



Memorandum From Purchasing Department

Letter of Instruction For RFP #251-24-303

To: Prospective Parties

Thank you for your interest in the Wake County Public School System. Please review the following instructions prior to submitting your proposal.

- A pre-proposal conference will be held N/A .
- All submittals must be organized and indexed according to the section number and required subject matter. The information contained in your submittal should be indexed and easily accessed by WCPSS. WCPSS is not required to seek clarification on any proposal that does not meet these minimum requirements.
- Prior to submitting and executing the proposal, please make sure you read and understand the terms and conditions referenced. All proposals are subject to the terms and conditions outlined herein. All responses will 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. The attachment of any other terms and conditions by the Offeror may be grounds for rejection of that proposal. Offeror specifically agrees to the conditions set forth in the above paragraph by signature to the proposal.
- WCPSS will adhere to strict deadlines as indicated in the solicitation document and thus will not make exceptions to these dates and times.
- Please read carefully the section titled CONFIDENTIALITY AND PROHIBITED COMMUNICATIONS DURING THE RFP PROCESS. All questions should be directed to Jim Jaeger at: jjaeger@wcpss.net
- Offerors are cautioned that this is a request for offers, not a request to contract, and WCPSS reserves the unqualified right to reject any and all offers when such rejection is deemed to be in the best interest of WCPSS.
- In submitting a proposal the Offeror agrees not to use the results there from as part of any news release or commercial advertising.
- **Submit: one (1) signed, original executed proposal response, along with 1 photocopy and 1 electronic copy if possible** (emails not accepted) of your proposal simultaneously to the address identified below. **Clearly mark each package with: (1) Vendor name; (2) the RFP number; and (3) the due date. Address the package(s) for delivery as shown in the table below.** If Vendor is submitting more than one (1) proposal, each proposal shall be submitted in separate envelopes and marked accordingly. For delivery purposes, separate envelopes from a single Vendor may be included in the same outer package. Proposals are subject to rejection unless submitted with the information above included on the outside of the proposal package.
- **Public opening to start at 2:00 p.m. on DUE DATE at:**
WCPSS Purchasing Dept. 1551 Rock Quarry Road, Building F Raleigh, NC 27610



**WAKE COUNTY
PUBLIC SCHOOL SYSTEM**

WCPSS Purchasing Dept.
1551 Rock Quarry Rd – Bldg. F
Raleigh, NC 27610

Request For Proposal

251-24-303

Proposals will be due: **DECEMBER 8, 2023 2:00PM**

Contract Type:
COMMODITY PURCHASE

Refer ALL Inquiries in email form to: **Jim Jaeger**

Commodity:
**CHILLER REPLACEMENT UNIT –
Cary H.S.**

Buyer E-Mail: **jjaeger@wcpss.net**

Using Agency Name: **WAKE COUNTY PUBLIC SCHOOL SYSTEM**

Pre-Proposal Meeting: **N/A**

NOTICE TO VENDORS

Sealed Proposals, subject to the conditions made a part hereof, **will be received at this office** (1551 Rock Quarry Road, Bldg. F, Raleigh, NC) until **2:00 p.m.** on the day of opening and then publicly opened, for furnishing and delivering the commodity/service as described herein. Refer to page 3 for proper mailing instructions.

Proposals submitted via Email or facsimile (FAX) machine in response to this Request for Proposals **will not** be acceptable. Proposals are subject to rejection unless submitted on this form.

EXECUTION

In compliance with this request for Proposals, and subject to all the conditions herein, the undersigned offers and agrees to furnish and deliver any or all items upon which prices are proposed, at the prices set opposite each item within the time specified herein. By executing this proposal, I certify that this proposal is submitted competitively and without collusion.

Failure to execute/sign proposal prior to submittal may render bid invalid. Late proposals are not acceptable.

VENDOR:		FEDERAL ID OR SOCIAL SECURITY NO.	
STREET ADDRESS:		P.O. BOX:	ZIP:
CITY & STATE & ZIP:		TELEPHONE NUMBER:	TOLL FREE TEL. NO (800)
PRINCIPAL PLACE OF BUSINESS ADDRESS IF DIFFERENT FROM ABOVE			
TYPE OR PRINT NAME & TITLE OF PERSON SIGNING:		FAX NUMBER:	
AUTHORIZED SIGNATURE:	DATE:	E-MAIL:	

Offer valid for 60 days from date of proposal opening unless otherwise stated here: ____ days Prompt Payment Discount: ____ % ____ days.

Submit **one (1) signed, original executed** proposal response, **along with one (1) photocopy and 1 electronic copy (flashdrive) if possible**, (emails not accepted) of your proposal simultaneously to the address identified above. **Clearly mark each package with:** (1) Vendor name; (2) the RFP number; and (3) the due date and (4) buyer name. Address the package(s) for delivery as shown in the table above. If Vendor is submitting more than one (1) proposal, each proposal shall be submitted in separate envelopes and marked accordingly. For delivery purposes, separate envelopes from a single Vendor may be included in the same outer package. Proposals are subject to rejection unless submitted with the information above included on the outside of the proposal package.

MAILING INSTRUCTIONS: Mail/Courier only as specified above, unless otherwise instructed, and only one proposal package with copies per envelope. **Address envelope and include proposal number as shown below.** It is the responsibility of the Vendor to have the proposal in this office by the specified time and date of opening.

DELIVER SEALED PROPOSAL TO: JIM JAEGER	
PROPOSAL NO.	RFP 251-24-303
Wake County Public School System	
Purchasing Department	
1551 Rock Quarry Road – Bldg. F	
Raleigh NC 27610-4145	

RFP SCHEDULE

The table below shows the *intended* schedule for this RFP. WCPSS will make every effort to adhere to this schedule.

