

STATE OF NORTH CAROLINA/BUNCOMBE COUNTY SCHOOLS REQUEST FOR PROPOSAL

**PROJECT: T.C. ROBERSON HIGH SCHOOL CHILLER REPLACEMENT
RFP# 14-16**

PROJECT DESIGNER: Al Meskil, HVAC Supervisor

USING AGENCY: Buncombe County Schools

ISSUE DATE: April 20, 2016

Proposals from bidders subject to the conditions made a part hereof will be received until 4:00 PM on May 11, 2016 for furnishing all labor, materials, equipment, and services incidental and implied, for completion of the project described herein.

PREBID CONFERENCE: A pre-bid conference shall be held in the lobby by the main office at 9:00am on Tuesday, April 26, 2016 at T.C. Roberson High School, located at 250 Overlook Rd, Asheville NC, 28803-3317. If you have any questions prior to the pre-bid, please contact Al Meskil, Office: (828) 225-1105 Cell: (828) 775-2086 email, al.meskil@bcsemail.org

SEND ALL PROPOSALS DIRECTLY TO THE ADDRESS AS SHOWN BELOW:

Buncombe County Schools, Purchasing Division
175 Bingham Road
Asheville, NC 28806

NOTE: Indicate firm name and RFP number on the front of each sealed proposal envelope or package, along with the date for receipt of proposals specified above.

Direct inquiries concerning this RFP to: Al Meskil, HVAC Supervisor Phone: 828-225-1105
Ron Venturella, Purchasing Officer Phone: 828-255-5891

THE PROCUREMENT PROCESS

The following is a general description of the process by which a firm will be selected to provide services.

1. Request for Proposals (RFP) is issued to prospective contractors.
2. A preproposal conference and/or deadline for written questions is five days prior to due date.
3. Proposals in one original will be received from each offeror in a sealed envelope or package. Each original shall be signed and dated by an official authorized to bind the firm. Unsigned proposals will not be considered. Bid bond should be included in a separate sealed envelope.
4. All proposals must be received by the issuing agency not later than the date and time specified on the cover sheet of this RFP.
5. At that date and time the proposals from each responding firm will be opened. Interested parties are cautioned that these costs and their components are subject to further evaluation for completeness and correctness and therefore may not be an exact indicator of an offeror's pricing position. Informal proposals (less than \$ 300,000) are confidential until such time that award has been made. Thereafter, the purchasing division will furnish bid tabs upon request.
6. At their option, the evaluators may request oral presentations or discussion with any or all offerors for the purpose of clarification or to amplify the materials presented in any part of the proposal. However, offerors are cautioned that the evaluators are not required to request clarification; therefore, all proposals should be complete and reflect the most favorable terms available from the offeror.
7. Proposals will be evaluated according to completeness, content, experience with similar projects, ability of the offeror and its staff, and cost. Award of a contract to one offeror does not mean that the other proposals lacked merit, but that, all factors considered, the selected proposal was deemed most advantageous to the State.
8. Offerors are cautioned that this is a request for offers, not a request to contract, and the State/Buncombe County Schools reserves the unqualified right to reject any and all offers when such rejection is deemed to be in the best interest of the State.

(NOTE: THIS FORM MUST BE FULLY EXECUTED AND RETURNED FOR CONSIDERATION OF PROPOSAL)

PROPOSAL FORM

T.C. ROBERSON HIGH SCHOOL CHILLER REPLACEMENT

RFP# 14-16

DUE DATE: MAY 11, 2016 by 4:00 PM

By submitting this proposal, the potential contractor certifies the following:

- ** This proposal is signed by an authorized representative of the firm.
- ** It can obtain and submit to the Owner insurance certificates as required within 5 calendar days after notice of award.
- ** The cost and availability of all equipment, materials, and supplies associated with performing the services described herein have been determined and included in the proposed cost.
- ** All labor costs, direct and indirect, have been determined and included in the proposed cost.
- ** All taxes have been determined and included in the proposed cost.
- ** The offeror has attended the conference (*if applicable*) or conducted a site visit and is aware of prevailing conditions associated with performing these services.
- ** The potential contractor has read and understands the conditions set forth in this RFP and agrees to them with no exceptions.

Therefore, in compliance with this Request for Proposals, and subject to all conditions herein, the undersigned offers and agrees, if this proposal is accepted within 45 days (normally less) from the date of the opening, to furnish the subject services for a cost not to exceed:

OFFEROR: _____

BASE BID: All of the items as listed, using the Carrier Water Cooled Centrifugal Chiller. **Note: Alternate Centrifugal Chillers of equal specification, may be submitted for consideration. All alternates must be submitted to the Owner for approval no less than five days prior to bid due date.**

\$ _____ dollars and _____/100 \$ _____

Alternate #1: Provide a Manufacturers five year warranty for all parts and labor on the Centrifugal Chiller.

\$ _____ dollars and _____/100 \$ _____

Alternate #2: Replace the existing chilled water side butterfly valves with Apollo lug style EPDM liner, rated at 200 P.S.I. and gear drives.

\$ _____ dollars and _____/100 \$ _____

Attended Pre-Bid Mtg: YES/NO _____

Addendums received and used in computing bid: YES/NO _____ Number of Addendums received: _____

PROPOSAL FORM CONTINUED ON NEXT PAGE

PROPOSAL FORM

T.C. ROBERSON HIGH SCHOOL CHILLER REPLACEMENT RFP# 14-16

DUE DATE: MAY 11, 2016 by 4:00 PM

OFFEROR: _____

ADDRESS: _____

CITY, STATE, ZIP: _____

TELEPHONE NUMBER: _____ FAX: _____

FED ID No: _____ Type & License #: _____

E-MAIL: _____ MBE Status: _____

Principal Place of Business if different from above (See General Information on Submitting Proposals, Item 18.): _____

BY: (Signature) _____ TITLE: _____

DATE: _____ (Typed or printed name) _____

End of Proposal Form

If the winning bid is \$150,000 or greater, the bidder will be required to provide a performance and payment bond before the contract is awarded. Bond forms are included with the RFP. A bid bond is not required for this proposal.

GENERAL INFORMATION ON SUBMITTING PROPOSALS

1. **EXCEPTIONS:** All proposals are subject to the terms and conditions outlined herein. All responses shall be controlled by such terms and conditions and the submission of other terms and conditions, price lists, catalogs, and/or other documents as part of an offeror's response will be waived and have no effect either on this Request for Proposals or on any contract that may be awarded resulting from this solicitation. Offeror specifically agrees to the conditions set forth in the above paragraph by signature to the proposal.
2. **CERTIFICATION:** By executing the proposal, the signer certifies that this proposal is submitted competitively and without collusion (G.S. 143-54), that none of our officers, directors, or owners of an unincorporated business entity has been convicted of any violations of Chapter 78A of the General Statutes, the Securities Act of 1933, or the Securities Exchange Act of 1934 (G.S. 143-59.2), and that we are not an ineligible vendor as set forth in G.S. 143-59.1. False certification is a Class I felony.
3. **ORAL EXPLANATIONS:** The State/Buncombe County Schools shall not be bound by oral explanations or instructions given at any time during the competitive process or after award.
4. **REFERENCE TO OTHER DATA:** Only information which is received in response to this RFP will be evaluated; reference to information previously submitted shall not be evaluated.
5. **ELABORATE PROPOSALS:** Elaborate proposals in the form of brochures or other presentations beyond that necessary to present a complete and effective proposal are not desired.

In an effort to support the sustainability efforts of the State of North Carolina we solicit your cooperation in this effort.

