Jeanne R. Colvin
Finance Director

Birthplace of the
Council-Manager
Form of Government

116 W. Beverley Street
P.O. Box 58
Staunton, VA 24402
540.332.3809 (O)
540.851.4017 (F)

REQUEST FOR PROPOSALS
FOR
THE CITY OF STAUNTON, VIRGINIA

February 15, 2013

GENERAL INFORMATION

The City of Staunton is requesting proposals from qualified contractors to remove two existing chillers and replace with a new water-cooled chiller with all piping and ancillary components at Robert E Lee High School.

All proposals must be delivered to:

Mail To:
Cynthia A. Steed
Supervisor of Purchasing
P.O. Box 58
Staunton, VA 24402-0058

Overnight To:
Cynthia A. Steed
Supervisor of Purchasing
116 W Beverley St., 3rd Floor
Staunton, VA 24401

(540) 332-3819

ALL PROPOSALS MUST BE RECEIVED BY 5:00 P.M. LOCAL TIME, FEBRUARY 28, 2013.

The City of Staunton is not responsible for delays in the delivery of the mail by the U.S. Postal Service, private couriers, or the inter-office mail system. It is the sole responsibility of the Offeror to ensure that its proposal reaches the Supervisor of Purchasing by the designated date and hour. **Facsimile and e-mail submittals are not acceptable.**

All offerors shall abide by all applicable State and Federal laws. The City does not discriminate against small and minority businesses or faith-based organizations.

INQUIRIES CONCERNING RFP

Any questions or comments concerning this Request for Proposal should be directed to:

Earl McCray
Staunton City Schools
P. O. Box 900
Staunton, VA 24402-0900
540-332-3920 (office)
emccray@staunton.k12.va.us

RFP DOCUMENTS INDEX
ROBERT E LEE HIGH SCHOOL CHILLER REPLACEMENT

Documents included in the REQUEST FOR PROPOSAL are as follows:

- INFORMATION FOR BIDDERS
- PROCUREMENT GUIDELINES
- FORM – CERTIFICATION OF CRIMES AGAINST CHILDREN
- FORM – CERTIFICATION OF INTEREST & RELATIONSHIPS
- CONTRACTOR'S SCOPE OF WORK
- CHILLER SPECIFICATIONS
- PIPING MATERIALS SPECIFICATIONS
- PROEJCT DESIGN PARAMETERS
- BALTIMORE AIRCOIL SUBMITTAL DATE FORM
- DRAWINGS
    1. EXISTING MECHANICAL ROOM ARRANGEMENT
    2. EXISTING CHILLED WATER PIPING
    3. EXISTING COOLING TOWER PIPING
    4. DEMOLITION & REMOVAL
    5. TYPICAL INSTALLATION DETAILS

INFORMATION FOR BIDDERS
RE LEE HIGH SCHOOL CHILLER REPLACEMENT

I. GENERAL REQUIREMENTS

PLEASE NOTE – There will be a PRE-PROPOSAL meeting on-site at the Robert E Lee High School on Thursday, February 21, 2013 at 10:00 a.m. A tour of the school will be provided at this time only.

Bid Questions and Addenda: All questions must be submitted in writing to Earl McCray, Operations Director, no later than Friday, February 22, 2013, at 4:00 p.m. E-mailed questions will be accepted. Any addenda or list of questions and answers will be available on the City web site by close of business on Friday, February 22, 2013. Prior to submitting their proposal, it is the bidder's responsibility to check the City web-site (**http://www.staunton.va.us/solicitations**) for any addenda associated with this Request for Proposal.

Proposals should be as thorough and detailed as possible so that the City may properly evaluate the capabilities of respective firms to provide the required services. **At the same time, proposals should be concise (a maximum of 25 pages) and supply the following information**:

a) A statement of the offerer's understanding of the work to be performed.

b) Information as to the offerer's background and experience relative to this project and valid state contractors license to conduct this type work.

c) Listing of previous clients who may be contacted as reference. Include customer name and contact information with telephone number.

d) Complete literature and description of equipment being offered.

e) Agreement to carry General Liability, Vehicle Liability, and Workman's Compensation Insurance in amounts not less than $1,000,000, $500,000, and $100,000 respectively, or such other insurance as is satisfactory and may be approved by the City. All insurance coverages shall be written by companies licensed to do business in Virginia, shall be administered by a Virginia registered agent, and shall ensure prior written notification to the City prior to cancellation of the policy.

f) Agreement to provide both performance and payment bonds for any contract signed which exceeds $50,000.

g) Any other special experience or qualifications relative to this project desired by the offerer.

II. REVIEW AND AWARD

To be considered for selection, offerers must submit a complete response to this Request for Proposal. Failure to submit all information requested may result in the rejection of the incomplete proposal. Proposal will be reviewed and ranked based on the factors listed herein. The City will invite a maximum of the two (2) most qualified firms for further interviews.

An authorized representative of the offerer shall sign proposals. Three (3) copies of the proposal must be submitted to the City of Staunton. Each copy of the proposal should be bound in a single volume where practical. All documentation submitted with the proposal should be bound in that single volume.

The City reserves the right to negotiate contract terms with the successful offerer for items/services other than those specifically stated in this RFP in the best interest of the City and agreed to by the contractor. Additional work of reasonable scale shall be priced consistent with proposal.

PROCUREMENT GUIDELINES

I. COMPETITIVE NEGOTIATION

The procurement method is competitive negotiation of other than professional services, as defined in Section 2.2-4301 of the Code of Virginia (1950) as amended. This Request for Proposal indicates, in general terms, the nature of the program and services being sought. Each offeror is to submit the proposal(s) that best suits the needs of the City.

The specific requirements for the contents of the proposals are contained in the RFP. Offerors are encouraged to provide additional information not specifically identified as a requirement if that additional information enables the proposal to better suit the needs of the City. In order to procure the program that best suits the needs of the City, the competitive negotiation process and evaluation criteria consider factors in addition to cost.

II. AWARDING THE CONTRACT

The award of a contract shall be determined in the sole discretion of the City based upon evaluation of all information as the City may request. The City reserves the right to waive any informality in proposals submitted in response to this RFP when such waiver is in the best interest of the City.

The evaluation process shall be based upon the criteria set forth in Section 1.5 of this request for proposals. Price will be considered but will not be the sole determining factor. Selection shall be made of two or more offerors deemed to be fully qualified and best suited among those submitting proposals, on the basis of the factors involved in the Request for Proposal. Negotiations shall then be conducted with each of the offerors so selected. After negotiations have been conducted with each offeror so selected, the City shall select the offeror which, in its opinion, has made the best proposal, and shall award the contract to that offeror. When the terms and conditions of multiple awards are so provided in the Request for Proposal, awards may be made to more than one offeror. Should the City determine in writing and in its sole discretion that only one offeror is fully qualified, or that one offeror is clearly more highly qualified than the others under consideration, a contract may be negotiated and awarded to that offeror.

The City of Staunton shall endeavor to award the contract within sixty (60) days from receipt of proposals. Notice of award will be posted on the City Web Site. (**http://www.staunton.va.us/solicitation-results**)

III. PUBLIC INSPECTION OF PROCUREMENT RECORDS

Proposals submitted shall be subject to public inspection only in accordance with Section 2.2-4342 of the Code of Virginia, which reads, in essence, as follows

2.2-4342 Public inspection of certain records:

Except as provided in this section, all proceedings, records, contracts, and other public records relating to procurement transactions shall be open to the inspection of any citizen, or any interested person, firm or corporation, in accordance with the Virginia Freedom of Information Act.

Cost estimates relating to a proposed procurement transaction prepared by or for a public body shall not be open to public inspection.

Any competitive negotiation offeror, upon request, shall be afforded the opportunity to inspect proposal records within a reasonable time after the evaluation and negotiations of proposals are completed but prior to award, except in the event that the City decides not to accept any of the proposals and to reopen the contract. Otherwise, proposal records shall be open to public inspection only after award of the contract.

Any inspection of procurement transaction records under this section shall be subject to reasonable restrictions to ensure the security and integrity of the records.

Trade secrets or proprietary information submitted by a bidder, offeror or contractor in connection with a procurement transaction shall not be subject to the Virginia Freedom of Information Act; however, the bidder, offeror or contractor shall (i) invoke the protections of this section prior to or upon submission of the data or other materials, (ii) identify the data or other materials to be protected, and (iii) state the reasons why protection is necessary.

IV. ETHICS IN PUBLIC CONTRACTING

By submitting their proposal, all offerors certify that their proposal is made without collusion or fraud and that they have not offered or received any kickbacks or inducements from any other offeror, supplier, manufacturer or sub-contractor in connection with their proposal, and that they have not conferred on any public employee having official responsibility for this procurement transaction any payment, loan, subscription, advance, deposit of money, services or anything of more than nominal value, present or promised unless consideration of substantially equal or greater value was exchanged.

V. ANTI-DISCRIMINATION

By submitting their proposal, offerors certify to the City of Staunton that they will conform to the provisions of the Federal Civil Rights Act of 1964, as amended, the Virginia Fair Employment Act of 1975, as amended, where applicable and Section 2.2-4311 of the Virginia Public Procurement Act.

