



**CITY OF TORRINGTON**  
**INVITATION TO BID**

**BID #CSU-023-093015 DATA CLOSET COOLING SYSTEM UPGRADE**

**Bid opening:** September 30, 2015 **Time:** 11:00 A.M. **Location:** City Hall, 140 Main St., 206, Torrington, CT

Bid Bond or Certified Check required with bid: 5%

Performance Bond required if awarded bid: 100%

**MUST SUBMIT AN ORIGINAL AND 3 COPIES.**

The City of Torrington reserves the right to accept or reject any or all bids or any portion thereof, to waive technicalities, and to award the contract as will best serve the public interest.

Omit State and Federal Taxes.

All prices must be F.O.B.: Destination (Torrington) unless otherwise requested.

Dated in Torrington: September 14, 2015

Purchasing Agent \_\_\_\_\_  
Pennie Zucco

Item	Price
<b>DATA CLOSET COOLING SYSTEM UPGRADE LOCATED AT THE POLICE DEPARTMENT PER SPECIFICATIONS.</b>	<b>**SEE APPENDIX A PRICE SHEET**</b>

The Purchasing Agent is authorized to offer City based bidders that exceed the lowest bid by up to 6%, the opportunity to match the lowest bid. A City based bidder within the 6% differential who agrees to accept the amount of the lowest bid will be awarded the bid. When multiple City based bidders agree to accept the amount of the low bid then the City based bidders will be invited to submit a new bid, not to exceed the low bid. The bid will then be awarded to the lowest responsive, responsible bidder.

Bid Submitted By: \_\_\_\_\_  
Name of Company \_\_\_\_\_  
Address \_\_\_\_\_

Signature \_\_\_\_\_

\_\_\_\_\_ Title \_\_\_\_\_  
Phone \_\_\_\_\_ Fax \_\_\_\_\_

Date \_\_\_\_\_

Delivery Date \_\_\_\_\_  
E-mail address \_\_\_\_\_

Web Page \_\_\_\_\_

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## **INSTRUCTION TO BIDDERS**

Sealed bids will be received by the Purchasing Agent, Room 206, 140 Main St., Torrington, CT 06790 until the time and date specified on the cover sheet and opened thereafter in the Purchasing Department, Room 206. Bids received later than the date and time specified will not be accepted. In the event of the closure of City Hall, proposals will be opened on the following business day that City Hall is opened. Amendments to or withdrawal of any section of the submitted bid received later than the time & date set for the bid opening will not be considered. Bid proposals must remain in effect for a minimum of 30 days unless otherwise noted elsewhere in the bid specifications.

**BID DOCUMENTS:** are available upon receipt of this invitation (if not attached) over the Internet at the City's web site: [www.torringtonct.org](http://www.torringtonct.org) UNDER Purchasing Department, select "Open Bids". Adobe Acrobat reader is required to view this document. If you do not have this software you may download it for free from Adobe at <http://www.adobe.com>. Businesses without internet access may contact the Purchasing Department at 860-489-2224 for a copy of the bid documents.

**BID BONDS:** shall be in the amount of 5% of the total bid made out in favor of the City of Torrington and issued by a Surety company acceptable to the City of Torrington must accompany each bid. A certified check, cashier's check, Treasurer's check, or money order in the same amount may be submitted in lieu of the bid bond. Bids submitted without Certified Check or Bid Bond **will not** be accepted. The City of Torrington will not be held liable for the accrual of interest on any check held by the city in conjunction with this bid. All checks or bid bonds will be refunded to the unsuccessful bidders after award of the bid by the City Council. The deposit check or Bid Bond of the successful bidder will be held in escrow until such time as the city determines that the bidder has or will meet their obligations as stated by the bid. If the bidder fails or refuses within a reasonable time after due notice that the contract has been awarded to him, to execute the same, an amount representing a loss to the city by reason of such failure shall be retained and paid into the city treasury.

**REPLIES:** whether bid or no bid, submittal must have the bid number clearly identified on the outside of the envelope. Bidders not marking the envelopes with the Bid number and date/time of opening on the envelope will have no recourse against the City of Torrington or its employees. Such bidders run the risk of the bid being opened prior to the scheduled Bid Opening time. Once opened such bids are public record. Any alleged oral agreement made by a bidder or contractor with any agency or employee of the City of Torrington will be disregarded.

**FREIGHT:** Prices quoted shall be net delivery **F.O.B. Torrington, CT.** All bid prices must include prepaid delivery, assembly, and/or installation (ready for operation and/or use) of all equipment and/or materials to the individual location(s) as designated by the Purchasing Agent. All bid prices are to be submitted on the sheets provided on this bid. Quantities and pricing are to be listed in accordance with these sheets.

**QUESTIONS:** Request for interpretation of any portion of the bid may be made in writing to the Purchasing Agent: Voice 860/489-2225, Fax 860/489-2547 and email: [pennie\\_zucco@torringtonct.org](mailto:pennie_zucco@torringtonct.org). All bidders questions pertaining to the contract specifications and plans under this contract shall be placed in writing.

Any Fax or email shall be followed up with a telephone call to verify receipt. All replies will be in writing and a copy of any such inquiry and advice (if deemed vital to the bid by the Purchasing Agent) will be made available to each prospective bidder by addendum. Bidders should check the web site for addendums/updates 48 hours prior to the bid opening.

In the event of receipt of identical bids as to offerings, delivery, service, content, price, etc., the bid will be awarded in accordance with the information contained in the bid document, based on first received as to date and time of receipt of the bid.

**EXPARTE COMMUNICATION:** Please note that to insure the proper and fair evaluation of a bid, the City of Torrington prohibits exparte communication (i.e., unsolicited) initiated by the Bidder to a City Official or Employee evaluating or considering the bids prior to the time a bid decision has been made. Communication between Bidder and the City will be directed in writing to the Purchasing Agent only. The Purchasing Agent will obtain the information or clarification needed. Exparte communication may be grounds for disqualifying the offending Bidder from consideration or award of the bid and repeat offenders may be disqualified from future bids.

**NON-COLLUSION STATEMENTS:** In order for bids to be considered, a non-collusive statement must be submitted with the bid. A sample non-collusive bid statement is attached. Bidders may elect to submit their own notarized non-collusion statement. **NOTE:** Documents must be signed before and sealed by a Notary Public. Only documents bearing a notary seal will be accepted.

**CONDITIONAL, QUALIFIED OR NON-RESPONSIVE BIDS/PROPOSALS:** All bids/proposals shall be submitted in the form and manner as indicated by the bid documents and bid forms. Any proposal which is not submitted in the form and manner indicated by the bid documents or which contains information, statements, conditions, or qualifications which place conditions or qualifications on the proposal submittal for purposes of making an award, or which alter any proposal terms, conditions, specifications, or forms, which has not been previously approved by written addendum from the Purchasing Agent, or which does not meet legal requirements, shall be declared as a qualified, conditional, or non-responsive proposal and shall be rejected without further consideration. Any proposal response that does not fully respond to and comply with all

detailed specifications or requests for information including execution of proposal forms, may be declared "non-responsive" and recommended for rejection. The City of Torrington shall not be responsible for any errors or omissions of the respondent.

**UNBALANCED BIDS AND/OR EXCESSIVE LINE ITEM PRICES:** The City reserves the right to reject any bids in which unit prices, in the sole opinion of the City, are unbalanced. In addition, where the City has decided to make an award, it further reserves the right to non-utilize a particular line item that in the sole opinion of the City is excessively priced, and reserves the right to obtain that item from another source.

**CONTRACT:** A response to an Invitation To Bid is an offer to contract with the City of Torrington based upon the terms, conditions, and specifications contained in the City's ITB. Bids do not become contracts unless and until executed by the City, eliminating a formal signing of a separate contract. For that reason, all of the terms and conditions of the contract are contained in the ITB, unless any of the terms and conditions are modified by an ITB Amendment, a Contract Amendment, or by mutually agreed terms and conditions in the contract documents.

**TAXES:** Omit all State and Federal taxes from the bid. The City of Torrington is exempt from the payment of taxes imposed by Federal government and/or the State of Connecticut.

**OWNERSHIP OF DOCUMENTS:** All documents, including drawings, plans, specifications, videotapes, or other documents or maps prepared by a contractor pursuant to any agreement arising from this bid shall become the property of the City of Torrington upon completion of the project or any termination of the project prior to the completion of the project.

**LEGALITY:** All bid offers for commodities, work, materials, or equipment hereunder shall comply in every respect with the laws, specifications and requirements of the State of Connecticut and the Federal government. Contractor will comply with the provisions of the Connecticut Fair Employment Practices Law.

**LANGUAGE DISPUTES:** Any disputes over the interpretation and/or meaning of any individual terms, conditions, and/or language within this Request for Bid/Proposal document shall be resolved by and at the sole discretion of the City Purchasing Agent in a manner that is in the best interest of, and best advantage to, the City of Torrington, provided any such interpretation shall be reasonable. In the event that an individual term, condition, and/or language/wording is determined at any time, including after award, by the City Purchasing Agent to be "not applicable at all" to this contract, then the term, condition, and or language/wording may be disregarded, even though an addendum is not issued. However, if the Purchasing Agent determines that the term, condition, and/or language/wording "is applicable in part", then the term, condition, and/or language/wording will apply to the degree applicable, even though an addendum is not issued.

**INDEMNIFICATION:** The Contractor shall save the City of Torrington, its agents or employees, harmless from liability of any kind for all claims of labor payments and materials furnished for this work, and for use of any copyrighted or uncopyrighted composition, secret process patented or unpatented invention, article or application furnished or used in the performance of the contract of which the Contractor is not the patentee, assignee, or licensee. To the fullest extent permitted by law, The bidder shall indemnify and hold harmless the Municipality, its officers, agents, servants and employees from and against all liability, claims, damages, losses and expenses including attorney's fees arising out of or resulting from the performance or lack of performance of the work, provided that any such liability, claim, damage, loss or expense is (a) attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property, including the loss of use resulting hereto from and (b) is caused in whole or in part by any negligent act or omission of the Bidder, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them are liable.

In any and all claims against the Municipality, its officers, agents, servants and employees by any employee of the Bidder, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for those acts any of them may be liable, the indemnification obligation under these sections to be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Bidder or any Subcontractor under Worker's Compensation Acts, Disability Benefit Acts or other employee benefit acts.

The successful bidder, vendor, and/or contractor must protect all property of the City of Torrington (i.e. all floors, furniture, grass, land, etc.) from injury or other damage. Any damage so caused must be repaired by contractor/vendor at his/her own expense. At the completion of work, the vendor and/or contractor must remove from the premises all surplus materials and all debris created by same. The premises must be left in a broom-clean and finished condition acceptable to the owner or its agents. Successful bidder will furnish adequate protection from damage for all work and to repair damage of any kind; for which he or his workers are responsible, to the premises or equipment to his own work or to the work of other contractors.

**DEFAULT:** It shall be understood that a bidder supplying equipment and/or supplies will be considered to be in default if/when they have not delivered the item(s) within the time constraints listed in this document or subsequent purchase orders and/or contract. Bidders providing a service and/or construction will be considered to be in default if/when they have failed to meet the completion date set forth in this document or its subsequent contract and/ or purchase orders and/ or they have ceased work on the project for a period of fifteen (15) working days, cumulative or consecutive.

**SUSPENSION AND DEBARMENT:** The Purchasing Agent may suspend or debar the right of a vendor to be included on

the vendor list and has the authority to reject any bid or response from any suspended or debarred vendors.

