# CONTRACT DOCUMENTS

## LANCASTER COUNTY
## N E B R A S K A

## Lancaster County Engineering RTU Replacement
## Bid No. 18-004

**MMC Contractors**
**9751 S. 142nd Street**
**Omaha, NE 68138**
**(402) 861-0681**

**LANCASTER COUNTY, NEBRASKA**
**CONTRACT TERMS**

THIS CONTRACT, made and entered into by and between **MMC Contractors, 9751 S. 142nd Street, Omaha, NE 68138**, hereinafter called the Contractor, and Lancaster County, Nebraska, a political subdivision of the State of Nebraska, hereinafter referred to as the County.

WHEREAS, the County has caused to be prepared, in accordance with law, Specifications, Plans, and other Contract Documents for the Work herein described, and has approved and adopted said documents and has caused to be published an advertisement for and in connection with said Work, to-wit:

**Lancaster County Engineering RTU Replacement, Bid No. 18-004**

and

WHEREAS, the Contractor, in response to such advertisement, has submitted to the County, in the manner and at the time specified, a sealed Proposal/Supplier Response in accordance with the terms of said advertisement; and

WHEREAS, the County, in the manner prescribed by law has publicly opened, read aloud, examined, and canvassed the Proposals/Supplier Responses submitted in response to such advertisement, and as a result of such canvass has determined and declared the Contractor to be the lowest responsible bidder for the said Work for the sum or sums named in the Contractor's Proposal/Supplier Response, a copy thereof being attached to and made a part of this Contract.

NOW, THEREFORE, in consideration of the sums to be paid to the Contractor and the mutual covenants herein contained, the Contractor and the County have agreed and hereby agree as follows:

1. The Contractor agrees to (a) furnish all tools, equipment, supplies, superintendence, transportation, and other construction accessories, services, and facilities; (b) furnish all materials, supplies, and equipment specified to be incorporated into and form a permanent part of the complete work; (c) provide and perform all necessary labor in a substantial and workmanlike manner and in accordance with the provisions of the Contract Documents; and (d) execute, construct, and compete all Work included in and covered by the County's award of this Contract to the Contractor, such award being based on the acceptance by the County of the Contractor's Proposal, or part thereof, as follows:

   **Agreement to Line Item No. 1 of Contractor's Proposal**

2. The County agrees to pay to the Contractor for the performance of the Work embraced in this Contract, the Contractor agrees to accept as full compensation therefor, the following sums and prices for all Work covered by and included in the Contract award and designated above, payment thereof to be made in the manner provided by the County:

   **The County will pay for products/services, according to the Line Item pricing as listed in Contractors Proposal/Supplier Response, a copy thereof being attached to and made a part of this Contract, for a total of $95,211.00.**

3. EQUAL EMPLOYMENT OPPORTUNITY: In connection with the carrying out of this project, the Contractor shall not discriminate against any employee, applicant for employment, or any other person because of race, color, religion, sex, national origin, ancestry, disability, age or marital status. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, national origin, ancestry, disability, age or marital status. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other compensation; and selection for training, including apprenticeship.

4. E-VERIFY: In accordance with Neb. Rev. Stat. 4-108 through 4-114, the contractor agrees to register with and use a federal immigration verification system, to determine the work eligibility status of new employees performing services within the state of Nebraska. A federal immigration verification system means the electronic verification of the work authorization program of the Illegal Immigration Reform and Immigrant Responsibility Act of 1996, 8 U.S.C. 1324 a, otherwise known as the E-Verify Program, or an equivalent federal program designated by the United States Department of Homeland Security or other federal agency authorized to verify the work eligibility status of a newly hired employee pursuant to the Immigration Reform and Control Act of 1986. The Contractor shall not discriminate against any employee or applicant for employment to be employed in the performance of this section pursuant to the requirements of state law and 8 U.S.C.A 1324b. The contractor shall require any subcontractor to comply with the provisions of this section.

5. GUARANTEE: A performance and payment bonds in the full amount of the contract shall be required for all construction contracts. These bonds shall remain in effect during the guarantee period as stated in the specifications. Once the project is completed, the contractor may submit a maintenance bond in place of the performance bond.

6a. TERMINATION FOR CAUSE:

a) The County may terminate the Contract if the Contractor:
   1. Refuses or fails to supply enough properly skilled workers or proper materials;
   2. Fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;
   3. Disregards laws, ordinances, or rules, regulations or orders of a public authority having jurisdiction; or
   4. Otherwise commits a substantial breach of any provision of the Contract Documents.

b) When any of the above reasons exist, the County without prejudice to any other rights or remedies of the County may (after giving the Contractor and the Contractor's surety, if any, seven days' written notice) terminate employment of the Contractor. In addition the County may (subject to any prior rights of the surety):
   1. Take possession of the site and of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
   2. Accept assignment of subcontracts; and
   3. Finish the Work by whatever reasonable method the County may deem expedient.

c) If the Contract is terminated by County as provided in this section, Contractor shall not be entitled to receive any further payment until the expiration of 35 days after Final Completion and acceptance of all Work by County.

d) If the unpaid balance of the Contract Sum exceeds the cost of completing the Work, including all additional costs and expenses made necessary thereby, including costs for County staff time, plus all losses sustained, including any liquidated damages provided under the Contract Documents, such excess shall be paid to Contractor. If such costs, expenses, losses, and liquidated damages exceed the unpaid balance of the Contract Sum, Contractor shall pay such excess to County.

e) If, after termination of the Contractor's right to proceed, it is determined that the Contractor was not in default, or that the delay was excusable, the rights and obligations of the parties will be the same as if the termination has been issued for the convenience of the County.

f) No termination or action taken by County after termination shall prejudice any other rights or remedies of County provided by law or by the Contract Documents upon such termination; and County may proceed against Contractor to recover all losses suffered by County.

6. TERMINATION BY THE COUNTY FOR CONVENIENCE:

a) The County may at its option, terminate this Contract in whole or in part at any time without cause by written notice thereof to the Contractor.

b) Upon any such termination, the Contractor agrees to waive any claims for damages, including loss of anticipated profits, on account thereof, and as the sole right and remedy of the Contractor, the County shall pay Contractor in accordance with this Paragraph. The provisions of the Contract which by their nature survive final acceptance of the Work, shall remain in full force and effect after such termination to the extent provided in such provisions.

c) Upon receipt of any such notice of termination, the Contractor shall, unless the Notice directs otherwise, immediately:
   1. Discontinue the Work to the extent specified by the County;
   2. Place no further orders or subcontracts for materials, equipment, services or facilities, except as may be necessary for completion of that portion of the Work, if any, the County has directed not to be discontinued;
   3. Promptly make every reasonable effort to procure cancellation upon satisfactory terms as determined by the County of all orders and subcontracts not related to that portion of the Work, if any, the County has directed not to be discontinued;
   4. Do only such other activity as may be necessary to preserve and protect work already in progress and to protect materials and plants and equipment on the Project Site or in transit thereto.

d) Upon such termination, the obligations of the Contract shall continue as to portions of the Work already performed and as to bona fide obligations the Contractor assumed prior to the date of termination.

e) Upon termination, the County shall pay the Contractor the full cost of all Work properly done by the Contractor to the date of termination not previously paid for by the County. If at the date of such termination the Contractor has properly prepared or fabricated off site any goods for subsequent incorporation in the Work, the County may direct the Contractor to deliver such goods to the Site or to such other place as the County may reasonably determine, whereupon the County shall pay to the Contractor the cost for such goods and materials.

f) Upon such termination, County shall pay to Contractor the sum of the following:
   1. The amount of the Contract Sum allocable to the portion of the Work properly performed by Contractor as of the date of termination, less sums previously paid to Contractor.
   2. Previously unpaid costs of any items delivered to the Project site which were fabricated for subsequent incorporation in the Work.
   3. Any proven losses with respect to materials and equipment directly resulting from such termination.
   4. Reasonable demobilization costs.

g) The above payment shall be the sole and exclusive remedy to which Contractor is entitled in the event of termination of the Contract by County pursuant to this provision; and Contractor will be entitled to no other compensation or damages and expressly waives same.

7. INDEPENDENT CONTRACTOR: It is the express intent of the parties that this contract shall not create an employer-employee relationship. Employees of the Contractor shall not be deemed to be employees of the County and employees of the County shall not be deemed to be employees of the Contractor. The Contractor and the County shall be responsible to their respective employees for all salary and benefits. Neither the Contractor's employees nor the County's employees shall be entitled to any salary, wages, or benefits from the other party, including but not limited to overtime, vacation, retirement benefits, workers' compensation, sick leave or injury leave. Contractor shall also be responsible for maintaining workers' compensation insurance, unemployment insurance for its employees, and for payment of all federal, state, local and any other payroll taxes with respect to its employees' compensation.

8. PERIOD OF PERFORMANCE: The work included in this Contract shall begin as soon as possible from date of executed contract. The completion shall be April 30, 2018.

9. ASSIGNMENT: Contractor shall not assign its duties and responsibilities under this Contract without the express written permission of the County.

10. The Contract Documents comprise the Contract, and consist of the following:

    1. Contract Terms
    2. Accepted Proposal
    3. Insurance Certificate with Endorsements
    4. Addendums 1 & 2
    5. Specifications/General Requirements
    6. Drawings and Plans
    7. Pre-Bid Attendee Sign-In Sheet/Roof Viewing Sign-In Sheet
    8 Instructions to Bidders
    9. Insurance Requirements
    10. Employee Classification Act Requirements
    11. Construction Bonds
    12. Sales Tax Exemption Forms 13 & 17
    13. Notice to Bidders

The herein above mentioned Contract Documents form this Contract and are a part of the Contract as if hereto attached. Said documents which are not attached to this document may be viewed at: lincoln.ne.gov - Keyword: Bid - Awarded or Closed bids.

This Contract contains the complete and entire Contract between the parties and may not be altered or amended except in writing executed, making specific references to this Contract, by a duly authorized officer of the Contractor and by a duly authorized official of the County.

The Contractor and the County hereby agree that all the terms and conditions of this Contract shall be binding upon themselves, and their heirs, administrators, executors, legal and personal representatives, successors, and assigns.

IN WITNESS WHEREOF, the Contractor and the County do hereby execute this contract upon completion of signature on:

Vendor Signature Page
Lancaster County Signature Page

## Vendor Signature Page

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**CONTRACT**
**Lancaster County Engineering RTU Replacement**
**Bid No. 18-004**
**Lancaster County**
**MMC Contractors**

**EXECUTION BY CONTRACTOR**

**IF A CORPORATION:**

Attest:

_____ Seal
Secretary

MMC Mechanical Contractors, Inc.
Name of Corporation

9751 S. 142nd Street, Omaha, NE 68138
Address

By: _____
Duly Authorized Official

Vice President
Legal Title of Official

**IF OTHER TYPE OF ORGANIZATION:**

_____
Name of Organization

_____
Type of Organization

_____
Address

By: _____
Member

By: _____
Member

**IF AN INDIVIDUAL:**

_____
Name

_____
Address

_____
Signature

## Lancaster County Signature Page

**CONTRACT**
**Lancaster County Engineering RTU Replacement**
**Bid No. 18-004**
**Lancaster County**
**MMC Contractors**

**EXECUTION BY LANCASTER COUNTY, NEBRASKA**

Contract Approved as to Form:

_____
Deputy Lancaster County Attorney

The Board of County Commissioners of Lancaster, Nebraska

_____

_____

_____

_____

_____

dated _____

COMMENTARY TO ACCOMPANY CONSTRUCTION BONDS

A. GENERAL INFORMATION

There are two types of construction bonds that are required by statutes for public work in many jurisdictions and are widely used for other projects as well.

Construction Performance Bond
Construction Payment Bond

The Construction Performance Bond is an instrument that is used to assure the availability of funds to complete the construction.

The Construction Payment Bond is an instrument that is used to assure the availability of sufficient funds to pay for labor, materials and equipment used in the construction. For public work the Construction Payment Bond provides rights of recovery for workers and suppliers similar to their rights under the mechanics lien laws applying to private work.

The objective underlying the re-writing of construction bond forms was to make them more understandable to provide guidance to users. The intention was to define the rights and responsibilities of the parties, without changing the traditional rights and responsibilities that have been decided by the courts. The new bond forms provide helpful guidance regarding time periods for various notices and actions and clarify the extent of available remedies.

The concept of pre-default meeting has been incorporated into the Construction Performance Bond. All of the participants favored early and informal resolution of the problems that may precipitate a default, but some Surety companies were reluctant to participate in pre-default settings absent specific authorization in the bond form.

The responsibilities of the Owner and the options available to the Surety when a default occurs are set forth in the Construction Performance Bond. Procedures for making a claim under the Construction Payment Bond are set forth in the form.

EJCDC recommends the use of two separate bonds rather than a combined form. Normally the amount of each bond is 100 percent of the contract amount. The bonds have different purposes and are separate and distinct obligations of the Surety. The Surety Association reports that the usual practice is to charge a single premium for both bonds and there is no reduction in premium for using a combined form or for issuing one bond without the other.

B. COMPLETING THE FORMS

Bonds have important legal consequences; consultation with an attorney and a bond specialist is encouraged with respect to federal, state and local laws applicable to bonds and with respect to completing or modifying the bond forms.

Both bond forms have a similar format and the information to be filled in is ordinarily the same on both bonds. If modification is necessary, the modifications may be different.

The bond forms are prepared for execution by the Contractor and the Surety. Evidence of authority to bind the Surety is usually provided in the form of a power of attorney designating the agent who is authorized to sign on behalf of the Surety. The power of attorney should be filed with the signed bonds.

Each bond must be executed separately since they cover separate and distinct obligations.

Preferably the bond date should be the same date as the contract, but in no case should the bond date precede the date of the contract.

CONSTRUCTION PERFORMANCE BOND

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

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CONTRACTOR (Name and Address):

MMC Mechanical Contractors, Inc.
9751 South 142nd Street
Omaha, NE 68138

SURETY (Name and Principal Place of Business):

Federal Insurance Company
202B Hall's Mill Road
Whitehouse Station, NJ 08889
(908) 903-2000

Owner (Name and Address):
Lancaster County
555 South 10th St.
Lincoln, NE 68508

CONSTRUCTION CONTRACT
Date:
Amount: $95,211.00 (Ninety Five Thousand Two Hundred Eleven and No/100 Dollars)

Description (Name and Location):
**For all labor, material and equipment necessary for Lancaster County Engineering RTU Replacement, Bid No. 18-004.**

BOND
Date:
Amount: $95,211.00 (Ninety Five Thousand Two Hundred Eleven and No/100 Dollars)

Modifications to this Bond Form: None

CONTRACTOR AS PRINCIPAL
Company: (Corp. Seal)

MMC Mechanical Contractors, Inc.
9751 South 142nd Street
Omaha, NE 68138

SURETY
Company: (Corp. Seal)

Federal Insurance Company
202B Hall's Mill Road
Whitehouse Station, NJ 08889

Signature:
Name and Title:

Signature:
Name and Title: Rebecca S. Leal
Attorney-in-Fact

EJCDC NO. 1910-28a (1984 Edition)
Prepared through the joint efforts of The Surety Assoc. of America. Engineers' Joint Contract Documents Committee. The Associated General Contractors of America, and the American Institute of Architects.

1. The Contractor and the Surety, jointly and severally, bind themselves their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.
2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except to participate in conferences as provided in Subparagraph 3.1.
3. If there is no Owner Default, the Surety's obligation under this Bond shall arise after:
   3.1 The Owner has notified the Contractor and the Surety at its address described in Paragraph 10 below, that the Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with the Contractor and the Surety to be held not later than fifteen days after receipt of such notice to discuss methods of performing the Construction Contract. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default and
   3.2 The Owner has declared a Contractor Default and formally terminated the Contractor's right to complete the contract. Such Contractor Default shall not be declared earlier than twenty days after the Contractor and the Surety have received notice as provided in Sub-paragraph 3.1; and
   3.3 The Owner has agreed to pay the Balance of the Contract Price to the Surety in accordance with the terms of the Construction Contract or to a contractor selected to perform the Construction Contract in accordance with the terms of the contract with the Owner.
4. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:
   4.1 Arrange for the Contractor, with consent of the Owner, to perform and complete the Construction Contract, or
   4.2 Undertake to perform and complete the Construction Contract itself, through its agents or through independent contractors: or
   4.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and the contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 6 in excess of the Balance of the Contract Price incurred by the Owner resulting from the Contractor's default, or
   4.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:
      1. After investigation, determine the amount for which it may be liable to the Owner and as soon as practicable after the amount is determined tender payment therefor to the Owner; or
      2. Deny liability in whole or in part and notify the Owner citing reasons therefor.
5. If the Surety does not proceed as provided in Paragraph 4 with reasonable promptness, the Surety shall be deemed to be in default on this Bond fifteen days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Subparagraph 4.4 and the Owner refuses payment tendered or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.
6. After the Owner has terminated the Contractor's right to complete the Construction Contract, and if the Surety elects to act under Subparagraph 4.1, 4.2, or 4.3 above, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. To the limit of the amount of this Bond, but subject to commitment by the Owner of the Balance of the Contract Price to mitigation of costs and damages on the Construction Contract, the Surety is obligated without duplication for:
   6.1 The responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
   6.2 Additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 4; an d
   6.3 Liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.
7. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, or successors.
8. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related sub-contracts, purchase orders and other obligations.
9. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.
10. Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the signature page.
11. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.
12. Definitions.
    12.1 Balance of the Contract Price: The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.
    12.2 Construction Contract: The agreement between the Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto.
    12.3 Contractor Default: Failure of the Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Construction Contract.
    12.4 Owner Default: Failure of the Owner, which has neither been remedied nor waived, to pay the Contractor as required by the Construction Contract or to perform and complete or comply with the other terms thereof.

CHUBB

# Power of Attorney

## Federal Insurance Company | Vigilant Insurance Company | Pacific Indemnity Company

Know All by These Presents, That FEDERAL INSURANCE COMPANY, an Indiana corporation, VIGILANT INSURANCE COMPANY, a New York corporation, and PACIFIC INDEMNITY COMPANY, a Wisconsin corporation, do each hereby constitute and appoint Christy M. Braile, Laura M. Buhrmester, Megan L. Burns-Hasty, Jeffrey C. Carey, Mary T. Flanigan, Tahitia M. Fry, C. Stephens Griggs, Charissa D. Lecuyer, Rebecca S. Leal, Patrick T. Pribyl, Debra J. Scarborough, Evan D. Sizemore and Charles R. Teter III of Kansas City, Missouri----------
each as their true and lawful Attorney-in-Fact to execute under such designation in their names and to affix their corporate seals to and deliver for and on their behalf as surety thereon or otherwise, bonds and undertakings and other writings obligatory in the nature thereof (other than bail bonds) given or executed in the course of business, and any instruments amending or altering the same, and consents to the modification or alteration of any instrument referred to in said bonds or obligations.

In Witness Whereof, said FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, and PACIFIC INDEMNITY COMPANY have each executed and attested these presents and affixed their corporate seals on this 10th day of November, 2017.

Dawn M. Chloros, Assistant Secretary

Stephen M. Haney, Vice President

STATE OF NEW JERSEY

County of Hunterdon ss.

On this 10th day of November, 2017 before me, a Notary Public of New Jersey, personally came Dawn M. Chloros, to me known to be Assistant Secretary of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, and PACIFIC INDEMNITY COMPANY, the companies which executed the foregoing Power of Attorney, and the said Dawn M. Chloros, being by me duly sworn, did depose and say that she is Assistant Secretary of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, and PACIFIC INDEMNITY COMPANY and knows the corporate seals thereof, that the seals affixed to the foregoing Power of Attorney are such corporate seals and were thereto affixed by authority of said Companies; and that she signed said Power of Attorney as Assistant Secretary of said Companies by like authority; and that she is acquainted with Stephen M. Haney, and knows him to be Vice President of said Companies; and that the signature of Stephen M. Haney, subscribed to said Power of Attorney is in the genuine handwriting of Stephen M. Haney, and was thereto subscribed by authority of said Companies and in deponent's presence.

Notarial Seal

KATHERINE J. ADELAAR
NOTARY PUBLIC OF NEW JERSEY
No. 2310686
Commission Expires July 16, 2019

Notary Public

## CERTIFICATION

Resolutions adopted by the Boards of Directors of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, and PACIFIC INDEMNITY COMPANY on August 30, 2016:

"RESOLVED, that the following authorizations relate to the execution, for and on behalf of the Company, of bonds, undertakings, recognizances, contracts and other written commitments of the Company entered into in the ordinary course of business (each a "Written Commitment"):

(1) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise.

(2) Each duly appointed attorney-in-fact of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise, to the extent that such action is authorized by the grant of powers provided for in such person's written appointment as such attorney-in-fact.

(3) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to appoint in writing any person the attorney-in-fact of the Company with full power and authority to execute, for and on behalf of the Company, under the seal of the Company or otherwise, such Written Commitments of the Company as may be specified in such written appointment, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.

(4) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to delegate in writing to any other officer of the Company the authority to execute, for and on behalf of the Company, under the Company's seal or otherwise, such Written Commitments of the Company as are specified in such written delegation, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.

(5) The signature of any officer or other person executing any Written Commitment or appointment or delegation pursuant to this Resolution, and the seal of the Company, may be affixed by facsimile on such Written Commitment or written appointment or delegation.

FURTHER RESOLVED, that the foregoing Resolution shall not be deemed to be an exclusive statement of the powers and authority of officers, employees and other persons to act for and on behalf of the Company, and such Resolution shall not limit or otherwise affect the exercise of any such power or authority otherwise validly granted or vested."

I, Dawn M. Chloros, Assistant Secretary of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, and PACIFIC INDEMNITY COMPANY (the "Companies") do hereby certify that

(i) the foregoing Resolutions adopted by the Board of Directors of the Companies are true, correct and in full force and effect,
(ii) the Companies are duly licensed and authorized to transact surety business in all 50 of the United States of America and the District of Columbia and are authorized by the U.S. Treasury Department; further, Federal and Vigilant are licensed in the U.S. Virgin Islands, and Federal is licensed in Guam, Puerto Rico, and each of the Provinces of Canada except Prince Edward Island; and
(iii) the foregoing Power of Attorney is true, correct and in full force and effect.

Given under my hand and seals of said Companies at Whitehouse Station, NJ, this

Dawn M. Chloros, Assistant Secretary

IN THE EVENT YOU WISH TO NOTIFY US OF A CLAIM, VERIFY THE AUTHENTICITY OF THIS BOND OR NOTIFY US OF ANY OTHER MATTER, PLEASE CONTACT US AT:
Telephone (908) 903-3493 Fax (908) 903-3656 e-mail: surety@chubb.com

Bond No. 82462430

# CONSTRUCTION PAYMENT BOND

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):
MMC Mechanical Contractors, Inc.
9751 South 142nd Street
Omaha, NE 68138

SURETY (Name and Principal Place Of Business):
Federal Insurance Company
202B Hall's Mill Road
Whitehouse Station, NJ 08889
(908) 903-2000

Owner (Name and Address):

Lancaster County
555 South 10th St.
Lincoln, NE 68508

CONSTRUCTION CONTRACT
Date:
Amount: $95,211.00 (Ninety Five Thousand Two Hundred Eleven and No/100 Dollars)

Description (Name and Location):
**For all labor, material and equipment necessary for Lancaster County Engineering RTU Replacement, Bid No. 18-004.**

BOND
Date:
Amount: $95,211.00 (Ninety Five Thousand Two Hundred Eleven and No/100 Dollars)

Modifications to this Bond Form: None

CONTRACTOR AS PRINCIPAL
Company: (Corp. Seal)
MMC Mechanical Contractors, Inc.
9751 South 142nd Street
Omaha, NE 68138

Signature: _____
Name and Title: Dennis Eden/ Vice President

SURETY
Company: (Corp. Seal)
Federal Insurance Company
202B Hall's Mill Road
Whitehouse Station, NJ 08889

Signature: _____
Name and Title: Rebecca S. Leal
Attorney-in-Fact

EJCDC NO. 1910-28B (1984 Edition)
Prepared through the joint efforts of The Surety Assoc. of America. Engineers' Joint Contract Documents Committee. The Associated General Contractors of America, and the American Institute of Architects.

1. The Contractor and the Surety, jointly and severally, bind themselves their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference.
2. With respect to the Owner, this obligation shall be null and void if the Contractor:
   2.1 Promptly makes payment, directly or indirectly, for all sums due Claimants, and
   2.2 Defends, indemnifies and holds harmless the Owner from all claims, demands, liens or suits by any person or entity who furnished labor, materials or equipment for use in the performance of the Construction Contract, provided the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 12) of any claims, demands, liens or suits and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety, and provided there is no Owner Default.
3. With respect to Claimants, this obligation shall be null and void if the Contractor promptly makes payment, directly or indirectly, for all sums due.
4. The Surety shall have no obligation to Claimants under this Bond until:
   4.1 Claimants who do not have a direct contract with the Contractor have given notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof to the Owner, stating that a claim is being made under this Bond and with substantial accuracy the amount of the claim.
   4.2 Claimants who do not have a direct contract with the Contractor:
      1. Have furnished written notice to the Contractor and sent a copy, or notice thereof, to the Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials were furnished or supplied or for whom the labor was done or performed, and
      2. Have either received a rejection in whole or in part from the Contractor, or not received within 30 days of furnishing the above notice any communication from the Contractor by which the Contractor has indicated the claim will be paid directly or indirectly; and
      3.Not having been paid within the above 30 days, have sent a written notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to the Owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to the Contractor.
5. If a notice required by Paragraph 4 is given by the Owner to the Contractor or to the Surety, that is sufficient compliance.
6. When the Claimant has satisfied the conditions of Paragraph 4, the Surety shall promptly and at the Surety's expense take the following actions:
   6.1 Send an answer to the Claimant, with a copy to the Owner, within 45 days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.
   6.2 Pay or arrange for payment of any undisputed amounts.
7. The Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.
8. Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any Construction Performance Bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and the Surety under this Bond, subject to the Owner's priority to the funds for the completion of the work.
9. The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.
10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.
11. No suite or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the work or part of the work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by Subparagraph 4.1 or Clause 4.1 (iii), or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.
12. Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the signature page. Actual receipt of notice by Surety, the Owner or the Contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.
13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted here from and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is, that this Bond shall be construed as a statutory bond and not as a common law bond.
14. Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.
15. DEFINITIONS
   15.1 Claimant: An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials, or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.
   15.2 Construction Contract: The agreement between the Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto.
   15.3 Owner Default: Failure of the Owner, which has neither been remedied nor waived, to pay the Contractor as required by the Construction Contract or to perform and complete or comply with the other terms thereof.

(FOR INFORMATION ONLY - NAME, ADDRESS AND TELEPHONE) AGENT OR BROKER: OWNER'S REPRESENTATIVE (ARCHITECT, ENGINEER OR OTHER PARTY)

CHUBB

# Power of Attorney

## Federal Insurance Company | Vigilant Insurance Company | Pacific Indemnity Company

Know All by These Presents, That FEDERAL INSURANCE COMPANY, an Indiana corporation, VIGILANT INSURANCE COMPANY, a New York corporation, and PACIFIC INDEMNITY COMPANY, a Wisconsin corporation, do each hereby constitute and appoint Christy M. Braile, Laura M. Buhrmester, Megan L. Burns-Hasty, Jeffrey C. Carey, Mary T. Flanigan, Tahitia M. Fry, C. Stephens Griggs, Charissa D. Lecuyer, Rebecca S. Leal, Patrick T. Pribyl, Debra J. Scarborough, Evan D. Sizemore and Charles R. Teter III of Kansas City, Missouri----------
each as their true and lawful Attorney-in-Fact to execute under such designation in their names and to affix their corporate seals to and deliver for and on their behalf as surety thereon or otherwise, bonds and undertakings and other writings obligatory in the nature thereof (other than bail bonds) given or executed in the course of business, and any instruments amending or altering the same, and consents to the modification or alteration of any instrument referred to in said bonds or obligations.

In Witness Whereof, said FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, and PACIFIC INDEMNITY COMPANY have each executed and attested these presents and affixed their corporate seals on this 10th day of November, 2017.

Dawn M. Chloros, Assistant Secretary

Stephen M. Haney, Vice President

STATE OF NEW JERSEY

County of Hunterdon ss.

On this 10th day of November, 2017 before me, a Notary Public of New Jersey, personally came Dawn M. Chloros, to me known to be Assistant Secretary of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, and PACIFIC INDEMNITY COMPANY, the companies which executed the foregoing Power of Attorney, and the said Dawn M. Chloros, being by me duly sworn, did depose and say that she is Assistant Secretary of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, and PACIFIC INDEMNITY COMPANY and knows the corporate seals thereof, that the seals affixed to the foregoing Power of Attorney are such corporate seals and were thereto affixed by authority of said Companies; and that she signed said Power of Attorney as Assistant Secretary of said Companies by like authority; and that she is acquainted with Stephen M. Haney, and knows him to be Vice President of said Companies; and that the signature of Stephen M. Haney, subscribed to said Power of Attorney is in the genuine handwriting of Stephen M. Haney, and was thereto subscribed by authority of said Companies and in deponent's presence.

Notarial Seal

KATHERINE J. ADELAAR
NOTARY PUBLIC OF NEW JERSEY
No. 2318686
Commission Expires July 16, 2019

Notary Public

## CERTIFICATION

Resolutions adopted by the Boards of Directors of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, and PACIFIC INDEMNITY COMPANY on August 30, 2016:

"RESOLVED, that the following authorizations relate to the execution, for and on behalf of the Company, of bonds, undertakings, recognizances, contracts and other written commitments of the Company entered into in the ordinary course of business (each a "Written Commitment"):

(1) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise.

(2) Each duly appointed attorney-in-fact of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise, to the extent that such action is authorized by the grant of powers provided for in such person's written appointment as such attorney-in-fact.

(3) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to appoint in writing any person the attorney-in-fact of the Company with full power and authority to execute, for and on behalf of the Company, under the seal of the Company or otherwise, such Written Commitments of the Company as may be specified in such written appointment, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.

(4) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to delegate in writing to any other officer of the Company the authority to execute, for and on behalf of the Company, under the Company's seal or otherwise, such Written Commitments of the Company as are specified in such written delegation, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.

(5) The signature of any officer or other person executing any Written Commitment or appointment or delegation pursuant to this Resolution, and the seal of the Company, may be affixed by facsimile on such Written Commitment or written appointment or delegation.

FURTHER RESOLVED, that the foregoing Resolution shall not be deemed to be an exclusive statement of the powers and authority of officers, employees and other persons to act for and on behalf of the Company, and such Resolution shall not limit or otherwise affect the exercise of any such power or authority otherwise validly granted or vested."

I, Dawn M. Chloros, Assistant Secretary of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, and PACIFIC INDEMNITY COMPANY (the "Companies") do hereby certify that

(i) the foregoing Resolutions adopted by the Board of Directors of the Companies are true, correct and in full force and effect,
(ii) the Companies are duly licensed and authorized to transact surety business in all 50 of the United States of America and the District of Columbia and are authorized by the U.S. Treasury Department; further, Federal and Vigilant are licensed in the U.S. Virgin Islands, and Federal is licensed in Guam, Puerto Rico, and each of the Provinces of Canada except Prince Edward Island; and
(iii) the foregoing Power of Attorney is true, correct and in full force and effect.

