CITY OF PORTSMOUTH
School Department

REQUEST FOR PROPOSALS
For
Middle School Building Systems Commissioning
RFP #49-10

Sealed proposals**, plainly marked, "RFP# 49-10, Middle School Commissioning"** addressed to the Finance/Purchasing Department, City Hall, 1 Junkins Avenue, Portsmouth, New Hampshire, 03801 will be accepted until **2:00 p.m. Thursday, May 20, 2010.** It is the City's intention that contract negotiations will be completed by **Wednesday June 2, 2010** for work to commence immediately.

The City of Portsmouth is seeking written proposals for commissioning of mechanical and electrical systems at the Portsmouth Middle School by an experienced commissioning provider.

Services required are:

- Review of Owner's requirements, building design intent and basis of design documentation.
- Incorporation of commissioning requirements into construction documents.
- Development and utilization of a commissioning plan.
- Verification of installation, functional performance, training and operation and maintenance documentation.
- Furnish a commissioning report that complies with NE CHPS prerequisite requirements.

PRE-PROPOSAL MEETING

A mandatory pre-proposal meeting will be held on **Wednesday, May 12 at 3 p.m.** to answer questions and clarify any project issues. Attendance is **required. Firms that do not attend will be disqualified.** The meeting will be held at: **Portsmouth Middle School,** 155 Parrott Ave., Portsmouth, NH.

The RFP is available on the City's at http://www.cityofportsmouth.com/finance/purchasing.htm or by contacting the Finance/Purchasing Department at the following number: (603) 610-7227. Addenda to this proposal, if any, including written answers to questions, will be posted on the City of Portsmouth website under the project heading. The addenda to this proposal will not be provided directly to the proposers.

The City of Portsmouth reserves the right to reject any or all proposals, to waive technical or legal deficiencies, and to accept any proposal that it may deem to be in the best interest of the City.

Portsmouth Middle School Building Systems Commissioning

PART 1 - GENERAL

A. The term "Commissioning Provider" is sometimes referred to as the "Commissioning Authority".

B. The City is seeking a Commissioning Authority (CxA) for building systems commissioning at the Portsmouth Middle School. The project includes an addition and major renovation of the existing building for a total project size of 130,000 square feet. The Project Construction Budget is approximately $29,000,000.

C. Project documents available for review can be accessed online at the **Middle School Dialogue Database** link: **http://www.cityofportsmouth.com.**

D. The CxA will satisfy the requirements of the Northeast Collaborative for High Performance Schools (NE CHPS) Protocol for New Construction and Major Renovations, Version 2.0 for Energy Efficiency Prerequisite 4 which include:

1. Review of building design intent and basis of design documentation.
2. Incorporation of commissioning requirements into construction documents.
3. Development and utilization of a commissioning plan.
4. Verification of installation, functional performance, training and operation and maintenance documentation.
5. Completion of a commissioning report.
6. Development of a systems and energy management manual.

E. The objective of commissioning is to provide documented confirmation that a facility fulfills the functional and performance requirements of the building owner, occupants, and operators.

1. The commissioning process shall establish and document the owner's criteria for system function, performance, and maintainability (Design Intent); and to also verify and document compliance with these criteria throughout design, construction, start-up, and the initial period of operation.

F. Complete operation and maintenance (O&M) manuals, as well as training on system operation, shall be provided to the building operators to ensure the building continues to operate as intended. The commissioning provider should be involved throughout the project from design through the warranty phase.

PART 2 - SCOPE OF SERVICES

A. Develop commissioning specifications to be integrated into the construction documents for the construction documents that clearly specify the responsibilities and tasks to be performed. Of particular importance are the delineation of the contractors'responsibilities regarding documentation, functional performance testing, occupant and operator training, and the creation of the operations and maintenance manuals.

B. Develop a commissioning plan that includes a list of all equipment and systems to be commissioned, delineation of roles for each of the primary commissioning participants, and details on the scope, timeline, and deliverables throughout the commissioning process.

C. Verify installation, functional performance, training, and operations and maintenance documentation for each commissioned system and feature.

