



STATE OF NORTH CAROLINA

North Carolina School of Science and Mathematics (NCSSM)

Invitation for Bid #: 87-09012023

Hill Residence Hall – Rooftop Air Handling Unit

Date Issued: September 1, 2023

Bid Opening Date: September 15, 2023

At 2:00 PM ET

Direct all inquiries concerning this IFB to:

Norma Evans

Purchasing Manager

Email: norma.evans@ncssm.edu

(919) 416-2791



STATE OF NORTH CAROLINA

Invitation for Bids

87-09012023

For internal State agency processing, including tabulation of bids, provide your company's eVP (Electronic Vendor Portal) Number. Pursuant to G.S. 132-1.10(b) this identification number shall not be released to the public. **This page will be removed and shredded, or otherwise kept confidential, before the procurement file is made available for public inspection.**

**This page shall be filled out and returned with your bid.
Failure to do so shall be sufficient cause to reject your bid.**

Vendor Name

Vendor eVP #

Note: For a contract to be awarded to you, your company (you) must be a North Carolina registered vendor in good standing. You must enter the vendor number assigned through eVP (Electronic Vendor Portal). If you do not have a vendor number, register at <https://vendor.ncgov.com/vendor/login>

Electronic responses ONLY will be accepted for this solicitation.

STATE OF NORTH CAROLINA
Division of North Carolina School of Science and Mathematics

Refer <u>ALL</u> Inquiries regarding this IFB to: Norma Evans Purchasing Manager norma.evans@ncssm.edu (919) 416-2791	Invitation for Bids # 87-09012023
	Bids will be publicly opened: September 15, 2023 at 2:00PM
Using Agency: NC School of Science and Mathematics - Durham	Commodity No. and Description: 40101709 Rooftop Air Handling Unit for Hill Residence Hall Renovation
Requisition No.: n/a	

EXECUTION

In compliance with this Invitation for Bids (IFB), and subject to all the conditions herein, the undersigned Vendor offers and agrees to furnish and deliver any or all items upon which prices are bid, at the prices set opposite each item within the time specified herein.

By executing this bid, the undersigned Vendor understands that false certification is a Class I felony and certifies that:

- this bid is submitted competitively and without collusion (G.S. 143-54),
- that none of its 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
- it is not an ineligible Vendor as set forth in G.S. 143-59.1.

Furthermore, by executing this bid, the undersigned certifies to the best of Vendor's knowledge and belief, that:

- it and its principals are not presently debarred, suspended, proposed for debarment, declared ineligible or voluntarily excluded from covered transactions by any Federal or State department or agency.

As required by G.S. 143-48.5, the undersigned Vendor certifies that it, and each of its sub-Contractors for any Contract awarded as a result of this IFB, complies with the requirements of Article 2 of Chapter 64 of the NC General Statutes, including the requirement for each employer with more than 25 employees in North Carolina to verify the work authorization of its employees through the federal E-Verify system.

As required by Executive Order 24 (2017), the undersigned vendor certifies will comply with all Federal and State requirements concerning fair employment and that it does not and will not discriminate, harass, or retaliate against any employee in connection with performance of any Contract arising from this solicitation.

G.S. 133-32 and Executive Order 24 (2009) prohibit the offer to, or acceptance by, any State Employee associated with the preparing plans, specifications, estimates for public Contract; or awarding or administering public Contracts; or inspecting or supervising delivery of the public Contract of any gift from anyone with a Contract with the State, or from any person seeking to do business with the State. By execution of this bid response to the IFB, the undersigned certifies, for Vendor's entire organization and its employees or agents, that Vendor are not aware that any such gift has been offered, accepted, or promised by any employees or agents of Vendor's organization.

By executing this bid, Vendor certifies that it has read and agreed to the **INSTRUCTION TO VENDORS** and the **NORTH CAROLINA GENERAL TERMS AND CONDITIONS incorporated herein**. These documents can be accessed from the ATTACHMENTS page within this document.

Failure to execute/sign bid prior to submittal may render bid invalid and it MAY BE REJECTED. Late bids cannot be accepted.

COMPLETE/FORMAL NAME OF VENDOR:		
STREET ADDRESS:	P.O. BOX:	ZIP:
CITY & STATE & ZIP:	TELEPHONE NUMBER:	TOLL FREE TEL. NO:
PRINCIPAL PLACE OF BUSINESS ADDRESS IF DIFFERENT FROM ABOVE (SEE INSTRUCTIONS TO VENDORS ITEM #21):		
PRINT NAME & TITLE OF PERSON SIGNING ON BEHALF OF VENDOR:	FAX NUMBER:	
VENDOR'S AUTHORIZED SIGNATURE:	DATE:	E-MAIL:

Bid Number: 87-09012023

Vendor: _____

VALIDITY PERIOD

Offer shall be valid for at least sixty (60) days from date of bid opening, unless otherwise stated here: _____ days, or if extended by mutual agreement of the parties. Any withdrawal of this offer shall be made in writing, effective upon receipt by the agency issuing this IFB.

BID ACCEPTANCE

If your bid is accepted, all provisions of this IFB, along with the written results of any negotiations, shall constitute the written agreement between the parties ("Contract"). The NORTH CAROLINA GENERAL TERMS AND CONDITIONS are incorporated herein and shall apply. Depending upon the Goods or Services being offered, other terms and conditions may apply, as mutually agreed.

FOR STATE USE ONLY: Offer accepted and Contract awarded this ____ day of _____, 20____, as indicated on the attached certification, by _____

(Authorized Representative of North Carolina School of Science and Mathematics)

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1.0 PURPOSE AND BACKGROUND

The North Carolina School of Science and Mathematics (NCSSM) is requesting proposals from vendors for **one (1) outdoor rooftop air handling unit (AHU) utilizing hot water and chilled water coils** as part of the Hill Residence Hall Renovation project. NCSSM is Owner-Furnishing this AHU in advance of execution of the project construction contract to ensure the AHU is on-hand in time for the project completion in Summer 2024. (Students will reoccupy the residence hall for start of classes in early August 2024.) The unit will be Contractor-Installed as part of the renovation construction (single prime).

Drawings and specifications for the air handler are attached to this RFP. **Lead-time is a critical consideration, and vendors may submit multiple options in their bid.** Clearly distinguish the unit selection, cost, and lead-time for each option submitted. For use in determining options, the ideal unit delivery date would be on or before **late April 2024**. Minor variations (inches) in the specified unit size dimensions may be considered in order to improve lead-time. Vendors are encouraged to submit reasonable options for consideration by the Engineer of Record (EOR). Please submit Questions if needed.