Event	Responsibility	Date and Time
Issue RFP	WCPSS	NOVEMBER 28, 2023 by 5:00 p.m.
Questions submitted to: jjaeger@wcpss.net (Reference RFP # in subject line)	Vendor/WCPSS	DECEMBER 4, 2023 by 1:00 p.m.
Response to Questions Posted to Websites	WCPSS	DECEMBER 5, 2023 by 5:00 p.m.
Submit Proposal Deadline and Public Bid Opening (At above location)	Vendor/WCPSS	Due: DECEMBER 8, 2023 2:00 P.M ET

PROPOSAL QUESTIONS

Upon review of the RFP documents, Vendors may have questions to clarify or interpret the RFP in order to submit the best proposal possible. To accommodate the Proposal Questions process, Vendors shall submit any such questions, in written form by the above due date. WCPSS will not respond to questions via telephone or telephone message(s). Written questions shall be emailed to at date and time specified above. Vendors should enter "RFP Number Questions" as the subject for the email. Questions submittals should include a reference to the applicable RFP section and be submitted in a format shown as follows:

Reference	Vendor Question
RFP Section, Page Number	Vendor question ...?

Questions received prior to the submission deadline date, WCPSS' response, and any additional terms deemed necessary by WCPSS will be posted in the form of an addendum to the Interactive Purchasing System(eVP), and WCPSS Purchasing

website, and shall become an Addendum to this RFP. No information, instruction or advice provided orally or informally by any WCPSS personnel, whether made in response to a question or otherwise in connection with this RFP, shall be considered authoritative or binding. **Vendors shall rely *only* on written material contained in an Addendum to this RFP.** Questions should be emailed to: jjaeager@wcpss.net

Proposal Evaluation

All proposals will be evaluated by representatives of WCPSS. WCPSS may, at its sole discretion, ask for additional information and/or elect to conduct interviews with finalists to clarify information provided in the proposals. The services that are the subject of this RFQ/P are not required to be bid under North Carolina law, and none of the statutory requirements regarding public bidding apply to this RFQ/P. This document, and not those statutes, will govern the selection process.

WCPSS shall not be required to award the contract to the lowest proposed compensation; nor shall WCPSS have any obligation to explain its decision to recommend or not to recommend any particular vendor or to invite or exclude any particular vendor from consideration at any stage of the process. Instead of recommending that contracts be awarded to one or more vendors who presented proposals, WCPSS may, at its sole discretion, reject the proposals and repeat the process, enter into direct contract negotiations with one or more vendors (possibly including vendors who have not previously submitted proposals) or take any other action WCPSS deems advisable under all the circumstances.

WCPSS is expected to make any final selection(s) based upon any factors or considerations WCPSS deems relevant. Factors often considered include qualifications, relevant experience, fee, and ability to perform work in a timely manner. WCPSS retains sole discretion to award the contract to the vendor(s) it believes will best serve the interests of WCPSS and may consider any factors, documents, or information it deems relevant in making that determination. WCPSS shall not have any obligation to explain its decision to select or not select any individual vendors or to invite or exclude any individual vendors from consideration at any stage of the process. The decision of WCPSS to accept or reject any proposals and to award contract(s) to any one or more vendor(s) shall be final and not subject to further review.

Vendors are subject to *immediate disqualification* at any stage of the selection process for any of the following:

- The submission of false or misleading information in the vendor's proposal.
- Any efforts to dissuade or discourage other vendors from submitting proposals.
- Any efforts to influence, dictate, or change the terms of another vendor's proposal.
- Any form of bid collusion or bid rigging.

Scope of Work

Refer to "Project" pages included with this RFP.

The Wake County Public School System (WCPSS) is the nation's sixteenth largest school district and the largest in the state of North Carolina. With 112 elementary schools, 38 middle schools, 28 high schools and 5 special schools, we serve over 160,000 students.

Minimum Requirements

Vendor shall identify and provide all requested rates and confirm part markup restrictions.

Vendor must complete and return all required attachments. Additional information may be included that effect the total cost to WCPSS.

It shall be mandatory that the selected vendor enforce the following employee requirements:

All employees are subject to the required background checks as described in the terms and conditions section of the solicitation. Any employee of awarded vendor that does not meet the requirements and are scheduled for ANY move will subject.

Qualifications

THE VENDOR shall be licensed and approved to do business in the State of North Carolina.

No fewer than five years experience in performing the required duties will be accepted. Please provide references.

Insurance requirements referenced within as well as any Federal, State and Local requirements shall be required and maintained

Present sufficient qualified personnel to carry out the project in a timely fashion. Please include staffing information.

Demonstrated experience in performing similar projects.

Experience with the service and material supply referenced in this RFP.

Vendor will be disqualified for consideration if they are listed on either the State of North Carolina debarred vendor registry or the Federal Government debarred vendor registry. (Federal Government) <https://www.sam.gov/SAM/pages/public/searchRecords/searchResults.jsf>

(State of North Carolina)
<https://ncadmin.nc.gov/documents/nc-debarred-vendors>

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AWARD OF CONTRACT: It is the general intent to award this contract to a single vendor, unless otherwise described in the RFP. The right is reserved, however, to make awards to multiple vendors, if such shall be

considered by Wake County Public School System to be most advantageous or to constitute its best interest. Vendors should show any required unit prices, but are requested also to offer a lump sum price where appropriate.

RFP EVALUATION: Proposals are requested for the services in the RFP. Wake County Public School System reserves the right to reject any proposal for any reason. Vendor(s) are cautioned that any/all information furnished or not furnished on this proposal may be used as a factor in determining the award of this contract.

DEVIATIONS: Any deviations from specifications and requirements herein must be clearly pointed out by vendor. Otherwise it will be considered that the services offered are in strict compliance with these specifications and requirements, and successful vendor will be held responsible therefor. Deviations must be explained in detail below or on an attached sheet. However, no implication is made by Wake County Public School System that deviations will be acceptable. Vendor is advised that the response (or lack thereof) on this question does not take precedence over specific responses or non-responses provided elsewhere in this RFP.

FIRM PROPOSAL: Prices and any other entry made hereon by the vendor shall be considered firm and not subject to change or withdrawal.

WCPSS Purchasing Department Ethics Policy and Standards of Conduct shall apply to this RFP.