D. Complete a commissioning report - The report must show that the building's systems have met the design intent and specifications, have been properly installed, are performing as expected, and that proper O&M documentation and training have been provided.
   1. The report should include a compilation of all commissioning documentation described in NE CHPS Energy Efficiency prerequisite 4.
   2. Include complete functional testing results and forms and note any items that have not been resolved at the time of the report is issued.

E. Develop a system and energy management manual - This manual is intended to improve and enhance the documentation of system intent and operation and to help the building owner continue to operate the building systems as efficiently and effectively as possible throughout the life of the facility. The manual should cover the operations and maintenance of all HVAC and lighting systems, and the facility staff should be trained in the use of the manual.

PART 3 - SCHEDULE

A. The City anticipates a construction start date in March 2011 with completion by September 2013. The building will be occupied during construction while school is in session. Currently construction is scheduled to be constructed in multiple phases to accommodate the school schedule with construction phasing to be defined during the Design Development phase.

B. Commissioning will be a three tiered activity to accommodate the construction path:
   1. MEP performance in the new addition.
   2. MEP systems extended to the renovated existing facility.
   3. 100% commissioning upon connection of systems between both buildings.

C. Currently the project is beginning the Design Development phase. Pertinent reports and drawings will become available when approved and released. Design documents are anticipated to be released in May 2010. The construction documents are planned to be completed by November 2010.

D. Design Phase tasks include:
   1. Assemble commissioning team, hold a scoping meeting and identify responsibilities.
   2. Attend regularly scheduled commissioning meetings as mutually agreed upon with the architect, engineers and construction manger.
   3. Review the design intent documentation for clarity and completeness.
   4. Coordinate the commissioning work during design.
   5. Develop the design phase commissioning plan.
   6. Perform focused reviews of the design, drawings and specifications at various stages of development (during Design Development and Construction Document phases).
   7. Assist and review the development and updating of the Design Record documentation by design team members (Design Intent, Design Narrative; Design Basis).
   8. Develop a draft construction phase commissioning plan using an Owner-approved outline.

9. Develop full commissioning specifications for all commissioned equipment. Coordinate this with the architect and engineers and integrate the commissioning specifications into the overall project specification package.
10. One or more of the following documents can be used as a guide for content, rigor and format:
    a. Model Commissioning Plan and Guide Specifications, USDOE/FEMP; Portland Energy Conservation, Inc. (PECI),
    b. The HVAC Commissioning Process, ASHRAE Guideline 1-1996. The PECI Document can be downloaded free at **http://www.peci.org** and a copy of the ASHRAE document can be obtained by contacting ASHRAE at 404/636-8400.
11. The commissioning specification will include a detailed description of the responsibilities of all parties, details of the commissioning process; reporting and documentation requirements, including formats; alerts to coordination issues, deficiency resolution; construction checklist and startup requirements; the functional testing process; specific functional test requirements, including testing conditions and acceptance criteria for each piece of equipment being commissioned.
12. Coordinate a controls integration meeting where the electrical and mechanical engineers, owner's representative, and the CxA discuss integration issues between equipment, systems and disciplines to ensure that integration issues and responsibilities are clearly described in the specifications.

E. Bid Phase

1. Attend pre-bid meeting to answer commissioning related questions.

F. Construction Phase

1. Perform the tasks and functions in the specifications ascribed to then CxA.
2. Coordinate and direct the commissioning activities in a logical, sequential and efficient manner using consistent protocols and forms, centralized documentation, clear and regular communications and consultations with all necessary parties, frequently updated timelines and schedules and technical expertise.
3. Coordinate the commissioning work with the construction manager to ensure that commissioning activities are being incorporated into the master schedule.
4. Revise, as necessary, the construction phase commissioning plan developed during design, including scope and schedule.
5. Plan and conduct regularly scheduled commissioning meetings as mutually agreed with the architect, engineers and construction manager including preparation and distribution of minutes.
6. Request and review additional information required to perform commissioning tasks, including O&M materials, contractor start-up and checkout procedures. Before startup, gather and review the current control sequences and interlocks and work with contractors and design engineers until sufficient clarity has been obtained, in writing, to be able to write detailed testing procedures.
7. Review normal contractor submittals applicable to systems being commissioned for compliance with commissioning needs, concurrent with the A/E reviews.