**Suspension:** A vendor may be suspended based on the following:

- 1) A vendor defaults or fails to fully comply with the conditions, specifications, or terms of a Bid, Quotation, Proposal or Contract with the City of Torrington.
- 2) A vendor commits any fraud or misrepresentation in connection with a Bid, Quotation, Proposal, or Contract with the City of Torrington.
- 3) A vendor is charged by a court with the commission of a criminal offense as incident to obtaining or attempting to obtain a public or private contract or sub-contract, or in the performance of such contract or sub-contract
- 4) A vendor is charged by a court with the following: embezzlement, theft, forgery, bribery, falsification or destruction of records, receiving stolen property, or any other offense indicating a lack of business integrity or business honesty which currently, seriously, and directly affects responsibility as a City contractor. If charges are dismissed or the vendor is found not guilty, the suspension shall be lifted automatically upon written notification and proof of final court disposition provided by the vendor to the City of Torrington.
- 5) A vendor becomes insolvent, has proceedings in bankruptcy instituted against it or, compounds its debts or assigns over its estate or effects for payment thereof, or has a receiver to trustee appointed over its property.
- 6) A vendor's commission of any act or omission to perform act is grounds for debarment.
- 7) A vendor violates the ethical standards set forth in local, state, or federal law.
- 8) Any other cause the Purchasing Agent determines to be so serious and compelling as to materially and adversely affect responsibility of a vendor as a City contractor, including but not limited to suspension by another government entity

**Debarment:** A vendor may be permanently debarred for the following:

- 1) Default or failure to fully comply with the conditions, specifications, drawings, or terms of a bid, proposal, or contract with the City of Torrington twice in any three-year period.
- 2) Conviction of or judgment obtained in a court for commission of those offenses in connection with the vendor's commercial enterprise stated sections 3) or 4) of suspension section listed above. If the conviction is reversed through the appellate process, the debarment shall be removed upon written notification and proof of final Court disposition from the vendor to the City of Torrington.

**TRADE NAME REFERENCES:** Any and all references to trade names, types, styles, model numbers, stock numbers or catalogs are intended to be descriptive only and not restrictive. The intention is to indicate to bidders the type and quality of the articles and or materials that will be satisfactory. When reviewing the information, it is the responsibility of the prospective bidder to inform the City of Torrington of any discrepancy that is found (i.e. number listed does not fit item description) Bids received on other makes or models with reference to other catalogs will be considered. The bidder is to clearly state in his bid exactly what he intends to furnish and to furnish with his bid a cut or illustration or other descriptive matter that will clearly indicate and give specification as to the product he/she proposes to furnish. Where a bid is offered on an item other than the trade standard used in the specification the item should be identified on the bid form by entering the MAKE, TRADE NAME AND MODEL NUMBER. It is understood that any substitute and/or alternate that might be offered are guaranteed by the bidder to be of equal or better quality than is referenced in the bid. The item(s) must be equivalent as to function, basic design, type and quality of material, method of construction and any required dimensions. It shall be further understood that during original as well as subsequent shipments spot checks will be performed to insure that the items received are in fact the items offered in the bid. When received, should items/materials prove to be different from what was bid in any way, the bidder agrees to the return of the items and agrees to supply correct items (per bid specifications) at the bidders expense. In the event this return action is required, it is understood the bidder may be subject to removal from the city's approved bidder's list. Bidders are cautioned that surplus, seconds, factory rejects, floor samples, close outs or distressed items are not acceptable and shipments of substitutions, defective or shop-worn equipment will be returned for a full refund at the vendor's expense.

**QUANTITY:** The quantities and/or materials listed in the specifications/bid sheets may be increased or decreased by the City of Torrington or its designated representative based on actual need at the time the purchase orders are placed.

**QUALITY:** The City of Torrington reserves the right to reject any proposal in whole or in part offering equipment and/or materials and/or services that in its or its agent's opinion does not meet the quality standards desired. Such decision is final and not subject to further recourse by the bidder.

**SAMPLES:** forwarded by the bidder will be returned to the bidder at his request and expense. Requests for return of samples must be submitted in writing at the time the sample is given to the City of Torrington or its representative. Samples not returned to the bidder will be disposed of at the discretion of the City of Torrington or its designated representative. Large pieces of equipment submitted for evaluation and inspection are to be picked up by the bidder within 30 days of the bid opening date. Items remaining after 30 days will be discarded.

**AWARD:** It is the intent to award this bid in its entirety to one bidder, however, the City reserves the right to award the bid line item by line item if it is deemed in its best interest to do so. In addition, bidders are advised that should budgetary constraints dictate, part, and/or all the items in this bid may be rejected. This decision shall be considered final and not subject to recourse by the bidder.

In determining the lowest or highest responsible bidder, the City reserves the right to consider, in addition to price, the compatibility, quality, cost of maintenance and availability of parts, experience and/or past performance of the bidder, sufficiency of the financial resources of the bidder as relates to the offerings as well as the ability of the bidder to provide future maintenance and service.

Documents previously submitted to the city of Torrington will not be considered as satisfying submission requirements for this bid.

No bidder can claim any contract rights by virtue of bidding alone. Awarding of the contract means actual written notice by letter and a properly executed purchase order to the bidder or bidders to whom the bid has been awarded.

**OPTION TO RENEW:** This contract may be extended for four (4) additional one (1) year periods, provided all terms and conditions remain in full force and effect except for the contract period being extended. This option, if exercised, is to be executed in the form of a letter of agreement, to be issued no later than 60 days prior to the expiration of the then current contract period. This option to renew requires the mutual agreement of both parties. Refusal by either party to exercise this option to extend, will cause this contract to expire on the original or mutually agreed upon date. The total period of this contract, including all extensions as a result of exercising this option, will not exceed a maximum combined period of five (5) years.

#### **BONDS:**

**Performance Bond:** The Contractor, when awarded the Bid, must submit within 10 days of the bid award, and before beginning the work or signing a contract, a Performance Bond amounting to one hundred percent (100%) of the total amount of the bid. Said performance bond must be in favor of the City of Torrington and executed by a surety company authorized to do business in the State of Connecticut. The City of Torrington reserves the right to retain the Bid Bond or Certified Check on bids below \$25,000.00 as a Performance Bond. On bids of \$25,000.00 or more the Performance Bond may be furnished in the following manner: Performance Bond, Surety Bond, Certified Check or Bank Check.

**Maintenance Bond:** The contractor, upon signing a contract and before beginning the work must submit to the Purchasing Agent a Maintenance Bond to guarantee that if defects in either labor or materials becomes evident within one year after completion and acceptance of work will be fixed at no cost to the City of Torrington. The maintenance bond may be included as a portion of the Performance bond or as a separate bond. If it is issued as a separate bond said maintenance bond must be in favor of the City of Torrington and issued by a surety company licensed and authorized to do business in the State of Connecticut.

**Labor and Material Bonds:** Per Section 49-41 of the Conn. General Statutes, on Public Works project where the estimate is in excess of \$25,000.00, a labor (payment) and material bond must be furnished to the City. Said bonds must be filed with the Purchasing Agent prior to the commencement of work.

**Consent for Release of Final Payment:** AIA Document G707 & G706, or equivalent, must be signed and returned by the Surety Company before final payment will be released to the contractor.

#### **INSURANCE:**

**Certificate of Insurance:** All insurers shall purchase insurance from an insurance company or companies rated A-V11 or better by A.M. Best Companies lawfully authorized to do business in the State of Connecticut. The insurance provisions set forth below are minimum requirements. All insurance policies must include a Waiver of Subrogation whereby the insured waives its right to subrogate against the City, its subsidiaries, employees, volunteers, directors and officers. In the event the Contractor/City Contract (Project Requirements) specifies additional coverage's and/or amounts of coverage then those set forth below and pertaining to the Contractor's work, then the Contractor shall provide the coverage's and/or amounts in accordance with the Project Requirements. Proof of proper insurance coverage, Workers Compensation Insurance, Liability and Property damage, and Vehicle Insurance shall be filed with the City of Torrington Purchasing Agent within 10 days after the award of the bid. The Certificate of Insurance must name the City of Torrington, 140 Main St., Torrington, CT, its subsidiaries, employees, volunteers, directors & officers as the "Additional Insured" and filed with the Purchasing Agent prior to commencement of work. Renewal Certificates of Insurance must be mailed to the Purchasing Agent 10 days prior to the expiration of the required coverage. Such insurance will protect the Contractor from claims which may arise out of or result from the Contractor's operations under the Subcontract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Sub-Contractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable. Contractor, and any Sub-subcontractors engaged by the Contractor, shall obtain the following insurance:

**Workers' Compensation Insurance:** For all work performed pursuant to this contract, Contractor shall maintain Workers' Compensation Insurance, including coverage for all executive officers, sole proprietors and partners, and other similar employee benefits in the amount required by all applicable statutes, law, regulations or acts. Such Workers' Compensation Insurance must list on Item 3A of the policy Information Page "Part One of the policy applies to the Workers' Compensation Law of the State Connecticut" and provide a Waiver of Subrogation endorsement (NCCI form WC 00 03 13 or its equivalent) that prohibits the insurance company from enforcing subrogation and recovery rights against the City, its subsidiaries, employees, volunteers, directors and officers. If work is to be performed over or adjacent to navigable

waterways, the Workers' Compensation Insurance shall contain the United States Longshore and Harbor Workers' Act Endorsement (NCCI Form WC 00 01 06 or its equivalent). In case any class of employees or subcontractors is engaged in hazardous work under the contract at the site of the work is not protected under the Workman's Compensation statute, the contractor shall provide Workman's Compensation Insurance for the protection of employees not otherwise protected.

**Liability Insurance:** The Contractor shall take out and maintain for the life of the contract, adequate public liability insurance insuring against liability to persons not employed by him in an amount of not less than \$1,000,000.00 for injuries, wrongful death to any one person and subject to the limit for each person in an amount of not less than \$2,000,000.00 on account of one accident and property damage insurance in an amount of not less than \$1,000,000.00.

**Vehicle Insurance:** The Contractor shall take out and maintain for the life of the contract, adequate automotive/truck or other vehicle insurance with minimum coverage of \$1,000,000.00 each for both liability and under insured and uninsured motorist as well as any other coverage required by the State of Connecticut or requested by an official of the City of Torrington as relates to the contract.

**Additional Security:** The City of Torrington reserves the right to require successful bidders to enter into and such security arrangements as are deemed necessary to protect the City of Torrington, its property and goods.

**PERMITS:** The successful bidder agrees to obtain all work/building permits as might be required. The cost of obtaining such permits is the responsibility of the bidder. The City of Torrington reserves the right to waive local permit fees. In addition, it shall be understood that where property lines are to be considered, bidders are to verify said lines and measurements with proper City Officials prior to commencement of work. It is to be understood that any/all specifications and/or plans or drawings contained in or developed as a result of the bid process are and shall be presented subject to the approval of the City of Torrington planning, zoning and building officials and that awards made prior to said approval are subject to cancellation.

**PREVAILING WAGE:** When the State of Connecticut Prevailing Wage Rate is applicable to the bid, the successful bidder must submit a Certified Payroll Record prior to any request and/or invoice for payment.

**CITIZENSHIP:** Each employee of the Contractor shall be a citizen of the United States or an alien who has been lawfully admitted for permanent residence as evidenced by an Alien Registration Receipt Card. The Contractor agrees not to employ any person undergoing sentence of imprisonment except as provided by Public Law 89-176, September 10, 1965, (18 USC 4082)(c)(2).

**SAFETY:**

**Machine and/or Equipment Hazard Assessment and Safety Training:** Upon delivery of machines and/or equipment, suppliers are required to provide to the end-user employees, at no additional charge, a training session that will emphasize hazard awareness and assessment and the safe use of such machinery/equipment.

**Occupational Safety and Health Act of 1970:** Seller shall warrant that the machinery, equipment or other materials covered hereby shall upon delivery to the City of Torrington, be in compliance with the standards required by said Act and any updates as pertain to or reference said Act as well as the standards required by comparable State and local laws, if any, for such machinery, equipment or other materials in effect at the time of delivery.

**Machines and/or Equipment Lockout/Tagout:** In an effort to comply with OSHA's final rule on the control of hazardous energy sources, vendors must warrant that any and all machines and/or equipment as is covered under this bid will be supplied and/or installed equipped with lockout/tagout devices as prescribed by OSHA.

**Toxic Substance Control Act (PL94-469):** Seller warrants that each and every chemical substance constituting or contained in the products sold or otherwise transferred to the City of Torrington under this bid and subsequent purchase orders is not on the list of prohibited chemical substances compiled and published by the Administrator of the Environmental Protection Agency pursuant to Act PL94-469 and are otherwise in compliance with said Act.