Given under my hand and seals of said Companies at Whitehouse Station, NJ, this

Dawn M. Chloros, Assistant Secretary

IN THE EVENT YOU WISH TO NOTIFY US OF A CLAIM, VERIFY THE AUTHENTICITY OF THIS BOND OR NOTIFY US OF ANY OTHER MATTER, PLEASE CONTACT US AT:
Telephone (908) 903-3493 Fax (908) 903-3656 e-mail: surety@chubb.com

**Certified Statement Pursuant to Neb. Rev. Stat. § 77-1323**

§ 77-1323 *Every person, partnership, limited liability company, association, or corporation furnishing labor or material in the repair, alteration, improvement, erection, or construction of any public improvement shall furnish a certified statement to be attached to the contract that all equipment to be used on the project, except that acquired since the assessment date, has been assessed for taxation for the current year, giving the county where assessed.*

Pursuant to Neb. Rev. Stat. § 77-1323, I, Daniel L Christensen, do hereby certify that all equipment to be used on Bid No. 18-004, except that equipment acquired since the assessment date, has been assessed for taxation for the current year, in Lancaster County, Nebraska.

DATED this 15 day of February, 2018.

By: _____

Title: Vice President

STATE OF NEBRASKA )
)ss.
COUNTY OF Sarpy )

On February 15, 2018, before me, the undersigned Notary Public duly commissioned for and qualified in said County, personally came Daniel L Christensen, to me known to be the identical person, whose name is affixed to the foregoing instrument and acknowledged the execution thereof to be his voluntary act and deed.

Witness my hand and notarial seal the day and year last above written.

_____ Notary Public

(SEAL)

CHRISTINE RAE SKUTNIK
General Notary
State of Nebraska
My Commission Expires Dec 9, 2019

## EMPLOYEE CLASSIFICATION ACT AFFIDAVIT

For the purposes of complying with THE NEBRASKA EMPLOYEE CLASSIFICATION ACT, Nebraska Revised Statutes 48-2901 to 48-2912 and City of Lincoln Executive Order 083319,

I, Daniel L Christensen herein below known as the Contractor, state under oath and swear as follows:

1. Each individual performing services for the Contractor is properly classified under the Employee Classification Act.

2.The Contractor has completed a federal I-9 immigration form and has such form on file for each employee performing services.

3. The Contractor has complied with Neb Rev Stat 4-114.

4. The Contractor has no reasonable basis to believe that any individual performing services for the Contractor is an undocumented worker.

5. The Contractor is not barred from contracting with the state or any political subdivision pursuant to NRS 48-2912 of this Act.

6. As the Contractor I understand that pursuant to the Employee Classification Act a violation of the Act by a contractor is grounds for rescission of the contract by the City of Lincoln and Lancaster County. I understand that pursuant to the Act any contractor who knowingly provides a false affidavit may be subject to criminal penalties and upon a second or subsequent violation shall be barred from contracting with the City of Lincoln and Lancaster County for a period of three years after the date of discovery of the falsehood.

I hereby affirm and swear that the statements and information provided on this affidavit are true, complete and accurate. The undersigned person does hereby agree and represent that he or she is legally capable to sign this affidavit and to lawfully bind the Contractor to this affidavit.

PRINT NAME: Daniel L Christensen
(First, Middle, Last)

SIGNATURE: [signature]

TITLE: Vice President

State of Nebraska )
) ss.
County of Sarpy )

This affidavit was signed and sworn to before me, the undersigned Notary Public, on this 15 day of February, 2018.

[signature]
Notary Public

CHRISTINE RAE SKUTNIK
General Notary
State of Nebraska
My Commission Expires Dec 9, 2019

# City of Lincoln/Lancaster County (Lincoln Purchasing)
# Supplier Response

## Bid Information

| | |
|---|---|
| Bid Creator | Sharon Mulder Asst Purchasing Agent |
| Email | smulder@lincoln.ne.gov |
| Phone | (402) 441-7428 |
| Fax | (402) 441-6513 |
| Bid Number | 18-004 Addendum 2 |
| Title | Lancaster County Engineering RTU Replacement |
| Bid Type | Bid |
| Issue Date | 1/10/2018 01:00 PM (CT) |
| Close Date | 1/24/2018 12:00:00 PM (CT) |

## Contact Information

| | |
|---|---|
| Address | Purchasing<br>440 S. 8th St.<br>Lincoln, NE 68508 |
| Contact | Sharon Mulder Asst Purchasing Agent |
| Department | |
| Building | Suite 200 |
| Floor/Room | |
| Telephone | (402) 441-7428 |
| Fax | (402) 441-6513 |
| Email | smulder@lincoln.ne.gov |

## Ship to Information

| | |
|---|---|
| Address | County Engineering<br>444 Cherrycreek Road,<br>Bldg C<br>Lincoln, NE 68528 |
| Contact | |
| Department | |
| Building | |
| Floor/Room | |
| Telephone | |
| Fax | |
| Email | |

## Supplier Information

| | |
|---|---|
| Company | MMC Contractors |
| Address | 9751 S. 142nd Street<br><br>Omaha, NE 68138 |
| Contact | Adam Nielsen |
| Department | |
| Building | |
| Floor/Room | |
| Telephone | (402) 861-0681 |
| Fax | (402) 861-0682 |
| Email | anielsen@mmccontractors.com |
| Submitted | 1/24/2018 11:50:14 AM (CT) |
| Total | $98,245.00 |

By submitting your response, you certify that you are authorized to represent and bind your company.

Signature Adam Nielsen  Email anielsen@mmccontractors.com

## Supplier Notes

## Bid Notes

## Bid Activities

| Date | Name | Description |
|---|---|---|
| 1/16/2018 10:00:00 AM (CT) | Pre-Bid Meeting | A pre-bid meeting will be held Tuesday, January 16, 2018 at 10:00 a.m. located at Lancaster County Engineering Office, 444 Cherrycreek Rd. Meet in conference room, in hallway between Extension Office and County Engineering. |

| | | |
|---|---|---|
| 1/19/2018 01:30:00 PM (CT) | Opportunity to view the roof | View the roof on Friday, January 19, 2018 for the Lancaster County Engineering RTU Replacement located at 444 Cherrycreek Road. Due to the extreme cold temperatures and winds, the roof viewing was rescheduled. |
| 1/24/2018 12:00:00 PM (CT) | General Contractor Intent | If you intend to bid as a Sub Contractor, select "No, I do not intend to respond to this opportunity" in the Response Intent Box, click Save. Click "Intent" a second time, select "Yes, I intend to respond to this opportunity" in the Response Intent Box, click Save. |
| 1/24/2018 12:00:00 PM (CT) | Sub-Contractor Intent | Select if you intend to bid as a Sub Contractor. |

## Bid Messages

## Bid Attributes

Please review the following and respond where necessary

| # | Name | Note | Response |
|---|---|---|---|
| 1 | Instructions to Bidders | I acknowledge reading and understanding the Instructions to Bidders. | Yes |
| 2 | Specifications | I acknowledge reading and understanding the specifications. | Yes |
| 3 | Insurance Requirements and Endorsements | Vendor agrees to provide insurance coverage for each checked box on the Insurance Clause document in the Bid Attachments including the submission of the Certificate of ACORD and the applicable endorsements.<br><br>Insurance Certificate and required Endorsements are required at time of contract execution by the vendor.<br><br>Vendors are strongly encouraged to send the insurance requirements and endorsement information to their insurance agent prior to bid close in order to expedite the contract execution process. | Yes |
| 4 | Sample Contract | I acknowledge reading and understanding the sample contract. | Yes |
| 5 | Contact | Name of person submitting this bid: | Adam Nielsen |
| 6 | Standard Specifications for Municipal Construction | I acknowledge reading and understanding the current City of Lincoln Standard Specifications for Municipal Construction and Lincoln Standard Plans (including General Provisions and Requirements, and Material and Construction Specifications) View at:<br><br>http://www.lincoln.ne.gov/city/pworks/engine/dconst/standard/stndspec/index.htm | Yes |
| 7 | Bid Bond Summission - County | I acknowledge and understand that my bid will not be considered unless a bid bond or certified check in the sum of five percent (5%) of the total amount of the bid is made payable to the order of the Lancaster County Treasurer as a guarantee of good faith prior to the bid opening. The bid security may be scanned and attached to the 'Response Attachments' section of your response or faxed to the Purchasing Office (402)441-6513. The original bond/check must then be received in the Purchasing Office, 440 S. 8th Street, Ste. 200, Lincoln, NE 68508 within three (3) days of bid closing.<br>YOU MUST INDICATE YOUR METHOD OF BID BOND | I have mailed my bid bond. |

| | | | SUBMISSION IN BOX TO RIGHT! |
|---|---|---|---|
| 8 | Performance/Payment Bonds | I acknowledge that a Performance Bond and a Payment Bond each in the amount of 100% of the Contract amount will be required with the signed contract upon award of this job. | Yes |
| 9 | U.S. Citizenship Attestation | Is your company legally considered an Individual or Sole Proprietor: YES or NO<br><br>As a Vendor who is legally considered an Individual or a Sole Proprietor I hereby understand and agree to comply with the requirements of the United States Citizenship Attestation Form, available at: http://www.sos.ne.gov/business/notary/citizenforminfo.html<br><br>All awarded Vendors who are legally considered an Individual or a Sole Proprietor must complete the form and submit it with contract documents at time of execution.<br><br>If a Vendor indicates on such attestation form that he or she is a qualified alien, the Vendor agrees to provide the US Citizenship and Immigration Services documentation required to verify the Vendor's lawful presence in the United States using the Systematic Alien Verification for Entitlements (SAVE) Program.<br><br>Vendor further understands and agrees that lawful presence in the United States is required and the Vendor may be disqualified or the Contract terminated if such lawful presence cannot be verified as required by Neb. Rev. Stat. 4-108. | NO |
| 10 | Employee Class Act EO | I acknowledge reading and understanding the Employee Classification Act, Executive Order 83319. | Yes |
| 11 | Employee Class Act Affidavit | I acknowledge if awarded the contract I will abide by the law, notarize and attach the Employee Classification Act Affidavit to my contract. | Yes |
| 12 | Tax Exempt Certification Forms | Materials being purchased in this bid are tax exempt and unit prices are reflected as such. A Purchasing Agent Appointment form and a Exempt Sales Certificate form shall be issued with contract documents. (Note: State Tax Law does not provide for sales tax exemption for proprietary functions for government, thereby excluding the purchases of pipes to be installed in water lines and purchase of water meters.) | Yes |
| 13 | Reference No. 1 | Determine which of the 3 options below applies to your company's experience and provide all of the information that is being requested only for the option selected within this attribute.<br>1. Current reference (within last five (5) years) where similar services have been provided.<br>Provide the following information: Name of the Company, Contact Person, Phone Number and/or Email Address, Project Name or Description<br>2. Our company has provided similar types of services to the City or County within the last five (5) years.<br>Provide the following information: Department Name, Contact person, Project Name or Number<br>3. If your company is unable to provide a reference and have not provided similar services to the City or County in the last five (5) years.<br>Indicate "Our company is unable to provide the requested information" and then indicate the reason why. | Rick L Roberts<br>Assistant Superintendent<br>Water Production & Treatment<br>Lincoln Water System<br>401 Highway 6 / P.O. Box 144<br>Ashland, Ne. 68003<br>Unit Heater Replacement |

| | | | |
|---|---|---|---|
| 14 | Reference No. 2 | Determine which of the 3 options below applies to your company's experience and provide all of the information that is being requested only for the option selected within this attribute.<br>1. Current reference (within last five (5) years) where similar services have been provided.<br>Provide the following information: Name of the Company, Contact Person, Phone Number and/or Email Address, Project Name or Description<br>2. Our company has provided similar types of services to the City or County within the last five (5) years.<br>Provide the following information: Department Name, Contact person, Project Name or Number<br>3. If your company is unable to provide a reference and have not provided similar services to the City or County in the last five (5) years.<br>Indicate "Our company is unable to provide the requested information" and then indicate the reason why. | Phil Deschane<br>Lincoln Wastewater Facilities Maintenance Coordinator<br>2400 Theresa Street Office: 402-441-3884<br>Lincoln NE 68521 Cell : 402-326-3467<br>Water Resource Recovery Facility<br>Thersa Street & Northeast Plants<br>RTU Repairs |
| 15 | Reference No. 3 | Determine which of the 3 options below applies to your company's experience and provide all of the information that is being requested only for the option selected within this attribute.<br>1. Current reference (within last five (5) years) where similar services have been provided.<br>Provide the following information: Name of the Company, Contact Person, Phone Number and/or Email Address, Project Name or Description<br>2. Our company has provided similar types of services to the City or County within the last five (5) years.<br>Provide the following information: Department Name, Contact person, Project Name or Number<br>3. If your company is unable to provide a reference and have not provided similar services to the City or County in the last five (5) years.<br>Indicate "Our company is unable to provide the requested information" and then indicate the reason why. | Joshua McCarty<br>Operations Supervisor<br>Public Works – Solid Waste<br>5101 N. 48th street<br>Lincoln, NE 68504<br>Unit Heater Replacement |
| 16 | Electronic Signature | Please check here for your electronic signature. | Yes |
| 17 | Agreement to Addendum No. 1 | Respondent hereby certifies that the change set forth in this addendum has been incorporated in their proposal and is part of their bid. Reason: See Bid Attachments section for Addendum information. | Yes |
| 18 | Agreement to Addendum No. 2 | Respondent hereby certifies that the change set forth in this addendum has been incorporated in their proposal and is part of their bid. Reason: See Bid Attachments section for Addendum information. | Yes |

## Line Items

| # | Qty | UOM | Description | Response |
|---|---|---|---|---|
| 1 | 1 | Lump Sum | Cost to Furnish and install/construct the roof top unit replacement and HVAC modifications | $95,211.00 |
| | Item Notes: | | | |
| | Supplier Notes: | | | |
| 2 | 1 | EA | Alternate 1: Provide a deduct pricing to utilize the existing 10 HP VFD in-lieu of providing a new VFD for RTU supply fan | $3,034.00 |
| | Item Notes: | This price is a deduction, please include minus sign prior to number. | | |
| | Supplier Notes: | | | |
| | | | Response Total: | $98,245.00 |

# CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 3/1/2018 2/9/2018

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

| | | |
|---|---|---|
| PRODUCER Lockton Companies<br>444 W. 47th Street, Suite 900<br>Kansas City MO 64112-1906<br>(816) 960-9000 | CONTACT NAME:<br>PHONE (A/C, No, Ext):<br>FAX (A/C, No):<br>E-MAIL ADDRESS: | |
| | INSURER(S) AFFORDING COVERAGE | NAIC # |
| | INSURER A : Old Republic General Ins Corporation | 24139 |
| INSURED 1066913 MMC MECHANICAL CONTRACTORS, INC.<br>9751 S. 142ND STREET<br>OMAHA NE 68138 | INSURER B : Houston Casualty Company | 42374 |
| | INSURER C : Berkley Assurance Company | 39462 |
| | INSURER D : | |
| | INSURER E : | |
| | INSURER F : | |

**COVERAGES** **CERTIFICATE NUMBER:** 15204844 **REVISION NUMBER:** XXXXXXX

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

| INSR LTR | TYPE OF INSURANCE | ADDL INSD | SUBR WVD | POLICY NUMBER | POLICY EFF (MM/DD/YYYY) | POLICY EXP (MM/DD/YYYY) | LIMITS | |
|---|---|---|---|---|---|---|---|---|
| A | X COMMERCIAL GENERAL LIABILITY<br>CLAIMS-MADE X OCCUR<br>X CONTRACTUAL<br>GEN'L AGGREGATE LIMIT APPLIES PER:<br>POLICY X PRO-JECT LOC<br>OTHER: | Y | N | A7DG09221702 | 3/1/2017 | 3/1/2018 | EACH OCCURRENCE<br>DAMAGE TO RENTED PREMISES (Ea occurrence)<br>MED EXP (Any one person)<br>PERSONAL & ADV INJURY<br>GENERAL AGGREGATE<br>PRODUCTS - COMP/OP AGG<br>$ | $ 1,000,000<br>$ 300,000<br>$ 10,000<br>$ 1,000,000<br>$ 2,000,000<br>$ 2,000,000<br>$ |
| A | AUTOMOBILE LIABILITY<br>X ANY AUTO<br>OWNED AUTOS ONLY<br>X HIRED AUTOS ONLY<br>SCHEDULED AUTOS<br>X NON-OWNED AUTOS ONLY | Y | N | A7CA09221702 | 3/1/2017 | 3/1/2018 | COMBINED SINGLE LIMIT (Ea accident)<br>BODILY INJURY (Per person)<br>BODILY INJURY (Per accident)<br>PROPERTY DAMAGE (Per accident)<br>$ | $ 1,000,000<br>$ XXXXXXX<br>$ XXXXXXX<br>$ XXXXXXX<br>$ XXXXXXX |
| B | UMBRELLA LIAB X OCCUR<br>X EXCESS LIAB CLAIMS-MADE<br>DED RETENTION $ | N | N | H17XC50421-02 | 3/1/2017 | 3/1/2018 | EACH OCCURRENCE<br>AGGREGATE<br>$ | $ 5,000,000<br>$ 5,000,000<br>$ XXXXXXX |
| A<br>A<br>A<br>A | WORKERS COMPENSATION AND EMPLOYERS' LIABILITY<br>ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) N<br>If yes, describe under DESCRIPTION OF OPERATIONS below | N / A | Y | A7DW09221702 (AOS)<br>A7CW09221702 (WI ONLY)<br>EXCLUDES PR, US VI<br>STOP GAP ONLY: ND,OH,WA,WY | 3/1/2017<br>3/1/2017 | 3/1/2018<br>3/1/2018 | X PER STATUTE OTH-ER<br>E.L. EACH ACCIDENT<br>E.L. DISEASE - EA EMPLOYEE<br>E.L. DISEASE - POLICY LIMIT | $ 1,000,000<br>$ 1,000,000<br>$ 1,000,000 |
| C | CONTRACTORS E&O & JOB SITE POLLUTION LEGAL | N | N | PCADB-5001583-0217 | 3/1/2017 | 3/1/2018 | $10,000,000 PER OCC/AGG - E&O CLAIMS MADE & POLLUTION OCCURRENCE; $100K RETENTION | |

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
[CONTRACTORS POLLUTION LEGAL INCLUDES MICROBIAL MATTER LEGAL LIABILITY.] RE: PROJECT: LANCASTER COUNTY ENGINEERING RTU REPLACEMENT; CITY OF LINCOLN, LANCASTER COUNTY, AND PBC ARE ADDITIONAL INSURED ON GENERAL AND AUTO LIABILITY COVERAGE, ON A PRIMARY, NON-CONTRIBUTORY BASIS, AS REQUIRED BY WRITTEN CONTRACT. WAIVER OF SUBROGATION IN FAVOR OF THE ADDITIONAL INSURED APPLIES ON WC COVERAGE, AS REQUIRED BY WRITTEN CONTRACT AND WHERE ALLOWED BY LAW. COVERAGE IS SUBJECT TO THE TERMS AND CONDITIONS OF THE POLICY.

**CERTIFICATE HOLDER**

15204844
LANCASTER COUNTY
555 SO. 10TH STREET
LINCOLN NE 68508

**CANCELLATION** See Attachments

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Joseph M Arnello

# CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 3/1/2019 — 2/22/2018

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

| | |
|---|---|
| PRODUCER<br>Lockton Companies<br>444 W. 47th Street, Suite 900<br>Kansas City MO 64112-1906<br>(816) 960-9000 | CONTACT NAME:<br>PHONE (A/C, No, Ext):<br>FAX (A/C, No):<br>E-MAIL ADDRESS: |
| INSURED<br>1066934<br>MMC MECHANICAL CONTRACTORS, INC.<br>9751 S. 142ND STREET<br>OMAHA NE 68138 | INSURER(S) AFFORDING COVERAGE — NAIC #<br>INSURER A : Old Republic General Ins Corporation — 24139<br>INSURER B : Houston Casualty Company — 42374<br>INSURER C : Travelers Property Casualty Co of America — 25674<br>INSURER D :<br>INSURER E :<br>INSURER F : |

**COVERAGES** **CERTIFICATE NUMBER:** 15227900 **REVISION NUMBER:** XXXXXXX

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

| INSR LTR | TYPE OF INSURANCE | ADDL INSD | SUBR WVD | POLICY NUMBER | POLICY EFF (MM/DD/YYYY) | POLICY EXP (MM/DD/YYYY) | LIMITS | |
|---|---|---|---|---|---|---|---|---|
| A | X COMMERCIAL GENERAL LIABILITY<br>CLAIMS-MADE [X] OCCUR<br>X CONTRACTUAL<br>GEN'L AGGREGATE LIMIT APPLIES PER:<br>POLICY [X] PRO-JECT [ ] LOC<br>OTHER: | Y | N | A7DG09221803 | 3/1/2018 | 3/1/2019 | EACH OCCURRENCE<br>DAMAGE TO RENTED PREMISES (Ea occurrence)<br>MED EXP (Any one person)<br>PERSONAL & ADV INJURY<br>GENERAL AGGREGATE<br>PRODUCTS - COMP/OP AGG<br>$ | $ 1,000,000<br>$ 300,000<br>$ 10,000<br>$ 1,000,000<br>$ 2,000,000<br>$ 2,000,000<br>$ |
| A | AUTOMOBILE LIABILITY<br>X ANY AUTO<br>OWNED AUTOS ONLY [ ] SCHEDULED AUTOS<br>X HIRED AUTOS ONLY [X] NON-OWNED AUTOS ONLY | Y | N | A7CA09221803 | 3/1/2018 | 3/1/2019 | COMBINED SINGLE LIMIT (Ea accident)<br>BODILY INJURY (Per person)<br>BODILY INJURY (Per accident)<br>PROPERTY DAMAGE (Per accident)<br>$ | $ 1,000,000<br>$ XXXXXXX<br>$ XXXXXXX<br>$ XXXXXXX<br>$ XXXXXXX |
| B | [ ] UMBRELLA LIAB [X] OCCUR<br>X EXCESS LIAB [ ] CLAIMS-MADE<br>DED [ ] RETENTION $ | N | N | H18XC5042103 | 3/1/2018 | 3/1/2019 | EACH OCCURRENCE<br>AGGREGATE<br>$ | $ 5,000,000<br>$ 5,000,000<br>$ XXXXXXX |
| A<br>A<br>A<br>A | WORKERS COMPENSATION AND EMPLOYERS' LIABILITY<br>ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y/N [N]<br>(Mandatory in NH)<br>If yes, describe under DESCRIPTION OF OPERATIONS below | N/A | Y | A7DW09221803 (AOS)<br>A7CW09221803 (WI ONLY)<br>EXCLUDES PR, US VI<br>STOP GAP ONLY: ND,OH,WA,WY | 3/1/2018<br>3/1/2018 | 3/1/2019<br>3/1/2019 | X PER STATUTE [ ] OTH-ER<br>E.L. EACH ACCIDENT<br>E.L. DISEASE - EA EMPLOYEE<br>E.L. DISEASE - POLICY LIMIT | <br>$ 1,000,000<br>$ 1,000,000<br>$ 1,000,000 |
| C | BLANKET BUILDERS RISK / INSTALLATION FLOATER | N | N | QT6600H524724TIL18 | 3/1/2018 | 3/1/2019 | SPECIAL FORM, REPLACEMENT COST, VARIOUS DEDUCTIBLES | |

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
RE: PROJECT: 18-004; LANCASTER COUNTY ENGINEERING RTU REPLACEMENT; ADDRESS: 444 CHERRYCREEK RD, LINCOLN, NE 68528; CITY OF LINCOLN, LANCASTER COUNTY, AND PBC ARE ADDITIONAL INSURED ON GENERAL AND AUTO LIABILITY COVERAGE, ON A PRIMARY, NON-CONTRIBUTORY BASIS, AS REQUIRED BY WRITTEN CONTRACT. WAIVER OF SUBROGATION IN FAVOR OF THE ADDITIONAL INSURED APPLIES ON WC COVERAGE, AS REQUIRED BY WRITTEN CONTRACT AND WHERE ALLOWED BY LAW. COVERAGE IS SUBJECT TO THE TERMS AND CONDITIONS OF THE POLICY. **SEE ATTACHMENT

**CERTIFICATE HOLDER**

15227900
LANCASTER COUNTY
555 SO. 10TH STREET
LINCOLN NE 68508

**CANCELLATION**

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Joseph M Agnello

BUILDERS RISK: CONTRACT AMOUNT $95,211; FLOOD DEDUCT- NO COVERAGE, EARTHQUAKE- $25,000, AOP- $5,000; ESTIMATED PROJECT TERM: 03/01/2018 - 04/30/2018

**POLICY NUMBER:** A7DG09221702

**COMMERCIAL GENERAL LIABILITY**
**CG 20 10 04 13**

**THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.**

# ADDITIONAL INSURED --- OWNERS, LESSEES OR CONTRACTORS -- SCHEDULED PERSON OR ORGANIZATION

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

**SCHEDULE**

**Name of Additional Insured Person(s) or Organization(s):**

ANY PERSONS OR ORGANIZATIONS TO WHOM OR TO WHICH YOU ARE REQUIRED TO PROVIDE ADDITIONAL INSURED STATUS IN A WRITTEN CONTRACT OR WRITTEN AGREEMENT EXECUTED PRIOR TO THE LOSS EXCEPT WHERE SUCH CONTRACT OR AGREEMENT IS PROHIBITED BY LAW.

**Location(s) Of Covered Operations:**

VARIOUS AS REQUIRED PER WRITTEN CONTRACT.

(Information required to complete this Schedule, if not shown above, will be shown in the Declarations.)

A. Section II - Who Is An Insured is amended to include as an additional insured the person(s) or organization(s) shown in the Schedule, but only with respect to liability for "bodily injury", "property damage" or "personal and advertising injury" caused, in whole or in part, by:

1. Your acts or omissions; or

2. The acts or omissions of those acting on your behalf;

in the performance of your ongoing operations for the additional insured(s) at the location(s) designated above.

However:

1. The insurance afforded to such additional insured only applies to the extent permitted by law; and

2. If coverage provided to the additional insured is required by a contract or agreement, the insurance afforded to such additional insured will not be broader than that which you are required by the contract or agreement to provide for such additional insured.

B. With respect to the insurance afforded to these additional insureds, the following additional exclusions apply:

This insurance does not apply to "bodily injury" or "property damage" occurring after:

1. All work, including materials, parts or equipment furnished in connection with such work, on the project (other than service, maintenance or repairs) to be performed by or on behalf of the additional insured(s) at the location of the covered operations has been completed; or

2. That portion of "your work" out of which the injury or damage arises has been put to its intended use by any person or organization other than another contractor or subcontractor engaged in performing operations for a principal as a part of the same project.

C. With respect to the insurance afforded to these additional insureds, the following is added to Section III - Limits Of Insurance:

If coverage provided to the additional insured is required by a contract or agreement, the most we will pay on behalf of the additional insured is the amount of insurance:

1. Required by the contract or agreement; or

2. Available under the applicable Limits of Insurance shown in the Declarations;

whichever is less.

This endorsement shall not increase the applicable Limits of Insurance shown in the Declarations.

**CG 20 10 04 13**

POLICY NUMBER: A7DG09221702

COMMERCIAL GENERAL LIABILITY
CG 20 37 04 13

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

# ADDITIONAL INSURED - OWNERS, LESSEES OR CONTRACTORS - COMPLETED OPERATIONS

This endorsement modifies insurance provided under the following:

**COMMERCIAL GENERAL LIABILITY COVERAGE PART**

**SCHEDULE**

Name of Additional Insured Person(s) or Organization(s):

ANY PERSONS OR ORGANIZATION TO WHOM OR TO WHICH YOU AR REQUIRED TO PROVIDE ADDITIONAL INSURED STATUS IN A WRITTEN CONTRACT OR WRITTEN AGREEMENT EXECUTED PRIOR TO THE LOSS EXCEPT WHERE SUCH CONTRACT OR AGREEMENT IS PROHIBITED BY LAW.

Location And Description of Completed Operations:

VARIOUS AS REQUIRED BY WRITTEN CONTRACT.

(Information required to complete this Schedule, if not shown above will be shown in the Declarations.)

A. Section II - Who Is An Insured is amended to include as an additional insured the person(s) or organization(s) shown in the Schedule, but only with respect to liability for "bodily injury" or "property damage" caused, in whole or in part, by "your work" at the location designated and described in the Schedule of this endorsement performed for that additional insured and included in the "products-completed operations hazard".

However:

1. The insurance afforded to such additional insured only applies to the extent permitted by law; and

2. If coverage provided to the additional insured is required by a contract or agreement, the insurance afforded to such additional insured will not be broader than that which you are required by the contract or agreement to provide for such additional insured.

B. With respect to the insurance afforded to these additional insureds, the following is added to Section III - Limits Of Insurance:

If coverage provided to the additional insured is required by a contract or agreement, the most we will pay on behalf of the additional insured is the amount of insurance:

1. Required by the contract or agreement; or

2. Available under the applicable Limits of Insurance shown in the Declarations;

whichever is less.

This endorsement shall not increase the applicable Limits of Insurance shown in the Declarations.

**POLICY NUMBER:** A7DG09221702

**COMMERCIAL GENERAL LIABILITY**
**CG 25 03 05/09**

**THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.**

# DESIGNATED CONSTRUCTION PROJECT(S) GENERAL AGGREGATE LIMIT

This endorsement modifies insurance provided under the following:

**COMMERCIAL GENERAL LIABILITY COVERAGE PART**

**SCHEDULE**

**Designated Construction Project(s):**
EACH "PROJECT" FOR WHICH YOU HAVE AGREED, IN A WRITTEN CONTRACT WHICH IS IN EFFECT DURING THIS POLICY PERIOD, TO PROVIDE A SEPARATE GENERAL AGGREGATE LIMIT; PROVIDED THAT, THE CONTRACT IS SIGNED AN EXECUTED PRIOR TO ANY LOSS FOR WHICH COVERAGE IS SOUGHT.

Information required to complete this Schedule, if not shown above, will be shown in the Declarations.

A. For all sums which the insured becomes legally obligated to pay as damages caused by "occurrences" under Section I - Coverage A, and for all medical expenses caused by accidents under Section I - Coverage C, which can be attributed only to ongoing operations at a single designated construction project shown in the Schedule above:

1. A separate Designated Construction Project General Aggregate Limit applies to each designated construction project, and that limit is equal to the amount of the General Aggregate Limit shown in the Declarations.

2. The Designated Construction Project General Aggregate Limit is the most we will pay for the sum of all damages under COVERAGE A, except damages because of "bodily injury" or "property damage" included in the "products-completed operations hazard", and for medical expenses under Coverage C regardless of the number of:

   a. Insureds;

   b. Claims made or "suits" brought; or

   c. Persons or organizations making claims or bringing "suits".

3. Any payments made under Coverage A for damages or under Coverage C for medical expenses shall reduce the Designated Construction Project General Aggregate Limit for that designated construction project. Such payments shall not reduce the General Aggregate Limit shown in the Declarations nor shall they reduce any other Designated Construction Project General Aggregate Limit for any other designated construction project shown in the Schedule above.

