pennsylvania
DEPARTMENT OF GENERAL SERVICES

REQUEST FOR QUOTE

Commissioning Agent Services

LINCOLN UNIVERSITY

THURGOOD MARSHALL LIVING LEARNING CENTER

Project No. DGS C-1101-0057-001

Technical Submission

aramark
ENGINEERING SOLUTIONS

2400 Market Street
Philadelphia, PA 19103

July 25, 2024

Matthew Vail
PA Department of General Services

Re: Commissioning Agent Services for DGS C1101-0057-001

Dear Mr. Vail,

We are pleased to respond and provide a proposal and cost estimate for Commissioning Agent Services during the design and construction stage of the Department of General Services Project No. DGS C1101-0057-001, Thurgood Marshall Living Learning Center project at Lincoln University.

Aramark is familiar with the DGS requirements for design and construction and has worked on many projects for DGS. Sean McCarty is slated as the project manager for this project and has also worked on several projects for DGS in the Eastern PA region. Sean is the project manager for the Wilkes-Barre Readiness Center, the North Central STU, and the Plymouth-Horsham Readiness Center and has also managed past DGS projects such as the Coatesville Readiness Center and Honesdale Readiness Center. Additionally, Sean has worked at Lincoln University on several projects within the past 10 years.

Sean will be supported by Allison Bailey, P.E., Chris Skalski, P.E., BCxP, Jacob Rourke, Mack Ailes, and Reilly Finegan for mechanical systems, electrical systems, and controls during design. This team has performed similar tasks for many of our references listed within our response.

We look forward to continuing and strengthening our relationship with the Department of General Services. Should you have any questions, please do not hesitate to contact Tim Sullivan, Director of Commissioning, directly at (914) 304-6252 or sullivan-timothy@aramark.com.

Sincerely,

Brian Lee, P.E., Vice President, Engineering Solutions
Authorized Signatory of Aramark Management Services Limited Partnership

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A. CONTRACTOR PRIOR EXPERIENCE

For more than 40 years, Aramark has demonstrated proven expertise and is the commissioning partner of choice for many institutions who seek successful delivery of signature projects. Whether we are working with higher or primary education clients, we bring a customized approach based on the individual drivers of each organization. Aramark is one of the largest third-party commissioning agents in the United States focusing on education facilities. Our unique operational expertise distinguishes our service from our competitors.

Our commissioning philosophy is guided by the following three tenets:

1. Provide a facility that operates to support the educational program.
2. Verify systems achieve peak efficiency.
3. Confirm building infrastructure is readily maintainable by the operators.

Our services will further facilitate a seamless transition to the operations group and provide a technical resource to support building operations.

FACILITIES COMMISSIONED

- Residential halls
- Large classroom, academic, and computer facilities
- Recreation centers (athletic & aquatics)
- Campus & performing arts centers
- Science, research, vivarium, BSL3 and laboratory
- Museums, libraries & cultural institutions
- K-12 Schools and Campuses
- Heating, cooling plants and major electric infrastructure
- Retro-commissioning of existing buildings and systems

Experience At A Glance

Total Projects Commissioned: **900+**

Total GSF Commissioned: **70+ Million**

Constructed Value of Commissioned Projects: **$11.2 Billion**

Select Aramark Commissioning Clients

- Baylor University
- City University of New York
- Centenary College
- Drew University
- Edinboro University
- Franklin & Marshall College
- George Washington University
- Institute for Advanced Study
- NYS Office of Mental Health
- Ohio State University
- Penn State University
- Princeton University
- Rutgers, State University of New Jersey
- State of Pennsylvania (PADGS)
- University of Pittsburgh
- University of Kentucky
- University of Pennsylvania
- Washington College
- West Chester University
- West Virginia University

EAST HALLS – PHASE 2A

PENNSYLVANIA STATE UNIVERSITY, STATE COLLEGE, PA

CONTACT:
Richard E. O'Donald, RA, CDT, CEFP
(814) 865-1333
reo100@psu.edu

CONSTRUCTION COST:
$54.9 Million

GROSS SQUARE FEET:
290,000

CX SERVICES:
Design Review
Installation Inspections
Performance Verification
Operations Training

SCHEDULE:
September 2019-December 2023

Aramark was selected to commission several residence halls during three phases of this project which set out to dramatically transform East Halls, a large residence hall campus at The Pennsylvania State University. This phase of the project - East Halls Phase 2A – included renovations of Geary Hall, Sproul, and Johnston Commons.

- Sproul – 74,719 SF 10-story residence hall.
- Geary – 69,939 SF, 8-story residence hall.
- Johnston Commons – student common area

Improvements were designed to improve the appearance, inside and out. The updated student experience includes improved social spaces throughout the buildings, "wet core" shared private bathrooms, and movable furniture in the dorm rooms. Building updates include replacement of aging and inefficient building systems, renovation of the building envelope, and ADA accessibility improvements. Site work included improved pedestrian circulation, ADA accessible pathways and improved landscaping.