**Hazardous Materials:** Any materials required by this bid and subsequent purchase orders that are hazardous under federal, state, or local statute, ordinance, regulation, or agency order will be packaged, labeled, marked and shipped by the seller to comply with all federal, state and local regulations then in effect including but limited to the provisions of the Hazardous Materials Transportation Act and Regulations promulgated thereunder and will further comply with any special requirements and any policies and procedures of the City of Torrington relating to the purchase of hazardous materials as might be noted on subsequent purchase orders or otherwise communicated to seller in writing.

**Material Safety Data Sheets:** Shall be provided by the Seller upon delivery to the City of Torrington of any goods having constituents listed in the following references - OSHA 1910, ACHIG Current Threshold Values, DOT HazMat Table 49, IARC Carcinogen List, National Toxicology Program Carcinogen List, and/or Radioactive Materials. These Material Safety Data Sheets must be consistent with and include information required by the OSHA Hazard Communication Standard published as 29 CFR 1910.1200, as the same may be amended or supplemented from time to time.

**Asbestos:** Bidders are advised that asbestos-containing material may be located in the boiler rooms, pipe tunnels, storage areas and various portions of City buildings. Before proceeding on any contractual work on City buildings or their interiors, it is mandatory that bidders familiarize themselves with the asbestos-containing material and that said material be considered as a health hazard and all precautionary measures according to the Ahera Rules & Regulations be observed. It is the bidder's responsibility to notify all employees and/or subcontractors of this notification.

**PREVAILING WAGE:** When the State of Connecticut Prevailing Wage Rate is applicable to the bid, the successful bidder must submit a Certified Payroll Record prior to any request and/or invoice for payment.

**CITIZENSHIP:** Each employee of the Contractor shall be a citizen of the United States or an alien who has been lawfully admitted for permanent residence as evidenced by an Alien Registration Receipt Card. The Contractor agrees not to employ any person-undergoing sentence of imprisonment except as provided by Public Law 89-176, September 10, 1965, (18 USC 4082)(c)(2).

**SUB-CONTRACTORS:** The successful bidder shall not employ any subcontractor to fulfill any of the duties herein specified without express, prior written approval of the City of Torrington or its designated agent.

**EEO:** The successful bidder shall provide any/all additionally required, affirmative action statements, fair employment plans and non-discrimination programs and statement as might be required by the City of Torrington. In connection with the execution of this bid, subsequent purchase orders and/or contracts, the seller shall not discriminate against any employee or applicant for employment because of age, race, religion, color, sex or national origin. Bidders must comply with all rules & regulations of the Department of Labor with regard to Equal Employment Opportunities as pertains to municipalities.

**TERMINATION OF CONTRACT:** Any contract entered into by the City and the successful bidder shall provide that the City may terminate the contract upon thirty (30) day notice to the bidder.

**The City of Torrington reserves the right to award or reject any or all bids, or any portion thereof, to waive technicalities, to award the contract to a bidder other than the lowest bid and to award the bid and/or contracts to one or more bidders submitting essentially identical proposals and, that in the city's judgment, will best serve the public interest.**

The terms and conditions of these "Instructions To Bidders" are made a part this bid.

**SAMPLE FORM**

**Bid #** \_\_\_\_\_

**NON-COLLUSION AFFIDAVIT**

STATE OF \_\_\_\_\_ COUNTY OF \_\_\_\_\_

I, \_\_\_\_\_, being first duly sworn, deposes and says that:

1. I am \_\_\_\_\_ of \_\_\_\_\_, the Bidder that has submitted the attached Bid for " \_\_\_\_\_":
2. I am fully informed respecting the preparation and contents of the attached Bid and of all pertinent circumstances respecting such bid;
3. Such Bid is genuine and is not a collusive or sham Bid;
4. Neither the said Bidder nor any of its officers, partners, owners, agents, representatives, employees or parties of interest, including this affiant, has in any way colluded, conspired, connived or agreed directly or indirectly with any other Bidder, firm or person to submit a collusive or sham Bid in connection with such Contract, for which the attached Bid has been submitted nor has it in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other Bidder, firm or person to fix the price or prices in the attached Bid or of any other Bidder, or to fix any overhead, profit or cost element of the Bid price or the price of any Bidder, or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against the City of Torrington or any person interested in the proposed Contract; and
5. The price or prices quoted in the attached Bid are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Bidder or any of it agents, representatives, owners, employees, or parties in interest, including this affiant.

(Printed) \_\_\_\_\_

(Signed) \_\_\_\_\_

(Title) \_\_\_\_\_

Subscribed and sworn to before this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

\_\_\_\_\_  
Notary Public Printed

\_\_\_\_\_  
Notary Public Signature

My Commission Expires \_\_\_\_\_

(Notary Seal)

**NOTE:** Documents must be signed before and sealed by a Notary Public. Only documents bearing a notary seal will be accepted.



**SAMPLE FORM**

**BID # \_\_\_\_\_**  
**CONSENT OF SURETY COMPANY**  
**TO RELEASE FINAL PAYMENT**

- City
- Architect
- Contractor
- Surety
- Other

PROJECT/BID NUMBER:

TO: City of Torrington  
Attn: Purchasing Agent  
140 Main Street  
Torrington, CT 06790

CONTRACTOR: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

In accordance with the provisions of the Contract between the City of Torrington and the Contractor as indicated above, the (insert name & address of Surety Co. ) \_\_\_\_\_, SURETY COMPANY on bond of (insert name & address of Contractor) \_\_\_\_\_, CONTRACTOR, hereby approves of the final payment to the Contractor, and agrees that final payment to the Contractor shall not relieve the Surety Company of any of its obligations to the CITY OF TORRINGTON as set forth in the Surety Company's bond.

Subscribed and sworn to before this  
\_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

\_\_\_\_\_

Notary Public

My Commission Expires \_\_\_\_\_

\_\_\_\_\_  
Surety Company

\_\_\_\_\_  
Authorized Representative's Signature

\_\_\_\_\_  
Title

(Notary Seal)

**NOTE:** Documents must be signed before and sealed by a Notary Public. Only documents bearing a notary seal will be accepted.



**INVITATION TO BID**  
**DATA CLOSET COOLING SYSTEM UPGRADE**  
**CSU-023-093015**

**Project Overview**

The City of Torrington is accepting sealed bids from licensed HVAC contractor(s) to furnish all labor, materials, tools, equipment, vehicles, and superintendence for the installation of a new cooling system in the Data Room located in the basement level of the Torrington Police Department, located at 576 Main St, Torrington, CT 06790. **ALSO INCLUDED** is the disposal of all waste materials by the awarded contractor. The City has hired the firm of vanZelm Engineers, located in Farmington, CT for the design of the new cooling system.

The project includes the installation of a new split system unit, along with reconfiguration work related to the existing cooling system.

One original and three (3) copies shall be placed in a sealed envelope and clearly marked “**CSU-023-093015, DATA CLOSET COOLING SYSTEM UPGRADE.**” Proposals will be received at the office of the Purchasing Agent, City of Torrington, 140 Main Street, Room 206, Torrington, CT, until **September 30, 2015 by 11:00 A.M.** Proposals received later than date and time specified will not be accepted. No fax or e-mail Bids will be accepted. In the event of the closure of City Hall, proposals will be opened on the following business day that City Hall is opened. Contractors mailing proposals should allow for normal delivery time to ensure timely receipt of their proposals. The City will not be liable for any costs incurred by vendor in the preparation or submission of a proposal.

Any alleged oral agreement made by a bidder or contractor with any agency or employee of the City of Torrington will be disregarded.

**Please Note:** Replacement of Unit **SHALL** include all costs associated with a turn-key installation; the work should also include any changes in refrigerant and evaporator coils and any other material and equipment that would be required when installing a new unit; Price also to include removal & disposal of old unit. **VENDOR MUST INCLUDE ALL PRODUCT INFORMATION OF PROPOSED REPLACEMENT SPLIT SYSTEM UNIT WITH SUBMITTED BID.**

**Scope of Work**

The scope of work includes, but is not limited to, the following items:

- Provide and install 3-ton split system, including indoor and outdoor unit, remote mounted controller, condensate pump and piping, refrigerant piping.
- Be permitted, installed, and tested in compliance with applicable Connecticut Building Code.

- Provide and install concrete pad for outdoor unit.
- Reconfigure and/or relocate supply and return ductwork located in the existing data room, relocate existing thermostat.
- Provide and install required conduit and wiring to new equipment, service disconnects, and control wiring.
- Removal and disposal of old unit and all demolition materials will be the responsibility of the awarded contractor at the contractors' expense.
- The work shall be executed in such a way as to avoid damage to adjacent structures or sidewalks, trees, and to avoid hazards to persons and property.
- Any damage as a result of the work performed during this project or misapplication shall be repaired or replaced as designated by the City of Torrington. Repairs or replacement will be made by the contractor at no expense to the City of Torrington.
- It is the contractor's responsibility to ensure that work being performed is in compliance with all local, state and federal codes. All owner's and OSHA safety rules shall be adhered to in the execution of this work.

**Sealed bid proposals are to include the following:**

1. Include all product information regarding proposed replacement equipment as outlined; All equipment shall be new and of current design and manufacture;
2. Include all Permit and Performance Bond filing fees.
3. Include pricing for extended warranty.
4. References - This list shall include; name of business or organization, contact name, address, phone/fax numbers and email.
5. Acknowledgement of any addenda's.
6. Timeline for completing project
7. All Required forms – non-collusion affidavit, bid bond, etc.

There will be a **highly recommended** pre-bid meeting on **Tuesday, September 22, 2015 at 10:00 AM** at Torrington Police Department, 576 Main Street, Torrington, CT 06790 to gain access to the project site to view location and set-up of unit.

Deadline for questions is **Thursday, September 24, 2015 by 4:00 PM**. Questions should be directed in writing to [Bill Donald, wdonald@vanzelm.com](mailto:wdonald@vanzelm.com). All information given by the City except by written addendum shall be informal and shall not be binding upon the City nor shall it furnish a basis for legal action by any Contractor or prospective Contractor against the City. Any Fax or email shall be followed up with a telephone call to verify receipt. Bidders should check the web site for addendas/updates 48 hours prior to the bid opening.

All permits, Performance Bonds and Insurance Policies are the responsibility of the Contractor and shall be supplied to the City Of Torrington prior to commencement of work.

Bidder shall provide, at its expense, technical information, graphs, charts, photographs, instruction guides, or other documentation to establish that the equipment offered fully complies with the specifications.

The price shall be guaranteed for ninety (90) days from the date the bid is opened. The total

price shall include all items listed in the specifications. Payment terms, if any, shall be submitted with the bid, but mandatory prepayment will cause the bid to be rejected. The completed system shall not be finally accepted or paid for until the system has been evaluated and tested to the full satisfaction of the Torrington Police Department.

**Design Drawings and Specifications**

The design drawings and specifications from vanZelm Engineers will provide the basis for the bid and are included as part of this Bid package. They are as follows:

<u>Drawing /Spec Number</u>	<u>Name</u>
ME-100	BASEMENT HVAC & ELECTRICAL PART PLAN HVAC SPECIFICATION ELECTRICAL SPECIFICATION

The bidder hereby acknowledges receipt of and agrees this submittal is based on the BID and the following addenda(s). Failure to indicate receipt of addenda may result in the bidder being rejected as nonresponsive.

ADDENDUM # \_\_\_\_\_ DATED \_\_\_\_\_    ADDENDUM # \_\_\_\_\_ DATED \_\_\_\_\_

ADDENDUM # \_\_\_\_\_ DATED \_\_\_\_\_    ADDENDUM # \_\_\_\_\_ DATED \_\_\_\_\_

ADDENDUM # \_\_\_\_\_ DATED \_\_\_\_\_    ADDENDUM # \_\_\_\_\_ DATED \_\_\_\_\_

(If additional addenda(s) are issued, attach a complete listing of these addenda when submitting this bid.)

**The City of Torrington reserves the right to reject any or all bids, to waive technicalities, to award the contract to a bidder other than the lowest bid, and to award the contract as it feels will best serve the public interest.**

## STATEMENT OF REFERENCES

List five references which demonstrate your ability to complete the work included with the scope of the specifications. Attach additional pages if required. The City reserves the right to contact each of the references listed for additional information regarding your company's qualifications.

