TOWN OF ORONO
NOTICE AND INFORMATION TO BIDDERS
August 2017

The Town of Orono will receive sealed bids for the purchase of BAS repair and update in the Orono Town Office building located at 59 Main Street, Orono, Maine. In accordance with this Notice and Information to Bidders, Specifications/Bid Forms are enclosed for bidding.

The Town of Orono will make an award of the bid on the basis of price, delivery time, and meeting specifications. The Town reserves the right to reject any or all bids in whole or in part, and is not necessarily bound to accept the lowest bid if that bid is contrary to the best interests of the Town. The Town of Orono also reserves the right to negotiate with any bidder if that bidder is deemed to be most suited to the Town's needs. In the case of a tie bid, the bid, which has been received first, will be awarded the bid.

Bidders shall submit their proposals on the enclosed Bid Forms. Terms, cash discounts, and delivery dates are to be specified. The price quoted is to be less any applicable Federal and Maine taxes.

All deviations from the specifications must be noted in detail by the bidder, in writing, at the time of submittal of the formal bid. The absence of a written list of specification deviations at the time of submittal of the bid will hold the bidder strictly accountable to the Town of Orono for the specifications as written. Any deviation from the specifications as written, and not previously submitted as required by the above will be grounds for rejection of the bid.

An official bid award is anticipated for Monday, September 11, 2017. Price must be held firm for forty-five days after submittal.

Bids shall be placed in a sealed envelope marked "**Orono Town Office BAS Repair and Update**" and submitted to the Town of Orono, 59 Main St, Orono, ME 04473, **on or before 10:00AM on Friday, September 1, 2017** at which time they will be opened. Bidders are invited to attend the opening at the Town Office; a decision to award the bid will not be made at that time. **FAXED or E-MAILED BIDS WILL NOT BE ACCEPTED.** Should you have any questions, please contact David Pinkham, Facilities Director at (207)458-7445 or email dpinkham@orono.org.

Sophia L. Wilson
Town Manager
59 Main Street
Orono, ME 04473
(207) 866-2556

Town of Orono

Request for Proposals

Town Office BAS Repair and Update Project

The Town of Orono is seeking proposals for a qualified contractor to provide BAS repair and update at the Orono Town Office. This building is located at 59 Main St, Orono, Maine.

Sealed proposals clearly marked **"Town Office BAS Repair and Update"** are due at the **Orono Town Office, 59 Main Street, Orono, ME 04473 on Friday, September 1, 2017 no later than 10:00am** at which time they will be publicly opened. No award will be made at that time. Proof of Worker' s Compensation and General Liability insurance are required.

Questions should be directed to David Pinkham, Facilities Director at 207-458-7445 or via email at dpinkham@orono.org

No fax or e-mail proposals will be accepted. The Town of Orono reserves the right to reject any and all proposals, and waive any irregularities.

Bid Schedule

1. **Pre-Bid Meeting will be held on Friday, August 25, 2017 at 10am** at the Orono Town Office 59 Main Street, Orono, Maine
2. **Sealed Bids are due on Friday, September 1, 2017 at 10am** at the Orono Town Office, 59 Main St., Orono, ME 04473.

See Attached Project Scope: Boiler System Controls Update (BAS)

Proposal Requirements:

- **General Statement of Qualifications:** Provide a general statement of qualifications on company letterhead that demonstrates the firm's qualifications and intent to meet the terms of the agreement. In this statement, demonstrate the firm's understanding of the requirements of the agreement, and make note of any important facts that make the firm especially qualified for this work.
- **Completed Bid Form - Attached**

- **References:** Provide no less than three independent references that can demonstrate or confirm the contractor's ability to successfully perform the services required under the scope of work. These references must include the owner's name and contact information, the type of services provided, and when the services were provided.

- **Insurance:** Provide proof of the following insurance coverage and list the Town of Orono as additionally insured:

  Workers Compensation Insurance (or a Pre-Determination Letter from the Workers Compensation Board indicating exemption from insurance requirement) in accordance with Maine Law

  General Liability: $500,000 each occurrence, $5,000 medical expense, $1,000,000 general aggregate, $1,000,000 automobile liability - each accident.

TOWN OF ORONO

REQUEST FOR PROPOSALS
ORONO TOWN OFFICE BOILER, CIRCULATOR, AND CONTROLS UPDATE

BID FORM

Due: Friday, September 1, 2017 by 10:00 AM

Contractor Name:_____

Contact Name: _____

Contact Phone #: _____

Address: _____

_____

Bid Price for Orono Town office Boiler, Circulator and Controls update as outlined in the above Request for Proposals:

Equipment Quoted: _____

Total Bid Price: _____

The Bid Prices specified above and on the schedule of items is considered valid for 45 days from the stated bid opening date.

