October 11, 2013

Re: Request for Proposals- Commissioning Services
0484101 – Trowbridge Hall Implement Energy Conservation Measures
University of Iowa

The University of Iowa, located in Iowa City, Iowa, intends to retain the services of a qualified Design Professional to provide Commissioning (Cx) Services for the above project. Qualified Commissioning Agents (CxA) are invited to submit a proposal based on the scope of services described below.

The scope of services will be for the Design Phase Commissioning. The Owner reserves the right to negotiate Construction and Acceptance Phase services once design is complete.

1.0 Background

The Trowbridge Hall - Implement Energy Conservation Measures project implements both short term and long term Energy Conservation Measures for Trowbridge Hall identified during the retro-commissioning study, including:

1. Short-term:
   a. Address mixed air temperature.
   b. Remove Air Handling Unit AHU-1 return fan inlet vanes and sound baffle.
   c. Repair flex connectors on exhaust fans and VAV boxes.
   d. Clean coils and air handling unit filtration.

2. Long-term:
   a. Replace VAV Boxes.
   b. Install Direct Digital Control system.
   c. Modify return air path.
   d. Update fume hoods.
   e. Install Variable Frequency drives on Hot Water Pump and Clean Room Exhaust Fans.
   f. Replace lighting including controls.

2.0 Scope of Work

The primary role of the successful Design Professional 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 Design Professional 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 0-2005 for acceptable standard of care.

Commissioning Tasks

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

Systems to be Commissioned and Sampling Rate

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200 University Services Building
Iowa City, IA  52242
319-335-5500  Fax 319-335-2722
http://www.facilities.uiowa.edu/
1. **GENERAL:** The list below is intended to provide a guide for determining the types of systems and equipment to be commissioned. The final commissioning schedule will be determined by the Owner based on the selected systems and equipment.

   a. **MECHANICAL SYSTEMS**
      i. Air Distribution Systems, including major equipment and terminal units, and associated controls and dampers. Conduct 100% check of major equipment (AHUs, DOAU, Heat Recovery Units, Heat Pumps, Fans, etc.) and 25% or Ten (10) units, whichever is greater, of like terminal units.
      ii. Exhaust Systems, including fans, equipment and dampers. Conduct 100% sampling.
      iii. Utility Metering and Reporting Systems. Conduct 100% check of reporting points.
      iv. Hydronic Equipment (pumps, exchangers, boilers, chillers, condensers, well fields, etc.) and associated controls and metering. Conduct 100% check of central equipment, controls, and interlocks.
      v. Full integration with existing systems.

   b. **ELECTRICAL SYSTEMS**
      i. Utility Metering and Reporting Systems. Conduct 100% check of reporting points.
      ii. Lighting Controls. Conduct 100% check of central equipment and 25% or Three (3), whichever is greater, of like room systems.
      iii. Full integration with existing systems.

   c. **BUILDING CONTROLS**
      i. 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.
      ii. Utilizing setpoint override and adjustment at the Operator Work Station (OWS), verify the remaining 75% of like terminal equipment performs as required.
      iii. 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.
      iv. 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.
      v. Sensors: Verify that all sensors have been calibrated so that the value reported in the control system represents the actual local value.
      vi. Actuators: Visually verify that all actuators have been adjusted to fully close and open dampers and valves.
      vii. Verify all graphic control screens are provided as required and accurately depict the equipment, system and associated floor plans. Verify proper operation of links between graphic screens.
      viii. Review trend information of all major control setpoints to ensure stable and accurate control.
      ix. Verify control and monitoring points/devices have been properly labeled.

**Design Phase**

Commissioning during the Design Phase is intended to 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 supervise the commissioning process during design.
2. Review the Owner’s Project Requirements (OPR).
3. Perform a quality control design review of the Design Documents, focusing on commissioned equipment and systems. Submit review comments on the form provided by the Owner’s Representative. Refer to ASHRAE Guideline 0-2005, 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 should be completed at the following benchmarks:
   i. 50% Construction Documents
   ii. 95% Construction Documents
5. Perform a back-check of each subsequent design submittal to verify the agreed upon commissioning related corrections were implemented.
6. Track all comments in a Commissioning Issues Log. The log must be sufficiently detailed so as to provide clarity and point of future reference for the comment.
7. 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;
8. Conduct Design Phase Cx meetings as required by the University (minimum of two (2) meetings).
9. Attend Pre-Bid Meeting.
10. Identify Commissioning activities to integrate in to the initial project schedule.