It is desirable that all responses meet the following requirements:

- All copies are printed **double sided**.
 - All submittals and copies are printed on **recycled paper with a minimum post-consumer content of 30%** and indicate this information accordingly on the response.
 - Unless absolutely necessary, all proposals and copies should **minimize or eliminate use of non-recyclable or non re-usable materials** such as plastic report covers, plastic dividers, vinyl sleeves, and GBC binding. Three-ringed binders, glued materials, paper clips, and staples are acceptable.
 - Materials should be submitted in a format which allows for **easy removal and recycling** of paper materials.
6. **COST FOR PROPOSAL PREPARATION:** Any costs incurred by offerors in preparing or submitting offers are the offerors' sole responsibility; the State of North Carolina/Buncombe County Schools will not reimburse any offeror for any costs incurred.
 7. **TIME FOR ACCEPTANCE:** Each proposal shall state that it is a firm offer which may be accepted within a period of 45 days. Although the contract is expected to be awarded prior to that time, the 45 day period is requested to allow for unforeseen delays.
 8. **TITLES:** Titles and headings in this RFP and any subsequent contract are for convenience only and shall have no binding force or effect.
 9. **CONFIDENTIALITY OF PROPOSALS:** In submitting its proposal the offeror agrees not to discuss or otherwise reveal the contents of the proposal to any source outside of the using or issuing agency, government or private, until after the award of the contract. Offerors not in compliance with this provision may be disqualified, at the option of the State/Buncombe County Schools, from contract award. Only discussions authorized by the issuing agency are exempt from this provision.
 10. **RIGHT TO SUBMITTED MATERIAL:** All responses, inquiries, or correspondence relating to or in reference to the RFP, and all other reports, charts, displays, schedules, exhibits, and other documentation submitted by the offerors shall become the property of the State/Buncombe County Schools when received.
 11. **OFFEROR'S REPRESENTATIVE:** Each offeror shall submit with its proposal the name, address, and telephone number of the person(s) with authority to bind the firm and answer questions or provide clarification concerning the firm's proposal.
 12. **SUBCONTRACTING:** Offerors may propose to subcontract portions of the work provided that their proposals clearly indicate what work they plan to subcontract and to whom and that all information required about the prime contractor is also included for each proposed subcontractor.
 13. **PROPRIETARY INFORMATION:** Trade secrets or similar proprietary data which the offeror does not wish disclosed to other than personnel involved in the evaluation or contract administration will be kept confidential to the extent permitted by NCAC T01:05B.1501 and G.S. 132-1.3 if identified as follows: Each page shall be identified in boldface at the top and bottom as "CONFIDENTIAL". Any section of the proposal which is to remain confidential shall also be so marked in boldface on the title page of that section. Cost information may not be deemed confidential. In spite of what is labeled as confidential, the determination as to whether or not it shall be determined by North Carolina law.

14. **HISTORICALLY UNDERUTILIZED BUSINESSES:** Pursuant to General Statute 143-48 and Executive Order #150, Buncombe County Schools invites and encourages participation in this procurement process by businesses owned by minorities, women, disabled, disabled business enterprises and non-profit work centers for the blind and severely disabled.

The Contractor agrees in particular to maintain open hiring and employment practices and to receive applications for employment in compliance with all requirements of applicable federal, state and local laws and regulations issued pursuant thereto relating to nondiscriminatory hiring and employment practices. Each Prime Contractor shall undertake an affirmative action program to ensure that no person shall be excluded from participation in any employment activities because of age, sex, race, religion, color, national origin or handicap.

15. **PROTEST PROCEDURES:** If an offeror wants to protest a contract awarded pursuant to this solicitation, they must submit a written request to the Purchasing Officer, Buncombe County Schools, 175 Bingham Road, or PO Box 16771, Asheville, NC 28806. This request must be received by the Purchasing Division within thirty (30) consecutive calendar days from the date of the contract award, and must contain specific sound reasons and any supporting documentation for the protest. NOTE: Contract award notices are sent only to those actually awarded contracts, and not to every person or firm responding to this solicitation. Contract status and award notices are available through the purchasing division or the project designer with contact information as shown on the first page of this solicitation. Offeror's may call to obtain a verbal status of contract award. All protests will be handled pursuant to the North Carolina Administrative Code, Title 1, Department of Administration, Chapter 5, Purchase and Contract, Section 5B.1519.

16. **TABULATIONS:** Offeror's may call the purchasing division to obtain a verbal status of contract award.

17. **VENDOR REGISTRATION AND SOLICITATION NOTIFICATION SYSTEM:** Vendor Link NC allows vendors to electronically register free with the State to receive electronic notification of current procurement opportunities for goods and services available on the Interactive Purchasing System. Online registration and other purchasing information are available on the Internet web site: <http://www.state.nc.us/pandc/>.

18. **RECIPROCAL PREFERENCE:** G.S. 143-59 establishes a reciprocal preference law to discourage other states from applying in-state preferences against North Carolina's resident offerors. The "Principal Place of Business" is defined as the principal place from which the trade or business of the offeror is directed or managed.

NORTH CAROLINA GENERAL CONTRACT TERMS AND CONDITIONS (Contractual and Consultant Services)

1. **GOVERNING LAW:** This contract is made under and shall be governed and construed in accordance with the laws of the State of North Carolina.
2. **SITUS:** The place of this contract, its situs and forum, shall be North Carolina, where all matters, whether sounding in contract or tort, relating to its validity, construction, interpretation and enforcement shall be determined.
3. **INDEPENDENT CONTRACTOR:** The Contractor shall be considered to be an independent contractor and as such shall be wholly responsible for the work to be performed and for the supervision of its employees. The Contractor represents that it has, or will secure at its own expense, all personnel required in performing the services under this agreement. Such employees shall not be employees of, or have any individual contractual relationship with the Agency.
4. **KEY PERSONNEL:** The Contractor shall not substitute key personnel assigned to the performance of this contract without prior written approval by the Agency's Contract Administrator. The individuals designated as key personnel for purposes of this contract are those specified in the Contractor's proposal.
5. **SUBCONTRACTING:** Work proposed to be performed under this contract by the Contractor or its employees shall not be subcontracted without prior written approval of the Agency's Contract Administrator/Project Designer. Acceptance of an offeror's proposal shall include any subcontractor(s) specified therein.
6. **PERFORMANCE AND DEFAULT:** If, through any cause, the Contractor shall fail to fulfill in timely and proper manner the obligations under this agreement, the Agency shall thereupon have the right to terminate this contract by giving written notice to the Contractor and specifying the effective date thereof. In that event, all finished or unfinished deliverable items under this contract prepared by the Contractor shall, at the option of the Agency, become its property, and the Contractor shall be entitled to receive just and equitable compensation for any satisfactory work completed on such materials. Notwithstanding, the Contractor shall not be relieved of liability to the Agency for damages sustained by the Agency by virtue of any breach of this agreement, and the Agency may withhold any payment due the Contractor for the purpose of setoff until such time as the exact amount of damages due the Agency from such breach can be determined. In case of default by the Contractor, the State may procure the services from other sources and hold the Contractor responsible for any excess cost occasioned thereby. The State reserves the right to require performance bond or other acceptable alternative guarantees from successful offeror without expense to the State.

Upon the entering of a judgment of bankruptcy or insolvency by or against the Contractor, the Agency may terminate this contract for cause.

Neither party shall be deemed to be in default of its obligations hereunder if and so long as it is prevented from performing such obligations by any act of war, hostile foreign action, nuclear explosion, riot, strikes, civil insurrection, earthquake, hurricane, tornado, or other catastrophic natural event or act of God.