The systems that were commissioned included AHUS/Energy recovery systems, building heating hot water and chilled water systems, 30% sampling of fan coil units, unit heaters and fintube radiant panels, exhaust fans and associated equipment (Dryer MAUs), building management system and automatic temperature controls (BMS/ATC) with sequence of operation, testing & balancing, Domestic Water Systems, Normal and Emergency Power Systems, Lighting Control System, and witnessing of the Fire Alarm and Security System testing.

COMMISSIONING RESULTS:

Throughout the design, construction, turnover and warranty on the project, Aramark identified 98 issues, including the following:

- VFD Disconnect - Aramark observed that ACF-015 supply fan VFD was not supplied with an integral disconnect. Permanent means of disconnecting power is readily available in direct proximity to the fan. This allows an added means of safety to any future work on the fan.
- Sprinkler Piping over Electrical Equipment – Aramark observed that Sprinkler piping in Sproul P005 was installed over electrical equipment. Sprinkler piping was relocated. This greatly reduced the chances of any leakage damaging the major electrical equipment in that space.
- Smoke Detector Installation in the ERUs – Aramark observed that The SD sampling tubes in Geary ERU-1 were not of adequate length, Sproul ERU-1 SD was mounted in the top of the unit and inaccessible for retesting, and Sproul ERU-2 SD sampling tube was mounted in-line with the airstream. Devices were relocated to allow for proper sampling of the ERU airstream and allow for PSU maintenance in the future.
- BAS Graphical Override Locks – Aramark observed that VAV override locks were omitted, Geary HWS control override locks on the graphics were linked to Pump Enable when the object controlled is for pump speed and override on FCUs were non-functioning. PSU is now provided with a BAS interface that is functional and accurate depicts the equipment under control.
- ERU Energy Recovery Wheel Control - Aramark observed that Sproul ERU-1 ERW Speed does not vary when the BAS is commanded from 10v to 2v. Contractors revised factory wiring issues in the internal ERW control. Unit was retested and operation confirmed.

We estimate that costs to remedy the MEP issues after the contractors had left would have been $42,583. In addition to costs saved during commissioning, Aramark provided value to PSU with items that do not have a price tag. This includes accessibility, safety, occupant comfort, and indoor air quality.

TRIPPE HALL RESIDENCE HALL

PENNSYLVANIA STATE UNIVERSITY, ERIE, PA

Trippe Hall, a 65,000 GSF four-story, 251-bed residence hall, opened for the fall semester 2018.The building houses both first-year and upper-level students with most assigned to double-occupancy rooms. Each floor in Trippe Hall has a large community room with additional study lounges in each wing of the building. A fully equipped community kitchen is accessible to all residents.

CONTACT:
Marcus Marasco
814-865-6197
mam326@psu.edu

GROSS SQUARE FEET:
65,000

CX SERVICES:
Design Review
Installation Inspections
Performance Verification
Operations Training
Building Envelope

SCHEDULE:
Fall 2016-Spring 2019

Trippe Hall also brings a new residence hall building concept to Penn State Behrend – the wet core. The design combines the efficiency and lower cost of the traditional hall double room layout but replaces the community bathroom on each wing with a wet core – multiple private rooms that each include a toilet and shower, all in the same area on the wing – that offers more privacy for residents.

COMMISSIONING RESULTS:

Commissioning was incorporated into the project early on in the Design phase in 2017 and continued into the Warranty phase through 2018. The higher priority issues found and reviewed via commissioning meetings and team collaboration and resolution include the following:

- HVAC Fire Smoke Damper and Manually Reset Heat Sensor Access: There were multiple fire/smoke dampers and actuators, access doors, and manual reset fire links that were not going to be accessible for periodic testing and maintenance per code NFPA 105.
- The heating/cooling system insulation: The fan coil units serving the bedrooms are configured for a two-pipe system, meaning they use the same coil for heating and cooling by switching the boiler system in the winter to the chiller in the summer. However, the heating/cooling plant was insulated for heating only, when the system switched to cooling the insulation was damaged from condensation because it was not the correct design and the entire system in the plant needed reinsulated.
- The boiler emergency cutout buttons: When testing the emergency cutout buttons, they were found to only be connected to the bas and not hardwired to the boilers themselves, so the point could have been disabled through the BAS. The contractor had to rewire the switches for proper operation.
- The building envelope IR scan: The IR scan showed the overall building envelope to be very well insulated although the multiple double doors at the entrances showed considerable heat loss. Upon further inspection, the weather strips were not sealing the gaps around the doors and had to be replaced.