4. The limits shown in the Declarations for Each Occurrence, Fire Damage and Medical Expense continue to apply. However, instead of being subject to the General Aggregate Limit shown in the Declarations, such limits will be subject to the applicable Designated Construction Project General Aggregate Limit.

B. For all sums which the insured becomes legally obligated to pay as damages caused by "occurrences" under Section I - Coverage A, and for all medical expenses caused by accidents under Section I - Coverage C, which cannot be attributed only to ongoing operations at a single designated construction project shown in the Schedule above:

1. Any payments made under Coverage A for damages or under Coverage C for medical expenses shall reduce the amount available under the General Aggregate Limit or the Products-Completed Operations Aggregate Limit, whichever is applicable; and

2. Such payments shall not reduce any Designated Construction Project General Aggregate Limit.

C. When coverage for liability arising out of the "products-completed operations hazard" is provided, any payments for damages because of "bodily injury" or "property damage" included in the "products-completed operations hazard" will reduce the Products-Completed Operations Aggregate Limit, and not reduce the General Aggregate Limit nor the Designated Construction Project General Aggregate Limit.

D. If the applicable designated construction project has been abandoned, delayed, or abandoned and then restarted, or if the authorized contracting parties deviate from plans, blueprints, designs, specifications or timetables, the project will still be deemed to be the same construction project.

E. The provisions of Section III - Limits Of Insurance not otherwise modified by this endorsement shall continue to apply as stipulated.

**CG 25 03 05/09**

**Policy Number:** A7CA09221702

## OLD REPUBLIC GENERAL INSURANCE CORPORATION

## ADDITIONAL INSURED-PRIMARY AND NON-CONTRIBUTORY

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

THIS ENDORSEMENT MODIFIES INSURANCE PROVIDED UNDER THE FOLLOWING:

BUSINESS AUTO COVERAGE FORM

With respect to coverage provided by this endorsement, the provisions of the Coverage Form apply unless modified by this endorsement.

This endorsement identifies person(s) or organization(s) who are "insureds" under the Who Is An Insured Provision of the Coverage Form. This endorsement does not alter coverage provided in the Coverage Form.

This endorsement changes the policy effective on the inception date of the policy unless another date is indicated below.

### SCHEDULE

Name of Person(s) or Organization(s) :

WHERE REQUIRED BY WRITTEN CONTRACT

(If no entry appears above, information required to complete this endorsement will be shown in the Declarations as applicable to the endorsement.)

Each person or organization shown in the Schedule is an "insured" for Liability Coverage, but only to the extent that person or organization qualifies as an "insured" under the Who Is An Insured Provision contained in Section II of the Coverage Form.

If the person or organization shown in the schedule qualifies as an 'insured' for Liability Coverage, and they have coverage as a first named insured under another policy, this policy is primary to and non-contributory with that other insurance.

All other terms, conditions, and exclusions apply.

**CA EN GN 0044 02 12**

## WORKERS COMPENSATION AND EMPLOYERS LIABILITY INSURANCE

**WC 00 03 13**
(Ed. 4-84)

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## WAIVER OF OUR RIGHT TO RECOVER FROM OTHERS ENDORSEMENT

We have the right to recover our payments from anyone liable for an injury covered by this policy. We will not enforce our right against the person or organization named in the Schedule. (This agreement applies only to the extent that you perform work under a written contract that requires you to obtain this agreement from us.)

This agreement shall not operate directly or indirectly to benefit anyone not named in the Schedule.

### SCHEDULE

WHERE REQUIRED BY WRITTEN AGREEMENT SIGNED PRIOR TO LOSS.

This endorsement changes the policy to which it is attached and is effective on the date issued unless otherwise stated.

Effective Policy # A7DW09221702 (AOS); A7CW09221702 (WI ONLY)

Insured: MMC Corp.

Insurance Company: Old Republic General Insurance Corporation



Miscellaneous Attachment: M472683
Certificate ID: 15204844

## 30 DAY NOTICE OF CANCELLATION - WRITTEN NOTICE

For insurance provided under:
- Commercial General Liability
- Commercial Automobile Liability
- Workers' Compensation/Employers Liability

If the insurance carrier cancels or non-renews any of the above policies by written notice to the first Named Insured for any reason other than the nonpayment of premium, the carrier will also mail or deliver a copy of such written notice of cancellation or non-renewal to the Certificate Holder.

Notice of cancellation for non-payment of premium will be mailed or delivered at least 10 days prior to the effective date of such cancellation.

**ADDENDUM #1**
**Issue Date:**
**1/17/2017**
**Bid No. 18-004**
# LANCASTER COUNTY ENGINEERING RTU REPLACEMENT

Addenda are instruments issued by the Purchasing Department prior to the date for receipt of offers which will modify or interpret the specification document by addition, deletion, clarification or correction. Please acknowledge receipt of this addendum in the space provided in the Attribute Section.

1. Attached the pre-bid attendee sign-in sheet.

2. Due to the extreme temperatures on Tuesday morning no roof top viewing was done, so on Friday, January 19, 2018 at 1:30 p.m., Vendors are invited to return for the opportunity to view the roof. Please meet in the lobby outside the conference rooms between the Engineering Office and Nebraska Extension Office located at 444 Cherrycreek Road, Lincoln, NE.

**END OF ADDENDA NO.1**

All other terms, conditions and requirements of the request remain the same as originally indicated in the document or as modified on previous addenda.

Sharon Mulder,
Asst. Purchasing Agent

**ADDENDUM #2**
**Issue Date:**
**1/22/2017**
**Bid No. 18-004**
# LANCASTER COUNTY ENGINEERING RTU REPLACEMENT

Addenda are instruments issued by the Purchasing Department prior to the date for receipt of offers which will modify or interpret the specification document by addition, deletion, clarification or correction. Please acknowledge receipt of this addendum in the space provided in the Attribute Section.

1. Attached the roof viewing portion of the pre-bid attendee sign-in sheet.

2. What is required for balancing?
   A. The balancing is specified under section 230593. A certified balancer is required. The air system is only thing that needs rebalanced as the existing control and flow valves for the RTU remain. The new VAV boxes have minimal impact and the HW system is constant volume.

3. Who was the original roofing contractor?
   A. A-J Roofing and Waterproofing was the contractor that installed the current roof.

4. What is the volume of water in the hot water system?
   A. The approximate volume of the system is 70 gallons.

5. What is the glycol mixture?
   A. The system is currently 40% propylene glycol.

6. What are the model numbers and weights of the current RTU?
   A. The RTU model number is McQuay RDS-802B and weighs approx. 5200 lbs. and the condensing unit model number is
   McQuay ALP-032C and
   weighs approx. 1500 lbs.

7. What are the current hot water flow control devices?
   A. The system should be utilizing Taco CS-T devices, unless they have been upgraded.

8. What type of refrigerant is in the existing condensing unit?
   A. It is assumed that the existing refrigerant is R-22.

**PRIOR APPOVAL – MECHANICAL**

1. The following manufacturers have received prior approval for bidding purposes subject to shop drawing review:
2.

| A. List Equipment Here | List Manufacturer Here |
|---|---|
| Variable Air Volume Box | Nailor |

**END OF ADDENDA NO.2**

All other terms, conditions and requirements of the request remain the same as originally indicated in the document or as modified on previous addenda.

Sharon Mulder,
Asst. Purchasing Agent

# GENERAL SPECIFICATIONS
# LANCASTER COUNTY ENGINEERING RTU REPLACEMENT

## 1. GENERAL NOTICE

1.1 Lancaster County, hereinafter referred to as Owners, are requesting bids from qualified companies, hereinafter referred to as Vendor(s) for RTU Replacement which includes removal of existing unit, providing new unit, new remote condensing unit, removal of existing exhaust fan, adding a couple VAV boxes and rebalancing the system located at the County Engineering office site.

1.1.1 The County Engineering Office is located at 444 Cherrycreek Road, Building C, Lincoln, NE.

1.1.1.1 Work on this project will include removal of existing unit, providing new unit, new remote condensing unit, removal of existing exhaust fan, adding a couple VAV boxes and rebalancing according to the documents, drawings and specifications located within the bid.

1.1.2 A detailed description of work is attached to the E-bid system in the Bid Attachment section.

1.2 The Vendor shall include all costs associated with the labor, supervision, materials, supplies, permits and licenses required to perform the services requested in these Specifications, the plans and drawings and other bid documents.

1.2.1 Any mention of compliance with the General Specifications shall also mean the compliance according to the terms of all other documents attached to or referenced in the bid.

1.3 Contract will be awarded to the lowest, responsible, responsive Vendor whose bid substantially meets all of the required specifications, duties, terms and conditions as defined in this request.

1.4 Vendor shall protect the general public, and adjacent buildings against damage during all portions of the project.

1.4.1 Any damage done which is not part of this construction will be immediately repaired by the Vendor at no charge to the Owners.

1.4.2 Vendor shall not store construction products, tools or supplies in an area other than what is designated as a staging area.

1.5 The Owners will execute a firm-fixed contract for the work to be performed under the terms of an awarded contract.

1.5.1 The Owners reserve the right to allow adjustments to the contract should there be a substantial change in the nature of the work involved.

1.5.1.1 Such adjustments must be made in the form of a written contract amendment signed by both the Vendor and the Owners at the time of the change.

1.6 Any deviation from these Specifications or any other bid document must be documented on Company Letterhead and attached to the Supplier Response section of your ebid response.

1.7 Vendor must submit their bid and all attachments via the City/County E-bid system.

1.7.1 To submit a bid, Vendor must be registered with the City of Lincoln/Lancaster County Purchasing Dept.

1.7.2 To register, go to the City of Lincoln website; lincoln.ne.gov
type bid in search box
click on “supplier registration”
follow instructions to completion.

1.8 All inquiries regarding these specifications shall be directed via e-mail request to Sharon Mulder, Assistant Purchasing Agent (smulder@lincoln.ne.gov).

1.8.1 These inquiries and/or responses shall be distributed to prospective Vendors as an electronic addenda.

1.8.2 All inquiries must be submitted to the Purchasing Office 5 days prior to the bid

opening.

1.8.3 Vendors are not allowed to discuss this bid with any County employee, Engineer/Architect or elected official other than the City/County Purchasing Staff through the award process.

1.8.3.1 Failure to follow this requirement may result in immediate disqualification of your bid.

1.9 A bid bond is required in the amount of 5% of the total bid amount at time of bid submission.

1.10 A Performance and Payment bond in the full amount of the contract will be required at time of contract award.

1.11 Work to be performed at the jobsite during operating hours which are from 7am – 4:30pm, Monday - Friday.

1.11.1 Workoutside of these days and times shall be subject to approval of the Owner.

1.12 The awarded contract is not assignable without the written approval of the Owners in the form of a contract amendment.

1.13 Progress payments may be made by the County through the Construction Administrator/ Owner Representative for documented work completed during the project.

1.13.1 At no time will the County make payment for work that has not been completed or approved.

1.13.2 The Construction Administrator will provide the documentation and requirements for progress payments to the awarded Vendor upon Notice to Proceed which will correspond with the City of Lincoln Standard Specifications for Municipal Construction and Lincoln Standard Plans.

1.13.3 Payments will be made as requested and approved by the Construction Administrator/Owners Representative with retention amounts following the City of Lincoln Standard Specifications for Municipal Construction and Lincoln Standard Plans.

1.14 The Construction Administrator/Owners Representative for this project will be Ron Bohaty – County Engineering.

1.15 The Consultant Representative for this project will be Tony Dupsky with Engineer Technologies Inc.

1.16 Failure to complete documents or follow the requirements may result in termination of contract.

1.17 A pre-bid meeting will be held at the jobsite on Tuesday, January 16, 2018 at 10:00am.

1.17.1 Meet in the conference room designated in between the Extension Office and County Engineering Office.

## 2. CONTRACTOR INSURANCE

2.1 The awarded Vendor shall furnish the Owners with a Certificate of Insurance ACORD and associated endorsements in the kinds and minimum amounts as detailed in the attached "Insurance Requirements for all Contracts" at time of award.

2.2 All certificates of insurance and endorsements shall be filed with the Owners on the standard ACORD Certificate of Insurance form showing specific limits of insurance coverage required and showing Lancaster County as “Named Additional Insured” as pertains to these services.

2.3 **Vendors are strongly encouraged to send the insurance requirements and endorsement information to their Insurance Agent during the bid process in order to ensure contract execution within 5 days of award notice.**

## 3. QUALIFICATIONS OF THE BIDDER

3.1 The Owner may investigate as deemed necessary to determine the ability of the Vendor to perform the required work, and the Vendor shall furnish to the Owners all such information and data for this purpose.

3.2 No Vendor will be considered who is not at the present time actively engaged in the performance of home construction services, and who cannot clearly demonstrate to the

satisfaction of the Owners, his/her ability to satisfactorily perform the work in accordance with the requirements of this specification and standards of the industry.

3.2.1 It is the intent of the County to hire a General Contractor to perform or subcontract for services associated with this project.

3.3 Vendor shall provide at least three current references for other customers where similar services have been provided at time of bid response or upon request.

3.3.1 Vendors who have provided similar types of services to the Lancaster County in the last five (5) years may not be required to provide such information unless requested by the County.

3.3.1 Reference responses may be attached to the Response Attachment section of the E-bid response.

## 4. REMOVAL, DISPOSAL AND SITE RESTORATION

4.1 The Vendor shall remove from the site and dispose of all material, debris, installation materials and adhesives in accordance with all Local, State and Federal regulations.

4.1.1 Vendors are strongly encouraged to recycle metal, concrete and any other material in order to reduce the amount of waste going to the City Landfill.

## 5. CONSTRUCTION REQUIREMENTS

5.1 Vendor must comply with City of Lincoln Standard Specifications for Municipal Construction and Lincoln Standard Plans (including General Provisions and Requirements, and Material and Construction Specifications) throughout the completion of the project provided they do not interfere with the other documents attached to the bid or other building requirements as required by Local, State and Federal Codes.

5.1.1 Any deviation to the Technical Specifications, General Specifications, or Plans and Drawings must be addressed as part of the bid response prior to bid closing.

5.1.2 Any deviation which may arise during construction must be addressed and approved by the Construction Administrator/Owner's Representative prior to completion of work, with a contract amendment being issued as necessary.

5.2 The materials, products and equipment described in the bid establish a standard of required function, dimension, appearance and quality to be met by any proposed substitution.

5.2.1 Any request for substitution of the products listed must be submitted to the Purchasing Department prior to bid closing.

5.2.2 Requests for substitutions will be addressed via an addendum to all Vendors through the ebid system.

5.2.3 No substitutions will be considered after the contract award unless specifically provided for in contract documents.

5.3 The Vendor is responsible for obtaining and paying of all fees and charges associated with permits or licenses required to complete the work for this project.

5.4 Vendors will comply with local parking and neighborhood requirements to determine where to park vehicles and stage equipment during the term of the project.

5.5 Vendor takes full responsibility for all of their employees and any subcontractors who are hired to work on the project.

5.67 All work related to the construction shall be included in the lump sum amount for the bid item.

## 6. PROJECT COMPLETION AND WARRANTY

6.1 Completion of the project shall be no later than April 30, 2018.

6.2 Vendor must complete the project according to the agreed upon contract completion date which will be listed in the contract documents.

6.2.1 Failure to complete the project by the contract date shall result in the charging of

liquidated damages according to the terms listed in the City of Lincoln Standard Specifications for Municipal Construction and Lincoln Standard Plans.

6.2.2 Delays caused by the Owners or other factors not in the control of the Vendor will result in an extension of the project and an amendment to the contract.

6.3 All work performed under the terms of this bid and subsequent contract documents shall be guaranteed for a minimum period of one year from date of completion of the project or longer according to the terms of the manufacturers standard agreement.

6.4 Job shall be completed according to industry standards with approval of completion and final payment being made by the Construction Administrator/Owner's Representative.

## 7. EVALUATION CRITERIA

7.1 Evaluation of bids will consist of the following:

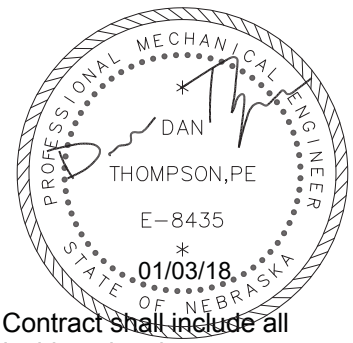
7.1.1 Total price of contract and other pricing factors that will amount to the best value to the Owners.

7.1.2 Ability to provide labor and services as required in this Specification.

7.1.3 Deviations from these Specifications.

7.1.4 References

7.1.5 Ability to meet completion requirements.




## SECTION 230050
## GENERAL MECHANICAL PROVISIONS

### PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. The work required under Heating, Ventilating, and Air Conditioning Contract shall include all material, labor, equipment and services necessary and reasonably incidental to the proper completion of the systems, and all special work as hereinafter specified and indicated on the drawings.

B. All work shall be executed in such a manner as to interfere as little as possible with the normal functioning of the facility, including operations of all utility services and any equipment, and with work being done by others. Roads shall be kept clear of materials, etc., at all times so that there will be no interference with the usual traffic. Where necessary, on account of new work connecting to existing pipes, where utility services are required to be cut, they shall be cut and capped at suitable places where indicated by drawings, or in the absence of such indication, where directed by the Architect/Engineer. No road traffic or utility service such as water, gas, or steam shall be interrupted without prior approval of the Owner, and all arrangements for work which will involve such interference shall be made in advance with the Owner so that same can be effected in a minimum of time and interference.

### 1.02 RELATED SECTIONS

A. Section 01 0000 - General Requirements

B. Section 007200 - General Conditions: Performance bond and labor and material payment bonds, warranty, and correction of work.

C. Section 013000 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.

D. Section 017000 - Execution and Closeout Requirements: Contract closeout procedures.

E. Individual Product Sections: Specific requirements for operation and maintenance data.

F. Individual Product Sections: Warranties required for specific products or Work.

### 1.03 INTERPRETATION OF DRAWINGS AND SPECIFICATIONS

A. Drawings and specifications shall be taken together. Provide work specified and not indicated, or work indicated and not specified as though mentioned in both.

B. In case of discrepancy between drawings and specifications, or within either document, the greater quantity of work and/or better quality shall be used for estimating and the matter brought to the Architect/Engineer's attention for a written decision.

C. Drawings are to be interpreted as diagrammatic only, intended to convey the scope of the work and to indicate the general arrangements and locations of equipment, outlets, etc., and the approximate sizes of equipment. It should be understood that the Contractor shall determine the exact locations of equipment and rough-ins, and the exact routing of pipes and ducts so as to best fit the layout of the job. Scaling of the drawings will not be sufficient or accurate for determining these locations. Contractor shall refer to the Architectural drawing for dimensions of walls, foundations, structural beams, and other structural building members. Where job conditions require reasonable changes in indicated arrangements and locations, such changes shall be made by the Contractor at no additional cost to the Owner.

D. Because of the scale of the drawings, certain basic items, such as fittings, boxes, valves, unions, etc., may not be shown, but where such items are required by other sections of the specifications or where they are required for proper installation of the work, such items shall be furnished and installed.

E. The determination of quantities of material and equipment required shall be made by the Contractor from the drawings. Schedules on the drawings and in the specifications are completed as an aid to the Contractor but where discrepancies arise, the greater number shall govern.

F. Where words "provide", "install", or "furnished" are used on the drawings or in the specifications, it shall be taken to mean, to furnish, install and connect up complete and ready for operation, the items mentioned.

**1.04 COOPERATION AND PROGRESS**

A. Keep informed about the work of all other trades engaged in the project and execute the work in such a manner as not to delay or interfere with the progress of other contractors. This contractor shall schedule his work so that no other contractor is delayed in the execution of his work. Complete cooperation of all trades is expected. Employ a competent foreman on job throughout the entire project to ensure that coordination is maintained.

B. Schedule and coordinate the work of this Division with the schedule of the contractor to progress the work expeditiously, and to avoid unnecessary delays.

C. Examine fully the drawings and specifications for other contractors for other trades, and coordinate the installation of this work with the work of the other contractors. Consult and cooperate with other contractors for determining space requirements and for determining that adequate clearance is allowed with respect to his equipment, other equipment, and the building. The Owner's representative reserves the right to determine space priority in the event of interference between piping, conduit, ducts, and equipment of the various contractors.

D. Conflicts between the drawings and the specification shall be called to the attention of the Owner's representative and Architect/Engineer. If clarification is not asked for prior to the taking of bids, it will be assumed that none is required and that the contractor is in agreement with the drawings and specifications as issued. If clarification is required after the Contract is awarded, such clarification will be made by the Architect/Engineer and his decision will be final.

E. Coordinate the installation of all mechanical system components with all other trades, including structural components and electrical trades. Allocate space in the different areas to allow for the installation of ductwork, piping, sprinklers, waste and vents, and mechanical equipment above ceilings and in equipment spaces. Recommend rerouting, resizing or relocation of mechanical components, if necessary, so all trades can install their systems in the space allotted. Any proposed changes from the systems layout, on the drawings, shall be done in accordance with the design criteria specified in the applicable codes and shall be subject to the review and acceptance of the Architect/Engineer.

F. The contract drawings are schematic in nature and do not show every fitting and appurtenance for each utility because of the scale of the drawings. Each contractor is expected to have included in his bid sufficient fittings, material, and labor to allow for adjustments in routing of utilities made necessary by the coordination process. The contractor will not be allowed any contract cost extra or time extension for changes dictated by the coordination process.

**1.05 GUARANTEE**

A. The Contractor, by the acceptance of this specification and the signing of the Contract, acknowledges his acquaintance with all the requirements and guarantees that every part going to make up the system, will be the best of its respective kind and will be erected in a most thorough and substantial manner by none but experienced labor.

B. The Contractor guarantees that all piping as provided in this specification will be free from all obstructions, and that all piping will be tight and drip free.

C. The Contractor guarantees that, in the entire hydronic piping system, a continuous and noiseless circulation of water will be established to all fixtures; and that water may be drawn from any fixture without hammering.

D. The Contractor guarantees that the entire system of ductwork will provide free circulation of air without objectionable noise and that all air distribution within the conditioned space will be draftless and reasonably quiet.

E. The Contractor guarantees that all equipment and appliances will successfully and acceptably perform the work for which they are installed and that each will operate smoothly and quietly up to its rated capacity.

F. The Contractor further guarantees himself responsible for any defects which may develop in any part of the system, including equipment, piping, fixtures and appliances, due to faulty workmanship, design or material; and to replace and make good, without cost to the Owner, any such faulty parts or construction which develop defects at any time within one (1) year from the date of substantial completion. The date of substantial completion shall be as defined in the Contract Documents. Any repairs or replacement required on account of defects, as outlined in this paragraph shall be made promptly upon written notice from the Architect.

G. Natural wear, accident, or carelessness on the part of others, however, shall not be made good by the Contractor.

**1.06 PROTECTION OF INSTALLED WORK AND MATERIAL STORED ON SITE**

A. The Contractor is responsible for all work installed by him until his contract is complete and shall protect it from injury by others.

B. All piping, fittings, equipment and material to be stored on the jobsite for any period of time shall be protected from the weather in a manner that is acceptable to the Architect.

**1.07 SITE VISIT**

A. Bidders are advised to visit the site and inform themselves as to all conditions, and failure to do so will in no way relieve the successful bidder from the necessity of furnishing any material or performing any work that may be required to complete the work in accordance with the true intent and meaning of the drawings and specifications without additional cost to the Owner.

**1.08 RULES, REGULATIONS AND CODES**

A. The Contractor shall become acquainted with the local codes, and in case of a discrepancy between plans or specifications and the local codes, the Contractor shall use the code requirements. The greater quantity of work and material and/or better quality shall be used for estimating and the matter brought to the Architect's attention for a written decision.

B. Perform all work in strict accordance with all rules, regulations, codes, ordinances, or laws of Local, State, and Federal governments, or of other authorities having lawful jurisdiction. Comply therewith. Such rules, regulations, codes, ordinances, or laws include, but are not necessarily limited to, the following:
   1. State building and fire codes.
   2. State plumbing and mechanical codes.
   3. City building and fire codes.
   4. City plumbing and mechanical codes.
   5. American Gas Association.
   6. National Electric Code.
   7. National Fire Protection Association.
   8. Occupation Safety and Health Act.

C. If the Contractor notes, at the time of bidding, any parts of the plans and specifications which are not in accord with the applicable codes or regulations, he shall inform the Architect/Engineer in writing, requesting a clarification. If there is insufficient time to follow this procedure, he shall submit with his proposal a separate price required to make the system shown on the drawings comply with the codes and regulations.

D. All changes to the system made after the letting of the contract, in order to comply with the applicable codes or the requirements of the inspector, shall be made by the Contractor without cost to the Owner.

**1.09 SUBSTITUTIONS**

A. The Architect/Engineer shall be the sole and final judge as to the suitability of items substituted for those specified.

B. The entire cost of all changes of any type due to substitutions for materials specified shall be borne by the Contractor at no extra cost to the Owner.

C. Unsolicited and voluntary deducts, on the part of the Contractor for substituting unapproved equipment, shall not be considered for the purpose of awarding the Contract.

D. When the drawings and/or specifications refer to any item, article, material, method, fabrication, assembly or construction by means of one or more manufacturer's trade name, catalog reference or similar means of identification of manufacturer, the Contractor shall furnish one of the makes so identified without substitution unless other make or makes have been approved by addendum to the contract documents prior to the receipt of bids. Requests for the approval of items of equal quality are requested to be made in writing to the Architect/Engineer five days prior to the date of the receipt of bids so that a list of acceptable equal quality items can be made known to all bidders by an addendum. If substitution for names items, articles, materials, methods, fabrications, assembly or construction are approved, the Contractor assumes all responsibility for coordination and performing the related changes in the work necessitated by such substitutions and shall include in his bid all costs involved therein.

**1.10 SHOP DRAWING REVIEW**

A. Shop drawings will be reviewed only to extent of information indicated. This check is only for review of general conformance with the design concept of the project and general compliance with the information given the contract documents. The contractor is responsible for confirming and correlating all quantities and dimensions, selecting fabrication processes techniques of construction, coordinating his work in a safe and satisfactory manner.

B. Review of shop drawings shall not relieve Contractor of responsibility for providing all controls, wiring, components, etc., which are shown or specified, or all additional controls, wiring, components, etc., required to provide complete and correctly operating mechanical systems.

C. In cases where substituted equipment has been installed in place of specified equipment the Contractor shall bear the entire cost of all changes of any type due to the substitution, even though the shop drawings have been reviewed by the Architect/Engineer.

D. Shop drawings in no way relieve the contractor from performing on the job as to the intent of the construction documents.

**1.11 CONNECTING NEW WORK TO EXISTING WORK**

A. Connect new work to existing work in a neat workmanlike manner. In every case where any part of the existing work must be cut to install new work, or is damaged, same must be patched and repaired in a manner satisfactory to the Architect. Where relocation of existing equipment and piping systems is necessary in areas providing uninterruptible services, schedule work during slack periods. Anticipate scheduling work at a period which will result in additional construction cost, such as overtime for work to be done at night or on weekends. Include cost in the bid proposal.

B. Do not cut into existing services without first informing the Owners representative as to the time and duration of shutdown of the existing services.

C. Perform work that interrupts any service at a time that will cause least interference to the operation of the building.

D. Maintain all existing services and equipment unless indicated to be removed.

**1.12 ACCESS TO EQUIPMENT FOR MAINTENANCE**

A. Install all equipment, piping, etc., to permit access for normal maintenance. Maintain easy access to filters, motors, drive compressors, coils, etc. Install all such equipment and accessories to facilitate maintenance. Perform any relocation of pipes, ducts, etc. required to permit access at request of Architect/Engineer at no additional cost to Owner.

**1.13 FIRE AND SMOKE STOPPAGE**

A. It shall be the responsibility of this Contractor to maintained and fire and smoke integrity of all walls, ceilings, floors, etc., through which this work passes through or into. Fire and smoke barriers shall be provided in and around as required by Codes.

B. Where holes are required to be patched, or conduit, piping, ducts, etc., are required to be patched around, it shall be filled with a material that is UL Classified Standard 1479 for this use and Factory Mutual System approved.

C. Fire and smoke stoppage material shall be water based with intumescent properties. Material may be in the form of caulking, putty pads or wrap strips. Materials shall be installed in accordance to manufacturers and UL standards.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION- NOT USED**

**END OF SECTION**

**SECTION 230501**

**CLOSEOUT SUBMITTALS FOR HVAC**

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Project Record Documents.

B. Operation and Maintenance Data.

C. Warranties and bonds.

### 1.02 RELATED SECTIONS

A. Section 007200 - General Conditions: Performance bond and labor and material payment bonds, warranty, and correction of work.

B. Section 013000 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.

C. Individual Product Sections: Specific requirements for operation and maintenance data.

D. Individual Product Sections: Warranties required for specific products or Work.

### 1.03 SUBMITTALS

A. Project Record Documents: Submit documents to Engineer .

B. Operation and Maintenance Data:
   1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Engineer will review draft and return one copy with comments.
   2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
   3. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Engineer comments. Revise content of all document sets as required prior to final submission.
   4. Submit two sets of revised final documents in final form within 10 days after final inspection.

C. Warranties and Bonds:
   1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
   2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
   3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

## PART 2 PRODUCTS - NOT USED

## PART 3 EXECUTION

### 3.01 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of the following record documents; record actual revisions to the Work:
   1. Drawings.
   2. Addenda.
   3. Change Orders and other modifications to the Contract.

B. Ensure entries are complete and accurate, enabling future reference by Owner.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress.

E. Record Drawings : Legibly mark each item to record actual construction including:
   1. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.

2. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
3. Field changes of dimension and detail.

**3.02 OPERATION AND MAINTENANCE DATA**

A. For Each Product or System: List names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.

B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.

C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.

D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

**3.03 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS**

A. For Each Item of Equipment and Each System:
1. Description of unit or system, and component parts.
2. Identify function, normal operating characteristics, and limiting conditions.
3. Include performance curves, with engineering data and tests.
4. Complete nomenclature and model number of replaceable parts.

B. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.

C. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

D. Provide servicing and lubrication schedule, and list of lubricants required.

E. Include manufacturer's printed operation and maintenance instructions.

F. Include sequence of operation by controls manufacturer.

G. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

H. Provide control diagrams by controls manufacturer as installed.

I. Provide Contractor's coordination drawings, with color coded piping diagrams as installed.

J. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

K. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

L. Include test and balancing reports.

M. Additional Requirements: As specified in individual product specification sections.

**3.04 OPERATION AND MAINTENANCE MANUALS**

A. Prepare instructions and data by personnel experienced in maintenance and operation of described products.

B. Prepare data in the form of an instructional manual.

C. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.

D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.

E. Provide tabbed dividers for each separate product and system, with typed description of product and major component parts of equipment.