7. **TERMINATION:** The Agency may terminate this agreement at any time by 15 days notice in writing from the Agency to the Contractor. In that event, all finished or unfinished deliverable items prepared by the Contractor under this contract shall, at the option of the Agency, become its property. If the contract is terminated by the Agency as provided herein, the Contractor shall be paid for services satisfactorily completed, less payment or compensation previously made.
8. **AVAILABILITY OF FUNDS:** Any and all payments to the Contractor are dependent upon and subject to the availability of funds to the Agency for the purpose set forth in this agreement.
9. **CONFIDENTIALITY:** Any information, data, instruments, documents, studies or reports given to or prepared or assembled by the Contractor under this agreement shall be kept as confidential and not divulged or made available to any individual or organization without the prior written approval of the Agency.
10. **CARE OF PROPERTY:** The Contractor agrees that it shall be responsible for the proper custody and care of any property furnished it for use in connection with the performance of this contract or purchased by it for this contract and will reimburse the State for loss or damage of such property.
11. **COPYRIGHT:** No deliverable items produced in whole or in part under this agreement shall be the subject of an application for copyright by or on behalf of the Contractor.
12. **ACCESS TO PERSONS AND RECORDS:** The State Auditor shall have access to persons and records as a result of all contracts or grants entered into by State agencies or political subdivisions in accordance with General Statute 147-64.7. The Contractor shall retain all records for a period of three years following completion of the contract.
13. **ASSIGNMENT:** No assignment of the Contractor's obligations nor the Contractor's right to receive payment hereunder shall be permitted. However, upon written request approved by the issuing purchasing authority, the State may:
 - a. Forward the contractor's payment check(s) directly to any person or entity designated by the Contractor, or

b. Include any person or entity designated by Contractor as a joint payee on the Contractor's payment check(s). In no event shall such approval and action obligate the State to anyone other than the Contractor and the Contractor shall remain responsible for fulfillment of all contract obligations.

14. **COMPLIANCE WITH LAWS:** The Contractor shall comply with all laws, ordinances, codes, rules, regulations, and licensing requirements (permits) that are applicable to the conduct of its business, including those of federal, state, and local agencies having jurisdiction and/or authority.
15. **AFFIRMATIVE ACTION:** The Contractor shall take affirmative action in complying with all Federal and State requirements concerning fair employment and employment of people with disabilities, and concerning the treatment of all employees without regard to discrimination by reason of race, color, religion, sex, national origin, or disability.
16. **INSURANCE:** During the term of the contract, the contractor at its sole cost and expense shall provide commercial insurance of such type and with such terms and limits as may be reasonably associated with the contract. As a minimum, the contractor shall provide and maintain the following coverage and limits:
 - a. Worker's Compensation - The contractor shall provide and maintain Worker's Compensation Insurance, as required by the laws of North Carolina, as well as employer's liability coverage with minimum limits of \$150,000.00, covering all of Contractor's employees who are engaged in any work under the contract. If any work is subcontracted, the contractor shall require the subcontractor to provide the same coverage for any of its employees engaged in any work under the contract.
 - b. Commercial General Liability - General Liability Coverage on a Comprehensive Broad Form on an occurrence basis in the minimum amount of \$2,000,000.00 Combined Single Limit. (Defense cost shall be in excess of the limit of liability).
 - c. Automobile - Automobile Liability Insurance, to include liability coverage, covering all owned, hired and non-owned vehicles, used in connection with the contract. The minimum combined single limit shall be \$500,000.00 bodily injury and property damage; \$500,000.00 uninsured/under insured motorist; and \$100,000.00 medical payment.

Providing and maintaining adequate insurance coverage is a material obligation of the contractor and is of the essence of this contract. All such insurance shall meet all laws of the State of North Carolina. Such insurance coverage shall be obtained from companies that are authorized to provide such coverage and that are authorized by the Commissioner of Insurance to do business in North Carolina. The contractor shall at all times comply with the terms of such insurance policies, and all requirements of the insurer under any such insurance policies, except as they may conflict with existing North Carolina laws or this contract. The limits of coverage under each insurance policy maintained by the contractor shall not be interpreted as limiting the contractor's liability and obligations under the contract.

The Contractor shall furnish a Certificate of Insurance as proof of the above coverages. Certificate will contain provision that the insurance coverages cannot be canceled, reduced in amount or coverage eliminated without 30 days written notice to the Buncombe County Board of Education. Owner's Protective insurance must list the Buncombe County Board of Education as a "Named Insured" as it's interest may appear. Owner's approval of Certificate of Insurance does not decrease or relieve the contractor's responsibility for maintaining insurance coverage as required in this Request for Proposal.

17. **ADVERTISING:** Contractor agrees not to use the existence of this contract, the name of the agency, or the name of the State of North Carolina as part of any commercial advertising.
18. **ENTIRE AGREEMENT:** This contract and any documents incorporated specifically by reference represent the entire agreement between the parties and supersede all prior oral or written statements or agreements. This Request for Proposals, any addenda thereto, and the offeror's proposal are incorporated herein by reference as though set forth verbatim.

All promises, requirements, terms, conditions, provisions, representations, guarantees, and warranties contained herein shall survive the contract expiration or termination date unless specifically provided otherwise herein, or unless superseded by applicable Federal or State statutes of limitation.
19. **AMENDMENTS:** This contract may be amended only by written amendments duly executed by the Agency and the Contractor.
20. **TAXES:** G.S. 143-59.1 bars the Secretary of Administration from entering into contracts with vendors if the vendor or its affiliates meet one of the conditions of G. S. 105-164.8(b) and refuse to collect use tax on sales of tangible personal property to purchasers in North Carolina. Conditions under G. S. 105-164.8(b) include: (1) Maintenance of a retail establishment or office, (2) Presence of representatives in the State that solicit sales or transact business on behalf of the vendor and (3) Systematic exploitation of the market by media-assisted, media-facilitated, or media-solicited means. By execution of the bid document the vendor certifies that it and all of its affiliates, (if it has affiliates), collect(s) the appropriate taxes.

21. **GENERAL INDEMNITY:** The contractor shall hold and save the State/Buncombe County Schools, its officers, agents, and employees, harmless from liability of any kind, including all claims and losses, with the exception of consequential damages, accruing or resulting to any other person, firm, or corporation furnishing or supplying work, services, materials, or supplies in connection with the performance of this contract, and from any and all claims and losses accruing or resulting to any person, firm, or corporation that may be injured or damaged by the contractor in the performance of this contract and that are attributable to the negligence or intentionally tortious acts of the contractor provided that the contractor is notified in writing within 30 days that the State/Buncombe County Schools has knowledge of such claims. The contractor represents and warrants that it shall make no claim of any kind or nature against the State's agents who are involved in the delivery or processing of contractor goods to the State. The representation and warranty in the preceding sentence shall survive the termination or expiration of this contract.

CONTRACTOR'S SALES TAX REPORT
NC State and Local Sales Taxes Paid

Buncombe County Schools

CONTRACTOR: _____

PO#/RFP# _____

Address: _____ For Period: _____

Invoice Date	Invoice #	Type of Property	NC Tax 4.75%	County Tax 2.25%	Name of County
		TOTAL	\$	\$	

I certify that the above figures do not include any tax paid on supplies, tools and equipment which were used to perform this contract and only includes those building materials, supplies, fixtures and equipment which actually became a part of or annexed to the building or structure. I certify that, to the best of my knowledge, the information provided here is true, correct, and complete.

Sworn to and subscribed before me,

This the _____ day of
_____, 20____

Signed

Notary Public

My Commission
Expires: _____

Print or Type Name of Above & Title

Seal

NOTE:
This certified statement may be subject to audit.

