



STATE OF NORTH CAROLINA

The University of North Carolina at Chapel Hill

Invitation for Bid #: 3000012440

Chilled Water Infrastructure Expansion Bernard Chiller Plant

Date Issued: 08/06/2025

Submit Written Questions: 08/13/2025 at 1:00PM EST

Bid Opening Date: 09/05/2025

At 01:00 PM EST

Direct all inquiries concerning this IFB to:

Marcy Moore

MRO Category Manager

Email: Mmrowlan@unc.edu



STATE OF NORTH CAROLINA

Invitation for Bids

3000012440

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>

STATE OF NORTH CAROLINA
The University of North Carolina at Chapel Hill

Refer <i>ALL</i> Inquiries regarding this IFB to: <i>Marcy Moore</i>	Invitation for Bids # 3000012440
	Bids will be publicly opened: 09/05/2025 at 1:00PM
Using Agency: University of Chapel Hill	Commodity No. and Description: Prepurchase Equipment Automatic Tube Cleaning System
Requisition No.: 1001070646	

Zoom Link for Opening if you would like to join:

<https://us04web.zoom.us/j/79598952315?pwd=u9qPDAd4kcW6x25QigGoudFkBeX234.1>

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: 65-3000012440

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 UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL 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 University of Chapel Hill)

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1.0 PURPOSE AND BACKGROUND

OWNER PRE-PURCHASED EQUIPMENT

- A. This equipment will be pre-purchased by the Owner and assigned to the successful Contractor after award for expediting delivery and installation as if the Contractor purchased the equipment directly.
- B. Owner will make available manufacturer provided shop drawings of Owner prepurchased equipment for review by the Contractor. Contractor shall review shop drawings to ascertain that Contractor has included necessary labor and materials to install equipment and complete system it serves.
- C. Contractor shall be responsible for arranging/coordinating delivery of Owner prepurchased equipment and all other related logistics and activities. This includes directing the delivery truck to the jobsite, coordinating the date and time of delivery, and receipt of the equipment at the jobsite. Manufacturer is responsible for equipment until it is unloaded at the jobsite by the Contractor.
- D. Contractor shall install Owner prepurchased equipment and all appurtenances. This shall include but not be limited to; unloading, rigging and setting equipment in place, making connections, starting, testing and installing equipment in accordance with manufacturer's recommendations, and maintaining equipment until such time as project is accepted by Owner. Perform all work and provide materials and connections for Owner furnished equipment in accordance with drawings and scope of work under all related specifications.
- E. The following summarizes the general responsibilities of the equipment manufacturer:
 - 1. Provide shop drawings and submittal data.
 - 2. Manufacture and delivery of equipment including coordination of exact delivery date and supervision of rigging, unloading, and setting.
 - 3. Lead equipment check-out, testing, and start-up process.
 - 4. Participate in any commissioning.
 - 5. Provide Owner training.
 - 6. Provide O&M documentation.

Please see attached Chilled Water Infrastructure Expansion Bernard Chiller Plant

1.1 CONTRACT TERM

This section intentionally omitted

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

This section intentionally omitted.

2.3 NOTICE TO VENDORS REGARDING IFB TERMS AND CONDITIONS

It shall be the Vendor's responsibility to read the Instructions to Vendors, the University of North Carolina at Chapel Hill 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 University 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 University 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 purport 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 University 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	University	08/06/2025
Hold Pre-Bid Conference/Site Visit	University	N/A
Submit Written Questions	Vendor	08/13/2025 at 1:00PM EST
Provide Responses to Questions	University	ASAP
Submit Bids	Vendor	09/05/2025 at 1:00PM EST
Contract Award	University	ASAP
Contract Effective Date	University	ASAP

2.5 SITE VISIT or PRE-BID CONFERENCE

This section intentionally omitted.

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.

Written questions shall be e-mailed to *mmrowlan@unc.edu* by the date and time specified above. Vendors will enter “IFB - 3000012440: 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 University’s response, and any additional terms deemed necessary by the University 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 University

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 University rejecting Vendor's bid, in the University's sole discretion

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

- a) Primary 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) Completed version of ATTACHMENT A: PRICING
- f) Completed version of ATTACHMENT D: HUB SUPPLEMENTAL VENDOR INFORMATION
- 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 bids for comparable Goods, various methods or levels of Service(s), or that propose different options. Alternate bids must specifically identify the IFB requirements and advantage(s) addressed by the alternate bid. Any alternate bid, in addition to the marking described above, must be clearly marked with the legend: "Alternate Bid # ___ [for 'name of Vendor']". Each bid 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 must be offered with a separate price and be contained in a separate bid. Each bid must be complete and independent of other bids 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 University shall use to award contracts, as supplemented by the additional criteria herein. The Goods or Services being procured shall dictate the application and order of criteria; however, all award decisions shall be in the University’s best interest.

All responsive bids will be reviewed, and award or awards 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.

While the intent of this IFB is to award a Contract(s) to a single Vendor for all line items the University reserves the right to make separate awards to different Vendors for one or more line items, to not award one or more line items or to cancel this IFB in its entirety without awarding a Contract, if it is considered to be most advantageous to the University to do so.

If a Vendor selected for award is determined by the University 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 University 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 University 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 the 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 University 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 University 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 University.

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 University 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 University.

The University 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 University.

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 University 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 University:

- a) Total cost to the University
- b) Level of quality provided by the Vendor
- c) Process and performance capability across multiple jurisdictions
- d) Protection of the University's information and intellectual property
- e) Availability of pertinent skills
- f) Ability to understand the University's business requirements and internal operational culture
- g) Particular risk factors such as the security of the University'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 University; 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 University will take into consideration the degree to which Vendors have proposed or failed to propose solutions that will satisfy the University’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 University 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 University to receive a 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.