1. During the performance of this contract, the offeror agrees as follows:

a. The offeror will not discriminate against any employee or applicant for employment because of race, religion, color, sex, national origin, age, disability, or other basis prohibited by state law relating to discrimination in employment, except where there is a bona fide occupational qualification reasonably necessary to the normal operation of the offeror. The offeror agrees to post in conspicuous places, available to employees and the

applicants for employment, notices setting forth the provisions of this nondiscrimination clause.

b. The offeror, in all solicitations or advertisements for employees placed by or on behalf of the offeror will state that such offeror is an equal opportunity employer.

c. Notices, advertisements and solicitations placed in accordance with federal law, rule or regulation shall be deemed sufficient for the purpose of meeting the requirements of this section.

2. The offeror will include the provisions of the foregoing paragraphs a, b and c in every subcontract or purchase order of over $10,000, so that the provisions will be binding upon each subcontractor or vendor.

VI. DRUG-FREE WORKPLACE

By submitting their proposal, offerors certify to the City of Staunton that they will conform to the provisions of Section 2.2-4312 of the Virginia Public Procurement Act. offerors agree to (i) provide a drug-free workplace for the offeror's employees; (ii) post in conspicuous places, available to employees and applicants for employment, a statement notifying employees that the unlawful manufacture, sale, distribution, dispensation, possession, or use of a controlled substance or marijuana is prohibited in the offeror's workplace and specifying the actions that will be taken against employees for violations of such prohibition; (iii) state in all solicitations or advertisements for employees placed by or on behalf of the offeror that the offeror maintains a drug-free workplace; and (iv) include the provisions of the foregoing clauses in every subcontract or purchase order of over $10,000, so that the provisions will be binding upon each subcontractor or vendor.

VII. IMMIGRATION REFORM

By submitting a proposal, offerors certify that, they will not, and shall not knowingly employ an unauthorized alien as defined in the federal Immigration Reform and Control Act of 1986.

VIII. PROMPT PAYMENT ACT

Any contract awarded as a result of this Request for Proposal shall incorporate the terms and conditions of Article 4 of the Virginia Public Procurement Act with respect to Prompt Payment.

IX. REJECTION OF PROPOSALS

The City reserves the right, at any time prior to award of the contract, to reject any and all proposals, or any part thereof, to make no award, and/or to issue a new Request for Proposal, or make modifications, corrections of additions to the information contained herein.

Offerors are cautioned this is a Request for Proposal, NOT a request to contract.

X. COSTS FOR PROPOSAL PREPARATION

Any costs incurred by offerors in preparing or submitting proposals are the offeror's sole responsibility; the City will not reimburse any offeror for any costs incurred as a result of the preparation of this Request for Proposal.

XI. APPROPRIATIONS

The obligations of the City of Staunton are subject to and contingent upon annual appropriation by City Council of sufficient funds for the purposes of this contract. In the absence of such annual appropriation, either the City of Staunton or offeror may terminate the contract by giving not less than ten (10) days prior notice to the other, specifying this reason for the termination, and upon effective termination pursuant to this provision, any compensation due shall be equitably adjusted by mutual agreement.

XII. STATE CORPORATION COMMISSION IDENTIFICATION NUMBER

Pursuant to Code of Virginia, §2.2-4311.2 subsection B, a bidder or offeror organized or authorized to transact business in the Commonwealth pursuant to Title 13.1 or Title 50 is required to include in its bid or proposal the identification number issued to it by the State Corporation Commission (SCC). Any bidder or offeror that is not required to be authorized to transact business in the Commonwealth as a foreign business entity under Title 13.1 or Title 50 or as otherwise required by law is required to include in its bid or proposal a statement describing why the bidder or offeror is not required to be so authorized. Link to the Virginia State Corporation Commission site: http://www.scc.virginia.gov/.

XIII. FORUM SELECTION

Any action, proceeding, or claim in any way related to this agreement or the relationship between the parties shall be filed and maintained solely in the General District Court or the Circuit Court of the City of Staunton, Virginia.

XIV. CERTIFICATION OF CRIMES AGAINST CHILDREN

The Contractor shall certify that Contractor, Contractor's employees, and all other persons who will have direct contact with students on school property during regular school hours or during school-sponsored activities have not been convicted of a felony or any offense involving the sexual molestation or physical or sexual abuse or rape of a child. In accordance with this paragraph, Contractor shall execute the certification attached hereto as Attachment D and submit the certification contemporaneously with this executed Contract.

Pursuant to Code of Virginia §22.1-296.1, any person making a materially false statement regarding offenses which are required to be included in the certification referenced above shall be guilty of a Class 1 misdemeanor and, upon conviction, the fact of such conviction shall be grounds for the revocation of the contract to provide such services and, when relevant, the revocation of any license required to provide such services. Staunton Public

Schools shall not be liable for materially false statements regarding the certifications required under this Contract.

XV. CERTIFICATION OF INTEREST & RELATIONSHIPS WITH CITY OF STAUNTON, STAUNTON CITY COUNCIL, SCHOOL BOARD AND STAUNTON PUBLIC SCHOOL EMPLOYEES

The extent that neither Contractor nor any of Contractor's officers, directors, or executive employees, maintains a financial or familial relationship with any person acting for, or employed by, the City of Staunton, Staunton City Council, School Board or Staunton Public Schools, Contractor shall reveal such relationships. In accordance with this paragraph, Contractor shall execute the certification attached hereto as Attachment E and submit the certification contemporaneously with this executed Contract.

ATTACHMENT A

CERTIFICATION OF CRIMES AGAINST CHILDREN

Contractor acknowledges that, to the extent the implementation of this contract requires Contractor, Contractor's employees or other persons within Contractor's control to have direct contact with Staunton Public Schools' students, the, Contractor hereby certifies, and is deemed to be continuously certifying, that neither Contractor, Contractor's employees nor any person who will have direct contact with students on school property during regular school hours or during school-sponsored activities have not been convicted of a felony or any offense involving the sexual molestation or physical or sexual abuse or rape of a child.

Contractor understands that, pursuant to Code of Virginia §22.1-296.1, making a materially false statement regarding offenses which are required to be included in the certification referenced above is a Class 1 misdemeanor and, upon conviction, the fact of such conviction shall be grounds for the revocation of the contract to provide such services and, when relevant, the revocation of any license required to provide such services. Staunton Public Schools shall not be liable for materially false statements regarding the certifications required under this Contract.

It is certified, now and on a continuous basis, that none of our employees, or any person on our behalf who will have direct contact with students under this contract, has been convicted of a felony or any offense involving the sexual molestation or physical or sexual abuse or rape of a child?

☐ No

☐ Yes (please explain) _____

_____

_____ _____

Contractor Date

By: _____

Name: _____

Title: _____

ATTACHMENT B

CERTIFICATION OF INTEREST & RELATIONSHIPS WITH CITY OF STAUNTON, STAUNTON CITY COUNCIL, SCHOOL BOARD AND STAUNTON PUBLIC SCHOOL EMPLOYEES

Contractor hereby certifies that neither Contractor, nor any of Contractor's officers, directors, or executive employees maintain a financial of familial relationship with any person acting for, or employed by, the City of Staunton, Staunton City Council, School Board, or Staunton Public Schools (City Employee).

To the extent that such relationships exist, Contractor shall reveal the relationship below by describing the nature of the relationship and identifying the person with whom such relationship exists.

☐ Neither Contractor nor any of its officers, directors, or executive employees maintain a financial or familial relationship with any person acting for, or employed by, the City of Staunton, Staunton City Council, School Board, or Staunton Public Schools.

☐ The following individuals currently maintain a ***financial*** relationship with Contractor.

City Employee's Name: _____

Position with City: _____

Nature of Relationship: _____

_____

☐ The following individuals currently maintain a ***familial*** relationship with Contractor.

City Employee's Name: _____

Position with City: _____

Nature of Relationship: _____

_____

_____ _____

Contractor Date

By: _____

Name: _____

Title: _____

CONTRACTOR'S SCOPE OF WORK
ROBERT E. LEE HIGH SCHOOL CHILLER REPLACEMENT PROJECT

GENERAL

Contractor shall furnish all labor, material, equipment, tools, supervision and services necessary for removal of two existing chillers, and providing one new water-cooled chiller with all piping and ancillary components at Lee High School per specifications and descriptions issued with the REQUEST FOR PROPOSAL, with amendments if any, as described herein. This Section generally defines, but does not limit, the scope of mechanical and electrical work.

Items not specifically identified herein or shown on the drawings, but which are required to complete the installation per applicable codes, regulations, and established trade practices shall be provided as if they were specified.

DEFINITIONS

- The project owner is Staunton City Schools, abbreviated SCS.
- The project engineering firm is Senger Engineering, Inc., abbreviated SEI.
- The REQUEST FOR PROPOSAL with amendments, if any, is abbreviated RFP.

WORK, MATERIALS AND EQUIPMENT

All work, materials and equipment shall be furnished and installed per details provided in the RFP documentation.