KINGS COURT, ENGLISH HOUSE, AND DUBOIS CENTER

UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA, PA

CONTACT:
Dave Dunn
Facilities Project Manager
215-898-8803
ddunn@upenn.edu

GROSS SQUARE FEET:
216,000

CX SERVICES:
Installation Inspections
Performance Verification
Operations Training

SCHEDULE:
March 2019-January 2020

Three low rise college dormitory houses (Dubois Center, English House, and Kings Court) were renovated to accommodate air conditioning system upgrades. The scope of worked included modifications to existing architectural, mechanical, electrical, plumbing, and fire protection systems. The project construction was completed in the summer 2019 between May and August 2019, and punchlist and commissioning issues were addressed over winter break 2019-2020.

A few of the higher priority issues identified and resolved include the following:

- Kings Court and English House dual temp systems were pumping frequently at 100% speed and not maintaining initial balanced differential pressure set points over various systems loads with outside air temperatures below 60° to above 95°. The mechanical contractor resolved this by correcting pipe risers that were piped backwards.
- Kings Court and English House dual temperature systems and Kings Court glycol CHW system were not maintaining 47°F temperature set point over various loads with outside air temperatures below 60° to above 95°. The mechanical contractor corrected the CHW system flow checks to resolve the issues.
- Make-up air handling units MUA-1,2,3 cooling performance were not meeting scheduled performance data due to associated glycol chilled water system performance issues. Check valve repairs were made by the mechanical contractor to address the issues.
- Final ATC controls were a work in progress at the time of testing which was later corrected and verified.
- Balancing integration of system set points and optimization of set points for accurate energy efficient system control.

HOUSTON HALL MARKET RENOVATIONS AND ATC UPGRADE

UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA, PA

CONTACT:
Market Renovation:
Heather Coyne,
(267) 418-9252
ATC Upgrades:
Lisa Rudi
(215) 307-6837

GROSS SQUARE FEET:
99,882

PROJECT COST:
$9.3 M Renovation
$350K ATC Upgrade

CX SERVICES:
Design Phase
Installation Inspections
Performance Verification
Operations Training

SCHEDULE:
2018-2019

Houston Hall is a four-story building located at 3417 Spruce Street and has approximately 85,000 square feet of floor area. The building was constructed in 1894 and underwent an extensive renovation in 2000 that included the installation of a new kitchen and grease exhaust system. The Market renovation project was a full renovation of the ground floor market, and server and kitchen area including kitchen equipment. The area renovated was 17,000 square feet. The construction phase of the project occurred in summer 2018 with an approximate 3-month duration. The project budget was $9.3 million.

The HVAC system serving Houston Hall were installed as part of the 2002 building renovations. The renovation included a new distributed digital control (DDC) system manufactured by American Auto-Matrix. The system was over 17 years old and no longer supported by the manufacturer. The ATC upgrade project replaced existing Auto-Matrix control system, the portion which was not replaced during the Houston Market renovation in 2018, with a new Automated Logic control system.

COMMISSIONING SUCCESS:

The functional performance testing acceptance phase of the HVAC systems identified over 60 issues. The higher priority issues found and resolved via commissioning meetings and team collaboration and resolution include the following.

- AHU-1 pressure issues encountered pressure issues while attempting to operate the unit at design air flow. With supply ductwork connected to existing to remain ductwork, significant duct leakage was observed. This prevented several downstream Phoenix valves from having sufficient pressure to correctly operate independent of system pressure. This resulted in multiple downstream thermal airflow control and comfort issues. This issue was resolved after team review by reducing air flow rates for multiple zones to allow sufficient pressure for the entire system and sealing the AHU.
- Air flow station calibration – Inaccurate air flow measuring stations were observed at AHU-1. After facilitating final calibration with the balancer, the air flow stations measured within tolerance.
- Glycol hot water system had significant temperature variation with hot water temperatures fluctuating from 80°F to 180°F in a short time period representing a control loop tuning issue. This issue was corrected and tuned by JCI and verified.
- A sampling or recommendations to the O&M staff how the facility could be made more efficient are listed below. Aramark has a full list of potential ESOs to explore.

1. AHU fan speed reduction during unoccupied periods: Calculate lowest available air flow rates needed to maintain environmental conditions and then reduce AHU fan speeds during unoccupied or low occupancy periods (i.e., 11pm-7am) to align with those flow rates.
2. Monitor kitchen exhaust fan operating hours aligning with cooking schedules and resulting outside air make-up at AHU-1 and ensure exhaust fan setbacks.