8. Review requests for information and change orders for impact on commissioning and owner's objectives.
9. Review coordination drawings to ensure that trades are making a reasonable effort to coordinate.
10. Write and distribute construction checklists for commissioned equipment.
11. Develop an enhanced start-up and initial systems checkout plan with contractors for selected equipment.
12. Perform site visits, as necessary, to observe component and system installations.
    a. Attend selected planning and job-site meetings to obtain information on construction progress.
    b. Review construction meeting minutes for revisions/substitutions relating to the commissioning process. Assist in resolving any discrepancies.
13. Each system shall be 100% tested prior to commissioning; sampling is not acceptable.
14. Perform the following pre-functional tasks:
    a. Witness HVAC piping pressure test and flushing, sufficient to be confident that proper procedures were followed. Include testing documentation in the Commissioning Record.
    b. Witness any ductwork testing and cleaning sufficient to be confident that proper procedures were followed. Include documentation in the Commissioning Record.
    c. Document construction checklist completion by reviewing completed construction checklists and by selected site observation.
    d. Document systems startup by reviewing start-up reports and by selected site observation.
    e. Approve air and water systems balancing by spot testing and by reviewing completed reports and by selected site observation.
15. With necessary assistance and review from installing contractors, write the functional performance test procedures for equipment and systems. This will include manual functional testing, energy management control system trending and may include stand-alone datalogger monitoring.
16. Coordinate witness and document manual functional performance tests performed by installing contractors.
17. Coordinate retesting as necessary until satisfactory performance is achieved. The functional testing shall include operating the system and components through each of the written sequences of operation, and other significant modes and sequences, including startup, shutdown, unoccupied mode, manual mode, staging, miscellaneous alarms, power failure, security alarm when impacted and interlocks with other systems or equipment. Sensors and actuators shall be calibrated during construction check listing by the installing contractors, and spot-checked by the commissioning provider during functional testing.
18. Analyze functional performance trend logs and monitoring data to verify performance.
19. Tests on respective HVAC equipment shall be executed, if possible, during both the heating and cooling season. However, some overwriting of control values to simulate

conditions shall be allowed. Functional testing shall be done using conventional manual methods, control system trend logs, and read-outs or standalone dataloggers, to provide a high level of confidence in proper system function, as deemed appropriate by the CxA and the Owner.

20. Prepare test plans for, assist with execution of, and document tests of commissioned equipment overseen by regulatory authorities and ensure that such tests meet the testing rigor desired by the Owner.
21. Maintain a master issues log and a separate record of functional testing. Report all issues as they occur directly to the Owner's Representative. Provide directly to the Owner's Representative written progress reports and test results with recommended actions.
22. Review equipment warranties to ensure that the Owner's responsibilities are clearly defined.
23. Oversee and review the training of the Owner's operating personnel.
24. Oversee the videotaping of this training.
25. Review the creation of a classroom "Owner's Manual" that is to be kept in the classroom.
26. Review the preparation of the O&M manuals for commissioned equipment.
27. Compile a Commissioning Record, which shall include:
    a. A brief summary report that includes a list of participants and roles, brief building description, overview of commissioning and testing scope, and a general description of testing and verification methods. For each piece of commissioned equipment, the report should contain the disposition of the commissioning provider regarding the adequacy of the equipment, documentation and training meeting the contract documents in the following areas:
        1. Equipment meeting the equipment specifications,
        2. Equipment installation,
        3. Functional performance and efficiency,
        4. Equipment documentation, and
        5. Operator training.
    b. All outstanding non-compliance items shall be specifically listed. Recommendations for improvement to equipment or operations, future actions, commissioning process changes, etc. shall also be listed. Each non-compliance issue shall be referenced to the specific functional test, inspection, trend log, etc. where the deficiency is documented.
    c. Also included in the Commissioning Record shall be the issues log, commissioning plan, progress reports, submittal and O&M manual reviews, training record, test schedules, construction checklists, start-up reports, functional tests, and trend log analysis.
28. Compile a Systems Manual that consists of the following:
    a. Owner's Project Requirements (by Owner);

