RFQ – Lenoir County Schools HVAC Controls Upgrades – Scope of Work – (mandatory site visit)

Replace existing TAC/Niagara R2 and ACT (Applied Computer Technologies) DDC Building Management Systems as noted in scope of work for a complete and functional system.

Pre-Bid Conference and site visit: Scheduled for **August 24th,2022 at 10:00 AM**. Meet at Lenoir County Public Schools Maintenance Office, 500 Abbott Street, Kinston NC 28504. Inspection of the site(s) shall be scheduled immediately after the Pre-Bid Conference. Complete site visit is mandatory.

Contractor Qualifications and Scope of Work:

- Sealed bids from licensed contractors will be received by Lenoir County Public Schools, Kinston, North Carolina on September 7th, 2022 for furnishing of labor, material, and equipment for the Lenoir County Public Schools HVAC Controls Upgrade Project, 500 Abbott Street, Kinston, NC 28504. Bids will be received up to 2:00 PM from Single Prime bidders at which time and place all bids will be publicly opened and read aloud. Deliver bids to the Lenoir County Public Schools Maintenance Office located at 500 Abbott Street, Kinston, NC 28504.
- 2. Mandatory site visit is scheduled for **August 24th**, **2022 at 10:00am**. Must be present at <u>scheduled</u> pre-bid proposal conference and site visit to submit a bid.
- 3. Each proposal shall be accompanied by a statement of qualifications. that demonstrates experience in at least three (3) projects of similar scope within the past ten (10) years with references. Project references must be of similar scope and size to be applicable.
- 4. No bid may be withdrawn after the scheduled closing time for the receipt of bids for a period of sixty (60) days.
- 5. Bid security required is 5% of the bid in cash, certified check, or Bid Bond.
- 6. Performance and Payment Bonds for 100% of the contract amount will be required.
- 7. Total bid amount of this project must not exceed 30% of contractor's full bonding capacity.
- 8. Lenoir County Public Schools reserves the right to reject any and all bids and to waive informalities or irregularities.
- 9. The Bidders, whether residents or nonresidents in North Carolina must be able to show documented evidence of the following:
 - a. Contractor's license in good standing with the North Carolina General Contractor's Licensure Board (or NC State Board of Examiners for Plumbing, Mechanical, Electrical, and / or Fire Protection only projects) with the appropriate level of limitations and classifications.
- 10. The Owner will consider, in determining the qualifications of a Bidder, their record in the performance of any contracts for construction work into which they may have entered with the Owner or with similar public or private bodies or corporations. The Owner expressly reserves the right to reject the bid of any Bidder if such record discloses that such Bidder, in the opinion of the Owner, has not properly performed such contracts or has habitually and without just cause neglected the payment of bills, or has otherwise disregarded his obligations, Subcontractors, material men, suppliers or employees.
- 11. The Owner may make such investigation as they deem necessary to determine the ability of the Bidder to perform the work, and the Bidder shall furnish to the Owner all such information and data for this purpose as they may request. The Owner reserves the right to reject any bid if the evidence submitted by, or investigation of such Bidder, fails to satisfy the Owner that such Bidder is a responsive and

responsible Bidder in accordance with the criteria set forth herein. Conditional bids will not be accepted.

- 12. All applicable Federal, State and Local Taxes shall be included in the Bidder's proposal.
- 13. Bidder's limits for commercial general liability, auto, workers compensation, excessive/umbrella insurance coverage should be \$5M for each.

TYPES OF INSURANCE REQUIRED	Limits Of Coverage (Minimum Limits)	
Workers' Compensation (U.S. Only) (Alternatively, Contractor can supply proof as a state qualified self- insured company	Statutory	
Employers' Liability (U.S. Only)	\$5,000,000 Each Accident & Disease	
Commercial General Liability Insurance	\$5,000,000 per Occurrence	
	\$5,000,000 Aggregate Bodily Injury, Property Damage and Death	
Automobile Liability Insurance for Any Auto used in the		
fulfillment of this agreement	\$5,000,000 per Accident	
Crime Insurance/Fidelity Bond	\$2,000,000 each Claim	
Professional Liability or Errors & Omissions Liability		
Insurance	\$2,000,000 each Claim	
	\$2,000,000 Aggregate	
Cyber Liability Insurance	\$5,000,000 each Claim	
	\$5,000,000 Aggregate	

14. Upon execution of this Agreement and thirty (30) days prior to the expiration of the required insurance, Contractor / Supplier / Service Provider must provide evidence of insurance. Certificate must:

Be on an ACORD form

Evidence required insurance coverages & limits

Notice of cancellation shall be in accordance with policy provisions Must be signed by an authorized representative of Contractor's insurance company Confirm insurance companies are rated A-VII or better by A.M. Best Company

- 15. Prior to Contract award or within seven days of the Owner's request to do so, the successful Bidder shall be prepared to demonstrate that his present organization, direct labor force and prior work experience is of adequate size and development to maintain responsible control of the project and to schedule, coordinate and perform the work in an expeditious manner and in accordance with the Contract Documents.
- 16. Project shall be completed in 18 months from Notice To Proceed by Lenoir County Public Schools.
- 17. The Contractor shall furnish and install a complete building automation system including all necessary hardware and all operating and applications software necessary to perform the control sequences of operation as called for in this document or to achieve existing sequences as identified by LCS. All components of the system –servers, application controllers, unitary controllers, etc. shall communicate using the BACnet protocol, as defined

by ASHRAE Standard 135-2007, or EIA standard 709.1, the LonTalk[™] protocol, or Modbus protocol. No gateways shall be used for communication to controllers for this project.