- Demolition
  1. Disconnect Electrical Power and remote electrical controls wiring from the two existing Carrier Model 30HR070-A140 chillers.
  2. Disconnect all "field-installed" piping connected to the two existing Carrier Model 30HR070-A140 chillers.
  3. Remove all "field-installed" chiller-related piping, hangers, and other piping components that are not to be reused. Handling and disposal of piping, wiring, conduit, pipe supports, etc. that are not reused is the contractor's responsibility.
  4. Remove all conduit, masonry anchors, electrical components, etc. associated with the two existing Carrier chillers that are not to be reused. Plug or patch all unused openings in conduits and masonry surfaces resulting from demolition work.
  5. Remove the two existing Carrier chillers. NOTE: The chillers are to remain the property of SCS and shall be removed in a manner that essentially maintains the units in their present mechanical conditions.

- Equipment and Installation Reviews
  Reviews are to be scheduled jointly with SEI and SCS, can typically be held at the job site, and can be informal. The contractor's representative at the review is to be authorized to make commitments on behalf of the contractor.
  1. Chiller Placement: Prior to placement of the chiller, review installation plans including proposed concrete and site preparation plans. Hand sketches, floor markings, etc. that satisfactorily demonstrate installation details will be acceptable.
  2. Piping: Prior to procurement, review layouts, materials lists for all piping and piping components, and installation plans. This includes all valves, fittings and accessories as shown on drawings or related documentation from the tie-in points up to and including final connections to the replacement chiller.
  3. Electrical: Prior to procurement, review layouts, materials lists for conduit, wiring, disconnecting means, installations plans, etc. for completion of electrical services from tie-in points up to and including final connections to the replacement chiller.

- Major Equipment and Components Supplied and Installed by Contractor
  1. One water-cooled packaged chiller rated at standard ARI capacity of 140 tons minimum cooling capacity.
  2. Concrete pad modifications for the replacement chiller.
  3. Piping and piping components, including chilled water piping, cooling tower piping, refrigerant vent piping (including wall penetration and sealing) from the chiller pressure relief valves to the outdoors, vibration isolators, hangers, supports, supplementary support steel, gauges and thermometers, insulation of project related chilled water piping, etc.
  4. Reinstallation of building control sensors and valves as requested by the service provider for the building control system. NOTE: Chiller specifications include a control system requirement for connectivity to BACnet/IP.
  5. Insulation of chilled water piping.
  6. Electrical disconnects, breakers, wiring, conduit, and other devices required for supplying power at the appropriate ampacity for the proposed chiller. Power for the proposed chiller to be sourced from the 800 amp breaker in the electrical panel that currently provides power to the Carrier chillers. This work is to be completed in conformance with applicable NEC codes, the chiller manufacturer's requirements, and other relevant regulatory guidelines.
  7. If the proposed chiller meets or exceeds minimum requirements for monitoring of refrigerant levels within the equipment room, the Contractor shall provide and install the devices required for such monitoring and alarming.

- Prohibited Materials
  1. Metal parts containing toxic heavy metals (lead, arsenic, cadmium, etc.).
  2. Chromium or chromate rust inhibitors or primers.
  3. Asbestos or asbestos-bearing insulation.
  4. Exposed fiberglass insulation.

SCHEDULE

School schedule dictates that the new chiller be operational by May 1, 2013. Based upon this, the following schedule shows anticipated project milestones:

• Issuance of RFP	Friday, February 15, 2013
• Pre-bid meeting	Thursday, February 21, 2013
• Proposals due	Thursday, February 28, 2013
• Bid awarded	Tuesday, March 5, 2013
• Chiller delivery	Tuesday, April 16, 2013
• Installation complete/Start-up	Wednesday, May 1, 2013

MISCELLANEOUS

- The Contractor is not responsible for permits.
- Contractor is responsible for managing the project to insure that work is completed in compliance with all applicable codes and regulations including, but not limited to, State of Virginia Building Codes, OSHA regulations, EPA regulations, etc.
- This project is exempt from Virginia Sales and Use Taxes.

CHILLER SPECIFICATIONS
ROBERT E. LEE HIGH SCHOOL CHILLER REPLACEMENT PROJECT

GENERAL

Contractor shall furnish and install a chiller with features as described in this specification. This Section generally defines, but does not limit, features and performance parameters for the proposed chiller.

FEATURES

The proposed chiller shall incorporate the following features:

- Water-cooled packaged chiller designed for cooling water without antifreeze. Condenser cooling water will be supplied from a cooling tower.
- A minimum of six positive displacement compressors, the number of which are operating is controlled from one to six as determined by system load, chiller efficiency, etc. Consequently, the chiller control system shall incorporate "Lead/Lag" control of all the compressors.
- "Footprint" of the floor area required for the proposed chiller shall be such that the chiller will fit into the equipment room and all recommended or required clearances for electrical panels, mechanical service, etc., including those for the chiller and those for other equipment within the room, be met.
- The condenser(s) shall be constructed such that the waterside heat exchange surfaces can be mechanically cleaned and tubes can be serviced. Shell and Tube vessels in which refrigerant is inside the tubes, brazed plate heat exchangers, etc. are not acceptable for condenser service.
- The evaporator(s) shall be constructed with removable heads to permit tube maintenance and limited repair (e.g., eddy current testing, plugging of a leaking tube, etc.).
- The chiller control system shall be equipped for connection to a building control system via BACnet/IP. Connection from the chiller to the building control system will be performed independently from this contract by Hoffman Building Technologies, Roanoke, VA.
- The chiller shall be supplied with controls for regulating refrigerant condensing pressure. The chiller will be the sole load on the existing cooling tower. A VFD controls speed of the existing cooling tower water pump.

CAPACITY AND RELATED ENVIRONMENTAL/SAFETY REQUIREMENTS

The proposed chiller shall be designed to meet the following:

- Minimum of 140 tons of cooling capacity at standard ARI rating conditions.
- Meets or exceeds minimum efficiency requirements per ASHRAE 90.1-2010.

- Refrigerant in the proposed chiller shall not be one in phaseout per EPA regulations.
- The Safety Group classification, GWP and ODP of the refrigerant in the proposed chiller shall not exceed the respective classifications for R410a.
- All chiller electrical components shall be constructed and labeled to minimize dangers associated with Arc Flash per NFPA 70E-2011, 29 CFR §1910.132, Subpart S, and all other applicable standards, codes, and regulations.

EQUIPMENT ROOM DETAILS

- The proposed chiller shall be designed for operating on 208 volts, 60 hertz, three-phase electrical power.
- Maximum equipment ambient temperature shall assumed to be 105 °F.
- For the proposed chiller, maximum operating noise level in dBA shall be included in for the proposal. If the maximum noise level exceeds 80 dBA, include in the proposal costs for options (if available) to reduce levels to 80 dBA or less.

STARTUP

The proposal shall include costs for completing successful startup of the chiller without time limitations. Operating the chiller at full load for more than a very short time during startup is unlikely because startup is planned for early in the spring season and rated cooling tower capacity is less than 140 tons (see BAC's submittal data for the tower). Consequently, chiller loading at startup will be limited by cooling loads and tower performance at the time of startup.

TRAINING

The proposal shall include a minimum of two training sessions on different days of two hours each for operative personnel. Two sessions will assist with scheduling of the personnel into the training.

WARRANTY

The chiller shall be fully warranted for one year after an authorized SCS representative formally acknowledges that the chiller manufacturer's authorized startup personnel have successfully completed start-up. The first year warranty shall include all parts, labor, refrigerant, and related expenses associated with servicing the chiller during the warranty period.

PIPING MATERIALS SPECIFICATIONS
ROBERT E. LEE HIGH SCHOOL CHILLER REPLACEMENT PROJECT

ITEM	PIPE SIZE	DESCRIPTION	ASTM
Pipe	1/2" thru 2"	Carbon Steel, Sch. 40, ERW, threaded & Coupled	A53, Gr. B, Type E
Fittings	1/2" thru 2"	Malleable iron, Class 300, threaded ends	A197
Unions	1/2" thru 2"	Malleable iron, Class 300, Threaded ends, brass-to-iron seat, ground joint	A197
Branches	1/2" thru 2"	Threaded tee, Class 300 malleable iron	A197
"Stab-in" Branches	Branch size: minimum of two pipe sizes smaller than host pipe	Threadolet, 3000 forged steel	A105
Pipe	2 1/2" thru 6"	Carbon steel, Sch. 40, ERW	A106, Gr. B
Fittings	2 1/2" thru 6"	Carbon Steel, standard weight, seamless, butt weld ends	A234, Gr. WPB
Branches	2 1/2" thru 6"	Carbon steel, standard weight, seamless butt weld ends	A234, Gr. WPB
"Stab-in" Branches	Branch size: minimum of two pipe sizes smaller than host pipe	Weldolet, standard weight, forged steel	A105
Flanges	2 1/2" thru 6"	Forged steel, Class 150, raised face (or faced to match equipment), weld neck, bore to match pipe	A105
Bolts		Carbon Steel, heavy hex head machine bolts	A307 Gr. B
Nuts		Carbon Steel, heavy hex head	A563 Gr. A
Shut-off Valves	1/4" thru 2"	Jamesbury ball valve, brass body, type 316 SS ball and stem, threaded ends, Teflon seats and seals.	Series 2000, Designation # 21-1136-TT-0

Shut-off Valves	2 1/2" thru 6"	Jamesbury butterfly valve, lug type carbon steel body, ANSI Class 150, 316 SS disc, filled TFE seat and seal, TFE shaft seals, with detent handle.	Series 815L, Designation # (Size)815L-11-2236MT with optional manual handle
Pressure Gauges	N/A	3 1/2" Ashcroft SS Case pressure gauge with 1/4" NPT bottom connection	Product # 351009SW02L100
Stem Thermometer	N/A	3" Ashcroft bimetal thermometer with 304 SS case, 2 1/2" stem, 1/2" NPT connection	Series EL, Product # 30EL60R025XCS
Thermometer Well	N/A	Ashcroft 316SS Thermowell, 3/4" NPT pipe connection, 1/2" NPT thermometer connection	Product # 75W0162SM260S
Chilled Water Pipe Insulation	N/A	Match thickness and density of existing fiberglass insulation	
Chilled Water Pipe Insulation Vapor Barrier/Exterior Jacket	N/A	As-installed vapor permeability of the selected barrier fabric shall not exceed the vapor permeability and durability of the existing vapor barrier. The material shall not contain asbestos and shall be sealed per the manufacturer's directions.	