The North Carolina General Assembly has amended the Statute to provide refunds of sales and use tax to local school units in accordance with the provisions of G.S. 105-164. 14(c) effective with tax paid on or after July 1, 1998.

These refunds are to include the "sales and use taxes paid by contractors on building materials, supplies, fixtures and equipment that become a part of or annexed to a building or structure that is owned or leased by the governmental entity and is being erected, altered or repaired for use by the governmental entity (G.S. 105-164.14)."

Sales and Use Tax Technical Bulletin Section 18-2F specifies: "To substantiate a refund claim for sales or use taxes paid on purchases of building materials, supplies, fixtures and equipment by its contractor, the claimant must secure from such contractor certified statements setting forth all of the following information:

- a. the date the property was purchased;
- b. the type of property purchased ;
- c. the project for which the property was used;
- d. if the property was purchased in this State, the county in which it was purchased;
- e. if the property was not purchased in this State, the county in which the property was used; and
- f. the amount of sales and use taxes paid.

In the event the contractor makes several purchases from the same vendor, such certified statement must indicate the invoice numbers, the inclusive dates of the invoices, the total amount of the invoices and the State and local sales and use taxes paid thereon. Such statement must also include the cost of any tangible personal property withdrawn from the contractor's warehouse stock and the amount of sales and use tax paid thereon by the contractor. Similar certified statements by his subcontractors must be obtained by the general contractor and furnished to the claimant. Any local sales or use taxes must be shown separately from the State sales or use taxes. The contractor's statements must not contain sales or use taxes paid on purchases of tangible personal property purchased by such contractors for use in performing the contract which does not annex to, affix to or in some manner become a part of the building or structure that is owned or leased by a governmental agency and is being erected, altered or repaired for use by a governmental entity as defined by G.S. 105-164.14(c). Examples of property on which sales or use tax has been paid by the contractor and which shall not be included in the contractor's statement are scaffolding, forms for concrete, fuel for the operation of machinery and equipment, tools, repair parts and equipment rentals.

Please read entire specification package. You will be held accountable for all information. NO payment shall be made if specifications are not followed.

Scope: Work shall consist of furnishing all labor, materials, equipment and services, incidental for the completion of work as described herein. All items not specifically mentioned in the specifications, but which obviously are required to make the job complete, shall be included automatically.

Qualifications: All bidders must furnish a list of North Carolina Contractor Licenses, which they hold.

Contractor's Responsibility: The Contractor shall be responsible for the construction site during the performance of the work. The Contractor shall be responsible for any and all damages to persons and property during the performance of the work and shall further provide all necessary safety measures and shall fully comply with all federal state and local laws, building rules, rules and regulations to prevent accidents or injury to persons or property on or about the location of the work site. This is to include OSHA 1910, General Construction, or those regulations mandated by these specifications. Special attention will be made to proper barricading of the work areas due to the work progressing within an actively operating office atmosphere.

Safety Regulations: The Contractor shall adhere to the rules, regulations and interpretations of the North Carolina Department of Labor relating to Occupational Safety and Health Standards for the Construction Industry (Title 29, Code of Federal Regulations, Part 1926, published in Volume 39, Number 122, Part II, June 24, 1974 Federal Register) which is hereby incorporated in these specifications.

Codes: All work shall be done in accordance with the specifications and shall comply with North Carolina Building Code, Underwriters' Rules and Regulations and Federal, State and Local Regulations covering work of this nature. Whenever drawings or specifications are in excess of such laws, codes and regulations, the specifications shall hold. All equipment shall have U. L. labels attached.

Permits: The Contractor must secure all permits required for the job completion, obtain and deliver to Owner, all certification of inspection issued by the authorities having jurisdiction, with Contractor paying cost of same. Permitting is through the Permitting Division of Buncombe County. **All final certificates must be delivered to owner prior to request for final payment.**

Scheduling: The Contractor must submit a precise time schedule as to when work will occur in specific areas within the building. This will be used to coordinate the work with the PRINCIPAL and occupants of the building. The PROJECT DESIGNER or PRINCIPAL may alter the schedule at any time to maintain the work process within the facility. Buncombe County Board of Education shall not incur any additional cost due to scheduling. Some or all work may have to be done after school hours or on holidays. Any additional cost due to scheduling shall be the contractor's responsibility.

Workers on Job: All employees of the Contractor shall, while on Buncombe County Board of Education property, act in a professional and courteous manner. All workers shall be expected to wear long pants and shirts while on Board property. Also, all employees of the Contractor must "sign in" in the main office upon entering the facility and must "sign out" upon leaving the property. Any employee of the Contractor may be told to leave the property by either the Principal or the Assistant Director, if they do not follow the above procedure. The employee shall be replaced with another at no additional cost to the Buncombe County Board of Education.

In accordance with G.S. 14-208.18, all persons who (1) are required to register under the Sex Offender and Public Protection Program AND (2) have been convicted of certain sexually violent offenses or any offense where the victim was under the age of 16 years at the time of the offense are expressly forbidden to knowingly be present on any property owned or operated by the school system, including school buildings, athletic fields, playgrounds, parking lots, school buses, activity buses or other property of any kind for any reason, including attendance at sporting events or other school related functions, whether before, during or

after school hours. It is the responsibility of the contractor or vendor that their employees and sub-contractors are in accordance with G.S. 14-208.18.

E-Verify: Contractor shall comply with E-Verify, the federal E-Verify program operated by the United States Department of Homeland Security and other federal agencies, or any successor or equivalent program used to verify the work authorization of newly hired employees pursuant to federal law and as in accordance with N.C.G.S. §64-25 et seq. In addition, to the best of Contractor's knowledge, any subcontractor employed by Contractor as a part of this contract shall be in compliance with the requirements of E-Verify and N.C.G.S. §64-25 et seq.

Iran Divestment Act: North Carolina Local Government Units may not enter into contracts with any entity or individual found on the State Treasurer's Iran Final Divestment List N.C.G.S. 143C-6A. By bidding on this project the bidder certifies it is not listed on the Final Divestment List created by the State Treasurer.

Equipment and Tools: The Contractor shall use no equipment or tools that are owned by the Buncombe County Board of Education. Also, no employees of the Buncombe County Board of Education shall be utilized by the Contractor except for opening locked doors and giving directions.

Materials: No materials shall be stored on site and the Buncombe County Board of Education is not responsible for any materials, equipment or tools lost or stolen from the site.

Clean Up: The area of work shall be cleaned daily so that the Buncombe County Board of Education shall not incur any additional costs to make the area suitable for the work process. Also, the Contractor shall utilize no trash receptacles or dumpsters owned by the Buncombe County Board of Education. All trash and removed materials shall be properly disposed of off the property.

Bonds: A bid bond is not required. If the winning bid is \$150,000 or greater, the bidder will be required to provide a performance and payment bond before the contract is awarded. Bond forms are included with the RFP.

Changes in the Work: Changes in the work shall only be made by written direction signed by the Owner. No additional cost to the Contract shall be allowed unless accepted in writing by the Owner before the work has begun.

Contract Time: ENTIRE PROJECT MUST BE COMPLETED BY FRIDAY AUGUST 5, 2016.

Submittal: Within 1 week of acceptance of contract, performance data, installation manuals, operation manuals (3 copies) and time schedule must be submitted to Owner for approval. Send to Buncombe County Schools Maintenance, 175 Bingham RD, Asheville, N.C. 28806 Attention Albert Meskil.

Payment: Final documents required:

1. Letter from Contractor, which states all work is completed and payment is desired.
2. Delivery to Owner, all certifications of inspection issued by the **Authorities Having Jurisdiction.**
3. Three copies each, Owners manuals, Maintenance Manuals, Manufacturer's start-up documents.