SYKES STUDENT UNION BUILDING

WEST CHESTER UNIVERSITY, WEST CHESTER, PA

TYPE OF BUILDING:
Student Center

PROJECT SIZE:
15,000 GSF

PROJECT COST:
$2 Million

CONTACT:
Yeda Arscott
Architect & Project Manager
610-436-2779
yarscott@wcupa.edu

CX SERVICES:
MEP Systems Review
Design Review
Installation Inspections
Performance Verification
Operations Training

Sykes encourages and provides an environment where everyone on campus can gather to participate and learn through diversity and co-curricular experiences. Striving to maintain a balance of recreational, social, educational, and cultural programs and activities, Sykes consists of the following:

- Study Lounge
- Seminar Space
- 20 Meeting Rooms
- 22-Unit Computer Lab
- 350-seat Theatre
- 5,000 Square Foot Ballroom
- Information Desk and Copy Center
- Dining Services
- Campus Store
- Computer Lab
- Meeting Rooms
- Various University Offices
- Student Services and Business Office

This project was a partial renovation of three floors of the four-floor Sykes Building which is the West Chester University Student Union. The renovation included floors with new air handling equipment serving student lounge and gathering spaces, administrative, and kitchen functions.

SYSTEMS COMMISSIONED:

HVAC, ATC, and Domestic Hot Water

COMMISSIONING SUCCESS:

A cost analysis of the commissioning issues identified yield a conservative estimate of $13,500 cost avoidance savings calculated for the cost of correcting issues after project completion if commissioning wasn't included in the project.

The functional performance testing acceptance phase of the HVAC systems identified over 50 issues. The higher priority issues found and resolved include the following:

- **BACNET Card Integration** – The BACNET card was not included for integration to Radius Systems for several hoods and exhaust fans, so the supply fan control was not operating per sequence.
- **CaptiveAire Hood** – The zone temperature sensors were installed high near ceilings which has an impact on exhaust fan control due to the space temperature gradient. There was a concern with building pressurization regarding the

difference in total air flow from AHU-10 and the exhaust fans. An issue with wiring was reported because wire was installed in only one conduit, resulting in fan speed control issues.

- **Balancing** – CAV-17 only obtained 73° discharge air temperature in heating while AHU-4 was discharging 57°, although design DAT is 75 with discharging 55 entering air temperature. The TAB scope included AHU-9 with downstream diffusers from the new ductwork, although AHU-9 is existing and the fan was not in the scope. While working on traverses, the total CFM was 7600, with a design of 14000 CFM.
- **Opposite Season Testing** – A few exhaust fan issues were identified. Exhaust fans EF-5,6,7,8 fan status points were mapped through integration per design, but they are unreliable points for the fan status and AHU-10 supply air flow control. AHU-10 air flow control requires airflow rate conversion of exhaust fans from the balancing report. The exhaust fans should cycle off during unoccupied periods. Also, EF-5,6,8 ATC monitor points for integration, shown on approved ATC submittal for the kitchen hood integration pages, were not registering change in value via trends such as fire condition, prep time button, and lights.

B. PROJECT UNDERSTANDING AND APPROACH

PROJECT UNDERSTANDING

Constructed in phases from 1993-1998, the Thurgood Marshal Living Learning Center (LLC) is 165,560 square feet and used for common areas / cafeteria and student housing. There are co-ed residential rooms, guest quarters, meeting rooms, and the main cafeteria that serves the entire campus community. The building houses approximately 400 people. Currently, the AC service in the building is outdated and only serves the kitchen and dining room. The current heating system is a gas boiler system distributed by heat exchangers and hydraulic perimeter fin tubes.

This project will install an air conditioning system for the entire LLC that will be efficient, control humidity, improve air quality, and increase ventilation in the kitchen. Also, each student room will have control of their temperature to allow for greater comfort. The selected HVAC system should also have heating capabilities to be used instead of or in addition to the current gas boiler system. The system design should focus on ease of maintenance and serviceability. The new system should be installed while the old heating system is in use and changed over seamlessly and will offer heating and cooling settings to replace the current fin tube heating.

Additionally, the new cooling system shall be compatible with future geothermal plans which will be reviewed early in the project during OPR development and design team development of the Basis of Design and Schematic Design. One specific aspect that we will review is pipe and coil material selection which is important for geothermal systems.

The goals of the project include:

- Increasing student comfort with the addition of air conditioning to each room including control.
- Improving staff comfort, experience, and retention by increasing ventilation and cooling in the kitchen and dining spaces.
- Increasing the use of the building during the summer months with the added new comfort levels.
- Increasing energy efficiency with the new cooling system that is compatible with future geothermal plans.
- Sustaining the current roof warranty when designing and adding new equipment on the roof which will save Lincoln University the cost, time, and effort in obtaining a new roof warranty.

In addition, Aramark has experience to support project goals of working on an occupied University campus, working to add air conditioning to an occupied building with no current air conditioning system and adding air conditioning with minimal exterior changes to the existing building. Aramark understands the impact of schedule on construction activities and will gear the commissioning program in coordination with the project team during commissioning meetings to ensure scheduled activities align with the project and University schedule. Coordination of existing building infrastructure and shop drawing review will also be important prior to rough-in that will be emphasized.

Existing electrical systems and capacity will be investigated during the development of the HVAC renovation to determine what changes are required to support the desired system.