PROJECT DESIGN PARAMETERS
ROBERT E. LEE HIGH SCHOOL CHILLER REPLACEMENT

GENERAL

Design parameters summarized in this specification shall be considered as minimum acceptable standards and are not intended to be all-inclusive or to be used in lieu of established practices or regulatory requirements.

PIPING

- Chilled water and cooling tower water pipe sizes shall be specified for a maximum pressure drop of designed such that the pressure drop in all sections does not exceed 4 feet of water head loss per 100 feet of equivalent pipe length at full rated flow.
- If multiple condenser or evaporator ("chiller barrel") vessels are proposed, the piping to each vessel shall be designed such that the pressure drop in all sections does not exceed 4 feet of water head loss per 100 feet of equivalent pipe length at full rated flow through that vessel.
- If multiple condenser or evaporator vessels are proposed, isolation valves shall be installed on waterside connections such that each vessel can be independently isolated for service.
- If multiple condenser or evaporator vessels are proposed, pressure gauges and thermometers are to be furnished and installed into the condenser supply and return piping for each vessel and into the evaporator supply and return piping for each vessel.
- Chiller refrigerant relief valve vent piping shall be terminated outdoors. Routing of the horizontal piping shall be between the drop ceiling and the roof in the equipment room, and penetrating the sidewall facing the cooling tower. Roof penetrations are forbidden.
- Refrigerant vent piping shall be connected to the chiller relief valves in such manner to insure that stress is not placed upon the relief valves.
- Connections for thermometer wells shall be installed horizontally to permit viewing from floor level the dial thermometers that are inserted into the wells. The specified thermometers are manufactured with the face perpendicular to the stem.

CONCRETE

- Minimum compressive strength of concrete used for modifications to, or replacement of, the existing chiller support pad shall be 3000 psi.
- Extensions to the existing chiller support pad shall be tied to the existing pad and floor by a minimum of one, #4 by 6" long rebar "pin" located at 12" center-to-center spacing. These pins shall be inserted 3" into the existing pad and 4" into the floor and bonded with anchor epoxy. At all points, distance from the rebar pins to finished surfaces of the concrete (both the existing pad and the extension) shall be a minimum of 1".

- The need for reinforcement of concrete slab extensions (or replacement pad) for chiller support shall be determined by the loading placed upon the slab by the proposed chiller. The Contractor is responsible for design of slab revisions and for reviewing such designs with SCS and SEI personnel per review requirements contained within the CONTRACTOR'S SCOPE OF WORK.

BALTIMORE AIRCOIL
One of the
Amsted
Industries

SUBMITTAL DATA FORM

CUSTOMER	RIDDLEBERGER BROTHERS, INC. P.O. BOX 27 MT. CRAWFORD, VA. 22841	DATE P.O. NO. B.A.C. NO. MODEL NO. SHIP DATE NO. OF COPIES	04/29/02 1846 U025704401 VT0-107KM 05/31/02 6
PROJECT: ENGINEER: B.A.C. REP:	R.E. LEE H.S., COOLING TOWER REPLACEMENT – STAUNTON, VA L.A. PRILLAMAN CO. INC. – ASHLAND, VA		

COOLING TOWER

ALL INFORMATION IS PER UNIT

CERTIFIED CAPACITY: 375 USGPM OF WATER FROM 95°F TO 85°F AT 72.5°F ENTERING WET BULB AND 1.31 PSI SPRAY PRESSURE

FAN MOTOR(S): (1) 10 HP, 1800 RPM, 3 PHASE, 60 HERTZ, SUITABLE 200 VOLTS, STANDARD EFFICIENT, TEFC ENCLOSURE - FAN DRIVES BASED ON 0" ESP

NOTE:

☐ **Two speed fan motors and/or Energy-Miser® Fan Systems require a starter that incorporates a 15 second time delay when switching from high to low speed.**

DRAWINGS	FEATURES
UNIT PRINT (BAC-9111 A) STEEL SUPPORT (BAC-10284A)	

THANK YOU FOR YOUR ORDER ACCEPTED AT BALTIMORE AIRCOIL COMPANY ON APRIL 19, 2002.

AN APPROVED SUBMITTAL IS NOT REQUIRED. PLEASE BE PREPARED TO ACCEPT THE EQUIPMENT AS SCHEDULED SINCE OUR FACILITIES CANNOT ACCOMMODATE STORAGE OF COMPLETED UNITS.

BALTIMORE AIRCOIL COMPANY TERMS & CONDITIONS OF SALE ATTACHED

P.O. BOX 7322, BALTIMORE, MARYLAND 21227 / TELE: (410) 799-6200 / FAX: (410) 799-6416
P.O. BOX 960, MADERA, CALIFORNIA 93639 / TELE: (209) 673-9231 / FAX: (209) 673-5095
P.O. BOX 317, PAXTON, ILLINOIS 60957 / TELE: (217) 379-2311 / FAX: (217) 379-3522
P.O. BOX 402, MILFORD, DELAWARE 19963 / TELE: (302) 422-3061 / FAX: (302) 422-9269
35 SINCLAIR AVENUE, GEORGETOWN, ONTARIO L7G 1J3 / TELE: (905) 877-5272 / FAX: (905) 877-9400

April 29, 2002

Baltimore Aircoil Company

Series VT0 Cooling Tower
Mechanical Specifications

G-235 (Z700 metric) Hot-Dip Galvanized Steel Construction

Project Name:	R.E. Lee H.S., Cooling Tower Replacement - Staunton, VA
Customer Name:	Riddleberger Brothers, Inc. - Mt. Crawford, VA
Purchase Order No.:	1846
Engineer Name:	
Model Number:	VT0-107KM
B.A.C. Serial No.:	U025704401

Unit Type: Factory-assembled, counterflow, blow-through design cooling tower. All steel panels and structural members are constructed from G-235 (Z700 metric) hot-dip galvanized steel. The edges are given a protective coat of zinc-rich compound.

Thermal Performance: Thermal performance is certified by the Cooling Technology Institute in accordance with CTI Certification Standard STD-201.

Quality Assurance: Each unit is manufactured under closely-controlled conditions using standardized parts to ensure each unit is built precisely to the same high-quality design and construction standards. The design, manufacture, and business processes are ISO 9001 certified.

Pan/Fan Construction: Heavy gauge panel construction of G-235 (Z700 metric) hot-dip galvanized steel. The centrifugal fans and motors are located in the dry entering airstream beneath the sloping side of the pan.

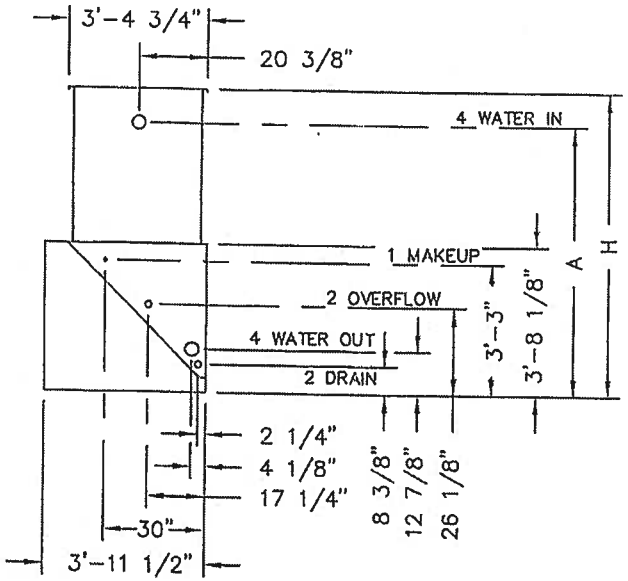
Access: Circular access doors constructed of G-235 (Z700 metric) hot-dip galvanized steel are held in place with phenolic knob screws.