SEE SCOPE OF WORK ATTACHED

4.1 PRICING

Bid price shall constitute the total cost to the University 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 ESTIMATED QUANTITIES

This section is intentionally omitted.

4.3 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 University 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 University’s best interest.

4.4 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.

4.5 DELIVERY AND INSTALLATION

DELIVERY

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

Delivery shall not be considered to have occurred until installation has been completed. Upon completion of the installation, the Vendor shall remove and properly dispose of all waste and debris from the installation site. The Vendor shall be responsible for leaving the installation area clean and ready to use.

INSTALLATION

- A. Install materials in accordance with drawings, approved Shop Drawings and manufacturer's recommendations.
- B. Protect electric motors from construction dust and other contaminants.
- A. Install ATCS as shown on drawings, and in accordance with manufacturer's installation instructions.
- B. Provide concrete housekeeping pads under pump skid and ball collectors.
- C. Rigging and setting/installation of ATCS components including coordination of exact delivery date with Manufacturer.
- D. Provide interconnecting piping between the ATCS components and condenser water piping system as required.
- E. Provide control devices, raceway systems and/or wiring between the ATCS and the Owners control system.
- F. Provide electrical service to the ATCS.
- G. Contractor shall schedule and expedite the manufacturers start-up process and support the Owners commissioning activities. Contractor shall coordinate exact timing of these activities and arrange for appropriate manufacturer personnel to be on-site.
- H. After successful completion of equipment installation, the Contractor shall assemble and incorporate equipment shop drawings, operating/maintenance instructions, and part lists into the Contractor's project operation/maintenance manuals.

4.6 AUTHORIZED RESELLER

This section is intentionally omitted

4.7 WARRANTY

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

Vendor warrants that all equipment furnished under this IFB will be newly manufactured, of good material and workmanship. The warranty will apply from date equipment is put into operation for a minimum period of twelve (12) months or the length of the manufacturer's warranty, whichever is longer. Such warranty shall cover the cost of all defective parts replacement, labor, freight, and technicians' travel at no additional cost to the University, or as specified by the Purchasing Agency herein. To the extent not superseded by the terms of this paragraph, manufacturer's warranty terms shall apply. Vendor's warranty shall be at least the level of coverage provided for its comparable customers.

The report of a problem does not presuppose that every call must result in an "on-site" visit for service/repair. The Vendor and/or service sub-contractor shall utilize best efforts to resolve problems in a timely fashion by using acceptable servicing methods to include, but not limited to, verbal problem analysis and remote diagnosis. The warranty requirement does not

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Vendor: _____

impose any additional duty on the University to make other than normal and good faith problem resolution efforts or expenditures of time. Vendor shall be responsible for compliance with warranty terms by any third-party service provider. Vendor shall provide contact information for warranty service provider, below.

Vendor is authorized by manufacturer to repair equipment offered during the warranty period? YES NO

Will the Vendor provide warranty service? YES NO, a manufacturer-authorized third party will perform warranty service.

Contact information for warranty service provider:

Company Name: _____

Company Address: _____

Contact Person (name): _____

Contact Person (phone number): _____

Contact Person (email): _____

4.8 MAINTENANCE OPTION

This section is intentionally removed.

4.9 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 to shall be a sufficient basis for rejection of the bid.

4.10 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.

4.11 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. The University 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.

4.12 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 University 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.

4.13 FINANCIAL STABILITY

As a condition of contract award, the Vendor must certify that it has the financial capacity to perform and to continue to perform its obligations under the Contract; that Vendor has no constructive or actual knowledge of an actual or potential legal proceeding being brought against Vendor that could materially adversely affect performance of this Contract; and that entering into this Contract is not prohibited by any contract, or order by any court of competent jurisdiction

Each Vendor shall certify it is financially stable by completing the ATTACHMENT G: CERTIFICATION OF FINANCIAL CONDITION. The University 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 University within thirty (30) days of any occurrence or condition that materially alters the truth of any statement made in this Certification.

4.14 AGENCY INSURANCE REQUIREMENTS MODIFICATION

This section is intentionally omitted. Please see standard Terms and Conditions attached.

4.15 NC COVID-19 VACCINATION AND TESTING REQUIREMENT

This section intentionally omitted.

4.16 FEDERAL COVID-19 VACCINATION REQUIREMENT

This section is intentionally omitted.

4.17 LOBBYING ACTIVITY CERTIFICATION FOR FEDERAL GRANTS

This section is intentionally omitted.

5.0 PRODUCT SPECIFICATIONS

5.1 SPECIFICATIONS

See the Scope of Work document, Chilled Water Infrastructure Expansion East Chiller Plant

SCO ID 22-25588-02H, Code: 42123-355 / 42323-305

Pre-purchased Equipment, Automatic Tube Cleaning System

MOTORS FOR MECHANICAL EQUIPMENT

A. Motors covered by this Specification shall conform to applicable requirements of NEMA, IEEE, ANSI, and NEC Standards and shall be third party listed where applicable for service specified. Third party agency shall be amongst those accredited by the North Carolina Building Code Council (NCBCC) to label electrical and mechanical equipment.
<https://www.ncosfm.gov/codes/state-electrical-division/qualified-testinglaboratories>

B. Motors shall be designed for conditions in which they will be required to perform; i.e., general purpose, splash proof, explosion proof, standard duty, high torque or other special type as required by equipment manufacturers.