All information requested in these specifications and actual bids shall be entered on enclosed "Request for Proposal" All areas of this document must be completed in full, especially: (1) Name of Company, (2) By (signature), (3) Official Title, and (4) Quotation Date.

Warranty: All work and all labor, materials and equipment shall be unconditionally warranted (excluding vandalism, or neglect by Buncombe County Schools only) for one (1) year from issuance of inspection "green tag". Compressors shall have a 5 year warranty.

Performance of Work: All work shall be performed at the highest level of quality. All equipment and materials

shall be new and without defects. The Owner shall be responsible for determining the quality of work, and may notify the Contractor of same. **ANY WORK COMPLETED THAT IS NOT SUITABLE TO THE OWNER SHALL BE REPEATED BY THE CONTRACTOR AT NO COST TO THE OWNER.** Any damage to existing area or utilities will be the responsibility of the Contractor. **NO EXCEPTIONS.**

- A. Removal of existing McQuay Centrifugal Chiller, and all related components not germane to the installation or operation of the new chiller.
 - 1. The chiller shall be removed safely and shall not damage any of the building or grounds. If damage occurs, contractor shall be responsible for repairing back to original condition. Any tools/equipment needed for removal and re-installation shall be the responsibility of the contractor.
 - 2. The unit shall be disposed of properly, meeting all requirements established under section 608 of the Clean Air Act.
- B. HVAC Equipment – Carrier Water Cooled Centrifugal Chiller
Model 19XRV4241354KDH64, Semi-Hermetic Centrifugal Liquid Chiller.
SIZE RANGE 425 Tons

Part 1 —GENERAL

1.01 SYSTEM DESCRIPTION

- A. Microprocessor-controlled liquid chiller shall use a semi-hermetic centrifugal compressor using refrigerant HFC-134a.

1.02 QUALITY ASSURANCE

- A. Chiller performance shall be rated in accordance with AHRI (Air-Conditioning, Heating and Refrigeration Institute) Standard 550/590, latest edition.
- B. Equipment and installation shall be in compliance with ANSI/ASHRAE (American Standards Institute/ American Society of Heating, Refrigerating and Air- Conditioning Engineers) 15 (latest edition).
- C. Cooler and condenser refrigerant side shall include ASME “U” stamp and nameplate certifying compliance with ASME Section VIII, Division 1 code for unfired pressure vessels.
- D. Chiller shall be designed and constructed to meet UL (Underwriters Laboratories) and UL, Canada requirements and have labels appropriately affixed.
- E. Centrifugal compressor impellers shall be dynamically balanced and over-speed tested by the manufacturer at a minimum of 120% design operating speed. Each compressor assembly shall undergo a mechanical run-in test to verify vibration levels, oil pressures, and temperatures are within acceptable limits. Each compressor assembly shall be proof tested at a minimum 204 psig (1406 kPa) and leak tested at 185 psig (1276 kPa) with a tracer gas mixture.
- F. Entire chiller assembly shall be proof tested at 204 psig (1406 kPa) and leak tested at 185 psig (1276 kPa) with a tracer gas mixture on the refrigerant side. The water side of each heat exchanger shall be hydrostatically tested at 1.3 times rated working pressure.
- G. Prior to shipment, the chiller automated controls test shall be executed to check for proper wiring and ensure correct controls operation.
- H. On chillers with unit-mounted compressor motor starter or VFD (variable frequency drive), the chiller and starter/VFD shall be factory wired and tested together to verify proper operation prior to shipment.
- I. Chiller shall be manufactured at an ISO (International Organization for Standardization) 9001 facility.

1.03 DELIVERY, STORAGE AND HANDLING

- A. Unit shall be stored and handled in accordance with manufacturer's instructions.
- B. Unit shall be shipped with all refrigerant piping and control wiring factory installed.
- C. Unit shall be shipped charged with oil and full charge of refrigerant HFC-134a or a nitrogen holding charge as specified on the equipment schedule.
- D. Unit shall be shipped with firmly attached labels that indicate name of manufacturer, chiller model number, chiller serial number, and refrigerant used.

1.04 WARRANTY

Warranty shall include parts and labor for one year after start-up or 18 months from shipment, whichever occurs first.

Part 2 — Products

2.01 EQUIPMENT

A. General:

Factory assembled, single piece, liquid chiller shall consist of compressor, motor, starter or variable frequency drive, lubrication system, cooler, condenser, initial oil and refrigerant operating charges, microprocessor control system, and documentation required prior to start-up. An optional compressor motor starter or VFD can be mounted on the chiller, wired, and tested by the chiller manufacturer (select models). Or, an optional free-standing medium voltage starter or VFD can be wired and tested by the chiller manufacturer.

B. Compressor:

1. One high performance centrifugal compressor.
2. Compressor, motor, and transmission shall be semi-hermetically sealed into a common assembly and arranged for easy field servicing.
3. Internal compressor parts must be accessible for servicing without removing the compressor base from the chiller. Connections to the compressor casing shall use O-rings instead of gaskets to reduce the occurrence of refrigerant leakage. Connections to the compressor shall be flanged or bolted for easy disassembly.
4. All pressure transducers shall have quick disconnects to allow replacement of the sensor without replacement of the entire sensor wire. Pressure transducers shall be capable of field calibration to ensure accurate readings and to avoid unnecessary transducer replacement. Pressure transducers and temperature sensors shall be serviceable without the need for refrigerant charge removal or isolation.
5. Transmission shall be helical, parallel shaft speed increaser. Gears shall conform to AGMA 2001-B88, Class 11.
6. Journal bearings shall be of the steel backed babbitt lined type. Aluminum journal bearings are not acceptable. The thrust bearing shall be tilting pad or rolling element type.
7. Centrifugal compressors shall use variable inlet guide vanes to provide capacity modulation while also providing pre-whirl of the refrigerant vapor entering the impeller for more efficient compression at all loads.
8. Centrifugal compressors shall be provided with a factory-installed lubrication system to deliver oil under pressure to bearings and transmission. Included in the system shall be:
 - a. Hermetic driven oil pump with factory-installed motor contactor with overload protection.
 - b. Refrigerant-cooled oil cooler. Water-cooled oil coolers are not acceptable.
 - c. Oil pressure regulator.
 - d. Oil filter with isolation valves to allow filter change without removal of refrigerant charge.
 - e. Oil sump heater controlled from unit microprocessor.
 - f. Oil reservoir temperature sensor with main control center digital readout.
 - g. When factory-mounted compressor motor starter or VFD is provided, all wiring to oil pump, oil heater, and controls shall be prewired in the factory.
 - h. Compressor shall be fully field serviceable. Compressors which must be removed and returned to the factory for service shall be unacceptable.

C. Motor:

1. Compressor motor shall be of the semi-hermetic, liquid refrigerant cooled, squirrel cage, induction type suitable for voltage shown on the equipment schedule.
2. Motors shall be suitable for operation in a refrigerant atmosphere and shall be cooled by atomized refrigerant in contact with the motor windings.
4. Motor stator shall be arranged for service or removal with only minor compressor disassembly and

without removing main refrigerant piping connections.

5. Full load operation of the motor shall not exceed nameplate rating.
6. At least one motor winding temperature sensor (and one spare) shall be provided.