The Town of Orono reserves the right to reject any and all bids and waive irregularities that do not affect the substantive provisions thereof.

_____ _____

Authorized Contractor's Representative Signature Date

Signature indicates the proposer has a full understanding of the work as described in this Request for Proposals and the intent to complete the work as directed by the Town of Orono.

TOWN OF ORONO
TOWN OFFICE HVAC INSTRUMENTATION AND CONTROL

The intent of this project is to repair and upgrade the existing Building Automation System (BAS) with a 100% Open and Non-Proprietary Building Automation and Control system built on the Tridium Niagara N4 platform or equivalent.

The existing system is a Proprietary Honeywell LANStation system which utilizes various controllers throughout the facility at different pieces of equipment.

The existing front end computer will be replaced with an Open JACE 8000 or equivalent controller which will sit on the building's LAN network and serve up the GUI by way of an Integrated Web Browser. The new controller will incorporate all existing controllers into the new station. The existing controllers will need to be setup to utilize an Open XL lO or equivalent module which will allow these controllers to be programmable and configurable directly within any vendor's version of Niagara AX/N4.

Additionally, the new boilers and pumps will need to be integrated into the system using a new open and freely programmable controller, as well as a new fin tube zone on the second floor. All controllers must be capable of being programmed or configured directly from within any vendor's version of Niagara AX/N4, please see the spec below for more information on acceptable systems.

Once completed, all system components are to be thoroughly checked for proper operation

SPECIFICATION

A. All Control Contractors must be pre-vetted by the Owner. This list will be provided as an amendment after the completion of the site visit. Any interested control contractors that want to be included on the list of pre-vetted control contractors must be present at the site walkthrough, where they will receive instructions on how to be included on the pre-vetted list for this project.

B. The Open Protocol of choice for this project is BACnet. Herein, any Open Protocol

Controller referenced in this document shall be a native BACnet controller or device. AH controllers for this project will natively utilize the BACnet Protocol without the use of a Gateway. Gateways that may be necessary to interface with specific equipment manufacturer's equipment or systems must be submitted for approval.

C. The intent of this specification is to provide and install an Open Source Non-Proprietary Building Automation Control System (BACS) based on the Tridium Niagara AX/N4 Platform or equivalent and a network of freely programmable interoperable open protocol digital controllers. The Interoperable controllers must be fully programmable via any vendor's version of the Niagara Work. Bench. Controllers that are not programmable or configurable directly within any vendor's version of the Niagara AX/N4 Workbench are not acceptable and will be rejected.

D. Products requiring a licensed, non-embedded, off-site programming tool are not acceptable. Open source as referred to herein must mean that the Tridium Niagara Network Area Controller or equivalent and the Interoperable Digital Controllers (JDC) products are available from multiple contractor and vendor sources, affording the Owner freedom of choice and competitive bidding for the initial installation of the BACS and future system expansions and modifications not limited by contractor, vendor or networking protocol. No territorially restricted OEM brands, single vendor or "branch only" products are acceptable. All products must be available for purchase by any qualified contractor that the Owner chooses to do the initial installation and any future expansion or modifications.

E. AJI JACE's and Controllers must be fully programmable or configurable from within any vendor's version of the Niagara AX/N4 Platform. Controllers that require a separate or 3rd party programming tool are not acceptable and will be rejected.

F. Contractor must be an authorized and approved representative of the product which they propose to install.

G. Furnish all labor , materials, equipment, and service necessary for a complete and operating Building Automation Control System (BACS), utilizing Direct Digital Controls as shown on the drawings and as described herein. Drawings are diagrammatic only.

H. All labor, material, equipment and software not specifically referred to herein or on the plans, that is required to meet the functional intent of this specification, must be provided without additional cost to the Owner.

I. The Owner must be the named license holder of all software associated with any and all incremental work on the project(s).

SYSTEM DESCRIPTION

A. The entire Building Automation Control System must be comprised of a network of interoperable, stand-alone digital controllers communicating via Open communication protocols to a Network Area Controller (JACE). Temperature Control System products must be by approved manufacturers.

B. The Building Automation Control Systems (BACS) consists of thermostats, control valves, dampers and operators, indicating devices, interface equipment and other apparatus and accessories required to operate mechanical systems, and perform functions specified.