The intent of this solicitation is to award an Agency Specific Contract.

Bids shall be submitted in accordance with the terms and conditions of this IFB and any addenda issued hereto.

2.0 GENERAL INFORMATION

2.1 INVITATION FOR BID DOCUMENT

The IFB is comprised of the base IFB document, any attachments, and any addenda released before Contract award, which are incorporated herein by reference.

2.2 E-PROCUREMENT FEE

ATTENTION: The E-Procurement fee may apply to this solicitation. See paragraph entitled ELECTRONIC PROCUREMENT of the North Carolina General Terms and Conditions.

General information on the E-Procurement Services can be found at: <http://eprocurement.nc.gov/>.

2.3 NOTICE TO VENDORS REGARDING IFB TERMS AND CONDITIONS

It shall be the Vendor's responsibility to read the Instructions to Vendors, the North Carolina General Terms and Conditions, all relevant exhibits and attachments, and any other components made a part of this IFB and comply with all requirements and specifications herein. Vendors also are responsible for obtaining and complying with all Addenda and other changes that may be issued in connection with this IFB.

If Vendors have questions or issues, or exceptions regarding any component within this IFB, those must be submitted as questions in accordance with the instructions in the BID QUESTIONS Section. If the State determines that any changes will be made as a result of the questions asked, then such decisions will be communicated in the form of an IFB addendum. The State may also elect to leave open the possibility for later negotiation of specific provisions of the Contract that have been addressed during the question-and-answer period, prior to contact award.

Other than through this process or negotiation under 01 NCAC 05B.0503, the State rejects and will not be required to evaluate or consider any additional or modified terms and conditions submitted with Vendor's bid. This applies to any language appearing in or attached to the document as part of the Vendor's bid that purports to vary any terms and conditions or Vendors' instructions herein or to render the bid non-binding or subject to further negotiation. Vendor's bid shall constitute a firm offer that shall be held open for the period required herein ("Validity Period" above).

The State may exercise its discretion to consider Vendor proposed modifications. By execution and delivery of this IFB Response, the Vendor agrees that any additional or modified terms and conditions, whether submitted purposely or inadvertently, shall have no force or effect, and will be disregarded unless expressly agreed upon through negotiations and

incorporated by way of a Best and Final Offer (BAFO). Noncompliance with, or any attempt to alter or delete, this paragraph shall constitute sufficient grounds to reject Vendor’s bid as nonresponsive.

2.4 IFB SCHEDULE

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

Event	Responsibility	Date and Time
Issue IFB	State	September 1, 2023
Submit Written Questions	Vendor	September 8, 2023
Provide Responses to Questions	State	September 11, 2023
Submit Bids (Electronically Only)	Vendor	September 15, 2023 by 2:00PM ET
Contract Award	State	September 22, 2023
Contract Effective Date	State	September 22, 2023

2.5 NO SITE VISIT or PRE-BID CONFERENCE WILL BE HELD.

2.6 BID QUESTIONS

Upon review of the IFB documents, Vendors may have questions to clarify or interpret the IFB in order to submit the best bid possible. To accommodate the Bid Questions process, Vendors shall submit any such questions by the “Submit Written Questions” date and time provided in the IFB SCHEDULE Section above, unless modified by Addendum. **NO PHONE CALLS WILL BE ACCEPTED.**

Written questions shall be e-mailed to norma.evans@ncssm.edu by the date and time specified above. Vendors will enter “IFB # [IFB Number]: Questions” as the subject for the email. Question submittals will include a reference to the applicable IFB section and be submitted in a format shown below:

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

Questions received prior to the submission deadline date, the State’s response, and any additional terms deemed necessary by the State will be posted in the form of an addendum to the *electronic Vendor Portal (eVP)*, <https://evp.nc.gov>, and shall become an Addendum to this IFB. No information, instruction or advice provided orally or informally by any State personnel, whether made in response to a question or otherwise in connection with this IFB, shall be considered authoritative or binding. Vendors shall rely *only* on written material contained in an Addendum to this IFB.

2.7 BID SUBMITTAL

IMPORTANT NOTE: This is an absolute requirement. Vendor shall bear the risk of late submission due to unintended or unanticipated delay. It is the Vendor’s sole responsibility to ensure its bid has been received as described in this IFB by the specified time and date of opening. The date and time of receipt will be marked on each bid when received. Any bid or portion thereof received after the bid submission deadline will be rejected.

All proposal responses shall be submitted electronically via the electronic Vendor Portal (eVP). Additional information can be found at the eVP updates for Vendors link: <https://eprocurement.nc.gov/news-events/evp-updates-vendors>.

Failure to submit a bid in strict accordance with these instructions shall constitute sufficient cause to reject a Vendor’s bid(s). Vendors are strongly encouraged to allow sufficient time to upload bids.

Critical updated information may be included in Addenda to this IFB. It is important that all Vendors responding on this IFB periodically check the State’s eVP website for any Addenda that may be issued prior to the bid opening date. All Vendors shall be deemed to have read and understood all information in this IFB and all Addenda thereto.

2.8 BID CONTENTS

Vendors shall populate all attachments of this IFB that require the Vendor to provide information and include an authorized signature where requested. Failure to provide all required items, or Vendor's submission of incomplete items, may result in the State rejecting Vendor's bid, in the State's sole discretion.