The building automation system will be an extension of existing Niagara BAS platform and associated control devices. The controls system manufacturer is Delta Controls whom Aramark has worked with on other projects. Integration to HVAC systems is a requirement to provide BAS operators the ability to adjust settings and parameters to gain maximum operating efficiency. Integration with the lighting control system pending a feasibility review was noted in the Project Development Study (PDS) and will be reviewed during design review.

Communication systems including voice/data and sound/video systems are noted in the PDS to be not applicable.

For protective systems of fire protection, the new HVAC system will need to be fit out with current fire protection with limited ceiling heights. For fire alarm, the interconnection between HVAC systems (i.e. duct detectors) will be commissioned.

The anticipated project schedule notes CxA onboarding in October 2024, OPR development November 2024 and design between January-October 2025, and construction between May 2026-July 2027.

PROJECT APPROACH

It is evident that in order to truly assist in the short- and long-term success of this project, our commissioning plan requires a unique and varied blend of technical, operational, and engineering expertise. The challenges involved in the construction of this project focus around:

1. Project schedule
2. Complex building systems
3. Increased integration of systems and components
4. MEP technical expertise
5. Project turnover and operations expectations

We are familiar with these significant challenges through our extensive commissioning, operations backgrounds, and experience with capital and operation teams. Our focus is to “bridge the gap” between the construction teams, design teams, project management, and operations groups. Our solution to these challenges is to develop and integrate a unique commissioning program that will provide collaboration between teams, verify that the design intent (installation and performance) is met, establish parameters for acceptance of the construction/end users, and integrate turnover/operations smoothly and effectively.

A summary of the solutions are outlined in the following bullets.

- Creating partnerships and leading collaboration within the project and construction teams.
- Providing “on-site” representation to focus and coordinate the commissioning efforts.
- Coordinating and integrating teams of professionals in supporting corrective actions.
- Establishing parameters and testing requirements for system acceptance as opposed to component acceptance.
- Exercising the systems throughout operating ranges, safety, and emergency conditions.

Aramark will develop a program specifically geared towards the Thurgood Marshall Living Learning Center project at Lincoln University. Aramark will work directly for the PADGS and provide an unbiased, objective view of the systems installation, operation, and performance. As part of the owner’s building systems commissioning process, Aramark will cooperate with and coordinate all commissioning activities with the project manager, design professionals, construction manager, and contractors. This process is not to take away or reduce the responsibility of the design team or installing contractors, but to provide a finished and fully operational product in accordance with design intent. Our scope of services consists of the following focused efforts:

PROFESSIONAL COMMISSIONING SERVICES – PHASE APPROACH

DESIGN PHASE

Past experience has demonstrated that collaboration, communication, and proper planning are the keys to verifying that the commissioning program is fully integrated into the normal design and construction process. This integration process for the program begins very early by initially employing a carefully prepared kick-off meeting, commissioning plan, and schedule that will guide the effort in and around the construction schedule. The commissioning team leader will develop, organize, implement, observe, document, and lead the commissioning effort in a manner that furthers the success of the project. This

effort will not only minimize the impact on project schedule, but also promote efficient system startup and turnover.

A summary of activities in this phase consists of:

- **Owner's Project Requirements (OPR)** – Working with the DGS Design Project Manager, Design Professional, and the Client Agency facilities maintenance staff conduct an OPR workshop to document the project goals, measurable performance criteria, cost considerations, benchmarks, success criteria, and supporting information. This OPR document will be used primarily to evaluate that product submittals meet already-established goals for owner requirements and develop acceptable Cx and training processes. Provide descriptions of the following:
    a. Primary purpose of Project.
    b. Environmental and sustainability goals
    c. Energy efficiency goals.
    d. Indoor environmental quality requirements.
    e. Desired equipment/system quality, reliability, and maintenance requirements.
    f. Facility operation and maintenance requirements including requisite personnel training and orientation.
- **Commissioning Plan (Cx Plan)** – Provide written document that outlines the overall process, organization, responsibilities, schedule, allocation of resources, and documentation requirements of the Commissioning Process to verify and document that the design, construction, and operation of the facility meet the Owner's Project Requirements (OPR).
- **Design Review** – Provide a review and comments of the Professional's design documents and Basis of Design (BOD) narrative for compliance with the OPR. Design review includes a back-check of Commissioning Design Review Comments at subsequent Design Submission. This includes reviews at each of the 3 design phases (Schematic Design, Design Development and Construction Documents)
- **Commissioning Specifications** – Provide Commissioning Specifications for all systems/assemblies being commissioned for inclusion within the Project Construction Documents.

CONSTRUCTION PHASE

A pivotal aspect of our commissioning program is enabling team reviews and inspections of the systems in their area of expertise (i.e., mechanical, electrical, and plumbing). Deficiencies and outstanding issues are documented in the commissioning database. The intent of the database is to generate a comprehensive list for the project manager to distribute to the design and construction teams for response and action. Subsequent to each focused inspection, a progress report will be issued detailing the deficiencies, resolution actions, and status of each item. We will maintain a current status for each item on the deficiency list as well as document the resolution actions in the final report. The commissioning team leader will act as the point person and bring up issues to the construction and design teams.