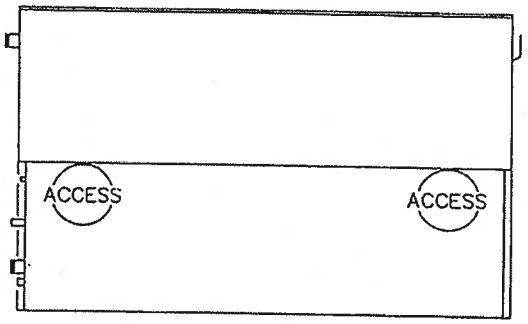
Water Level Control: Bronze make-up valve with unsinkable polystyrene filled plastic float arranged for easy adjustment. The make-up valve is suitable for water supply pressures between 15 psig (103 kPa) and 50 psig (345 kPa).

Strainer: Large area, lift out, G-235 (Z700 metric) hot-dip galvanized steel strainer screens have perforated openings sized smaller than the water distribution nozzle orifices. Strainer includes anti-vortexing baffle to prevent air entrainment.

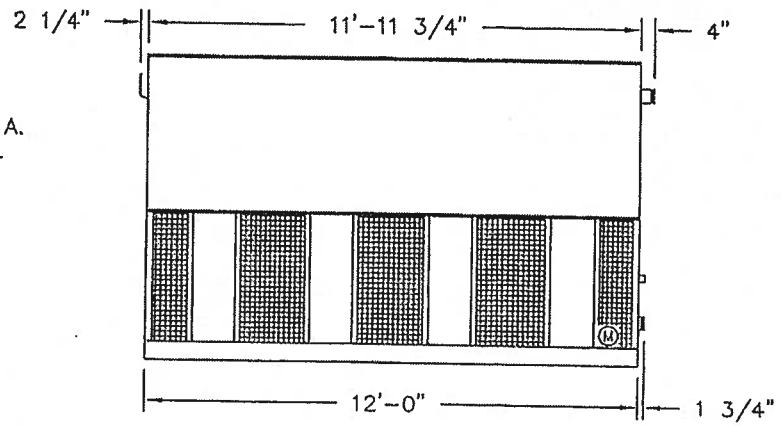
Fan Wheels: Forwardly curved, centrifugal, squirrel cage type fan wheels, constructed from G-235 (Z700 metric) hot-dip galvanized steel, are statically and dynamically balanced. Fan housings have curved inlet rings for efficient air entry.

Fan Discharge Cowls:	Fan discharge cowls, constructed of G-235 (Z700 metric) hot-dip galvanized steel, are provided on each fan. They extend within the pan to protect the fans from falling water.
Fan Shaft and Bearings:	Solid shaft of ground and polished steel with exposed surface coated with a rust preventative. Self-aligning, heavy-duty, grease-packed, ball bearings with eccentric locking collars are provided on each end of the fan shaft. Where intermediate bearings are required, self-aligning, oil lubricated, sleeve type bearings with split, cast iron, pillow-block housing are furnished.
TEFC Fan Motor(s):	Fan motor(s) is totally enclosed, fan-cooled (TEFC) ball bearing type with 1.15 service factor, one speed, one winding, suitable for outdoor service and mounted on an adjustable motor base. Motor base is adjusted by means of a single threaded bolt-and-nut arrangement.
Drive:	V-belt sheaves, selected for 150% motor nameplate horsepower, are mounted and aligned at the factory.
Fan Guard Screens:	G-235 (Z700 metric) hot-dip galvanized steel screens are provided.
Heat Transfer Section:	Heavy gauge panel construction of G-235 (Z700 metric) hot-dip galvanized steel. Heat transfer section is separable from pan/fan section.
Wet Deck Surface:	Serpentine polyvinyl chloride (PVC) BACount® Wet Deck Surface is impervious to rot, decay, fungus or biological attack and has a flame spread rating of 5 per ASTM Standard E84-77a. Wet deck is suitable for a maximum entering water temperature of 130°F(54°C).
Water Distribution System:	Schedule 40 PVC spray header and branches. Removable branches and large orifice plastic spray nozzles are held in place with snap-in rubber grommets.
Drift Eliminators:	Eliminators are constructed of polyvinyl chloride (PVC) and are removable in easily handled sections. They impart three distinct changes in air direction to effectively strip entrained moisture from the leaving airstream with minimum air resistance, and to direct discharge air away from fans.





NOTES:
1. ALL DIMENSIONS ARE IN FEET AND INCHES. WEIGHTS ARE IN POUNDS.
2. UNLESS OTHERWISE INDICATED ALL CONNECTIONS 3 INCHES AND SMALLER ARE MPT AND CONNECTIONS 4 INCHES AND LARGER ARE BEVELLED FOR WELDING AND GROOVED FOR VICTAULIC CONNECTION.
3. FOR STANDARD SUGGESTED STEEL SUPPORT LOCATION REFER TO DRAWING BAC-10284 A. FOR UNITS BEING INSTALLED ON VIBRATION ISOLATORS SUPPLIED BY BALTIMORE AIRCOIL COMPANY, REFER TO DRAWING BAC-9150 B.
4. PRE-FABRICATION OF FINAL CONNECTING PIPEWORK IS NOT RECOMMENDED.
5. DO NOT SUPPORT PIPING FROM COOLING TOWER. ALL NECESSARY PIPE SUPPORTS ARE TO BE SUPPLIED BY OTHERS.



* CASING IS HEAVIEST SECTION

MODEL NO.	APPROX. SHPG. WEIGHT	APPROX. OPER. WEIGHT	HEAV. SECT. (PAN)	A	H
VTO-107-L	2870	3680	1540 *	9'-7 7/8"	10'-6 1/8"