C. The Building Automation Control System must be comprised of Network Area Controller or Controllers (JACE) within each facility. From herein, NAC must refer to a JACE. The NAC must connect to the Owner's local or wide area network, depending on configuration. The controllers must be located adjacent to the equipment they monitor or control and must be sized for the task assigned to them. The system must utilize distributed processing architecture and one controller must be provided for each major piece of equipment or system controlled or monitored. Access to the system, either locally in each building, or remotely from a central site or sites, must be accomplished through standard Web browsers, via the local area network.

D. The BACS as provided in this description must be based on a hierarchical architecture incorporating the Niagara AX/N4 Framework™. Systems not developed on the Niagara AX/N4 Framework™ platform are unacceptable .

E. The BACS must monitor and control equipment as called for by the "Sequence of Operation" and points list.

F. The BACS must provide full graphic software capable of complete system operation for up to 34 simultaneous Thin-Client workstations.

G. The BACS must provide full graphic operator interface to include the following graphics as a minimum:

    a. Home page to include a minimum of six critical points, i.e. Outside Air Temperature, Outside Air Relative Humidity, Enthalpy, KWH, KW etc.

    b. Graphic floor plans accurately depicting rooms, walls, hallways, and showing accurate locations of space sensors and major mechanical equipment.

    c. Detail graphics for each mechanical system to include; AHUs (Air Handling Units), ERUs (Energy Recovery Units), TUs {Terminal Units), EFs (Exhaust Fans), Chillers and associated controls, Boilers, and Converters as a minimum.

d. Access corresponding system drawings, technical literature, and sequences of operations directly from each system graphic.

H. The BACS must provide the following data links to electronically formatted information for operator access and use.

a. Project control as-built documentation; to include all BACS drawings and diagrams converted to Adobe Acrobat .pdf files.

b. TCS Bill of Material for each system, i.e. AHU, RTU, FCU, Boiler etc.

c. Technical literature specification data sheets for all components listed in the BACS Bill of Material.

I. The BACS must provide automated alarming software capable of sending messages to email compatible cellular telephones and pagers via the Owner's e-mail service. The email alarm paging system must be able to segregate users, time schedules, and equipment, and be capable of being programmed by the Owner.

J. The contractor must provide the appropriate quantity of legal copies of all software and utilities used during system commissioning and installation. The Owner must be named the license holder for all software associated with any and all incremental work in the project.

K. System performance:

a. Software requirements are Niagara AX/N4 as previously specified in this document.

b. Peripheral device performance requirements are specified/detailed in the sequence of operations, and or drawings for this project; per each individual piece of equipment or system.

SUBMITTAL

A. Four copies of shop drawings of the components and devices for the entire control system must be submitted and must consist of a complete list of equipment and materials, including manufacturer's catalog data sheets and installation instructions for all controllers, valves, dampers, sensors, routers, etc. Shop drawings must also contain complete wiring and schematic diagrams, software descriptions, calculations , and any other details required to demonstrate that the system has been coordinated and will properly function as a system. Terminal identification for all control wiring must be shown on the shop drawings. A complete written Sequence of Operation must also be included with the submittal package . The selected contractor supplying products and systems as detailed in Town of Orono RFP

"Town Office Boiler Replacement", herein referred to as the Boiler Contractor, as part of their packages must provide catalog data sheets, wiring diagrams and point lists to the selected controller system contractor, herein referred to as the Controller Contractor, for proper coordination of work.

B. Submittal must also include a trunk cable schematic diagram depicting operator workstations, control panel locations and a description of the communication type, media, and protocol. Though the Boiler Contractor and the Controller Contractor must provide these diagrams for their portions of work, the Systems Integrator must be responsible for integrating those diagrams into the overall trunk cable schematic diagrams for the entire Wide Area Network **(WAN)** and/or Local Area Network (LAN) utilized by the BACS.

    a. The network infrastructure must conform to the published guidelines for wire type, length, number of nodes per channel, termination, and other relevant wiring and infrastructure criteria as published. The number of nodes per channel must be no more than 80% of the defined segment (logical or physical) limit in order to provide future system expansion with minimal infrastructure modifications.

C. Submittal must also include a complete point list of all points to be connected to the BACS. The Boiler Contractor and Controller Contractor must provide necessary point lists, protocol documentation, and factory support information for systems provided in their respective divisions but integrated into the BACS.

D. Submittal must also include a copy of each of the graphics developed for the Graphic User Interface including a flowchart (site map) indicating how the graphics are to be linked to one another for system navigation. The graphics are intended to be 80% - 90% complete at this stage with the only remaining changes to be based on review comments from the A/E design team and/or Owner.

E. Upon completion of the work, provide a complete set of 'as-built' drawings that will reside in the file structure of the Niagara AX/N4 Supervisor. Eight l l"xl 7" bound paper copies of the ' as-built' drawings must be provided. The Boiler Contractor and Controller Contractor must provide as-builts for their portions of work. The Controller Contractor must be responsible for as-builts pertaining to overall BACS architecture and network diagrams.