b. Design Narrative and Basis of Design (by designer);

c. Performance Metrics, if completed during design; space and use descriptions, single line drawings and schematics for major systems (by designer); control drawings, sequences of control (by contractor); and a table of all setpoints and implications when changing them, schedules, instructions for operation of each piece of equipment for emergencies, seasonal adjustment, startup and shutdown, instructions for energy savings operations and descriptions of the energy savings strategies in the facility, recommendations for recommissioning frequency by equipment type, energy tracking recommendations, and recommended standard trend logs with a brief description of what to look for in them (all by commissioning provider).

29. Commissioning will be completed before Final Acceptance of the Project.

G. Warranty Period :

1. The one year warranty period for all commissioned systems will begin upon completion of all construction, tentatively scheduled for September 2013.

2. Coordinate and supervise required opposite season or deferred testing and deficiency corrections and provide the final testing documentation for the Commissioning Record and O&M manuals.

3. Return to the site at 10 months into the 12 month warranty period and review with facility staff the current building operation and the condition of outstanding issues related to the original and seasonal commissioning.

4. Also interview facility staff and identify problems or concerns they have with operating the building as originally intended. Make suggestions for improvements and for recording these changes in the O&M manuals.

5. Identify areas that may come under warranty or under the original construction contract. Assist facility staff in developing reports and documents and requests for services to remedy outstanding problems.

PART 4 - SYSTEMS TO BE COMMISSIONED

A. The following systems and assemblies will be commissioned:

1. Central building automation system and mixing systems;
2. All equipment of the heating, ventilating and air conditioning systems;
3. Electrical;
4. Scheduled or occupancy sensor lighting controls; Daylight dimming controls;
5. Emergency power generators and automatic transfer switching;
6. Uninterruptible power supply systems;
7. Equipment sound control systems and testing;
8. Paging systems;
9. Security system;
10. Data and communication;
11. Life safety systems (fire alarm, egress pressurization, fire protection);
12. Plumbing; Fire protection Domestic water pumping;

13. Refrigeration systems;
14. Building envelope;
15. Laboratory, hoods and pressurization.

PART 5 - DESIRED QUALIFICATIONS

A. The required expertise for this project will be based on skill and experience set of the prime firm making the proposal. A member of that firm will be the designated Commissioning Authority (CxA). The CxA must be fully qualified to commission the above listed systems.

B. If the CxA or prime firm does not have sufficient skills to commission a specific system, the prime firm shall subcontract with a qualified party to do so. That party's qualifications shall be included and clearly designated in the response to this RFP.

C. The City seeks the following skills and experience:

1. The CxA shall have documented commissioning authority experience in at least two building projects of 120,000 square feet or more.
2. Extensive experience in the operation and troubleshooting of HVAC systems, energy management control systems, and security systems.
3. A minimum of five (5) full years of extensive field experience in this type of work is required.
4. Knowledgeable in building operation and maintenance and O&M training.
5. Knowledgeable in test and balance of both air and water systems.
6. Experienced in energy-efficient equipment design and control strategy optimization.
7. Direct experience in monitoring and analyzing system operation using energy management control system trending and stand-alone data logging equipment.
8. Excellent verbal and writing communication skills. Highly organized and able to work with both management and trade contractors.
9. Experienced in writing commissioning specifications.
10. A bachelor's degree in Mechanical Engineering, and P.E. certification is desired.
11. Membership of the Building Commissioning Association will be considered a plus.
12. If the commissioning firm's personnel or sub-consultants change for this project, the Owner must review and approve the replacement personnel, in advance. The replacement personnel shall have, at minimum, equivalent qualifications as the original personnel.

PART 6 - PROPOSAL

A. **A mandatory pre-proposal meeting** will be held to answer questions and clarify any project issues. The meeting will be held at Portsmouth Middle School, 155 Parrott Ave, Portsmouth on **Wednesday, May 12, 2010 at 3 p.m.**

B. Proposals shall provide sufficient information to allow the Owner to evaluate the CxA's approach, experience, staff and availability.