### Reference No. 1

Customer Name/email: \_\_\_\_\_  
Contact Individual: \_\_\_\_\_ Phone No: \_\_\_\_\_  
Address: \_\_\_\_\_  
Contract Amount: \_\_\_\_\_ Year: \_\_\_\_\_  
Description of work done: \_\_\_\_\_

### Reference No. 2

Customer Name/email: \_\_\_\_\_  
Contact Individual: \_\_\_\_\_ Phone No: \_\_\_\_\_  
Address: \_\_\_\_\_  
Contract Amount: \_\_\_\_\_ Year: \_\_\_\_\_  
Description of work done: \_\_\_\_\_

### Reference No. 3

Customer Name/email: \_\_\_\_\_  
Contact Individual: \_\_\_\_\_ Phone No: \_\_\_\_\_  
Address: \_\_\_\_\_  
Contract Amount: \_\_\_\_\_ Year: \_\_\_\_\_  
Description of work done: \_\_\_\_\_

### Reference No. 4

Customer Name/email: \_\_\_\_\_  
Contact Individual: \_\_\_\_\_ Phone No: \_\_\_\_\_  
Address: \_\_\_\_\_  
Contract Amount: \_\_\_\_\_ Year: \_\_\_\_\_  
Description of work done: \_\_\_\_\_

### Reference No. 5

Customer Name/email: \_\_\_\_\_  
Contact Individual: \_\_\_\_\_ Phone No: \_\_\_\_\_  
Address: \_\_\_\_\_  
Contract Amount: \_\_\_\_\_ Year: \_\_\_\_\_  
Description of work done: \_\_\_\_\_

The City of Torrington reserves the right to award or reject any or all bids, or any portion thereof, to waive technicalities, to award the contract to a bidder other than the lowest bid and to award the bid and/or contracts to one or more bidders submitting essentially identical proposals and, that in the city's judgment, will best serve the public interest.

**APPENDIX A  
CITY OF TORRINGTON  
DATA CLOSET COOLING SYSTEM UPGRADE  
CSU-023-093015**

**Base Bid:**

**Base Bid** – Furnish and install one (1) new 3 ton Split System Unit and removal of old unit. Pricing should include Five (5) & One (1) year manufacturer warranty on split system unit.

**Please Note:** Replacement of Unit **SHALL** include all costs associated with a turn-key installation; the work should also include any changes in refrigerant and evaporator coils and any other material and equipment that would be required when installing a new unit; Price also to include removal & disposal of old unit. **VENDOR MUST INCLUDE ALL PRODUCT INFORMATION OF PROPOSED REPLACEMENT SPLIT SYSTEM UNIT WITH SUBMITTED BID.**

\$ \_\_\_\_\_

Timeline for completion of project

\_\_\_\_\_

**CITY OF TORRINGTON  
DATA CLOSET COOLING SYSTEM UPGRADE  
CSU-023-093015  
Acceptance of Terms of this Agreement**

Name of Proposer:

\_\_\_\_\_

Contact Person:

\_\_\_\_\_

Address:

\_\_\_\_\_

City/State/Zip:

\_\_\_\_\_

Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_

E-mail: \_\_\_\_\_

Authorized Signature \_\_\_\_\_ Title: \_\_\_\_\_

Name Printed: \_\_\_\_\_ Date: \_\_\_\_\_

It is agreed by the above signed proposer that the signature and submission of this proposal. Represents the proposer's acceptance of all terms, conditions, and requirements of the proposal specifications, and, if awarded, the proposal will represent the agreement between the parties.

The above signed has carefully examined the specifications and all other bidding documents related to the project, acquainted themselves with the site and all other conditions relevant to the work and made all evaluations and investigations necessary to fully understand any difficulties, which may be encounter in performing the work.

The proposer agrees that the cost of any work performed, materials furnished, services provided, or expenses incurred, which are not specifically delineated in the proposal documents, but which are incidental to the scope, intent, and completion of this contract, shall be deemed to have been included in the prices for the various items scheduled.

\_\_\_\_\_

## HVAC SPECIFICATION

### PART 1 - GENERAL

#### 1.1 GENERAL

- A. All work shall be done in strict accordance with all applicable Codes and Regulations of local and State Agencies and utility companies. This Contractor shall bear the cost of all fees, permits, licenses and taxes and any utility company charges in connection with the work. All equipment installed shall be UL listed.
- B. Prime Contractor shall be the HVAC Contractor who shall arrange and be responsible for all work in Contract Documents including any subcontracted work.

#### 1.2 SCOPE

- A. Provide a complete HVAC system and all other equipment as shown on the Drawings and herein specified, including but not limited to:
  - 1. System shall be complete in all respects, tested, accepted and ready to operate.

#### 1.3 SUBMITTALS

- A. Submit three (3) copies of manufacturer's drawings of the following to the Engineer for approval:
  - 1. Submit information on any other equipment to be used when requested by the Engineer.
  - 2. Submit three (3) copies of ductwork shop drawings showing clearances with structural members and major equipment of other trades.

#### 1.4 GUARANTEE

- A. Materials, equipment and workmanship shall have standard warranty against defects in material and workmanship. Any failure due to defective or improper material, equipment, workmanship or design shall be made good, forthwith, by and at the expense of the Contractor, including any damage done to areas, materials and other systems resulting from this failure. Guarantee period shall extend for one year from the Date of Acceptance.
- B. The HVAC Contractor shall provide a guarantee covering all material and workmanship for 1 year following the Date of Acceptance.



1.5 DEFINITION

- A. As used on Contract Documents, the term “to provide” shall mean “to furnish, install and connect completely in the specified or approved manner the item or material described.”

1.6 OPERATING AND MAINTENANCE INSTRUCTIONS

- A. Upon completion of the project, the HVAC Contractor shall fully instruct the Owner in the operation, adjustment and maintenance of all equipment and systems furnished.
- B. The HVAC Contractor shall provide the Owner with three (3) sets of complete maintenance and operating instructions, and technical data, in booklet form, of all equipment and devices furnished in the Contract.

1.7 CONTRACTOR’S INSPECTION

- A. Contract Drawings are diagrammatic and do NOT show every required fittings, etc. The Contractor shall familiarize himself with the existing site conditions, prior to submitting a bid, and shall include all equipment and accessories necessary for complete and operational systems.
- B. The HVAC Contractor shall examine the drawings and specifications of other trades to determine the extent of work. The HVAC Contractor shall visit the site and become familiar with the project and local conditions before submitting a Bid. Drawings are diagrammatic and indicate the general arrangement of systems and work included in the Contract. If so directed by the Engineer, the HVAC Contractor shall, without extra charge, make reasonable modifications in the layout to prevent conflict with those of other trades and for proper installation of work. The Contractor shall coordinate locations of equipment with all trades before starting construction. Any modifications to the equipment layout required for installation shall be performed at no additional cost to the Owner.

1.8 ARRANGEMENT OF WORK

- A. Work shall be coordinated between trades to prevent unnecessary interference. Work shall present a neat coordinated appearance. Install work as necessary to provide maximum possible headroom, adequate clearance and ready access for inspection, operation, safe maintenance and repair, and Code conformance. Where space appears inadequate, consult the Owner before proceeding with installation.

1.9 INSURANCE

- A. Furnish insurance certificates required by the Owner.

## 1.10 PERMITS, LAWS, ORDINANCES, CODES AND STANDARDS

- A. Obtain and pay for permits, inspections, licenses and certificates required. Work of this Contract shall meet current accepted editions of the State Building Code, State Fire Safety Code and other laws, rules and regulations of local, State and Federal authorities including, but not limited to: National Fire Protection Association #13; National Fire Protection Association #90A; National Fire Protection Association #90B; National Fire Protection Association #99; International Plumbing Code; International Mechanical Code; National Fire Protection Association #70 (National Electrical Code); and local utility company requirements. Pay utility company backcharges. Equipment, materials and components listed UL Product Directories, shall bear UL labels.

## 1.11 FILTERS AND STRAINERS

- A. Any equipment which operates with filters or strainers shall have filters and strainers installed at all times.

## 1.12 WORK BY OTHERS

- A. The HVAC Contractor shall install all motors provided under the HVAC Contract ready for wiring by the Electrical Contractor and shall furnish and deliver to the Electrical Contractor wiring diagrams for all motor starters for installation and wiring. The HVAC Contractor shall furnish motor starters, relays and all temperature control equipment to the Electrical Contractor for installation and wiring. The HVAC Contractor shall perform all excavation, backfill, chases, openings, cutting, patching and finish work.

## 1.13 FIELD MEASUREMENTS

- A. The HVAC Contractor shall verify in the field all measurements necessary for the work. Verify thermostat locations with the Owner before installation.
- B. The HVAC Contractor shall coordinate supply and return ductwork locations with structure, conduits and piping of other trades.

## 1.14 WORKMANSHIP

- A. Equipment and materials shall be new, of first quality, selected and arranged to fit properly into spaces indicated. Install equipment and materials in accordance with manufacturer's recommendations.

## 1.15 COORDINATION WITH OWNER

- A. All work shall be scheduled with the Owner. Interruptions in the Owner's access to the site shall be subject to Owner limitations of date and duration.

1.16 OPERATION OF SERVICES AND UTILITIES

- A. Shutdown of existing services and utilities shall, without exception, be coordinated with the proper utility and with the Owner as to date, time of day, and duration before any service is interrupted. Notify the Owner of estimated duration of shutdown period at least ten days in advance of proposed shutdown.

1.17 PROTECTION

- A. Close open ends of work with temporary covers or plugs during construction to prevent entry of obstructing material or damaging water. Protect existing property, equipment and finishes from damage. Repair, to original condition, existing property that has been damaged during execution of the work.

1.18 CLEANING

- A. Work site must be kept clean. Rubbish, debris and leftover or excess materials shall be removed daily.

1.19 LUBRICATION

- A. No equipment shall be operated for temporary service or testing without proper lubrication. Items requiring lubrication shall be left freshly and fully lubricated at time of substantial completion. Furnish Owner with one (1) complete new set of any special lubrication devices required for servicing, e.g., grease guns, fittings and adapters.

1.20 PAINTING

- A. Mechanical and electrical equipment and materials shall have prime coat and standard manufacturer's finish. Painting of finished surfaces (excluding ceilings) shall be one coat primer and two coats vinyl base semi-gloss paint. Painting of ceiling shall be one coat primer and two coats flat white paint. Primer shall be omitted on repainting of existing surfaces.

1.21 CUTTING AND PATCHING

- A. Areas disturbed by new construction or demolition shall be patched and repaired to match existing conditions. Patch painting of ceilings shall include painting of entire ceiling of room involved. Patch painting of other surfaces shall be to nearest cut-off point.

1.22 WATERPROOFING

- A. Provide necessary sleeves, caulking and flashing required to make openings waterproof.

## 1.23 FIREPROOFING

- A. At closing of each working day, provide temporary firestopping in every opening cut between floors and through fire-rated partitions. Permanent firestops shall be provided around sleeves and at other permanent openings through fire-rated partitions and floors, as required. Materials used for fire stopping shall be Class A “Noncombustible” with firestopping capabilities equal to that of adjacent construction.

## 1.24 BASES AND SUPPORTS

- A. Provide necessary supports, pads, bases and piers required. Equipment shall be securely attached to building structure in acceptable manner. Attachments shall be of strong and durable nature, as determined by the Owner.

## 1.25 ACCESS

- A. Provide adequately sized access doors, for access to concealed equipment and components requiring servicing or inspection. Doors shall have fire ratings equal to construction in which they are located.

## 1.26 TESTS

- A. Perform tests required by the Owner, legal authorities and agencies. Each piece of equipment, including motors and controls, shall be operated continuously for minimum one-hour test. Correct all defects appearing during tests, and repeat tests until no defects are disclosed. Final tests shall be made in the Owner’s presence.

## 1.27 SEISMIC REQUIREMENTS

- A. Submit six (6) copies of a final inspection report which includes: Sealed certification by a Structural Engineer with P.E. registration in the state in which the project is located.
  - 1. Engineer has reviewed the project.
  - 2. Engineer has approved the use of the devices for the particular applications.
  - 3. The devices satisfy Specification – and Code – mandated seismic criteria.
- B. Application of Seismic Restraint Requirements is governed by the 2005 State of Connecticut Building Code with reference to A.S.C.E. 7-05, Section 9.6.
- C. Seismic restraint for all trades shall be provided as required, based on the building seismic design category and material importance factors. Refer to individual trade sections for additional requirements.