Construction Phase

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

Commissioning during the Construction Phase is intended to assure that the Owner’s Project Requirements, as expressed by the contract documents, are met and achieve their specific objectives. The CxA shall complete the following tasks:

1. Conduct a kick-off meeting with the Contractor, including installation subcontractors, to discuss Commissioning scope, plan, coordination and schedule. Prepare and distribute meeting minutes.
2. 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. Phased Construction Milestones;
   b. Commissioning Team Meetings;
   c. Start and completion of each project phase;
   d. Key system and assembly completion and testing;
   e. Training sessions;
   f. Substantial completion;
   g. Warranty start dates;
   h. Occupant move-in dates;
   i. Warranty walkthrough date (two (2) months prior to end of warranty);
   j. Lessons learned meeting.
3. Review applicable Contractor submittals concurrent with the Design Team reviews.
4. Review 50% Construction Operation and Maintenance Manuals.
5. Develop project specific Construction Checklists. Verify that the manufacturer pre-start and start-up checks are incorporated into, or augment, the Construction Checklists.
6. Verify Construction Checklists are completed and submitted by appropriate Contractor prior to functional acceptance testing.
7. 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 to be installed. 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.

8. 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.

9. Prepare Functional Performance Test procedures/scripts/checklists for the commissioned equipment and systems. Submit for Owner’s Representative and Contractor review two (2) months prior to functional testing in the field.

10. 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.

11. In conjunction with required site visits, conduct on-site Cx meetings to review progress, coordination, and issues resolution.

12. Coordinate with the contractor to witness startup of the following equipment:
   a. Variable Frequency Drives.

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 sufficiently detailed as to provide clarity and point of future reference for the comment. The log is to be updated and issued 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 is intended to 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 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. Verify building controls.

4. 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.

5. 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.

6. 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.

7. 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.


9. 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 should 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.

11. 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 standard Specification Section 01 78 23 OPERATION AND MAINTENANCE DATA.
   c. Commissioning Documentation for a given system or piece of equipment is to be modeled after ASHRAE Guideline 4-2008 and should 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.
      v. Completed test reports, startup reports, etc.

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.

3.0 Schedule

The project is currently in the Preliminary Design Phase.

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

<table>
<thead>
<tr>
<th>Event</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>50% Construction Document Review Meetings</td>
<td>11-2013</td>
</tr>
<tr>
<td>95% Construction Document Review Meetings</td>
<td>12-2013</td>
</tr>
<tr>
<td>Begin On-Site Construction</td>
<td>03-2014</td>
</tr>
<tr>
<td>Substantial Completion</td>
<td>08-2014</td>
</tr>
</tbody>
</table>

4.0 Test Equipment

The Contractor shall provide all tools or the use of tools required to start, checkout, and functionally test equipment and systems, except for specified testing with supplemental portable data loggers, which shall be supplied and installed by the CxA.

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 Proposal Requirements

The Proposer shall:

Provide a written proposal on the University of Iowa Letter of Proposal form found on the University’s Facilities Management/Consultants web site.

http://www.facilities.uiowa.edu/pdc/consultants/agreement-form.html

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.
6. Limit submittal to twenty (20) pages.

7.0 Proposal Evaluation and Award

1. The Owner will consider and evaluate the following proposal components:
   a. Design Professional experience and qualifications.
   b. CxA qualifications and accreditations.
   c. Key support personnel experience and qualifications, including TAB and Building Automation Experience.
   d. Project approach.
   e. Design Professional location.
   f. Proposal quality.
   g. Proposed fee.
2. The Owner reserves the right to negotiate and accept any proposal, or to reject all proposals, and to offer to accept any proposal subject to the deletion of any item or group of items of work from the scope of work.
3. The Proposer shall be prepared to attend an interview as part of the evaluation process. The Proposer shall bear all costs associated with preparing the RFP and subsequent interviews.

Respondents’ proposals are due no later than 12:00 pm (Noon) on October 25, 2013 and shall be submitted electronically to both address listed below. Combine all requested materials in a single *.pdf file format.

(Jeff Gambrall) jeffery-gambrall@uiowa.edu and (Bob Tandy) robert-tandy@uiowa.edu

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Should you have any questions or comments, please contact:

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