CONFIDENTIALITY AND PROHIBITED COMMUNICATIONS DURING EVALUATION: During the proposal process from the date proposals are issued through the date the contract is awarded—each Vendor submitting a proposal (including its representatives, sub-contractors and/or suppliers) is prohibited from having any communications with any Wake County Board of Education member, any employee of WCPSS, or any other person in any way involved in the award of this contract, if the communication refers to the content of Vendor's proposal or qualifications, the contents of another Vendor's proposal, another Vendor's qualifications or ability to perform the contract, and/or the transmittal of any other communication of information that could be reasonably considered to have the effect of directly or indirectly influencing the evaluation of proposals and/or the award of the contract. A Vendor not in compliance with this provision shall be disqualified from contract award. A Vendor's proposal may be disqualified if its sub-contractor and supplier engage in any of the foregoing communications during the time that the procurement is active (i.e., the issuance date of the procurement to the date of contract award). Only those discussions, communications or transmittals of information authorized or initiated by WCPSS for this RFP or general inquiries directed to the purchaser regarding requirements of the RFP (prior to proposal submission) or the status of the contract award (after submission) are excepted from this provision. Notwithstanding the above, the vendor may direct any written concerns, questions or issues to Debra Wallace at dwallace2@wcpss.net.

TERMS & CONDITIONS

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TERMS AND CONDITIONS

1. **READ, REVIEW AND COMPLY:** It shall be the vendor's responsibility to read this entire document, review all enclosures and attachments, and comply with all requirements specified herein. Vendor shall review WCPSS's Purchasing Department Ethics Policy and Standards of Conduct and shall refrain from any actions that would cause an employee to be in violation of the policies.
2. **NOTICE TO VENDORS:** All proposals are subject to the provisions of special terms and conditions specific to this RFP, the specifications. Wake County Public School System (WCPSS) objects to and will not evaluate or consider any additional terms and conditions submitted with a vendor's response. This applies to any language appearing in or attached to the document as part of the vendor's response. **DO NOT ATTACH ANY ADDITIONAL TERMS AND CONDITIONS.** By execution and delivery of this document, the vendor agrees that any additional terms and conditions, whether submitted purposely or inadvertently, shall have no force or effect.
3. **EXECUTION:** Failure to sign under EXECUTION section may render proposal invalid.
4. **ORDER OF PRECEDENCE:** In cases of conflict between specific provisions in this RFP, the order of precedence shall be (1) special terms and conditions specific to this RFP, (2) specifications, and (3) Instructions to Vendors.
5. **TIME FOR CONSIDERATION:** Unless otherwise indicated on the first page of this document, vendor's proposal shall be valid for 45 days from the date of proposal opening. Preference may be given to responses allowing not less than 45 days for consideration and acceptance.
6. **SPECIFICATIONS:** Any deviation from specifications indicated herein must be clearly pointed out; otherwise, it will be considered that items offered are in strict compliance with these specifications, and vendor will be held responsible, therefore. Deviations shall be explained in detail. The vendor shall not construe this paragraph as inviting deviation or implying that any deviation will be acceptable.
7. **CLARIFICATIONS/INTERPRETATIONS:** Any and all questions regarding this document must be addressed to the WCPSS representative named on the cover sheet of this document. Do not contact the school or department directly. Any and all revisions to this document shall be made only by written addendum from WCPSS Purchasing Department. The vendor is cautioned that the requirements of this RFP can be altered only by written addendum and that verbal communications from whatever source are of no effect.
8. **ACCEPTANCE AND REJECTION:** WCPSS reserves the right to reject any and all proposals, to waive any informality in proposals and, unless otherwise specified by the vendor, to accept any item in the proposal.
9. **AWARD OF CONTRACT:** Qualified proposals will be evaluated and acceptance may be made to the proposal most advantageous to WCPSS as determined upon consideration of such factors as: prices offered; the quality of the services offered; the general reputation and performance capabilities of the vendors; the substantial conformity with the specifications and other conditions set forth in the RFP; the suitability of the services; the date or dates of delivery and performance; and such other factors deemed by WCPSS to be pertinent or peculiar to the services in question. WCPSS also reserves the right to reject any and all proposals.
10. **HISTORICALLY UNDERUTILIZED BUSINESSES:** Pursuant to General Statute 143-48 and Executive Order #150, WCPSS 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.
11. **CONFIDENTIAL INFORMATION:** As provided by statute and rule, WCPSS will consider keeping trade secrets which the vendor does not wish disclosed confidential. Each page shall be identified in boldface at the top and bottom as "CONFIDENTIAL" by the vendor. Cost information shall not be deemed confidential. In spite of what is labeled as a trade secret, the determination whether it is or not will be determined by North Carolina law.
12. **AWARD PROCEDURES:** Contract award notice shall be posted on WCPSS website. Contract award notices are sent only to those actually awarded contracts, and not to every person or firm responding to this solicitation.
13. **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 vendors. The "Principal Place of Business" is defined as the principal place from which the trade or business of the vendor is directed or managed.
14. **DEFAULT AND PERFORMANCE BOND:** In case of default by the vendor, WCPSS may procure the articles or services from other sources and hold the vendor responsible for any excess cost occasioned thereby. WCPSS reserves the right to require performance bond or other acceptable alternative guarantees from successful vendor without expense to WCPSS.
15. **GOVERNMENTAL RESTRICTIONS:** In the event any Governmental restrictions are imposed which necessitate alteration of the services prior to their delivery, it shall be the responsibility of the vendor to notify in writing WCPSS, indicating the specific regulation which required such alterations. WCPSS reserves the right to accept any such alterations, including any price adjustments occasioned thereby, or to cancel the contract.
16. **TAXES:** Any applicable taxes shall be invoiced as a separate item.
17. **SITUS:** The place of this contract, its situs and forum, shall be Wake County, North Carolina, where all matters, whether sounding in contract or tort, relating to its validity, construction, interpretation, and enforcement shall be determined.
18. **GOVERNING LAWS:** This contract is made under and shall be governed and construed in accordance with the laws of the state of North Carolina.
19. **INSPECTION AT VENDOR'S SITE:** WCPSS reserves the right to inspect, at a reasonable time, the equipment, plant, or other facilities of a prospective vendor prior to contract award, and during the contract term as necessary for WCPSS determination that such services conform with the specifications/requirements and are adequate and suitable for the proper and effective performance of the contract.
20. **PAYMENT TERMS:** Payment terms are Net not later than 30 days after receipt of correct invoice or acceptance of goods, whichever is later. Payment may be made by procurement card, and it shall be accepted by the vendor for payment if the vendor accepts that card (Visa, Mastercard, etc.) from other customers.
21. **PATENT:** The vendor shall hold and save WCPSS, its officers, agents, and employees, harmless from liability of any kind, including costs and expenses, on account of any confidential information, copyrighted material, patented or unpatented invention, articles, device or appliance manufactured or used in the performance of this contract, including use by WCPSS or disclosure of any information pursuant to the NC Public Records Act.
22. **ASSIGNMENT:** No assignment of the vendor's obligations nor the vendor's right to receive payment hereunder shall be permitted. However, upon written request approved by the purchasing department and solely as a convenience to the vendor, WCPSS may: a. Forward the vendor's payment check directly to any person or entity designated by the vendor, and b. Include any person or entity designated by vendor as a joint payee on the vendor's payment check. In no event shall such approval and action obligate WCPSS to anyone other than the vendor and the vendor shall remain responsible for fulfillment of all contract obligations.
23. **INSURANCE:**
 - a. Worker's Compensation including Occupational Disease and Employer's Liability Insurance. Statutory - Amount and coverage as required by state of North Carolina Worker's Compensation laws. Employer's Liability - At least
 - Part A Bodily Injury Statutory Limits
 - Part B By Accident \$500,000 each accident
 - By Disease \$500,000 policy limit
 - \$500,000 each employee