## 1.28 INSTRUCTION TRAINING

- A. Competent technicians shall provide instruction to Owner's personnel. Instructions shall include, but are NOT limited to, following:
1. Familiarization with HVAC Control System, hardware and operation procedures.
  2. Familiarization with Management System Hardware.
  3. Use of management system.
  4. Modifications of software packages.
  5. Trouble-shooting and service procedures.

## PART 2 - PRODUCTS

## 2.1 MATERIALS AND METHODS

## A. Piping:

1. Hot water heating piping may be Type "L" copper with 95/5 (lead free) soldered fittings. Provide proper dielectric fittings where copper piping connects to steel piping.
2. Cooling coil condensate drain piping shall be Type "M" copper with wrought copper pressure fittings and 95/5 solder. Use 45 degree lateral type fittings and long sweep elbows. No tees or short radius elbows will be allowed.
3. Water system piping shall be run level. Take-offs shall be made from the bottom of the main or at 45 degrees from the bottom of the main. Provide drain valves at all low points; manual air vents at all high points. Use eccentric reducers on horizontal lines, flush to top of the pipe.
4. Provide unions and shut-off valves at all equipment, coils, etc.
5. All piping shall be supported in a manner to prevent vibration or sagging. In no case shall the hanger spacing exceed the distances listed in the current accepted edition of the International Mechanical Code.
6. Refrigerant piping shall be Type L refrigerant service copper. 3/4" outside dimensions or smaller may be soft drawn meeting ASTM BS280. Larger sizes shall be hard drawn meeting ASTM B88.62 ACR. Fitting shall be wrought or forged copper solder pattern for hard drawn tube meeting ANSI B16.26.SAE. Joints on all lines shall be brazed with 45% silver brazing alloy.

## B. Valves:

1. Gate (2-1/2" and smaller): Nibco #T-111, Stockham #100.
2. Gate (3" and larger): Nibco #F-617-0, Stockham #G-623.
3. Globe: Nibco #T-235, Stockham #B-22.
4. Check (for base-mounted pump discharge): Milwaukee #1400, Nibco #W-960, Stockham #WG-970.
5. Check (2" and smaller): Nibco #T-433-Y, Hammond #IB946.
6. Check (2-1/2" and larger): Nibco #F91 8, Hammond #IR1124.
7. Ball Valves: Apollo #70-100, Jamesbury #A11TT.
8. Butterfly: Stockham #LD-711, Keystone #AR-2.
9. Balancing: Armstrong CBV or Bell & Gossett "Circuit Setter".

10. Hose Bibb Drain: Nibco #74, Central Brass #548.

C. Ductwork:

1. All ductwork and accessories shall be constructed, fabricated and installed in accordance with the latest SMACNA Standards manuals for low pressure ducts, fire damper installations and flexible ductwork.
2. VAV air conditioning primary supply ductwork from AHUs to VAV boxes shall be spiral-round, flat-oval or galvanized steel ductwork, four (4") inch static pressure classification and seal Class "A".
3. Air conditioning secondary supply ductwork from VAV boxes to air outlets shall be galvanized steel with one (1") inch acoustical duct liner. One (1") inch static pressure classification, Seal Class "C".
4. Flexible ducts on primary side of VAV system shall be semi-rigid metallic mechanically locked spiral duct, UL Class 1 air duct, Flexmaster Type V BuckDuct. Provide pre-insulated or field insulate as required.
5. Flexible ducts to air outlets shall be UL Class 1 connectors with airtight core, galvanized wire helix and pre-insulated with one (1") inch, 3/4 pcf fiberglass with a flame retardant vapor barrier. Flexmaster Type IX.
6. All air conditioning, supply and exhaust (except kitchen exhaust), outside air and ventilation systems ductwork shall be galvanized sheet metal, two (2") inch static pressure classification, Seal Class "C". Return air ductwork to be one (1") inch classification.
7. Provide airtight, gasketed access panels for cleaning at all changes in direction and at the base of all risers and every 20 feet in horizontal runs.
8. Bottom of access panels shall be at least 1-1/2" above the bottom of the duct. Ascertain that all access panels are indeed in accessible locations.
9. Ductwork located on the roof shall be constructed of aluminum alloy 1100 or 3300. Entire rooftop duct system shall be completely air and watertight. Use suitable weather and sun-resistant sealant. Angles, channels or other members used for bracing or support shall be aluminum. Fasteners shall be either aluminum or stainless steel. Duct shall be constructed to SMACNA Seal Class "B", 2" static pressure classification. Ducts shall be internally insulated.
10. Boiler breeching shall be a factory-made component breeching system designed for positive pressure combustion systems. System shall be double-wall construction with stainless steel inner liner, 1" air space and galvanized or aluminum steel outer shell. Provide all fittings, couplers and packaged support systems as required and as shown on Plans.
11. Atmospheric, gas-fired appliance breeching shall be UL Type "B" gas vent consisting of 20-gauge, galvanized steel pipe securely and suitably fastened and supported. Provide draft hoods where required.
12. High and medium pressure, spiral round or flat oval duct system shall be galvanized steel with die-stamped or welded fabricated fittings. Ducts and fittings shall be as manufactured by United Sheet Metal, Semco or U.S. Air Duct.
13. Louver plenums shall be galvanized steel with flanged joints. Metal thickness shall correspond to gauge required for equal size duct. Pitch base of plenums and ducts toward louver, for moisture drainage. Plenums shall be firmly attached to louvers and caulked weathertight at joints.

14. Install adequate balancing; e.g., volume dampers, extractors, etc., as required to balance each system to its design airflows.
15. Furnish and install UL listed fire dampers and access doors at all duct penetrations of walls, floors, partitions, etc., that are required to have a fire resistance rating. Fire dampers, sleeves, access doors, etc., shall be constructed and installed in conformance to the manufacturer's instructions, NFPA 90A and the Building Official.

D. Insulation Systems:

1. Piping systems shall be insulated in accordance with the following schedule (all conforming to ASHRAE Standard 90.1):
  - a. Hot Water Systems (including secondary water systems):
    - 1) ½" through 4" pipe: 1" fiberglass
    - 2) 5" through 8" pipe: 1-1/2" fiberglass
    - 3) In concealed areas not within return air plenums: 3/4" thick expanded rubber insulation may be used on lines up to 2" diameter.
  - b. Chilled Water Systems:
    - 1) ½" through 8" pipe: 1" fiberglass, vapor barrier.
  - c. All indoor fiberglass piping insulation shall have all service jacket and zeston covers on all fittings, valves, etc.
  - d. Piping exposed on roof, hot water, chilled water and heat recovery piping:
    - 1) All sizes: 3" thick expanded cellular glass or 1-1/2" thick urethane foam pipe insulation. Provide watertight aluminum jacket with fitting and valve covers.
  - e. Insulate refrigeration piping with glass fiber insulation with minimum density of 3-1/2 pcf and maximum K value of 0.25 @ 75 degree F: Manville "Micro-lok", Owens-Corning "Pipe Insulation SSL-2", Knauf "Pipe Insulation", or equal. 1" and smaller - 1" thickness; 1-1/4" and larger - 1-1/2" thickness; Type FG.
  - f. Insulate all cooling coil condensate piping with ½" thick, fiberglass pipe insulation, rated for use in return air plenum. Seal all joints. Miter insulation at all tees and elbows. Insulation to have vapor seal jacket.
  - g. Insulate all chilled water pump casings with 1" thick expanded rubber insulation. Install insulation such that an effective vapor barrier is formed to prevent condensation.
  - h. Piping insulation shall run continuous through all pipe hangers. Protect insulation with 12" long sheet metal insulation protection saddles. Under saddles of piping 1-1/2" or larger, substitute rigid/calcium silicate insulation inserts for the specified insulation and of the same thickness as the specified insulation.
  - i. Maintain the integrity of all piping vapor barriers. Should condensation develop on any pipe, fitting, etc., the Contractor shall correct the vapor barrier break and replace any insulation damaged by moisture.
  - j. The entire emergency generator exhaust system (except flexible section) shall be insulated with two 1" thick layers of calcium silicate insulation, factory nested, staggered joints, banded in place, covered with weathertight stainless steel jacket.
2. Duct System Insulation:
  - a. Concealed air conditioning supply duct systems shall be insulated with 1-1/2" thick fiberglass duct wrap with continuous vapor barrier.

- b. Insulate exposed air conditioning supply air ductwork and all insulated air ducts in mechanical rooms with 1-1/2" thick, rigid foil-faced fiberglass duct insulation.
- c. Insulate all outside air ductwork, exhaust ductwork on cold side of dampers, all plenums connected to louvers with 2" thick, rigid foil-faced fiberglass duct insulation.
- d. Acoustical lining, where shown, shall be nominal 1" thick fiberglass duct liner, unless otherwise indicated.
- e. Supply air, return air, make-up air and exhaust air ducts exposed on roof to be insulated with 3" fiberglass insulation. Use either 3" thick acoustical duct liner or 2" rigid fiberglass board on outside and with 2" acoustical liner on duct inside face.

## 2.2 AUTOMATIC TEMPERATURE CONTROLS

- A. Data Closet Split System
  - 1. Provide Mitsubishi Wired Remote Controller for each indoor wall mounted air conditioning unit. Temperature setpoint to be set 75° F, unless directed otherwise by Owner. Contractor to provide and install controls for Indoor air conditioning units and Condensing Unit per manufacturers requirements. Equipment manufacturer to verify all new equipment controls are working properly and temperature setpoints are correct. Refer to manufacturer's wiring diagram for control wiring schematic.
- B. SEQUENCE OF OPERATION: Data Closet
  - 1. Split systems AC/CU-1 shall be enabled to run to maintain cooling space temperature setpoint of 75 degrees F.

## PART 3 - EXECUTION

### 3.1 FIRE STOPS

- A. All penetrations through fire rated walls, ceilings or floors in which pipes or ducts pass shall be sealed with a UL approved fire-stop fitting classified for an hourly rating equal to the rating of the wall, ceiling or floor.

### 3.2 REMOVAL, RELOCATION AND/OR ABANDONMENT

- A. Certain items of existing equipment and piping or ductwork may be indicated for removal, relocation or abandonment. Items noted for removal shall be disconnected and turned over to the Owner or disposed of by the Contractor if the Owner so requests. Items noted for relocation are intended for reuse in another location as designated on the Drawings. It shall be the responsibility of the Contractor to remove the material from its present location, store the material in a safe place and reinstall the material in its new location. Questions regarding the suitability of the material or equipment shall be brought to the attention of the Engineer in writing. Abandonment shall be defined as abandoning in place any item so designated and shall include proper piping or ductwork termination within any occupied or open area. All



abandoned pipes and ducts shall be disconnected and capped at their mains. All abandoned pipes shall be capped.

### 3.3 PIPE PRESSURE TESTING

- A. Piping systems shall be pressure tested as indicated below for each system. All piping shall be tested before it is covered, concealed or made otherwise inaccessible.
- B. Leaks found during pressure tests shall be corrected by remaking the joint, tightening or other suitable method. The Contractor shall not add any “stop-leak” type compounds to the piping system.
- C. Any system requiring leak repair shall be retested in the same manner as the original test.
- D. The Contractor shall furnish all booster pumps, compressors, hoses and equipment required to perform all pressure tests.

### 3.4 START UP AND ADJUSTMENT

- A. Startup of equipment shall be performed according to manufacturer’s recommendations. Startup and adjustment shall include services required to check out, test and balance devices to ensure proper sequencing of operation, prior to instruction of the Owner’s maintenance personnel.
- B. Prior to startup, equipment shall be checked for physical damage, loose connections, loose parts, leaks and other defects and defects shall be corrected.
- C. Furnish startup/adjustment services by manufacturer, for following equipment. Manufacturer shall be responsible for supervising and inspecting equipment installation and for equipment start up and adjustment.
  - 1. DX condensing units for split systems.