The focus of the construction installation phase will include the following:

- **Submittal Review** – Identify and review Contractor submittals applicable to systems/assemblies being commissioned. Identify issues that might result in rework or change orders. Verify the

following: a) conformance with Owner's Project Requirements (OPR) and Basis of Design (BoD), b) achievement of operations and maintenance requirements, c) enablement of performance testing. All submittal reviews and correspondence must take place in eBuilder.

- **Job Construction Meetings** – CxA shall attend regular job construction meetings as necessary to ensure the systems are properly installed, operated and tested, and are functioning correctly to meet the design intent. The construction is scheduled between May 2026 and July 2027.
- **Commissioning Meetings** – CxA shall hold regularly scheduled jobsite Commissioning Meetings with all project stakeholders to review important aspects of equipment, HVAC system, and Controls System installation. Review and document necessary installation details, system testing procedures, and documentation requirements. Keep meeting minutes and include in the Cx Report.
- **Construction Observation and Testing** – Verify that the performance of the systems/assemblies being commissioned, as installed, meet the Owner's Project Requirements (OPR), Sustainability Criteria, Basis of Design (BoD), and Contract Documents. Furnish test procedures and checklists prior to equipment installation. Produce a Pre-functional test for each test. Test procedures shall list the entities responsible for executing each test. Provide installation inspections. Direct, witness, and document tests. Evaluate test results and verify that installed systems/assemblies meet the criteria for the Project.
- **Issues and Resolution Log** – Develop a commissioning issues log containing open and continuing items, status, and name of person/organization responsible for resolution.
- **Systems Manual** – During the design and construction of the project, the design and construction documents should be assembled into the systems manual. This assembly of documents provides the details and history of the design and construction of the building and information needed to properly operate the building. The systems manual includes the project final OPR, BOD, construction record documents, submittals, completed startup, verification checklists, functional and performance checklists, verified sequence of operation, facility guide, training records, and commissioning report. The systems manual should be used in the initial and subsequent training of the building operations staff and occupants. The systems manual should be updated throughout the life of the building.
- **Pre-Functional and Functional Performance Testing** – Confirm (but not necessarily witness) manufacturer's startup of individual equipment components (Pre-Functional Performance Testing). Write, direct completion of, witness, and document full Functional Performance Testing of each system and system component. Confirm proper operation of all control sequences for each season operation. Document in Cx Report.
- **Training Plans and Records** – Review, pre-approve, and verify training of the Client Agency personnel by the Contractor, to operate and maintain systems/assemblies being commissioned. Include training plan, training materials, and records in final Systems Manual.
- **End of Warranty Cx Report** – Provide post-occupancy operation commissioning, including incomplete, delayed, and seasonal testing, as well as warranty issues. Post-occupancy operations shall begin at Substantial Completion and shall continue through to the end of the warranty period.
- **Preliminary and Final Cx Report** – A preliminary commissioning report should be prepared that shows the commissioning progress and equipment performance to date at the time the Certificate of Occupancy is issued. At the completion of the project, the final commissioning report should be assembled and provided to the owner and others as required by the OPR and local jurisdiction requirements. This report includes the final commissioning plan, copy of design and submittal review reports, all startup, inspection, verification, functional and performance test forms and reports, the verified sequence of operation, the final Issues and Resolutions log, and summary of the performance of commissioned systems.

SYSTEMS TO BE COMMISSIONED

- Protective Systems including Fire Suppression and Fire Alarm Systems.
- Heating, Ventilating, Air Conditioning and Refrigeration Systems (HVAC) including Heat Generation, Refrigeration, Ventilation, and HVAC Control Systems.
- Electrical Systems including Power Distribution, Lighting, and Controls, and Emergency Generator Systems.
- Communications Systems including Voice/Data and Sound/Video Systems.

C. GEOGRAPHIC LOCATION

Sean McCarty, the proposed project manager, is located within 62 miles to the project site. For support, Chris Skalski is approximately 63 miles and Mack Ailes' home office is approximately 51 miles from the site. Travel time will not be required for reimbursement as travel will be performed on the employee's time.

D. PROJECT WORK PLAN

I. Schedule of Milestones

DESIGN PHASE – AWARD OF PROJECT THROUGH NOVEMBER 2025

- Conduct Owner's Project Requirements (OPR) workshop and develop OPR.
- Develop and provide the Cx Plan.
- Review and comment on design documents and BOD.
- Conduct design phase Cx meeting.
- Develop and provide Cx specs for all systems/assemblies being commissioned.