- 18. Except as otherwise noted, the control system shall consist of all necessary Ethernet Network Controllers, Standalone Digital Control Units, enterprise server, software, sensors, transducers, relays, valves, dampers, damper operators, control panels, and other accessory equipment, for a complete and operable system. Existing input/output wiring can be reused if compatible with new system being installed. All communications wiring must be installed as new wiring (ethernet or MSTP/shielded).
- 19. The BAS contractor shall review and study all existing control drawings (as provided by owner) and the entire scope of work to familiarize themselves with the contract scope.
- 20. All wiring and installation of control devices associated with the equipment listed below shall be provided under this Contract. Existing input/output wiring can be reused if compatible with new system and is in good condition. When the BAS system is fully installed and operational, the BAS Contractor and representatives of the Owner will review and check out the system. At that time, the BAS contractor shall demonstrate the operation of the system and prove that it complies with the intent of the scope of work and existing sequences.
- 21. All work performed as a part of this project will comply with all governing codes, laws and governing bodies. The Contractor shall obtain and pay for all necessary construction permits and licenses.
- 22. Provide complete controls shop drawing submittal information to include complete controller input/output connected points, wiring diagrams for all devices, network communications riser, and data sheets for all devices and equipment being provided. Each school site must have its own set of shop drawing submittal diagrams.
- 23. Provide Project Manager whose only project responsibility is to coordinate the installation and communicate with Lenoir County Schools on project scheduling of contractor's employees and access to buildings. Minimal downtime of equipment will be allowed during occupied hours. Project Manager cannot be a working technician, electrician/installer, or programmer/graphic technician. Attendance at bi-weekly (at minimum) project meetings by Project Manager will be required.
- 24. Controls contractor must include all coordination, programming, graphics, startup of equipment, and field checkout.
- 25. Provide one-year warranty on all new installed control equipment
- 26. Controls and interlock wiring per electrical code. Plenum rated cable to be installed above lay-in ceilings and strapped/supported appropriately. All wiring located in mechanical rooms and areas with exposed ceilings shall be installed wiring in conduit. Existing conduit can be reused if it is in good condition.
- 27. Each separate building will have a network controller(s) installed with Lenoir Schools LAN connection. Contractor to install CAT 6 wiring back to telecom room for each connection. LCS to connect and assign/configure IP addresses.
- 28. In accordance to the scope of work, the system shall also provide a graphical, web-based, operator interface that allows for instant access to any system through a standard browser. The contractor must provide a BAS server (appropriately sized), and microcomputer controllers of modular design providing distributed processing capability, and allowing future expansion of both input/output points and processing/control functions.
- 29. Ethernet-based Network Router and/or Network Server Controller(s): The BAS Contractor shall furnish Ethernet-based Network Server Controllers as described. These controllers will connect directly to the BAS server over Ethernet at a minimum of 100mbps, and provide communication to the Standalone Digital Control Units and/or other Input/Output Modules. Network Server Controllers shall conform to BACnet device profile B-BC. Network controllers that utilize RS232 serial communications or ARCNET to communicate with the workstations will not be accepted.

- 30. Network Controllers shall be tested and certified by the BACnet Testing Laboratory (BTL) as Network Server Controllers (B-BC).
- 31. Standalone Digital Control Units (SDCUs): Provide the necessary quantity and types of SDCUs to meet the requirements of the project for mechanical equipment control including air handlers, central plant control, and terminal unit control, and as identified in existing control drawings provided by LCS. Each SDCU shall have the capability to operate completely standalone, containing all of the I/O and programs to control its associated equipment. BACnet SDCUs shall be tested and certified by the BACnet Testing Laboratory (BTL). SDCUs shall communicate with the building Network Server Controller over ethernet (TCP/IP) wiring. MSTP (shielded RS485 wiring) communications between SDCUs shall not be allowed except in unique circumstances where equipment type and location deems it permissible as determined by the owner.
- 32. All work described in this document shall be installed, wired, and circuit tested by factory certified technicians qualified for this work and in the regular employment of the approved manufacturer's local field office. The approved manufacturer's local field office shall have a minimum of 15 years of installation experience with the manufacturer and shall provide documentation in the bid and submittal package verifying longevity of the installing company's relationship with the manufacturer when requested. Supervision, hardware and software engineering, and checkout of the system shall be by the employees of the approved manufacturer's local field office and shall not be subcontracted. The control contractor shall have an in place support facility within 100 miles of the Lenoir County Schools Maintenance Department with factory certified technicians and engineers, spare parts inventory and all necessary test and diagnostic equipment for the installed system, and the control contractor shall have 24 hours/day, 7 days/week emergency service available.
- 33. Provide BAS components and ancillary equipment, which are UL-916 listed and labeled.
- 34. All equipment or piping used in conditioned air streams, spaces or return air plenums shall comply with NFPA 90A Flame/Smoke/Fuel contribution rating of 25/50/0 and all applicable building codes or requirements.
- 35. All wiring shall conform to the National Electrical Code.
- 36. Comply with FCC rules, Part 15 regarding Class A radiation for computing devices and low power communication equipment operating in commercial environments.
- 37. All shop drawings shall be prepared in Visio Professional or AutoCAD software. In addition to the drawings, the Contractor shall furnish a CD containing the identical information.
- 38. Shop drawings shall include a riser diagram depicting locations of all controllers and workstations, with associated network wiring. Also included shall be individual schematics of each mechanical system showing all connected points with reference to their associated controller. Typicals will be allowed where appropriate.
- 39. Submittal data shall contain manufacturer's data on all hardware and software products required by the specification.
- 40. Submittals shall contain narrative descriptions of sequences of operation. Diagrams shall be on 11" by 17" foldouts.
- 41. Submit five (5) electronic copies and (2) hardcopies of submittal data and shop drawings to the Engineer for review prior to ordering or fabrication of the equipment. The Contractor, prior to submitting, shall check all documents for accuracy.
- 42. The following is a list of post construction submittals that shall be updated to reflect any changes during construction and re-submitted as "As-Built".
 - a. System architecture drawing.
 - b. Layout drawing for each control panel
 - c. Wiring diagram for individual components
 - d. System flow diagram for each controlled system