F. Contents: Prepare a Table of Contents for each volume, with each product or system description identified, in three parts as follows:
   1. Part 1: Directory, listing names, addresses, and telephone numbers of Engineer, Contractor, Subcontractors, and major equipment suppliers.
   2. Part 2: Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
      a. Significant design criteria.
      b. List of equipment.
      c. Parts list for each component.
      d. Operating instructions.
      e. Maintenance instructions for equipment and systems.
   3. Part 3: Project documents and certificates, including the following:
      a. Shop drawings and product data.
      b. Air and water balance reports.
      c. Photocopies of warranties and bonds.

**3.05 WARRANTIES AND BONDS**

A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial completion is determined.

B. Verify that documents are in proper form, contain full information, and are notarized.

C. Co-execute submittals when required.

D. Retain warranties and bonds until time specified for submittal.

E. Include originals of each in operation and maintenance manuals, indexed separately on Table of Contents.

**END OF SECTION**

**SECTION 230502**

**DEMONSTRATION AND TRAINING FOR HVAC SYSTEMS**

## PART 1 GENERAL

### 1.01 SUMMARY

A. Demonstration of products and systems where indicated in specific specification sections.

B. Training of Owner personnel in operation and maintenance is required for:
   1. HVAC systems and equipment.

### 1.02 RELATED SECTIONS

A. Section 220501 - Closeout Submittals: Operation and maintenance manuals.

B. Other Specification Sections: Additional requirements for demonstration and training.

### 1.03 SUBMITTALS

A. Training Manuals: Provide training manual for each attendee; allow for minimum of two attendees per training session.
   1. Include applicable portion of O&M manuals.
   2. Include copies of all hand-outs, slides, overheads, video presentations, etc., that are not included in O&M manuals.
   3. Provide one extra copy of each training manual to be included with operation and maintenance data.

B. Video Recordings: Submit digital video recording of each demonstration and training session for Owner's subsequent use.
   1. Format: DVD Disc.
   2. Label each disc and container with session identification and date.

C. System Diagrams: Require system diagrams to be mounted in each mechanical equipment room with stainless steel frame and clear acrylic front, with all operating piping, valves, controls, and air and water flows shown. Final balance flows, pressures, temperatures, motor horsepower, pump and fan curves, and belt sizes shall be shown.

### 1.04 QUALITY ASSURANCE

A. Instructor Qualifications: Familiar with design, operation, maintenance and troubleshooting of the relevant products and systems.
   1. Provide as instructors the most qualified trainer of those contractors and/or installers who actually supplied and installed the systems and equipment.
   2. Where a single person is not familiar with all aspects, provide specialists with necessary qualifications.

## PART 2 PRODUCTS - NOT USED

## PART 3 EXECUTION

### 3.01 DEMONSTRATION - GENERAL

A. Demonstrations conducted during system start-up do not qualify as demonstrations for the purposes of this section, unless approved in advance by Owner.

B. Demonstration may be combined with Owner personnel training if applicable.

C. Operating Equipment and Systems: Demonstrate operation in all modes, including start-up, shut-down, seasonal changeover, emergency conditions, and troubleshooting, and maintenance procedures, including scheduled and preventive maintenance.
   1. Perform demonstrations not less than two weeks prior to Substantial Completion.
   2. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

D. Non-Operating Products: Demonstrate cleaning, scheduled and preventive maintenance, and repair procedures.
   1. Perform demonstrations not less than two weeks prior to Substantial Completion.

### 3.02 TRAINING - GENERAL

A. Conduct training on-site unless otherwise indicated.

B. Provide training in minimum two hour segments.

C. Review of Facility Policy on Operation and Maintenance Data: During training discuss:
   1. The location of the O&M manuals and procedures for use and preservation; backup copies.
   2. Typical contents and organization of all manuals, including explanatory information, system narratives, and product specific information.
   3. Typical uses of the O&M manuals.

D. Product- and System-Specific Training:
   1. Review the applicable O&M manuals.
   2. For systems, provide an overview of system operation, design parameters and constraints, and operational strategies.
   3. Review instructions for proper operation in all modes, including start-up, shut-down, seasonal changeover and emergency procedures, and for maintenance, including preventative maintenance.
   4. Provide hands-on training on all operational modes possible and preventive maintenance.
   5. Emphasize safe and proper operating requirements; discuss relevant health and safety issues and emergency procedures.
   6. Discuss common troubleshooting problems and solutions.
   7. Discuss any peculiarities of equipment installation or operation.
   8. Discuss warranties and guarantees, including procedures necessary to avoid voiding coverage.
   9. Review recommended tools and spare parts inventory suggestions of manufacturers.
   10. Review spare parts and tools required to be furnished by Contractor.
   11. Review spare parts suppliers and sources and procurement procedures.

E. Be prepared to answer questions raised by training attendees; if unable to answer during training session, provide written response within three days.

**END OF SECTION**

## SECTION 230514

## VARIABLE FREQUENCY CONTROLLERS

### PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Variable frequency controllers.

### 1.02 RELATED SECTIONS

A. Section 260553 - Identification for Electrical Systems: Engraved nameplates.

B. Section 262813 - Fuses.

### 1.03 REFERENCES

A. NEMA ICS 7.1 - Safety Standards for Construction and Guide for Selection, Installation, and Operation of Adjustable Speed Drive Systems; National Electrical Manufacturers Association; 2000.

### 1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide catalog sheets showing voltage, controller size, ratings and size of switching and overcurrent protective devices, short circuit ratings, dimensions, and enclosure details.

C. Shop Drawings: Indicate front and side views of enclosures with overall dimensions and weights shown; conduit entrance locations and requirements; and nameplate legends. Shop drawings shall indicate the Short Circuit Current Rating (SCCR).

D. Operation Data: NEMA ICS 7.1. Include instructions for starting and operating controllers, and describe operating limits that may result in hazardous or unsafe conditions.

E. Maintenance Data: NEMA ICS 7.1. Include routine preventive maintenance schedule.

### 1.05 DELIVERY, STORAGE, AND HANDLING

A. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.

B. Handle in accordance with manufacturer's written instructions. Lift only with lugs provided for the purpose. Handle carefully to avoid damage to components, enclosure, and finish.

### PART 2 PRODUCTS

### 2.01 MANUFACTURERS

A. Allen Bradley/Rockwell Automation:

B. Asea Brown Boveri (ABB):

C. Danfoss Graham:

D. Square D

### 2.02 DESCRIPTION

A. Variable Frequency Controllers: Enclosed controllers suitable for operating the indicated loads, in conformance with requirements of NEMA ICS 7. Select unspecified features and options in accordance with NEMA ICS 3.1.

1. Employ microprocessor-based inverter logic isolated from power circuits.
2. Employ pulse-width-modulated inverter system.
3. Design for ability to operate controller with motor disconnected from output.
4. Design to attempt five automatic restarts following fault condition before locking out and requiring manual restart.

B. Enclosures: NEMA 250, Type 1, suitable for equipment application in places restricted to persons employed on the premises.

C. The Variable Frequency Controller shall have a minimum SCCR of 65,000-Amperes.

D. Variable frequency controller shall have integral phase loss/imbalance and undervoltage protection on all 3 phase products. Provide alarm output contact to DDC controls.

**2.03 OPERATING REQUIREMENTS**

A. Rated Input Voltage: 208 volts, three phase, 60 Hertz.

B. Motor Nameplate Voltage: 200 volts, three phase, 60 Hertz.

C. Displacement Power Factor: Between 1.0 and 0.95, lagging, over entire range of operating speed and load.

D. Operating Ambient: 0 degrees C to 40 degrees C.

E. Volts Per Hertz Adjustment: Plus or minus 10 percent.

F. Current Limit Adjustment: 60 to 110 percent of rated.

G. Acceleration Rate Adjustment: 0.5 to 30 seconds.

H. Deceleration Rate Adjustment: 1 to 30 seconds.

I. Input Signal: 4 to 20 mA DC.

**2.04 COMPONENTS**

A. Display: Provide integral digital display to indicate output voltage, output frequency, and output current.

B. Status Indicators: Separate indicators for overcurrent, overvoltage, ground fault, overtemperature, and input power ON.

C. Furnish HAND-OFF-AUTOMATIC selector switch and manual speed control.

D. Control Power Source: Separate circuit.

E. Door Interlocks: Furnish mechanical means to prevent opening of equipment with power connected, or to disconnect power if door is opened; include means for defeating interlock by qualified persons.

F. Safety Interlocks: Furnish terminals for remote contact to inhibit starting under both manual and automatic mode.

G. Control Interlocks: Furnish terminals for remote contact to allow starting in automatic mode.

H. Manual Bypass: Furnish contactor, motor running overload protection, and short circuit protection for full voltage, non-reversing operation of the motor. Include isolation switch to allow maintenance of inverter during bypass operation.

I. Emergency Stop: Use dynamic brakes for emergency stop function.

J. Disconnecting Means: Include integral fused disconnect switch on the line side of each controller. Disconnect shall have a minimum AIC of 65k amperes.

K. Wiring Terminations: Match conductor materials and sizes indicated.

**2.05 SOURCE QUALITY CONTROL**

A. Shop inspect and perform standard productions tests for each controller.

**PART 3 EXECUTION**

**3.01 INSTALLATION**

A. Install in accordance with NEMA ICS 7.1 and manufacturer's instructions.

B. Tighten accessible connections and mechanical fasteners after placing controller.

C. Provide fuses in fusible switches; refer to Section 262813 for product requirements.

D. Provide engraved plastic nameplates; refer to Section 260553 for product requirements and location.

**3.02 MANUFACTURER'S FIELD SERVICES**

A. Provide the service of the manufacturer's field representative to prepare and start controllers.

### 3.03 ADJUSTING

A. Make final adjustments to installed controller to assure proper operation of load system. Obtain performance requirements from installer of driven loads.

### 3.04 DEMONSTRATION

A. Demonstrate operation of controllers in automatic and manual modes.

**END OF SECTION**

## SECTION 230593

## TESTING, ADJUSTING, AND BALANCING FOR HVAC

### PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Testing, adjustment, and balancing of air systems.

B. Measurement of final operating condition of HVAC systems.

### 1.02 REFERENCE STANDARDS

A. ASHRAE Std 111 - Measurement, Testing, Adjusting, and Balancing of Building HVAC Systems; 2008.

B. NEBB (TAB) - Procedural Standards for Testing Adjusting and Balancing of Environmental Systems; 2015, Eighth Edition.

### 1.03 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Final Report: Indicate deficiencies in systems that would prevent proper testing, adjusting, and balancing of systems and equipment to achieve specified performance.
   1. Submit draft copies of report for review prior to final acceptance of Project. Provide final copies for Engineer and for inclusion in operating and maintenance manuals.
   2. Provide reports in soft cover, letter size, 3-ring binder manuals, complete with index page and indexing tabs, with cover identification at front and side. Include set of reduced drawings with air outlets and equipment identified to correspond with data sheets, and indicating thermostat locations.
   3. Include actual instrument list, with manufacturer name, serial number, and date of calibration.
   4. Form of Test Reports: Where the TAB standard being followed recommends a report format use that; otherwise, follow ASHRAE Std 111.
   5. Units of Measure: Report data in I-P (inch-pound) units only.

C. Project Record Documents: Record actual locations of flow measuring stations and balancing valves and rough setting.

### PART 2 PRODUCTS - NOT USED

### PART 3 EXECUTION

### 3.01 GENERAL REQUIREMENTS

A. Perform total system balance in accordance with one of the following:
   1. ASHRAE Std 111, Practices for Measurement, Testing, Adjusting and Balancing of Building Heating, Ventilation, Air-Conditioning, and Refrigeration Systems.
   2. NEBB Procedural Standards for Testing Adjusting Balancing of Environmental Systems.

B. Begin work after completion of systems to be tested, adjusted, or balanced and complete work prior to Substantial Completion of the project.

C. TAB Agency Qualifications:
   1. Company specializing in the testing, adjusting, and balancing of systems specified in this section.

### 3.02 EXAMINATION

A. Verify that systems are complete and operable before commencing work. Ensure the following conditions:
   1. Systems are started and operating in a safe and normal condition.
   2. Temperature control systems are installed complete and operable.
   3. Proper thermal overload protection is in place for electrical equipment.
   4. Final filters are clean and in place. If required, install temporary media in addition to final filters.

5. Duct systems are clean of debris.
6. Fans are rotating correctly.
7. Fire and volume dampers are in place and open.
8. Air coil fins are cleaned and combed.
9. Access doors are closed and duct end caps are in place.
10. Air outlets are installed and connected.
11. Duct system leakage is minimized.

B. Beginning of work means acceptance of existing conditions.

**3.03 ADJUSTMENT TOLERANCES**

A. Air Handling Systems: Adjust to within plus or minus 5 percent of design for supply systems and plus or minus 10 percent of design for return and exhaust systems.

B. Air Outlets and Inlets: Adjust total to within plus 10 percent and minus 5 percent of design to space. Adjust outlets and inlets in space to within plus or minus 10 percent of design.

C. If system cannot be balanced per design documents, Contractors shall work together towards a solution on the site and be prepared to remedy work as required. If requirements cannot still be attained, the Contractor shall contact Engineer prior to submitting report.

**3.04 RECORDING AND ADJUSTING**

A. Ensure recorded data represents actual measured or observed conditions.

B. Permanently mark settings of valves, dampers, and other adjustment devices allowing settings to be restored. Set and lock memory stops.

C. After adjustment, take measurements to verify balance has not been disrupted or that such disruption has been rectified.

D. Leave systems in proper working order, replacing belt guards, closing access doors, closing doors to electrical switch boxes, and restoring thermostats to specified settings.

**3.05 AIR SYSTEM PROCEDURE**

A. Adjust air handling and distribution systems to provide required or design supply, return, and exhaust air quantities by adjusting fan sheaves as needed. If the factory supplied sheave does not allow for the required adjustment, the Contractor shall provide the appropriately sized sheave and belt to meet specified air quantity.

B. Make air quantity measurements in ducts by Pitot tube traverse of entire cross sectional area of duct.

C. Measure air quantities at air inlets and outlets.

D. Adjust distribution system to obtain uniform space temperatures free from objectionable drafts and noise.

E. Use volume control devices to regulate air quantities only to extend that adjustments do not create objectionable air motion or sound levels. Effect volume control by duct internal devices such as dampers and splitters.

F. Vary total system air quantities by adjustment of fan speeds. Provide drive changes required. Vary branch air quantities by damper regulation.

G. Provide system schematic with required and actual air quantities recorded at each outlet or inlet.

H. Measure static air pressure conditions on air supply units, including filter and coil pressure drops, and total pressure across the fan. Make allowances for 50 percent loading of filters.

I. Adjust outside air automatic dampers, outside air, return air, and exhaust dampers for design conditions.

J. Measure temperature conditions across outside air, return air, and exhaust dampers to check leakage.

K. Where modulating dampers are provided, take measurements and balance at extreme conditions. Balance variable volume systems at maximum air flow rate, full cooling, and at minimum air flow rate, full heating.

L. Measure building static pressure and adjust supply, return, and exhaust air systems to provide required relationship between each to maintain approximately 0.05 inches positive static pressure near the building entries.

**3.06 SCOPE**

A. Test, adjust, and balance the following:
   1. Air Coils.
   2. Air Handling Units.
   3. Air Inlets and Outlets.
   4. Zone Control Dampers

**3.07 MINIMUM DATA TO BE REPORTED**

A. Electric Motors:
   1. Manufacturer.
   2. Model/Frame.
   3. HP/BHP.
   4. Phase, voltage, amperage; nameplate, actual, no load.
   5. RPM.
   6. Service factor.
   7. Starter size, rating, heater elements.
   8. Sheave Make/Size/Bore.

B. V-Belt Drives:
   1. Identification/location.
   2. Required driven RPM.
   3. Driven sheave, diameter and RPM.
   4. Belt, size and quantity.
   5. Motor sheave diameter and RPM.
   6. Center to center distance, maximum, minimum, and actual.

C. Cooling Coils:
   1. Identification/number.
   2. Location.
   3. Service.
   4. Air flow, design and actual.
   5. Entering air DB temperature, design and actual.
   6. Entering air WB temperature, design and actual.
   7. Leaving air DB temperature, design and actual.
   8. Leaving air WB temperature, design and actual.
   9. Water flow, design and actual.
   10. Water pressure drop, design and actual.
   11. Air pressure drop, design and actual.

D. Heating Coils:
   1. Identification/number.
   2. Location.
   3. Service.
   4. Air flow, design and actual.
   5. Water flow, design and actual.
   6. Water pressure drop, design and actual.
   7. Entering water temperature, design and actual.
   8. Leaving water temperature, design and actual.
   9. Entering air temperature, design and actual.

10. Leaving air temperature, design and actual.
11. Air pressure drop, design and actual.

E. Air Moving Equipment:
1. Location.
2. Manufacturer.
3. Model number.
4. Serial number.
5. Arrangement/Class/Discharge.
6. Air flow, specified and actual.
7. Return air flow, specified and actual.
8. Outside air flow, specified and actual.
9. Total static pressure (total external), specified and actual.
10. Inlet pressure.
11. Discharge pressure.
12. Sheave Make/Size/Bore.
13. Number of Belts/Make/Size.
14. Fan RPM.

F. Return Air/Outside Air:
1. Identification/location.
2. Design air flow.
3. Actual air flow.
4. Return air temperature.
5. Outside air temperature.
6. Actual mixed air temperature.

G. Duct Traverses:
1. System zone/branch.
2. Duct size.
3. Area.
4. Design velocity.
5. Design air flow.
6. Test velocity.
7. Test air flow.
8. Duct static pressure.

H. Air Distribution Tests:
1. Air terminal number.
2. Room number/location.
3. Terminal type.
4. Terminal size.
5. Area factor.
6. Design velocity.
7. Design air flow.
8. Test (final) velocity.
9. Test (final) air flow.
10. Percent of design air flow.

**END OF SECTION**

# SECTION 230713
# DUCT INSULATION

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Duct insulation.

### 1.02 RELATED REQUIREMENTS

A. Section 233100 - HVAC Ducts and Casings.

### 1.03 REFERENCE STANDARDS

A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2015a.

B. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2014.

C. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

### 1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.

### 1.05 DELIVERY, STORAGE, AND HANDLING

A. Accept materials on site in original factory packaging, labelled with manufacturer's identification, including product density and thickness.

B. Protect insulation from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original wrapping.

## PART 2 PRODUCTS

### 2.01 REGULATORY REQUIREMENTS

A. Surface Burning Characteristics: Flame spread index/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84 or UL 723.

### 2.02 GLASS FIBER, FLEXIBLE

A. Manufacturer:
   1. Knauf Fiber Glass.
   2. Johns Manville Corporation.
   3. Owens Corning Corp.
   4. CertainTeed Corporation.;

B. Vapor Barrier Jacket:
   1. Kraft paper with glass fiber yarn and bonded to aluminized film.
   2. Moisture Vapor Permeability: 0.029 ng/Pa s m (0.02 perm inch), when tested in accordance with ASTM E96/E96M.
   3. Secure with pressure sensitive tape.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Verify that ducts have been tested before applying insulation materials.

B. Verify that surfaces are clean, foreign material removed, and dry.

### 3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Insulated ducts conveying air below ambient temperature:
   1. Provide insulation with vapor barrier jackets.

2. Finish with tape and vapor barrier jacket.
3. Continue insulation through walls, sleeves, hangers, and other duct penetrations.
4. Insulate entire system including fittings, joints, flanges, fire dampers, flexible connections, and expansion joints.

C. External Duct Insulation Application:
1. Secure insulation with vapor barrier with wires and seal jacket joints with vapor barrier adhesive or tape to match jacket.
2. Install without sag on underside of duct. Use adhesive or mechanical fasteners where necessary to prevent sagging. Lift duct off trapeze hangers and insert spacers.
3. Seal vapor barrier penetrations by mechanical fasteners with vapor barrier adhesive.
4. Stop and point insulation around access doors and damper operators to allow operation without disturbing wrapping.

**3.03 SCHEDULES**

A. Supply, Return or Exhaust Ducts: 1-1/2" inch thick duct wrap insulation on ducts.

**END OF SECTION**

## SECTION 230719
## HVAC PIPING INSULATION

### PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Piping insulation.

B. Flexible removable and reusable blanket insulation.

### 1.02 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.

### 1.03 DELIVERY, STORAGE, AND HANDLING

A. Accept materials on site, labeled with manufacturer's identification, product density, and thickness.

### 1.04 FIELD CONDITIONS

A. Maintain ambient conditions required by manufacturers of each product.

B. Maintain temperature before, during, and after installation for minimum of 24 hours.

### PART 2 PRODUCTS

### 2.01 REGULATORY REQUIREMENTS

A. Surface Burning Characteristics: Flame spread index/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84 or UL 723.

### 2.02 GLASS FIBER

A. Manufacturers:
   1. CertainTeed Corporation; _____: www.certainteed.com.
   2. Johns Manville Corporation; _____: www.jm.com.
   3. Knauf Insulation; _____: www.knaufinsulation.com.
   4. Substitutions: See Section 016000 - Product Requirements.

B. Insulation: ASTM C547 and ASTM C795; rigid molded, noncombustible.
   1. 'K' Value: ASTM C177, 0.24 at 75 degrees F.
   2. Maximum Service Temperature: 850 degrees F.
   3. Maximum Moisture Absorption: 0.2 percent by volume.

### 2.03 FLEXIBLE ELASTOMERIC CELLULAR INSULATION

A. Insulation: Preformed flexible elastomeric cellular rubber insulation complying with ASTM C534/C534M Grade 1; use molded tubular material wherever possible.
   1. Minimum Service Temperature: Minus 40 degrees F.
   2. Maximum Service Temperature: 220 degrees F.
   3. Connection: Waterproof vapor barrier adhesive.

### PART 3 EXECUTION

### 3.01 EXAMINATION

A. Verify that piping has been tested before applying insulation materials.

B. Verify that surfaces are clean and dry, with foreign material removed.

### 3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Exposed Piping: Locate insulation and cover seams in least visible locations.

C. For hot piping conveying fluids 140 degrees F or less, do not insulate flanges and unions at equipment, but bevel and seal ends of insulation.

D. For hot piping conveying fluids over 140 degrees F, insulate flanges and unions at equipment.

E. Glass fiber insulated pipes conveying fluids above ambient temperature.
   1. Provide standard jackets, with or without vapor barrier, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure sensitive adhesive. Secure with outward clinch expanding staples.
   2. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe. Finish with glass cloth and adhesive or PVC fitting covers.

F. Exterior Applications: Provide vapor barrier jacket. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe, and finish with glass mesh reinforced vapor barrier cement. Cover with aluminum jacket with seams located on bottom side of horizontal piping. Provide two coats of UV resistant finish for flexible elastomeric cellular insulation without jacketing.

**3.03 SCHEDULE**

A. Heating Systems:
   1. Glycol Heating Supply and Return: 1" insulation

B. Cooling Systems:
   1. Refrigerant Suction: 1" thickness Armaflex
   2. Refrigerant Hot Gas: 1" thickness Armaflex

**END OF SECTION**

**SECTION 230913**

**INSTRUMENTATION AND CONTROL DEVICES FOR HVAC**

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Thermostats.

B. Temperature and humidity sensors.

C. Control valves.

D. Automatic dampers.

E. Damper operators.

### 1.02 RELATED REQUIREMENTS

A. Section 232113 - Hydronic Piping: Installation of control valves, flow switches, temperature sensor sockets, gauge taps.

B. Section 233300 - Air Duct Accessories: Installation of automatic dampers.

C. Section 262726 - Wiring Devices: Elevation of exposed components.

### 1.03 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide description and engineering data for each control system component. Include sizing as requested. Provide data for each system component and software module.

C. Shop Drawings: Indicate complete operating data, system drawings, wiring diagrams, and written detailed operational description of sequences. Submit schedule of valves indicating size, flow, and pressure drop for each valve. For automatic dampers indicate arrangement, velocities, and static pressure drops for each system.

D. Project Record Documents: Record actual locations of control components, including panels, thermostats, and sensors. Accurately record actual location of control components, including panels, thermostats, and sensors.

E. Operation and Maintenance Data: Include inspection period, cleaning methods, recommended cleaning materials, and calibration tolerances.

### 1.04 QUALITY ASSURANCE

A. System will require the installation of Delta components of the termperature control/energy management system in addition to other work as specified herein. The installing Contractor shall have factory trained personnel for the application, engineering installation, and programming of the Control System.

### 1.05 WARRANTY

A. See Section 017800 - Closeout Submittals, for additional warranty requirements.

B. Correct defective Work within a five year period after Substantial Completion.

## PART 2 PRODUCTS

### 2.01 MANUFACTURERS

A. Delta Controls Corporation.

### 2.02 EQUIPMENT - GENERAL

A. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.

### 2.03 CONTROL VALVES

A. Globe Pattern:

1. Up to 2 inches: Bronze body, bronze trim, rising stem, renewable composition disc, screwed ends with backseating capacity repackable under pressure.

2. Over 2 inches: Iron body, bronze trim, rising stem, plug-type disc, flanged ends, renewable seat and disc.
3. Hydronic Systems:
   a. Rate for service pressure of 125 psig at 250 degrees F.
   b. Replaceable plugs and seats of stainless steel.
   c. Size for 3 psig maximum pressure drop at design flow rate.
   d. Two way valves shall have equal percentage characteristics, three way valves linear characteristics. Size two way valve operators to close valves against pump shut off head.

B. Electronic Operators:
1. Valves shall spring return to normal position as indicated on freeze, fire, or temperature protection.
2. Select operator for full shut off at maximum pump differential pressure.

C. Ball Valves:
1. Bronze body, bronze trim, 2 or 3 port as indicated, replaceable plugs and seats, union and threaded ends.
2. Rate for service pressure of 125 psig at 250 degrees F.
3. Size for 3 psig maximum pressure drop at design flow rate.
4. Two way valves shall have equal percentage characteristics, three way valves linear characteristics. Size two way valve operators to close valves against pump shut off head.
5. Operators (2 Position): Synchronous motor with enclosed gear train, dual return springs, valve position indicator; 24 v DC, 0.4 amp. Valves shall spring return to normal position for temperature protection.
6. Operators (Modulating): Self contained, linear motorized actuator with approximately 3/4 inch stroke, 60 second full travel with transformer and SPDT contacts: 24 v DC, 6 watt maximum input.

**2.04 DAMPERS**

A. Frames: Galvanized steel, welded or riveted with corner reinforcement, minimum 12 gage, 0.1046 inch.

B. Blades: Galvanized steel, maximum blade size 8 inches wide, 48 inches long, minimum 16 gage, attached to minimum 1/2 inch shafts with set screws. Blades shall be typically opposed blade for control unless mixing is required and then they shall be of parallel configuration.

C. Blade Seals: Synthetic elastomeric mechanically attached, field replaceable.

D. Jamb Seals: Spring stainless steel.

E. Shaft Bearings: Graphite impregnated nylon sleeve, with thrust washers at bearings.

F. Linkage Bearings: Graphite impregnated nylon.

G. Leakage: Less than one percent based on approach velocity of 2000 ft/min and 4 inches wg.

**2.05 DAMPER OPERATORS**

A. General: Provide smooth proportional control with sufficient power for air velocities 20 percent greater than maximum design velocity and to provide tight seal against maximum system pressures. Provide spring return for two position control and for fail safe operation.

B. Electric Operators:
1. Spring return, adjustable stroke motor having oil immersed gear train, with auxiliary end switch.

**2.06 INPUT/OUTPUT SENSORS**

A. Temperature Sensors:
1. Resistance temperature detectors with resistance tolerance of plus or minus 0.1 percent at 70 degrees F, interchangeability less than plus or minus 0.2 percent, time constant of 13 seconds maximum for fluids and 200 seconds maximum for air.

2. Use insertion elements in ducts not affected by temperature stratification or smaller than one square meter. Use averaging elements where larger or prone to stratification sensor length 8 feet or 16 feet as required.
3. Insertion elements for liquids shall be with brass socket with minimum insertion length of 2-1/2 inches.
4. Room sensors: Locking cover .
5. Outside air sensors: Watertight inlet fitting, shielded from direct rays of sun.
6. Room sensors: Provide temperature setpoint adjust for +/- 3 deg. (adjustable) of control setpoint and occupied/unoccupied override button.

**2.07 THERMOSTATS**

A. Immersion Thermostat:
   1. Remote bulb or bimetallic rod and tube type, proportional action with adjustable setpoint and adjustable throttling range.

B. Airstream Thermostats:
   1. Remote bulb or bimetallic rod and tube type, proportional action with adjustable setpoint in middle of range and adjustable throttling range.

C. Electric Low Limit Duct Thermostat:
   1. Snap acting, single pole, single throw, manual reset switch that trips if temperature sensed across any 12 inches of bulb length is equal to or below setpoint,
   2. Provide one thermostat for every 20 sq ft of coil surface.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

A. Verify existing conditions before starting work.

B. Verify that systems are ready to receive work.

C. Beginning of installation means installer accepts existing conditions.

D. Sequence work to ensure installation of components is complementary to installation of similar components in other systems.

E. Coordinate installation of system components with installation of mechanical systems equipment such as air handling units and air terminal units.

**3.02 INSTALLATION**

A. Install in accordance with manufacturer's instructions.

B. Check and verify location of thermostats with plans and room details before installation. Locate 60 inches above floor. Align with lighting switches and humidistats. Refer to Section 262726.

C. Mount freeze protection thermostats using flanges and element holders.

D. Mount outdoor reset thermostats and outdoor sensors indoors, with sensing elements outdoors with sun shield.

E. Provide separable sockets for liquids and flanges for air bulb elements.

F. Provide flat plate security sensors on temperature sensors in public areas.

G. Provide mixing dampers of parallel blade construction arranged to mix streams. Provide opposed blade construction for other air control dampers. Provide pilot positioners on mixed air damper motors.

H. Install damper motors on outside of duct in warm areas. Do not install motors in locations at outdoor temperatures.

I. Mount control panels adjacent to associated equipment on vibration free walls or free standing angle iron supports. One cabinet may accommodate more than one system in same equipment room. Provide engraved plastic nameplates for instruments and controls inside cabinet and engraved plastic nameplates on cabinet face.

J. Provide all control wiring in conduit. Conduit and electrical wiring shall be in accordance with Section 262717. Electrical material and installation shall be in accordance with appropriate requirements of Division 26.

**END OF SECTION**

**SECTION 230923**

**DIRECT-DIGITAL CONTROL SYSTEM FOR HVAC**

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. System description.

B. System software.

C. Control equipment.

D. Software.

### 1.02 RELATED REQUIREMENTS

A. Section 230913 - Instrumentation and Control Devices for HVAC.

B. Section 230993 - Sequence of Operations for HVAC Controls.

C. Section 260583 - Wiring Connections: Electrical characteristics and wiring connections.

### 1.03 REFERENCE STANDARDS

A. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

### 1.04 SYSTEM DESCRIPTION

A. Automatic temperature control field monitoring and control system using field programmable micro-processor based units . System shall be an extension of the existing Delta Control system.

B. The existing Roof Top Unit #1 and condensing unit is being removed in this project. Remove all control wiring/equipment to the units. The existing graphics for these units shall be revised to reflect the new installation/equipment.

C. Base system on distributed system of fully intelligent, stand-alone controllers, operating in a multi-tasking, multi-user environment on token passing network, with central and remote hardware, software, and interconnecting wire and conduit.