Vendor IFB responses shall include the following items and attachments, which shall be arranged in the following order:

- a) Cover Letter, which must contain all of the following; (i) a statement that confirms that the Vendor has read the IFB in its entirety, including all links, and all Addenda released in conjunction with the IFB; (ii) a statement that the Vendor agrees to perform in accordance with the scope of work, requirements, and specifications contained herein; and (iii) Vendor's agreement to comply with all instructions, terms and conditions, and attachments.
- b) Title Page: Include the company name, address, phone number and authorized representative along with the Bid Number.
- c) Completed and signed version of EXECUTION PAGES, along with the body of the IFB.
- d) Signed receipt pages of any addenda released in conjunction with this IFB, if required to be returned.
- e) Vendor Response. *Multiple options may be submitted. Clearly indicate the unit selection, cost, and lead-time for each option.*
- f) Completed version of ATTACHMENT A: PRICING
- g) Completed version of ATTACHMENT D: HUB SUPPLEMENTAL VENDOR INFORMATION
- h) Completed version of ATTACHMENT E: CUSTOMER REFERENCE FORM
- i) Completed version of ATTACHMENT F: LOCATION OF WORKERS UTILIZED BY VENDOR
- j) Completed and signed version of ATTACHMENT G: CERTIFICATION OF FINANCIAL CONDITION
- k) Completed and signed version of ATTACHMENT H: VENDOR REQUEST FOR EO50 PRICE-MATCHING, if applicable

2.9 ALTERNATE BIDS

Unless provided otherwise in this IFB, Vendor may submit alternate offering for comparable Goods, various methods or levels of Service(s), or that propose different options. Specifically, Vendors may offer alternate air handlers with different lead times in compliance with the specifications listed in Section 5.1 of this IFB. Alternate offerings must specifically identify the IFB requirements and advantage(s) addressed by the alternate offering(s). Each offering must be for a specific set of Goods and Services and must include specific pricing. If a Vendor chooses to respond with various offerings, each offering must be offered with a separate price and be clearly marked as an alternate offering. Each offering must be complete and independent of other offerings offered.

2.10 DEFINITIONS, ACRONYMS, AND ABBREVIATIONS

Relevant definitions for this IFB are provided in 01 NCAC 05A .0112 and in the Instructions to Vendors referenced below which are incorporated herein by this reference.

3.0 METHOD OF AWARD AND BID EVALUATION PROCESS

3.1 METHOD OF AWARD

North Carolina G.S. 143-52 provides a general list of criteria the State shall use to award contracts, as supplemented by the additional criteria herein. **Additional criteria for this IFB include the lead-time in which a vendor can provide the goods specified in the IFB. Minor variations (inches) in the specified unit size dimensions may be considered in order to improve lead-time. Vendors are encouraged to submit reasonable options for consideration by the Engineer of Record (EOR). Please**

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Vendor: _____

submit Questions if needed. The Goods or Services being procured shall dictate the application and order of criteria; however, all award decisions shall be in the State's best interest.

All responsive bids will be reviewed, and award will be based on the responsive bid(s) offering the lowest price that meets the specifications to include any required verifications set out herein such as but not limited to past performance, references, and financial documents.

If a Vendor selected for award is determined by the State to be a non-resident of North Carolina, all responsive bids will be reviewed to determine if any of them were submitted by a North Carolina resident Vendor who requested an opportunity to match the price of the winning bid, pursuant to Executive Order #50 and G.S. 143-59 (for more information, please refer to ATTACHMENT H: VENDOR REQUEST FOR EXECUTIVE ORDER #50 PRICE MATCHING. If such bid(s) are identified, the State will then determine whether any such bid falls within the price-match range, and, if so, make a Contract award in accordance with the process that implements G.S. 143-59 and Executive Order #50.

The State reserves the right to waive any minor informality or technicality in bids received.

3.2 CONFIDENTIALITY AND PROHIBITED COMMUNICATIONS DURING EVALUATION

While this IFB is under evaluation, the responding Vendor, including any subcontractors and suppliers, is prohibited from engaging in conversations intended to influence the outcome of the evaluation. See Paragraph 29 of the Instructions To Vendors entitled COMMUNICATIONS BY VENDORS.

Each Vendor submitting a bid to this IFB, including its employees, agents, subcontractors, suppliers, subsidiaries and affiliates, is prohibited from having any communications with any person inside or outside the using agency; issuing agency; other government agency office or body (including the purchaser named above, any department secretary, agency head, members of the General Assembly and Governor's office); or private entity, if the communication refers to the content of Vendor's bid or qualifications, the content of another Vendor's proposal, another Vendor's qualifications or ability to perform a resulting 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, the award of a contract, or both.

Any Vendor not in compliance with this provision shall be disqualified from evaluation and award. A Vendor's proposal may be disqualified if its subcontractor and/or supplier engage in any of the foregoing communications during the time that the procurement is active (*i.e.*, the issuance date of the procurement until the date of contract award or cancellation of the procurement). Only those discussions, communications or transmittals of information authorized or initiated by the issuing agency for this IFB or inquiries directed to the purchaser named in this IFB regarding requirements of the IFB (prior to proposal submission) or the status of the award (after submission) are excepted from this provision.

3.3 BID EVALUATION PROCESS

Only responsive submissions will be evaluated.

The State will conduct an evaluation of responsive Bids, as follows:

Bids will be received according to the method stated in the Bid Submittal section above.

All bids must be received by the issuing agency not later than the date and time specified in the IFB SCHEDULE Section above, unless modified by Addendum. Vendors are cautioned that this is a request for offers, not an offer or request to contract, and the State reserves the unqualified right to reject any and all offers at any time if such rejection is deemed to be in the best interest of the State.

At the date and time provided in the IFB SCHEDULE Section above, unless modified by Addendum, the bids from each responding Vendor will be opened publicly and all offers (except those that have been previously withdrawn, or voided bids) will be tabulated. The tabulation shall be made public at the time it is created. When negotiations after receipt of bids is authorized pursuant to G.S. 143-49 and 01 NCAC 05B.0503, only the names of offerors and the Goods and Services offered shall be tabulated at the time of opening. If negotiation is anticipated, cost and price shall become available for public

inspection at the time of the award. 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 a Vendor's pricing position.

At their option, the evaluators may request oral presentations or discussions with any or all Vendors for clarification or to amplify the materials presented in any part of the bid. Vendors are cautioned, however, that the evaluators are not required to request presentations or other clarification—and often do not. Therefore, all bids should be complete and reflect the most favorable terms available from the Vendor. Prices bid cannot be altered or modified as part of a clarification.

Bids will generally be evaluated, based on completeness, content, cost and responsibility of the Vendor to supply the requested Goods and Services. Specific evaluation criteria are listed in Section 3.1 METHOD OF AWARD.

Upon completion of the evaluation process, the State will make Award(s) based on the evaluation and post the award(s) to the State's eVP website under the IFB number for this solicitation. Award of a Contract to one Vendor does not mean that the other bids lacked merit, but that, all factors considered, the selected bid was deemed most advantageous and represented the best value to the State.

The State reserves the right to negotiate with one or more Vendors, or to reject all original offers and negotiate with one or more sources of supply that may be capable of satisfying the requirement, and in either case to require Vendor to submit a Best and Final Offer (BAFO) based on discussions and negotiations with the State.