- e. Instrumentation list for each controlled system
- f. Sequence of control
- g. Operation and Maintenance Manuals
- 43. Information common to the entire system shall be provided. This shall include but not be limited to the following.
 - a. Product manuals for the key software tasks.
 - b. Operating the system.
 - c. Administrating the system.
 - d. Engineering the operator workstation.
 - e. Application programming.
 - f. Engineering the network.
 - g. Setting up the web server.
 - h. Report creation.
 - i. Graphics creation.
 - j. All other engineering tasks.
 - k. System Architecture Diagram.
 - I. Reference the product manual that includes instructions on executing the task.
 - m. Names, addresses, and telephone numbers of installing contractors and service representatives for equipment and control systems.
 - n. Licenses, guarantees, and warranty documents for equipment and systems.
 - o. Submit one copy for each building, plus two extra copies.
- 44. Information common to the systems in a single building shall be provided.
 - a. System architecture diagram for components within the building annotated with specific location information.
 - b. As-built drawing for each control panel.
 - c. As-built wiring design diagram for all components.
 - d. Installation design details for each I/O device.
 - e. As-built system flow diagram for each system.
 - f. Sequence of control for each system.
 - g. Product data sheet for each component.
 - h. Installation data sheet for each component.
 - i. Submit two copies for each building and two extra copies.
- 45. Software shall be provided:
 - a. Submit a copy of all software installed on the network controllers and server.
 - b. Submit all licensing information for all software installed on the servers.
 - c. Submit a copy of all software used to execute the project even if the software was not installed on the servers.
 - d. Submit all licensing information for all of the software used to execute the project.
 - e. All software revisions shall be as installed at the time of the system acceptance.
 - f. Firmware Files
 - g. Submit a copy of all firmware files that were downloaded to or pre-installed on any devices installed as part of this project.
 - h. This does not apply to firmware that is permanently burned on a chip at the factory and can only be replaced by replacing the chip.
 - i. Submit a copy of all application files that were created during the execution of the project.
 - j. Submit a copy of all graphic page files created during the execution of the project.

- 46. The Owner shall retain licenses to software for this project.
- 47. The BAS Contractor shall provide a technician a minimum of 64 hours as required to verify with owner the sequences of operation and system operation.
- 48. Startup Testing shall be performed for each task on the startup test checklist, which shall be initialed by the technician and dated upon test completion. Any deviations from the submitted installation plan shall also be recorded. Required elements of the startup testing include:
 - a. Measurement of voltage sources, primary and secondary
 - b. Verification of proper controller power wiring.
 - c. Verification of component inventory when compared to the submittals.
 - d. Verification of labeling on components and wiring.
 - e. Verification of connection integrity and quality (loose strands and tight connections).
 - f. Verification of bus topology, grounding of shields and installation of termination devices.
 - g. Verification of point checkout.
 - h. Each I/O device is landed per the submittals and functions per the sequence of control.
 - i. Analog sensors are properly scaled and a value is reported
 - j. Binary sensors have the correct normal position and the state is correctly reported.
 - k. Analog outputs have the correct normal position and move full stroke when so commanded.
 - I. Binary outputs have the correct normal state and respond appropriately to energize/de-energize commands.
 - m. Documentation of analog sensor calibration (measured value, reported value and calculated offset).
 - n. Documentation of Loop tuning (sample rate, gain and integral time constant).
- 49. All components, system software, and parts furnished and installed by the BMS contractor shall be guaranteed against defects in materials and workmanship for 1 year of substantial completion. Labor to repair, reprogram, or replace these components shall be furnished by the BMS contractor at no charge during normal working hours during the warranty period. Materials furnished but not installed by the BMS contractor shall be covered to the extent of the product only. Installation labor shall be the responsibility of the trade contractor performing the installation. All corrective software modifications made during warranty periods shall be updated on all user documentation and on user and manufacturer archived software disks. The Contractor shall respond to the owner's request for warranty service within 24 standard working hours.
- 50. The BAS Contractor shall provide on-site training to the Owner's representative and maintenance personnel per the following description:
 - a. On-site training shall consist of a minimum of (2) hours per site of hands-on instruction geared at the operation and maintenance of the systems. The curriculum shall include
 - b. System Overview
 - c. System Software and Operation
 - d. System access
 - e. Software features overview
 - f. Changing setpoints and other attributes
 - g. Scheduling
 - h. Editing programmed variables
 - i. Displaying color graphics

- j. Running reports
- k. Viewing application programming
- I. Operational sequences including start-up, shutdown
- m. Equipment maintenance.
- 51. Acceptable manufacturers/products (must be a corporate Branch office of the product being installed and NOT an independent reseller for products/manufacturer listed:
 - a. Schneider Electric Buildings Local Branch EcoStruxure
 - b. Siemens local branch office
 - c. Automated Logic local branch office
- 52. The Building Automation System (BAS) shall consist of Network Server/Controllers (NSCs), a family of Standalone Digital Control Units (SDCUs), and Enterprise Network Server. The BAS shall provide control, alarm detection, scheduling, reporting and information management for the entire facility, and Wide Area Network (WAN) if applicable.
- 53. An Enterprise Level BAS shall consist of an Enterprise Server, which enables multiple NSCs (including all graphics, alarms, schedules, trends, programming, and configuration) to be accessible from a single Workstation simultaneously for operations and engineering tasks.
- 54. The Enterprise Level BAS shall be able to host up to 250 servers, or NSCs, beneath it.
- 55. The fieldbus layer shall support all the following types of SDCUs:
 - a. BACnet IP SDCU requirements: The system shall consist of one or more BACnet IP field buses managed by the Network Server Controller. Minimum speed of not less than 100Mbps. The field bus controllers shall support daisy chain topology of up to 50 controllers. The field bus controllers shall also support, where applicable, RSTP loop whereby up to 39 controllers are supported. These devices shall support a BACnet protocol stack in accordance with the ANSI/ASHRAE Standard 135-2008 and the BACnet Device Profile supported.
 - b. BACnet MS/TP SDCU requirements: The system shall consist of one or more BACnet MS/TP field buses managed by the Network Server Controller. Minimum speed shall be 76.8kbps. The field bus layer consists of an RS485, token passing bus that supports up to 127 Standalone Digital Control Units (SDCUs) for operation of HVAC and lighting equipment. These devices shall conform to BACnet standard 135-2007. The NSCs shall be capable of at least two BACnet MS/TP field buses for a total capability of 254 SDCUs per NSC. Bacnet MS/TP SDCUs only allowed in unique circumstances where equipment type and location deems it permissible as determined by the owner.
- 56. The Enterprise Server shall consist of the following:
 - a. Processor
 - Minimum: Intel Core i5 @ 2.0 GHz or equivalent Recommended: Intel Core i5 @ 3.0 GHz or better
 - b. Memory
 - c. Minimum: 4GB
 - d. Recommended: 8GB or higher
 - e. Operating systems:
 - f. Microsoft Windows 7 64-bit
 - g. Microsoft Windows 10 64-bit
 - h. Microsoft Windows Server 2012 R2 64-bit
 - i. Microsoft Windows Server 2016
 - j. Microsoft Windows Server 2019