CONSTRUCTION PHASE – MAY 2026 THROUGH JULY 2027

- Perform submittals review.
- Conduct Cx kick-off meeting with contractors.
- Attend construction meetings as needed.
- Hold regular commissioning meetings.
- Develop pre-functional test forms and provide to contractors.
- Conduct construction observation and testing.
- Develop and maintain issues and resolution log.

ACCEPTANCE PHASE – JULY 2027 THROUGH JANUARY 2028

- Perform functional performance testing of Cx systems.
- Conduct Cx meetings as needed.
- Develop and deliver Systems Manual.
- Review, pre-approve and verity training of personnel.
- Develop End of Warranty Cx report.

I. **Indicate all resources need to complete the assignment including staff assignments, consultants, and reimbursements.**

Aramark will perform all commissioning activities with its own personnel. Staff assignments are indicated in the organizational chart. Reimbursements will be submitted for mileage only which is detailed in Section C above.

II. **Note inefficiencies or risks to successful implementation, and any planning efforts to mitigate issues such as travel distance, schedule conflicts and required coordination.**

Aramark has no scheduling conflicts associated with performing the commissioning requirements of this project.

III. **Indicate the anticipated number of hours required for completion of the work described in the Scope of Work (Attachment A).**

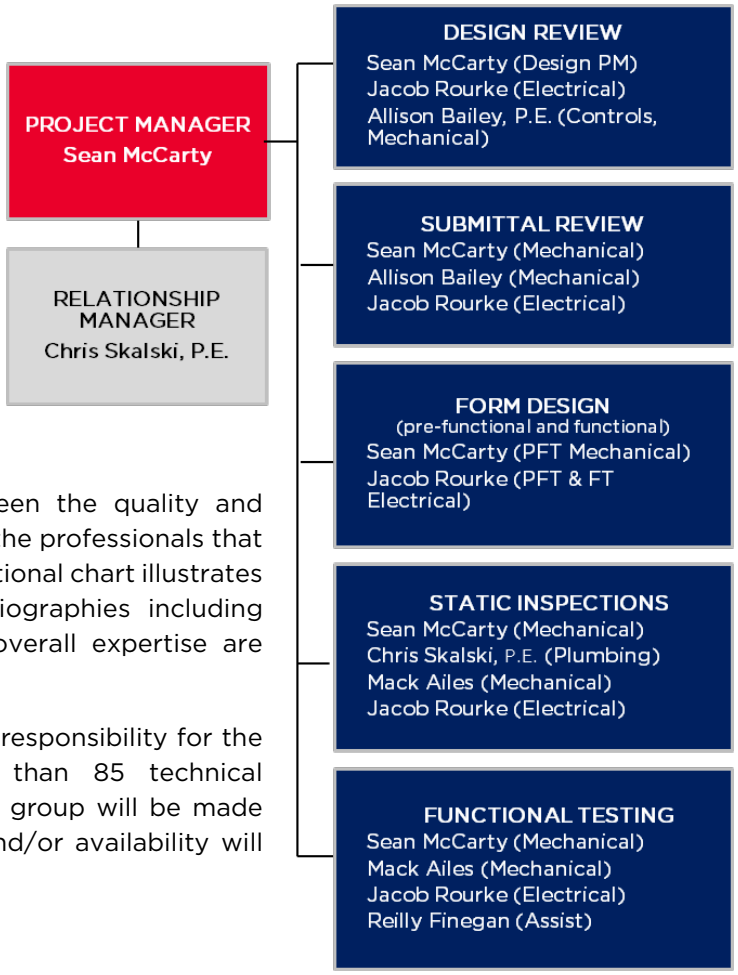
The estimated number of hours per phase are as follows:

Design Phase:	90
Construction Phase:	608

E. PROJECT PERSONNEL AND QUALIFICATIONS

All of Aramark's engagements rely on our experienced professional staff to function as the catalyst for the success of the overall program. Our staffing strategy for managing this relationship expertly and efficiently is straightforward:

- Provide PADGS with a qualified commissioning agent to lead the overall program and serve as the primary contact person.
- Support PADGS with a core technical team comprised of individuals with the requisite technical experience and skill sets.
- Provide experienced "quality assurance" resources to verify that the highest level of quality services is provided.



The success of our approach has always been the quality and consistency of our senior leadership as well as the professionals that comprise the core technical team. The organizational chart illustrates the proposed team for this engagement. Biographies including experience with similar projects as well as overall expertise are included on the next pages.

Although the proposed staff will have primary responsibility for the proposed engagement, any of the more than 85 technical professionals within the Engineering Solutions group will be made available to PADGS if their skills, expertise, and/or availability will add incremental value to this engagement.

Aramark's Engineering Solutions group consists of more than 85 technical professionals including: Professional Engineers (PE) Certified Commissioning Professionals (CCP), LEED Accredited Professionals (LEED AP) and other technical designations. We verify that each facility's operating, maintenance, and program support requirements are met during construction and renovation.

