issued

S. Richard Fedrizzi, President and CEO

ASHRAE

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

To all whom these presents shall come
Greetings:
Be it known that

WILLIAM A. WRIGHT

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

Commissioning Process Management Professional

and has accordingly been awarded all the rights, honors, and privileges thereunto appertaining.

Gordon Holness
ASHRAE President 2009-2010

Jeff Littleton
Executive Vice President

August 4, 2009

Date

The Association of Energy Engineers

certifies that

William A. Wright

has completed the prescribed standards for certification,
has demonstrated a high level of competence and ethical fitness
for energy management, and is hereby granted the title of

CERTIFIED ENERGY MANAGER®

Valid

February 4, 2019 to December 31, 2024

CEM

21947

ASSOCIATION OF ENERGY ENGINEERS CORPORATE SEAL GEORGIA

CEM Board Chairman

Helen Johnson

CEM Director

ANSI

ANSI Accredited Program
PERSONNEL CERTIFICATION
#1088

U.S. ARMY CORPS OF ENGINEERS

USACE LEARNING CENTER
HUNTSVILLE, ALABAMA

NAVFAC

CERTIFICATE

William Wright

NAB-08-20-09051

has completed the Corps of Engineers and Naval Facility Engineering Command Training Course

CONSTRUCTION QUALITY MANAGEMENT FOR CONTRACTORS - #784

Beltsville	02/06/2020	NAB /WA 1CEU:0.8 LU:8POH:8	Salvatore Vitale
Location	Training Date(s)	Instructional District/ NAVFAC	CQM-C Manager

Jason Hummel / Paula Furman	Salvatore.Vitale@usace.army.mil	410-962-2967	VITALE.SALVATORE.1094560566 Digitally signed by VITALE.SALVATORE.1094560566 Date: 2019.08.12 07:22:57 -04'00'
acilitator/Instructor	Email	Telephone	Facilitator/Instructor Signature

THIS CERTIFICATE EXPIRES FIVE YEARS FROM DATE OF ISSUE

Jeffrey D. Dziedzic

Chief, USACE Learning Center

City of Philadelphia
Department of
Licenses & Inspections
P.O. Box 53310
Philadelphia, Pa. 19105

DISPLAY PROMINENTLY
if required by law

WRIGHT COMMISSIONING LLC
1001 BALTIMORE PIKE, SUITE 303
SPRINGFIELD, PA 19064
USA

3702 Commercial Activity License

Activity License Type: Commercial Activity

LICENSE CODE	LICENSE NO.	COMMERCIAL ACTIVITY LIC.	EXPIRES AT END OF	EFFECTIVE DATE
3702	575500	575500		10/11/2012

ACTIVITY LICENSE

Interpreter services available. |خدمات الترجمة الشفهية متوفرة لدينا |អាចទទួលបានសេវាកម្មអ្នកបកប្រែភាសា ។ |提供口译服务 |Services d'interprétation disponibles. |통역이 제공됩니다 |Предоставляются услуги устного переводчика. |Se brindan servicios de interpretación. |Có sẵn dịch vụ thông dịch.

City of Philadelphia
Department of
Licenses & Inspections
P.O. Box 53310
Philadelphia, Pa. 19105

DISPLAY PROMINENTLY
if required by law

WRIGHT COMMISSIONING LLC
1001 BALTIMORE PIKE, SUITE 303
SPRINGFIELD, PA 19064
USA

3541 Special Inspection Agency

WRIGHT COMMISSIONING LLC

THIS LICENSE IS GRANTED TO THE PERSON OR COMPANY FOR THE PURPOSE STATED ABOVE. IT IS SUBJECT TO IMMEDIATE CANCELLATION BY THIS DEPARTMENT FOR VIOLATIONS OF CITY ORDINANCES AND REGULATIONS.