b. Public liability and Property Damage Insurance - The Vendor shall procure insurance coverage for direct operations, contractual liability and completed operations with limits not less than those stated below:

Occurrence:

General Aggregate \$2,000,000

Premises Operations \$1,000,000

Personal & Advertising Injury \$1,000,000

c. Comprehensive Automobile Liability Insurance, including coverage for owned, hired and non-owned vehicles: A Combined Single Limit for bodily injury and property damage limit of not less than \$1,000,000; and \$2,000 medical payments.

d. Certificates of Insurance acceptable to WCPSS shall be filed with WCPSS prior to commencement of the Work. These Certificates shall contain a provision that coverage afforded under the policies will not be canceled until at least thirty (30) days' prior written notice has been given to WCPSS, and that the Wake County Board of Education is listed as additional insured on general liability.

The successful vendor agrees to hold harmless and indemnify the Wake County Board of Education (WCBOE) for any liability that may arise from the negligent or illegal acts of the vendor's employees or agents.

24. **GENERAL INDEMNITY:** The vendor shall hold and save WCPSS, its officers, agents, and employees, harmless from liability of any kind, including all claims and losses, 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 vendor in the performance of this contract and that are attributable to the negligence or intentionally tortious acts of the vendor. The vendor represents and warrants that it shall make no claim of any kind or nature against WCPSS agents who are involved in the project. This section shall survive the termination or expiration of this contract.

25. **LUNSFORD ACT/CRIMINAL BACKGROUND CHECKS:** The Vendor shall conduct at its own expense sexual offender registry checks on each of its employees, agents, ownership personnel, or contractors ("contractual personnel") who will engage in any service on or delivery of goods to school system property or at a school-system sponsored event. The checks shall include at a minimum check of the state Sex Offender and Public Protection Registration Program, the state Sexually Violent Predator Registration Program, and the National Sex Offender Registry ("the Registries"). For the Vendor's convenience only, all of the required registry checks may be completed at no cost by accessing the North Carolina Sex Offender Registry website at <http://sexoffender.ncdoj.gov/>. The Vendor shall provide certification on Sexual Offender Registry Check Certification Form that the registry checks were conducted on each of its contractual personnel providing services or delivering goods under this Agreement prior to the commencement of such services or the delivery of such goods. The Vendor shall conduct a current initial check of the registries (a check done more than 30 days prior to the date of this Agreement shall not satisfy this contractual obligation). In addition, Vendor agrees to conduct the registry checks and provide a supplemental certification form before any additional contractual personnel are used to deliver goods or provide services pursuant to this Agreement. Vendor further agrees to conduct annual registry checks of all contractual personnel and provide annual certifications at each anniversary date of this Agreement. Vendor shall not assign any individual to deliver goods or provide services pursuant to this Agreement if said individual appears on any of the listed registries. Vendor agrees that it will maintain all records and documents necessary to demonstrate that it has conducted a thorough check of the registries as to each contractual personnel and agrees to provide such records and documents to the school system upon request. Vendor specifically acknowledges that the school system retains the right to audit these records to ensure compliance with this section at any time in the school system's sole discretion. Failure to comply with the terms of this provision shall be grounds for immediate termination of the Agreement. In addition, the school system may conduct additional criminal records checks at Vendor's expense. If the school system exercises this right to conduct additional criminal records checks, Vendor agrees to provide within seven (7) days of request the full name, date of birth, state of residency for the past ten years, and any additional information requested by the school system for all contractual personnel who may deliver goods or perform services under this Agreement. Vendor further agrees that it has an ongoing obligation to provide the school system with the name of any new contractual personnel who may deliver goods or provide services under the Agreement. WCPSS reserves the right to prohibit any contractual personnel of Vendor from delivering goods or providing services under this Agreement if WCPSS determines, in its sole discretion, that such contractual personnel may pose a threat to the safety or well-being of students, school personnel or others.

26. **ACCESS TO PERSONS AND RECORDS:** WCPSS and its internal auditors shall have access to persons and records as a result of this contract. Vendor shall provide reasonable access to all documents, invoices, pay records and other materials involved in this contract.