D. Include computer software and hardware, operator input/output devices, control units, local area networks (LAN), sensors, control devices, actuators.

E. Controls for variable air volume terminals, reheat coils, unit heaters, fan coils, and the like when directly connected to the control units. Individual terminal unit control is specified in Section 230913.

F. Provide control systems consisting of thermostats, control valves, dampers and operators, indicating devices, interface equipment and other apparatus and accessories required to operate mechanical systems, and to perform functions specified.

G. Include installation and calibration, supervision, adjustments, and fine tuning necessary for complete and fully operational system.

### 1.05 SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data for each system component and software module.

C. Shop Drawings:
   1. Indicate trunk cable schematic showing programmable control unit locations, and trunk data conductors.
   2. List connected data points, including connected control unit and input device.
   3. Indicate system graphics indicating monitored systems, data (connected and calculated) point addresses, and operator notations. Provide demonstration diskette containing graphics.
   4. Show system configuration with peripheral devices, batteries, power supplies, diagrams, modems, and interconnections.

5. Indicate description and sequence of operation of operating, user, and application software.

D. Project Record Documents: Record actual locations of control components, including control units, thermostats, and sensors.
   1. Revise shop drawings to reflect actual installation and operating sequences.

E. Operation and Maintenance Data:
   1. Include interconnection wiring diagrams complete field installed systems with identified and numbered, system components and devices.
   2. Include keyboard illustrations and step-by-step procedures indexed for each operator function.
   3. Include inspection period, cleaning methods, cleaning materials recommended, and calibration tolerances.

**1.06 QUALITY ASSURANCE**

A. Perform work in accordance with NFPA 70.

B. Installer Qualifications: Company specializing in performing work of the type specified and with minimum three years of documented experience.

**1.07 WARRANTY**

A. See Section 017800 - Closeout Submittals for additional warranty requirements.

B. Correct defective Work within a one year period after Substantial Completion.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

A. Delta Controls.

**2.02 SYSTEM SOFTWARE**

A. Provide new system software for incorporation into the system. Software shall be Delta enteliWEB. Contractor shall install and create dashboards and alarm management per the direction of the owner.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

A. Verify existing conditions before starting work.

B. Verify that conditioned power supply is available to the control units and to the operator work station. Verify that field end devices and wiring is installed prior to installation proceeding.

**3.02 INSTALLATION**

A. Install control units and other hardware in position on permanent walls where not subject to excessive vibration.

B. Install software in control units and in operator work station. Implement all features of programs to specified requirements and appropriate to sequence of operation. Refer to Section 230993.

C. Provide conduit and electrical wiring in accordance with Section 260583. Electrical material and installation shall be in accordance with appropriate requirements of Division 26.

**3.03 MANUFACTURER'S FIELD SERVICES**

A. Start and commission systems. Allow sufficient time for start-up and commissioning prior to placing control systems in permanent operation.

B. Provide basic operator training for Owner on data display, alarm and status descriptors, requesting data, execution of commands and request of logs. Include a minimum of 16 hours dedicated instructor time. Provide training on site.

**3.04 DEMONSTRATION AND INSTRUCTIONS**

A. Demonstrate complete and operating system to Owner.

### 3.05 MAINTENANCE

A. Provide service and maintenance of energy management and control systems for one years from Date of Substantial Completion.

**END OF SECTION**

**SECTION 230993**

**SEQUENCE OF OPERATIONS FOR HVAC CONTROLS**

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. This section defines the manner and method by which controls function. Requirements for each type of control system operation are specified. Equipment, devices, and system components required for control systems are specified in other sections.

B. Sequence of operation for:
   1. Air terminal units.
   2. Roof Top units and condensing units

### 1.02 RELATED REQUIREMENTS

A. Section 230913 - Instrumentation and Control Devices for HVAC.

### 1.03 SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittal procedures.

B. Sequence of Operation Documentation: Submit written sequence of operation for entire HVAC system and each piece of equipment.

C. Control System Diagrams: Submit graphic schematic of the control system showing each control component and each component controlled, monitored, or enabled.

D. Points List: Submit list of all control points.

E. Project Record Documents: Record actual locations of components and setpoints of controls, including changes to sequences made after submission of shop drawings.

## PART 2 PRODUCTS - NOT USED

## PART 3 EXECUTION

### 3.01 AIR TERMINAL UNITS

A. Single-duct Variable Volume:
   1. Cooling with Reheat:
      a. On a rise in space temperature above the cooling set-point, the unit modulates to its maximum airflow.
      b. As the space temperature falls below the cooling set-point, the unit modulates to its minimum airflow.
      c. As the space temperature continues to fall to the heating set-point, the terminal modulates to its heating minimum airflow and modulates the hot water valve as required to maintain setpoint. If the space is still calling for heat when the hot water valve shall is at 100%, the unit shall modulate the airflow to maintain setpoint
   2. Temperature setback: During scheduled unoccupied times the space temperature set-point shall be provided with a 5 deg (adjustable) temperature setback. Provide optimized control to precondition the space so set-point temperatures are met prior to schduled occupancy.

### 3.02 ROOF TOP AIR HANDLING UNIT #1 AND CONDENSING UNIT

A. Time Schedule: Start and stop supply fan. Determine fan status by current sensing devices. If fan fails to start as commanded, signal alarm.

B. Provide temp sensor/wiring and input the following points:
   1. Discharge air temp. and setpoint
   2. Return air temp.
   3. Mixed air temp.
   4. Outside air temp.

C. Provide actuator/control for the following dampers that are unit mounted, and input damper position.

1. Return air
2. Relief air
3. Mixed air

D. Hot water Heating Coil:
1. When fan is not running and outside air temperature is below 40 degrees F, fully open coil valve to heating.
2. When fan is running, modulate coil control valve to satisfy discharge air temperature setpoint.
3. Provide supply and return water temperature inputs off of coil.

E. DX Condensing Unit
1. Maintain discharge air temperature of 55 degrees F (adj.) by energizing compressors #1 and #2 during a call for cooling and cycling to satisfy sensor. Provide min. run times on compressors, and high/low temp. limits. Modulate the hot gas bypass as required during times of low demand.
2. Provide alarm off of condensing unit motor starter indicating phase loss.

F. Outside, Return, and Relief Dampers:
1. When supply fan is not running, outside and relief dampers are closed and return damper is open.
2. When supply fan is running, dampers are controlled and operate with outside and relief dampers opening, and return damper closing.
3. When building is in an occupied mode, outside air damper shall be opened to a minimum position.
4. For cooling and outside air temperatures below 55 degrees F, modulate dampers to maintain mixed air temperature of 55 degrees F or higher.
5. For cooling and outside air temperatures above 55 degrees F outside and relief dampers are open and return damper is closed.
6. For cooling and outside air temperatures above 55 degrees F compare return and outside air temperatures. If return air temperature is lower, drive outside damper to minimum, close relief damper, and open return damper.
7. For heating, drive outside damper to minimum, close relief damper, and open return damper.

G. Provide control of supply fan
1. Connect unit to indoor mounted VFD and provide input on status and speed. Provide fault indication in case of phase loss.
2. Maintain constant supply static pressure of 1.0 inches wg by modulating supply fan speed in sequence. Locate pressure sensor minimum 50 ft downstream of supply fan in supply air duct.
3. Provide minimum air flow sequence. VFD shall not be allowed to go below 30% of maximum setting. Coordinate percentage with condensing unit supplier. Modulate VAV box dampers as required so no one space has excessive air flow.

**3.03 POINTS LIST**

A. Refer to the following pages for "Input/Output Summary" for listing of required control points.

B. All control points shall be addressed according to actual mechanical equipment identification numbers and room numbers.

**END OF SECTION**

# Input/Output Summary

| | Indication and Control | | | | | | | | | | | | General | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Analog | | | | | | | Digital | | | | | | | | |
| | Temperature | Humidity | Pressure | Air Flow | Kilowatt-Hours | Modulation | | Start/Stop | Status/Alarm | Open/Close | Staging | | Color Graphic | | | |
| Roof Top Unit #1 | | | | | | | | X | | | | | X | | | |
| Supply Fan | | | | | | | | X | X | | | | | | | VFD Modulation |
| Supply Air | X | | X | | | | | | | | | | | | | |
| Return Air | X | | | | | X | | | | | | | | | | Damper modulation |
| Mixed Air | X | | | | | X | | | | | | | | | | Damper modulation |
| Outside Air | X | | | | | X | | | | | | | | | | Damper modulation |
| Hot Water Valve | | | | | | X | | | | | | | | | | |
| Hot Water Temperature | X | | | | | | | | | | | | | | | Supply/Return |
| | | | | | | | | | | | | | | | | |
| Condensing Unit #1 | | | | | | | | X | | | | | X | | | |
| Compressor #1 / #2 | | | | | | X | | | | | | | | | | |
| Phase Loss | | | | | | | | | X | | | | | | | |
| Hot Gas Bypass | | | | | | X | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| VAV Box | | | | | | | | | | | | | X | | | |
| Supply Air | X | | | X | | | | | | | | | | | | Setpoint |
| Min/Max cfm | | | | X | | | | | | | | | | | | |
| Hot Water Valve | | | | | | | X | | | | | | | | | |
| Damper | | | | | | | X | | | | | | | | | |
| Room | X | | | | | | | | | | | | | | | Setpoint |
| | | | | | | | | | | | | | | | | |

**SECTION 232113**

**HYDRONIC PIPING**

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Hydronic system requirements.

B. Heating water and glycol piping, above grade.

C. Equipment drains and overflows.

D. Pipe hangers and supports.

E. Unions, flanges, mechanical couplings, and dielectric connections.

F. Valves:
   1. Ball valves.
   2. Butterfly valves.
   3. Check valves.

### 1.02 RELATED REQUIREMENTS

A. Section 083100 - Access Doors and Panels.

B. Section 220516 - Expansion Fittings and Loops for Plumbing Piping.

C. Section 220553 - Identification for Mechanical Piping and Equipment.

D. Section 220719 - Plumbing Piping Insulation.

E. Section 232114 - Hydronic Specialties.

F. Section 232500 - HVAC Water Treatment: Pipe cleaning.

### 1.03 REFERENCE STANDARDS

A. ASME BPVC-IX - Boiler and Pressure Vessel Code, Section IX - Welding, Brazing, and Fusing Qualifications; 2015.

B. ASME B16.3 - Malleable Iron Threaded Fittings: Classes 150 and 300; 2011.

C. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings; 2012.

D. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings; 2013.

E. ASME B31.9 - Building Services Piping; 2014.

F. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2012.

G. ASTM A234/A234M - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service; 2015.

H. ASTM A536 - Standard Specification for Ductile Iron Castings; 1984 (Reapproved 2014).

I. ASTM B32 - Standard Specification for Solder Metal; 2008 (Reapproved 2014).

J. ASTM B88 - Standard Specification for Seamless Copper Water Tube; 2014.

K. ASTM B88M - Standard Specification for Seamless Copper Water Tube (Metric); 2013.

L. ASTM F708 - Standard Practice for Design and Installation of Rigid Pipe Hangers; 1992 (Reapproved 2008).

M. ASTM F1476 - Standard Specification for Performance of Gasketed Mechanical Couplings for Use in Piping Applications; 2007 (Reapproved 2013).

N. AWS A5.8M/A5.8 - Specification for Filler Metals for Brazing and Braze Welding; 2011-AMD 1.

O. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2015.

P. AWWA C606 - Grooved and Shouldered Joints; 2011.

Q. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation; 2009.

## 1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Product Data:
   1. Include data on pipe materials, pipe fittings, valves, and accessories.

C. Project Record Documents: Record actual locations of valves.

D. Maintenance Data: Include installation instructions, spare parts lists, exploded assembly views.

## 1.05 QUALITY ASSURANCE

A. Provide all grooved joint couplings, fittings, valves, specialties, and grooving tools from a single manufacturer. All castings used shall be date stamped for quality assurance and traceability.

B. Welder Qualifications: Certify in accordance with ASME BPVC-IX.

## 1.06 DELIVERY, STORAGE, AND HANDLING

A. Accept valves on site in shipping containers with labeling in place. Inspect for damage.

B. Provide temporary protective coating on cast iron and steel valves.

C. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.

D. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

# PART 2 PRODUCTS

## 2.01 HYDRONIC SYSTEM REQUIREMENTS

A. Comply with ASME B31.9 and applicable federal, state, and local regulations.

B. Piping: Provide piping, fittings, hangers and supports as required, as indicated, and as follows:
   1. Where more than one piping system material is specified, provide joining fittings that are compatible with piping materials and ensure that the integrity of the system is not jeopardized.
   2. Use non-conducting dielectric connections (Clear-Flow nipples or dielectric flanges) whenever jointing dissimilar metals.
   3. Make hydronic piping branch taps off of the top of the system mains.
   4. Grooved mechanical joints may be used in accessible locations only.
      a. Accessible locations include those exposed on interior of building, in pipe chases, and in mechanical rooms, aboveground outdoors, and as approved by Engineer.
      b. Use rigid joints unless otherwise indicated.
   5. Provide pipe hangers and supports in accordance with ASME B31.9 or MSS SP-58 unless indicated otherwise.

C. Pipe-to-Valve and Pipe-to-Equipment Connections: Use flanges, unions, or grooved couplings to allow disconnection of components for servicing; do not use direct welded, soldered, or threaded connections.

D. Valves: Provide valves where indicated:
   1. Provide drain valves where indicated, and if not indicated provide at least at main shut-off, low points of piping, bases of vertical risers, and at equipment. Use 3/4 inch ball valves with cap; pipe to nearest floor drain.
   2. Isolate equipment using butterfly valves with lug end flanges or grooved mechanical couplings.
   3. For throttling, bypass, or manual flow control services, use globe, ball, or butterfly valves.
   4. For shut-off and to isolate parts of systems or vertical risers, use ball or butterfly valves.

E. Welding Materials and Procedures: Conform to ASME BPVC-IX.

## 2.02 HEATING WATER AND GLYCOL PIPING, ABOVE GRADE

A. Steel Pipe: ASTM A53/A53M, Schedule 40, black, using one of the following joint types:

1. Welded Joints: ASTM A234/A234M, wrought steel welding type fittings; AWS D1.1/D1.1M welded.
2. Threaded Joints (only allowed up to 2" size): ASME B16.3, malleable iron fittings.
3. Grooved Joints: AWWA C606 grooved pipe, fittings of same material, and mechanical couplings.

B. Copper Tube: ASTM B88 (ASTM B88M), Type L (B), drawn, using one of the following joint types:
1. Solder Joints: ASME B16.18 cast brass/bronze or ASME B16.22 solder wrought copper fittings.
a. Solder: ASTM B32 lead-free solder, HB alloy (95-5 tin-antimony) or tin and silver.
b. Braze: AWS A5.8M/A5.8 BCuP copper/silver alloy.
c. Braze: AWS A5.8/A5.8M BCuP copper/silver alloy. Braze all piping joints 2" and larger.
2. Grooved Joints: AWWA C606 grooved tube, fittings of same material, and copper-tube-dimension mechanical couplings.

**2.03 EQUIPMENT DRAINS AND OVERFLOWS**

A. Steel Pipe: ASTM A53/A53M, Schedule 40 galvanized; using one of the following joint types:
1. Threaded Joints: Galvanized cast iron, or ASME B16.3 malleable iron fittings.

B. Copper Tube: ASTM B88 (ASTM B88M), Type K (A), drawn; using one of the following joint types:
1. Solder Joints: ASME B16.18 cast brass/bronze or ASME B16.22 solder wrought copper fittings; ASTM B32 lead-free solder, HB alloy (95-5 tin-antimony) or tin and silver.

**2.04 PIPE HANGERS AND SUPPORTS**

A. Provide hangers and supports that comply with MSS SP-58 and ASME B31.9.
1. If type of hanger or support for a particular situation is not indicated, select appropriate type using MSS SP-58 recommendations.
2. Hangers for Pipe Sizes 1/2 to 1-1/2 Inch: Malleable iron, adjustable swivel, split ring.
3. Hangers for Cold Pipe Sizes 2 Inches and Greater: Carbon steel, adjustable, clevis.
4. Hangers for Hot Pipe Sizes 2 to 4 Inches: Carbon steel, adjustable, clevis.
5. Hangers for Hot Pipe Sizes 6 Inches and Greater: Adjustable steel yoke, cast iron roll, double hanger.
6. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
7. Wall Support for Pipe Sizes to 3 Inches: Cast iron hook.
8. Wall Support for Pipe Sizes 4 Inches and Greater: Welded steel bracket and wrought steel clamp.
9. Vertical Support: Steel riser clamp.
10. Floor Support for Cold Pipe: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
11. Floor Support for Hot Pipe Sizes to 4 Inches: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
12. Floor Support for Hot Pipe Sizes 6 Inches and Greater: Adjustable cast iron roll and stand, steel screws, and concrete pier or steel support.
13. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.
14. Hanger Rods: Mild steel threaded both ends, threaded one end, or continuous threaded.
15. Inserts: Malleable iron case of galvanized steel shell and expander plug for threaded connection with lateral adjustment, top slot for reinforcing rods, lugs for attaching to forms; size inserts to suit threaded hanger rods.

B. In grooved installations, use rigid couplings with offsetting angle-pattern bolt pads or with wedge shaped grooves in header piping to permit support and hanging in accordance with ASME B31.9.

**2.05 UNIONS, FLANGES, MECHANICAL COUPLINGS, AND DIELECTRIC CONNECTIONS**

A. Unions for Pipe 2 Inches and Less:

1. Ferrous Piping: 150 psig malleable iron, threaded.
2. Copper Pipe: Bronze, soldered joints.

B. Flanges for Pipe 2 Inches and Greater:
1. Ferrous Piping: 150 psig forged steel, slip-on.
2. Copper Piping: Bronze.
3. Gaskets: 1/16 inch thick preformed neoprene.

C. Mechanical Couplings for Grooved and Shouldered Joints: Two or more curved housing segments with continuous key to engage pipe groove, circular C-profile gasket, and bolts to secure and compress gasket.
1. Dimensions and Testing: In accordance with AWWA C606.
2. Mechanical Couplings: Comply with ASTM F1476.
3. Housing Material: Ductile iron, galvanized complying with ASTM A536.
4. Bolts and Nuts: Hot dipped galvanized or zinc-electroplated steel.
5. When pipe is field grooved, provide coupling manufacturer's grooving tools.

D. Dielectric Connections:
1. Waterways:
a. Water impervious insulation barrier capable of limiting galvanic current to 1 percent of short circuit current in a corresponding bimetallic joint.
b. Dry insulation barrier able to withstand 600 volt breakdown test.
c. Construct of galvanized steel with threaded end connections to match connecting piping.
d. Suitable for the required operating pressures and temperatures.
2. Flanges:
a. Dielectric flanges with same pressure ratings as standard flanges.
b. Water impervious insulation barrier capable of limiting galvanic current to 1 percent of short circuit current in a corresponding bimetallic joint.
c. Dry insulation barrier able to withstand 600 volt breakdown test.
d. Construct of galvanized steel with threaded end connections to match connecting piping.
e. Suitable for the required operating pressures and temperatures.

## 2.06 BALL VALVES

A. Manufacturers:
1. Milwaukee Valve Company: www.milwaukeevalve.com.
2. Apollo Valve
3. Victaulic Company: www.victaulic.com.

B. Up To and Including 2 Inches:
1. Bronze one piece body, chrome plated brass ball, teflon seats and stuffing box ring, lever handle with balancing stops, solder ends with union.

## 2.07 BUTTERFLY VALVES

A. Manufacturers:
1. Crane Co.: www.craneco.com.
2. Victaulic Company: www.victaulic.com.

B. Body: Cast or ductile iron with resilient replaceable EPDM seat, wafer, lug, or grooved ends, extended neck.

C. Disc: Construct of aluminum bronze, chrome plated ductile iron, stainless steel, ductile iron with EPDM encapsulation, or Buna-N encapsulation.

D. Operator: 10 position lever handle.

## 2.08 SWING CHECK VALVES

A. Manufacturers:
1. Milwaukee Valve Company: www.milwaukeevalve.com.

2. Victaulic Company: www.victaulic.com.

B. Up To and Including 2 Inches:
   1. Bronze body, bronze trim, bronze rotating swing disc, with composition disc, solder ends.

C. Over 2 Inches:
   1. Iron body, bronze trim, bronze or bronze faced rotating swing disc, renewable disc and seat, flanged or grooved ends.

**2.09 SPRING LOADED CHECK VALVES**

A. Manufacturers:
   1. Crane Co.: www.craneco.com.
   2. Milwaukee Valve Company: www.milwaukeevalve.com.
   3. Victaulic Company: www.victaulic.com.

B. Iron body, bronze trim, split plate, hinged with stainless steel spring, resilient seal bonded to body, wafer or threaded lug ends.

**PART 3 EXECUTION**

**3.01 PREPARATION**

A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.

B. Prepare pipe for grooved mechanical joints as required by coupling manufacturer.

C. Remove scale and dirt on inside and outside before assembly.

D. Prepare piping connections to equipment using jointing system specified.

E. Keep open ends of pipe free from scale and dirt. Protect open ends with temporary plugs or caps.

F. After completion, flush, clean, fill, and treat systems with specified fluid with corrosion inhibitors. Refer to Section 232500 for additional requirements.

G. Refer to Division 22 0000 for piping insulation and identification.

**3.02 INSTALLATION**

A. Install in accordance with manufacturer's instructions.

B. Install heating water, glycol, chilled water, heat pump water, condenser water, and engine exhaust piping to ASME B31.9 requirements.

C. Route piping in orderly manner, parallel to building structure, and maintain gradient.

D. Install piping to conserve building space and to avoid interfere with use of space.

E. Group piping whenever practical at common elevations.

F. Sleeve pipe passing through partitions, walls and floors constructed of a minimum of 18 gauge sheetmetal. Provide schedule 40 pipe as sleeves with appropriate sealant at fire and/or smoke rated penetrations around pipe sleeve. Extend sleeves through floors a minimum of 2" above the floor. Wall sleeves shall be flush with the wall and chrome plated solid steel escutcheons shall be installed..

G. Slope piping and arrange to drain at low points.

H. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment. Refer to Section 220516.

I. Grooved Joints:
   1. Install in accordance with the manufacturer's latest published installation instructions. All installations shall be done by factory-trained field personnel. Contractor shall remove and replace any improperly installed products.
   2. Gaskets to be suitable for the intended service, molded, and produced by the coupling manufacturer.
   3. Use grooved mechanical couplings and fasteners only in accessible locations.

J. Inserts:

1. Provide inserts for placement in concrete formwork.
2. Where concrete slabs form finished ceiling, locate inserts to project 1" above slab surface.

K. Pipe Hangers and Supports:
1. Install in accordance with ASME B31.9, ASTM F708, or MSS SP-58.
2. Support horizontal piping as scheduled.
3. Provide copper plated hangers and supports for copper piping.
4. Prime coat exposed steel hangers and supports. Refer to Section 099123. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.

L. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings. Refer to Section 220719.

M. Provide access where valves and fittings are not exposed. Coordinate size and location of access doors with Section 083100.

N. Use eccentric reducers to maintain top of pipe level.

O. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welds.

P. Prepare unfinished pipe, fittings, supports, and accessories, ready for finish painting. Refer to Section 099123.

Q. Install valves with stems upright or horizontal, not inverted.

**3.03 SCHEDULES**

A. Hanger Spacing for Copper Tubing.
1. 1/2 inch and 3/4 inch: Maximum span, 5 feet; minimum rod size, 1/4 inch.
2. 1 inch: Maximum span, 6 feet; minimum rod size, 1/4 inch.
3. 1-1/2 inch and 2 inch: Maximum span, 8 feet; minimum rod size, 3/8 inch.
4. 2-1/2 inch: Maximum span, 9 feet; minimum rod size, 3/8 inch.

B. Hanger Spacing for Steel Piping.
1. 1/2 inch, 3/4 inch, and 1 inch: Maximum span, 7 feet; minimum rod size, 1/4 inch.
2. 1-1/4 inches: Maximum span, 8 feet; minimum rod size, 3/8 inch.
3. 1-1/2 inches: Maximum span, 9 feet; minimum rod size, 3/8 inch.
4. 2 inches: Maximum span, 10 feet; minimum rod size, 3/8 inch.
5. 2-1/2 inches: Maximum span, 11 feet; minimum rod size, 3/8 inch.
6. 3 inches: Maximum span, 12 feet; minimum rod size, 3/8 inch.
7. 4 inches: Maximum span, 14 feet; minimum rod size, 1/2 inch.

**END OF SECTION**

**SECTION 232300**

**REFRIGERANT PIPING**

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Piping.

B. Refrigerant.

C. Moisture and liquid indicators.

D. Valves.

E. Strainers.

F. Filter-driers.

### 1.02 SYSTEM DESCRIPTION

A. Where more than one piping system material is specified ensure system components are compatible and joined to ensure the integrity of the system is not jeopardized. Provide necessary joining fittings. Ensure flanges, union, and couplings for servicing are consistently provided.

B. Extend and connect refrigerant piping between AHU#1 and condensing unit. Piping shall be tested after completion and shall be filled with refrigerant. System shall be a complete and operational and shall comply with manufacturers recommendations.

C. Filter-Driers:
   1. Use a filter-drier immediately ahead of liquid-line controls, such as thermostatic expansion valves, solenoid valves, and moisture indicators.

### 1.03 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide general assembly of specialties, including manufacturers catalogue information. Provide manufacturers catalog data including load capacity.

C. Shop Drawings: Indicate schematic layout of system, including equipment, critical dimensions, and sizes.

D. Design Data: Submit design data indicating pipe sizing. Indicate load carrying capacity of trapeze, multiple pipe, and riser support hangers.

E. Test Reports: Indicate results of leak test, acid test.

### 1.04 QUALITY ASSURANCE

A. Designer Qualifications: Design piping system under direct supervision of a Professional Engineer experienced in design of this type of work.

### 1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store piping and specialties in shipping containers with labeling in place.

B. Protect piping and specialties from entry of contaminating material by leaving end caps and plugs in place until installation.

C. Dehydrate and charge components such as piping and receivers, seal prior to shipment, until connected into system.

## PART 2 PRODUCTS

### 2.01 PIPING

A. Copper Tube: ASTM B280, H58 hard drawn or O60 soft annealed.
   1. Fittings: ASME B16.22 wrought copper.
   2. Joints: Braze, AWS A5.8M/A5.8 BCuP silver/phosphorus/copper alloy.

B. Copper Tube to 7/8 inch OD: ASTM B88 (ASTM B88M), Type K (A), annealed.
   1. Fittings: ASME B16.26 cast copper.

2. Joints: Flared.

C. Pipe Supports and Anchors:
   1. Rooftop Supports for Low-Slope Roofs: Steel pedestals with bases that rest on top of roofing membrane, not requiring any attachment to the roof structure and not penetrating the roofing assembly, with support fixtures as specified; and as follows:
      a. Bases: High density, UV tolerant, polypropylene or reinforced PVC.
      b. Base Sizes: As required to distribute load sufficiently to prevent indentation of roofing assembly.
      c. Steel Components: Stainless steel, or carbon steel hot-dip galvanized after fabrication in accordance with ASTM A123/A123M.
      d. Attachment/Support Fixtures: As recommended by manufacturer, same type as indicated for equivalent indoor hangers and supports; corrosion resistant material.
      e. Height: Provide minimum clearance of 6 inches under pipe to top of roofing.
      f. Manufacturers:
         1) PHP Systems/Design; _____: www.phpsd.com.
         2) Portals Plus; Pedestal Plus: www.portalsplus.com.

**2.02 REFRIGERANT**

A. Refrigerant: Use only refrigerants that have ozone depletion potential (ODP) of zero and global warming potential (GWP) of less than 50.

B. Refrigerant: R-410A as defined in ASHRAE Std 34.

**2.03 MOISTURE AND LIQUID INDICATORS**

A. Indicators: Single port type, UL listed, with copper or brass body, flared or solder ends, sight glass, color coded paper moisture indicator with removable element cartridge and plastic cap; for maximum temperature of 200 degrees F and maximum working pressure of 500 psi.

**2.04 VALVES**

A. Service Valves:
   1. Forged brass body with copper stubs, brass caps, removable valve core, integral ball check valve, flared or solder ends, for maximum pressure of 500 psi.

**2.05 FILTER-DRIERS**

A. Performance:
   1. Flow Capacity - Liquid Line: ____ ton, minimum, rated in accordance with AHRI 710.
   2. Pressure Drop: 2 psi, maximum, when operating at full connected evaporator capacity.
   3. Design Working Pressure: 350 psi, minimum.

B. Cores: Molded or loose-fill molecular sieve desiccant compatible with refrigerant, activated alumina, activated charcoal, and filtration to 40 microns, with secondary filtration to 20 microns; of construction that will not pass into refrigerant lines.

C. Construction: UL listed.
   1. Connections: As specified for applicable pipe type.

**PART 3 EXECUTION**

**3.01 PREPARATION**

A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.

B. Remove scale and dirt on inside and outside before assembly.

C. Prepare piping connections to equipment with flanges or unions.

**3.02 INSTALLATION**

A. Install refrigeration specialties in accordance with manufacturer's instructions.

B. Route piping in orderly manner, with plumbing parallel to building structure, and maintain gradient.

C. Install piping to conserve building space and avoid interference with use of space.

D. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

E. Arrange piping to return oil to compressor. Provide traps and loops in piping, and provide double risers as required. Slope horizontal piping 0.40 percent in direction of flow.

F. Provide clearance for installation of insulation and access to valves and fittings.

G. Flood piping system with nitrogen when brazing.

H. Prepare unfinished pipe, fittings, supports, and accessories ready for finish painting. Refer to Section 099123.

I. Insulate piping and equipment; refer to Section and Section 220716.

J. Follow ASHRAE Std 15 procedures for charging and purging of systems and for disposal of refrigerant.

K. Install flexible connectors at right angles to axial movement of compressor, parallel to crankshaft.

L. Fully charge completed system with refrigerant after testing.

**3.03 FIELD QUALITY CONTROL**

A. See Section 014000 - Quality Requirements, for additional requirements.

B. Test refrigeration system in accordance with ASME B31.5.

C. Pressure test system with dry nitrogen to 200 psi. Perform final tests at 27 inches vacuum and 200 psi using halide torch. Test to no leakage.

**END OF SECTION**

## SECTION 233100
## HVAC DUCTS AND CASINGS

### PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Metal ductwork.

B. Nonmetal ductwork.

C. Kitchen hood ductwork.

### 1.02 RELATED REQUIREMENTS

A. Section 230713 - Duct Insulation: External insulation and duct liner.

B. Section 233300 - Air Duct Accessories.

C. Section 233600 - Air Terminal Units.

D. Section 233700 - Air Outlets and Inlets.

### 1.03 REFERENCE STANDARDS

A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015.

C. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2014.

D. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.

E. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate [Metric]; 2014.

F. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2015a.

G. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; 2015.

H. NFPA 96 - Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations; 2014.

I. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; 2005.

J. SMACNA (KVS) - Kitchen Ventilation Systems and Food Service Equipment Fabrication and Installation Guidelines; 2001.

K. UL 181 - Standard for Factory-Made Air Ducts and Air Connectors; current edition, including all revisions.

### 1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Project Record Documents: Record actual locations of ducts and duct fittings. Record changes in fitting location and type. Show additional fittings used.