B.A.C.
ORDER NO: U025704401

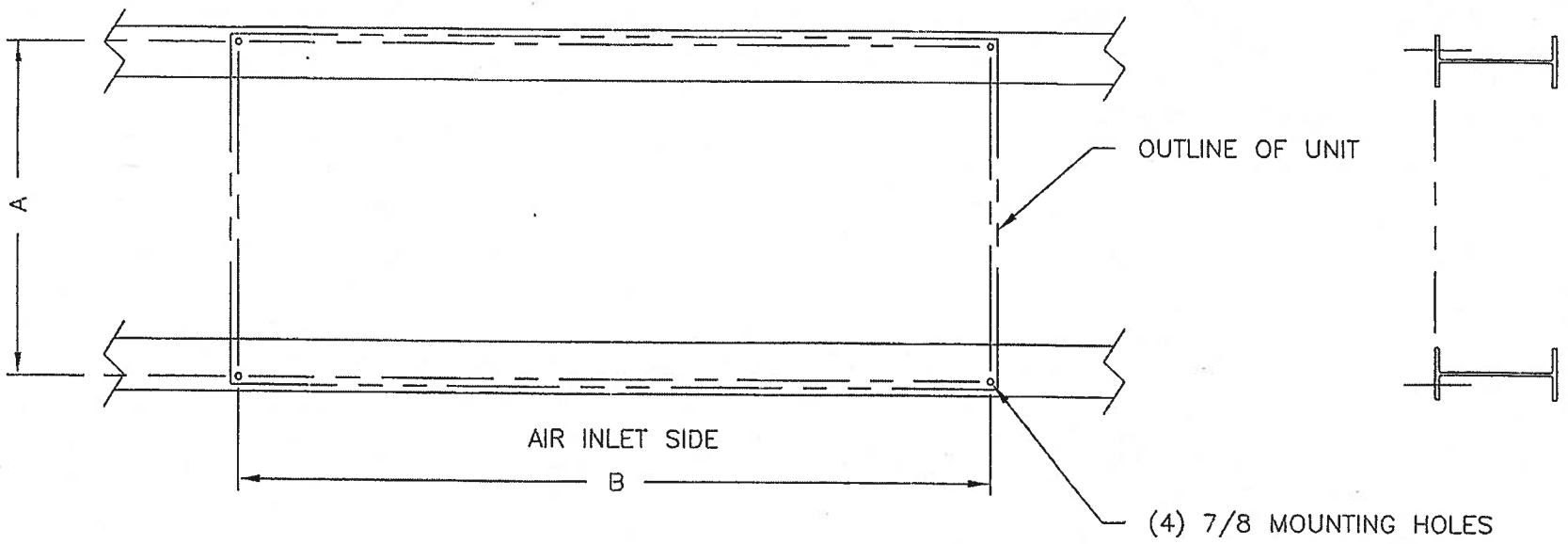
DATE: 04/29/02

BALTIMORE AIRCOIL COMPANY

COOLING TOWER

DRAWING NUMBER:
BAC-9111 A

A



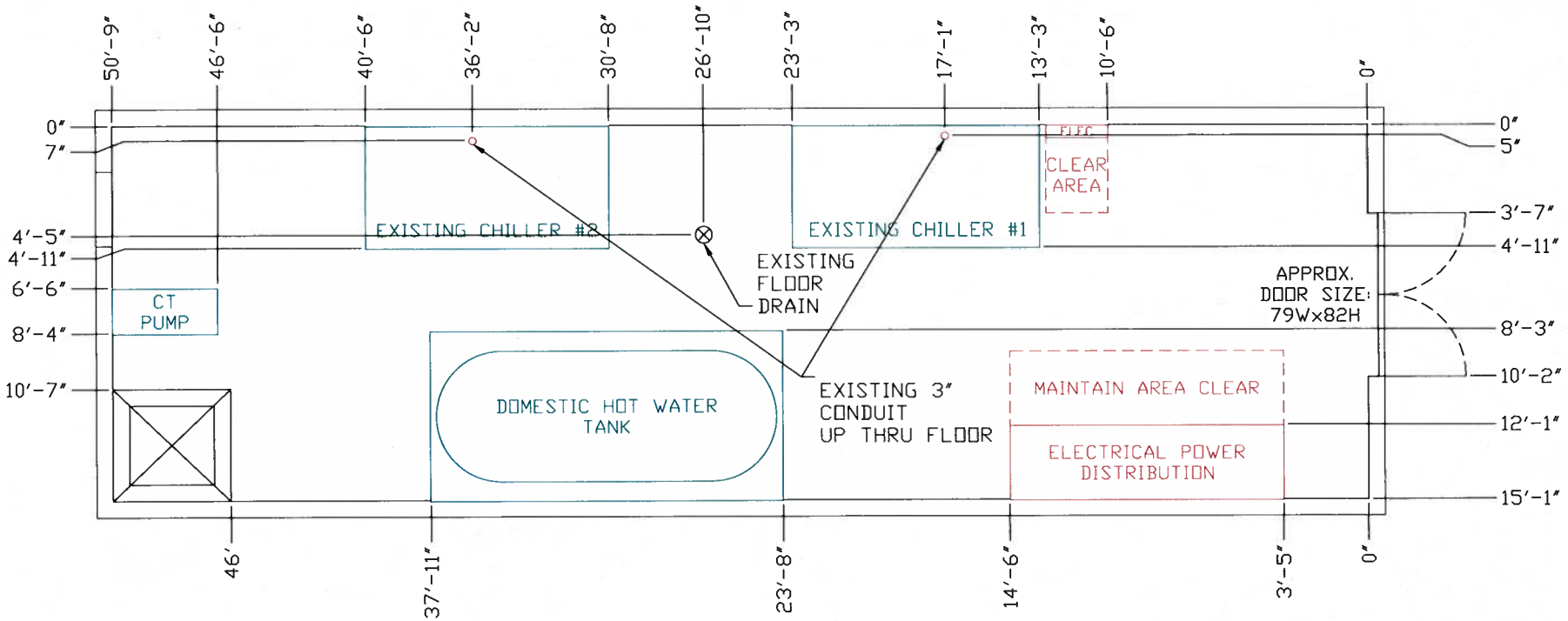
MODEL NO.	DIMENSION		* (SEE NOTE 3)
	A	B	
VTO-102-L THRU VTO-116-M	45 3/8	137 1/2	3/8

NOTES:

1. THE RECOMMENDED SUPPORT ARRANGEMENT FOR VTO UNITS CONSISTS OF TWO PARALLEL I-BEAMS EXTENDING THE FULL LENGTH OF THE UNIT. SUPPORTS AND ANCHOR BOLTS ARE TO BE DESIGNED AND FURNISHED BY OTHERS.
2. ALL SUPPORTING BEAMS ARE TO BE FLUSH AND LEVEL AT TOP AND MUST BE ORIENTED RELATIVE TO GAGE LINE AS SHOWN.
3. RECOMMENDED DESIGN LOADS FOR EACH BEAM SHOULD BE 65% OF THE TOTAL UNIT OPERATING WEIGHT APPLIED AS A UNIFORM LOAD TO EACH BEAM. BEAMS SHOULD BE DESIGNED IN ACCORDANCE WITH STANDARD STRUCTURAL PRACTICE. THE MAXIMUM ALLOWABLE DEFLECTION OF BEAMS UNDER THE UNIT SHALL BE * (REFER TO CHART) OF AN INCH.
4. ALL MOUNTING HOLES ARE 7/8 INCH DIA. AT THE LOCATIONS SHOWN.
5. IF VIBRATION ISOLATORS ARE USED, A RAIL OR CHANNEL MUST BE PROVIDED BETWEEN THE UNIT AND THE ISOLATORS TO PROVIDE CONTINUOUS UNIT SUPPORT. ADDITIONALLY THE SUPPORT BEAMS MUST BE DESIGNED TO ACCOMMODATE THE OVERALL LENGTH AND MOUNTING HOLE LOCATION OF THE ISOLATORS WHICH MAY DIFFER FROM THOSE OF THE UNIT. REFER TO VIBRATION ISOLATOR DRAWINGS FOR THESE DATA.

B.A.C. ORDER NO: U025704401 DATE: 04/29/02	BALTIMORE AIRCOIL COMPANY	SUGGSETED STEEL SUPPORT VTO-12-E THRU VTO-176-O DRAWING NUMBER: BAC-10284A A

REVISIONS					
LTR	DESCRIPTION	DATE	DRAWN	CHECK	APP



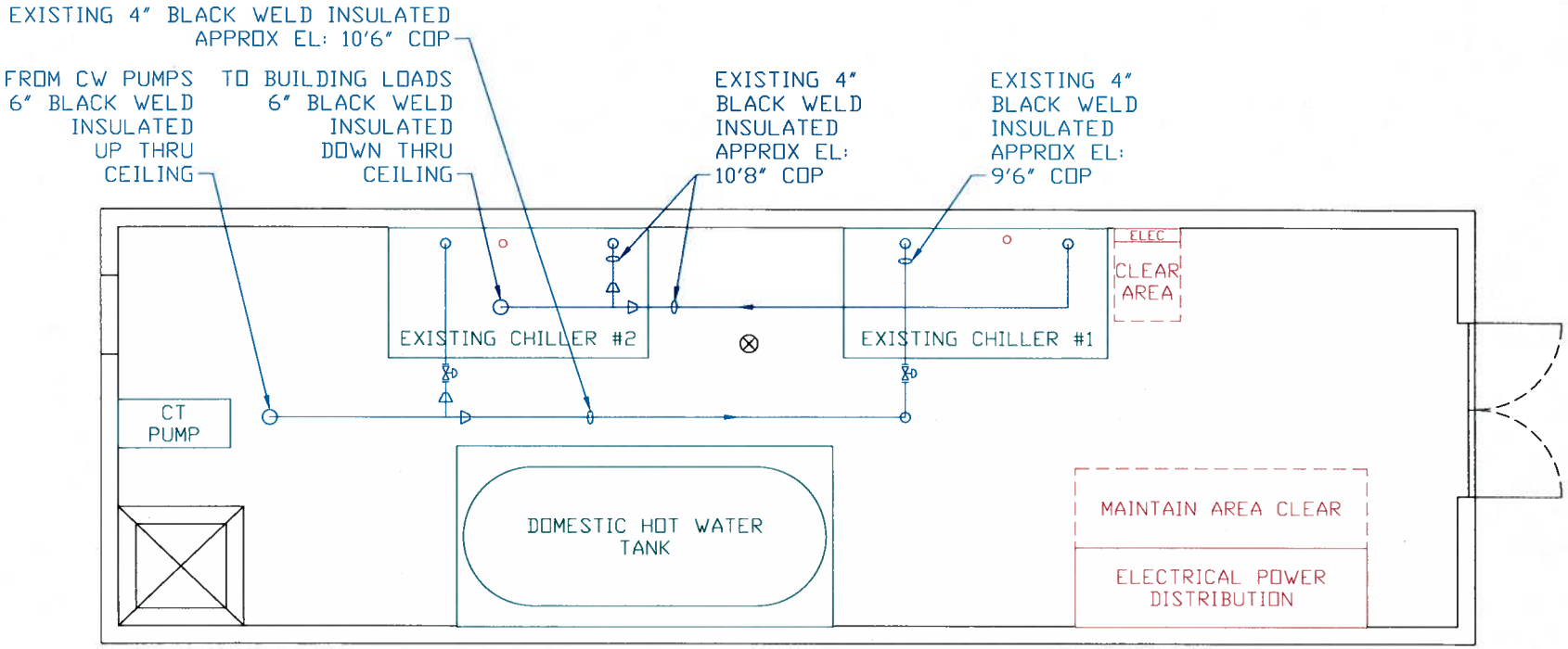
NOTICE:-THIS DRAWING IS THE PROPERTY OF SENGER ENGINEERING, INC., AND IS LOANED SUBJECT TO RETURN ON DEMAND AND IS SUBJECT TO THE CONDITION THAT IT IS NOT TO BE REPRODUCED OR COPIED OR USED IN ANY WAY DETRIMENTAL TO THE INTEREST OF SENGER ENGINEERING, INC. NO INFORMATION MAY BE TAKEN FROM THIS DRAWING TO MAKE DRAWINGS, PRINTS OR APPARATUS OR PARTS THEREOF EXCEPT WHERE PROVIDED BY SPECIFIC WRITTEN AGREEMENT WITH SENGER ENGINEERING, INC.