3.4 PERFORMANCE OUTSIDE THE UNITED STATES

Vendor shall complete ATTACHMENT F: LOCATION OF WORKERS UTILIZED BY VENDOR. In addition to any other evaluation criteria identified in this IFB, the State may also consider, for purposes of evaluating proposed or actual contract performance outside of the United States, how that performance may affect the following factors to ensure that any award will be in the best interest of the State:

- a) Total cost to the State
- b) Level of quality provided by the Vendor
- c) Process and performance capability across multiple jurisdictions
- d) Protection of the State's information and intellectual property
- e) Availability of pertinent skills
- f) Ability to understand the State's business requirements and internal operational culture
- g) Particular risk factors such as the security of the State's information technology
- h) Relations with citizens and employees
- i) Contract enforcement jurisdictional issues

3.5 INTERPRETATION OF TERMS AND PHRASES

This IFB serves two functions: (1) to advise potential Vendors of the parameters of the solution being sought by the State; and (2) to provide (together with other specified documents) the terms of the Contract resulting from this procurement. The use of phrases such as "shall," "must," and "requirements" are intended to create enforceable contract conditions. In determining whether bids should be evaluated or rejected, the State will take into consideration the degree to which Vendors have proposed or failed to propose solutions that will satisfy the State's needs as described in the IFB. Except as specifically stated in the IFB, no one requirement shall automatically disqualify a Vendor from consideration. However, failure to comply with any single requirement may result in the State exercising its discretion to reject a bid in its entirety.

4.0 REQUIREMENTS

This Section lists the requirements related to this IFB. By submitting a bid, the Vendor agrees to meet all stated requirements in this Section, as well as any other specifications, requirements, and terms and conditions stated in this IFB. If a Vendor is unclear about a requirement or specification, or believes a change in a requirement would allow for the State to receive a

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Vendor: _____

better bid, the Vendor is encouraged to submit these items in the form of a question during the question and answer period in accordance with the Bid Questions Section above.

4.1 PRICING

Bid price shall constitute the total cost to the State for delivery fully assembled and ready for use, including all applicable charges for shipping, delivery, handling, administrative and other similar fees. Complete ATTACHMENT A: PRICING FORM and include in Vendor’s response.

4.2 PRODUCT IDENTIFICATION

SUITABILITY FOR INTENDED USE

Vendors are requested to offer only items directly complying with the specifications herein or comparable items which will provide the equivalent capabilities, features and diversity called for herein. The State reserves the right to evaluate all bids for suitability for the required use and to award the one best meeting requirements and considered to be in the State’s best interest.

4.3 TRANSPORTATION AND IDENTIFICATION

The Vendor shall deliver Free-On-Board (FOB) Destination to any requested location within the State of North Carolina with all transportation costs and fees included in the total bid price.

When an order is placed using a purchase order, the purchase order number shall be shown on all packages and shipping manifests to ensure proper identification and payment of invoices. If an order is placed without using a purchase order, such as via phone, the Buyer’s name shall be show on all packages. A complete packing list shall accompany each shipment. Vendors shall not ship any products until they have received an order.

4.4 DELIVERY

The Vendor shall deliver Free-On-Board (FOB) Destination to the following location(s):

**North Carolina School of Science and Mathematics – Hill Hall Renovation Project
1219 Broad Street
Durham, NC 27705**

Vendor should complete delivery within **220 consecutive calendar days** after receipt of purchase order.

For completion by Vendor: Delivery will be made from _____ (city, state) within _____ consecutive calendar days after receipt of purchase order. Promptness of delivery may be used as a factor in the award criteria.

4.5 AUTHORIZED RESELLER

The Vendor shall be authorized by the manufacturer to distribute or resell the products and/or maintenance offered in this IFB. The Vendor shall provide a signed statement from the manufacturer confirming authorization with its bid response. Failure to provide this statement shall constitute sufficient grounds for rejection of Vendor’s offer, at the discretion of the State.

Vendor is the: Manufacturer Dealer Reseller Distributor

Authorized: Yes No Attached Manufacturer’s Authority: Yes No

4.6 WARRANTY

Manufacturer’s standard warranty shall apply. Vendors shall include a copy of the manufacturer’s standard warranty with the bid response.

4.7 DESCRIPTIVE LITERATURE

DESCRIPTIVE LITERATURE/CERTIFICATION

Each bid shall be accompanied by complete descriptive literature, specifications, certifications, and all other pertinent data necessary for thorough evaluation of the item(s) offered and sufficient to determine compliance of the item(s) with the specifications. Failure to include such information shall be a sufficient basis for rejection of the bid.

4.8 HUB PARTICIPATION

Pursuant to North Carolina General Statute G.S. 143-48, it is State policy to encourage and promote the use of small, minority, physically handicapped, and women contractors in purchasing Goods and Services. As such, this IFB will serve to identify those Vendors that are minority owned or have a strategic plan to support the State’s Historically Underutilized Business program by meeting or exceeding the goal of 10% utilization of diverse firms as 1st or 2nd tier subcontractors. Vendor shall complete ATTACHMENT D: HUB SUPPLEMENTAL VENDOR INFORMATION.

4.9 REFERENCES

Vendors shall provide at least three (3) references, using ATTACHMENT E: CUSTOMER REFERENCE FORM, for which your company has supplied the exact model of equipment offered or equivalent. The State may contact these users to determine quality level of the offered equipment; as well as, but not limited to user satisfaction with Vendor performance. Information obtained may be considered in the evaluation of the bid.

4.10 VENDOR’S REPRESENTATIONS

If the bid results in an award, Vendor agrees that it will not enter any agreement with a third party that may abridge any rights of the State under the Contract. If any Services, deliverables, functions, or responsibilities not specifically described in this solicitation are required for Vendor’s proper performance, provision and delivery of the Service and deliverables under a resulting Contract, or are an inherent part of or necessary sub-task included within such service, they will be deemed to be implied by and included within the scope of the contract to the same extent and in the same manner as if specifically described in the Contract. Unless otherwise expressly provided herein, Vendor will furnish all of its own necessary management, supervision, labor, facilities, furniture, computer and telecommunications equipment, software, supplies and materials necessary for the Vendor to provide and deliver the Services and/or other Deliverables.