C. The proposer shall:

1. Limit it's proposal to 15 single-sided pages, including graphics. A letter of introduction, section dividers, detailed resumes and the sample work products of item five below are not included in this limit.
2. Have the proposal signed by an officer of the proposing firm with the authority to commit the firm.
3. Fill out the attached Commissioning Firm Experience form and the Commissioning Task Listing form (Exhibits 2 and 3) for each firm on the team. List no more than four projects in Exhibit 3.
4. Provide an organization chart for managing and executing this contract.
5. List the individual(s) who will serve as the lead Commissioning Provider for the design phase and for the construction phase of the contract.
6. Provide resumes for key staff and subconsultants. The resumes shall include specific information about expertise in commissioning tasks, (e.g. design reviews, specification writing, commissioning management, troubleshooting, test writing, test execution, energy management, sustainable design, etc.).
7. Briefly describe "relevant" experience (project phasing, life cycle costing, testing, adjusting and balancing, building simulation, sustainable design, fume hoods, envelope, IAQ, solar, clean rooms, campus projects, etc.) of the proposer's team in the following areas (list involvement of key team members):
    a. Projects similar to this one;
    b. O&M experience;
    c. Energy-efficient equipment design and control strategy optimization;
    d. Project and construction management;
    e. System design (specify);
    f. Troubleshooting.
8. Describe your proposed approach to managing the project expertly and efficiently, including distribution of tasks, travel, and duration of which staff will be on site during what periods of time, etc. Describe what approach you will take to integrate the commissioning into the normal design and construction process in order to minimize potential time delays. Describe what you will do to foster teamwork and cooperation from contractors and design team and what you will do to minimize adversarial relationships. Describe how you intend to determine the appropriate level of commissioning effort for the various systems and equipment.
9. As an attachment, provide the following work products that members of the proposer's team developed. List the team member who actually wrote the document and the projects on which they were used. Work from the designated Commissioning Provider is preferred.
    a. Commissioning plan that was executed (the process part of the plan);
    b. Commissioning specifications;
    c. An actual functional test procedure form that was executed.

D. Provide an hourly rate for each team member, along with rates and fees for all other costs the Owner could incur from the CxA.

E. The proposer is free to suggest changes and improvements to the scope of services. For this proposal, it is assumed by the Owner that all of these tasks will be completed, unless any proposed changes to the task list are clearly highlighted and noted in the respondents' proposal.

1. Provide a fixed, lump sum total cost to accomplish the work for the design phases. All task amounts include associated meetings, progress reports and direct costs (travel, mileage, etc.). Use the budget table shown in Exhibit 4 (or a suitable equivalent) to provide a cost breakdown. Also provide an hourly rate for each team member for work that may exceed the scope.
2. For planning purposes, the proposer must also provide a "not to exceed" price for the Construction and Warranty Phase tasks using the form below. Also provide an hourly rate for each team member for work that may exceed the scope. For each phase, provide the percentage level of effort for each primary team member.
3. Provide a statement of proposer's liability insurance coverage (type, and dollar amount of coverage). Proof of this insurance will be required prior to the award of this contract to the winning proposal.
4. The respondent must submit three (3) copies of the proposal, each signed by an authorized representative of the
5. Proposals must be submitted to arrive no later than 2:00 p.m. Thursday, May 13, 2010. to:

   Finance/Purchasing Department, City Hall
   1 Junkins Avenue
   Portsmouth, New Hampshire, 03801

PART 7 - INSURANCE REQUIREMENTS

A. Commissioning Provider will be required to maintain insurance throughout the period of the contract in sufficient amounts as to protect the Commissioning Provider from all claims and liabilities for damages for bodily injury, including accidental death, and for property damage, which may arise from operations under this Contract whether such operation by himself or by anyone directly or indirectly employed by him. The following amounts of insurance are required:

1. Comprehensive General Liability:
   Bodily Injury or Property Damage - $1,000,000
2. Automobile and Truck Liability:
   Bodily Injury or Property Damage - $1,000,000
3. Professional Liability:
   Errors and Omissions - $1,000,000
4. Workers Comprehensive Insurance coverage for all people employed

PART 8 - REFERENCES

A. Northeast Collaborative for High Performance **Schools (NE CHPS) Protocol for New Construction and Major Renovations, Version 2.0** for Energy Efficiency Prerequisite 4, and enhanced commissioning per Energy Efficiency Credit 3.