27. **COMPLIANCE WITH E-VERIFY:** Vendor shall comply with all applicable laws and regulations in providing services under this Contract. In particular, Vendor shall not employ any individuals to provide services to the School System who are not authorized by federal law to work in the United States. Vendor represents and warrants that it is aware of and in compliance with the Immigration Reform and Control Act and North Carolina law (Article 2 of Chapter 64 of the North Carolina General Statutes) requiring use of the E-Verify system for employers who employ twenty-five (25) or more employees and that it is and will remain in compliance with these laws at all times while providing services pursuant to this Contract. Vendor shall also ensure that any of its subcontractors (of any tier) will remain in compliance with these laws at all times while providing subcontracted services in connection with this Contract.

28. **COMPLIANCE WITH AFFORDABLE CARE ACT:** Vendor is responsible for providing affordable health care coverage to all of its full-time employees providing services to the School System. The definitions of "affordable coverage" and "full-time employee" are governed by the Affordable Care Act and accompanying IRS and Treasury Department regulations.

29. **RESTRICTED COMPANIES LIST:** Bidder represents that as of the date of this bid, Bidder is not included on the Final Divestment List created by the North Carolina State Treasurer pursuant to N.C. Gen. Stat. § 147-86.58. Bidder also represents that as of the date of this bid, Bidder is not included on the list of restricted companies determined to be engaged in a boycott of Israel created by the North Carolina State Treasurer pursuant to N.C. Gen. Stat. § 147-86.81.

30. **Termination for Default.** At any time, the School System may terminate this Contract immediately and without prior notice if Vendor is unable to meet goals and timetables or if the School System is dissatisfied with the quality of services provided. The Vendor shall reimburse the School System for any for any costs and expenses incurred by the School System resulting from the Vendor's default. In the event of a termination pursuant to this section, the school system reserves its rights to pursue all remedies to which it may be entitled at law or in equity.

31. **Termination for Convenience.** The School System may terminate this Contract at any time at its complete discretion upon twenty (20) calendar days' notice in writing from the School System to Vendor prior to the date of termination. In addition, all finished or unfinished documents and other materials produced by Vendor pursuant to this Contract shall, at the request of the School System be turned over to it and become its property. If the Contract is terminated by the School System in accordance with this section, the School System will pay Vendor for all services performed and accepted as of the date of termination.

32. **BUSINESS AUTHORIZATION:** Bidder is duly qualified to do business in North Carolina. If Bidder is a business entity that is not registered in North Carolina, prior to providing any products or beginning any services described by this bid, Bidder shall either (i) obtain a certificate of authority from the Secretary of State for North Carolina, pursuant to N. C. Gen. Stat. § 55-15-03, or (ii) provide a letter from an attorney indicating that the attorney has reviewed N. C. Gen. Stat. § 55-15-01 and determined that Bidder is not required to obtain a certificate of authority pursuant to N. C. Gen. Stat. § 55-15-01(b).

33. **COMPANIES LIST:** Bidder represents that as of the date of this bid, Bidder is not included on the Final Divestment List created by the North Carolina State Treasurer pursuant to N.C. Gen. Stat. § 147-86.58. Bidder also represents that as of the date of this bid, Bidder is not included on the list of restricted companies determined to be engaged in a boycott of Israel created by the North Carolina State Treasurer pursuant to N.C. Gen. Stat. § 147-86.8133.

ETHICS AND THE PURCHASING FUNCTION *Policy Code: 6401/9100*

The Wake County Board of Education is committed to conducting the purchasing function in an ethical manner and in compliance with state and federal laws and regulations. The Board expects all employees who are directly or indirectly involved in any aspect of the purchasing function to be aware of and comply with all current state and federal laws and regulations as these standards apply to the school system's purchasing activities. The Board's purchasing goals and principles will not be compromised by individuals motivated by personal gain.

Employees directly or indirectly involved in any aspect of the school system's procurement, purchasing, and/or contracting process for apparatus, materials, equipment, supplies, services, real property, or construction or repair projects, regardless of source of funds, must adhere to the following standards of conduct and those established in any policies regarding employee conflict of interest and 8305: Federal Grant Administration.

1. Employees are expected to make all purchasing-related decisions in a neutral and objective way based on what is in the best interest of the school system and not in consideration of actual or potential personal benefit.
2. Employees shall not participate, directly or indirectly, in making or administering any contract from which they will obtain a direct benefit, unless an exception is allowed pursuant to law.

An employee obtains a direct benefit when the employee or his or her spouse will receive income, commission, or property under the contract, or the employee or spouse has more than a 10 percent interest in an entity that is a party to the contract. See G.S. 14-234 and any policies regarding employee conflict of interest. Participation in making or administering a contract includes, but is not limited to, participating in the development of specifications or contract terms; obtaining or reviewing bids; preparation or award of the contract; and having the authority to make decisions about, interpret, or oversee the contract.

3. Employees shall not participate, directly or indirectly, in the selection, award, or administration of a contract supported in whole or part by a federal grant or award if the employee has a real or apparent conflict of interest. See 2 C.F.R. 200.318 and policy 8305: Federal Grant Administration.

A real or apparent conflict exists when the employee, his or her immediate family member or partner, or an organization which employs or is about to employ any of those individuals, has a financial or other interest in or receives a tangible personal benefit from a firm considered for a contract. For purposes of this subsection, a "financial interest" means a financial interest which comprises more than five percent of the equity of the firm or business or more than five percent of the assets of the economic interest in indebtedness. It does not include an ownership interest held through a fiduciary, such as *Policy Code: 6401/9100* a mutual fund or blind trust, where the individual or individual's employer has no control over the selection of holdings.

4. Employees shall not influence or attempt to influence any person involved in making or administering a contract from which the employee will obtain a direct benefit as described in paragraph 2, above.
5. Employees shall not solicit or receive any gift, favor, reward, service, or promise of reward, including a promise of future employment, in exchange for recommending, influencing, or attempting to influence the award of a contract by the school system.
6. Employees shall notify the superintendent or designee in writing if they have an actual or potential conflict of interest under this policy or applicable state or federal law that would disqualify them from performing any aspect of their job responsibilities.
7. Employees shall not solicit or accept trips, meals, gratuities, gifts, favors, or anything of monetary value from current or recent (within the past year) contractors, subcontractors, or suppliers, or any persons or entities that foreseeably may bid on a contract in the future, unless the item is an unsolicited gift of nominal value (\$50 or less), and is one of the following: an advertising item or souvenir that is widely distributed; an honorarium for participating in a meeting; a meal provided at a banquet; or other item that is clearly permitted by state and federal law. Multiple permitted items from a single contractor may not exceed an aggregate value of \$100 in a twelve-month period.

