November 26, 2014

Re: Request for Qualifications - Commissioning Services
0548201 Bowen Science Building – Modernize Building Systems
University of Iowa

The University of Iowa, located in Iowa City, Iowa, intends to retain the services of a qualified Commissioning Agent (CxA) to provide Commissioning (Cx) Services for the above project. CxA firms are invited to submit a statement of qualifications based on the scope of services described below.

The scope of services will be divided into two commissioning phases, Design Phase and Construction/Acceptance Phase. CxA selection will be based on the firm’s Design Phase and Construction/Acceptance Phase qualifications.

The Owner reserves the right to negotiate Construction/Acceptance Phase Commissioning services with the successful firm once the design is complete and the appropriate Construction/Acceptance Phase scope of services is established.

1.0 Background

The Bowen Science Building was constructed in 1973 and is the most intensely utilized laboratory facility on the University of Iowa campus. The lab space within Bowen Science Building primarily serves the colleges located on the Health Science Campus. The 375,000 gross square foot facility has undergone individual and isolated updates as needed to address pressing research needs, but the systems supporting all of the lab space within the building remain nearly unchanged since constructed 41 years ago.

The following studies have been completed in preparation of the project. Studies combined into a single .pdf document:


This project modernizes the Heating Ventilation and Air Conditioning (HVAC) system at the Bowen Science Building to address capital renewal needs, improve system efficiency, decrease energy consumption, and reduce operating and maintenance costs. The project will centralize building exhaust systems, review operation of and upgrade space terminal units, and install energy saving HVAC components.
The building will be occupied and retain normal research activities throughout design and construction. Extreme care and communications will be required to plan the phased project delivery.

The project will address the following scope items as identified in the Bowen Science Building - Retro Commissioning Study:

1. Recommission Variable Air Volume (VAV) terminal units: Identifies the failed components and the repair work required to restore complete functionality to existing Direct Digital Control (DDC) supply and exhaust VAV terminal units throughout the facility.

2. Replace pneumatic HVAC terminal units with DDC units in the 2-600 and 2-700 areas and connect them to the Building Automation System (BAS).

3. Control airflow through atrium skylight openings: Provide control of skylight openings to maintain building pressure control and prevent conditioned air from escaping the building.

4. Centralize building general exhaust systems: Combine the general exhaust systems in each core utilizing 100-percent redundant central variable volume fans, to be installed on the roof directly adjacent to the existing mechanical penthouses.

5. Centralize building fume exhaust systems: Combine fume exhaust systems in each core utilizing 100-percent redundant central variable volume fans, to be installed on the roof directly adjacent to the existing mechanical penthouses.

6. Install energy recovery system: Implement a pumped Energy Recovery Coil (ERC) on the general and fume hood exhaust systems to maximize the energy effectiveness of a pumped coil strategy, while minimizing impact to the existing air handling system.

7. Provide supplemental cooling: Provide year round cooling to rooms where space usage changes have added heat load without increasing the existing cooling supply.

Project is not seeking LEED certification.

2.0 Scope of Work

The primary role of the successful CxA is to develop and coordinate the execution of a quality assurance plan pertaining to commissioned equipment and systems, observe and document performance, and determine whether systems are functioning in accordance with the Owner's Project Requirements and the Contract Documents. Additionally, the successful CxA will assist in identifying solutions to non-conforming work. Final resolution will remain the responsibility of the Contractor and Design Professional. Refer to ASHRAE Guideline 0-2013 for acceptable standard of care.
Commissioning Tasks

The Commissioning Agent (CxA) shall complete the following tasks during the Design, Construction, Acceptance, and Occupancy/Operations Phases of the project.

Design Phase

Commissioning during the Design Phase shall ensure that the Owner's Project Requirements are documented and captured within the Contract Documents. The CxA shall complete the following:

1. Coordinate with the Owner's Representative and oversee the commissioning process during design.
2. Recommissioning services:
   a. Recommission, approximately 1200 DDC supply and exhaust VAV terminal units connected to the Building Automation System. Photo document conditions existing conditions.
   b. Coordinate performance of minor repairs of non-functioning components including controls programming.
   c. Prepare a list of supply and exhaust VAV terminal units in need of major repair or replacement for inclusion by Design Professional into construction documents.
3. Data collection services: Commissioning Agent to collect and furnish to the Design Professional the following data in each room to minimize disruptions to building occupants:
   a. Room volume verification (room plan dimensions and ceiling height) via online database.
   b. Verification on plan drawings of VAV terminal unit location.
   c. VAV terminal unit University tag number, manufacturer, model and size.
   d. Measured air flows for each VAV terminal unit.
   e. Lab equipment inventory for heat load calculations.
4. Perform a quality control design review of the Design Documents, focusing on equipment and systems. Submit review comments on the form provided by the Owner's Representative. Refer to ASHRAE Guideline 0-2013, Annex N and addendum, for expected standard of care. Include the following, as applicable:
   a. Opportunities for making the building easier to commission.
   b. Opportunities for making building operations and maintenance easier (i.e.: Equipment Accessibility, System Control, etc.).
   c. Opportunities for decreasing utility usage and/or increasing indoor environmental quality.
   d. Verify compliance with OPR.
   e. Reviews shall be completed at the following benchmarks:
      i. Design Development Documents
      ii. 50% Construction Documents
      iii. 95% Construction Documents
      iv. Final Construction Documents
5. Participate in the following design review meetings:
   i. Design Development Documents
   ii. 50% Construction Documents
   iii. 95% Construction Documents
   iv. Final Construction Documents
6. Perform a back-check of each subsequent design submittal to verify the agreed upon commissioning related corrections were implemented.
7. Track all comments in a Commissioning Issues Log. The log must be detailed enough to provide clarity and point of future reference for the comment.
8. Edit University Of Iowa standard Specification Section 01 91 13 COMMISSIONING. The commissioning specifications shall be transmitted to the Design Professional in electronic form and shall include review of the following:
   a. List of systems being commissioned
   b. Cross references to all applicable and related sections
   c. References for inclusion into individual equipment and systems specification sections
   d. Acceptance testing criteria
   e. Deferred testing requirements;
10. Attend Pre-Bid Meeting.
11. Identify Commissioning activities for inclusion into the project schedule.

**Construction Phase**

The Construction Phase scope of work will be established at final design. Anticipated scope of work is as listed below.

Commissioning during the Construction Phase shall verify that the project achieves the objectives of the Owner’s Project Requirements, as expressed by the contract documents. The CxA shall complete the following tasks:

1. Attend Preconstruction Meeting.
2. Conduct a kick-off meeting with the Contractor, including installation subcontractors, to discuss Commissioning scope, plan, coordination and schedule. Prepare and distribute meeting minutes.
3. Coordinate the Commissioning work with Owner’s Representative and Contractors to ensure that Commissioning activities are included in the master construction schedule. As a minimum, identify the following:
   a. Commissioning Team Meetings;
   b. Permanent utilities connected - by individual utility type
   c. IT interface completed
   d. Start and completion of each project phase
   e. End of dust producing activities
   f. Construction checklists complete – by individual system
   g. Equipment startups completed – by individual piece of equipment
   h. Functional performance testing completed - by individual system.
   i. Owner training Section 01 78 23 - Operating and Maintenance Manual
   j. Substantial completion
   k. Warranty start dates
   l. Warranty walkthrough date (two (2) months prior to end of warranty)
   m. Lessons learned meeting
4. Review applicable Contractor submittals concurrent with the Design Team reviews. CxA will review submittals to create Commissioning Checklists and Functional Performance Testing forms.
5. Review 50% Construction Operation and Maintenance Manuals.
6. Develop project specific Construction Checklists. Verify that the manufacturer pre-start and start-up checks are incorporated into, or augment, the Construction Checklists. Provide Checklists to contractors within two weeks after product submittal approval.
7. Verify Construction Checklists are completed and submitted prior to functional performance testing.
8. After receipt of the Controls Submittal, participate in a meeting with the Owner’s Representative, Design Professional, Contractor, Controls subcontractor, Mechanical subcontractor and Electrical subcontractor to review the submittal and mechanical/electrical systems. Focus will be on how the selected sequences of operation interact with the mechanical/electrical systems. Additional focus will be on defining and assigning responsibilities for construction activities; i.e. control installation, control programming, and equipment start-up that will allow the pre-functional testing and start-up of mechanical/electrical systems.
9. Coordinate with and assist the Construction Team in developing a start-up plan for each piece of equipment and system to ensure all recommended procedures are incorporated in the appropriate sequence. This coordination may be best performed by the CxA’s participation in regularly scheduled MEP coordination meetings conducted by the Contractors.
10. Prepare Functional Performance Test procedures/scripts/checklists for the commissioned equipment and systems. Submit for Owner’s Representative and Contractor within two (2) weeks of product or system submittal approval.
11. Perform site visits as needed, but at least monthly, during construction to observe component and system installations. Attend planning and job-site meetings to obtain information on construction progress as requested by Owner. Review construction meeting minutes for revisions and substitutions relating to the Owner’s Project Requirements. Assist in resolving any discrepancies identified during regular site inspections. Begin site visits at onset of MEP installation.
12. In conjunction with required site visits, conduct on-site Cx meetings to review progress, coordination, and issues resolution.
13. Review Request for Information (RFI), Instruction to Contractor (ITC); and Change Orders for impact on commissioning and the Owner Project Requirements.
14. Maintain Commissioning Issues Log containing any items that do not meet the OPR or Contract Documents. The log must be detailed enough to provide clarity and point of future reference for the comment. CxA shall update and issue the Issues Log within two (2) days following a site visit and two (2) days prior to Cx meeting.