D. Cooler and Condenser:

1. Cooler shall be of shell and tube type construction, each in separate shells. Units shall be fabricated with high-performance tubing, minimum 1/4 in. (6 mm) steel shell and tube sheets with fabricated steel waterboxes.
 - a. Waterbox shall be nozzle-in-head waterbox (150 psig [1034 kPa]).
2. Condenser shall be of shell and tube type construction, each in separate shells. Units shall be fabricated with high-performance tubing, minimum 1/4 in. (6 mm) steel shell and tube sheets with fabricated steel waterboxes.
 - a. Waterbox shall be nozzle-in-head (150 psig [1034 kPa]).
3. Waterboxes shall have vents, drains, and covers to permit tube cleaning within the space shown on the drawings. A thermistor type temperature sensor with quick connects shall be factory installed in each water nozzle.
4. Tubes shall be individually replaceable from either end of the heat exchanger without affecting the strength and durability of the tube sheet and without causing leakage in adjacent tubes.
5. Tubing shall be copper, high-efficiency type, with integral internal and external enhancement unless otherwise noted. Tubes shall be nominal 3/4-in. OD with nominal wall thickness of 0.025 in. measured at the root of the fin at the enhanced areas and nominal wall thickness of 0.049 in. where the tubes are in contact with the end tube sheets unless otherwise noted. Tubes shall be rolled into tube sheets and shall be individually replaceable. Tube sheet holes shall be double grooved for joint structural integrity.
6. Cooler shall be designed to prevent liquid refrigerant from entering the compressor.
7. The condenser shell shall include a FLASC (flash subcooler) which cools the condensed liquid refrigerant to a reduced temperature, thereby increasing the refrigeration cycle efficiency.
8. A reseating type pressure relief valve shall be installed on each heat exchanger. If a non-reseating type is used, a backup reseating type shall be installed in series.

E. Refrigerant Flow Control:

1. To maintain optimal part load efficiency, the refrigerant expansion device to the cooler and as applicable to the economizer, shall use a variable metering valve, such as a float or actuated valve. To ensure good operating performance, the valve design will prevent refrigerant gas from the condenser from passing to the cooler or economizer at full or part load.
2. By maintaining a liquid seal at the flow valve, bypassed hot gas from the condenser to the cooler is eliminated. The float valve chamber shall have a bolted access cover to allow field inspection and the float valve shall be field serviceable.

F. Controls, Safeties, and Diagnostics:

1. Controls:
 - a. The chiller shall be provided with a factory installed and wired microprocessor control center. The microprocessor can be configured for either English or SI units.
 - b. All chiller and starter monitoring shall be displayed at the chiller control panel.
 - c. The controls shall make use of non-volatile memory.
 - d. The chiller control system shall have the ability to interface and communicate directly to the building control system.
 - e. The default standard display screen shall simultaneously indicate the following minimum information:
 - 1) date and time of day
 - 2) 24-character primary system status message
 - 3) 24-character secondary status message
 - 4) chiller operating hours
 - 5) entering chilled water temperature

- 6) leaving chilled water temperature
 - 7) evaporator refrigerant temperature
 - 8) entering condenser water temperature
 - 9) leaving condenser water temperature
 - 10) condenser refrigerant temperature
 - 11) oil supply pressure
 - 12) oil sump temperature
 - 13) percent motor rated load amps (RLA)
- f. In addition to the default screen, status screens shall be accessible to view the status of every point monitored by the control center including:
- 1) evaporator pressure
 - 2) condenser pressure
 - 3) bearing oil supply temperature
 - 4) compressor discharge temperature
 - 5) motor winding temperature
 - 6) number of compressor starts
 - 7) control point settings
 - 8) discrete output status of various devices
 - 9) compressor motor starter status
 - 10) optional spare input channels
 - 11) current and voltage for each phase
 - 12) frequency
- g. Schedule Function:
The chiller controls shall be configurable for manual or automatic start-up and shutdown. In automatic operation mode, the controls shall be capable of automatically starting and stopping the chiller according to a stored user programmable occupancy schedule. The controls shall include built-in provisions for accepting:
- 1) A minimum of two 365-day occupancy schedules.
 - 2) Minimum of 8 separate occupied/ unoccupied periods per day.
 - 3) Daylight savings start/end.
 - 4) Minimum of 18 user-defined holidays.
 - 5) Means of configuring an occupancy timed override.
 - 6) Chiller start-up and shutdown via remote contact closure.
- h. Service Function:
The controls shall provide a password protected service function which allows authorized individuals to view an alarm history file which shall contain the last 25 alarm/alert messages with time and date stamp. These messages shall be displayed in text form, not codes.
- i. Network Window Function:
Each chiller control panel shall be capable of viewing multiple point values and statuses from other like controllers connected on a common network, including controller maintenance data. The operator shall be able to alter the remote controller's set points or time schedule and to force point values or statuses for those points that are operator forcible. The control panel shall also have access to the alarm history file of all like controllers connected on the network.
- j. Pump Control:
Upon request to start the compressor, the control system shall start the chilled water pump, condenser water pumps and verify that flows have been established.
- k. Ramp Loading:
A user-configurable ramp loading rate, effective during the chilled water temperature pulldown period, shall control the rate of guide vane opening to prevent a rapid increase in compressor power consumption. The controls shall allow configuration of the ramp loading rate in either degrees/minute of chilled water temperature pulldown or percent motor amps/minute. During the ramp loading period, a message shall be displayed informing the operator that the chiller is operating in ramp loading mode.
- l. Chilled Water Reset:
The control center shall allow reset of the chilled water temperature set point based on any one

of the following criteria:

- 1) Chilled water reset based on an external 4 to 20 mA signal.
- 2) Chilled water reset based on a remote temperature sensor (such as outdoor air).
- 3) Chilled water reset based on water temperature rise across the evaporator.

m. Demand Limit:

The control center shall limit amp draw of the compressor to the rated load amps or to a lower value based on one of the following criteria:

- 1) Demand limit based on a user input ranging from 40% to 100% of compressor rated load amps.
- 2) Demand limit based on external 4 to 20 mA signal.

n. Controlled Compressor Shutdown:

The controls shall be capable of being configured to soft stop the compressor. When the stop button is pressed or remote contacts open with this feature active, the guide vanes shall close to a configured amperage level and the machine shall then shut down. The display shall indicate "shutdown in progress."

2. Safeties:

a. Unit shall automatically shut down when any of the following conditions occur: (Each of these protective limits shall require manual reset and cause an alarm message to be displayed on the control panel screen, informing the operator of the shutdown cause.)

- 1) motor overcurrent
- 2) over voltage*
- 3) under voltage*
- 4) single cycle dropout*
- 5) bearing oil high temperature
- 6) low evaporator refrigerant temperature
- 7) high condenser pressure
- 8) high motor temperature
- 9) high compressor discharge temperature
- 10) low oil pressure
- 11) prolonged surge
- 12) loss of cooler water flow
- 13) loss of condenser water flow
- 14) starter fault

*Shall not require manual reset or cause an alarm if auto-restart after power failure is enabled.

b. The control system shall detect conditions that approach protective limits and take self-corrective action prior to an alarm occurring. The system shall automatically reduce chiller capacity when any of the following parameters are outside their normal operating range:

- 1) high condenser pressure
- 2) high motor temperature
- 3) low evaporator refrigerant temperature
- 4) surge prevention control
- 5) high motor amps.

c. During the capacity override period, a pre-alarm (alert) message shall be displayed informing the operator which condition is causing the capacity override. Once the condition is again within acceptable limits, the override condition shall be terminated and the chiller shall revert to normal chilled water control. If during either condition the protective limit is reached, the chiller shall shut down and a message shall be displayed informing the operator which condition caused the shutdown and alarm.

d. Internal built-in safeties shall protect the chiller from loss of water flow. Differential pressure switches shall not be allowed to be the only form of freeze protection.

3. Diagnostics and Service:

a. A self diagnostic controls test shall be an integral part of the control system to allow quick identification of malfunctioning components.