C. Select motors so they do not exceed nameplate rating nor operate into service factor to meet specified duty.

D. All motors shall have totally enclosed fan cooled (TEFC) enclosures.

E. Motors shall be furnished for starting in accordance with utility requirements and be compatible with starters specified hereinafter.

AUTOMATIC TUBE CLEANING SYSTEM

- A. Provide complete foam ball type automatic tube cleaning system with all required accessories for a complete and operational system.
- B. System shall be functionally tested prior to shipment including automatic valves, pump, controls and control panel.
- C. Manufacturer shall supply field supervision and inspection of system to assure proper installation, start up, and operation.
- D. Manufacturer shall guarantee system, when operating according to instructions, and shall provide a fouling factor in the chiller condenser bundles of 0.00025 or better.

Please see attached Chilled Water Infrastructure Expansion Bernard Chiller Plant for additional details.

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 University 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

This section is intentionally omitted.

6.2 POST AWARD PROJECT REVIEW MEETINGS

This section is intentionally omitted.

6.3 CONTINUOUS IMPROVEMENT

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

6.4 PERIODIC STATUS REPORTS

This section is intentionally omitted.

6.5 ACCEPTANCE OF WORK

Performance of the work and 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: See Scope of work.

The University 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 University 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 University 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 University's Contract Manager for resolution. Any claims by the University 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 University, as necessary, to promptly replace any such products, at no cost to the University.

6.9.1 PRICE ADJUSTMENTS

Prices proposed by the Vendor shall be firm against any increase for 60 days from the effective date of the Contract.

Price increase requests shall be submitted in writing to the Contract Lead, which shall include the reason(s) for the request and contain supporting documentation for the need. Price increases will be negotiated and agreed to by both the University and Vendor in advance of any price increase going into effect. The University is not obligated to accept pricing adjustments or

Bid Number: 65-3000012440

Vendor: _____

increases and reserves the right to accept or reject them in part or in whole. Price de-escalation or decreases may be requested by the University at any time.

It is understood and agreed that orders will be shipped at the established Contract prices in effect on the date an order is placed. Invoicing that deviates from this provision may result in Contract to cancellation.

6.10 CONTRACT CHANGES

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

The remainder of this page is intentionally left blank

7.0 ATTACHMENTS

****IMPORTANT NOTICE****

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

ATTACHMENT A: PRICING

No attachment associated with this IFB. **Please submit all costs including transportation on a standard company quote document with a line for "TOTAL COST TO THE UNIVERSITY".**

ATTACHMENT B: INSTRUCTIONS TO VENDORS

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

<https://www.doa.nc.gov/divisions/purchase-contract/vendor-forms>

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://www.doa.nc.gov/divisions/purchase-contract/vendor-forms>

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://www.doa.nc.gov/divisions/purchase-contract/vendor-forms>

ATTACHMENT E: CUSTOMER REFERENCE FORM

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

<https://www.doa.nc.gov/divisions/purchase-contract/vendor-forms>

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://www.doa.nc.gov/divisions/purchase-contract/vendor-forms>

ATTACHMENT G: CERTIFICATION OF FINANCIAL CONDITION

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

<https://www.doa.nc.gov/divisions/purchase-contract/vendor-forms>

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://www.doa.nc.gov/divisions/purchase-contract/vendor-forms>

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



THE UNIVERSITY
of **NORTH CAROLINA**
at **CHAPEL HILL**

Chilled Water Infrastructure Expansion Bernard Chiller Plant

SCO ID 22-25588-02H, Code: 42123-355 / 42323-305
UNC Bldg. No. XXX

Prepurchased Equipment Automatic Tube Cleaning System Bid Set

Submitted by:



1414 Raleigh Road, Suite 305
Chapel Hill, North Carolina 27517
(919) 419-9802
License No. C-2982

AEI Project No. 23480-01

July 22, 2025

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SPECIFICATIONS

SECTION TITLE

DIVISION 23 - HEATING, VENTILATING, AND AIR-CONDITIONING

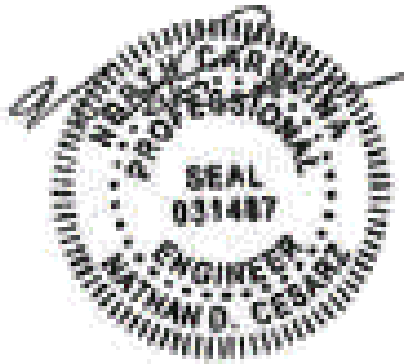
23 0513	Motors for Mechanical Equipment
23 2121	Automatic Tube Cleaning System

DRAWINGS

SHEET TITLE

B.M.402	Condenser Water Flow Diagram
B.M.404	Automatic Tube Cleaning System (ATCS) – P&ID

CERTIFICATION



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END OF TABLE OF CONTENTS

**SECTION 23 0513
MOTORS FOR MECHANICAL EQUIPMENT**

PART 1 - GENERAL

1.1 SUBMITTALS

- A. Product Data including the following:
1. Manufacturer
 2. hp, voltage, phase, hertz, rpm
 3. Motor type
 4. Enclosure type
 5. Frame type
 6. Insulation class
 7. NEMA design designation
 8. Service factor
 9. Nominal efficiency at full load
 10. Power factor at full load
 11. Full load amperes
 12. Bearings
 13. Mountings
 14. Dimensions
 15. Weight
 16. Shaft grounding brush for motors driven by Variable Frequency Drives (VFD)

1.2 PRODUCT CRITERIA

- A. Motors covered by this Specification shall conform to applicable requirements of NEMA, IEEE, ANSI, and NEC Standards and shall be third party listed where applicable for service specified. Third party agency shall be amongst those accredited by the North Carolina Building Code Council (NCBCC) to label electrical and mechanical equipment. <https://www.ncosfm.gov/codes/state-electrical-division/qualified-testing-laboratories>
- B. Motors shall be designed for conditions in which they will be required to perform; i.e., general purpose, splash proof, explosion proof, standard duty, high torque or other special type as required by equipment manufacturers.
- C. Select motors so they do not exceed nameplate rating nor operate into service factor to meet specified duty.
- D. All motors shall have totally enclosed fan cooled (TEFC) enclosures.
- E. Motors shall be furnished for starting in accordance with utility requirements and be compatible with starters specified hereinafter.