4.11 FINANCIAL STABILITY

Each Vendor shall certify it is financially stable by completing the ATTACHMENT G: CERTIFICATION OF FINANCIAL CONDITION. The State is requiring this certification to minimize potential performance issues from contracting with a Vendor that is financially unstable. This Certification shall be deemed continuing, and from the date of the Certification to the expiration of the Contract, the Vendor shall notify the State within thirty (30) days of any occurrence or condition that materially alters the truth of any statement made in this Certification.

4.12 AGENCY INSURANCE REQUIREMENTS MODIFICATION

A. Default Insurance Coverage from the General Terms and Conditions applicable to this Solicitation:

- Small Purchases
- Contract value in excess of the Small Purchase threshold, but up to \$1,000,000.00
- Contract value in excess of \$1,000,000.00

5.0 PRODUCT SPECIFICATIONS

5.1 SPECIFICATIONS

The specific items and any specifications that the Purchasing Agency is seeking are listed below. Items offered by the Vendor must meet or exceed the listed Specifications.

Item #	Specifications
1	one (1) outdoor rooftop air handling unit (AHU) utilizing hot water and chilled water coils meeting the specifications provided in the attachments: <ul style="list-style-type: none"> • Drawing Sheets: M203, M300, M500 • Specifications Section: Modular Air Handling Units 23 73 00

5.2 CERTIFICATION AND SAFETY LABELS

All manufactured items and/or fabricated assemblies subject to operation under pressure, operation by connection to an electric source, or operation involving a connection to a manufactured, natural, or LP gas source shall be constructed and approved in a manner acceptable to the appropriate state inspector which customarily requires the label or re-examination listing or identification marking of the appropriate safety standard organization; such as the American Society of Mechanical Engineers for pressure vessels; the Underwriters Laboratories and /or National Electrical Manufacturers’ Association for electrically operated assemblies; or the American Gas Association for gas operated assemblies, where such approvals of listings have been established for the type of device offered and furnished. Further, all items furnished shall meet all requirements of the Occupational Safety and Health Act (OSHA), and state and federal requirements relating to clean air and water pollution.

5.3 DEVIATIONS

The nature of all deviations from the Specifications listed herein shall be clearly described by the Vendor. Otherwise, it will be considered that items offered by the Vendor are in strict compliance with the Specifications provided herein, and the successful Vendor shall be required to supply conforming goods. Deviations shall be explained in detail on an attached sheet. However, no implication is made or intended by the State that any deviation will be acceptable. Do not list objections to the North Carolina General Terms and Conditions in this section.

6.0 CONTRACT ADMINISTRATION

All Contract Administration requirements are conditioned on an award resulting from this solicitation. This information is provided for the Vendor’s planning purposes.

6.1 CONTRACT MANAGER AND CUSTOMER SERVICE

The Vendor shall be required to designate and make available to the State a contract manager. The contract manager shall be the State’s point of contact for Contract related issues and issues concerning performance, progress review, scheduling, and service.

Contract Manager Point of Contact	
Name:	
Office Phone #:	
Mobile Phone #:	
Email:	

6.2 POST AWARD PROJECT REVIEW MEETINGS – NOT APPLICABLE

6.3 CONTINUOUS IMPROVEMENT

The State encourages the Vendor to identify opportunities to reduce the total cost to the State. A continuous improvement effort consisting of various ideas to enhance business efficiencies as performance progresses.

6.4 PERIODIC STATUS REPORTS – NOT APPLICABLE

6.5 ACCEPTANCE OF WORK

Delivery of Goods shall be conducted and completed at least in accordance with the Contract requirements and recognized and customarily accepted industry practices. Performance shall be considered complete when the Services or Goods are approved as acceptable by the Contract Administrator.

Acceptance of work products shall be based on the following criteria: delivery and receipt of unit meeting the specifications and the selected submittal at the site within the quoted lead-time.

The State shall have the obligation to notify Vendor, in writing ten (10) calendar days following completion of such work or delivery of a deliverable described in the Contract that it is not acceptable. The notice shall specify in reasonable detail the reason(s) it is unacceptable. Acceptance by the State shall not be unreasonably withheld; but may be conditioned or delayed as required for reasonable review, evaluation, installation, or testing, as applicable to the work or deliverable. Final acceptance is expressly conditioned upon completion of all applicable assessment procedures. Should the work or deliverables fail to meet any specifications, acceptance criteria or otherwise fail to conform to the Contract, the State may exercise any and all rights hereunder, including, for Goods deliverables, such rights provided by the Uniform Commercial Code, as adopted in North Carolina.

6.6 INVOICES

Vendor shall invoice the Purchasing Agency. The standard format for invoicing shall be Single Invoices meaning that the Vendor shall provide the Purchasing Agency with an invoice for each order. Invoices shall include detailed line item information to allow Purchasing Agency to verify pricing at point of receipt matches the correct price from the original date of order. At a minimum, the following fields shall be included on all invoices:

Vendor’s Billing Address, Customer Account Number, NC Contract Number, Order Date, Buyer’s Order Number, Manufacturer Part Numbers, Vendor Part Numbers, Item Descriptions, Price, Quantity, and Unit of Measure.

INVOICES MAY NOT BE PAID UNTIL AN INSPECTION HAS OCCURRED AND THE GOODS ACCEPTED.

6.7 DISPUTE RESOLUTION

During the performance of the Contract, the Parties agree that it is in their mutual interest to resolve disputes informally. Any claims by the Vendor shall be submitted in writing to the State’s Contract Manager for resolution. Any claims by the State shall be submitted in writing to the Vendor’s Project Manager for resolution. The Parties shall agree to negotiate in good faith and use all reasonable efforts to resolve such dispute(s).

During the time the Parties are attempting to resolve any dispute, each shall proceed diligently to perform their respective duties and responsibilities under this Contract. The Parties will agree on a reasonable amount of time to resolve a dispute. If a dispute cannot be resolved between the Parties within the agreed upon period, either Party may elect to exercise any other remedies available under the Contract, or at law. This provision, when agreed in the Contract, shall not constitute an agreement by either party to mediate or arbitrate any dispute.

6.8 PRODUCT RECALL

Vendor expressly assumes full responsibility for prompt notification to the Buyer listed on the face of this IFB of any product recall in accordance with the applicable state or federal regulations. The Vendor shall support the State, as necessary, to promptly replace any such products, at no cost to the State.