(17) Professional Engineers (PE)

(13) Certified Energy Managers (CEM)

(2) Commissioning Process Management Professionals (CPMP)

(5) Certified Measurement Verification Professionals (CMVP)

(9) LEED Accredited Professionals (LEED AP)

(2) LEED Green Associates

(2) Project Management Professionals

(3) Certified Building Commissioning Professionals (BCxP)

SEAN MCCARTY, M.S.M.E., LEED AP BD+C

Cx Engineer

- 7.0 Million GSF Commissioned
- 35 Projects
- University of Alabama Master of Science Mechanical Engineering
- University of Alabama Bachelor of Science Mechanical Engineering

Mr. McCarty has 14 years of energy management and building commissioning experience. Currently working in the North Atlantic region as a Project Manager, he has been involved in all aspects of commissioning from new building commissioning MEP design review to retro-commissioning energy analysis. As a preferred project manager for some of our top clientele, he is capable of providing the services needed to present a result that exceeds expectations.

Sean is slated as the Project Manager for this project. His primary responsibility as project manager is to ensure that all of the commissioning tasks as described within this response are completed. Sean will lead the design team as well as provide mechanical input.

ALLISON BAILEY, P.E.

Senior Cx Manager

- 10 Million GSF Commissioned
- 50+ Commissioning Projects (Project Manager)
- Ohio State University Bachelor of Science Mechanical Engineering
- Professional Engineer (KY, OH, and WV)

Ms. Bailey possesses more than 28 years of experience in HVAC design, DDC control programming, HVAC system troubleshooting, project management, and project coordination. Currently, Allison supports commissioning programs throughout the region and is involved in all design reviews as the design lead and mechanical systems reviewer. She is also project manager for the new Twin Valley Behavioral Health Hospital in central Ohio. Allison performs over 40 design reviews per year and has most recently reviewed multiple projects for Nemours, renovations at M&T Bank Stadium and various other projects for Penn State University. She has been the design leader for all of the reference projects listed within this proposal and is familiar with the Penn State standards of design for mechanical systems.

Allison is proposed in a support role for this project. She will provide design review and submittal reviews of mechanical and controls systems.

JACOB ROURKE

Cx Manager

- 1.0+ Million GSF Commissioned
- 50+ Commissioning Projects
- Penn State University Bachelor of Science Energy Engineering
- NABCEP PVA
- Association of Energy Engineers

Mr. Rourke has seven years of experience in supporting electrical design, commissioning, and construction for commercial, pharmaceutical, and industrial sectors. Although a relatively new addition to Aramark, Jacob brings his experience as an Electrical Engineer for Barton Associates where he supported the design of low and medium voltage distribution and specialty systems, including but not limited to solar, power generation, utility interconnections, and life safety. On behalf of Aramark, Jacob provides professional commissioning services to clients in Pennsylvania.

On this project, Jacob will provide design review, review submittals, design the PFT and FPT forms, and perform static inspections and functional testing of the electrical systems.

MACK AILES

Cx Engineer

- 1.8 Million GSF Commissioned
- 37 Commissioning Projects
- Penn State University Bachelor of Science Mechanical Engineering

Mr. Ailes is a Commissioning Manager, providing building commissioning services to various projects and clients in the Northeast Region.

Current projects include the DGS Kutztown University DeFrancesco Education Building Renovation, Penn State University Hazleton Campus Library Renewal, several projects on the campus of University of Pennsylvania, and projects with the Allegheny Health Network.

Mack is proposed in a support role for the project and will assist with the static inspections and functional testing for mechanical systems.

REILLY FINEGAN

Cx Manager

- 10 Commissioning Projects
- Drexel University Bachelor of Science Mechanical Engineering Concentrations in Aerospace and Energy

Ms. Finegan is a mechanical engineer and a Commissioning Manager for Aramark Engineering Solutions where she provides building commissioning services to various projects and clients in the Northeast Region. Currently, she is providing support at the University of Pennsylvania on multiple projects and Nemours Children's Hospital.

Reilly is proposed in a support role for the project and will assist with functional testing for mechanical systems.

CHRIS SKALSKI, P.E., LEED AP, BCxP

Cx Senior Engineer

- 8.0 Million GSF Commissioned
- 60 Commissioning Projects (Project Manager)
- 20 Commissioning Projects (Cx Agent)
- University of Pennsylvania Bachelor of Science Mechanical Engineering

Mr. Skalski is a Professional Engineer and LEED Accredited Professional with 20 years of experience as a building commissioning agent, including extensive experience in HVAC and plumbing systems design, building automation, and DDC systems.

On behalf of Aramark, Mr. Skalski is the commissioning team leader for several of Aramark's higher education and healthcare clients. His responsibilities include engineering design reviews, installation quality assurance, pre-functional/performance testing, initiation of corrective actions, and operator training.

Chris will be responsible for quality control as well as major issue resolution on this project, in addition to performing static inspections on the plumbing systems.