SPECIFICATION NOMENCLATURE

A. Acronyms used in this specification are as follows:

DDCS	Direct Digital Control System
BACS	Building Automation Control System
GUI	Graphical User Interface
LAN	Local Area Network
NAC	Network Area Controller
OOT	Object Oriented Technology
OPC	Open Protocol Controller
PICS	Product Interoperability
PMI	Power Measurement Interface
POT	Portable Operator's Terminal
TCS	Temperature Control System
WAN	Wide Area Network
WBI	Web Browser Interface

DIVISION OF WORK

A. The Controller Contractor and Boiler Contractor (if applicable) must be responsible for all open protocol controllers(OPC), control devices, control panels, controller programming, controller programming software, controller input/output and power wiring and controller network wiring.

B. The Controller Contractor must be responsible for the Network Area Controller(s) (NAC), software and programming of the NAC, graphical user interface software (GU[), development of all graphical screens, Web browser pages, setup of schedules, logs and alarms, network management and connection of the NAC to the local or wide area network.

C. The Boiler Contractor is responsible for measuring equipment that relates to this Section.

RELATED WORK SPECIFIED ELSEWHERE

A. Town of Orono RFP "Town Office Boiler Replacement":
    a. Providing motor starters and disconnect switches (unless otherwise noted).
    b. Power wiring and conduit (unless otherwise noted).

c. Provision, installation and wiring of smoke detectors (unless otherwise noted).
d. Other equipment and wiring as specified.

AGENCY AND CODE APPROVALS

A. All products of the BACS must be provided with the following agency approvals. Verification that the approvals exist for all submitted products must be provided with the submittal package. Systems or products not currently offering the following approvals arc not acceptable.

   a. UL-916; Energy Management Systems

   b. C-UL listed to Canadian Standards Association C22.2 No. 205-Ml 983 "signal Equipment"

   c. CE

   d. FCC, Part 15, Subpart J, Class A Computing Devices

MATERIALS

1 GENERAL

A. The Building Automation Control System (BACS) must be comprised of a network of interoperable, stand-alone digital controllers, a computer system, graphical user interface software, printers, network devices. valves, dampers, sensors, and other devices as specified herein.
B. The installed system must provide secure password access to all features, functions and data contained in the overall BACS.

2 ACCEPTABLE MANUFACTURERS

A. Tridium;

B. Siemans;

C. Honeywell; or

D. Equivalent

3 OPEN, INTEROPERABLE, INTEGRATED ARCHITECTURES

A. The intent of this specification is to provide a peer-to-peer networked, stand-alone, distributed control system with the capability to integrate ANSI/ASHRAE Standard 135-2001 Open Protocol technology, MODBUS ™, OPC, and other open and proprietary communication protocols into one open, interoperable system .

B. The supplied computer software must employ object-oriented technology (oot for representation of all data and control devices within the system. In addition, adherence to industry standards including ANSI/ ASHRAE™ Standard 135-2001 and Open Protocol to assure interoperability between all system components is required. For each Open Protocol device, the device supplier must provide a PICS document showing the installed device's compliance level. Minimum compliance is Level 3; with the ability to support data read and write functionality. Physical connection of Open Protocol devices must be via Ethernet, and/or RS-485, and/or RS-232.

C. All components and controllers supplied under this RFP must be true "peer-to-peer" communicating devices. Components or controllers requiring "polling" by a host to pass data must not be acceptable.

D. The supplied system must incorporate the ability to access all data using standard Web browsers without requiring proprietary operator interface and configuration programs. Systems requiring proprietary database and user interface programs must not be acceptable.

E. A hierarchical topology is required to assure reasonable system response times and to manage the flow and sharing of data without unduly burdening the customer's internal Intranet network. Systems employing a "flat" single tiered architecture must not be acceptable.

    a. Maximum acceptable response time from any alarm occurrence (at the point of origin) to the point of annunciation must not exceed 5 seconds for local network connected user interfaces.

    b. Maximum acceptable response time from any alarm occurrence (at the point of origin) to the point of annunciation must not exceed 60 seconds for remote or dial-up connected user interfaces.

EXECUTION

l INSTALLATION

A. All work described in this section must be performed by system integrators or contractors that have a successful history in the design and installation of integrated control systems. The installing office must have a minimum of five years of integration experience and must provide documentation in the submittal package verifying the company's experience.

B. Install system and materials in accordance with manufacturer's instructions, and as detailed on the project drawing set.