END OF SECTION

## ELECTRICAL SPECIFICATION

## PART 1 - GENERAL

## 1.1 GENERAL

- A. All work shall be done in strict accordance with all applicable Codes and Regulations of local and State Agencies and utility companies. This Contractor shall bear the cost of all fees, permits, licenses and taxes and any utility company charges in connection with the work. All equipment installed shall be UL listed.
- B. Prime Contractor shall be the HVAC Contractor who shall arrange and be responsible for all work in Contract Documents including any subcontracted work.

## 1.2 SCOPE

## A. Demolition:

- 1. The Contractor shall reference mechanical and electrical plans and remove or relocate existing electrical materials as shown or which exist on walls and partitions being removed. Removal of wiring that is no longer in service shall be complete back to source. Existing conduit may be reused when in suitable condition. Wiring for branch circuits shall not be reused unless otherwise noted. Circuits that remain shall be left in operating condition.
- 2. The Contractor shall remove all unused telephone and data cables complete from outlet to patch panel.
- 3. Existing electrical materials shall NOT be reused unless so indicated on the Drawings. Existing flush-mounted boxes in good condition may be reused if located as shown for new boxes on Drawings. Flush-mounted boxes not being reused shall be covered with suitable cover plates, surface boxes and raceways shall be removed.
- 4. All materials removed under this Division and not scheduled for reuse or requested by the Owner, shall be disposed of off site.

## B. New Work:

- 1. Provide complete electrical lighting, power, fire alarm and special systems as indicated on the Contract Drawings.
- 2. Provide all electrical work necessary to power Owner-supplied equipment. Provide all receptacles, power wiring, underfloor distribution system activation fittings, core drills, etc., necessary for a complete installation.
- 3. Systems shall be complete in all respects, tested, approved and ready for operation.
- 4. Maintain existing receptacles on existing walls to remain, reconnect circuits that are interrupted.

## C. Work by Others:

1. Other Trade Contractors and Owner's equipment vendors shall install all motors for equipment provided under their trade work contracts; motors shall be ready for wiring by the Electrical Contractor.
2. Other Trade Contractors and Owner's equipment vendors shall furnish and deliver to the Electrical Contractor wiring diagrams for all electrically operated equipment. Other Trade Contractors shall furnish relays and control equipment to the Electrical Contractor who shall install and wire these devices. The Electrical Contractor shall provide motor starters and disconnect switches.
3. The HVAC Contractor shall provide excavation, backfill, chases, openings, cutting, patching, painting and finish work.
4. The HVAC Contractor shall install all access doors where required; doors needed for access to electrical systems shall be furnished by the Electrical Contractor.

### 1.3 SHOP DRAWING SUBMITTALS

- A. Submit shop drawings on equipment and materials, in triplicate (3 copies), to the Engineer for approval. The Drawings shall include ratings, performance information, operating data and wiring diagrams. The Contractor shall assume full responsibility for work performed or equipment supplied that is not in agreement with approved shop drawings.
- B. The following list of electrical items must be submitted by this Contractor for approval:
  1. Circuit breakers
  2. Wiring devices and plates
  3. Conduit and wire
  4. Disconnect Switches
- C. Submit for record an itemized list detailing electrical systems and components to be seismically restrained and associated seismic restraint system to be used.

### 1.4 RECORD DRAWINGS

- A. Neatly and accurately record all changes to Contract Documents on record set of drawings furnished by the HVAC Contractor. These record "as-built" drawings shall include locations of specific items as listed in the various Specification DIVISIONS. Upon project completion, these record drawings shall be turned over to the Engineer.

### 1.5 DEFINITION

- A. As used on Contract Drawings, the term "to provide" shall mean "to furnish, install and connect completely in the specified or approved manner the item or material described."

### 1.6 GUARANTEE

- A. Materials, equipment and workmanship shall have standard warranty against defects in material and workmanship. Failures due to defective or improper material, equipment, workmanship or design shall be made good, forthwith, by and at the expense of the Contractor, including

damage done to areas, materials and other systems resulting from such failures. Guarantee period shall extend for one year from the Date of Acceptance.

#### 1.7 INSPECTION

- A. Contract Drawings are diagrammatic and do NOT show every required fitting, etc. The Contractor shall familiarize himself with existing site conditions prior to submitting a bid, and shall include all equipment and accessories necessary for complete and operational systems.

#### 1.8 INSURANCE

- A. Furnish insurance certificates required by the Owner.

#### 1.9 PERMITS, LAWS, ORDINANCES, CODES AND STANDARDS

- A. Obtain and pay for permits, inspections, licenses and certificates required. Work of this Contract shall meet current accepted editions of the State Building Code, State Fire Safety Code and other laws, rules and regulations of local, State and Federal authorities including, but not limited to: National Fire Protection Association #13; National Fire Protection Association #90A; National Fire Protection Association #90B; National Fire Protection Association #99; International Plumbing Code; International Mechanical Code; National Fire Protection Association #70 (National Electrical Code); and local utility company requirements. Pay utility company backcharges. Equipment, materials and components listed in UL Product Directories, shall bear UL labels.

#### 1.10 ARRANGEMENT OF WORK

- A. Work shall be coordinated between trades to prevent interference. Work shall present a neat coordinated appearance. Install work as necessary to provide maximum possible headroom, adequate clearance and ready access for inspection, operation, safe maintenance and repair and Code conformance. Where space appears inadequate, consult the Engineer before proceeding with installation.

#### 1.11 WORKMANSHIP

- A. Equipment and materials shall be new, of first quality, selected and arranged to fit properly into spaces indicated. Install equipment and materials in accordance with manufacturer's recommendations.

#### 1.12 COORDINATION WITH OWNER

- A. Work shall be scheduled with the Owner. Interruptions in Owner's access to the site shall be subject to Owner limitations of date and duration.

## 1.13 OPERATION OF SERVICES AND UTILITIES

- A. Shutdown of existing services and utilities shall, without exception, be coordinated with the proper utility and with the Owner as to date, time of day, and duration before any service is interrupted. Notify the Owner of estimated duration of shutdown period at least ten days in advance of proposed shutdown.

## 1.14 PROTECTION

- A. Close open ends of work with temporary covers or plugs during construction to prevent entry of foreign material. Protect existing property, equipment and finishes from damage. Repair, to original condition, existing property that has been damaged during execution of the work.

## 1.15 CLEANING

- A. Work site must be kept clean. Rubbish, debris and leftover or excess materials shall be removed daily.

## 1.16 LUBRICATION

- A. No equipment shall be operated for temporary service or testing without proper lubrication. Items requiring lubrication shall be left freshly and fully lubricated at time of substantial completion. Furnish Owner with one complete new set of any special lubrication devices required for servicing, e.g., grease guns, fittings and adapters.

## 1.17 PAINTING

- A. Equipment and materials shall have standard manufacturer's finish except where otherwise noted.

## 1.18 CUTTING AND PATCHING

- A. Cutting and patching to be performed by HVAC Contractor. Painting of finished surfaces after patching shall match adjacent finishes.

## 1.19 WATERPROOFING

- A. Provide necessary sleeves, caulking and flashing required to make openings waterproof.

## 1.20 FIREPROOFING

- A. At closing of each working day, opening cut between floors and through fire-rated partitions shall be provided with UL approved, Class A "Noncombustible", firestopping with ratings equal to that of adjacent construction.

## 1.21 BASES AND SUPPORTS

- A. Provide necessary supports, pads, bases and piers for equipment. Equipment shall be securely attached to building structure in acceptable manner. Attachments shall be of strong and durable nature, as determined by the Owner.

## 1.22 ACCESS

- A. Provide adequately sized access doors, for access to concealed equipment and components requiring servicing or inspection. Doors shall have fire ratings equal to construction in which they are located.

## 1.23 TESTS

- A. Perform tests required by the Owner, legal authorities and agencies. Each piece of equipment, including motors and controls, shall be operated continuously for minimum one-hour test. Correct all defects appearing during tests, and repeat tests until no defects are disclosed. Final tests shall be made in the Owner's presence.

## 1.24 SYSTEMS OPERATION AND MAINTENANCE

- A. Upon completion of the work and at a time designated by the Engineer, the Contractor shall furnish instruction manuals including data, warranties, etc., and shall instruct the Owner or his representative as to the arrangement, location and operation of all equipment and systems furnished and installed under the Electrical Contract.

## 1.25 SEISMIC REQUIREMENTS

- A. Submit six (6) copies of a final inspection report which includes: Sealed certification by a Structural Engineer with P.E. registration in the state in which the project is located, that:
  - 1. Engineer has reviewed the project.
  - 2. Engineer has approved the use of the devices for the particular applications.
  - 3. The devices satisfy Specification- and Code-mandated seismic criteria.
- B. Application of Seismic Restraint Requirements is governed by the 2005 State of Connecticut Building Code with reference to A.S.C.E. 7-05, Section 9.6.
- C. Seismic restraint for all trades shall be provided as required, based on the building seismic design category and material importance factors. Refer to individual trade sections for additional requirements.

## PART 2 - PRODUCTS

## 2.1 WIRE CABLE AND RACEWAYS

- A. Rigid galvanized steel conduit (RGS) shall be used for all exterior wiring and where subject to dampness, except as noted below or as specifically noted on the Drawings. Connectors and couplings shall be galvanized steel threaded type listed for RMC use.
- B. Electrical Metallic Tubing (EMT) shall be used for feeders run above ground in dry areas. Connectors and couplings shall be galvanized steel, either compression type or heavy-duty set screw-type, listed for EMT use. Indent or crimp-type connectors are NOT allowed.
- C. EMT or RGS shall be used for all circuit homeruns.
- D. Schedule 40 polyvinyl chloride (PVC) conduit may be used for underground power and telephone wiring except as specifically otherwise noted on the Drawings. All elbows shall be rigid steel conduit.
- E. Minimum sizes shall be as follows:
  - 1. Conduit and EMT: 3/4" unless otherwise noted.
  - 2. Flexible Metal Conduit: 1/2"
  - 3. Wireway: 4" x 4".
  - 4. Cable Ladder: 12".
- F. Type MC metal-clad cable may be used for branch wiring to light fixtures, receptacles and switches. Wherever MC cable is used for light fixture wiring, leave sufficient slack for future removal or servicing of fixtures in finished ceilings. The MC cable shall be UL listed, 600V, 90 degree C rated, metal clad with THHN insulation and green insulated ground wire. Connectors and fittings shall be galvanized steel, listed for MC cable use. All cables shall be rigidly supported from the building structure at least 4' O.C. and within 12" from every fitting and shall run in lines parallel or perpendicular to building structural members. Cable shall not rest on the ceiling structure. Type MC cable shall not be used for homeruns. Cable sheath of interlocked aluminum is not acceptable. Type AC armored cable shall not be permitted on the job.
- G. Health Care Facility Cable Type (HCFC) metal-clad cable may be used for branch wiring to light fixtures, receptacles and switches on non-emergency circuits ONLY. Wherever HCFC cable is used for light fixture wiring, leave sufficient slack for future removal or servicing of fixtures in finished ceilings. The HFC/HCFC cable shall be UL listed, 600V, 90 degree C rated, metal clad with THHN insulation and green insulated ground wire. Connectors and fittings shall be galvanized steel, listed for HCFC cable use. All cables shall be rigidly supported from the building structure at least 4' O.C. and within 12" from every fitting and shall run in lines parallel or perpendicular to building structural members. Cable shall not rest on the ceiling structure. Type HCFC cable shall not be used for homeruns or ANY Life Safety or Critical circuit. Cable sheath of interlocked aluminum is not acceptable. Type AC armored cable shall not be permitted on the job. HCFC cable shall not be used in wiring Life Safety or Critical circuits.