- k. 10/100MBPS Ethernet NIC
- I. Storage Minimum: 1TB
- m. Solid State Drive recommended
- n. Required additional software Microsoft .Net 4.7.2 and later
- o. Microsoft .Net 4.7.2 and later
- p. License agreement for all applicable software
- q. External log storage option
- r. PostgreSQL 11.0 and later
- s. TimescaleDB 1.2 and later
- 57. The software shall be designed so that each user of the software can have a unique username and password. This username/password combination shall be linked to a set of capabilities within the software, set by and editable only by, a system administrator. The sets of capabilities shall range from View only, Acknowledge alarms, Enable/disable and change values, Program, and Administer. The system shall allow the above capabilities to be applied independently to each and every class of object in the system. The system must allow a minimum of 256 users to be configured per workstation. Additionally, the software shall enable the ability to add/remove users based upon Microsoft Windows Security Domains that enable the customer IT department to assist in user access.
- 58. Scheduling
 - a. From the workstation (provided by owner) or webstation (provided by owner), it shall be possible to configure and download schedules for any of the controllers on the network.
 - b. Time of day schedules shall be in a calendar style and viewable in both a graphical and tabular view.
 - c. Schedules shall be programmable for a minimum of one year in advance.
 - d. To change the schedule for a particular day, a user shall simply select the day and make the desired modifications.
 - e. Additionally, from the operator webstations(provided by owner), each schedule will appear on the screen viewable as the entire year, monthly, week and day. A simple mouse click shall allow switching between views. It shall also be possible to scroll from one month to the next and view or alter any of the schedule times.
 - f. Schedules will be assigned to specific controllers and stored in their local RAM memory. Any changes made at the workstation(provided by owner) will be automatically updated to the corresponding schedule in the controller.
 - g. It shall be possible to assign a lead schedule such that shadow/local schedules are updated based upon changes in the Lead.
 - h. It shall be possible to assign a list(s) of exception event days, dates, date ranges to a schedule.
 - i. It shall be possible to view combined views showing the calendar and all prioritized exemptions on one screen.
 - j. It should accommodate a minimum of 16 priority levels.
 - k. Values should be able to be controlled directly from a schedule, without the need for special program logic.
- 59. Day-to-day operation of the system shall be accessible through a standard web browser interface, allowing technicians and operators to view any part of the system from anywhere on the network.
- 60. The system shall be able to be accessed on site via a mobile device environment with, at a minimum, access to overwrite and view system values.
- 61. History Logging:

- a. Each NSC controller shall be capable of LOCALLY logging any input, output, calculated value or other system variable either over user defined time intervals ranging from 1 second to 1440 minutes or based upon a user configurable change of value. A minimum of 1000 logs, with a minimum of 100,000 records, shall be stored. Each log can record either the instantaneous, average, minimum or maximum value of the point. Logged data shall be downloadable to a higher level NSC long term archiving based upon user-defined time intervals, or manual command.
- b. For extended trend logging a minimum of 1500 trends shall be capable, with a minimum number of 600,000 records within.
- c. Management of a power meter replacement to ensure meter log data is accurate shall be possible in the NSC.
- d. Every hardware input and output point, hosted within the NSC and attached I/O modules, shall be trended automatically without the requirement for manual creation, and each of these logs shall log values based upon a change of value and store at least 500 trend samples before replacing the oldest sample with new data.
- e. The presentation of logged data shall be built into the server capabilities of the NSC Presentation can be in time stamped list formats or in a chart format with fully configurable pen colors, weights, scales and time spans.
- 62. Identify all control wires with labeling tape or sleeves using words, letters, or numbers that can be exactly cross-referenced with as-built drawings.
- 63. Switch-over from the existing control system to the new system will be fully coordinated with the Owner. A representative of the Owner will be on site during switch-over. After normal school hours work will possibly be required to minimize class disturbance and equipment downtime. Coordinate with owner.
- 64. The Contractor shall minimize control system downtime during switch-over. Sufficient installation mechanics will be on site so that the entire switch-over can be accomplished in a reasonable time frame.
- 65. Each I/O device (both field mounted as well as those located in FIPs) shall be inspected and verified for proper installation and functionality. A checkout sheet itemizing each device shall be filled out, dated and approved by the Project Manager for submission to the owner or owner's representative.
- 66. All application software will be verified and compared against the sequences of operation.
- 67. Control loops will be exercised by inducing a setpoint shift of at least 10% and observing whether the system successfully returns the process variable to setpoint.
- 68. Test alarms in the system and validate that the system generates the appropriate alarm message, that the message appears at all prescribed destinations (workstations or printers), and that any other related actions occur as defined (i.e. graphic panels are invoked, reports are generated, etc.).
- 69. Perform an operational test of each unique graphic display and report to verify that the item exists, that the appearance and content are correct, and that any special features work as intended.
- 70. Perform an operational test of each third party interface that has been included as part of the automation system. Verify that all points are properly polled, that alarms have been configured, and that any associated graphics and reports have been completed. If the interface involves a file transfer over Ethernet, test any logic that controls the transmission of the file, and verify the content of the specified information.