LICENSE CODE	LICENSE NO.	COMMERCIAL ACTIVITY LIC.	EXPIRES ON	ISSUED ON
3541	051322	575500	2/15/2027	1/10/2024

LICENSE

City of Philadelphia
Department of
Licenses & Inspections
P.O. Box 53310
Philadelphia, Pa. 19105

DISPLAY PROMINENTLY
if required by law

WILLIAM WRIGHT

3541 Special Inspector

THIS LICENSE IS GRANTED TO THE PERSON OR COMPANY FOR THE PURPOSE STATED ABOVE. IT IS SUBJECT TO IMMEDIATE CANCELLATION BY THIS DEPARTMENT FOR VIOLATIONS OF CITY ORDINANCES AND REGULATIONS.

LICENSE CODE	LICENSE NO.	COMMERCIAL ACTIVITY LIC.	EXPIRES ON	ISSUED ON
3541	051228		1/28/2027	12/18/2023

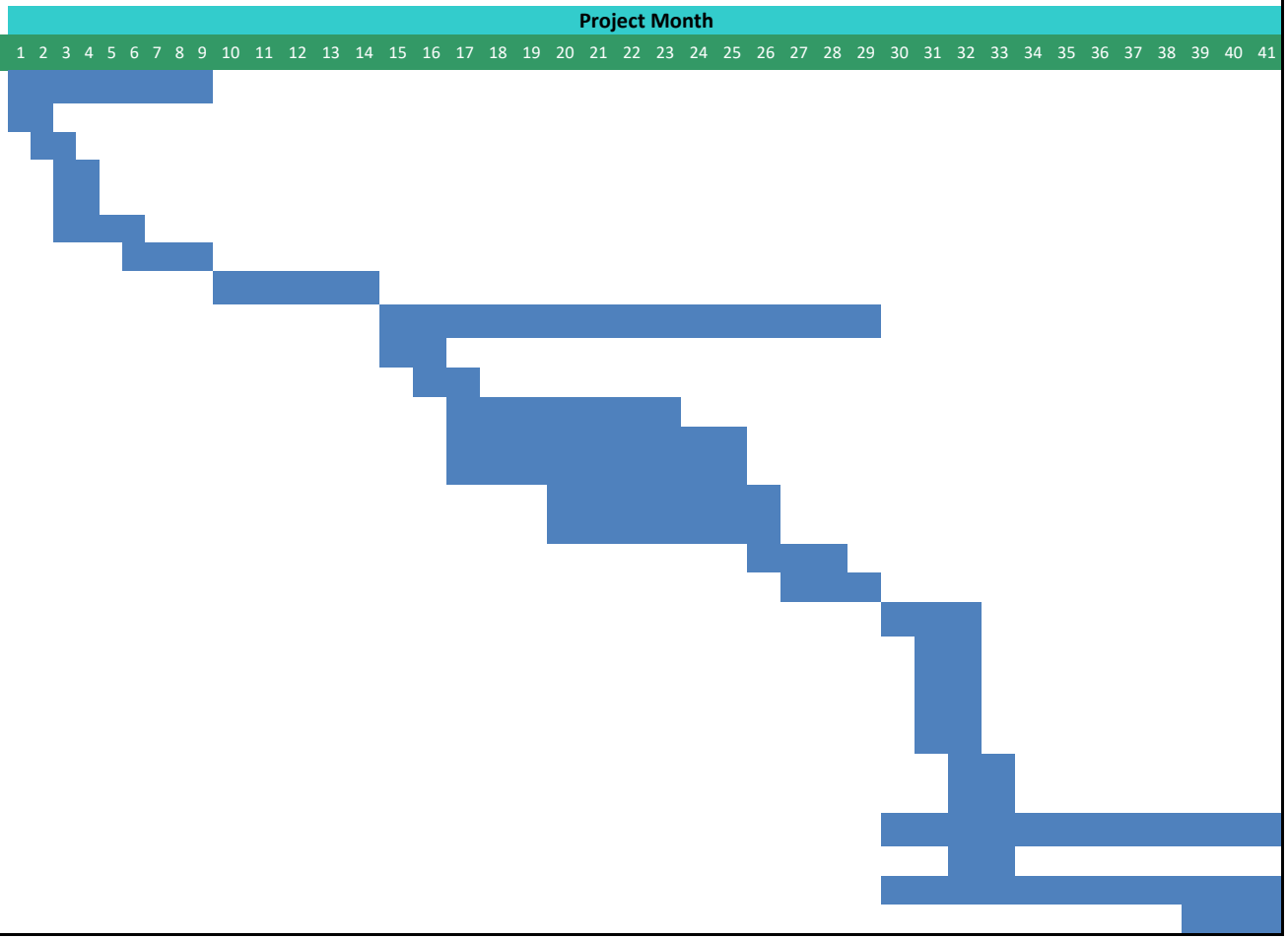
LICENSE

SECTION 5: WORK PLAN/SCHEDULE

Gettysburg Readiness Center Renovation Preliminary Commissioning Schedule

Project Start Date: June, 2024

Cx Phase / Activity	Start Month	End Month
Design Phase	**1**	**9**
Develop OPR	1	2
Review BOD	2	3
Preliminary Cx Plan	3	4
Cx Specs	3	4
Design Reviews	3	6
Back-Checks and Reviews	6	9
Bidding	**10**	**14**
Construction and Acceptance Phases	**15**	**29**
Cx Plan	15	16
Cx Kick-Off	16	17
Submittal Review	17	23
Field Installation Verification	17	25
Static Testing	17	25
Start-Ups	20	26
Functional Testing	20	26
TAB Verification	26	28
Performance Verification	27	29
Occupancy and Operations Phases	**30**	**32**
Record Drawing Review	31	32
O&M Review	31	32
Training	31	32
Lessons Learned	31	32
Systems Manual	32	33
Cx Report	32	33
Post Occupancy/Warranty Phase	**30**	**41**
Opposite Season Testing as required	32	33
Ongoing Commissioning	30	41
End of Warranty Review	39	41



COMMISSIONING HOURS MATRIX -- Gettysburg Readiness Center Renovation

Phase / Activity	Staff	Hours
DESIGN PHASE		