- H. Flexible Metallic Conduit (FMC) or liquid-tight flexible metallic conduit (LFMC) shall be used for connections to vibrating equipment and furniture partitions. Connectors, fittings and clamps for FMC shall be galvanized steel, listed for FMC use. Connectors and couplings for LFMC shall be zinc plated malleable iron or steel, with engagement window locknut and sealing ring: liquid, oil, and rain-tight; suitable for wet locations, listed for LFMC use: acceptable equivalent to O-Z/Gedney "Type 4Q".
1. Blue Type LA liquid-tight flexible metal conduit (LFMC) shall be used for all wiring beneath raised floor.
  2. Grey/tan Type LA liquid-tight flexible metal conduit (LFMC) shall be used for final connections to vibrating equipment and to furniture partitions from underfloor duct activation fittings.
- I. Wiring that must be run along the surface of the existing walls shall be run in Wiremold #500 surface metal raceway, Wiremold #2100 surface metal raceway or as otherwise specified on the Drawings.
- J. Conductors shall be new copper with 600 Volt code gauge insulation conforming to NEC requirements. Wire #10 and smaller shall be solid conductor with THWN/THHN insulation, Size #8 and larger shall be stranded conductors with THWN/THHN insulation. Size #3 and larger shall be stranded conductors with XHHW insulation. Minimum size wire for light and power circuits shall be #12 AWG. The Contractor shall include an individual code sized green insulated ground conductor for all circuits; the use of the conduit system or cable covering as the sole means of grounding will not be permitted.
- K. Common neutrals shall not be used for receptacle circuits, unless otherwise noted on plans. When used, common neutral conductor ampere rating shall be double the phase conductor rating.
- L. All conduits and wiring shall be run concealed inside walls where possible. Exposed conduits where allowed shall be run neatly in lines parallel or perpendicular to building walls.
- M. All splices for #10 or smaller shall be made with "Scotchlok" spring connectors or equal. Splices for #8 or larger shall be made with UL approved compression connectors.
- N. Provide nylon pull lines for all empty conduits.

## 2.2 GROUNDING AND BONDING

### A. Equipment Grounds

1. Grounding shall be installed and tested in accordance with NFPA 70 (NEC) and to satisfaction of local electrical inspector and Engineer.
2. Provide green THHN insulated copper equipment grounding conductor between the ground bus of the source distribution panel or switchboard and each load being served. Conductor shall be sized according to NEC Table 250.122. Provide separate grounding conductor for each branch circuit, unless otherwise indicated on Contract Drawings.
3. Maintain electrical continuity of raceways.



## B. Ground Fault Protection

1. If excessive ground current flows, main breakers and/or circuit breakers with ground fault sensing shall trip to protect against arcing ground faults.
2. Provide ground fault circuit interrupter protection for receptacles located within six feet of sink or faucet and as required and indicated.

## C. Materials

1. Above-grade and exposed connections shall be Burndy or acceptable equivalent.
2. Wire shall be stranded bare copper or insulated copper, as indicated on Contract Drawings.
3. Bus shall be copper bar, as indicated on Contract Drawings.
4. Bushings and Pressure Lugs shall be by T&B, O.Z./Gedney or acceptable equivalent.
5. Pipe clamps shall be by O.Z./Gedney or acceptable equivalent.

## D. Telecommunications System Grounds

1. Raceway including wireways, conduits, cable trays, etc. installed for low voltage or fiberoptic cabling shall be made electrically continuous for grounding purposes. Provide hollow braided copper jumpers equal to Belden No. 8669 (60A Ampacity). Provide equal impedance conductor for aluminum raceway. Provide connections from each item to the ground bus or if bonded in series provide two separate connections to the ground bus so as to form a loop.
2. Bond raceways to the ground bus located in the telecommunications closets/rooms. Bond raceways in each room they terminate in.
3. Grounding or bonding conductors installed for Telecommunications Systems shall be labeled near their termination points. Labels shall be non-metallic and include the following:
  - a. "WARNING if this connector or cable is loose or must be removed, please call the Building Telecommunications Manager."
  - b. Labels and installation shall meet the requirements of ANSI/TIA/EIA 606 and 607.

## 2.3 SAFETY SWITCHES

- A. Safety switches shall be fused, 600 VAC, heavy-duty type in NEMA enclosures suitable for the environment in which they shall be installed. Switches shall be Square D, General Electric or Cutler-Hammer equivalent to the following Square D types:
  1. Fused disconnect 2- and 3-pole: "Type H"
  2. Fused, raintight (WP) disconnect switches in NEMA 3R enclosures: "Type H-R".

## 2.4 FUSES

- A. Fuses for circuit protection shall be UL listed, non-renewable, low peak, dual-element, time delay fuses. Bussman Type FRN-RK (250 Volt) or FRS-RK (460 Volt) UL Class RK5 or approved equal.

## 2.5 MOTOR STARTERS

- A. Provide starters for all motors unless noted otherwise. Starters shall be Allen-Bradley or equal by Square D, General Electric or Cutler-Hammer, as follows:
  - 1. Manual for 120 Volt or 208 volt, 1-phase: Allen Bradley Bulletin 600.
  - 2. Magnetic across-the-line: Allen Bradley Bulletin 509.
  - 3. Combination starter disconnects: Allen Bradley Bulletin 512.
- B. Manual starters shall have NEMA 1 enclosure.
- C. Magnetic starters shall have the following features:
  - 1. NEMA 1 enclosure
  - 2. Two N.O. and two N.C. auxiliary contacts
  - 3. HOA switch
  - 4. Neon run pilot light
  - 5. Three overload heaters
  - 6. Control power transformer.

## 2.6 OUTLET AND JUNCTION BOXES

- A. Switch and receptacle outlet boxes in partitions where wiring is concealed shall be standard 4 inches square, 1-1/2 inches deep, hot-dipped, galvanized steel, with device ring for boxes installed in sheetrock walls. Use 1-1/2 inch deep square corner tile wall extension for boxes installed in tile, exposed brick or exposed block masonry walls.
- B. Boxes shall be securely fastened to the building structure. Suitable means shall be provided to support outlet boxes to take the weight of fixtures. Recessed outlet boxes or their extension covers shall be set flush with face of finished wall, but in no case set greater than 1/4 inch behind finished face of wall. The Contractor shall check with the Engineer's Drawings for possible box interference.
- C. Junction boxes shall be sized in accordance with Code requirements.
- D. Junction and outlet boxes where exposed to the weather and wet locations shall be threaded hub type and provided with watertight screw-on covers and gaskets.

## 2.7 SWITCHES, RECEPTACLES AND PLATES

- A. Switches and receptacles shall be as manufactured by Hubbell, Arrow-Hart, Leviton or Pass and Seymour and equivalent to the following specification grades, with color matching Building Standard:
  - 1. Single-pole switches shall be Hubbell #1221.
  - 2. 3-way switches shall be Hubbell #1223.
  - 3. Momentary contact switches shall be single-pole, double-throw equivalent to Hubbell #1557.
  - 4. Duplex grounding type receptacles shall be 20 Ampere Hubbell #5362.

5. Isolated ground type receptacles shall be 20 Ampere Hubbell #IG5362.
  6. Ground fault type receptacles shall be Hubbell #GF-5362 feed-through receptacles.
- B. Occupancy sensor switches shall be Sensor Switch #WSD-PDT motion and sound dual technology line voltage wallbox type rated to control up to 600 Watts at 277 VAC. Units shall have adjustable light level and off-time.
  - C. Provide wall plates equal to building standard on all switches and receptacles. When no standard exists provide specification grade stainless steel (Type 302).
  - D. Where there are multiple devices in one location, devices shall be ganged under one cover plate. All wall switches shall be flush mounted, where applicable.
  - E. Receptacles shall be mounted 18 inches above finished floor with U ground up unless otherwise indicated.
  - F. Wall switches shall be mounted 48 inches above finished floor, on strike side of door, unless otherwise indicated.

## 2.8 CIRCUIT BREAKERS

- A. All new circuit breakers shall match existing in style, manufacturer and interrupting rating for panel in which they are being installed, unless noted otherwise.

## PART 3 - EXECUTION

### 3.1 GENERAL

- A. The Electrical Contractor shall ensure that no piping, ductwork, leak protection apparatus or other equipment foreign to the electrical trade passes through the space equal to the width and depth of the electrical distribution equipment and extending from the floor to the structural ceiling.

### 3.2 LOAD BALANCE

- A. The Electrical Contractor shall balance the loads on the three phases in the electrical panelboard in which he does work insofar as physically possible, and report each panel loading to the Engineer.

### 3.3 GENERAL WIRING TESTS

- A. At the time of final inspection and test, all wiring and connections throughout the renovation areas must be completed, devices and equipment properly operating, lighting fixtures installed, and power and lighting circuit and control wiring clearly identified with approved tags ready for acceptance. Each system shall test free from short circuit and grounds.

- B. Insulation resistance for low voltage cables and wiring shall be performed at 1000 Volt D.C. for one (1) minute. When insulation resistance must be determined, switchboards, panelboards, fuse holders, switches and overcurrent devices shall be in place, and the insulation resistance when tested at 1000 Volts D.C. shall be no less than 100,000 ohms for #14 and #12 wire and 250,000 ohms for #10 wire and larger.

### 3.4 GROUNDING SYSTEM TESTS

- A. Test and inspect the main grounding electrode system in accordance with Section 7.13 of the NETA Handbook for Electrical Testing Procedures. Perform a resistance to ground test and insure that resistance is no greater than 5 (five) ohms. Investigate and supplement grounding system where resistance exceeds recommended values and re-test as required.
- B. Ground Fault Circuit Interruption shall be tested after installation by random connection of plug-in tester to various protected receptacles, as directed by Engineer.

### 3.5 OPERATIONAL TESTS

- A. Each piece of electrical equipment, including lighting fixtures, motors and controls shall be operated continuously for minimum test period of one hour.
- B. Demonstrate by operating equipment that circuits and devices are in good operating condition.

### 3.6 MECHANICAL SYSTEM ADJUSTMENT AND TESTING

- A. Be present during adjustment period and final testing of mechanical systems. Take readings necessary to ensure that electrical systems are operating properly.
- B. Take ampere readings with true RMS reading ammeter at each electrical component, such as motor and heating coil, to determine proper operation.
- C. Record readings and submit them in triplicate to the Engineer for review.

### 3.7 LABELING

- A. Label all new disconnects, starters, motors, furniture feeder boxes, in a manner acceptable to the Engineer.
- B. Provide updated panel schedules in all panelboards within the scope of work.
- C. Provide printed, colored, adhesive labels for all electrical equipment, such as but not limited to switchboards, panelboards, motor control centers, disconnect switches, meter socket enclosures, etc. to warn qualified personnel of potential electric arc flash hazards. Label shall be a minimum of 4" x 5".

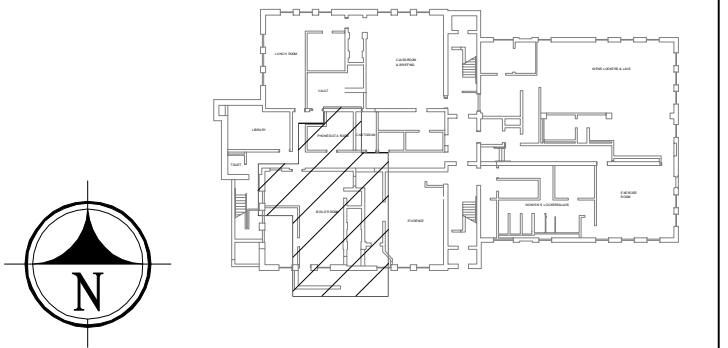
END OF SECTION



PROJECT NAME:

**CITY OF TORRINGTON CT  
POLICE DEPARTMENT  
DATA CLOSET COOLING UPGRADE**  
576 MAIN STREET, TORRINGTON, CT 06790

KEYPLAN



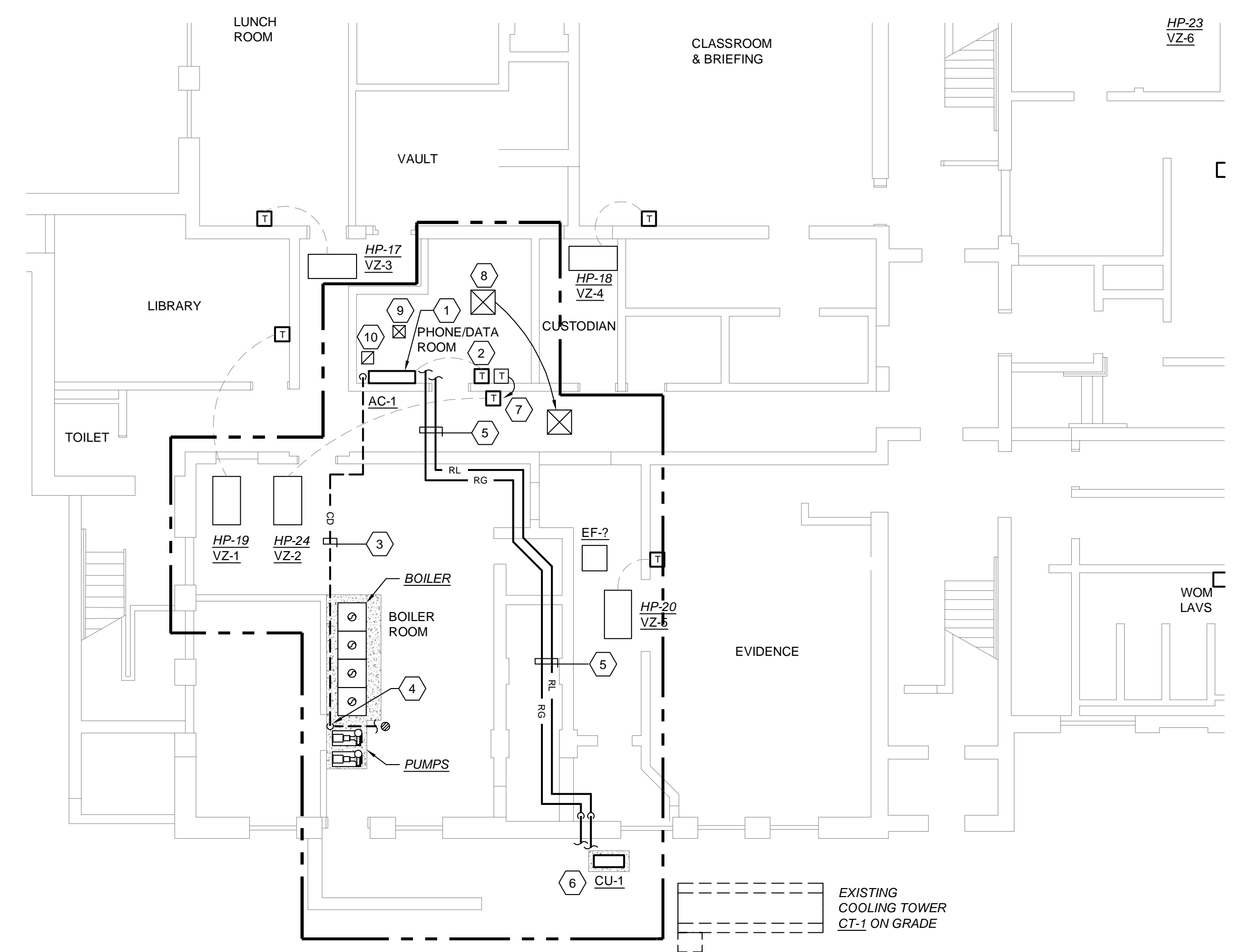
REVISIONS		
REV. NO.	DATE	DESCRIPTION
	09/04/2015	ISSUED FOR BID

DRAWING TITLE:

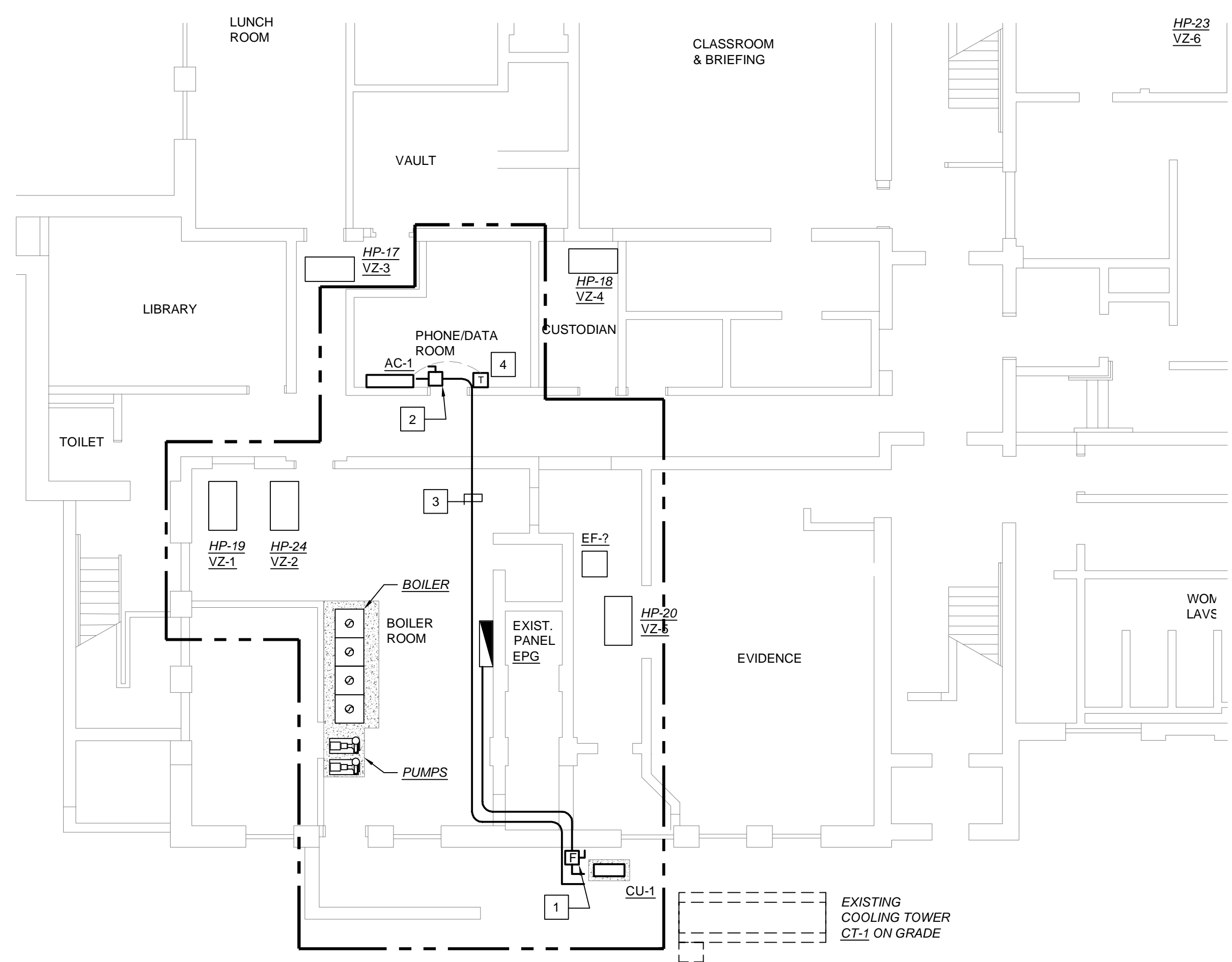
**BASEMENT HVAC &  
ELECTRICAL PART  
PLAN**

DATE: 09/04/15  
DRAWN BY: A.J.D.  
CHECKED BY: W.J.D.  
SCALE: AS NOTED  
PROJ#: 2015073.00

DRAWING NUMBER:  
**ME-100**



**1 HVAC BASEMENT PARTIAL FLOOR PLAN**  
1/8"=1'-0"  
\*SCALE IS APPROXIMATE. FIELD VERIFICATION IS REQUIRED TO DETERMINE ACCURATE DIMENSIONS



**2 ELECTRICAL BASEMENT PARTIAL FLOOR PLAN**  
1/8"=1'-0"  
\*SCALE IS APPROXIMATE. FIELD VERIFICATION IS REQUIRED TO DETERMINE ACCURATE DIMENSIONS

DUCTLESS SPLIT AIR CONDITIONING UNITS											
INDOOR UNITS											
UNIT TAG	SERVING	MFR.	MODEL	TOTAL CLG. CAPACITY MBH	TOTAL HTG. CAPACITY MBH	MAX. CFM	FAN FLA	MAX FUSE SIZE	MCA	VOLT/ PHASE/ AMPS	REMARKS
AC-1	PHONE/DATA ROOM	MITSUBISHI	PKA-A36KA4	36	N/A	920	0.57	30 A	1.0	208-230/1/60	
OUTDOOR UNITS											
UNIT TYPE	LOCATION	SERVING	MANUFACTURER	MODEL	COMPRESSOR		MAX FUSE SIZE	MCA	VOLT/ PHASE/ AMPS	REMARKS	
					RLA	LRA					
CU-1	ON GRADE	AC-1	MITSUBISHI	PUY-A36NH44	-	-	30 A	25 A	208-230/1/60	PROVIDE 0" LOW AMBIENT WIND BAFFLE.	

GENERAL NOTES:  
1. MANUFACTURER TO VERIFY SIZE & ROUTING OF REFRIGERANT LINES.  
2. MAINTAIN MANUFACTURER'S RECOMMENDED SERVICE CLEARANCES.  
3. VERIFY ALL ELECTRICAL INFORMATION WITH MANUFACTURER.

PROVIDE ALL UNITS WITH:  
• ALL REQUIRED MOUNTING BRACKETS  
• MANUFACTURER'S PROGRAMMABLE WIRED REMOTE CONTROLLER.  
• MANUFACTURER STANDARD CONDENSATE PUMP (INDOOR UNIT)  
• SECONDARY DRAIN PAN (INDOOR UNIT)

MECHANICAL NEW WORK KEY NOTES:

- 1 PROVIDE SECONDARY DRAIN PAN WITH LEAK DETECTOR BELOW AC UNIT.
- 2 MANUFACTURER'S WIRED REMOTE CONTROLLER
- 3 3/4" CONDENSATE DISCHARGE.
- 4 DROP 3/4" CONDENSATE DISCHARGE DOWN WALL. RUN CONDENSATE LINE ACROSS CONCRETE PAD AND DISCHARGE INTO EXISTING FLOOR DRAIN.
- 5 5/8" REFRIGERANT GAS & 3/8" REFRIGERANT LIQUID. UNIT MANUFACTURER TO VERIFY ALL REFRIGERANT PIPE SIZING AND ROUTING.
- 6 MOUNT CU-1 ON 4" CONCRETE PAD. UNIT TO BE MOUNTED MINIMUM 12" FROM BUILDING WALL. MAINTAIN ALL FACTORY RECOMMENDED CLEARANCES.
- 7 RELOCATE EXISTING HP-24 TEMPERATURE SENSOR TO CORRIDOR WALL.
- 8 RELOCATE EXISTING SUPPLY DIFFUSER TO CORRIDOR. EXTEND SUPPLY DUCTWORK AS REQUIRED.
- 9 REMOVE EXISTING SUPPLY DIFFUSER AND CAP BRANCH DUCT.
- 10 REMOVE EXISTING RETURN GRILLE.

HVAC GENERAL NOTES

1. MANUFACTURER AND CONTRACTOR TO VERIFY ALL AC-1/CU-1 PIPING SIZING AND ROUTING.

ELECTRICAL NEW WORK KEY NOTES:

- 1 PROVIDE AND INSTALL 30A-2P FUSED NEMA 3R DISCONNECT SWITCH, SQUARE-D #D211NRB FOR CONDENSING UNIT CU-1. WIRE TO EXISTING PANEL EPG USING 2 #10AWG, 1 #10AWG FOR GROUND IN 3/4" CONDUIT.
- 2 PROVIDE AND INSTALL MITSUBISHI TAZ-MS303, 3-POLE DISCONNECT SWITCH. REFER TO WIRING DETAIL IN THIS SHEET.
- 3 PROVIDE AND INSTALL 3 #14AWG, 1 #14AWG GROUND IN 3/4" CONDUIT, CONNECTING INDOOR UNIT AC-1 TO OUTDOOR UNIT CU-1.
- 4 PROVIDE AND INSTALL 2 #22AWG(NON-POLAR) IN 1/2" CONDUIT AND WIRE FROM AC-1 TO REMOTE MOUNTED T-STAT (CONTROLLER)

ELECTRICAL GENERAL NOTES

1. REFER TO AC-1/CU-1 MANUFACTURER'S WIRING DIAGRAM FOR ADDITIONAL INFORMATION AND DETAIL ON UNIT WIRING AND POWER REQUIREMENTS.
2. CONTRACTOR TO CONDUIT ROUTING IN FIELD.