Server & Licensing

- Interprise system licensing and setup
- All required computer hardware (provided by contractor) for new BAS system to be located at LCS Facilities office
- Provide rack/assembly and rack mount server; to be located at LCS Facilities office. Server to be sized appropriately and specs identified above for a fully functional system.
- Labor to setup trends for applicable input/output points shall be included.
- Global trend configuration

Banks Elementary School Upgrade – specific scope

- Furnish and install Network controller(s) and Bacnet IP DDC panels
- Install new communication wiring (IP) to each controller location
- Demo existing ACT control boards (Qty. 3), sensors and control devices as replace necessary. Control valves/actuators, dampers and actuators are excluded from repair or replacement
- Furnish and install Bacnet IP DDC panels with factory mounted controller in same location as ACT boards
- Replace existing ACT room temperature sensors, outside air temp, well temperature sensors and relays; wire to BAS controller(s)
- Remove (1) UNC-520 Jace, (15) MZ2A-102[Microzone II) and (11) PEM[Packaged Equipment Module] controllers
- Install new Bacnet IP DDC controllers to replace existing controllers being removed. Existing Microzone and PEM enclosures may be reused if space allows.
- Mount new DDC panels with new DDC controllers in place of ACT control boards
- Remove and replace space temperature sensors with sensors which include LCD display, setpoint adjustment, and override
- If compatible with new system, re-use existing duct and water temperature/pressure sensors, current sensing status switches, static pressure transmitters, and low-limit thermostats where compatible and re-wire existing control points from existing controllers to new DDC controllers. All valves/actuators and damper/actuators to be re-used. If devices are found defective during new system startup, contractor shall notify the owner for direction.
- Regardless of compatibility with new system, space mounted temperature sensors shall be replaced with sensors which include LCD display, setpoint adjustment, and override.
- Replace all control relays.
- Replace existing CO2/humidity sensors due to age of sensors.
- Reuse existing input/output wiring to the largest extent possible
- Install CAT 6 cable from new network controllers back to LCS telecom room for connection/configuration by others.
- Commissioning and owner demonstration labor as identified in general scope above

Contentnea-Savannah K-8 School Upgrade

- Furnish and install Network controller(s) and Bacnet IP DDC panels
- Install new communication wiring (IP) to each controller location
- Remove (2) UNC-520 Jaces, (78) MZ2A-102[Microzone II] and (70) PEM[Packaged Equipment Module] controllers
- Install new Bacnet IP DDC controllers in existing Microzone-PEM enclosures
- Mount new DDC panels with Bacnet IP DDC controllers in place of ACT control boards

- Remove and replace space temperature sensors with sensors which include LCD display, setpoint adjustment, and override
- If compatible with new system, re-use existing duct and water temperature/pressure sensors, current sensing status switches, static pressure transmitters, and low-limit thermostats where compatible and re-wire existing control points from existing controllers to new DDC controllers. All valves/actuators and damper/actuators to be re-used. If devices are found defective during new system startup, contractor shall notify the owner for direction.
- Regardless of compatibility with new system, space mounted temperature sensors shall be replaced with sensors which include LCD display, setpoint adjustment, and override.
- Replace existing CO2/humidity sensors due to age of sensors.
- Reuse existing input/output wiring to the largest extent possible
- Install CAT 6 cable from new network controllers back to LCS telecom room for connection/configuration by others.
- Commissioning and owner demonstration labor as identified in general scope above

LaGrange Elementary School Upgrade

- Furnish and install Network controller(s) and Bacnet IP DDC panels
- Install new communication wiring (IP) to each controller location
- Remove (1) UNC-520, (44) MZ2A-102[Microzone II] and (40) PEM[Packaged Equipment Module] controllers
- Install new Bacnet IP DDC controllers in existing Microzone-PEM enclosures
- Mount new DDC panels with Bacnet IP DDC controllers in place of ACT control boards
- Remove and replace space temperature sensors with sensors which include LCD display, setpoint adjustment, and override
- If compatible with new system, re-use existing duct and water temperature/pressure sensors, current sensing status switches, static pressure transmitters, and low-limit thermostats where compatible and re-wire existing control points from existing controllers to new DDC controllers. All valves/actuators and damper/actuators to be re-used. If devices are found defective during new system startup, contractor shall notify the owner for direction.
- Regardless of compatibility with new system, space mounted temperature sensors shall be replaced with sensors which include LCD display, setpoint adjustment, and override.
- Replace all control relays.
- Replace existing CO2/humidity sensors due to age of sensors.
- Reuse existing input/output wiring to the largest extent possible
- Install CAT 6 cable from new network controllers back to LCS telecom room for connection/configuration by others.
- Commissioning and owner demonstration labor as identified in general scope above

Moss Hill Elementary School Upgrade

- Furnish and install Network controller(s) and Bacnet IP DDC panels
- Install new communication wiring (IP) to each controller location
- Demo existing ACT control boards (Qty. 3), sensors and control devices as replace necessary. Control valves/actuators, dampers and actuators are excluded from repair or replacement
- Furnish and install Bacnet IP DDC panels with factory mounted controller in same location as ACT boards

- Replace existing ACT room temperature sensors, outside air temp, well temperature sensors and relays; wire to BAS controller(s)
- Remove (1) UNC-520 Jace, (19) MZ2A-102[Microzone II] and (15) PEM[Packaged Equipment Module] controllers
- Install new Bacnet IP DDC controllers to replace existing controllers being removed. Existing Microzone and PEM enclosures may be reused if space allows.
- Mount new DDC panels with new DDC controllers in place of ACT control boards
- Remove and replace space temperature sensors with sensors which include LCD display, setpoint adjustment, and override
- If compatible with new system, re-use existing duct and water temperature/pressure sensors, current sensing status switches, static pressure transmitters, and low-limit thermostats where compatible and re-wire existing control points from existing controllers to new DDC controllers. All valves/actuators and damper/actuators to be re-used. If devices are found defective during new system startup, contractor shall notify the owner for direction.
- Regardless of compatibility with new system, space mounted temperature sensors shall be replaced with sensors which include LCD display, setpoint adjustment, and override.
- Replace all control relays.
- Replace existing CO2/humidity sensors due to age of sensors.
- Reuse existing input/output wiring to the largest extent possible
- Install CAT 6 cable from new network controllers back to LCS telecom room for connection/configuration by others.
- Commissioning and owner demonstration labor as identified in general scope above