1. Starters for NEMA rated 460 V motors, 1/2 hp and above to be reduced voltage starting type.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. GE/ABB, US Motor, or Toshiba

2.2 MATERIALS

- A. Materials shall be new and guaranteed for service intended.

2.3 INDUCTION MOTORS

- A. Voltage Ratings
 1. Refer to equipment schedules and specification sections for voltages required.
 2. Unless otherwise indicated, motors 1/2 hp and smaller shall be rated 115 V for operation on 120 V, 1 Ph, 60 Hz service.
 3. Unless otherwise indicated, motors 1/2 hp and larger shall be rated:
 - a. 460 V for operation on 480 V, 3 Ph, 60 Hz service.
- B. Motors shall be 4 pole (approximately 1750 rpm) unless otherwise noted.
- C. Single-phase motors shall be furnished with built-in thermal overload protection.
- D. Use NEMA Design B motors, normal starting torque with regreasable ball bearings, and Class B insulation unless specified otherwise or unless manufacturer of equipment on which motor is being used has more stringent requirements.
 1. Bearings shall be rated for minimum AFBMA 9, L-10 life of 26,280 hours (belted) and 200,000 hours (direct-coupled) at full-load.
 2. Motors > 100HP shall have insulated bearings on both the non-drive end and the drive end side of the motor.
- E. Motors shall be rated continuous duty and have 1.15 service factor unless otherwise noted.
- F. Motors directly exposed to outdoors shall have two internal thermostats in the stator windings with normally closed contacts. One contact shall open if temperature rises above (overtemperature) setpoint and the other shall open when below (low temperature) setpoint determined by motor manufacturer. This shall be via digital input arranged to coordinate with normally closed contacts for motor thermostats. Outdoor motors shall also be provided with 120V heating elements to eliminate moisture in motor when fan is not being operated during and low temperature conditions. Thermostats shall be monitored and heaters activated by associated VFD controller. Heater power shall be provided and extended separately through the VFD.
- G. Motors Driven by Variable Frequency Drives (VFD)

UNC - Chapel Hill

CHW Infrastructure Expansion – BCP

Prepurchased Equipment – Automatic Tube
Cleaning System

07/22/25

Motors for Mechanical Equipment

23 0513 - 2

1. Motors shall comply with the latest NEMA MG 1, Section IV, Part 31 unless otherwise noted. Starter winding insulation shall be designed to operate under maximum voltage peak of not less than 1600 volts with time rise not greater than 0.1 micro-seconds. Motors shall have corona gas resistant stator insulation. Motors shall be rated for 90°C temperature rise with 40°C ambient.
 2. Motors shall be listed as "Inverter Duty or Inverter Duty Rated". Motors listed only as "suitable for use with inverter" is not acceptable for this project.
 3. Motors shall have service factor not less than 1.0 when rated for inverter duty.
 4. Insulation class shall be Class F or H.
- H. Vibration shall not exceed 0.15" per second, unfiltered peak unless otherwise noted.
- I. Motors (180 frames and larger) shall have provisions for lifting eyes or lugs capable of safety factor of 5.
- J. Additional Grounding
1. Furnish each motor with grounding brush similar to AEGIS Shaft Grounding Ring on the DE (Driven Equipment) side of the motor to prevent bearing from shaft current. Soft carbon brushes are not acceptable. Shaft grounding ring shall be maintenance free. Grounding brush shall be installed on motor prior to installation in the field. Provide/confirm grounded connection between shaft grounding ring to motor casing. Provide sticker by grounding brush manufacturer on outside of motor casing for visual inspection.
 2. Provide dedicated ground connection between the casing and the grounding lug in the terminal box.
 3. For motors 100HP and larger, provide "HF bonding strap" which is a braided straps of 100mm wide copper, bare flat conductor cable with protective jacket. Bond motor casing to local structural steel.
 4. The electrical contractor shall bond motor casing to local structural steel with braided straps of bare flat copper conductor cable.
- K. Full load nominal efficiency of motors 1 hp and larger, except special-purpose motors including 2-speed or multi-speed motors, and rewind motors, shall meet or exceed listed values according to 10 CFR 431 Table 5 - Nominal Full-Load Efficiencies of NEMA Design A, NEMA Design B and IEC Design N Motors (Excluding Fire Pump Electric Motors) at 60 Hz.