B. **CHPS Best Practices Manual**, vol. 2, Guideline GC5: Contractor's Commissioning Responsibilities, http://www.chps.net.

C. **ASHRAE Guideline 1-1996**: The HVAC Commissioning Process and ASHRAE Guideline 4-1993: Preparation of Operations & Maintenance Documentation for Building Systems, http://www.ashrae.org.

D. **LEED Reference Guide**, Energy and Atmosphere, U.S. Green Building Council, http://www.usgbc.org.

PART 9 - SELECTION PROCESS

A. The Owner's staff shall review all proposals and select and rank the three most qualified Commissioning Providers. The selection and ranking shall be based on the criteria listed below. The order in which the criteria appear does not indicate the importance, ranking or weighting that will be used in the evaluation.

1. Commissioning Provider's qualifications (see **PART 5**).
2. Proposed approach to the project.
3. Successful experience performing similar projects.
4. Experience and availability of the staff to be assigned to perform the services required by the Project.
5. Cost and projected timeline to accomplish the scope of work.

B. The Owner will negotiate with the highest ranked Commissioning Provider on the tasks, staffing, schedule and a maximum not-to-exceed fee consistent with Commissioning Provider's proposal and fair and reasonable to the Owner. Negotiations may be terminated if they fail to result in a contract within a reasonable amount of time. Negotiations will then ensue with the second ranked Commissioning Provider, and if necessary, the third ranked Commissioning Provider. It is the City's intention that contract negotiations will be completed by **June 2, 2010** for work to commence immediately.

C. By submitting a proposal, the firm consents to the City undertaking such investigation as it deems in its best interest to investigate the firm's qualifications. The submitting firm assumes all responsibility for any costs it incurs in preparing a response to this Request for Proposal.

The City of Portsmouth reserves the right to reject any and all proposals, to waive technical or legal deficiencies, and to accept any proposals that are deemed to be in the best interest of the city.

Exhibit 1: Focused Design Review Scope

WRITER: CHECK THE AREAS FOR WHICH YOU WANT THE COMMISSIONING FIRM TO FROVIDE INFUT.

The commissioning provider will perform a review of the design documents for the following issues at the phases checked for each system commissioned.

Design Area	Review Description	Schematic Design Review	Design Develmt. Review	Contract Document Review #1	Contract Document Review #2
Design narrative and design basis	Ensure that design narrative and basis of design are clear, complete, and meet the original Owner's Project Requirements.				
Commissioning facilitation	Review to facilitate effective commissioning (see Exhibit 2). (sufficient accessibility, test ports, monitoring points, etc.)				
Energy efficiency	Review for adequacy of the effectiveness of building layout and efficiency of system types and components for building shell, HVAC systems and lighting systems.				
Control system & control strategies	Review X HVAC, X lighting, X fire control, X emergency power, X security control system, strategies and sequences of operation for adequacy and efficiency.				
Operations and maintenance (O&M)	Review for effects of specified systems and layout toward facilitating O&M (equipment accessibility, system control, etc.).				
Indoor environmental quality	Review to ensure that systems relating to X thermal, X visual, X acoustical, X air quality comfort, X air distribution maximize comfort and are in accordance with the Owner's Project Requirements. (See Exhibit 3 for IAQ checklist).				
O&M documentation	Verify adequate building O&M documentation requirements.				
Training	Verify adequate operator training requirements.				
Commissioning specifications	Verify that bid documents adequately specify building commissioning, including testing requirements by equipment type.				
Owner's design guideline or standard	Verify that the design complies with the owner's own design guideline or standard.				
Environmental sustainability	Review to ensure that the X building materials, X landscaping, X use of water, X waste management create a low impact on the environment and are in accordance with Owner's Project Requirements.				
Mechanical	Review the mechanical concepts/design for enhancements.				
Electrical	Review the electrical concepts/systems for enhancements.				
Envelope	Review envelope design and assemblies for thermal and water integrity, moisture vapor control and assembly life.				
Structural	Review the structural concepts/design for enhancements.				
Functionality	Ensure the design maximizes the functional needs of the occupants.				
Life cycle costs	Perform a life cycle assessment of the primary competing mechanical systems relative to X energy efficiency, X O&M, X IEQ, X functionality, X sustainability.				