Northeast Elementary School Upgrade

- Furnish and install Network controller(s) and Bacnet IP DDC panels
- Install new communication wiring (IP) to each controller location
- Remove (2) UNC-520, (53) MZ2A-102[Microzone II] and (49) PEM[Packaged Equipment Module] controllers
- Install new Bacnet IP DDC controllers in existing Microzone-PEM enclosures
- Mount new DDC panels with Bacnet IP DDC controllers in place of ACT control boards
- Remove and replace space temperature sensors with sensors which include LCD display, setpoint adjustment, and override
- If compatible with new system, re-use existing duct and water temperature/pressure sensors, current sensing status switches, static pressure transmitters, and low-limit thermostats where compatible and re-wire existing control points from existing controllers to new DDC controllers. All valves/actuators and damper/actuators to be re-used. If devices are found defective during new system startup, contractor shall notify the owner for direction.
- Regardless of compatibility with new system, space mounted temperature sensors shall be replaced with sensors which include LCD display, setpoint adjustment, and override.
- Replace existing CO2/humidity sensors due to age of sensors.
- Reuse existing input/output wiring to the largest extent possible
- Install CAT 6 cable from new network controllers back to LCS telecom room for connection/configuration by others.
- Commissioning and owner demonstration labor as identified in general scope above

Northwest Elementary School Upgrade

- Furnish and install Network controller(s) and Bacnet IP DDC panels
- Install new communication wiring (IP) to each controller location
- Demo existing ACT control boards (Qty. 3), sensors and control devices as replace necessary. Control valves/actuators, dampers and actuators are excluded from repair or replacement
- Furnish and install Bacnet IP DDC panels with factory mounted controller in same location as ACT boards
- Replace existing ACT room temperature sensors, outside air temp, well temperature sensors and relays; wire to BAS controller(s)
- Remove and replace space temperature sensors with sensors which include LCD display, setpoint adjustment, and override
- If compatible with new system, re-use existing duct and water temperature/pressure sensors, current sensing status switches, static pressure transmitters, and low-limit thermostats where compatible and re-wire existing control points from existing controllers to new DDC controllers. All valves/actuators and damper/actuators to be re-used. If devices are found defective during new system startup, contractor shall notify the owner for direction.
- Regardless of compatibility with new system, space mounted temperature sensors shall be replaced with sensors which include LCD display, setpoint adjustment, and override.
- Reuse existing input/output wiring to the largest extent possible
- Install CAT 6 cable from new network controllers back to LCS telecom room for connection/configuration by others.
- Commissioning and owner demonstration labor as identified in general scope above

Pink Hill Elementary School Upgrade

- Furnish and install Network controller(s) and Bacnet IP DDC panels
- Install new communication wiring (IP) to each controller location
- Remove (2) UNC-520 JACE, (50) MZ2A-102[Microzone II] and (49) PEM[Packaged Equipment Module] controllers
- Install new Bacnet IP DDC controllers in existing Microzone-PEM enclosures
- Mount new DDC panels with Bacnet IP DDC controllers in place of ACT control boards
- Remove and replace space temperature sensors with sensors which include LCD display, setpoint adjustment, and override
- If compatible with new system, re-use existing duct and water temperature/pressure sensors, current sensing status switches, static pressure transmitters, and low-limit thermostats where compatible and re-wire existing control points from existing controllers to new DDC controllers. All valves/actuators and damper/actuators to be re-used. If devices are found defective during new system startup, contractor shall notify the owner for direction.
- Regardless of compatibility with new system, space mounted temperature sensors shall be replaced with sensors which include LCD display, setpoint adjustment, and override.
- Replace existing CO2/humidity sensors due to age of sensors.
- Reuse existing input/output wiring to the largest extent possible
- Install CAT 6 cable from new network controllers back to LCS telecom room for connection/configuration by others.
- Commissioning and owner demonstration labor as identified in general scope above

Southeast Elementary School Upgrade

- Furnish and install Network controller(s) and Bacnet IP DDC panels
- Install new communication wiring (IP) to each controller location
- Demo existing ACT control boards (Qty. 3), sensors and control devices and replace necessary. Control valves/actuators, dampers and actuators are excluded from repair or replacement
- Remove existing UNC-520 JACE and (5) MZ2A-102[Microzone II] controllers
- Install new Bacnet IP DDC controllers in existing Microzone-PEM enclosures
- Mount new DDC panels with Bacnet IP DDC controllers in place of ACT control boards
- Remove and replace space temperature sensors with sensors which include LCD display, setpoint adjustment, and override
- If compatible with new system, re-use existing duct and water temperature/pressure sensors, current sensing status switches, static pressure transmitters, and low-limit thermostats where compatible and re-wire existing control points from existing controllers to new DDC controllers. All valves/actuators and damper/actuators to be re-used. If devices are found defective during new system startup, contractor shall notify the owner for direction.
- Regardless of compatibility with new system, space mounted temperature sensors shall be replaced with sensors which include LCD display, setpoint adjustment, and override.
- Replace existing CO2/humidity sensors due to age of sensors.
- Reuse existing input/output wiring to the largest extent possible
- Install CAT 6 cable from new network controllers back to LCS telecom room for connection/configuration by others.
- Commissioning and owner demonstration labor as identified in general scope above

Southwood Elementary School Upgrade

- Furnish and install Network controller(s) and Bacnet IP DDC panels
- Install new communication wiring (IP) to each controller location
- Demo existing ACT control boards (Qty. 3), sensors and control devices and replace necessary. Control valves/actuators, dampers and actuators are excluded from repair or replacement
- Reuse existing control wiring where applicable
- Mount new DDC panels with Bacnet IP DDC controllers in place of ACT control boards
- Replace existing space temp sensors, outside air temp sensor and well temp sensors; wire to BAS controller(s)
- Remove and replace space temperature sensors with sensors which include LCD display, setpoint adjustment, and override
- If compatible with new system, re-use existing duct and water temperature/pressure sensors, current sensing status switches, static pressure transmitters, and low-limit thermostats where compatible and re-wire existing control points from existing controllers to new DDC controllers. All valves/actuators and damper/actuators to be re-used. If devices are found defective during new system startup, contractor shall notify the owner for direction.
- Regardless of compatibility with new system, space mounted temperature sensors shall be replaced with sensors which include LCD display, setpoint adjustment, and override.
- Reuse existing input/output wiring to the largest extent possible
- Install CAT 6 cable from new network controllers back to LCS telecom room for connection/configuration by others.
- Commissioning and owner demonstration labor as identified in general scope above