	<u>Open Drip-Proof Motors</u>			<u>Totally Enclosed Fan-Cooled Motors</u>		
	1200 rpm	1800 rpm	3600 rpm	1200 rpm	1800 rpm	3600 rpm
HP	(6 pole)	(4 pole)	(2 pole)	(6 pole)	(4 pole)	(2 pole)
1	82.5	85.5	77.0	82.5	85.5	77.0
1.5	86.5	86.5	84.0	87.5	86.5	84.0
2	87.5	86.5	85.5	88.5	86.5	85.5
3	88.5	89.5	85.5	89.5	89.5	86.
5	89.5	89.5	86.5	89.5	89.5	88.5
7.5	90.2	91.0	88.5	91.0	91.7	89.5
10	91.7	91.7	89.5	91.0	91.7	90.2
15	91.7	93.0	90.2	91.7	92.4	91.0
20	92.4	93.0	91.0	91.7	93.0	91.0
25	93.0	93.6	91.7	93.0	93.6	91.7
30	93.6	94.1	91.7	93.0	93.6	91.7
40	94.1	94.1	92.4	94.1	94.1	92.4
50	94.1	94.5	93.0	94.1	94.5	93.0
60	94.5	95.0	93.6	94.5	95.0	93.6
75	94.5	95.0	93.6	94.5	95.4	93.6
100	95.0	95.4	93.6	95.0	95.4	94.1
125	95.0	95.4	94.1	95.0	95.4	95.0
150	95.4	95.8	94.1	95.8	95.8	95.0
200	95.4	95.8	95.0	95.8	96.2	95.4
250	95.4	95.8	95.0	95.8	96.2	95.8
300				95.6	96.2	95.9
400				95.6	96.2	95.9

- L. Small fractional horsepower polyphase and single-phase motors shall have an average full load efficiency of not less than the following: Efficiency values listed are based on 10 CFR Part 431 published by the U.S. Department of Energy.

	1200 rpm	1800 rpm	3600 rpm
HP	(6 pole)	(4 pole)	(2 pole)
0.25	67.5	69.5	65.6
0.33	71.4	73.4	69.5
0.5	75.3	78.2	73.4
0.75	81.7	81.1	76.8
1.0	82.5	83.5	77.0
1.5	83.8	86.5	84.0
2	N/A	86.5	85.5
3	N/A	86.9	85.5

- M. Single-phase motors for hard starting applications including outdoor applications shall be capacitor start type. Motors for fans and pumps located indoors may be split phase or permanent split-capacitor. Motors shall be equipped with permanently lubricated and sealed ball bearings and shall be selected for quiet operation. Motors 1/8 hp and below may be shaded pole type. Refer to individual equipment section for additional requirements or specific type of motors.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install materials in accordance with drawings, approved Shop Drawings and manufacturer's recommendations.
- B. Protect electric motors from construction dust and other contaminants.

END OF SECTION

**SECTION 23 2121
AUTOMATIC TUBE CLEANING SYSTEM**

PART 1 - GENERAL

1.1 OWNER PRE-PURCHASED EQUIPMENT

- A. This equipment will be pre-purchased by the Owner and assigned to the successful Contractor after award for expediting delivery and installation as if the Contractor purchased the equipment directly.
- B. Owner will make available manufacturer provided shop drawings of Owner prepurchased equipment for review by the Contractor. Contractor shall review shop drawings to ascertain that Contractor has included necessary labor and materials to install equipment and complete system it serves.
- C. Contractor shall be responsible for arranging/coordinating delivery of Owner prepurchased equipment and all other related logistics and activities. This includes directing the delivery truck to the jobsite, coordinating the date and time of delivery, and receipt of the equipment at the jobsite. Manufacturer is responsible for equipment until it is unloaded at the jobsite by the Contractor.
- D. Contractor shall install Owner prepurchased equipment and all appurtenances. This shall include, but not be limited to; unloading, rigging and setting equipment in place, making connections, starting, testing and installing equipment in accordance with manufacturer's recommendations, and maintaining equipment until such time as project is accepted by Owner. Perform all work and provide materials and connections for Owner furnished equipment in accordance with drawings and scope of work under all related specifications.
- E. The following summarizes the general responsibilities of the equipment manufacturer:
 - 1. Provide shop drawings and submittal data.
 - 2. Manufacture and delivery of equipment including coordination of exact delivery date and supervision of rigging, unloading, and setting.
 - 3. Lead equipment check-out, testing, and start-up process.
 - 4. Participate in any commissioning.
 - 5. Provide Owner training.
 - 6. Provide O&M documentation.

1.2 SCHEDULE

A. Schedule:

- 1. The following schedule is anticipated relative to the prepurchased equipment delivery, installation and activation. This is a preliminary schedule and exact dates are to be coordinated with the Owner and Contractor.
 - a. Equipment Delivery: March 2027
 - b. Installation, Start-Up & Commissioning: November 2027 – March 2028

- B. Manufacturer shall be able to produce, test, and deliver the equipment (FOB) to a location dictated by the Contractor per the schedule described above.
- C. Contractor shall plan construction to allow for equipment to be received and installed at the job site within the above delivery window. If Contractor is unable to install equipment upon coordinated delivery date(s), it is the Contractor's responsibility to provide appropriate storage for equipment, local to the University, and provide transportation of equipment from storage site to job site.

1.3 PRODUCT CRITERIA

- A. Provide complete foam ball type automatic tube cleaning system with all required accessories for a complete and operational system.
- B. System shall be functionally tested prior to shipment including automatic valves, pump, controls and control panel.
- C. Manufacturer shall supply field supervision and inspection of system to assure proper installation, start up, and operation.
- D. Manufacturer shall guarantee system, when operating according to instructions, and shall provide a fouling factor in the chiller condenser bundles of 0.00025 or better.

1.4 RELATED WORK

- A. Section 23 0513 - Motors for Mechanical Equipment

1.5 BID SUBMITTALS

- A. The following shall be provided with the equipment bid proposal:
 - 1. Cover letter with compliance table listing each specification section and indicating compliance "C", deviation for alternate "D", or exception with explanation "E". Any deviation or exception shall be accompanied with detailed explanation of how design intent is being upheld for evaluation by the Owner and Designer.
 - 2. Submit shop drawings including, but not limited to, the following:
 - a. Manufacturer.
 - b. Bill of materials listing all parts.
 - c. Motor data (manufacturer, type, frame size, hp, rpm, service factor, efficiency, insulation class, etc.)
 - d. Wiring diagrams.
 - e. Weights and dimensional data.
 - f. Foam cleaning ball manufacturers data sheet.
 - g. All other appropriate information.