- b. Once the controls test has been initiated, all pressure and temperature sensors shall be checked to ensure they are within normal operating range. A pump test shall automatically energize the chilled water pump, condenser water pump, and oil pump. The control system shall confirm that water flow and oil pressure have been established and require operator confirmation before proceeding to the next test. A guide vane actuator test shall open and close the guide vanes to check for proper operation. The operator manually acknowledges proper guide vane operation prior to proceeding to the next test.
- c. In addition to the automated controls test, the controls shall provide a manual test which permits selection and testing of individual control components and inputs. A thermistor test and transducer test shall display and an actual reading shall be performed for each transducer and each thermistor installed on the chiller. All out-of-range sensors shall be identified.

4. Multiple Chiller Control:

The chiller controls shall be supplied as standard with a two-chiller lead/lag and a third chiller standby system. The control system shall automatically start and stop a lag or second chiller on a two-chiller system. If one of the two chillers on line goes into a fault mode, the third standby chiller shall be automatically started. The two-chiller lead/lag system shall allow manual rotation of the lead chiller, include load balancing if configured, and a staggered restart of the chillers after a power failure.

G. Electrical Requirements:

1. Electrical contractor shall supply and install main electrical power line, disconnect switches, circuit breakers, and electrical protection devices per local code requirements and as indicated necessary by the chiller manufacturer.
2. Electrical contractor shall wire the chilled water pump, condenser water pump, and tower fan control circuit to the chiller control circuit.
3. Electrical contractor shall supply and install electrical wiring and devices required to interface the chiller controls with the building control system if applicable.
4. Electrical power shall be supplied to the unit at the voltage, phase, and frequency listed in the equipment schedule.

H. Piping Requirements — Instrumentation and Safeties:

1. Mechanical contractor shall supply and install pressure gages in readily accessible locations in piping adjacent to the chiller such that they can be easily read from a standing position on the floor. Scale range shall be such that design values shall be indicated at approximately midscale.
2. Gages shall be installed in the entering and leaving water lines of the cooler and condenser.

I. Vibration Isolation:

Chiller manufacturer shall furnish neoprene isolator pads for mounting equipment on a level concrete surface.

J. Start-up:

1. The chiller manufacturer shall provide a factory-trained representative, employed by the chiller manufacturer, to perform the start-up procedures as outlined in the Start-up, Operation and Maintenance manual provided by the chiller manufacturer.
2. Manufacturer shall supply the following literature:
 - a. Start-up, operation and maintenance instructions.
 - b. Installation instructions.
 - c. Field wiring diagrams.
 - d. One complete set of certified drawings.

K. Special Features:

1. Thermal Insulation:

Unit manufacturer shall insulate the cooler shell, economizer low side compressor suction elbow, motor shell and motor cooling lines. Insulation shall be 3/4 in. (19 mm) thick with a thermal

conductivity not exceeding 0.28 (Btu in.)/hr ft² F [(0.0404 • W)/(m • °C)] and shall conform to UL standard 94, classification 94 HBF.

2. Automatic Hot Gas Bypass:
Hot gas bypass valve and piping shall be factory furnished to permit chiller operation for extended periods of time.
3. Cooler and Condenser Tubes:
 - a. Unit manufacturer shall provide 3/4-in. outside diameter copper tubes in the cooler that are internally/externally enhanced and have 0.025 in. (0.635 mm) wall thickness.
4. Cooler and Condenser Passes:
Unit manufacturer shall provide the cooler and/ or condenser with 2 pass configuration on the water side.
5. Flanged Waterbox Nozzles:
Unit manufacturer shall furnish standard flanged piping connections on the cooler and/ or condenser.
6. Optional Compressor Discharge Isolation Valve and Liquid Line Ball Valve:
These items shall be factory installed to allow isolation of the refrigerant charge in the condenser for servicing the compressor.
7. BACnet Communication Option:
Shall provide factory-installed communication capability with a BACnet network. Allows integration with i-Vu® Open control system or a BACnet building automation system. (Integration with i-Vu requires the use of the i-Vu Link module for compressor frames 6 and 7. The UPC Open module is required for compressor frames 2-5, E.)
8. Unit-Mounted Variable Frequency Drive (VFD):
 - a. Design:
 - 1) VFD shall be refrigerant cooled, microprocessor based, pulse width modulated (PWM) design. Water cooled designs are not acceptable.
 - 2) Output power devices shall be insulated gate bipolar transistors (IGBTs).
 - 3) Converter section with full-wave fixed diode bridge rectifier shall convert incoming fixed voltage/frequency to fixed DC voltage.
 - 4) DC link shall filter and smooth the converted DC voltage.
 - 5) Transistorized inverter and control regulator shall convert fixed DC voltage to a sinusoidal PWM waveform.
 - 6) Integrated controls shall coordinate motor speed and guide vane position to optimize chiller performance over a wide variety of operating conditions.
 - 7) Surge prevention and surge protection algorithms shall take action to prevent surge and move chiller operation away from surge.
 - b. Enclosure:
 - 1) Pre-painted, unit mounted NEMA 1 cabinet shall include hinged, lockable doors and removable lifting lugs.
 - 2) VFD shall have a short circuit interrupt and withstand rating of at least 65,000 amps.
 - 3) Provisions to padlock main disconnect handle in the "Off" positions shall be provided. Mechanical interlock to prevent opening cabinet door with disconnect in the "On" position or moving disconnect to the "ON" position while the door is open shall be provided.
 - 4) Provisions shall be made for top entry of incoming line power cables.
 - c. Heat Sink:
 - 1) The heat sink shall be refrigerant cooled. Heat sink and mating flanges shall be suitable for ASME design working pressure of 185 psig (1276 kPa).
 - 2) Refrigerant cooling shall be metered by integrated standard controls to maintain heat sink temperature within acceptable limits for ambient temperature.
 - d. VFD Rating:
 - 1) Drive shall be suitable for nameplate voltage $\pm 10\%$.
 - 2) Drive shall be suitable for continuous operation at 100% of nameplate amps and 150% of nameplate amps for 3 seconds.
 - 3) Drive shall comply with applicable UL, CE, and NEMA standards.
 - 4) Drive shall be suitable for operation in ambient temperatures between 40 and 104 F (4.4

and 40 C), 95% humidity (non-condensing) for altitudes up to 3300 ft (1006 m) above sea level. Specific drive performance at jobsite ambient temperature and elevation shall be provided by the manufacturer in the bid.

- e. User Interface:
Displays shall provide interface for programming and display of VFD and chiller parameters.
Viewable parameters include:
 - 1) Operating, configuration and fault messages
 - 2) Frequency in hertz
 - 3) Load and line side voltage and current (at the VFD)
 - 4) kW (on the VFD interface)
- f. VFD Performance:
 - 1) VFD full load efficiency shall meet or exceed 97% at 100% VFD Rated Ampacity.
 - 2) Displacement Input Power Factor shall meet or exceed 95% soft start, linear acceleration, coast to stop.
 - 3) Base motor frequency shall be either 50 or 60 Hz. Adjustable frequency range from 38 to 60 Hz or 32.5 to 50 Hz.
- g. VFD Electrical Service (single point power):
 - 1) VFD shall have input circuit breaker with minimum 100,000 amp interrupt capacity.
 - 2) VFD shall have standard 15 amp branch oil pump circuit breaker to provide power for chiller oil pump.
 - 3) VFD shall have standard 3 kva control power transformer with circuit breaker provides power for oil heater, VFD controls and chiller controls.
 - 4) The branch oil pump circuit breaker and control power transformer shall be factory wired.
 - 5) Input power shall be 380/480 vac, ± 10 percent, 3 phase, 50/60 Hz, ± 3 Hz.
- h. Discrete Outputs: 115-v discrete contact outputs shall be provided for:
 - 1) Circuit breaker shunt trip
 - 2) Chilled water pump
 - 3) Condenser water pump
 - 4) Alarm status.
- i. Analog Output:
An analog (4 to 20 mA) output for head pressure reference shall be provided. This signal shall be suitable to control a 2-way or 3-way water regulating valve in the condenser piping.
- j. Protection (the following shall be supplied):
 - 1) Under-voltage
 - 2) Over voltage
 - 3) Phase loss
 - 4) Phase reversal
 - 5) Ground fault
 - 6) Phase unbalance protection
 - 7) Single cycle voltage loss protection
 - 8) Programmable auto re-start after loss of power
 - 9) Motor overload protection (NEMA Class 10)
 - 10) Motor over temperature protection
- k. VFD Testing:
VFD shall be factory mounted, wired and tested on the chiller prior to shipment.