E.B. Frink Middle School Upgrade

- Furnish and install Network controller(s) and Bacnet IP DDC panels
- Install new communication wiring (IP) to each controller location
- Demo existing ACT control boards (Qty. 3), sensors and control devices and replace necessary. Control valves/actuators, dampers and actuators are excluded from repair or replacement
- Reuse existing control wiring where applicable
- Mount new DDC panels with Bacnet IP DDC controllers in place of ACT control boards
- Replace existing space temp sensors, outside air temp sensor and well temp sensors; wire to BAS controller(s)
- Remove and replace space temperature sensors with sensors which include LCD display, setpoint adjustment, and override
- If compatible with new system, re-use existing duct and water temperature/pressure sensors, current sensing status switches, static pressure transmitters, and low-limit thermostats where compatible and re-wire existing control points from existing controllers to new DDC controllers. All valves/actuators and damper/actuators to be re-used. If devices are found defective during new system startup, contractor shall notify the owner for direction.
- Regardless of compatibility with new system, space mounted temperature sensors shall be replaced with sensors which include LCD display, setpoint adjustment, and override.
- ACT Board #3 is no longer in use or does not exist per LCS personnel
- Reuse existing input/output wiring to the largest extent possible
- Install CAT 6 cable from new network controllers back to LCS telecom room for connection/configuration by others.
- Commissioning and owner demonstration labor as identified in general scope above

Rochelle Middle School Upgrade

- Furnish and install Network controller(s) and Bacnet IP DDC panels
- Install new communication wiring (IP) to each controller location
- Demo existing ACT control boards (Qty. 2), sensors and control devices and replace necessary. Control valves/actuators, dampers and actuators are excluded from repair or replacement
- Reuse existing control wiring where applicable
- Mount new DDC panels with Bacnet IP DDC controllers in place of ACT control boards
- Replace existing space temp sensors, outside air temp sensor and well temp sensors; wire to BAS controller(s)
- Remove and replace space temperature sensors with sensors which include LCD display, setpoint adjustment, and override
- If compatible with new system, re-use existing duct and water temperature/pressure sensors, current sensing status switches, static pressure transmitters, and low-limit thermostats where compatible and re-wire existing control points from existing controllers to new DDC controllers. All valves/actuators and damper/actuators to be re-used. If devices are found defective during new system startup, contractor shall notify the owner for direction.

- Regardless of compatibility with new system, space mounted temperature sensors shall be replaced with sensors which include LCD display, setpoint adjustment, and override.
- Reuse existing input/output wiring to the largest extent possible
- Install CAT 6 cable from new network controllers back to LCS telecom room for connection/configuration by others.
- Commissioning and owner demonstration labor as identified in general scope above

Woodington Middle School Upgrade

- Furnish and install Network controller(s) and Bacnet IP DDC panels
- Install new communication wiring (IP) to each controller location
- Demo existing ACT control boards (Qty. 10), sensors and control devices and replace necessary. Control valves/actuators, dampers and actuators are excluded from repair or replacement
- Reuse existing control wiring where applicable
- Mount new DDC panels with Bacnet IP DDC controllers in place of ACT control boards
- Replace existing space temp sensors, outside air temp sensor and well temp sensors; wire to BAS controller(s)
- Remove and replace space temperature sensors with sensors which include LCD display, setpoint adjustment, and override
- If compatible with new system, re-use existing duct and water temperature/pressure sensors, current sensing status switches, static pressure transmitters, and low-limit thermostats where compatible and re-wire existing control points from existing controllers to new DDC controllers. All valves/actuators and damper/actuators to be re-used. If devices are found defective during new system startup, contractor shall notify the owner for direction.
- Regardless of compatibility with new system, space mounted temperature sensors shall be replaced with sensors which include LCD display, setpoint adjustment, and override.
- Reuse existing input/output wiring to the largest extent possible
- Install CAT 6 cable from new network controllers back to LCS telecom room for connection/configuration by others.
- Commissioning and owner demonstration labor as identified in general scope above

Kinston High School Upgrade

- Furnish and install Network controller(s) and Bacnet IP DDC panels
- Install new communication wiring (IP) to each controller location
- Demo existing ACT control boards (Qty. 5), sensors and control devices and replace necessary. Control valves/actuators, dampers and actuators are excluded from repair or replacement
- Reuse existing control wiring
- Mount new DDC panels with Bacnet IP DDC controllers in place of ACT control boards
- Replace existing space temp sensors, outside air temp sensor and well temp sensors; wire to BAS controller(s)
- Remove and replace space temperature sensors with sensors which include LCD display, setpoint adjustment, and override
- If compatible with new system, re-use existing duct and water temperature/pressure sensors, current sensing status switches, static pressure transmitters, and low-limit thermostats where compatible and re-wire existing control points from existing

controllers to new DDC controllers. All valves/actuators and damper/actuators to be reused. If devices are found defective during new system startup, contractor shall notify the owner for direction.

- Regardless of compatibility with new system, space mounted temperature sensors shall be replaced with sensors which include LCD display, setpoint adjustment, and override.
- Reuse existing input/output wiring to the largest extent possible
- Install CAT 6 cable from new network controllers back to LCS telecom room for connection/configuration by others.
- Commissioning and owner demonstration labor as identified in general scope above

North Lenoir High School Upgrade

- Furnish and install Network controller(s) and Bacnet IP DDC panels
- Install new communication wiring (IP) to each controller location
- Demo existing ACT control boards (Qty. 10), sensors and control devices and replace necessary. Control valves/actuators, dampers and actuators are excluded from repair or replacement
- Mount new DDC panels with Bacnet IP DDC controllers in place of ACT control boards
- Replace existing space temp sensors, outside air temp sensor and well temp sensors; wire to BAS controller(s)
- Remove and replace space temperature sensors with sensors which include LCD display, setpoint adjustment, and override
- If compatible with new system, re-use existing duct and water temperature/pressure sensors, current sensing status switches, static pressure transmitters, and low-limit thermostats where compatible and re-wire existing control points from existing controllers to new DDC controllers. All valves/actuators and damper/actuators to be re-used. If devices are found defective during new system startup, contractor shall notify the owner for direction.
- Regardless of compatibility with new system, space mounted temperature sensors shall be replaced with sensors which include LCD display, setpoint adjustment, and override.
- Reuse existing input/output wiring to the largest extent possible
- Install CAT 6 cable from new network controllers back to LCS telecom room for connection/configuration by others.
- Commissioning and owner demonstration labor as identified in general scope above