1.6 FABRICATION SUBMITTALS

- A. All information from the Bid Submittal per Section 1.3 to include any updates to the development of any of the information.
- B. Installation and operational manual.

1.7 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data:
 - 1. Include manufacturer's recommended operating instructions, maintenance procedures and intervals, and preventive maintenance instructions.
 - 2. Include manufacturer's written instructions for testing and adjusting system.
 - 3. Include spare parts data listing, source, and current prices of replacement parts and supplies.
 - 4. Include copy of equipment warranty.

1.8 SPARE PARTS

- A. Furnish one spare set of cleaning balls for each chiller connected to the automatic tube cleaning system.

1.9 WARRANTY

- A. Manufacturer shall provide standard one year warranty against defects in materials and workmanship for products specified in this Section. Warranty period shall begin on date of project final acceptance.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Equipment paint colors shall be coordinated with Owner.

2.2 AUTOMATIC TUBE CLEANING SYSTEM

- A. Cleaning ball injection shall utilize a periodic cleaning ball injection system, with injections at programmed time intervals, and using a water pump to inject cleaning balls into the heat exchanger water inlet piping. The injection and collection process shall ensure:
 - 1. All balls shall be injected at once and reach heat exchanger tube sheet simultaneously.
 - 2. Balls shall randomly disperse, cleaning both central and peripheral tubes.
 - 3. The ball injection process shall not inhibit the heat exchanger cooling water flow. Systems that interrupt cooling water flow and/or change flow direction in the heat exchanger tubes will not be permitted.
 - 4. Cleaning balls shall not travel through pump impellers where they may get sheared or damaged, resulting in frequent replacement or reduction of cleaning ball life.
 - 5. The cleaning ball injection process shall be capable of interlocking with a permissive signal indicating sufficient cooling water flow is recognized in the heat exchanger prior to cleaning ball injection.
 - 6. The cleaning ball collection process shall be accomplished via the same pump and controller as the cleaning ball injection process.

7. In order to maximize heat transfer process efficiency, the collection process shall not route heat exchanger outlet water back to the heat exchanger inlet during collection.

2.3 FOAM CLEANING BALLS

- A. Shall be rated for a maximum operating temperature of 175F.
- B. Size and material shall be selected by the manufacturer based on coordination with the chiller manufacturer and associated tube diameter, finish, and material.

2.4 COLLECTOR

- A. The Collector is the site for ball residence before and after ball injection. Each Collector shall be constructed of carbon steel with internal and external epoxy painting, and all materials and components shall be rated for condenser water system design pressure and temperatures. Each Collector shall serve a single heat exchanger. The Collector shall provide an observation window for quick inspection of ball condition and provide access for replacement of cleaning balls.
- B. Refer to equipment schedule and piping layouts on drawings for additional collector specifications, including non-standard connection locations (if applicable).

2.5 CONTROLLER

- A. Controller shall be a micro-processor based, programmable application type utilized to manage cleaning of heat exchangers, and shall be capable of communication of permissives, alarms, run status and monitoring with the plants distributed control system via MOSBUS TCP/IP without translators, communication bridges, or gateways.
- B. Enclosure shall be NEMA 12.
- C. Controller shall provide a local human machine interface (HMI) and shall provide the option to include a graphical user interface (GUI) touchscreen for local indication and control of operations.
- D. Controller shall allow local control, presetting of ball injection times and frequency of cleaning each heat exchanger.
- E. Controller shall provide alarms and notifications of the following conditions:
 1. System fault.
 2. Pump fault.
 3. Ball change required.
 4. Valve fault.
 5. Permissive fault.

2.6 INJECTION PUMP SKID

- A. The injection pump shall be of horizontal centrifugal design, coupled to a totally enclosed fan cooled 480V motor, and sized to inject cleaning balls and water into the heat exchanger inlet piping. Cleaning balls shall not be circulated through the pump impeller. One water pump will be used to inject balls into one heat exchanger at a time. The pump shall be installed in a manner that does not recirculate effluent water. A system allowing mixing of inlet and outlet heat exchanger cooling water shall not be permitted. The pump shall be mounted on an epoxy painted steel skid with the motor prewired to the controller such that the skid is provided with single points of connection for external piping, power and controls.
- B. Complete assembled pump skid shall be third party listed. Third party agency shall be amongst those accredited by the North Carolina Building Code Council (NCBCC) to label electrical and mechanical equipment. <https://www.ncosfm.gov/codes/state-electrical-division/qualified-testing-laboratories>

2.7 BALL TRAP

- A. A Ball Trap shall be installed in each heat exchanger's condenser water outlet piping. Ball Traps shall have the following characteristics:
 - 1. Ball traps shall be cylindrical shaped containing perforated stainless steel screens. Primary ball collection area shall be located outside the heat exchanger outlet pipe primary flow with ball collection at end of the ball trap.
 - 2. Ball trap strainer open area shall be at minimum 3.0 times larger than the cross-sectional area of the piping nominal size.
 - 3. The ball trap may not have any moving parts, reducing wear and tear and associated maintenance requirement. Systems using mechanically actuated screens or slotted bars will not be permitted.
- B. The ball trap shall guarantee 100% zero ball escape to downstream processes.
- C. Ball trap body shall be carbon steel schedule STD A53 Grade B.
- D. Flanges, where applicable, shall be ANSI Class 150 carbon steel A105.
- E. The ball trap shall include lifting lugs to assist in installation and removal of cover for strainer maintenance.
- F. The ball trap shall be hydraulically modeled and lab tested to accurately simulate the operating conditions. This testing shall confirm the design of the trap and internals is appropriate for the expected flow dynamics. The manufacturer shall provide documentation upon completion.
- G. Refer to equipment schedule on drawings for additional trap specifications, including non-standard connection types (if applicable).