### 1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience, and approved by manufacturer.

### 1.06 REGULATORY REQUIREMENTS

A. Construct ductwork to NFPA 90A and NFPA 96 standards.

## PART 2 PRODUCTS

### 2.01 DUCT ASSEMBLIES

A. Regulatory Requirements: Construct ductwork to NFPA 90A standards.

B. All Ducts: 2 inch w.g. pressure class, galvanized steel, unless otherwise indicated.

C. Dishwasher Exhaust: 1/2 inch w.g. pressure class, galvanized steel.

D. Grease Exhaust: 1/2 inch w.g. pressure class, stainless steel.
   1. Construct of ASTM A1011/A1011M 16 gage un-galvanized steel.
   2. Construct of 18 gage, 0.0500 inch stainless steel.
   3. Construction:
      a. Liquid tight with continuous external weld for all seams and joints.
      b. Where ducts are not self draining back to equipment, provide low point drain pocket with copper drain pipe to sanitary sewer.
   4. Access Doors:
      a. Provide for duct cleaning inside horizontal duct at drain pockets, every 20 feet and at each change of direction.
      b. Use same material and thickness as duct with gaskets and sealants rated 1500 degrees F for grease tight construction.

E. Fume Hood Exhaust: 1/2 inch w.g. pressure class, galvanized steel.

F. Outside Air Intake: 1/2 inch w.g. pressure class, galvanized steel.

### 2.02 MATERIALS

A. Galvanized Steel for Ducts: Hot-dipped galvanized steel sheet, ASTM A653/A653M FS Type B, with G60/Z180 coating.

B. Aluminum for Ducts: ASTM B209 (ASTM B209M); aluminum sheet, alloy 3003-H14. Aluminum Connectors and Bar Stock: Alloy 6061-T651 or of equivalent strength.

C. Joint Sealers and Sealants: Non-hardening, water resistant, mildew and mold resistant.
   1. Type: Heavy mastic or liquid used alone or with tape, suitable for joint configuration and compatible with substrates, and recommended by manufacturer for pressure class of ducts.
   2. VOC Content: Not more than 250 g/L, excluding water.
   3. Surface Burning Characteristics: Flame spread index of zero and smoke developed index of zero, when tested in accordance with ASTM E84.
   4. For Use With Flexible Ducts: UL labeled.

D. Hanger Rod: ASTM A36/A36M; steel, galvanized; threaded both ends, threaded one end, or continuously threaded.

### 2.03 DUCTWORK FABRICATION

A. Fabricate and support in accordance with SMACNA (DCS) and as indicated.

B. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.

C. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.

D. Fabricate continuously welded round and oval duct fittings in accordance with SMACNA (DCS).

### 2.04 MANUFACTURED DUCTWORK AND FITTINGS

A. Flat Oval and Spiral Round Ducts: Machine made from round spiral lockseam duct.
   1. Manufacture in accordance with SMACNA (DCS).
   2. Fittings: Manufacture at least two gages heavier metal than duct.
   3. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.

B. Flexible Ducts: UL 181, Class 1, aluminum laminate and polyester film with latex adhesive supported by helically wound spring steel wire.

1. Pressure Rating: 10 inches WG positive and 1.0 inches WG negative.
2. Maximum Velocity: 4000 fpm.
3. Temperature Range: Minus 20 degrees F to 210 degrees F.
4. Manufacturers:
   a. _____.
   b. _____.

C. Grease Exhaust: 16 gage non-galvanized steel or 18 gage 304 stainless steel with two layers of 1-1/2 inch thick "Fire Wrap" insulation.

D. Fume Hood Exhaust: Minimum 21 gage, 0.0344 inch thick, single wall, Type 304 stainless steel.
   1. Single wall, factory built general use vent system.
   2. Designed, fabricated, and installed to be liquid tight preventing exhaust leakage into the building.
   3. Joints to be sealed during installation with factory supplied overlapping V-bands and sealant.

**2.05 KITCHEN HOOD EXHAUST DUCTWORK**

A. Fabricate in accordance with ductwork manufacturer's installation instructions, SMACNA (DCS), SMACNA (KVS), and NFPA 96.

**PART 3 EXECUTION**

**3.01 INSTALLATION**

A. Install, support, and seal ducts in accordance with SMACNA (DCS).

B. Install in accordance with manufacturer's instructions.

C. Provide all ductwork offsets and fittings as required for a quality installation.

D. During construction provide temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering ductwork system.

E. Kitchen Hood Exhaust: Provide residue traps at base of vertical risers with provisions for clean out.

F. Duct sizes indicated are inside clear dimensions. For lined ducts, maintain sizes inside lining.

G. Provide openings in ductwork where required to accommodate thermometers and controllers. Provide pilot tube openings where required for testing of systems, complete with metal can with spring device or screw to ensure against air leakage. Where openings are provided in insulated ductwork, install insulation material inside a metal ring.

H. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.

I. Connect flexible ducts to metal ducts with liquid adhesive plus tape.

J. Connect diffusers to low pressure ducts with 3 feet maximum length of flexible duct held in place with strap or clamp.

K. At exterior wall louvers, seal duct to louver frame . See detail on Drawings.

L. Provide approved method of sealing ductwork penetrations through fire and/or smoke rated walls and barriers with an intumescent sealant or caulk.

M. For installation of exposed spiral ductwork, hang with stainless steel braided cable system or as detailed otherwise on the Drawings.

N. Seal all supply duct connections to heat pumps, air handling units, fan coils, furnaces, etc.

**END OF SECTION**

## SECTION 233600
## AIR TERMINAL UNITS

### PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Variable volume terminal units.

B. Integral heating coils.

### 1.02 RELATED REQUIREMENTS

A. Section 232113 - Hydronic Piping: Connections to heating coils.

B. Section 232114 - Hydronic Specialties: Connections to heating coils.

C. Section 233100 - HVAC Ducts and Casings.

D. Section 233700 - Air Outlets and Inlets.

E. Section 230913 - Instrumentation and Control Devices for HVAC: Thermostats and Actuators.

### 1.03 REFERENCE STANDARDS

A. ASTM A492 - Standard Specification for Stainless Steel Rope Wire; 1995 (Reapproved 2013).

B. ASTM A603 - Standard Specification for Zinc-Coated Steel Structural Wire Rope; 1998 (Reapproved 2014).

C. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; 2015.

D. SMACNA (SRM) - Seismic Restraint Manual Guidelines for Mechanical Systems; Sheet Metal and Air Conditioning Contractors' National Association; 2008.

E. UL 181 - Standard for Factory-Made Air Ducts and Air Connectors; current edition, including all revisions.

### 1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data indicating configuration, general assembly, and materials used in fabrication. Include catalog performance ratings that indicate air flow, static pressure, and NC designation. Include electrical characteristics and connection requirements.

C. Operation and Maintenance Data: Include manufacturer's descriptive literature, operating instructions, maintenance and repair data, and parts lists. Include directions for resetting constant-volume regulators.

### PART 2 PRODUCTS

### 2.01 MANUFACTURERS

A. Titus

B. Trane

C. Tuttle & Bailey

D. Kreuger

### 2.02 MANUFACTURED UNITS

A. Ceiling mounted variable air volume supply air control terminals for connection to single duct, central air systems, with electronic variable volume controls,, hot water heating coils.

B. Identify each terminal unit with clearly marked identification label and air flow indicator. Include unit nominal air flow, maximum factory set airflow, minimum factory set air flow, and coil type.

### 2.03 SINGLE DUCT VARIABLE VOLUME UNITS

A. Basic Assembly:
   1. Casings: Minimum 22 gage galvanized steel.

2. Lining: Minimum 1/2 inch thick neoprene or vinyl coated fibrous glass insulation, 1.5 lb/cu ft density, meeting NFPA 90A requirements and UL 181 erosion requirements. Face lining with mylar film.
3. Plenum Air Inlets: Round stub connections for duct attachment.
4. Plenum Air Outlets: S slip and drive connections.

B. Basic Unit:
1. Configuration: Air volume damper assembly inside unit casing. Locate control components inside protective metal shroud.
2. Volume Damper: Construct of galvanized steel with peripheral gasket and self lubricating bearings; maximum damper leakage: 2 percent of design air flow at 1 inches rated inlet static pressure.

C. Hot Water Heating Coil:
1. Construction: 1/2 inch copper tube mechanically expanded into aluminum plate fins, leak tested under water to 200 psig pressure, factory installed.

## PART 3 EXECUTION

### 3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install the inlets of air terminal units and air flow sensors a minimum of four duct diameters from elbows, transitions, and duct takeoffs.

C. Provide ceiling access doors or locate units above easily removable ceiling components.

D. Support units individually from structure with wire rope complying with ASTM A492 and ASTM A603 in accordance with SMACNA (SRM). See Section 230548.

E. Do not support from ductwork.

F. Connect to ductwork in accordance with Section 233100.

G. Install heating coils in accordance with Section 238200.

**END OF SECTION**

## SECTION 236213

## PACKAGED AIR-COOLED REFRIGERANT COMPRESSOR AND CONDENSER UNITS

### PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Condensing unit package.

B. Charge of refrigerant and oil.

C. Controls and control connections.

D. Refrigerant piping connections.

E. Motor starters.

F. Electrical power connections.

### 1.02 RELATED REQUIREMENTS

A. Section 220548 - Vibration and Seismic Controls for Mechanical Piping and Equipment: Placement of vibration isolators.

B. Section 230993 - Sequence of Operations for HVAC Controls.

C. Section 232300 - Refrigerant Piping.

D. Section 237313 - Modular Central-Station Air-Handling Units.

### 1.03 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide rated capacities, weights specialties and accessories, electrical nameplate data, and wiring diagrams. Include equipment served by condensing units in submittal, or submit at same time, to ensure capacities are complementary.

C. Shop Drawings: Indicate components, assembly, dimensions, weights and loadings, required clearances, and location and size of field connections. Include schematic layouts showing condensing units, cooling coils, refrigerant piping, and accessories required for complete system.

D. Design Data: Indicate pipe and equipment sizing.

E. Manufacturer's Instructions: Submit manufacturer's complete installation instructions.

F. Operation and Maintenance Data: Include start-up instructions, maintenance instructions, parts lists, controls, and accessories.

G. Warranty: Submit manufacturer's warranty and ensure forms have been filled out in Owner's name and registered with manufacturer.

### 1.04 QUALITY ASSURANCE

A. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

### 1.05 DELIVERY, STORAGE, AND HANDLING

A. Comply with manufacturer's installation instructions for rigging, unloading, and transporting units.

### 1.06 WARRANTY

A. See Section 017800 - Closeout Submittals, for additional warranty requirements.

B. Provide a five year warranty to include coverage for refrigerant compressors.

### PART 2 PRODUCTS

### 2.01 MANUFACTURERS

A. Trane, a brand of Ingersoll Rand

B. Daikin.

## 2.02 GENERAL UNIT DESCRIPTION

A. Provide self-contained, packaged, factory-assembled and pre-wired units suitable for outdoor use consisting of cabinet, compressor(s), condensing coil and fan(s), integral subcooling circuit(s), filter drier(s), and controls. Provide expansion valve(s) and check valves for split system heat pump unit(s).

B. Performance Ratings: Energy Efficiency Rating (EER) [and Coefficient of Performance (COP)] not less than prescribed by ANSI/ASHRAE 90.1

## 2.03 CASING

A. House components in 18 gauge galvanized steel frame and panels with weather resistant, baked enamel finish. Units surface shall be tested 500 hours in salt spray test.

B. Mount controls in weatherproof panel provided with removable panels and/or access doors with quick opening fasteners.

## 2.04 CONDENSER COILS

A. Coils: Microchannel-Parallel flow aluminum tubes that are mechanically brazed to enhanced aluminum fins. Provide subcooling circuit(s). Factory leak test (at supplier), and vacuum dehydrate. Seal with holding charge of nitrogen.

B. Provide unit with optional hail guards.

## 2.05 FANS AND MOTORS

A. Vertical discharge direct driven propeller type condenser fans with fan guard on discharge. Fans shall be statically and dynamically balanced.

B. Weatherproof motors suitable for outdoor use, with permanently lubricated totally enclosed or open construction motors shall be provided and shall have built in current and thermal overload protection. Motors shall be either sleeve or ball bearing type.

## 2.06 COMPRESSORS

A. Compressor(s): Provide direct-drive scroll compressor(s) with centrifugal oil pump providing positive lubrication to moving parts. Motor shall be suction gas-cooled with internal temperature and current sensitive motor overloads. External high and low pressure cutout devices shall be provided.

B. Provide hot gas bypass on lead compressor.

## 2.07 CONTROLS

A. Provide factory-wired condensing units with 24 volt control circuit with internal fusing and control transformers, contactor pressure lugs and/or terminal block for power wiring. Contractor to provide field installed unit mounted disconnect switch. Units shall have single point power connections.

# PART 3 EXECUTION

## 3.01 INSTALLATION

A. Install in accordance with manufacturer's installation instructions.

B. Complete structural, mechanical, and electrical connections in accordance with manufacturer's installation instructions.

C. Install units on vibration isolation.

D. Provide connection to refrigeration piping system and evaporators. Refer to Section 232300. Comply with ASHRAE Std 15.

## 3.02 SYSTEM STARTUP

A. Supply initial charge of refrigerant and oil for each refrigeration system. Replace losses of oil or refrigerant prior to end of correction period.

B. Charge system with refrigerant and test entire system for leaks after completion of installation. Repair leaks, put system into operation, and test equipment performance.

**END OF SECTION**

**SECTION 237415**

**VAV MODULAR CENTRAL-STATION ROOFTOP AIR-HANDLING UNITS**

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Modular Rooftop air handling unit: RTU-1

### 1.02 RELATED REQUIREMENTS

A. Section 22 0513 - Common Motor Requirements for Plumbing Equipment.

B. Section 23 0719 - HVAC Piping Insulation.

C. Section 23 3300 - Air Duct Accessories: Flexible duct connections.

D. Section 26 2717 - Equipment Wiring: Electrical characteristics and wiring connections.

### 1.03 REFERENCE STANDARDS

A. AHRI 430 - Standard for Central-Station Air-Handling Units; Air-Conditioning, Heating, and Refrigeration Institute; 2009.

### 1.04 SUBMITTALS

A. See Administrative Requirements, for submittal procedures.

B. Product Data:
   1. Published Literature: Indicate dimensions, weights, capacities, ratings, gages and finishes of materials, and electrical characteristics and connection requirements.
   2. Fans: Performance and fan curves with specified operating point clearly plotted, power, RPM.
   3. Sound Power Level Data: Fan outlet and casing radiation at rated capacity.
   4. Electrical Requirements: Power supply wiring including wiring diagrams for interlock and control wiring, clearly indicating factory-installed and field-installed wiring.

C. Shop Drawings: Indicate assembly, unit dimensions, weight loading, required clearances, construction details, field connection details, and electrical characteristics and connection requirements.

D. Maintenance Data: Include instructions for lubrication, filter replacement, motor and drive replacement, spare parts lists, and wiring diagrams.

### 1.05 REGULATORY REQUIREMENTS

A. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

### 1.06 DELIVERY, STORAGE, AND HANDLING

A. Accept products on site in factory-fabricated protective containers, with factory-installed shipping skids and lifting lugs. Inspect for damage.

B. Store in clean dry place and protect from weather and construction traffic. Handle carefully to avoid damage to components, enclosures, and finish.

C. Do not operate units until ductwork is clean, filters are in place, bearings lubricated, and fan has been test run under observation.

## PART 2 PRODUCTS

### 2.01 MANUFACTURERS

A. The Trane Company.

B. Daikin

### 2.02 GENERAL DESCRIPTION

A. Configuration: Fabricate with fan and coil section plus accessories, including:
   1. Cooling coil section.
   2. Heating coil.

3. Filter section.

B. Fabrication: Conform to AMCA 99 and ARI 430.

C. Overall unit shall have 12 month warranty from substantial completion, and 18 month warranty from unit ship date.

**2.03 FRAMEWORK AND CASING**

A. Base rails shall be constructed of a minimum of 10 gage galvanized steel with 16 gage integral floor pan. Base pan shall be insulated with ½" closed-cell neoprene liner or equivalent.

B. Base rails shall be constructed of a minimum of 10 gage galvanized steel with 1” foam-injected double-wall floor.

C. Base shall have a minimum 4" overhang over the top of a roof curb to prevent water infiltration.

D. All floor seams shall have a raised rib joint.

E. There shall be no penetrations through the floor of the unit within the perimeter of the curb except for duct openings and utility chases.

F. Penetrations through the floor shall have a ½” raised rib around each opening.

G. Casing shall be constructed with minimum 1-inch, insulated, double-wall panels.

H. Individual panels shall be constructed so that they are thermally broken (there shall be no metal-to-metal contact between the interior and exterior sheet metal of each panel).

I. Interior side of panel shall be 22 gage galvanized steel.

J. Exterior side of panel shall be 22 gage painted steel rated for 1000 hours in accordance with ASTM B117 and ASTM D1654.
   1. Insulation shall be 1.5 lb./ft3 foam insulation with an R-value of 4.1.
      a. Insulation water absorption must be no more that 0.038 lb/ft per ASTM D 2842 and show "no growth" per ASTM G21 biocide testing.
      b. No insulation shall be exposed to the air stream.
      c. Fiberglass insulation is not acceptable due to possibility of sloughing and moisture retention.

**2.04 ACCESS DOORS**

A. Access doors shall be 2-inch double-wall construction. Interior and exterior shall be of the same construction as the interior and exterior wall panels.

B. All doors downstream of the cooling coil shall be provided with a thermal break construction of door panel and door frame.

C. Gasketing shall be provided around the full perimeter of the doors to prevent air leakage.

D. Door hardware shall be surface-mounted to prevent through-cabinet penetrations that could likely weaken the casing leakage and thermal performance.

E. Handle hardware shall be designed to prevent unintended closure.

F. Access doors shall be hinged and removable without the use of specialized tools.

G. Hinges shall be interchangeable with the door handle hardware to allow for alternating door swing in the field to minimize access interference due to unforeseen job site obstructions.

H. Door handle hardware shall be adjustable and visually indicate locking position of door latch external to the section.

I. All doors shall be a 60-inch high when sufficient unit height is available, or the maximum height allowed by the unit height.

J. Multiple door handles shall be provided for each latching point of the door necessary to maintain the specified air leakage integrity of the unit.

**2.05 INSULATION**

A. Insulation of shall be 1.5 lb/ft3 foam insulation with a minimum R-value of 4.1.

B. Insulation water absorption must be no more that 0.038 lb/ft per ASTM D 2842 and show "no growth" per ASTM G21 biocide testing.

C. No insulation shall be exposed to the air stream.

D. Fiberglass insulation is not acceptable due to possibility of sloughing and moisture retention.

E. Weather hood with bird screen shall be provided on outside air and fresh air inlet.

F. Roof shall be pitched with a minimum ½" roof overhang around the perimeter of the unit.

**2.06 ROOF CURB**

A. Unit shall have a roof curb. Curb shall mate to the existing roof curb. Contractor and unit supplier shall coordinate exact size of curb and requirements for connection of new to old curb. Entire assemby shall form a water tight package.

**2.07 PRIMARY DRAIN PANS**

A. All cooling coil sections shall be provided with an insulated, double-wall, galvanized drain pan.

B. The drain pan shall be designed in accordance with ASHRAE 62.1 being of sufficient size to collect all condensation produced from the coil and sloped in two planes, pitched toward drain connections, promoting positive drainage to eliminate stagnant water conditions when unit is installed level and trapped per manufacturer's requirements. See section 2.07, paragraph F through H for specifications on intermediate drain pans between cooling coils.

C. The outlet shall be located at the lowest point of the pan and shall be sufficient diameter to preclude drain pan overflow under any normally expected operating condition.

D. All drain pan threaded connections shall be visible external to the unit. Threaded connections under the unit floor shall not be accepted.

E. Drain connections shall be of the same material as the primary drain pan and shall extend a minimum 2-1/2-inch beyond the base to ensure adequate room for field piping of condensate traps.

F. The installing contractor is responsible to ensure the unit is installed level, trapped in accordance with the manufacturer's requirements, and visually inspected to ensure proper drainage of condensate.

G. Coil support members inside the drain pan shall be of the same material as the drain pan and coil casing.

**2.08 FANS**

A. Fan sections shall have a minimum of one hinged and latched access door located on the drive side of the unit to allow inspection and maintenance of the fan, motor, and drive components. Construct door(s) per Section 2.04.

B. Provide fans of type and class as specified on the schedule. Fan shafts shall be solid steel, coated with a rust-inhibiting coating, and properly designed so that fan shaft does not pass through first critical speed as unit comes up to rated RPM. All fans shall be statically and dynamically tested by the manufacturer for vibration and alignment as an assembly at the operating RPM to meet design specifications. Fans that are selected with inverter balancing shall first be dynamically balanced at design RPM. The fans then will be checked in the factory from 25% to 100% of design RPM to insure they are operating within vibration tolerance specifications, and that there are no resonant frequency issues throughout this operating range. Inverter balancing that requires lockout frequencies inputted into a variable frequency drive to in order to bypass resonant frequencies shall not be acceptable. If supplied in this manner by the unit manufacturer, the contractor will be responsible for rebalancing in the field after unit installation. Fans selected with inverter balancing shall have a maintenance free, circumferential conductive micro fiber shaft grounding ring installed on the fan motor to discharge shaft currents to ground.

C. Fans with integral frame motors, shall be mounted on isolation bases. Internally-mounted motor shall be on the same isolation base. Fan and motor shall be internally isolated with spring isolators. A flexible connection shall be installed between fan and unit casing to ensure

complete isolation. Flexible connection shall comply with NFPA 90A and UL 181 requirements. If fans and motors are not internally isolated, then the entire unit shall be externally isolated from the building, including supply and return duct work, piping, and electrical connections. External isolation shall be furnished by the installing contractor in order to avoid transmission of noise and vibration through the ductwork and building structure.

**2.09 MOTORS AND DRIVES**

A. All motors and drives shall be factory-installed and run tested. All motors shall be installed on a slide base to permit adjustment of belt tension. Slide base shall be designed to accept all motor sizes offered by the air-handler manufacturer for that fan size to allow a motor change in the future, should airflow requirements change. Fan sections without factory-installed motors shall have motors field installed by the contractor. The contractor shall be responsible for all costs associated with installation of motor and drive, alignment of sheaves and belts, run testing of the motor, and balancing of the assembly.

B. Motors shall meet or exceed all NEMA Standards Publication MG 1 - 2006 requirements and comply with NEMA Premium efficiency levels when applicable. Motors shall comply with applicable requirements of NEC and shall be UL Listed.

C. Fan Motors shall be heavy duty, open drip-proof operable at 460 volts, 60Hz, 3-phase. If applicable, motor efficiency shall meet or exceed NEMA Premium efficiencies.

D. Direct driven fans utilizing integral frame motors shall use 2-pole (3600 rpm), 4-pole (1800 rpm) or 6-pole (1200 rpm) motors, NEMA Design B, with Class B insulation capable to operate continuously at 104 deg F (40 deg C) without tripping overloads.

E. Motors shall have a +/- 10 percent voltage utilization range to protect against voltage variation.

**2.10 COILS**

A. Coils section header end panel shall be removable to allow for removal and replacement of coils without impacting the structural integrity of the unit.

B. Install coils such that headers and return bends are enclosed by unit casing to ensure that if condensate forms on the header or return bends, it is captured by the drain pan under the coil.

C. Coils shall be manufactured with plate fins to minimize water carryover and maximize airside thermal efficiency. Fin tube holes shall have drawn and belled collars to maintain consistent fin spacing to ensure performance and air pressure drop across the coil as scheduled. Tubes shall be mechanically expanded and bonded to fin collars for maximum thermal conductivity. Use of soldering or tinning during the fin-to-tube bonding process is not acceptable due to the inherent thermal stress and possible loss of bonding at that joint.

D. Construct coil casings of galvanized steel steel. End supports and tube sheets shall have belled tube holes to minimize wear of the tube wall during thermal expansion and contraction of the tube.

E. All coils shall be completely cleaned prior to installation into the air handling unit. Complete fin bundle in direction of airflow shall be degreased and steam cleaned to remove any lubricants used in the manufacturing of the fins, or dirt that may have accumulated, in order to minimize the chance for water carryover.

F. When two or more cooling coils are stacked in the unit, an intermediate drain pan shall be installed between each coil. The intermediate drain pan shall be designed being of sufficient size to collect all condensation produced from the coil and sloped to promote positive drainage to eliminate stagnant water conditions. The intermediate drain pan shall be constructed of the same material as the sections primary drain pan.

G. The intermediate drain pan shall begin at the leading face of the water-producing device and be of sufficient length extending downstream to prevent condensate from passing through the air stream of the lower coil.

H. Intermediate drain pan shall include downspouts to direct condensate to the primary drain pan. The intermediate drain pan outlet shall be located at the lowest point of the pan and shall be

sufficient diameter to preclude drain pan overflow under any normally expected operating condition.

I. Hydronic Coils
   1. Supply and return header connections shall be clearly labeled on unit exterior such that direction of coil water-flow is counter to direction of unit air-flow.
   2. Coils shall be proof-tested to 300 psig and leak-tested to 200 psig air pressure under water.
   3. Headers shall be constructed of round copper pipe or cast iron.
   4. Tubes shall be 1/2-inch .016 copper, with aluminum fins.
   5. Hydronic coils shall be supplied with factory installed drain and vent piping to the unit exterior.

**2.11 FILTERS**

A. Provide factory-fabricated filter section of the same construction and finish as unit casings. Filter section shall have side access filter guides and access door(s) extending the full height of the casing to facilitate filter removal. Construct doors in accordance with Section 2.04. Provide fixed filter blockoffs as required to prevent air bypass around filters. Blockoffs shall not need to be removed during filter replacement. Filters to be of size, and quantity needed to maximize filter face area of each particular unit size.

B. Filter type, MERV rating, and arrangement shall be provided as defined in project plans and schedule

C. Manufacturer shall provide one new set of startup filters, and one spare set to be turned over to owner for future use.

**2.12 DAMPERS**

A. All dampers, with the exception of external bypass and multizones (if scheduled), shall be internally mounted. Dampers shall be premium ultra low leak and located as indicated on the schedule and plans. Blade arrangement (parallel or opposed) shall be provided as indicated on the schedule and drawings. Dampers shall be Ruskin CD60 double-skin airfoil design or equivalent for minimal air leakage and pressure drop. Leakage rate shall not exceed 3 CFM/square foot at one inch water gauge complying with ASHRAE 90.1 maximum damper leakage and shall be AMCA licensed for Class 1A. All leakage testing and pressure ratings shall be based on AMCA Standard 500-D. Manufacturer shall submit brand and model of damper(s) being furnished, if not Ruskin CD60.

**2.13 ELECTRICAL**

A. Units shall be factory wired with a single point power connection.

B. Units shall be wired according to NEC and listed per ETL.

C. ETL listing shall cover all components of the ventilator and not be limited to the control panel.

D. All major electrical components shall be UL listed.

E. Unit shall be constructed with an integral control center isolated from supply airflow, exhaust airflow, compressors, and heating elements.

F. The following items shall be provided and wired within the control center by the factory:
   1. Sub-circuit fusing.
   2. Low voltage transformers.
   3. Control circuit fusing.
   4. Terminal block.

G. Electrical panel must house all high voltage components such as terminal blocks, variable frequency drives, and fuse blocks.

**2.14 TEMPERATURE CONTROLS**

A. Unit controls shall be provided by others under section 230913.

## PART 3 EXECUTION

### 3.01 INSTALLATION

A. Unit shall be run tested prior to shipment from the factory.

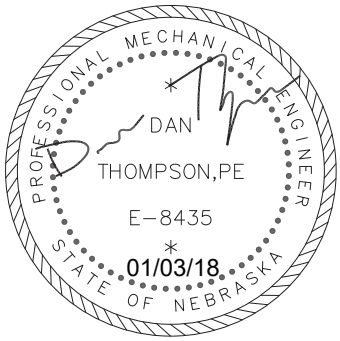
B. Factory run test report shall be provided at the request of the engineer, contractor, or owner.

C. Test report shall be included with unit and available from the factory upon request.

D. Install in accordance with manufacturer's instructions.

E. Make connections to coils with unions or flanges.

**END OF SECTION**



**Advertise 2 times**
**Wednesday, January 10, 2018**
**Wednesday, January 17, 2018**

## City of Lincoln/Lancaster County
## Purchasing Division
## NOTICE TO BIDDERS

Sealed bids will be received by the Purchasing Agent of the City of Lincoln/Lancaster County, Nebraska BY ELECTRONIC BID PROCESS until: **12:00 pm, Wednesday, January 24, 2018** for providing the following:

# Lancaster County Engineering RTU Replacement
# Bid No. 18-004

***A Pre-bid meeting will be held Tuesday, January 16, 2018 at 10:00 am, located at Lancaster County Engineering Office, 444 Cherrycreek Rd., Building C, Lincoln, NE 68528. Meet in conference room; in hallway between Extension Office and County Engineering.***

Bidders must be registered on the City/County's E-Bid site in order to respond to the above Bid. To register go to: lincoln.ne.gov (type: e-bid - in search box, then click "Supplier Registration").

*Questions concerning this bid process may be directed to City/County Purchasing at*
(402) 441-8103 or *purchasing@lincoln.ne.gov*

# INSURANCE CLAUSE FOR ALL CITY OF LINCOLN, LANCASTER COUNTY AND PUBLIC BUILDING COMMISSION CONTRACTS

**Insurance coverage on this Contract will be required for the entities selected below**
**☐ City of Lincoln ☒ Lancaster County ☐ Public Building Commission**

**Vendors must provide coverage & documents related to the items with a check mark in Sections 1 – 1.9. This includes proof of coverage and waivers as required below.**
**All Vendors must comply with Sections 2-8.**

**THE REQUIREMENTS HEREIN APPLY TO CONTRACTS TO BE ISSUED BY THE CITY OF LINCOLN, LANCASTER COUNTY, AND THE LINCOLN-LANCASTER COUNTY PUBLIC BUILDING COMMISSION. FOR PURPOSES OF CERTIFICATES, ENDORSEMENTS AND OTHER PROOF REQUIRED HEREIN, ONLY INCLUDE THE ENTITY ISSUING THE CONTRACT.**

**FAILURE OF THE APPROPRIATE ENTITY (CITY, COUNTY, OR PUBLIC BUILDING COMMISSION) TO OBJECT TO THE FORM OF THE CERTIFICATE OR ENDORSEMENT OR TO DEMAND SUCH PROOF AS IS REQUIRED HEREIN SHALL NOT CONSTITUTE A WAIVER OF ANY OF THE INSURANCE REQUIREMENTS SET FORTH BELOW.**

## Insurance; Coverage Information

The Contractor shall, prior to beginning work, provide proof of insurance coverage in a form satisfactory to the City/County/PBC, which shall not withhold approval unreasonably. The coverages and minimum levels required by this Contract are set forth below and shall be in effect for all times that work is being done pursuant to this Contract. No work on the Project or pursuant to this Contract shall begin until all insurance obligations herein are met to the satisfaction of the City/County/PBC, which shall not unreasonably withhold approval. Self-insurance shall not be permitted unless consent is given by the City/County/PBC prior to execution of the Contract and may require submission of financial information for analysis. Deductible levels shall be provided in writing from the Contractor's insurer and will be no more than $25,000 per occurrence or as may be approved by the City or County as appropriate. Said insurance shall be written on an **OCCURRENCE** basis, and shall be **PRIMARY, with any insurance coverage maintained by the City/County/PBC being secondary or excess.**

## Certificates

The Contractor shall provide certificates of insurance and such other proof, such as endorsements, as may be acceptable to the City or County (as appropriate) evidencing compliance with these requirements. The Contractor shall provide a Certificate of Insurance demonstrating the coverage required herein and the necessary endorsements or other proof and waivers described herein and below before being permitted to begin the work or project pursuant to this Contract.

