

**GRAND RAPIDS PUBLIC SCHOOLS (GRPS)
REQUEST FOR PROPOSAL (RFP) – COMMISSIONING SERVICES
2023 BOND PROGRAM
ATTACHMENT A2 – SCOPE OF SERVICES
FEBRUARY 7, 2025**

The following systems are intended to be Commissioned:

All HVAC Equipment & Systems
Building Automation Systems, Controls and Sequence of Operations
Lighting Controls – Interior & Exterior
Emergency Standby Generators (as applicable)
Domestic Hot Water Systems (as applicable)
Other Systems as noted

Scope of Services

ASHRAE Guideline 0-2019 shall be the basis for the Commissioning Process.

The CA shall be responsible for carrying out the following tasks. The responding Firm is free to suggest changes and improvements to the following task list. It is assumed by the Owner that all of these tasks will be completed by the CA, unless any proposed changes to the following task list are “clearly” highlighted and noted in the Firm’s Proposal. For this proposal, Construction Phase and Warranty Phase Services are required.

Commissioning Planning and Design Phase Services

Design Development (where possible given individual project statuses)

1. Meet with the Owner, and their consultants, to establish team responsibilities, methods of approval, project procedures and schedule requirements.
2. Consult with the Owner, and their consultants, to determine its criteria and objectives regarding design quality and the Owner’s budget for the Project.
3. Tour the Owner’s existing facilities; review the existing mechanical / electrical systems and operational aspects that may affect the Project.
4. Assist Owner’s architects and engineers in developing specifications for mechanical and electrical system components and controls.
5. Review the Design Development Documents and provide comments to the Owner and their consultants.
6. Develop commissioning requirements, sequences, phasing plans and checklists in conjunction with the Owner and their consultants.
7. Attend Design Development coordination and review meetings as required and requested to assure design solutions meet Project and Owner requirements.
8. Assist Construction Manager in developing Design Development estimates including value engineering as necessary to meet the Owner’s budget.

Construction Documents

1. Assist Owner’s architects and engineers in finalizing specifications for mechanical and electrical system components and controls.

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2. Finalize commissioning requirements, sequences, phasing plans and checklists in conjunction with the Owner, and their consultants.
3. Attend Construction Document coordination and review meetings as required and requested to assure design solutions meet Project and Owner requirements.
4. Review the final Construction Documents and provide comments to the Owner, and their consultants.
5. Assist AE in developing final bid packages, schedules and phasing plans, scopes of work and general conditions as necessary to meet the Owner's Program.

Bidding Phase

1. Assist the Owner and its Consultants in reviewing and analyzing bids.
2. Attend pre-bid meetings, post bid interviews and assist in drafting award recommendations.

Construction Phase, Documentation and Training Phase Services

1. Perform the tasks and functions in the specifications ascribed to the Commissioning Agent
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 and Contractors/Subcontractors, to ensure that commissioning activities are being incorporated into the Project schedule.
4. Plan and conduct commissioning meetings as needed and distribute minutes.
5. 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 work with contractors and design engineers to adjust final testing procedures.
6. Review normal Contractor submittals applicable to systems being commissioned for compliance with commissioning needs.
7. Review requests for information, bulletins, and change orders pertaining to commissioning.
8. Write and distribute construction checklists for commissioned equipment.
9. Develop an enhanced start-up and initial systems checkout plan with Contractors for selected equipment.
10. Perform site visits, as necessary, to observe component and system installations. Attend selected planning and job-site meetings to obtain information on construction progress. Review construction meeting minutes for revisions/substitutions relating to the commissioning process. Assist in resolving any discrepancies.

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11. **For terminal heating and cooling devices, a minimum of 25% must be verified for compliance with start-up and operating procedures. If consistent deficiencies are discovered additional devices may require verification.**
12. Verify the completion of the following pre-functional tasks:
 - a. HVAC piping pressure test and flushing, sufficient to be confident that proper procedures were followed. Include testing documentation in the Commissioning Record.
 - b. 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. Document air and water systems balancing by reviewing completed reports and by selected site observation.
13. With necessary assistance and review from installing Contractors, write the functional performance test procedures for equipment and systems. This may include manual functional testing, energy management control system trending and may include stand-alone datalogger monitoring.
14. Coordinate, witness and document manual functional performance tests performed by installing Contractors. 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 Agent during functional testing. Analyze functional performance trend logs and monitoring data to verify performance. 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 stand-alone dataloggers, to provide a high level of confidence in proper system function, as deemed appropriate by the commissioning Agent and the Owner.
15. 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.
16. 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.

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17. Review equipment warranties to ensure that the Owner’s responsibilities are clearly defined.
18. Oversee and review the training of the Owner’s operating personnel.
19. Review the preparation of the O&M manuals for commissioned equipment.

20. 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 Agent regarding the adequacy of the equipment, documentation and training meeting the contract documents in the following areas:
 - i. Equipment meeting the equipment specifications
 - ii. Equipment installation
 - iii. Functional performance and efficiency
 - iv. Equipment documentation
 - v. 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.
21. Compile a Systems Manual that consists of the following: Owner’s Project Requirements (by Owner); Design Narrative and Basis of Design (by Architect); Performance Metrics, if completed during design; space and use descriptions, single line drawings and schematics for major systems (by Architect); 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 Agent).
22. Review and verify air and water balancing reports for commissioned equipment.

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Warranty Period Services

1. 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.
2. Return to the site at 11 months into the 24-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. 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. 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. Provide written report addressing the items noted above.

Alternate No. 1

1. Enhanced Commissioning (LEED – base level)
2. Project must complete the following commissioning process (CxP) activities for mechanical, electrical, domestic hot water, and renewable energy systems and assemblies in accordance with ASHRAE Guideline 0-2005 and ASHRAE Guideline 1.1-2007 for HVAC&R systems, as they relate to energy, water, indoor environmental quality and durability.
 - Review contractor submittals
 - Include systems manual requirements in construction documents
 - Include operator and occupant training requirements in construction documents
 - Verify systems manual updates and delivery
 - Verify seasonal testing
 - Review building operations 10 months after substantial completion
 - Develop an on-going commissioning plan

Alternate No. 2

1. Return to the site at 23 months into the 24-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. Survey 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. 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. Provide written report addressing the items noted above.