Employees shall inform existing and potential contractors, subcontractors, and suppliers about these restrictions.

8. Employees shall not solicit or accept any gift from a current or potential provider of E-rate services or products in violation of applicable federal E-rate program gifting rules.
9. Employees shall not divulge confidential information to any unauthorized person. Confidential information includes but is not limited to (1) the school system's cost estimate for any public contract, prior to bidding or completion of other competitive purchasing processes; and (2) the identity of contractors who have obtained proposals for bid purposes for a public contract, until the bids are opened in public and recorded in the Board minutes.
10. An employee shall not misuse information in violation of G.S. 14-234.1. Specifically, an employee shall not, in contemplation of the employee's own official action or that of the Board or others acting on behalf of the school system, or in reliance on information known to the employee in his or her official capacity and not made public, to: a. acquire a financial interest in any property, transaction, or enterprise; b. gain a financial benefit that may be affected by the information or contemplated action; or c. intentionally aid another to acquire a financial interest or gain a financial benefit from the information or contemplated action.

The superintendent or designee shall ensure that all affected personnel are aware of Board policy requirements and applicable laws. Any individual aware of any violation of this policy, policy 2121: Board Member Conflict of Interest, any policies regarding employee conflict of interest, the conflict-of-interest provisions of policy 8305: Federal Grant Administration, or applicable conflict of interest laws shall report such violation in accordance with policy 1760/7280: Prohibition Against Retaliation. Employees who violate this policy, policy 2121, any policies regarding employee conflict of interest, or the conflict-of-interest provisions of policy 8305, will be subject to disciplinary action.

Legal References: 2 C.F.R. 200.318(c); 47 C.F.R. 54.503; FCC Sixth Report and Order 10-175; G.S. 14-234, -234.1; 133-32, -33; Attorney General Opinion requested by L.W. Lamar regarding G.S. 133-32, the Applicability to Attorneys and Law Firms Providing Professional Services to Local Boards of Education, dated May 13, 1993.

Company Name (include dba): _____

Phone number: _____ Fax: _____ E-mail: _____

Contact: _____

Corporate Office Address: _____

Wake County Office Address (if different from Corporate): _____

Web Address: _____

Length of time in business: _____ Number of permanent employees: _____

DOT #: (if appl): _____ MC License # (if appl): _____

Insurance Contact: _____ Phone: _____

The Wake County Public School System reserves the right to reject or disqualify any and all vendors, waive informalities and irregularities in the bid process, and to accept vendors, which are considered to be in the best interest of the School System.

WAKE COUNTY PUBLIC SCHOOL SYSTEM BID PROTEST PROCEDURE

PURPOSE

To ensure fairness and to promote open competition, Wake County Public School System shall be consistent in responding to an offeror's protest over contract awards.

PROCEDURE

Any party which is a prospective bidder, offeror, or contractor that may be aggrieved by the solicitation must submit a written protest within five (5) calendar days prior to the opening of the Request for Bid, Request for Proposal.

Any party which is an actual bidder, offeror, or contractor that may be aggrieved by the award of a contract, must submit a written protest within five (5) calendar days of Wake County Public School System's transmitting via fax or email the announcement of intent to award.

The protest must be addressed to the Senior Director of Purchasing, Building F, 1551 Rock Quarry Road, Raleigh, NC 27610 and must include all of the following information:

1. Name, address, telephone number, facsimile number and e-mail of the protester.
2. Signature of the protester or authorized agent.
3. The bid name and number.
4. A detailed statement of the legal and factual grounds of protest including copies of relevant documents.
5. Any supporting exhibits, evidence, or documents to substantiate any claims.
6. All information establishing that the protester is an interested party for the purpose of filing a protest.
7. The form of relief requested.

After careful consideration of all relevant information the Senior Director of Purchasing shall make a written decision. Any and all costs incurred by a protesting party in connection with a protest shall be the sole responsibility of the protesting party.



~~ADMINISTRATIVE SERVICES~~

1551 Rock QUARRY ROAD
RALEIGH, NORTH CAROLINA 27610-4145
PHONE: 919.694-8726
EMAIL: PURCHASING@WCPSS.NET

Minority, Women, Small Business Enterprise Information:

Pursuant to WCPSS Board of Education policy and NC General Statutes, WCPSS invites and encourages participation in the procurement process by businesses owned by minorities, women, small business enterprise, disabled business enterprises and non-profit work centers for the blind and severely disabled. Parties are asked to complete the following information:

Check all that apply:

- Minority Owned Business
- Woman Owned Business
- Disabled Owned Business
- Small Business Enterprise

Yes, I certify that that my company has been certified by the North Carolina Department of Administration (HUB Office) as a Historically Underutilized Business.

No, my company has not yet received HUB or MWBE certification but meets the above criteria.

No, my company is not a minority, woman, disabled owned or small business enterprise.

Vendor Signature: _____

Date: _____ Print Name: _____

DELIVER SEALED VIA DELIVERY/COURIER TO: Jim Jaeger
Due by: DECEMBER 8, 2023 2:00 pm ET

RFP NO.: **251-24-303**
Wake County Public School System
Purchasing Department
1551 Rock Quarry Rd. Bldg. F
Raleigh NC 27610-4145

Please provide a quote for the following items in the template below. This request is a purchase only request and all information should be included below. If allowed and you are quoting a substitute model, you must indicate such on your response and attach all specifications, drawings and information in order for the end user to compare and review. Quotes submitted without the proper documentation will not be considered. Any miscellaneous fees or charges for this quote must be listed below. **Bidding vendor must be a Manufacturer's full-service distributor. No RFQ's from third party brokers will be accepted. Any new bidding vendor to WCPSS should include information on being an authorized vendor for the manufacturer.**