☒ **1. Commercial General Liability**

The Contractor shall provide proof of Commercial General Liability Insurance with a minimum limit of not less than $1,000,000 each occurrence and $2,000,000 aggregate. These minimum limits can be met by primary and umbrella liability policies. Coverage shall include: Premises-Operations, Products/ Completed Operations, Contractual, Broad Form Property Damage, and Personal Injury. Such coverage shall be endorsed for the general aggregate to be on a **PER PROJECT** basis, and the Contractor shall provide an additional insured endorsement acceptable to the City/County/PBC. The required insurance must include coverage for all projects and operations of Contractor or similar language that meets the approval of the City/County/PBC, which approval shall not be unreasonably withheld.

☒ **1.1 Additional Insured (Requires an Endorsement Form)**

All Contractors shall provide an Additional Insured Endorsement form or other proof showing the City/County/PBC as additional insured for commercial general liability, auto liability and such other coverages as may be required by the City/County/PBC. The form or other proof shall be as is acceptable to the City/County Attorney.

☒ **1.2 Automobile Liability**

The Contractor shall provide proof of Automobile Liability coverage, which shall include: Owned, Hired and Non-Owned. Bodily Injury and Property Damage Combined Single Limit shall be at least $1,000,000 Per Accident.

☐ **1.3 Garage Keepers / Garage Liability**

The Contractor shall provide garage insurance, if required. Coverage shall include Garage Liability and Garage Keepers on a Direct Primary Basis, including Auto Physical Damage, with limits of not less than $1,000,000 each accident Bodily Injury and Property Damage combined liability and Actual Cash Value auto physical damage. Coverage symbol(s) 30 and 21 shall be provided, where applicable.

☒ **1.4 Workers' Compensation; Employers' Liability**

The Contractor shall provide proof of workers' compensation insurance of not less than minimum statutory requirements under the laws of the State of Nebraska and any other applicable State. Employers' Liability coverage with limits of not less than $500,000 each accident or injury shall be included. The Contractor shall provide the City/County/PBC with an endorsement for waiver of subrogation or other proof of such waiver as may be acceptable to the City or County. The Contractor shall also be responsible for ensuring that all subcontractors have workers' compensation insurance for their employees before and during the time any work is done pursuant to this Contract.

☒ **1.5 Builder's Risk Insurance**

The Contractor shall purchase and maintain builder's risk property insurance for all sites upon which construction is occurring as provided by Contract and all storage sites where equipment, materials, and supplies of any kind purchased pursuant to the Contract are being held or stored unless the Contractor receives notice that the City/County/PBC has obtained a builder's risk policy for itself. Except to the extent recoverable by Contractor from another subcontractor, deductibles shall be the responsibility of the Contractor. This coverage is required whenever the work under contract involves construction or repair of a building structure or bridge.

☒ **1.5.1 Waiver of Builder's Risk Insurance Carrier's Subrogation Rights**

The Contractor and its subcontractor(s) waive all rights of action and subrogation that the insurance company providing the builder's risk policy may have against each of them and/or the City/County/PBC, Architect, and the officers, agents and employees of any of them, for all claims, damages, injuries and losses, to the extent covered by such property insurance. Such waiver of subrogation shall be effective for such persons even though such persons would otherwise have a duty of indemnification or contribution, contractual or otherwise, and even though such persons did not pay the insurance premium directly or indirectly, and whether or not such persons had an insurable interest in any property damaged. The Contractor or subcontractor shall provide proof of such waiver.

☒ **1.6 Pollution Liability**

Contractors shall provide proof of pollution liability insurance arising out of all operations of the Contractors and subcontractors, due to discharge, dispersal, release, or escape of contaminants or pollutants into or upon land, the atmosphere or any watercourse or body of water with bodily injury and property damage limits of not less than $1,000,000 per occurrence and $2,000,000 annual aggregate for:

1) Bodily injury, sickness, disease, mental anguish or shock sustained by any person, including death;

2) Property damage including physical injury to or destruction of tangible property including the resulting loss of use thereof, clean-up costs, and the loss of use of tangible property that has not been physically injured or destroyed;

3)Defense including loss adjustment costs, charges and expenses incurred in the investigation, adjustment or defense of claims for such compensatory damages;

4) Definition of pollution conditions shall include asbestos, lead, and mold so that these risks are covered if caused by Contractor/successful candidate's work or operations.

5) Coverage is required on an occurrence form.

☐ **1.7 Errors and Omissions; Professional Liability**

Errors and Omissions or Professional Liability insurance, as may be required, covering damages arising out of negligent acts, errors, or omissions committed by Contractor in the performance of this Contract, with a liability limit of not less than $1,000,000 each claim. Contractor shall maintain this policy for a minimum of two (2) years after completion of the work or shall arrange for a two year extended discovery (tail) provision if the policy is not renewed. The intent of this policy is to provide coverage for claims arising out of the performance of professional Services under this contract and caused by any error, omission, breach or negligent act, including infringement of intellectual property (except patent and trade secret) of the Contractor. This coverage is required whenever the Contractor or service provider is required to be certified, licensed or registered by a regulatory entity and/or where the provider's judgment in planning and design could result in economic loss to City/County/PBC.

☐ **1.8 Railroad Contractual Liability Insurance**

If work is to be performed within 50 feet of any railroad property and affecting any railroad bridge or trestle, tracks, road beds, tunnel, underpass or railroad crossing, the Contractor must provide proof acceptable to the City or County that any exception for such work in the Contractor's commercial general liability policy has been removed or deleted.

☐ **1.8.1 Railroad Protective Liability**

If work is to be performed within 50 feet of any railroad property and affecting any railroad bridge or trestle, tracks, road beds, tunnel, underpass or crossing or otherwise required by the Special Provisions or applicable requirements of an affected railroad, the Contractor shall provide Railroad Protective Liability Insurance naming the affected railroad/s as insured with minimum limits for bodily injury and property damage of $2,000,000 per occurrence, $6,000,000 aggregate, or such other limits as required in the Special Provisions or by the affected railroad. The original of the policy shall be furnished to the railroad and a certified copy of the same furnished to the City/County/PBC Purchasing Department prior to any related construction or entry upon railroad premises by the Contractor or for work related to the Contract.

☐ **1.9 Cyber Insurance**

The Contractor shall maintain network risk and cyber liability coverage (including coverage for unauthorized access, failure of security, breach of privacy perils, as well at notification costs and regulatory defense) in an amount of not less than $1,000,000. Such insurance shall be maintained in force at all times during the term of the Contract and for a period of two years thereafter for services completed during the term of the Contract.

**2. Cancellation Notice**

All Contractors shall include an endorsement to provide for at least thirty (30) days' firm written notice in the event of cancellation during the term of the Contract and during the period of any required continuing coverages. The Contractor shall provide, prior to expiration of the policies, certificates and endorsement forms evidencing renewal insurance coverages. The parties agree that the failure of City/County/PBC to object to the form of a certificate and/or additional insured endorsement or endorsement forms provided shall not constitute a waiver of this requirement.

**3. Risk of Loss**

Except to the extent covered by the builder's risk insurance, the Contractor shall have the sole responsibility for the proper storage and protection of, and assumes all risk of loss of, any subcontractor's Work and tools, materials, equipment, supplies, facilities, offices and other property at or off the Project site. The Contractor shall be solely responsible for ensuring each subcontractor shall take every reasonable precaution in the protection of all structures, streets, sidewalks, materials and work of other subcontractors. Contractor shall protect its Work from damage by the elements or by other trades working in the area.

**4. Umbrella or Excess Liability**

The Contractor may use an Umbrella, Excess Liability, or similar coverage to supplement the primary insurance stated above in order to meet or exceed the minimum coverage levels required by this Contract.

**5. Minimum Scope of Insurance**

All Liability Insurance policies shall be written on an "Occurrence" basis only. All insurance coverage are to be placed with insurers authorized to do business in the State of Nebraska and must be placed with an insurer that has an A.M. Best's Rating of no less than A:VII unless specific approval has been granted otherwise.

**6. Indemnification**

To the fullest extent permitted by law the Contractor shall indemnify, defend, and hold harmless the Owner, its elected officials, officers, employees, agents, consultants, and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorney fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible or intangible property, including the Work itself, but only to the extent caused by the negligent, wrongful, or intentional acts or omissions of the Contractor, a subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss

or expense is caused in part by the negligence of a party indemnified hereunder. In the event the claim, damage, loss or expense is caused in part by the negligence of a party indemnified hereunder, the indemnification by the Contractor shall be prorated based on the extent of the liability of the party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce obligations of indemnity which would otherwise exist as to a party or person described in this Section. Nothing herein shall be construed to be a waiver of sovereign immunity by the Owner.

**7. Reservation of Rights**

The City/County/PBC reserves the right to require a higher limit of insurance or additional coverages when the City/County/PBC determines that a higher limit or additional coverage is required to protect the City/County/PBC or the interests of the public. Such changes in limits or coverages shall be eligible for a change order or amendment to the Contract.

**8. Sovereign Immunity**

Nothing contained in this clause or other clauses of this Contract shall be construed to waive the Sovereign Immunity of the City/County/PBC.

**9. Further Contact**

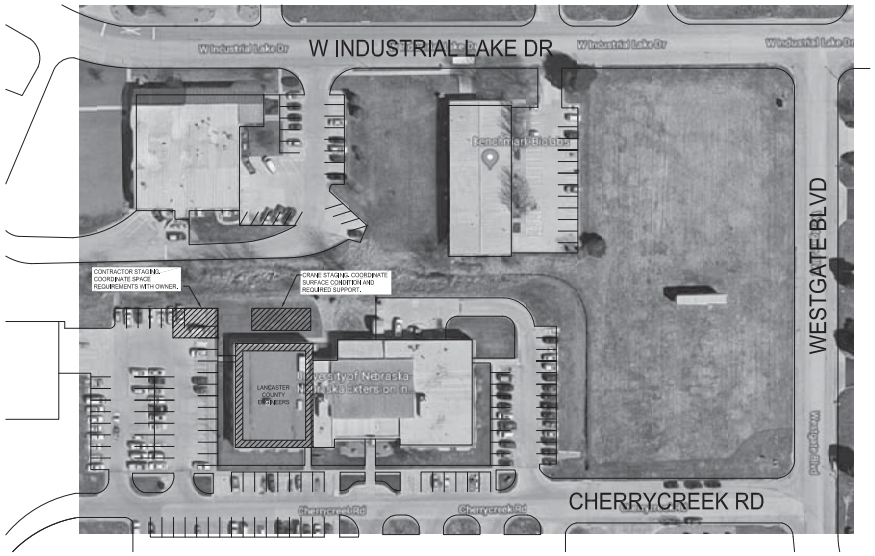
For further information or questions concerning coverage or acceptable forms, Contractors may contact the Purchasing Division or the department that issued the bid or the request for proposal.

For general questions regarding Insurance Requirements, please contact Risk Management for the City or County.

# LANCASTER COUNTY ENGINEERS
# RTU REPLACEMENT

## 444 Cherrycreek Rd, Lincoln, NE 68528

### LOCATION OF PROJECT




### SCHEDULE OF DRAWINGS

Mechanical

M1.1 FIRST FLOOR PLAN - HVAC DEMOLTION
M1.2 FIRST FLOOR PLAN - MECHANICAL
M1.3 FIRST FLOOR PLAN - HVAC
M1.4 ROOF PLAN - DEMOLITION AND MECHANICAL
SCHEDULES, DETAILS & SYMBOLS

ELECTRICAL

E1.1 FIRST FLOOR PLAN - ELECTRICAL
E2.1 SPECIFICATIONS, SYMBOLS & SCHEDULES

### PROFESSIONAL SEALS


I, Dan Thompson, am the Coordinating Professional on the Lancaster County Engineers RTU Replacement project.

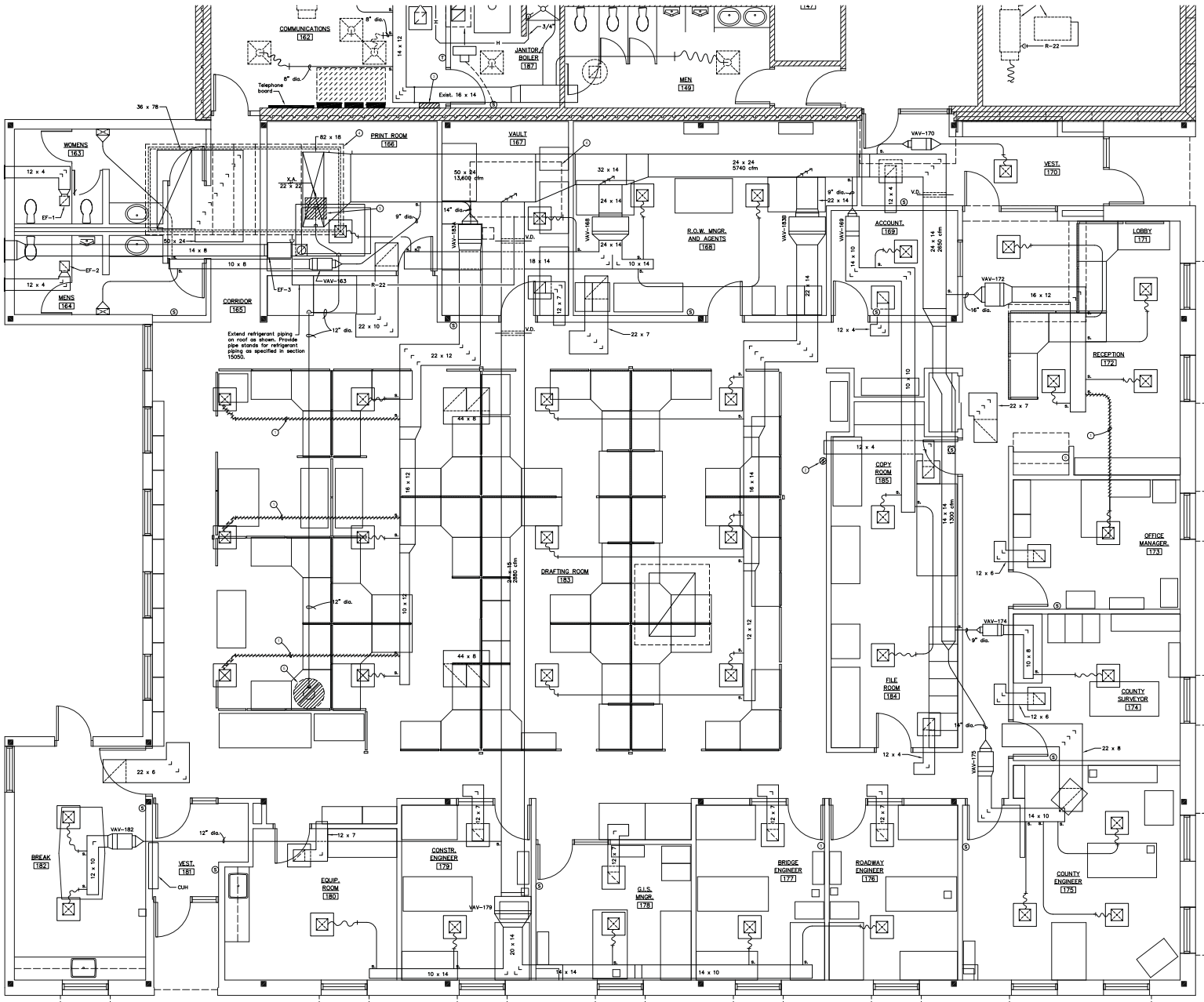
DATE: JANUARY 3, 2018
PROJECT NO.: 2017-140

### MECHANICAL AND ELECTRICAL


**Engineering Technologies Inc.**
Mechanical & Electrical Building Solutions
825 M Street, Suite 200 | Lincoln, NE 68508
P 402.476.1273 | F 402.476.1274
1111 North 13th Street, Suite 216 | Omaha, NE 68102
P 402.330.2772 | F 402.330.2630
ETI Project No: 2017-140


LANCASTER COUNTY ENGINEERS
RTU REPLACEMENT

COVER SHEET




GENERAL NOTE

A. CONTRACTOR SHALL COORDINATE TIMING OF ALL WORK WITH OWNER BEFORE PROCEEDING.

B. CONTRACTOR SHALL PROVIDE DUST / DEBRIS PROTECTION AROUND ALL AREAS OF WORK AND SHALL CLEAR AREA WHEN WORK IS COMPLETED.

C. CONTRACTOR SHALL REMOVE EXISTING LAY-IN CEILING AND REPLACE AS REQUIRED.

SHEET NOTES

1. EXISTING CROSSHATCHED DUCTWORK TO BE REMOVED. REMOVE ALL SUPPORTS, ETC., CAP EXISTING DUCT TO REMAIN AS REQUIRED.
2. EXISTING COMBINATION TEMPERATURE SENSOR AND CO2 SENSOR TO BE RELOCATED. SEE SHEET M1.2 FOR NEW LOCATION. PROVIDE COVER PLATE.
3. EXISTING VFD FOR RTU#1 SUPPLY FAN TO BE REMOVED UNDER THE BASE BID, UNDER ALTERNATE #1 THE VFD SHALL REMAIN AND BE RECONNECTED TO THE NEW SUPPLY FAN.
4. EXISTING RTU AND CONDENSING UNIT TO BE REMOVED. SEE SHEET M1.4 FOR DEMOLITION.
5. REMOVE EXISTING EXHAUST GRILLE AND CAP DUCT ABOVE CEILING. REMOVE EXHAUST FAN AND PROVIDE INSULATED CURB CAP.

A1 FIRST FLOOR PLAN - HVAC DEMOLITION

SCALE: 1/4" = 1'-0"

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1111 North 13th Street Suite 216, Omaha, NE 68137
P 402.330.2772 F 402.330.2630

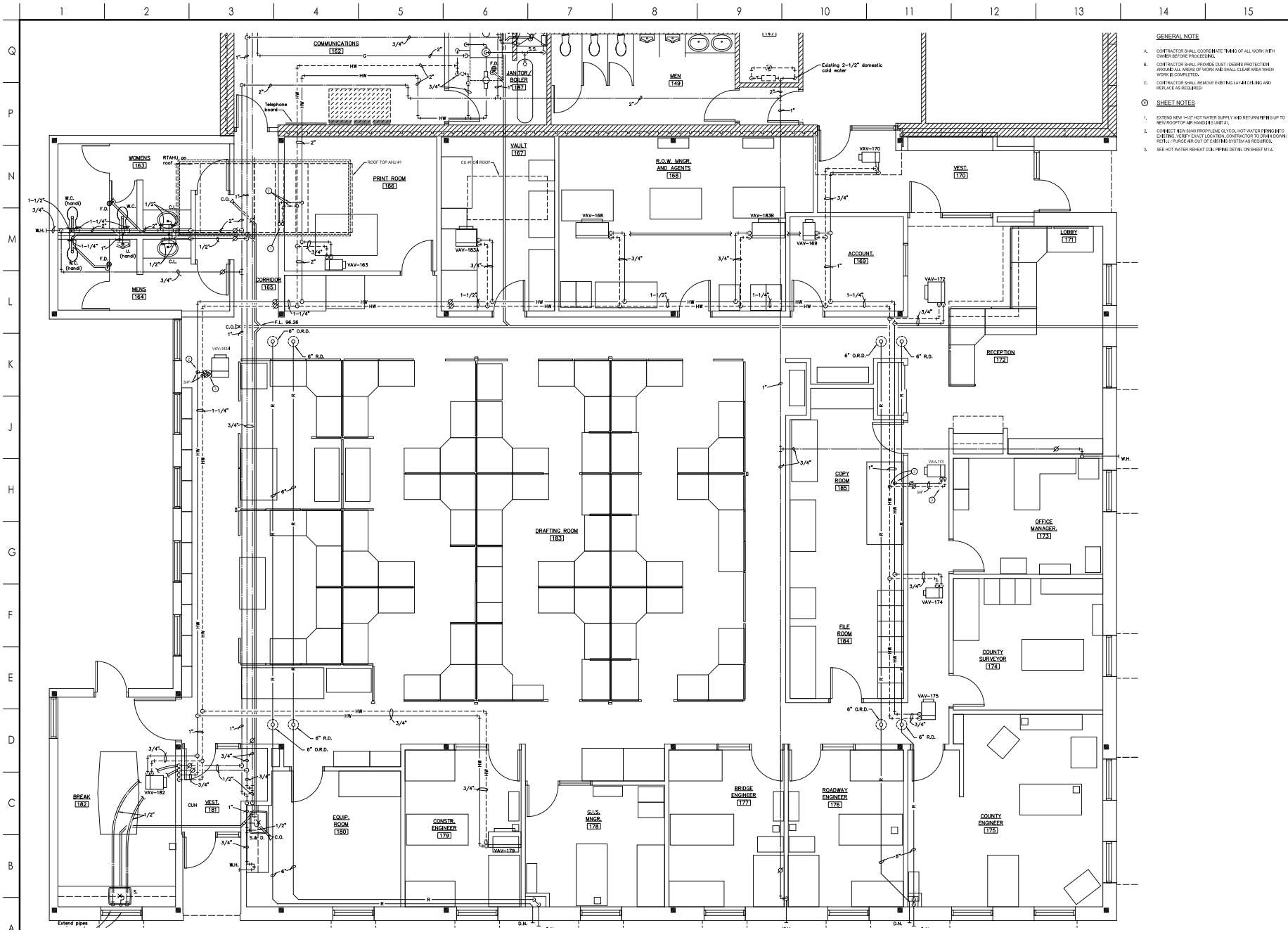
| | |
|---|---|
| DATE: JANUARY, 03 2018 | REVISION # - DATE |
| PROJECT NUMBER: 2017-140 | |
| MECH. ENGINEER: DLT | |
| ELECT. ENGINEER: TAE | |
| MECH. DESIGNER: AJI | |
| ELECT. TECHNICIAN: TSK | |

PROFESSIONAL MECHANICAL ENGINEER
DAN THOMPSON, PE
E-8435
01/03/18
STATE OF NEBRASKA

LANCASTER COUNTY ENGINEERS
RTU REPLACEMENT

FIRST FLOOR PLAN - HVAC DEMOLITION

M1.1




GENERAL NOTE

A. CONTRACTOR SHALL COORDINATE TIMING OF ALL WORK WITH OWNER BEFORE PROCEEDING.

B. CONTRACTOR SHALL PROVIDE DUST / DEBRIS PROTECTION AROUND ALL AREAS OF WORK AND SHALL CLEAR AREA WHEN WORK IS COMPLETED.

C. CONTRACTOR SHALL REMOVE EXISTING LAY-IN CEILING AND REPLACE AS REQUIRED.

SHEET NOTES

1. EXTEND NEW 1-1/2" HOT WATER SUPPLY AND RETURN PIPING UP TO NEW ROOFTOP AIR HANDLING UNIT #1.
2. CONNECT NEW 60/40 PROPYLENE GLYCOL HOT WATER PIPING INTO EXISTING. VERIFY EXACT LOCATION. CONTRACTOR TO DRAIN DOWN / REFILL / PURGE AIR OUT OF EXISTING SYSTEM AS REQUIRED.
3. SEE HOT WATER REHEAT COIL PIPING DETAIL ON SHEET M1.A.

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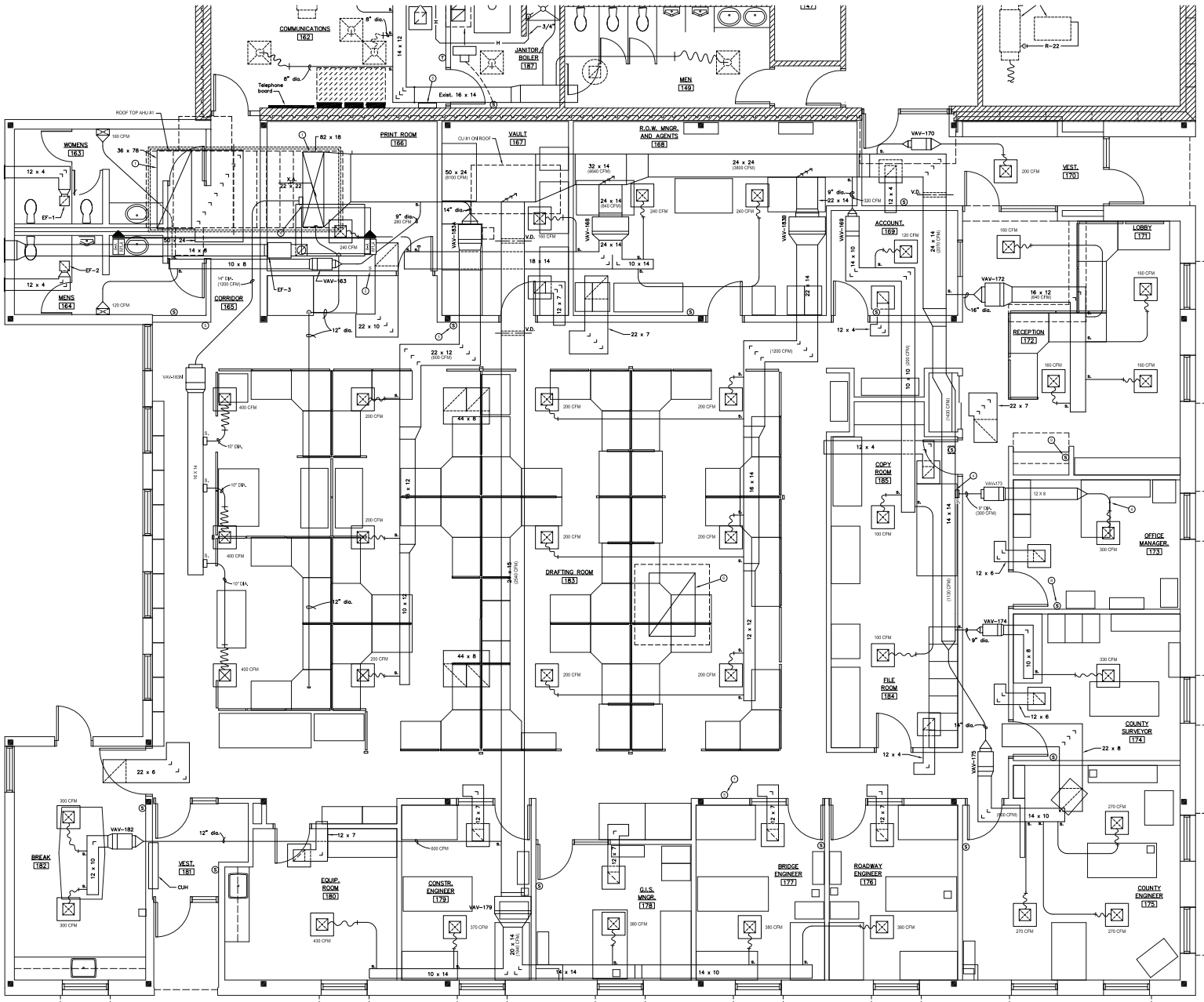
PROFESSIONAL MECHANICAL ENGINEER
DAN THOMPSON, PE
E-8435
01/03/18
STATE OF NEBRASKA

LANCASTER COUNTY ENGINEERS
RTU REPLACEMENT

FIRST FLOOR PLAN - MECHANICAL

M1.2

A1 FIRST FLOOR PLAN - MECHANICAL
SCALE: 1/4" = 1'-0"




GENERAL NOTE

A. CONTRACTOR SHALL COORDINATE TIMING OF ALL WORK WITH OWNER BEFORE PROCEEDING.
B. CONTRACTOR SHALL PROVIDE DUST / DEBRIS PROTECTION AROUND ALL AREAS OF WORK AND SHALL CLEAR AREA WHEN WORK IS COMPLETED.
C. RE-BALANCE ALL EXISTING SUPPLY REGISTER / DIFFUSERS TO CFM SHOWN. VERIFY LOCATION OF EXISTING DAMPERS.
D. CONTRACTOR SHALL REMOVE EXISTING LAY-IN CEILING AND REPLACE AS REQUIRED.

SHEET NOTES

1. CONNECT NEW DUCT TO OPENING IN BOTTOM OF RTU#1. VERIFY EXACT SIZE.
2. EXISTING SWITCH TO OPERATE EXHAUST FAN TO BE REMOVED. PROVIDE BLANK COVER PLATE.
3. PROVIDE NEW CO2 SENSOR. EXISTING TEMPERATURE SENSOR TO CONTROL VAV-183A AND VAV-183B.
4. CONNECT NEW DUCT TO EXISTING. VERIFY SIZE AND LOCATION.
5. NEW VFD FOR RTU#1 SUPPLY FAN TO BE PROVIDED UNDER THE BASE BID, UNDER ALTERNATE #1 THE EXISTING VFD SHALL REMAIN AND BE RECONNECTED TO THE NEW SUPPLY FAN.
6. EXISTING RELIEF AIR HOOD TO BE SEALED, CLOSED OFF AND ABANDONED.
7. RELOCATED COMBINATION TEMPERATURE SENSOR AND CO2 SENSOR. SENSOR TO BE INTERCONNECTED TO EXISTING SENSOR OUTSIDE OF VAULT 167 AND THE AVERAGE TEMPERATURE SHALL CONTROL VAV-183A AND VAV-183B.
8. EXISTING TEMPERATURE SENSOR TO BE RECONFIGURED TO CONTROL VAV-175. VERIFY EXACT REQUIREMENTS PRIOR TO BID.
9. EXISTING TEMPERATURE SENSOR TO BE CONFIGURED AS THE ONLY SENSOR THAT CONTROLS VAV-172.