6.9 CONTRACT CHANGES

Contract changes, if any, over the life of the Contract shall be implemented by contract amendments agreed to in writing by the State and Vendor. Amendments to the contract can only be made through the contract administrator.

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ATTACHMENTS

****IMPORTANT NOTICE****

**RETURN THE REQUIRED ATTACHMENTS WITH YOUR RESPONSE
FOLLOW THE LINKS TO ACCESS EACH ATTACHMENT**

ATTACHMENT A: PRICING

Complete and return the Pricing associated with this IFB in the table below:

Option #	Air Handling Unit Description	Price	Lead-time or delivery date (indicate clearly)

ATTACHMENT B: INSTRUCTIONS TO VENDORS

The Instructions to Vendors, which are incorporated herein by this reference, may be found here:

<https://ncadmin.nc.gov/formnorth-carolina-instructions-vendors032023/download?attachment>

ATTACHMENT C: NORTH CAROLINA GENERAL TERMS & CONDITIONS

The North Carolina General Terms and Conditions, which are incorporated herein by this reference, may be found here:

https://files.nc.gov/ncdoa/pandc/OnlineForms/Form_North-Carolina-General-Terms-and-Conditions_11.2021.pdf

ATTACHMENT D: HUB SUPPLEMENTAL VENDOR INFORMATION

Complete and return the Historically Underutilized Businesses (HUB) Vendor Information form, which can be found at the following link:

https://files.nc.gov/ncdoa/pandc/OnlineForms/Form_HUB-Supplemental-Vendor-Information_9.2021.pdf

ATTACHMENT E: CUSTOMER REFERENCE FORM

Complete and return the Customer Reference Form, which can be found at the following link:

https://files.nc.gov/ncdoa/pandc/OnlineForms/Form_Customer_Reference_Template_09.2021.pdf

Bid Number: 87-09012023

Vendor: _____

ATTACHMENT F: LOCATION OF WORKERS UTILIZED BY VENDOR

Complete and return the Location of Workers Utilized by Vendor, which can be found at the following link:

https://files.nc.gov/ncdoa/pandc/OnlineForms/Form_Location-of-Workers_09.2021.pdf

ATTACHMENT G: CERTIFICATION OF FINANCIAL CONDITION

Complete, sign, and return the Certification of Financial Condition, which can be found at the following link:

https://files.nc.gov/ncdoa/pandc/OnlineForms/Form_Certification-of-Financial-Condition_09.2021.pdf

ATTACHMENT H: VENDOR REQUEST FOR EO50 PRICE-MATCHING

Complete, sign, and return the Vendor Request for EO50 Price-Matching, which can be found at the following link:

https://files.nc.gov/ncdoa/pandc/OnlineForms/Form_Vendor-Price-Matching-Opportunity_09.2021.pdf

***** Failure to Return the Required Attachments May Eliminate
Your Response from Further Consideration *****



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SHEET NAME:
MECHANICAL SCHEDULES

PHASE:
BD SET

REVISIONS	DATE	DESCRIPTION

ISSUE DATE: 08/24/2023
PROJECT #: 204818
DRAWN BY: JARR
SHEET NUMBER

M500

PUMP SCHEDULE

TAG	TYPE	SERVICE	QPM	HP	EFF	MANUFACTURER	NOTES
HPW-1	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-2	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-3	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-4	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-5	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-6	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-7	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-8	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-9	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-10	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-11	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-12	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-13	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-14	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-15	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-16	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-17	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-18	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-19	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-20	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-21	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-22	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-23	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-24	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-25	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-26	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-27	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-28	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-29	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-30	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-31	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-32	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-33	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-34	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-35	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-36	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-37	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-38	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-39	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-40	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-41	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-42	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-43	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-44	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-45	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-46	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-47	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-48	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-49	ONLINE	HOT WATER	118	45	5.00		1-4
HPW-50	ONLINE	HOT WATER	118	45	5.00		1-4

HOT WATER CONNECTOR SCHEDULE

MARK	TYPE	QTY	MPH	QPM	MANUFACTURER	NOTES
HWCT	VERTICAL SUPPLY TO	2	3.3	32		1-4

DIFFUSER & GRILLE SCHEDULE

MARK	TYPE	QTY	MPH	QPM	MANUFACTURER	NOTES
DF						
GR						

EXISTING FAN COIL UNIT SCHEDULE

MARK	TYPE	QTY	MPH	QPM	MANUFACTURER	NOTES
FCU1						
FCU2						
FCU3						
FCU4						
FCU5						
FCU6						
FCU7						
FCU8						
FCU9						
FCU10						
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FCU97						
FCU98						
FCU99						
FCU100						

AIR HANDLING UNIT SCHEDULE

MARK	TYPE	QTY	MPH	QPM	MANUFACTURER	NOTES
AHU1						
AHU2						
AHU3						
AHU4						
AHU5						
AHU6						
AHU7						
AHU8						
AHU9						
AHU10						
AHU11						
AHU12						
AHU13						

SECTION 23 73 00 – MODULAR AIR HANDING UNITS

PART 1 GENERAL

1.1 DESCRIPTION

- A. This section of the work includes the design, fabrication, testing, cleaning and packaging, shipment and final assembly of air handling units by the unit manufacturer in complete accordance with the following specification.
- B. The details outlined, and component manufacturers named in this specification may not be deviated from in the air handling unit manufacturer's preparation of the bid, even where techniques are required which the manufacturer does not consider standard.

1.2 PRODUCT CLEANING, DELIVERY, STORAGE, AND HANDLING

- A. Thoroughly clean equipment, components and subassemblies of water, dirt, debris, weld splatter, grease, oil and other foreign matter prior to shipment.
- B. Seal and protect all openings in unit casings, housings and enclosures with thin gauge sheet metal closure sheets. Seal closures, caps and plugs dust-tight and moisture-tight.
- C. Protect pipe flanges with plywood coverings. Protect pipe threads with plastic end caps or plugs.
- D. Protect machined surfaces with suitable, easily removable rust preventive.
- E. Provide full charge of proper lubricant for grease lubricated bearings.
- F. Provide desiccant bags or vapor phase inhibitors where required to keep components dry.
- G. Units delivered with scratched, dented, or dirty surfaces or damage of any type shall be restored to "as new" condition as directed by the Architect/Engineer/Owner at no cost to Owner.
- H. If equipment is to be stored before use, the shipping protection provided by the unit manufacturer shall remain on the unit until the unit is installed. In addition, manufacturer shall submit written recommendations for field storage, both indoor and outdoor.
- I. Provide non-corrosive nameplate permanently attached to each piece of equipment containing the following information at a minimum:
 - 1. Manufacturer's project number
 - 2. Plant name and location
 - 3. Equipment number
 - 4. Date of manufacture