PART 3 – EXECUTION – BY EQUIPMENT MANUFACTURER

3.1 TRAINING AND OPERATION

- A. The equipment manufacturer shall provide full operating, service and maintenance training programs for the Owner's maintenance personnel. All costs associated with Owner Training shall be included in the base proposal, including travel and per diem expenses. Training shall occur at the Owners facility. Training will be scheduled separately at a time determined by the Owner.
- B. Training shall only occur after the systems provided are installed by the Contractor, started up by the Manufacturer, and made ready for proper operation.
- C. Manufacturer shall instruct and train Owner's representative in operation and maintenance and participate in any commissioning of each system provided for the project.
- D. A complete syllabus and O&M Manuals shall be submitted and approved by Owner four weeks prior to training.
- E. Include minimum of 8 hours of start-up and Owner training and a minimum of an additional 8 hours of commissioning support time for each system.
- F. Owner may video tape training sessions for their use in future training of their operations and maintenance staff.

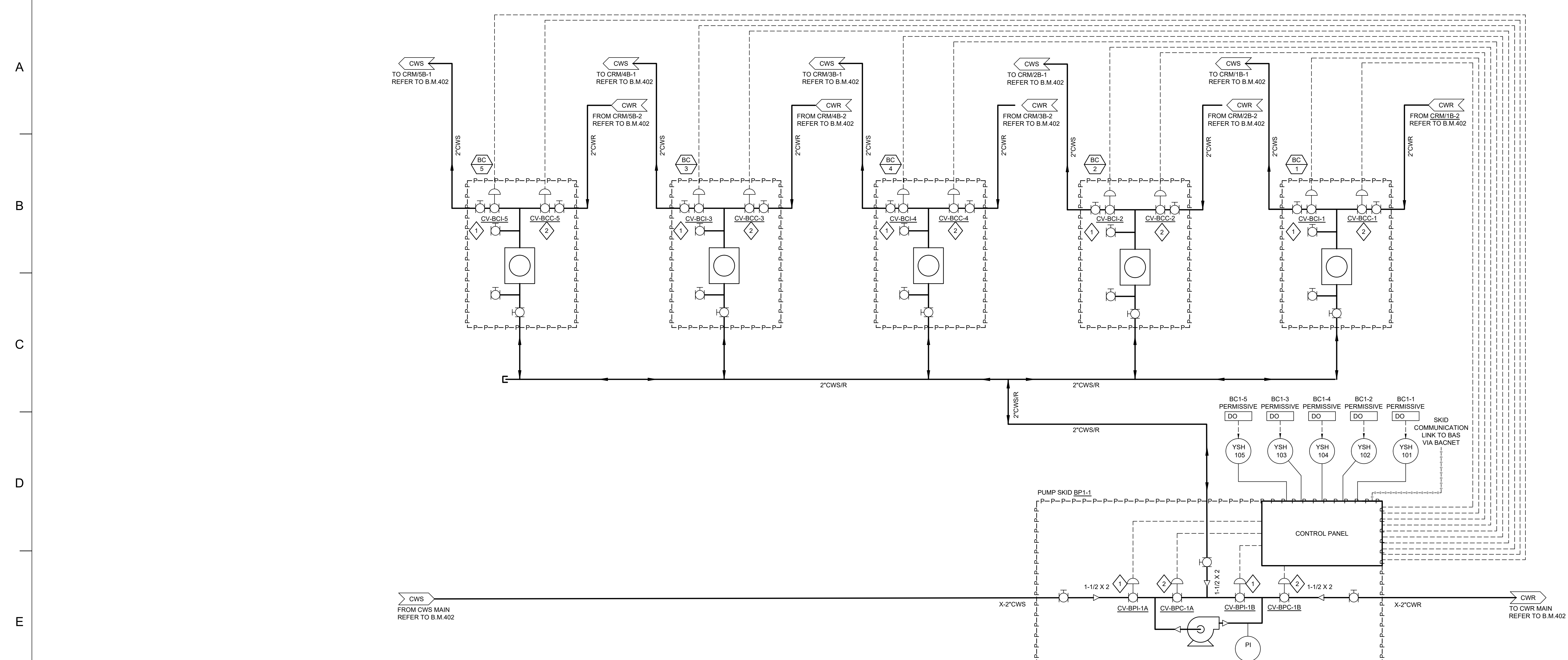
PART 4 – EXECUTION – BY INSTALLING CONTRACTOR