Final OPR	Commissioning Authority	24
Review BOD	Lead Commissioning Engineer	27
Preliminary Cx Plan	Commissioning Engineer	27
Cx Specs	Clerical/Administrative	19
Design Reviews		
Design Back-Checks and Reviews		
	Design Phase Hours:	**97**
CONSTRUCTION AND ACCEPTANCE PHASES		
Develop construction phase Cx plan	Commissioning Authority	31
Cx kick-off meeting	Lead Commissioning Engineer	148
Equipment submittal review	Commissioning Engineer	148
Field installation verification	Clerical/Administrative	100
Ductwork and piping static testing		
Equipment start-up		
Maintain issues log		
Functional performance testing		
Air and hydronic TAB verification		
	Construction and Acceptance Phases Hours:	**427**
OCCUPANCY AND OPERATIONS PHASES		
Record drawing and O&M manual review	Commissioning Authority	2
Owner training seminar	Lead Commissioning Engineer	8
Develop systems manual	Commissioning Engineer	8
Prepare Cx report	Clerical/Administrative	8
	Occupancy and Operations Phases Hours:	**26**
POST OCCUPANCY/WARRANTY PHASE		
Opposite-season testing	Commissioning Authority	2
Ongoing commissioning	Lead Commissioning Engineer	8
10-month warranty review visit	Commissioning Engineer	8
	Clerical/Administrative	8
	Post Occupancy/Warranty Phase Hours:	**26**
	TOTAL HOURS:	**576**

SECTION 6: GEOGRAPHIC PROXIMITY

WRIGHT COMMISSIONING

GEOGRAPHIC PROXIMITY

Wright Commissioning's office in Baltimore, MD, 7309 Windsor Mill Road, is 49 miles from the project site. The drive is approximately 60 minutes, depending on traffic. As WCx is close in proximity, travel time will not be billed.

1001 Baltimore Pike
Suite 303
Springfield, PA 19064

T. 215.279.5950
F. 215.558.5767

www.wrightcx.com