NOTES:

1. ALL DIMENSIONS ARE APPROXIMATE AND ARE TO BE VERIFIED BY INSTALLATION CONTRACTOR BEFORE STARTING FABRICATION.

	DRAWN: RANDY SENGER 04FEB13	UNLESS OTHERWISE NOTED: ALL DIMENSIONS IN INCHES FINISH ALL SURFACES 63 BREAK ALL CORNERS ⅛ ALL FILLETS ⅛ RADIUS DEBUR ALL HOLES ⅛	TOLERANCE UNLESS OTHERWISE NOTED: FRACTIONS ± ⅛ DECIMALS ± 0.005 ANGLES ± ½°	Senger Engineering Inc. PO BOX 115 MOUNT SIDNEY, VA (540) 248-1023 sengerengineering@verizon.net
SCALE: NONE	CHECKED:			TITLE: STAUNTON CITY SCHOOLS ROBERT E. LEE HIGH SCHOOL EXISTING MECHANICAL ROOM ARRANGEMENT
SIZE: D	APPROVED:	DRAWING NUMBER: SCS-LHS-100		

REVISIONS					
LTR	DESCRIPTION	DATE	DRAWN	CHECK	APP

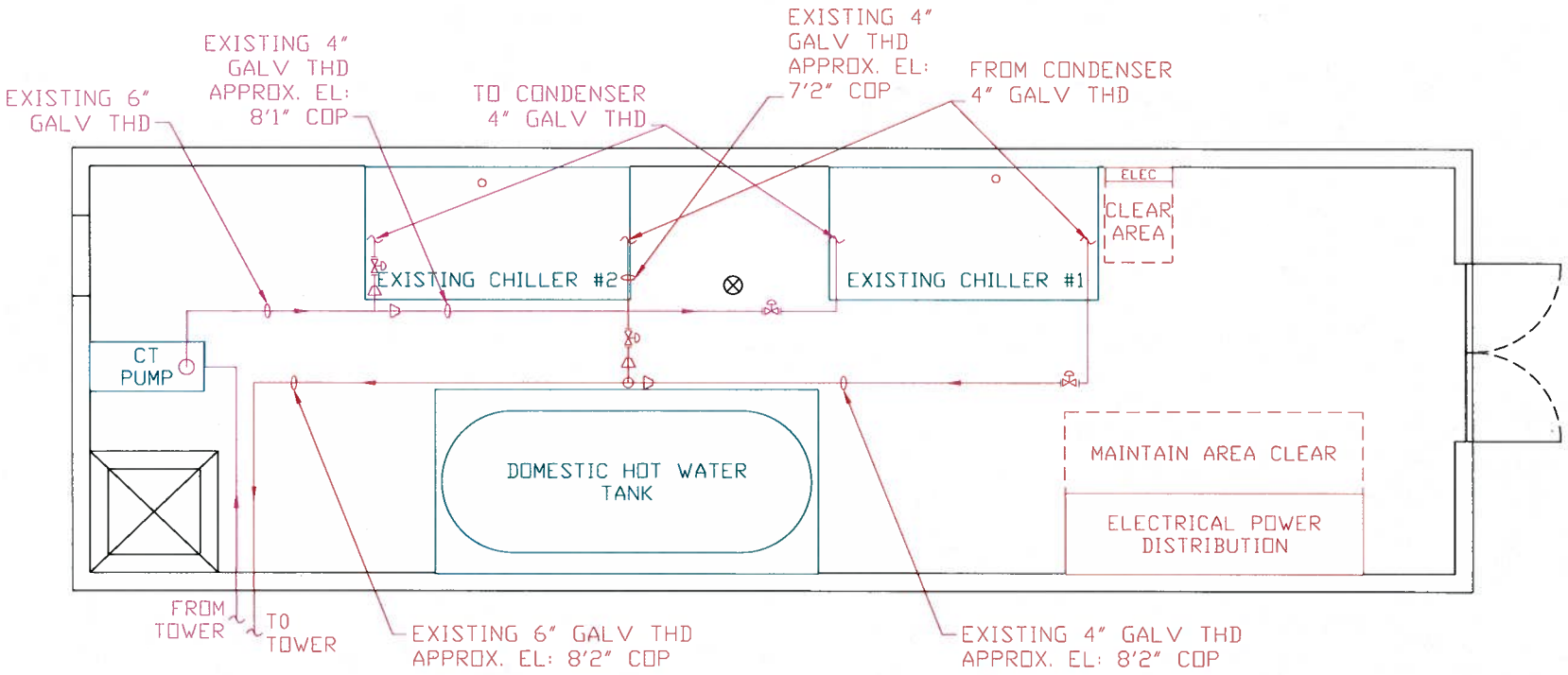


NOTES:

1. ALL DIMENSIONS ARE APPROXIMATE AND ARE TO BE VERIFIED BY INSTALLATION CONTRACTOR BEFORE STARTING FABRICATION.

	DRAWN: RANDY SENGER 04FEB13	UNLESS OTHERWISE NOTED: ALL DIMENSIONS IN INCHES FINISH ALL SURFACES 63 BREAK ALL CORNERS 1/32 ALL FILLETS 1/16 RADIUS DEBUR ALL HOLES 1/32	TOLERANCE UNLESS OTHERWISE NOTED: FRACTIONS ± 1/32 DECIMALS ± 0.005 ANGLES ± 1°	Senger Engineering Inc. PO BOX 115 MOUNT SIDNEY, VA (540) 248-1023 sengerengineering@verizon.net
SCALE: NONE	CHECKED:		TITLE:	STAUNTON CITY SCHOOLS ROBERT E. LEE HIGH SCHOOL EXISTING CHILLED WATER PIPING
SIZE: D	APPROVED:	DRAWING NUMBER: SCS-LHS-101		

REVISIONS					
LTR	DESCRIPTION	DATE	DRAWN	CHECK	APP



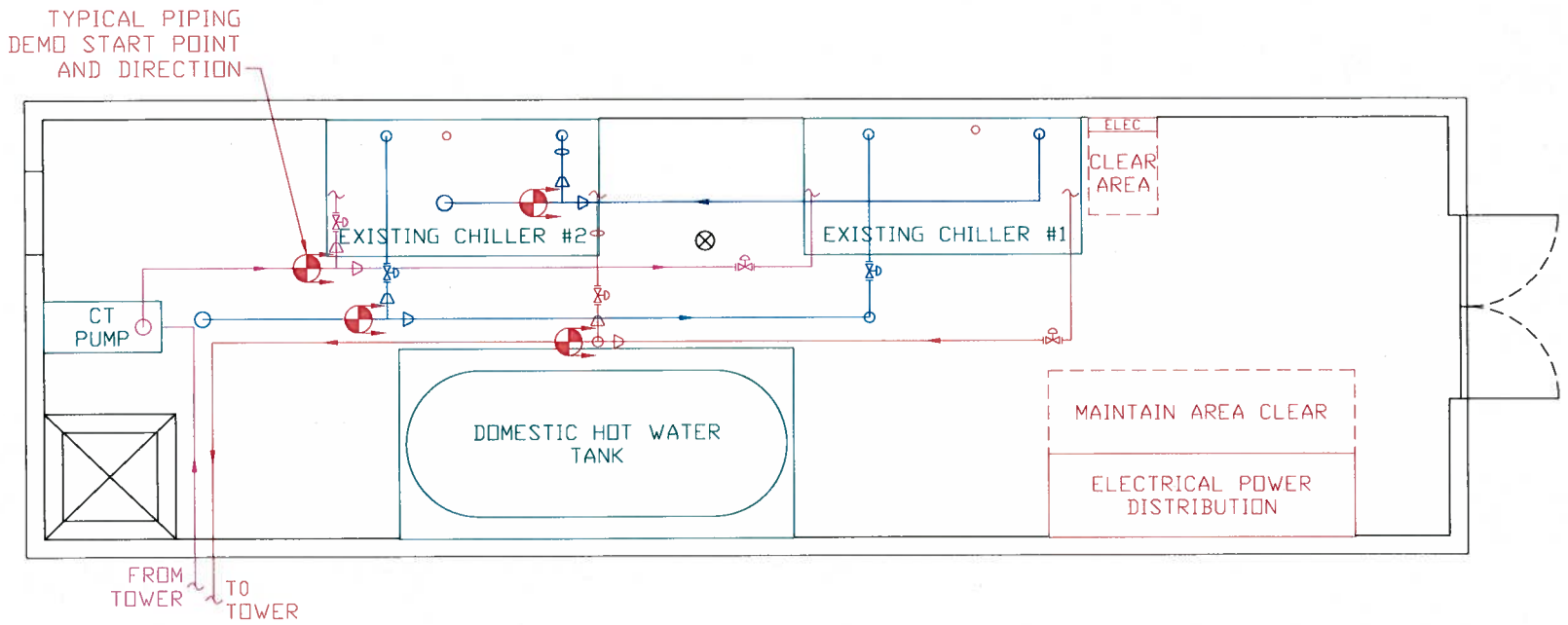
NOTICE:-THIS DRAWING IS THE PROPERTY OF SENGER ENGINEERING, INC., AND IS LOANED SUBJECT TO RETURN ON DEMAND AND IS SUBJECT TO THE CONDITION THAT IT IS NOT TO BE REPRODUCED OR COPIED OR USED IN ANY WAY DETRIMENTAL TO THE INTEREST OF SENGER ENGINEERING, INC. NO INFORMATION MAY BE TAKEN FROM THIS DRAWING TO MAKE DRAWINGS, PRINTS OR APPARATUS OR PARTS THEREOF EXCEPT WHERE PROVIDED BY SPECIFIC WRITTEN AGREEMENT WITH SENGER ENGINEERING, INC.