South Lenoir High School Upgrade

- Furnish and install Network controller(s) and Bacnet IP DDC panels
- Install new communication wiring (IP) to each controller location
- Demo existing ACT control boards (Qty. 7), sensors and control devices and replace necessary. Control valves/actuators, dampers and actuators are excluded from repair or replacement
- Mount new DDC panels with Bacnet IP DDC controllers in place of ACT control boards
- Replace existing space temp sensors, outside air temp sensor and well temp sensors; wire to BAS controller(s)
- Remove and replace space temperature sensors with sensors which include LCD display, setpoint adjustment, and override
- If compatible with new system, re-use existing duct and water temperature/pressure sensors, current sensing status switches, static pressure transmitters, and low-limit thermostats where compatible and re-wire existing control points from existing controllers to new DDC controllers. All valves/actuators and damper/actuators to be re-

used. If devices are found defective during new system startup, contractor shall notify the owner for direction.

- Regardless of compatibility with new system, space mounted temperature sensors shall be replaced with sensors which include LCD display, setpoint adjustment, and override.
- Reuse existing input/output wiring to the largest extent possible
- Install CAT 6 cable from new network controllers back to LCS telecom room for connection/configuration by others.
- Commissioning and owner demonstration labor as identified in general scope above

Performing Arts Center Upgrade (Kinston High Site)

- Furnish and install Network controller(s) and Bacnet IP DDC panels
- Install new communication wiring (IP) to each controller location
- Demo existing ACT control boards (Qty. 4), sensors and control devices and replace necessary. Control valves/actuators, dampers and actuators are excluded from repair or replacement
- Mount new DDC panels with Bacnet IP DDC controllers in place of ACT control boards
- Replace existing space temp sensors, outside air temp sensor and well temp sensors; wire to BAS controller(s)
- Remove and replace space temperature sensors with sensors which include LCD display, setpoint adjustment, and override
- If compatible with new system, re-use existing duct and water temperature/pressure sensors, current sensing status switches, static pressure transmitters, and low-limit thermostats where compatible and re-wire existing control points from existing controllers to new DDC controllers. All valves/actuators and damper/actuators to be re-used. If devices are found defective during new system startup, contractor shall notify the owner for direction.
- Regardless of compatibility with new system, space mounted temperature sensors shall be replaced with sensors which include LCD display, setpoint adjustment, and override.
- Reuse existing input/output wiring to the largest extent possible
- Install CAT 6 cable from new network controllers back to LCS telecom room for connection/configuration by others.
- Commissioning and owner demonstration labor as identified in general scope above

Items Not Included in Contractors Scope of Work:

- 1. Any work at Bynum Teacher's ES, Teacher's Memorial ES or Sampson ES; Schools are permanently closed
- 2. Any work associated with Boards #3 through #7 at Moss Hill ES. Only boards #1 and #2.
- 3. Provision or installation (or replacement) of Variable Frequency Drives
- 4. Repair or troubleshooting of existing Variable Frequency Drives
- 5. Repair or replacement of valves or dampers and their actuators of any type.
- 6. Any pneumatic component replacement (ie, compressor, dryer, pneumatic valves/actuators, pneumatic dampers/actuators, pneumatic thermostats, etc.
- 7. Repair or replacement of existing zone dampers
- 8. Repair or replacement of mechanical or electrical (other than controls noted above) equipment (ie, AHUs, RTUs, FCUs, fan motors, pulleys, belts, sheaves, coils, starters, disconnect switches, VFDs, valves, dampers, etc.)
- 9. Repair, replacement or furnishing of new Flow Meters (Onicon or others)

- 10. MER refrigerant monitoring and alarm devices. Should be existing to remain.
- 11. Provision or installation (or replacement) of duct smoke detectors: installation labor or materials
- 12. Repair or replacement of existing gauges and thermometers, or circuit setters
- 13. Balancing dampers, fire/smoke dampers and their actuators, other dampers of any type, and any installation labor
- 14. Installation of new access doors
- 15. Painting of conduit
- 16. Ceiling tile replacement
- 17. Insulation/duct repair or replacement
- 18. Test and Balance work

If above items are determined to be needed or items repaired, they will be handled by owner's contingency via change order.

Bid Form:

<u>Bidder:</u> Company Name: Address: Contractors Unlimited License Number:

Base Bid Full functional system (all sites) all f	or the net sum of:	<u>\$</u>
		Dollars
RESPECTFULLY SUBMITTED this	dav of	. 202
(Name of firm or corporation making bid)		,
By: Title: (Owner / Partner / President / Vice President)		
License No Federal ID No		
WITNESS: (Proprietorship / Partnership) By:		
ATTEST: (Corporation)		

ATTEST: (Corporation) By: _____ Title: _____ (Corporate Secretary or Asst. Secretary Only)

(CORPORATE SEAL)

For questions regarding this bid, please contact:

Larry Modlin Imodlin@lenoir.k12.nc.us

Thank you for your consideration.

Pricing above includes BAS server and all sites with scope detailed above and listed below:

BAS server, licensing, and reports server software/config: Banks ES, all for the net sum of: Contentnea-Savannah K-8, all for the net sum of: LaGrange ES, all for the net sum of: Moss Hill ES, all for the net sum of: Northeast ES, all for the net sum of: Northwest ES, all for the net sum of: Pink Hill ES, all for the net sum of: Southeast ES, all for the net sum of: Southwood ES, all for the net sum of: E.B. Frink MS, all for the net sum of: Rochelle MS, all for the net sum of: Woodington MS, all for the net sum of: Kinston HS, all for the net sum of: North Lenoir HS, all for the net sum of: South Lenoir HS, all for the net sum of Performing Arts Center, all for the net sum of