C. Drawings of the BACS network are diagrammatic only and any apparatus not shown, but required to make Lhe system operative to the complete satisfaction of the Architect must be furnished and installed without additional cost.

D. Line and low voltage electrical connections to control equipment shown specified or shown on the control diagrams must be furnished and installed by this contractor in accordance with these specifications.

E. Equipment furnished by the HVAC Contractor that is normally wired before installation must be furnished completely wired. Control wiring normally performed in the field will be furnished and installed by this contractor.

2 WIRING

A. All electrical control wiring and power wiring to the control panels, NAC, computers and network components must be the responsibility of this contractor, unless otherwise noted in Division 26.

B. The Boiler Contractor must furnish all power wiring to electrical starters and motors.

C. All wiring must be in accordance with the the National Electrical Code and any applicable local codes. All BACS wiring must be installed in the existing conduit types where possible. Any new conduit must be according to National Electrical Code or applicable local codes. Where BACS plenum rated cable wiring is allowed it must be run parallel to or at right angles to the structure, properly supported and installed in a neat and workmanlike manner.

D. COMPONENT IDENTIFICATION LABELING

Using an electronic hand-held label maker with white tape and bold black block lettering, provide an identification label on the exterior of each new control panel, control device, actuator, and sensor. Also provide labels on the exterior of each new control actuator indicating the (full) open and (full) closed positions. For labels located outdoors, use exterior grade label tape, and provide labels on both the inside and outside of the panel door or device cover. Acceptable alternatives are white plastic labels with engraved bold black block lettering permanently attached to the control panel, control device, actuator, and sensor. Have the labels and wording approved by the BAS Owner prior to installation

3 WARRANTY

A. Equipment, materials and workmanship incorporated into the work must be warranted for a period of one year from the time of system acceptance.

B. Within this period, upon notice by the Owner, any defects in the work provided under this section due to faulty materials, methods of installation or workmanship must be promptly (within 48 hours after receipt of notice) repaired or replaced by this contractor at no expense to the Owner.

4 WARRANTY ACCESS

A. The Owner must grant to this contractor, reasonable access to the system during the warranty period.

B. The Owner must allow the contractor to access the BACS from a remote location for the purpose of diagnostics and troubleshooting, via the Internet, during the warranty period.

5 ACCEPTANCE TESTING

A. Upon completion of the installation, this contractor must load all system software and start-up the system. This contractor must perform all necessary calibration, testing and debugging and perform al1 required operational checks to insure that the system is functioning in full accordance with these specifications.

B. This contractor must perform tests to verify proper performance of components, routines, and points. Repeat tests until proper performance results. This testing must include a point-by-point log to validate 100% of the input and output points of the DOC system operation.

C. Upon completion of the performance tests described above, repeat these tests, point by point as described in the validation log above in presence of Owner's Representative, as required. Properly schedule these tests so testing is complete at a time directed by the Owner's Representative. Do not delay tests so as to prevent delay of occupancy permits or building occupancy.

D. System Acceptance: Satisfactory completion is when this contractor and the Division 26 contractor have performed successfully all the required testing to show performance compliance with the requirements of the Contract Documents to the satisfaction of the Owner's Representative. System acceptance must be contingent upon completion and review of all corrected deficiencies.

6 OPERATOR INSTRUCTION, TRAINING

A. During system commissioning and at such time acceptable performance of the BACS hardware and software has been established this contractor must provide on-site operator

instruction to the Owner's operating personnel. Operator instruction must be done during normal working hours and must be performed by a competent representative familiar with the system hardware, software and accessories.

B. This contractor must provide 24 hours of instruction to the Owner's designated personnel on the operation of the BACS and describe its intended use with respect to the programmed functions specified. Operator orientation of the systems must include, but not be limited to; the overall operation program, equipment functions (both individually and as part of the total integrated system), commands, systems generation, advisories, and appropriate operator intervention required in responding to the System's operation.

C. The training must be in three sessions as follows:

    a. Initial Training: One day session (8 hours) after system is started up and at least one week before first acceptance test. Manual must have been submitted at least two weeks prior to training so that the Owner’s personnel can start to familiarize themselves with the system before classroom instruction begins.

    b. First Follow-Up Training: Two days (8 hours total) approximately two weeks after initial training, and before Formal Acceptance. These sessions will deal with more advanced topics and answer questions.

    c. Warranty Follow Up: Two days (8 hours total) in no less than 4 hour increments, to be scheduled at the request of the Owner during the one year warranty period. These sessions must cover topics as requested by the Owner such as; how to add additional points, create and gather data for trends, graphic screen generation or modification of control routines.