Qty.	Description	Submissions must meet provided Specifications	Unit Price	TOTAL PRICE
1 EACH	Provide price for purchase of a 235 Ton Water Cooled Centrifugal Chiller as per attached Chiller schedule and Chiller specifications and Accessories. <u>The basis of design is a: CARRIER 19XRV</u> MUST SPECIFY DELIVERY ARO: _____		\$	\$
<u>*IMPORTANT NOTES</u>			<u>IMPORTANT NOTE:</u>	<u>SPECIFICATION SHEETS MUST BE INCLUDED WITH YOUR RFQ SUBMISSION</u>
<u>IMPORTANT *NOTE*</u>	QUOTE DELIVERED PRICING		DELIVERED PRICE	
<u>VENDOR NOTE:</u>	<u>IMPORTANT NOTE:</u> ALL BIDDING VENDORS MUST BE "FULL SERVICE DISTRIBUTORS" FOR THE ABOVE REQUESTED PRODUCTS. RFQ'S SUBMITTED FROM BROKERS, 3 rd PARTY AGENTS WILL NOT BE ACCEPTED. BIDDING COMPANIES MUST WORK DIRECTLY WITH THE MANUFACTURER. WITH A SUBMITTED RFQ TO WCPSS, DOCUMENTATION OF BEING AN AUTHORIZED MANUFACTURER VENDOR SHOULD BE PROVIDED, IF NOT CURRENTLY DOING BUSINESS WITH WCPSS. THE AWARDED VENDOR WILL BE EXPECTED TO PROVIDE THE ALL COMMODITES IN A TIMELY MANNER, COORDINATE DELIVERY, HANDLE ANY AND ALL PRODUCT ISSUES RELATED TO ANY WCPSS ORDER RESULTING FROM THIS RFQ AWARD.			
	FOR: CHS (FAL)	<u>SUBMISSIONS MUST MEET PROVIDED SPECIFICATIONS</u>	TOTAL:	\$

Note: Please do not include Sales Tax in the above quote. WCPSS is not tax exempt. N.C. Sales Tax will be added automatically on the awarded purchase order.

Please State Availability: (Delivery availability ARO must be specified above)
DELIVERY DETAILS: TO BE COORDINATED WITH WCPSS M & O FAL DEPT. AND CONTRACTED MECHANICAL CONTRACTOR
Any Misc. fees or charges must be specified above.
WCPSS reserves the right to amend quantities or cancel bid or an undelivered purchase order due to changes in funds availability

Bidding Company Name: _____ Date: _____

Company Rep (Print): _____ Signature: _____

WATER-COOLED CHILLER SCHEDULE

SYMBOL	CAPACITY TONS REFR. ①	EVAPORATOR				CONDENSER				ELECTRICAL ③			FULL LOAD EER	IPLV	BASIS OF DESIGN	MAXIMO #	REMARKS	
		EWT °F	LWT °F	GPM	MAX. PD	EAT °F	LWT °F	GPM	MAX. PD	VOLTAGE	MCA ②	MOCP						MIN. SHORT CIRCUIT / AIC RATING
CH-2	235.0	54	42	470	12 FT.	85	95	705	25 FT.	480V-3Ø	240	450	65,000	0.682	0.44	CARRIER 19XRV	28625	④⑤⑥⑦⑧⑨⑩

- ① BASED ON 0.0001 EVAPORATOR FOULING FACTOR.
- ② MINIMUM CIRCUIT AMPACITY WITH SINGLE POINT POWER CONNECTION.
- ③ PER AHRI 550/590.
- ④ CHILLER PROVIDED BY OWNER INCLUDING FACTORY STARTUP. CONTRACTOR SHALL COORDINATE AND RECEIVE CHILLER DIRECTLY FROM CARRIER AND INSTALL COMPLETE.
- ⑤ MANUFACTURER TO PROVIDE 5-YEAR FULL PARTS AND LABOR WARRANTY (INCLUDES REFRIGERANT CHARGE).
- ⑥ FACTORY FURNISHED LON COMM CARD; MC TO COORDINATE WITH EXISTING BAS.
- ⑦ ANALOG CHILLED WATER SETPOINT RESET.
- ⑧ FACTORY FURNISHED VFD, STANDARD BEARINGS, AND INLET GUIDE VANES.
- ⑨ FRAME MOUNTED AND REFRIGERANT COOLED VFD WITH THD <5% PER IEEE 519.
- ⑩ EVAPORATOR AND CONDENSER PIPING ON OPPOSITE ENDS. EVAPORATOR CONNECTIONS ON DRIVE SIDE.

CUSTOMER: WAKE COUNTY PUBLIC SCHOOLS PROJECT NAME: CARY HIGH SCHOOL - CHILLER REPLACEMENT PROJECT NUMBER: 23001 DATE: NOVEMBER 21, 2023 DRAWN BY: TRS/NAH CHECKED BY: THS	DRAWING TITLE BD-M-01
--	-------------------------------------

Packaged Semi-Hermetic Centrifugal Liquid Chiller

HVAC Guide Specifications — 19XRV

Carrier Model Number:

19XRV

Part 1 — General

1.01 SYSTEM DESCRIPTION

- A. Microprocessor-controlled liquid chiller shall use a semi-hermetic centrifugal compressor using refrigerant R-513A.
- B. If a manufacturer proposes a liquid chiller using R-514A refrigerant, then the manufacturer shall include in the chiller price:
 1. A vapor activated alarm system shall be capable of responding to R-514A levels of 10 ppm Allowable Exposure Limit (AEL).
 2. External refrigerant storage tank and pumpout unit.
 3. Zero emission purge unit capable of operating even when the chiller is not operating.
 4. Back-up relief valve to rupture disk.
 5. Chiller pressurizing system to prevent leakage of noncondensables into chiller during shutdown periods.
 6. Plant room ventilation.

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 National Standards Institute/American Society of Heating, Refrigerating and Air-Conditioning Engineers) 15 (latest edition).
- C. Evaporator 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.
- F. 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.
- G. 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.
- H. Prior to shipment, the chiller automated controls test shall be executed to check for proper wiring and ensure correct controls operation.
- I. 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.
- J. The management system governing the manufacture of this chiller shall be ISO 9001:2015 certified.