Exhibit 2: Commissioning Firm Experience

FILL OUT A SEPARATE FORM FOR EACH FIRM ON THE TEAM

Company Name		Contact Person	Title
Address	City	State/Prov	Zip/Postal Code
Telephone	Fax	E-Mail	

Description of Business

Commissioning Activities

Percentage of overall business devoted to commissioning services _____%

How long has the firm offered commissioning services _____years

Average number of commissioning projects performed each year: _____projects

Systems or technologies for which firm has provided commissioning services (check all that apply)

- ☐ Pkg. or split HVAC
- ☐ Chiller system
- ☐ Boiler system
- ☐ Energy Mgmt. Sys.
- ☐ Variable Freq.Drives
- ☐ Lighting Controls
- ☐ Daylighting
- ☐ Electrical, general
- ☐ Electrical, emerg. power
- ☐ Envelope
- ☐ Fire/Life Safety
- ☐ Plumbing
- ☐ Commercial refrigeration
- ☐ Telecommunications
- ☐ Thermal Energy Storage
- ☐ Labs & Clean Rooms
- ☐ Other: _____

Number of registered engineers on staff who have directed commissioning projects: _____

The firm has provided commissioning services in the following: (check all that apply)

Building Sector	New Construction Major Renovation	Existing Building Tune-up	Equipment Replacement
Office or retail	❑	❑	❑
Grocery	❑	❑	❑
Hospitals	❑	❑	❑
Laboratories	❑	❑	❑
Schools or universities	❑	❑	❑
Industrial / Manufacturing	❑	❑	❑
Special purpose–prisons, museums, libraries, etc.	❑	❑	❑

Exhibit 3: Commissioning Task Experience For Similar Projects

FILL OUT A SEPARATE FORM FOR EACH FIRM ON THE TEAM

(Enter "X" if by own firm, "S" if by sub-consultant)

	Project (Name, Date, Bldg Size, Type, new or existing)			
	Owner Contact (Title, City, State, and Phone)			
	Name & Role of Persons(s) Assigned to Project by Firm (identify any sub-consultants)			
	Systems Commissioned (Identify if tested by sub-consultants)			
Commissioning Tasks Performed	Reviewed design and provided comment during design phase			
	Wrote the commissioning plan			
	Wrote commissioning specs for construction team			
	Wrote functional test procedures			
	Witnessed and documented functional tests			
	Performed functional tests (hands-on)			
	Used data loggers or EMS trend logs for testing			
	Developed or approved staff training			
	Reviewed completed O&M manuals			
Management	Commissioning provider was part of the firm			
	Supervised a sub-consultant commissioning provider to our firm.			
	Worked with a commissioning provider hired by others			

Exhibit 4: Budget Table

Task	Budget ($)
Pre-Design and Design	
1 Develop or review Owner's Project Requirements (per scope)	
2 Design documents reviews of plans, specifications; narratives	
3 Commissioning plan, specification development and bid meeting	
4 Other	
Subtotal	
Construction	
1 Commissioning plan and submittal reviews	
2 Construction checklists; observation of installation and startup	
3 Functional test writing	
4 Functional test execution and documentation	
5 O&M manual review and training review	
6 Compilation of Commissioning Record	
7 Systems Manual development	
8 Other	
Subtotal	
Warranty Period	
Seasonal testing	
Near-warranty end review	
Subtotal	
Total	