NOTES:

1. ALL DIMENSIONS ARE APPROXIMATE AND ARE TO BE VERIFIED BY INSTALLATION CONTRACTOR BEFORE STARTING FABRICATION.

	DRAWN: RANDY SENGER 04FEB13	UNLESS OTHERWISE NOTED: ALL DIMENSIONS IN INCHES FINISH ALL SURFACES 63 BREAK ALL CORNERS ⅛ ALL FILLETS ⅛ RADIUS DEBUR ALL HOLES ⅛	TOLERANCE UNLESS OTHERWISE NOTED: FRACTIONS ± 1/32 DECIMALS ± 0.005 ANGLES ± ½°	Senger Inc. PO BOX 115 MOUNT SIDNEY, VA (540) 248-1023 sengerengineering@verizon.net
SCALE: NONE	CHECKED:		TITLE: STAUNTON CITY SCHOOLS ROBERT E. LEE HIGH SCHOOL EXISTING COOLING TOWER PIPING	
SIZE: D	APPROVED:	DRAWING NUMBER: SCS-LHS-102		

REVISIONS					
LTR	DESCRIPTION	DATE	DRAWN	CHECK	APP



NOTICE:-THIS DRAWING IS THE PROPERTY OF SENGER ENGINEERING, INC., AND IS LOANED SUBJECT TO RETURN ON DEMAND AND IS SUBJECT TO THE CONDITION THAT IT IS NOT TO BE REPRODUCED OR COPIED OR USED IN ANY WAY DETRIMENTAL TO THE INTEREST OF SENGER ENGINEERING, INC. NO INFORMATION MAY BE TAKEN FROM THIS DRAWING TO MAKE DRAWINGS, PRINTS OR APPARATUS OR PARTS THEREOF EXCEPT WHERE PROVIDED BY SPECIFIC WRITTEN AGREEMENT WITH SENGER ENGINEERING, INC.

NOTES:

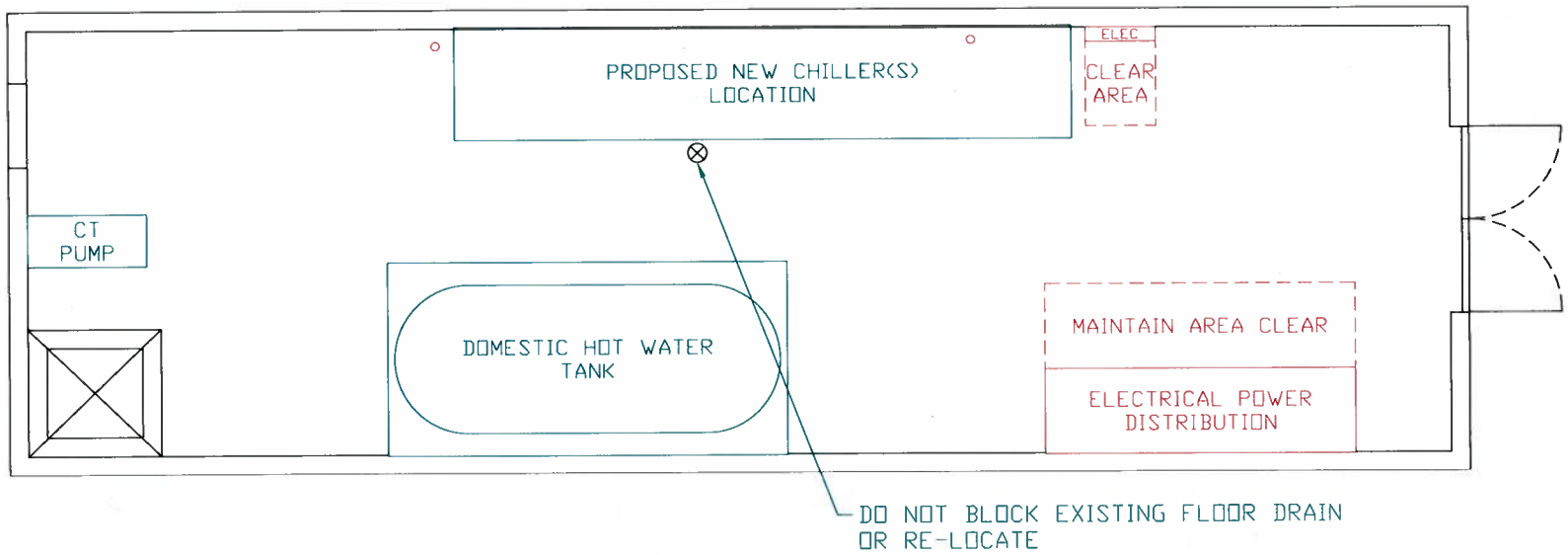
1. DEMO EXISTING PIPING AS SHOWN.

	DRAWN: RANDY SENGER 04FEB13	UNLESS OTHERWISE NOTED: ALL DIMENSIONS IN INCHES FINISH ALL SURFACES 63 BREAK ALL CORNERS ⅛ ALL FILLETS ⅛ RADIUS DEBUR ALL HOLES ⅛	TOLERANCE UNLESS OTHERWISE NOTED: FRACTIONS ± 1/32 DECIMALS ± 0.005 ANGLES ± 1°
SCALE: NONE	CHECKED:		
SIZE: D	APPROVED:	DRAWING NUMBER: SCS-LHS-103	

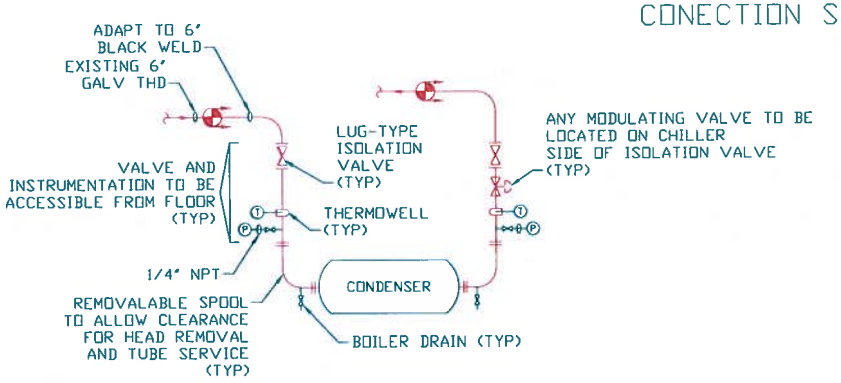
Senger Engineering Inc.
PO BOX 115
MOUNT SIDNEY, VA
(540) 248-1023
sengerengineering@verizon.net

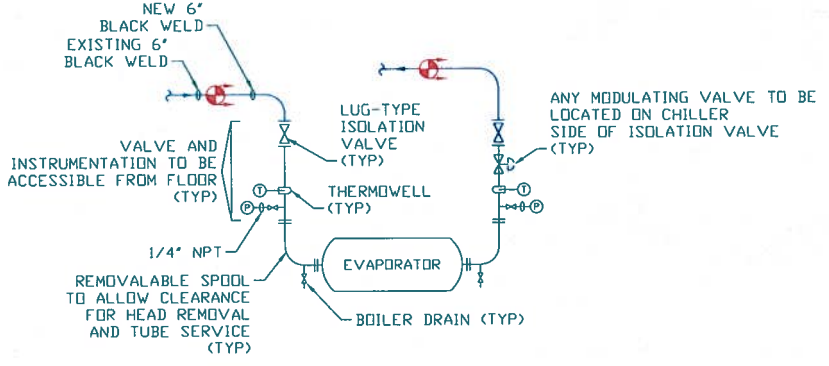
TITLE: STAUNTON CITY SCHOOLS
ROBERT E. LEE HIGH SCHOOL
DEMOLITION & REMOVAL

REVISIONS					
LTR	DESCRIPTION	DATE	DRAWN	CHECK	APP



TYPICAL NEW CHILLER CONECTION SCHEMATICS





NOTES:

1.

	DRAWN: RANDY SENGER 04FEB13	UNLESS OTHERWISE NOTED: ALL DIMENSIONS IN INCHES FINISH ALL SURFACES 63 BREAK ALL CORNERS .03 ALL FILLETS ± RADIUS DEBUR ALL HOLES ±	TOLERANCE UNLESS OTHERWISE NOTED: FRACTIONS ± 1/32 DECIMALS ± 0.005 ANGLES ± 1°	Senger Engineering Inc. PO BOX 115 MOUNT SIDNEY, VA (540) 248-1023 sengerengineering@verizon.net
SCALE: NONE	CHECKED:			TITLE: STAUNTON CITY SCHOOLS ROBERT E. LEE HIGH SCHOOL TYPICAL INSTALLATION DETAILS
SIZE: D	APPROVED:	DRAWING NUMBER: SCS-LHS-104		