1.3 WARRANTY

- A. Manufacturer Warranty - Parts and labor for all equipment, materials and workmanship for a period of two (2) years from project acceptance.
- B. During the warranty period, the manufacturer shall repair or replace, at no additional cost to the Owner, any equipment, material, or workmanship in which defects may develop.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. York/JCI
- B. Trane
- C. Carrier
- D. Daikin

2.2 GENERAL DESCRIPTION

- A. Fabricate air-handling units suitable for the scheduled capacities.
- B. Factory fabricate and test air handling units of sizes, capacities, and configuration as indicated and specified.
- C. Base performance on sea level conditions.
- D. All internal components specified in the air handling unit schedule shall be factory furnished and installed. Unit(s) shall be completely factory assembled.
- E. Units shall ship in one (1) piece whenever possible. A minimal number of shipping splits may be provided as required for installation. Lifting lugs will be supplied on each side of the split to facilitate rigging and joining of segments.

2.3 UNIT CASING

- A. The entire unit shall be provided with a full length, continuous, base rail channel. Base rail channels will be formed of a minimum of 12-gauge galvanized steel. The base channel shall have a minimum height of 10 inches. Units without a complete and continuous base rail (e. g. units with mounting legs) will not be acceptable. All segments shall be double wall and shall be constructed of G90 mill galvanized sheet steel, formed and reinforced to provide a rigid assembly. The exterior casing shall be constructed of minimum 18-gauge galvanized steel. The interior lining (except in unit discharge panel) shall be a solid lining of a minimum of 20-gauge galvanized steel. Floor panels shall be double wall with minimum 18-gauge galvanized steel, reinforced to support the weight of maintenance personnel. All panels shall be completely gasketed prior to shipment and shall be completely removable for unit access and removal of components.
- B. The interior lining within the cooling coil section shall be a solid lining of a minimum of 20-gauge stainless steel.
- C. For exterior rooftop units, the external surface of unit cast shall be prepared and coated with a minimum 1.5 mil enamel finish or equal. Units shall be able to withstand a salt spray test in accordance with ASTM B117 for a minimum of 500 consecutive hours. Unit casing exterior shall be provided with color as selected by Owner. Unit roof shall be constructed of two (2) pieces. Inner roof shall be installed in such a manner as to prevent air bypass between internal components. Outer roof will be sloped a minimum .25 inch per foot. Roof assembly will overhang all walls of unit by 2" minimum. The unit base design will allow unit to rest on top of roof curb when field installed (roof curb shall be furnished by unit manufacturer and shall be a minimum of 12" in height). Entire length and width under base shall be sealed for additional water management protection.
- D. Provide double wall construction with encased insulation between exterior and interior panels such that no insulation is exposed to airstream. Insulate casing sections with 2" thick 1.5 pound per cubic foot density insulation. The panel insulation must be a full 2" throughout the entire unit. Units with less than 2" of insulation in any part of the walls, floor, roof or drain pan, in any section (e.g. coil sections, mixing boxes, etc.) shall not be acceptable. In addition to panel insulation, insulate all structural channels connected to casing panels and cover openings in structural channels with galvanized steel. If structural channels are not internally insulated, then structural channels must be wrapped with an armaflex type insulation to maintain

unit thermal performance and prevent sweating. Any portion of the unit that is not insulated (gaps) or has less than 2" of insulation shall be the responsibility of the contractor to modify.

- E. Double wall access doors shall be provided on sections as shown in control schematics. Doors shall be of the same thickness and construction as the wall panels. A gasket shall be provided around the entire door perimeter. Industrial style hinges shall permit a complete 180 degree door swing.

2.4 FANS

- A. Fan segments shall be equipped with double width double inlet (DWDI) housed fans or plenum (PL) fans as scheduled. Fans shall have airfoil (AF) blades as scheduled.
- B. All airfoil fans shall bear the AMCA Seal. Airfoil fan performance shall be based on tests made in accordance with AMCA standards 210 and comply with the requirements of the AMCA certified ratings program for air and sound. In addition, all airfoil wheels shall comply with AMCA standard 99 2408 69 and 99 2401 82.
- C. After the pre-balanced fan is installed in the air handler, the entire fan section shall be run balanced at the specified speed to insure smooth and trouble-free operation. The run balance shall include filter-in and filter-out balancing in all three (3) planes, on both sides of the fan assembly at the bearings. Filter-in measurements shall be taken in the horizontal and vertical planes on the drive and opposite-drive sides of the fan shaft. Filter-out measurements shall be taken in the horizontal, vertical, and axial planes on the drive and opposite-drive sides of the fan shaft.
- D. Fan and fan motor shall be internally mounted and isolated on a full width isolator support channel using 1" static deflection springs. The fan discharge shall be connected to the fan cabinet using a flexible connection to insure vibration free operation.

2.5 BEARINGS AND DRIVES

- A. Fan bearings shall be self aligning, pillow block, or flanged type regreaseable ball bearings, or rubber housed sealed bearings and shall be designed for an average life (L50) of at least 200,000 hours. All regreaseable bearings shall be factory lubricated and equipped with hydraulic grease fittings and lube lines extended to the motor side of the fan.
- B. Fan drives shall be selected for a 1.5 service factor and anti static belts shall be furnished. All drives shall be fixed pitch. All fans shall be equipped with multiple belt drives.
- C. Fan shafts shall be selected to operate well below the first critical speed and each shaft shall be factory coated after assembly with an anti-corrosion coating.

2.6 ELECTRICAL CHARACTERISTICS AND COMPONENTS

- A. Fan motors shall be NEMA design ball bearing type with electrical characteristics and horsepower as specified on the schedule. Motors shall be 1750 RPM open drip proof type. All motors shall be high efficiency.
- B. The motor shall be mounted on the same isolation base as the fan. The motor shall be on an adjustable base.