A. Piping Requirements:

- 1. All piping modifications are responsibility of the contractor and included in bid proposal.
- 2. All piping subject to freezing, including chiller barrel, shall be heat traced equal to the existing and shall have an automatic temperature control.
- 3. All existing heat trace shall be replaced by the installer as part of the total project.
- 4. All piping shall be insulated with no less than 2" fiberglass insulation. All fiberglass insulation, including elbows, less than 6 feet above floor level shall be covered with aluminum jacket. All seams are to be water sealed.

5. All piping shall be supported in a sound mechanical means. All supports and brackets are to be galvanized or painted (2 coats) with a rust inhibiting paint.
6. There shall be a dry well, nontoxic, spirit thermometer, and pressure gauge with shut off valve, on the inlet and outlet of the chiller piping. Contractor shall insulate with Armaflex to provide a water tight seal to prevent condensation

Start-up

The Contractor shall include an equipment start-up by the Chiller Manufacturer. Equipment start-up shall be witnessed by owner. Three copies of the Start-up documentation and manufactures installation and maintenance manuals shall be forwarded to the Owner; one copy of each is to be left with the unit in a water proof jacket. All installations must meet or exceed printed manufacturer's recommendations, be code compliant as pertains to clearances, locations and accessories, etc. **These requirements must be fulfilled prior to final payment.**

Sequence of Operation

(DDC CONTROL INTERFACE COORDINATED WITH OWNER)

Mechanical systems and Services is the Owner's preferred Controls Contractor.

The chiller microprocessor shall include a programmed sequence to meet pre-lube and post - lube needs of machine. Upon request to start the chiller from the BAS, the chillers internal control system shall start the chilled water and condenser pumps, verify that flow has been established, and then compare leaving chilled water temp with chiller water setpoint. After all safeties have been verified the chiller compressor may now start.

F. Power wiring, controls wiring, disconnects, conduit, and any other accessory needed to accomplish installation shall be responsibility of the contractor and included as part of this project. **Note:** The main disconnect and feed wiring may be reused if it meets the requirements for the new chiller. All existing items reused shall be warranted as new for one year.

The Buncombe County Board of Education reserves the right to reject any or all bids
for any or no reason, and to waive informalities.

PERFORMANCE BOND

Date of Execution
of this Bond:

Name and Address of
Principal (Contractor):

Name and Address
of Surety:

Name and Address of
Contracting Body:

THE BUNCOMBE COUNTY BOARD OF EDUCATION, a
body corporate of the State of North Carolina, 175 Bingham Road,
Asheville, NC 28806.

Amount of Bond:

Contract:

That certain contract by and between the Principal and the
Contracting Body above named, dated _____
for _____

KNOW ALL MEN BY THESE PRESENTS, that we, the Principal and Surety above named, are held and firmly bound unto the above named Contracting Body, hereinafter called the Contracting Body in the penal sum of the amount stated above for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal entered into a certain contract with the Contracting Body, as identified and shown above and hereto attached.

NOW THEREFORE, if the Principal shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term of said contract and any extensions thereof that may be granted by the Contracting Body, with or without notice to the Surety, and during the life of any guaranty required under the contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the Surety being hereby waived, then, this obligation to be void; otherwise to remain in full force and virtue.

THIS PERFORMANCE BOND is made and given pursuant to the requirements and provisions of Section 129 of Chapter 143 of the General Statutes of North Carolina and pursuant to Article 3 of Chapter 44-A of the General Statutes of North Carolina, and each and every provision set forth and contained in Article 3 of Chapter 44-A of the General Statutes of North Carolina is incorporated herein, made a part hereof, and deemed to be conclusively written into this Bond.

PFB 1

IN WITNESS WHEREOF, the above-bounded parties have executed this instrument under their several seals on the date indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Principal (Name of individual, individual and
trade name, partnership, corporation or joint
venture)

WITNESS:

(Proprietorship of Partnership)

BY: _____(SEAL)

TITLE: _____
(Owner, partner, office held in corporation,
joint venture)

(Corporate Seal)

ATTEST: (Corporation)

BY: _____

TITLE: _____
(Corporate Secretary of Assistant Secretary only)

WITNESS:

Surety (Name of Surety Company)

BY: _____

TITLE: Attorney-in-Fact

(Corporate Seal of Surety)

COUNTERSIGNED:

(Address of Attorney-in-Fact)

N.C. Licensed Resident Agent

PAYMENT BOND:

Date of Execution
of this Bond:

Name and Address of
Principal (Contractor):

Name and Address
of Surety:

Name and Address of
Contracting Body:

THE BUNCOMBE COUNTY BOARD OF EDUCATION, a
body corporate of the State of North Carolina, 175 Bingham Road,
Asheville, NC 28806.

Amount of Bond:

Contract:

That certain contract by and between the Principal and the
Contracting Body above named, dated _____
for _____

KNOW ALL MEN BY THESE PRESENTS, that we, the Principal and Surety above named, are held and firmly bound unto the above named Contracting Body, hereinafter called the Contracting Body in the penal sum of the amount stated above for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal entered into a certain contract with the Contracting Body, as identified and shown above and hereto attached.

NOW THEREFORE, if the Principal shall promptly make payment to all persons supplying labor and material in the prosecution of the work provided for in said contract, and any and all duly authorized modifications and extensions of time of said contract that may hereafter be made, notice of which modifications and extensions of time to the Surety being hereby waived, then this obligation to be void; otherwise to remain in full force and virtue.

THIS PAYMENT BOND is made and given pursuant to the requirements and provisions of Section 129 of Chapter 143 of the General Statutes of North Carolina and pursuant to Article 3 of Chapter 44-A of the General Statutes of North Carolina, and each and every provision set forth and contained in Article 3 of Chapter 44-A of the General Statutes of North Carolina is incorporated herein, made a part hereof, and deemed to be conclusively written into this Bond.

PYB 1

Section 000103

IN WITNESS WHEREOF, the above-bounded parties have executed this instrument under their several seals on the date indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Principal (Name of individual, individual
and trade name, partnership, corporation or
joint venture)

WITNESS:

(Proprietorship of Partnership) BY: _____ (SEAL)
TITLE: _____
(Owner, partner, office held in corporation,
joint venture)

(Corporate Seal)

ATTEST: (Corporation)

BY: _____

TITLE: _____
(Corporate Secretary of Assistant Secretary only)

WITNESS:

Surety (Name of Surety Company)

BY: _____

TITLE: Attorney-in-Fact

(Corporate Seal of Surety)

COUNTERSIGNED:

(Address of Attorney-in-Fact)

N.C. Licensed Resident Agent

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