4.1 INSTALLATION

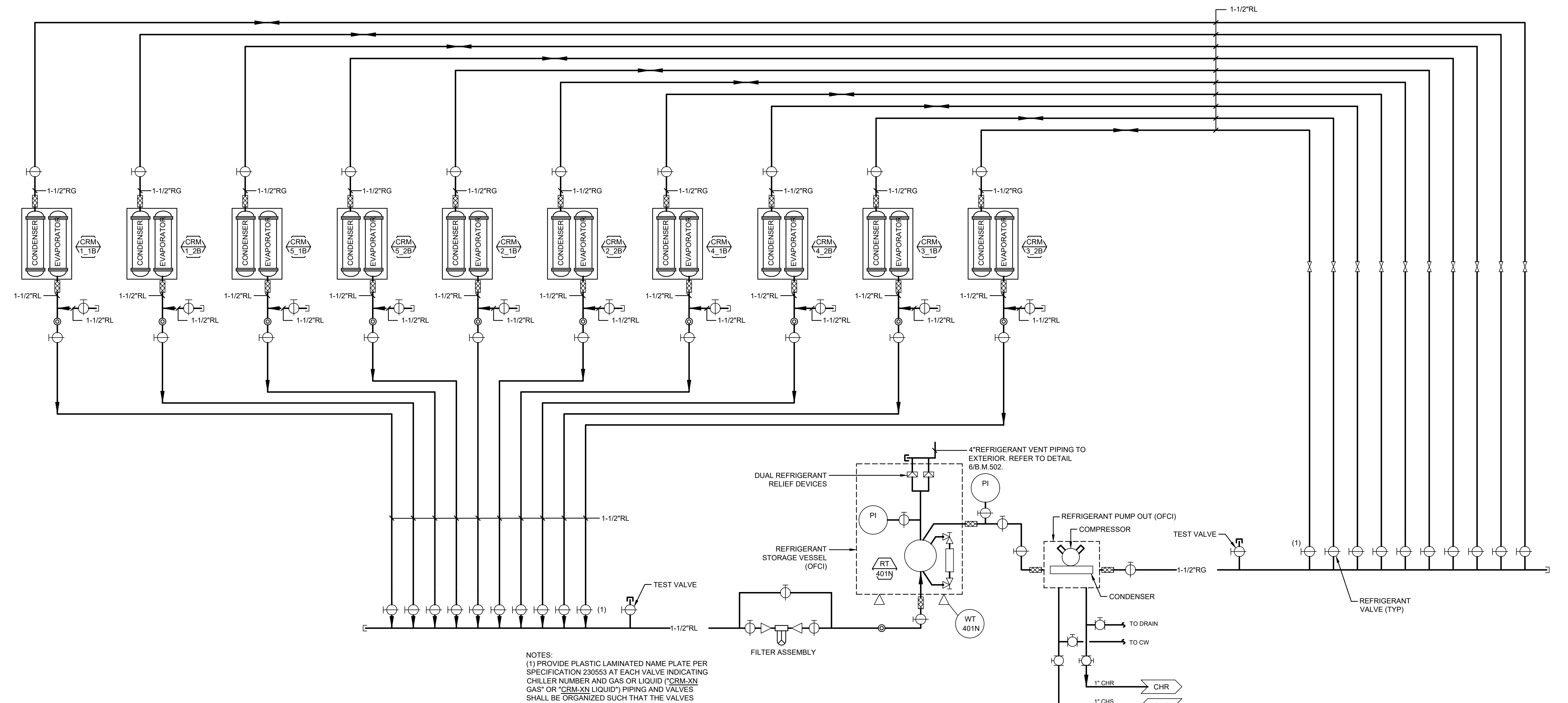
- A. Install ATCS as shown on drawings, and in accordance with manufacturer's installation instructions.
- B. Provide concrete housekeeping pads under pump skid and ball collectors.
- C. Rigging and setting/installation of ATCS components including coordination of exact delivery date with Manufacturer.
- D. Provide interconnecting piping between the ATCS components and condenser water piping system as required.
- E. Provide control devices, raceway systems and/or wiring between the ATCS and the Owners control system.
- F. Provide electrical service to the ATCS.
- G. Contractor shall schedule and expedite the manufacturers start-up process and support the Owners commissioning activities. Contractor shall coordinate exact timing of these activities and arrange for appropriate manufacturer personnel to be on-site.

- H. After successful completion of equipment installation, the Contractor shall assemble and incorporate equipment shop drawings, operating/maintenance instructions, and part lists into the Contractor's project operation/maintenance manuals.

END OF SECTION



1 AUTOMATIC TUBE CLEANING SYSTEM (ATCS) P&ID (DCS CONTROLS BY DIVISION 25)
SCALE: NOT TO SCALE



NOTES:
(1) PROVIDE PLASTIC LAMINATED NAME PLATE PER SPECIFICATION 230585 AT EACH VALVE INDICATING CHILLER NUMBER AND GAS OR LIQUID ("CRM.XX" GAS" OR "CRM.XX LIQUID") PIPING AND VALVES SHALL BE ORGANIZED SUCH THAT THE VALVES ARE IN NUMERICAL ORDER READING FROM LEFT TO RIGHT.

2 REFRIGERANT PUMPOUT DIAGRAM (DCS CONTROLS BY DIVISION 25)
SCALE: NOT TO SCALE

GENERAL NOTES:
1. ALL DRAINS TO BE STAINLESS STEEL PIPING WITH BRONZE OR STAINLESS STEEL VALVES.



Sheet Keynotes:
1. NORMALLY CLOSED. VALVE OPEN DURING INJECTION MODE ONLY.
2. NORMALLY CLOSED. VALVE OPEN DURING COLLECTION MODE ONLY.

Rev	Date	Description of Issue
B	07/11/25	CD FOR REVIEW
A	12/06/24	DESIGN DEVELOPMENT



THE UNIVERSITY of NORTH CAROLINA at CHAPEL HILL

Chilled Water Infrastructure Expansion
SCOP# 22-25888-02A
CODE: 42123-355 / 42323-308
UNC BLDG. NO XXX

Sheet Title:
ATCS AND REFRIGERANT PUMP OUT SYSTEM P&ID

Date	Drawn By
07/11/25	DVS
Date	Checked By
23480-01	BJP

Sheet No.
B.M.404