2.7 HEATING/COOLING COMPONENTS

- A. Cooling coil segments shall have a full width, sloped drain pan that extends downstream of the coil a minimum of 8" to contain moisture carryover. The unit design and coil selection shall not require a drain pan in any downstream section to contain the coil condensate. Drain pans shall be sloped in a minimum of 2 planes; cross break interior pans and pitch toward drain connections to ensure complete condensate

drainage. Units with cooling coils shall have drain pans under complete cooling coil section. A minimum of 1" clearance shall be provided from the bottom of the coil casing to the drain pan so that the drain pan can be visually inspected and physically cleaned, including underneath coil, without removal of the coil. All drain pan connections will be to one side of the unit to enable proper trapping. Drain pans that do not comply with these maintenance requirements will be the responsibility of the contractor to field modify. The pan shall be of double wall construction with a stainless-steel liner and shall be fully insulated. Drain pan shall be provided with a minimum 1-1/4" FPT condensate connection positioned beneath the lowest point of the drain pan.

- B. Coils with finned height greater than 48" shall have an intermediate drain pan extending the entire finned length of the coil. Cooling coils in excess of 48" in height shall not be acceptable unless provided with an intermediate drain pan. The intermediate pans shall have drop tubes to guide condensate to the main drain pan.
- C. All cooling and/or heating coils shall be furnished to meet the performance requirements set forth in the schedule. All water and steam coils shall have performance certified in accordance with ARI Standard 410. Coils used with glycol are outside the scope of ARI-410, but shall be selected to meet scheduled performance.
- D. All coils shall be slide out, "shipping" type, mounted on tracks and easily removable from the air handling unit by removing only one exterior panel. Coils that require additional disassembly of the unit or replacement of the entire coil section (e.g. "unit" type coils) for coil removal are unacceptable.
- E. Drainable Water coils shall be designed to operate at 250 psig design working pressure and up to 300°F and shall be tested with 325 psig compressed air under water. Circuiting shall provide free and complete draining and venting when installed in the unit. All vent and drain connections shall be extended to the outside of the unit casing. Coils shall be circuited for counter flow of air and water. Water velocities shall not exceed 7 feet per second and/or exceed the water pressure drops scheduled. All coils shall have same end connections regardless of the number of rows deep. Coils using turbulators are unacceptable. Units with staggered coil arrangements are unacceptable.
- F. Circuit steam coils for gravity drain of condensate without trapping. Steam shall discharge in the direction of condensate flow to ensure even heat transfer across each tube.
- G. Coil casing to be constructed of 16-gauge galvanized steel. Intermediate casing supports shall be supplied for finned lengths that exceed 60 inches.
- H. The primary surface shall be 1/2" O.D. copper tube, staggered in direction of airflow. Tubes shall be mandrel expanded to form fin bond and provide burnished, work-hardened interior surface. The tubes shall have a minimum tube wall thickness of 0.016". Specified thickness shall be maintained throughout the tube including brazed U-bends. Coils manufactured with hairpin bends shall provide increased nominal wall thickness as required to compensate for the thinning of tube walls that occurs at the exterior of each bend.
- I. Extended surface shall consist of die-formed, continuous, aluminum fins. The fins shall have fully drawn collars to accurately space fins, and to form a protective sheath for the primary surface. The fin thickness shall be 0.006".
- J. Headers shall be of heavy seamless copper tubing, silver-brazed to tubes. Connections shall be of steel, with male pipe threads, silver-brazed to the headers. A 1/4" FPT, plugged, vent, or drain tap shall be provided on each connection. All vent and drain connections shall be factory extended to the outside of the unit casing.
- K. Coil grommets shall be provided on all coils to completely seal the area between the coil connection and the unit casing.

2.8 FILTERS

- A. Filters and filter segments shall be provided as scheduled. Filter frames shall be constructed of galvanized steel and be built as an integral part of the unit. Filter media shall be listed Class 2 or Class 1 under U.L. Standard 900 as required by local codes.
- B. Units shall be provided with Rigid Filter Segments designed to accommodate 2" pre-filters (MERV 8) and high efficiency rigid cartridge filters (12" deep, MERV 11 or MERV 13) as scheduled.
- C. Unit manufacturer shall provide three (3) sets of prefilter media, and three (3) sets of final filter media with the unit for installation by others.

2.9 DAMPERS

- A. Dampers shall be of low leak design having stamped 16-gauge galvanized steel blades. The damper blades shall be provided with a PVC coated polyester fabric mechanically locked into the blade edge. The jamb is a flexible metal, compression type. Leakage will not exceed 7.20 CFM/square foot at 1" w.g. and 14.0 CFM/square foot at 4" w.g. The blades shall be parallel acting unless otherwise scheduled.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install each unit on a 10" channel base, grouted to set level.
- B. Mount each unit by spring isolators (minimum 1-1/2" deflection) to prevent transmission of vibration.
- C. Coordinate the selection of the isolators with manufacturer of the air handling units to assure compatibility of mounting details.
- D. Units with internal frame to utilize internal vibration isolation.
- E. Isolators for units mounted on intertia bases to be supplied by vibration isolation manufacturer.
- F. Provide clearance at each unit for routine service including the changing of filters, removal of coils, bearing greasing, opening of access doors, and pulling of blower shaft.
- G. Duct Connection:
 - 1. Duct connections to each unit to allow for straight and smooth airflow.
 - 2. Do not install duct turns at the fan discharge which are in the opposite direction to a fan wheel rotation.
 - 3. Provide flexible connections at duct connections to unit.
- H. Piping Connections:
 - 1. Support piping independently of coils and with adequate flexibility to prevent undue stress at coil header connections.
 - 2. Install full size drain lines from the drain pan connection and trap to permit condensate to drain freely.
 - 3. Route condensate drain piping to nearest floor drain.
 - 4. Install service valves and companion flanges or unions on supply and return lines to coils.
 - 5. Arrange piping such that valves can be shut off, a small section of pipe removed, and the coil pulled.

3.2 START-UP AND OWNER ORIENTATION:

- A. Do not install final filters until building is to be occupied. Replace prefilters when building is occupied with new prefilters.

- B. Equipment start-up and owner maintenance orientation shall be the responsibility of the unit manufacturer in order to activate equipment warranty and assure that the Owner and his facility personnel are comfortable and familiar with equipment maintenance.
- C. Manufacturer shall include a minimum of four hours on-site for owner maintenance training and orientation.
- D. The air handling unit manufacturer shall be responsible for proper operation and shall be required to meet the scheduled capacities and specified performance for this equipment.

END OF SECTION 23 73 00