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 R-513A.
- 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~~ five-years after start-up or 18 66 months from shipment, whichever occurs first, including refrigerant.

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, evaporator, condenser, initial oil and refrigerant operating charges, microprocessor control system, and documentation required prior to start-up. VFD will be mounted on the chiller, 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 pre-wired 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. If an open drive motor is provided, a compressor shaft seal leakage containment system shall be provided.
 - a. An oil reservoir shall collect oil and refrigerant that leaks past the seal.
 - b. A float device shall be provided to open when the reservoir is full, directing the refrigerant/oil mixture back into the compressor housing.
 - c. A refrigerant sensor shall be located next to the open drive seal to detect leaks.
3. 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.
7. Should the mechanical contractor choose to provide a chiller with an open motor instead of the specified semi-hermetic motor, the contractor shall install additional cooling equipment to dissipate the motor heat as per the following formula:

$$\text{Btuh} = (\text{FLkW motor}) (0.05) (3413)$$

$$\text{Btuh} = (\text{FLkW motor}) (171)$$

and, alternately

$$\text{Tons} = \text{Btuh} / 12,000$$

The additional piping, valves, air-handling equipment, insulation, wiring, switchgear changes, ductwork, and coordination with other trades shall be the responsibility of the mechanical contractor. Shop drawings reflecting any changes to the design shall be included in the submittal, and incorporated into the final as-built drawings for the project.

8. If an open motor is provided, a mechanical room thermostat shall be provided and set at 104°F (40°C). If this temperature is exceeded, the chillers shall shut down and an alarm signal shall be generated to the central Energy Management System (EMS) display module prompting the service personnel to diagnose and repair the cause of the over-temperature condition. The mechanical contractor shall be responsible for all changes to the design, including coordination with temperature control, electrical and other trades. In addition, the electrical power consumption of any auxiliary ventilation and/or mechanical cooling required to maintain the mechanical room conditions stated above shall be considered in the determination of conformance to the scheduled chiller energy efficiency requirement.

D. Evaporator and Condenser:

1. Evaporator 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]).
 - a. Waterbox shall have Flanged Connections.
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]).
 - b. Waterbox shall have Flanged Connections.
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. 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. Evaporator 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 evaporator 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 evaporator 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 evaporator 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. Communication card shall be LON.
- 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 evaporator 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.

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 gauges 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 mid-scale.
2. Gauges shall be installed in the entering and leaving water lines of the evaporator and condenser.

I. Isolator Pads:

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. Additional Details:

1. Refrigerant Charge:

The chiller shall ship from the factory fully charged with R-513A refrigerant and oil.

2. Thermal Insulation:

Unit manufacturer shall insulate the evaporator 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.

3. Automatic Hot Gas Bypass:

Hot gas bypass valve and piping shall be factory furnished to permit chiller operation for extended periods of time.

4. Flanged Waterbox Nozzles:

Unit manufacturer shall furnish standard flanged piping connections on the evaporator and condenser.

5. 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.

6. Unit-Mounted Variable Frequency Drive (VFD) with Built-in Harmonic Filter (LiquiFlo^{®1} 2):

a. Design:

- 1) VFD shall be refrigerant cooled, microprocessor based, pulse width modulated (PWM) design. Water-cooled designs are not acceptable.
- 2) Input and output power devices shall be insulated gate bipolar transistors (IGBTs).
- 3) Active rectifier shall convert incoming voltage / frequency to DC voltage. Input current and voltage shall be regulated.
- 4) Transistorized inverter and control regulator shall convert DC voltage to a sinusoidal PWM waveform.
- 5) Integrated chiller controls shall coordinate motor speed and guide vane position to optimize chiller performance over all chiller operating conditions.
- 6) 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 (35,000 amps for 575-v units).
- 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 flange shall be suitable for ASME design working pressure of 185 psig (1276 kPa).
- 2) Refrigerant cooling shall be controlled by a fixed orifice to maintain heat sink temperature within acceptable limits for ambient temperature.
- 3) Water-cooled heat exchangers requiring cleaning shall not be acceptable.

d. VFD Rating:

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- 1) Drive shall be suitable for continuous operation at nameplate voltage $\pm 10\%$.
 - 2) Drive shall be suitable for continuous operation at 100% of nameplate amps and 150% of nameplate amps for 5 seconds.
 - 3) Drive shall comply with applicable ANSI, NEMA, UL and NEC 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 6000 ft (1829 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:
- A single display shall provide interface for programming and display of VFD and chiller parameters. Viewable parameters include:
- 1) Operating, configuration and fault messages
 - 2) Frequency in Hz
 - 3) Load and line side voltage and current (at the VFD)
 - 4) kW (line and load side)
 - 5) IGBT temperatures
- f. VFD Performance:
- 1) VFD voltage total harmonic distortion (THD) and harmonic current total demand distortion (TDD) shall not exceed IEEE-519 requirements using the VFD circuit breaker input terminals as the point of common coupling (PCC).
 - 2) VFD full load efficiency shall meet or exceed 97% at 100% VFD rated ampacity.
 - 3) Active rectifier shall regulate unity displacement power factor to 0.99 or higher at full load.
 - 4) Voltage boost capability to provide full motor voltage at reduced line voltage conditions.
 - 5) Soft start, linear acceleration, coast to stop.
 - 6) Base motor frequency shall be either 50 or 60 Hz. Adjustable frequency range from 39 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 65,000 amp interrupt capacity.
 - 2) VFD shall have standard 15 amp branch 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) Nameplate voltage shall range between 380 and 460 $\pm 10\%$, 3 phase, 50/60 Hz
 - 6) $\pm 2\%$ Hz.
- h. Discrete Outputs:
- 115 v discrete contact outputs shall be provided for field wired:
- 1) Chilled water pump
 - 2) Condenser water pump
 - 3) Alarm status
 - 4) Tower fan low
 - 5) Tower fan high
- 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)

k. VFD Testing:

VFD shall be factory mounted, wired and tested on the chiller prior to shipment.