**Acceptance Phase (Prior to Substantial Completion)**

Commissioning during the acceptance phase shall demonstrate the performance of the equipment and systems installed during the construction phase meet the requirements of the Contract Documents. The acceptance phase must occur prior to Substantial Completion. The CxA shall complete the following:
1. Update commissioning schedule and plan with Owner’s Representative and Contractor.
2. Conduct functional testing to demonstrate that systems and components are operating according to the Owner's Project Requirements, University Design Standards, Contract Documents and applicable industry standards. Functional testing shall include operating the system and components through each of the written sequences of operation, and verification of proper integration to other system or systems as required.
3. Review the preliminary and final Testing, Adjusting and Balancing (TAB) report to verify all equipment is included and performance of each is per contract requirements.
4. With assistance and collaboration of the TAB and controls contractors, perform the following:
   a. Utilizing the trend data captured, optimize static and differential pressure control setpoints and reset limits.
   b. Verify calibration of airflow monitoring stations
   c. Verify the re-circulating flow balance and maintenance accessibility.
5. Update Commissioning Issues Log with any acceptance testing items that do not meet the OPR or Contract Documents. Provide the log and acceptance test results and recommendations to the Owner’s Representative and Contractors.
6. Coordinate retesting as necessary. One retest of each major system will be provided as part of normal checkout. Additional retests will be considered outside the normal scope of work.
7. Verify Owner training schedule and format. Refer to ASHRAE Guideline 0-2005 for expected standard of care.
8. Submit electronic copy of Commissioning Process Progress Report at Substantial Completion. Report to include, at a minimum, the following:
   a. List of incomplete commissioning milestones with anticipated completion dates. Include seasonal and/or deferred testing milestones.
   b. List of systems and equipment successfully commissioned to date. List shall not include systems or equipment with outstanding issues.
   c. Updated Commissioning Issues Log. Include anticipated resolution date for open items.
   d. Recommendations for continuous commissioning activities for verifying on-going energy conservation.
10. Transmit to the Contractors one (1) electronic and four (4) hard copies of Commissioning Documentation to be inserted into the Operation and Maintenance (O&M) Manuals.
    a. The intent of this requirement is to provide a combined O&M and Commissioning Systems Manual for use by the Owner’s personnel for Operations and Existing Building Commissioning activities. A separate Commissioning Systems Manual will not be required.
    b. Coordinate format and organization of O&M Manuals with Contractor. Like systems are to be submitted together under a single binder tab or heading. Refer to University of Iowa standard Specification Section 01 78 23 OPERATION AND MAINTENANCE MANUAL.
    c. Commissioning Documentation for a given system or piece of equipment is to be modeled after ASHRAE Guideline 4-2008 and shall include, as applicable:
      i. Executive summary of system and major components.
ii. Completed functional test reports, including as-commissioned setpoints, sequence of operation, operating parameters, etc.

iii. Operating procedures for all normal, manual, and emergency modes of operation.

iv. Ongoing optimization guidelines and detailed, equipment specific maintenance recommendations.

11. Transmit to the Owner one (1) electronic copy of Commissioning Documentation listed above.

**Occupancy / Operations Phase**

Commissioning during the Occupancy / Operations Phase is intended to assist the facility operating staff in identifying any defects in the installed equipment or system operation. The CxA shall complete the following:

1. Schedule and attend seasonal and/or deferred testing of HVAC systems. Submit reports to Owner for inclusion into O&M Manuals.
2. Participate in Lessons Learned meeting.

**Systems to be Commissioned and Sampling Rate**

**A. MECHANICAL SYSTEMS**

1. Air Distribution Systems, including major equipment and terminal units, and associated controls and dampers.
   a. Conduct 100% check of major equipment (AHUs, DOAU, Heat Recovery Units, Heat Pumps, etc.) and 25% or Ten (10) units, whichever is greater, of like terminal units.

2. Exhaust Systems, including equipment and dampers
   a. Conduct 25% sampling or One (1) unit, whichever is greater, of like systems.

3. Utility Metering and Verification Systems
   a. Conduct 100% check of reporting points.

4. Humidity Control System
   a. Conduct 100% check of central equipment.

5. Hydronic Equipment (pumps, exchangers, boilers, chillers, condensers, well fields, etc.) and associated controls and metering.
   a. Conduct 100% check of central equipment, controls, and interlocks.

6. Full integration with existing systems

**B. ELECTRICAL SYSTEMS**

1. Utility Metering and Verification Systems
   a. Conduct 100% check of reporting points.

2. Lighting Controls
   a. Conduct 100% check of Lighting Control Systems – OR - Conduct 100% check of central equipment and 25% or Three (3), whichever is greater, of like room systems.

3. Full integration with existing systems.

**C. BUILDING CONTROLS**
1. Conduct a 25% sampling of like terminal equipment, including analog sensor calibration, point-to-point and mapping to workstation graphics, proper control of operating sequences and alarm management functions.

2. Utilizing setpoint override and adjustment at the Operator Work Station (OWS), verify the remaining 75% of like terminal equipment performs as required.

3. Conduct a 100% check of major equipment and monitoring points, including analog sensor calibration, point-to-point and mapping to workstation graphics, proper control of operating sequences and alarm management functions.

4. Conduct a 100% check of each unique system or equipment control sequence.

5. Control Points: Verify that the control system was checked and that it is commanding, reporting and controlling as specified in the construction documents. Verification must include verification of each control point.

6. Sensors
   a. Verify that all sensors have been calibrated so that the value reported in the control system represents the actual local value.

7. Actuators
   a. Visually verify that all actuators have been adjusted to fully close and open dampers and valves.

8. Graphic control screens
   a. Verify all graphic control screens accurately depict the equipment, system and associated floor plans. Verify proper performance of links between graphic screens.

9. Control setpoints
   a. Review trend information of all major control setpoints to ensure stable and accurate control.

10. Verify control and monitoring points/devices have been properly labeled.

D. LIFE SAFETY AND SECURITY

1. Fire Protection and Fire Alarm
   a. Conduct 100% check of equipment, controls, and interlocks.

3.0 Schedule

The project is currently selecting the Design Firm.

The project anticipates the following schedule (Dates subject to change):

- Shortlisting of Firms: By December 12, 2014
- Firm Interviews: December 18-19, 2014
- Project Kickoff Meeting: Week of January 5, 2015.
- Recommissioning VAV Terminal Units complete: By July 3, 2015.
- Bid Date: Week of February 29, 2016.

4.0  Test Equipment

The Contractor shall provide all tools required to start, checkout, and functionally test equipment and systems. CxA shall provide specialized testing equipment, such as supplemental portable data loggers.

Data logging equipment, monitoring devices, specialized equipment, and software not required to be provided by the Contractor in the Contract Documents, and provided by the CxA to monitor, confirm, or verify the contractor's testing procedures, shall remain the property of the CxA. Equipment provided shall meet the minimum accuracy, calibration, and performance standards required by the performance test.

5.0  Statement of Qualifications

It is the Owner’s intent that the person designated as the commissioning authority (CxA), and the key staff members, exhibit the following:

1. Acted as the principal Commissioning Authority for at least five projects.
2. A bachelor’s degree in Engineering is strongly preferred. P.E. license is desired. Other technical training, past commissioning, and field experience will also be considered.
3. Hold ASHRAE CPMP Certification, NEBB BSC Accreditation, University of Wisconsin CxAP, or BCxA CCP Certification.
4. Exhibit extensive experience in the operation and troubleshooting of HVAC systems and energy management control systems.
5. Exhibit extensive field experience. A minimum of five full years in this type of work is required.
6. Exhibit extensive knowledge in testing and balancing of both air and water systems. NEBB, AABC or TABB certification preferred.
7. Exhibit experience in energy-efficient equipment design and optimization.
8. Exhibit direct experience in monitoring and analyzing system operation using energy management control system trending and stand-alone data logging equipment.
9. Exhibit excellent verbal and writing communication skills. Highly organized and able to work with both management and trade contractors.

6.0  Submittal Requirements

The statement of qualifications shall include the following:
1. List the individual who will be the CxA.
2. Provide an organization chart indicating proposed project team.
3. Provide resumes for key staff members.
4. Briefly describe relevant experience of the proposed team in the following areas. List each person’s direct involvement in:
   a. Similar Projects.
   b. Testing and Balancing.
   c. Energy-efficient equipment design and control strategy optimization.
5. Describe your proposed approach to managing the project.

7.0 Evaluation and Award

1. The Owner will consider and evaluate the following components:
   a. Design Professional experience and qualifications.
   b. CxA qualifications and accreditations.
   c. Key support personnel experience and qualifications.
   d. Project approach.
   e. Design Professional location.
   f. Proposal quality.

2. Candidate firms shall be prepared to attend an interview as part of the evaluation process. The firm shall bear all costs associated with preparing the RFQ and subsequent interviews.

Respondents’ proposals are due no later than 12:00 pm (Noon) on Wednesday, December 10, 2014. Combine all requested materials in a single *.pdf file format.

Submit electronically to:

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Should you have any questions or comments, please contact:

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