A1 FIRST FLOOR PLAN - HVAC
SCALE: 1/4" = 1'-0"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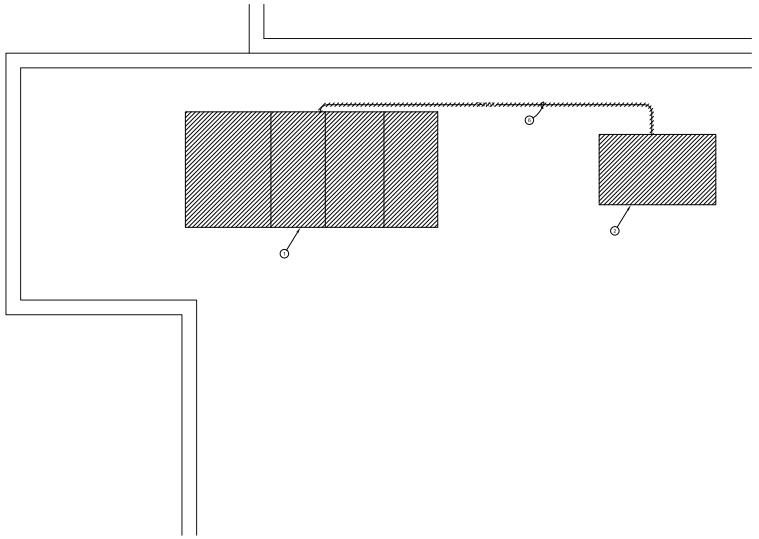
| ELECT. TECHNICIAN: TSK | |

DAN THOMPSON PE E-8435 01/03/18 PROFESSIONAL ENGINEER STATE OF NEBRASKA

LANCASTER COUNTY ENGINEERS
RTU REPLACEMENT

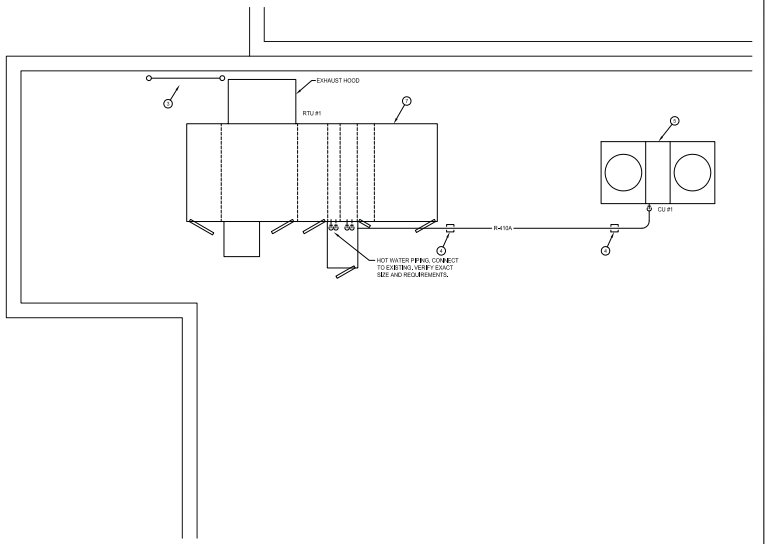
FIRST FLOOR PLAN - HVAC

M1.3



J1 ROOF PLAN - DEMOLITION

SCALE: 1/4" = 1'-0"




J7 ROOF PLAN - MECHANICAL

SCALE: 1/4" = 1'-0"

GENERAL NOTE

A. CONTRACTOR SHALL COORDINATE TIMING OF ALL WORK WITH OWNER BEFORE PROCEEDING.

B. CONTRACTOR SHALL PROVIDE DUST / DEBRIS PROTECTION AROUND ALL AREAS OF WORK AND SHALL CLEAN AREA WHEN WORK IS COMPLETED.

C. CONTRACTOR TO PROVIDE ROOF PROTECTION AS REQUIRED DURING REMOVAL AND INSTALLATION OF NEW ROOF TOP UNIT.

SHEET NOTES

1. EXISTING ROOF TOP UNIT TO BE REMOVED.
2. EXISTING CONDENSING UNIT AND SUPPORTS TO BE REMOVED.
3. GUARDRAIL TO BE INSTALLED, SEE DETAIL ON THIS SHEET.
4. REFRIGERANT PIPING, MOUNT ON ROOF SUPPORTS AS REQUIRED.
5. CONDENSING UNIT #1, MOUNT ON REDWOOD TIMBER SUPPORTS AS REQUIRED.
6. EXISTING REFRIGERANT PIPING TO BE REMOVED, EVACUATE AS REQUIRED.
7. NEW ROOF TOP UNIT, COORDINATE REQUIREMENTS WITH EXISTING CURB, PROVIDE CURB ADAPTER AS REQUIRED.

MECHANICAL SYMBOLS

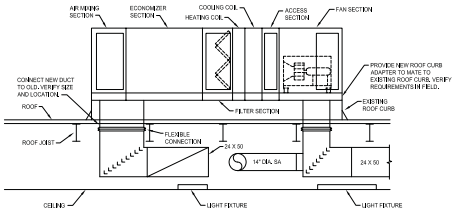
- NOTE REFERENCE
- #1 THERMOSTAT AND ZONE NUMBER (IT=ZONE 1)
- TEMPERATURE SENSOR
- XX SHT — SECTION IDENTIFICATION (SECTION NUMBER / SHEET NUMBER)
- ELECTRICAL PANEL
- VFD — VARIABLE FREQUENCY DRIVE
- XXX — PIPING ABOVE FLOOR OR ABOVE GROUND, SYMBOL INDICATES TYPE OF SERVICE
- XXX — PIPING BELOW FLOOR OR UNDER GROUND, SYMBOL INDICATES TYPE OF SERVICE
- EXISTING PIPING
- EXISTING PIPING TO BE REMOVED
- SOIL AND WASTE PIPING ABOVE GRADE
- SOIL AND WASTE PIPING BELOW GRADE
- DOMESTIC COLD WATER PIPING
- DOMESTIC HOT WATER PIPING
- HOT WATER CIRCULATING PIPING
- H — HUMIDITY DRAIN PIPING
- R-410A — REFRIGERANT PIPING (PAIR)
- HW — HOT WATER HEATING SUPPLY PIPING
- HWR — HOT WATER HEATING RETURN PIPING
- ELBOW DOWN AND ELBOW UP
- TEE DOWN AND TEE UP
- BALL VALVE
- BUTTERFLY VALVE
- PIPING STRAINER
- PIPING UNION
- 3-WAY TEMPERATURE CONTROL VALVE
- AUTOMATIC FLOW CONTROL VALVE
- CO — CLEANOUT
- BELOW FLOOR OR UNDER GROUND P-TRAP
- TURNING VANES IN DUCT
- MD — MOTORIZED DAMPER IN DUCT
- VD — MANUAL VOLUME DAMPER IN DUCT (ADJUSTABLE)
- CD — CEILING DIFFUSER WITH REGAIN BOX, FLEXIBLE DUCT TO BE A MAXIMUM 3-4'0" LONG
- SR — SUPPLY REGISTER
- RA / XA — RETURN OR EXHAUST AIR GRILLE
- HE — HIGH EFFICIENCY TAKE-OFF, SEE SPECIFICATION
- DUCTWORK
- EXISTING DUCTWORK
- EXISTING DUCTWORK TO BE REMOVED
- VAV-XX — VARIABLE AIR VOLUME BOX, XX INDICATES BOX DESIGNATION
- FLEXIBLE DUCTWORK CONNECTION
- RECTANGULAR DUCTWORK BREAK MARK

VARIABLE AIR VOLUME BOX SCHEDULE

| UNIT NO. | CFM SETTING MIN. | CFM SETTING MAX. | CFM SETTING HEAT | REHEAT COIL GPM | REHEAT COIL Room MBH | REHEAT COIL Coil MBH | REHEAT COIL ROWS | S.P. (MAX.) | MODEL NUMBER (KRUEGER SIZE) | ROOMS SERVED |
|---|---|---|---|---|---|---|---|---|---|---|
| VAV-163 | 90 | 280 | 140 | 3.0 | 10.2 | 17.3 | 2 | .18 | 8 | Mens 164, Womens 163 |
| VAV-168 | 250 | 640 | 420 | 4.0 | 8.4 | 43.0 | 1 | .16 | 20 | R.C.W., Manager & Agents 168, Vault 167, Print Room 166 |
| VAV-169 | 100 | 320 | 160 | 3.0 | 8.1 | 12.6 | 2 | .18 | 12 | File Room 184, Copy Room 185, Accounting 169 |
| VAV-170 | 60 | 200 | 100 | 3.0 | 6.0 | 8.2 | 1 | .18 | 6 | Vestibule 170 |
| VAV-172 | 200 | 640 | 320 | 3.0 | 22.9 | 33.7 | 2 | .16 | 16 | Lobby 171, Reception 172, Office Manager 173 |
| VAV-174 | 100 | 330 | 155 | 3.0 | 5.5 | 7.7 | 1 | .18 | 7 | County Surveyor 174 |
| VAV-175 | 240 | 800 | 400 | 3.0 | 16.1 | 22.6 | 2 | .18 | 12 | County Engineer 175 |
| VAV-179 | 580 | 1940 | 970 | 4.0 | 27.7 | 40.7 | 2 | .16 | 20 | Roadway Engr. 176, Bridge Engr. 177, GIS Mgr., 178, Constr. Engr., 179, Equip. Rm. 180 |
| VAV-182 | 180 | 600 | 300 | 3.0 | 17.1 | 23.6 | 2 | .18 | 12 | Break 182 |
| VAV-183A | 180 | 600 | 300 | 4.0 | 20.8 | 33.9 | 2 | .18 | 20 | North Drafting Room 183 |
| VAV-183B | 360 | 1200 | 600 | 3.0 | 12.4 | 25.4 | 1 | .16 | 20 | South Drafting Room 183 |
| VAV-173 | 90 | 300 | 150 | 1.0 | 5.4 | 6.8 | 2 | .17 | 8 | Office Manager 173 |
| VAV-183N | 360 | 1200 | 600 | 3.0 | 21.7 | 32.0 | 2 | .28 | 12 | North Drafting Room 183 |

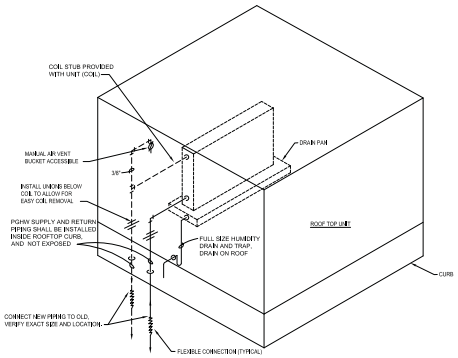
VARIABLE AIR VOLUME BOX SCHEDULE NOTES

1. TEMPERATURE CONTROL CONTRACTOR SHALL RE-BALANCE ALL BOXES TO CFM SETTINGS SHOWN.



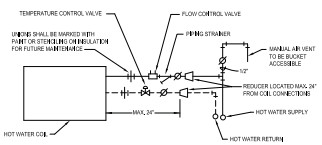

AIR HANDLING UNIT SECTION A-A

NO SCALE




ROOFTOP UNIT HOT WATER COIL PIPING DETAIL

NO SCALE

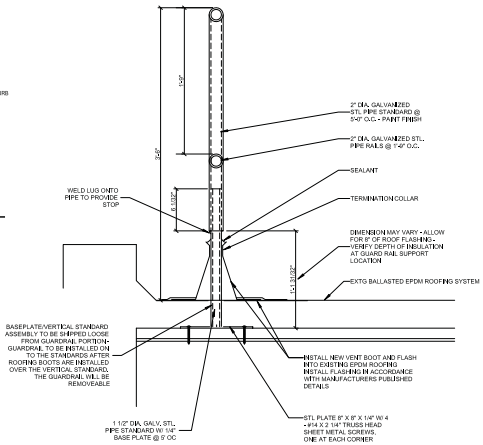



HOT WATER REHEAT COIL PIPING DETAIL

NO SCALE

MECHANICAL EQUIPMENT SCHEDULE:

1. ROOFTOP AIR HANDLING UNIT #1: 9,300 CFM AT 1.0" E.S.P., 7-1/2 HP, 208 VOLT, 3 PHASE PLENUM FAN, DX COOLING COIL WITH 285 MBH TOTAL AND 207 MBH SENSIBLE COOLING CAPACITY WITH 74°F DB/63°F WB ENTERING AIR, R-410A REFRIGERANT WITH 47°F DB SUCTION TEMPERATURE, 100 MBH HEATING WITH 160°F E.W.T., 140°F L.W.T., 40% PROPYLENE GLYCOL, 700 CFM FRESH AIR. PROVIDE ENTHALPY ECONOMIZER SECTION. PROVIDE ROOF ADAPTOR CURB TO FIT ON EXISTING ROOF CURB, VERIFY EXACT REQUIREMENTS IN FIELD. PROVIDE HOT GAS BYPASS ON LEAD COMPRESSOR AND HAIL GUARDS, TRANE SIZE 21.
2. CONDENSING UNIT #1: 286 MBH TOTAL COOLING CAPACITY WITH 47°F SUCTION TEMPERATURE, 100°F AMBIENT AIR, PROVIDE HOT GAS BYPASS, (2) MANIFOLDED SCROLL COMPRESSORS, 103 MCA @ 208 VOLT 3 PHASE, TRANE TTA-300J.




GUARDRAIL DETAIL

NO SCALE

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1111 North 13th Street Suite 216, Omaha, NE 68137
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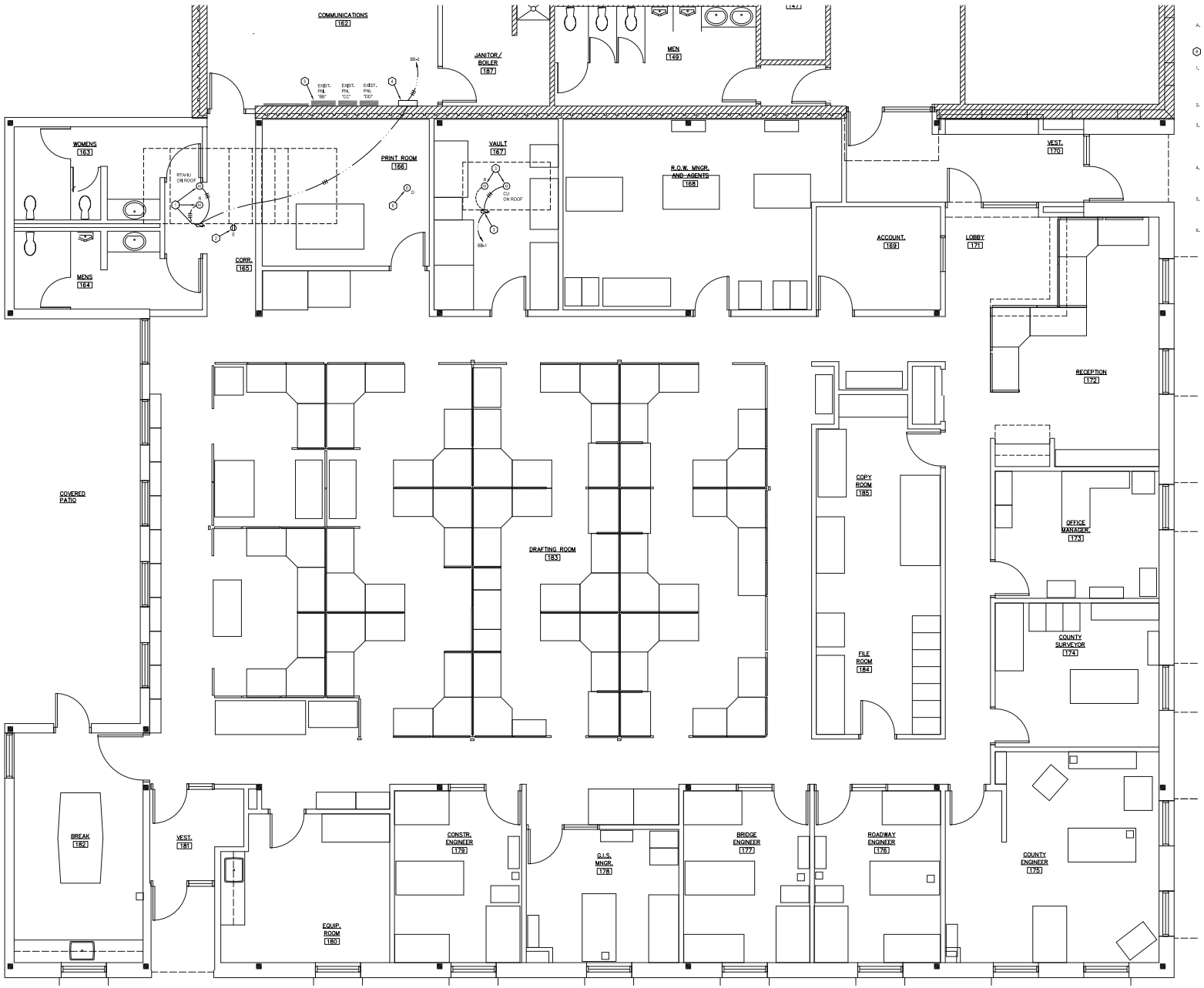
| | |
|---|---|
| DATE: JANUARY, 03 2018 | REVISION # - DATE |
| PROJECT NUMBER: 2017-140 | |
| MECH. ENGINEER: DLT | |
| ELECT. ENGINEER: TAE | |
| MECH. DESIGNER: AJI | |
| ELECT. TECHNICIAN: TSK | |

PROFESSIONAL MECHANICAL ENGINEER — DAN THOMPSON PE — E-8435 — 01/03/18 — STATE OF NEBRASKA

LANCASTER COUNTY ENGINEERS
RTU REPLACEMENT

ROOF PLAN - DEMOLITION AND MECHANICAL
SCHEDULES, DETAILS & SYMBOLS

M1.4




GENERAL NOTE

A. CONTRACTOR SHALL REMOVE AND DISCONNECT LIGHTS AS REQUIRED FOR WORK; REPLACE AND RE-CONNECT LIGHTS WHEN WORK IS COMPLETED.

SHEET NOTES

1. MECHANICAL CONTRACTOR TO REMOVE AND REPLACE EXISTING ROOF TOP AIR HANDLER, THIS CONTRACTOR TO REMOVE EXISTING ELECTRICAL CONNECTION AND DISCONNECT SWITCH, PROVIDE NEW 60 AMP, 3 POLE, NEMA 3R FUSIBLE DISCONNECT SWITCH AND EXTEND EXISTING BRANCH CIRCUIT (3 - #6 AWG TYPE THWN CU IN 3/4" CONDUIT) TO NEW DISCONNECT AND RTU AS REQUIRED.
2. REMOVE EXISTING RECEPTACLE MOUNTED ON SIDE OF RTU AND INSTALL ON NEW ROOF TOP AIR HANDLER, RE-CONNECT RECEPTACLE TO EXISTING BRANCH CIRCUIT AS REQUIRED.
3. MECHANICAL CONTRACTOR TO REMOVE AND REPLACE EXISTING ROOF TOP MOUNTED CONDENSING UNIT, THIS CONTRACTOR TO REMOVE EXISTING ELECTRICAL CONNECTION AND DISCONNECT SWITCH, PROVIDE NEW 200 AMP, 3 POLE, NEMA 3R FUSIBLE DISCONNECT SWITCH AND EXTEND EXISTING BRANCH CIRCUIT (3 - #1/0 AWG TYPE THWN CU IN 1 1/4" CONDUIT) TO NEW DISCONNECT AND CONDENSING UNIT AS REQUIRED.
4. MECHANICAL CONTRACTOR TO REMOVE AND REPLACE EXISTING VFD UNDER THE BASE BID, UNDER ALTERNATE #1 THE EXISTING VFD SHALL REMAIN AND BE RECONNECTED TO THE NEW SUPPLY FAN, THIS CONTRACTOR TO REMOVE EXISTING BRANCH CIRCUIT FROM EXISTING VFD AND CONNECT TO NEW VFD AS REQUIRED.
5. REMOVE EXISTING 70 AMP, 3 POLE CIRCUIT BREAKER (BB-3) AND 250 AMP, 3 POLE CIRCUIT BREAKER (BB-1) AND REPLACE WITH NEW 50 AMP, 3 POLE AND 125 AMP, 3 POLE CIRCUIT BREAKERS, CONNECT EXISTING BRANCH CIRCUITS TO NEW CIRCUIT BREAKERS AS REQUIRED.
6. EXISTING DUCT SMOKE DETECTOR IN SUPPLY AIR DUCT, RE-CONNECT SHUTDOWN RELAY AS REQUIRED.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| MECH. DESIGNER: ALI | |
| ELECT. TECHNICIAN: TSK | |

PROFESSIONAL ELECTRICAL ENGINEER
THOMAS A. ERNST
E-10213
01/03/18
STATE OF NEBRASKA

# LANCASTER COUNTY ENGINEERS RTU REPLACEMENT

FIRST FLOOR PLAN - ELECTRICAL

A1 FIRST FLOOR PLAN - ELECTRICAL
SCALE: 1/4" = 1'-0"

E1.1

ELECTRICAL SPECIFICATIONS

## SECTION 26 0101 - GENERAL ELECTRICAL REQUIREMENTS

A. RULES AND REGULATIONS

ALL WORK, MATERIALS, AND MANNER OF PLACING MATERIAL OF THIS CONTRACT SHALL BE IN STRICT ACCORDANCE WITH THE LATEST REQUIREMENTS OF THE NATIONAL FIRE PROTECTION ASSOCIATION (SEE PARTICULARLY PAMPHLETS 101, 70, AND 99A) AND WITH THE MUNICIPAL AND STATE LAWS AND ORDINANCES RELATING TO THIS WORK. ALL ELECTRICAL MATERIALS USED IN THIS WORK SHALL BE APPROVED BY THE UNDERWRITERS LABORATORIES AND SHALL BEAR THEIR LABEL OF APPROVAL. IN EVENT OF CONFLICT BETWEEN THE PLANS AND/OR SPECIFICATIONS AND GOVERNING LAWS OR ORDINANCES, THE MORE STRINGENT SHALL SUPERSEDE.

B. PERMITS, LICENSES, AND FEES

THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH ALL REQUIREMENTS AS TO PERMITS, LICENSES, FEES, CODES, AND ORDINANCES AND ARRANGE TO COMPLY WITH THEM. ALL PERMITS, LICENSES, FEES, AND INSPECTIONS REQUIRED FOR THE WORK UNDER THIS CONTRACT SHALL BE OBTAINED AND PAID FOR BY THE CONTRACTOR UNLESS OTHERWISE SPECIFIED.

C. GENERAL REQUIREMENTS

SEE DIVISION 1 PROJECT MANUAL OR ARCHITECTURAL AND CIVIL DRAWINGS FOR GENERAL REQUIREMENTS, INCLUDING BUT NOT LIMITED TO ALTERNATE BID ITEMS, ADMINISTRATIVE REQUIREMENTS, PROJECT REQUIREMENTS, AND CLOSEOUT SUBMITTALS.

D. WARRANTY

THE CONTRACTOR SHALL WARRANT ALL MATERIAL AND WORKMANSHIP UNDER THIS CONTRACT FOR A PERIOD OF ONE YEAR FROM RECEIPT OF WRITTEN FINAL ACCEPTANCE, UNLESS NOTED OTHERWISE. HE SHALL REPAIR OR REPLACE, FREE OF CHARGE, ANY APPARATUS WHICH SHALL BE DEFECTIVE DURING THAT PERIOD OF TIME, WHICH IS DEFECTIVE DUE TO FAULTY MATERIAL OR WORKMANSHIP.

E. SHOP DRAWINGS

THE CONTRACTOR SHALL SUBMIT FIVE (5) COPIES OF SHOP DRAWINGS AND PRODUCT DATA TO THE ARCHITECT/ENGINEER FOR APPROVAL OR SUBMIT DIGITAL INFORMATION ON SUBMITTAL EXCHANGE OR OTHER APPROVED DIGITAL DOCUMENTING SYSTEM. STAMP, DATE, AND SIGN EACH SUBMITTAL TO INDICATE SUBMITTAL IS IN CONFORMANCE WITH REQUIREMENTS OF THE CONTRACT DOCUMENTS. SHOP DRAWINGS SHALL BE SUBMITTED FOR THE FOLLOWING ITEMS:

1. WIRING DEVICES AND COVER PLATES
2. ENCLOSED SWITCHES
3. PANELBOARDS, SWITCHBOARDS AND BREAKERS

THE ARCHITECT/ENGINEER SHALL BE THE SOLE AND FINAL JUDGE AS TO THE SUITABILITY OF ITEMS SUBSTITUTED FOR THOSE SPECIFIED. THE ENTIRE COST OF ALL CHANGES OF ANY TYPE DUE TO SUBSTITUTIONS FOR MATERIALS SPECIFIED SHALL BE BORNE BY THE CONTRACTOR AT NO EXTRA COST.

## SECTION 26 0501 - MINOR ELECTRICAL DEMOLITION

THE ELECTRICAL CONTRACTOR SHALL REMOVE ALL ELECTRICAL EQUIPMENT, WIRING DEVICES, LIGHTING FIXTURES, MOUNTING HARDWARE, ASSOCIATED WIRING, AND CONDUIT IN ALL AREAS OF THE BUILDING UNDER GOING DEMOLITION AS A PART OF THIS PROJECT. ELECTRICAL CIRCUITS SHALL BE REMOVED TO SOURCE OF SUPPLY AND SHALL BE LEFT IN A SAFE CONDITION AND ALL WORK SHALL COMPLY WITH THE NATIONAL ELECTRICAL CODE. ELECTRICAL DEMOLITION WORK SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR TO ENSURE THE SAFETY OF ALL WORKERS, OTHER PERSONNEL, AND PUBLIC FROM ANY HAZARD WITH RESPECT TO THE ELECTRICAL SYSTEM. PROVIDE BLANK COVER PLATES ON ALL ABANDONED BOXES.

COORDINATE ALL DOWNTIMES OF ELECTRICAL SYSTEMS WITH THE OWNER, UTILITY COMPANIES, AND LOCAL FIRE DEPARTMENT.

## SECTION 26 0519 - CONDUCTORS

ALL WIRE SHALL BE SOFT DRAWN, COPPER WIRE WITH 600 VOLT INSULATION. WIRE AND CABLE SHALL BE TYPE THHN/THWN UNLESS OTHERWISE NOTED.

NO WIRES SMALLER THAN #12 SHALL BE USED, UNLESS NOTED OTHERWISE, EXCEPT #14 AWG MAY BE USED FOR CONTROL WIRING. ALL WIRING SHALL BE COLOR CODED PER N.E.C. ARTICLE 210.5. SPECIAL SYSTEM WIRE SHALL BE OF TYPE AND SIZE SPECIFIED ELSEWHERE IN THIS SPECIFICATION OR SHOWN ON THE DRAWINGS. ALL WIRE #10 AWG AND SMALLER SHALL BE SOLID COPPER AND ALL WIRE #8 AWG AND LARGER SHALL BE STRANDED COPPER WIRE.

THE USE OF MC OR AC CABLE IS PROHIBITED.

## SECTION 26 0526 - GROUNDING AND BONDING

ALL NEUTRAL CONDUCTORS, CONDUIT SYSTEMS, CABINETS, EQUIPMENT, MOTOR FRAMES, AND OTHER ELECTRICAL EQUIPMENT SHALL BE GROUNDED AND BONDED IN ACCORDANCE WITH N.E.C. AND MUNICIPAL CODES AND ORDINANCES.

## SECTION 26 0529 - HANGERS AND SUPPORTS

PROVIDE ALL REQUIRED HANGERS, SUPPORTS, ANCHORS, FASTENERS, ETC., AS REQUIRED TO SECURE AND SUPPORT RACEWAYS AND EQUIPMENT. IN ACCORDANCE WITH THE NEC, DO NOT USE WIRE, CHAIN, PERFORATED PIPE STRAP, WOOD, POWDER ACTUATED OR RED ANCHORS FOR PERMANENT SUPPORTS. UNLESS NOTED OTHERWISE, DO NOT SUPPORT FROM PIPING OR HVAC DUCTWORK. ALL HANGERS, SUPPORTS, ANCHORS, FASTENERS, ETC., SHALL BE GALVANIZED AND UL LISTED FOR THE APPLICATION.

## SECTION 26 0534 - CONDUIT

ALL WIRING SHALL BE INSTALLED IN CONDUIT RACEWAYS UNLESS OTHERWISE INDICATED HEREIN. ALL CONDUIT RUNS SHOWN ARE DIAGRAMATIC. EXACT LOCATIONS SHALL BE DETERMINED IN THE FIELD. ALL RACEWAYS SHALL BE SIZED PER THE N.E.C. NO CONDUIT SMALLER THAN 3/4 INCH SHALL BE PERMITTED FOR POWER DISTRIBUTION WIRING. ALL MOTOR CONNECTIONS (24 INCH MAXIMUM LENGTH) TO BE MADE WITH FLEXIBLE CONDUIT. USE LIQUIDTIGHT FLEXIBLE METAL CONDUIT IN DAMP AND WET LOCATIONS. ALL OTHER WIRING MAY BE INSTALLED IN THIN WALL CONDUIT (E.M.T.). ALL STEEL COMPRESSION OR SET SCREW FITTINGS SHALL BE USED.

CONDUITS SHALL BE INSTALLED CONCEALED IN OR ABOVE CEILING OR BELOW CONCRETE FLOORS AND WITHIN WALLS. EXPOSED CONDUIT WILL BE ALLOWED ONLY OVERHEAD IN ROOMS WITH UNFINISHED CEILINGS, FOR DROPS TO MOTORS, ON WALL FOR CONNECTION TO SURFACE-MOUNTED PANELBOARDS OR SWITCHBOARDS OR CABINETS, IN ELECTRICAL EQUIPMENT ROOMS, AND WHERE NOTED ON THE PLANS.

SUPPORT CONDUITS IN ACCORDANCE WITH THE NEC AND SPEC. SECTION 26 0529. DO NOT SUPPORT CONDUITS FROM HVAC DUCTWORK OR PIPING. PROVIDE EXPANSION FITTINGS, FIRESTOPPING, MODULAR SEALS, SLEEVES, TRENCHING, WARNING TAPE, PULLSTRINGS IN EMPTY CONDUITS, ETC, AS REQUIRED FOR A COMPLETE CONDUIT AND RACEWAY SYSTEM.

## SECTION 26 0553 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

PROVIDE ENGRAVED THREE-LAYER LAMINATED PLASTIC NAME PLATES WITH WHITE LETTERS ON BLACK BACKGROUND FOR EACH PANELBOARD, SWITCHBOARD AND BREAKERS, ENCLOSED SWITCH, LIGHTING CONTROL PANELS, OR MOTOR CONTROLLER.

## SECTION 26 2416 - PANELBOARDS

ALL PANELBOARDS SHALL BE MANUFACTURED BY SQUARE "D" OR EQUAL. ALL PANELS SHALL BE DEAD FRONT WITH CIRCUIT BREAKERS IN ACCORDANCE WITH SCHEDULES AND NOTATIONS SHOWN ON THE DRAWINGS. ALL PANELS SHALL HAVE A COPPER BUS AND AN EQUIPMENT GROUND BUS. LOAD CENTER PANELS ARE NOT ACCEPTABLE.

ALL CABINETS, WIRING GUTTERS, ETC., SHALL BE IN STRICT ACCORDANCE WITH THE STANDARD PRACTICE OF THE NEMA AND THE NATIONAL ELECTRIC CODE. ALL BRANCH CIRCUIT WIRING IN PANELS SHALL BE NEATLY RACKED IN THE WIRING GUTTERS. PROVIDE HINGED DOOR-IN-DOOR PANEL TRIMS FOR EACH PANELBOARD.

ALL CIRCUIT BREAKERS SHALL HAVE A QUICK-MAKE AND BREAK MECHANISM WITH NON-WELDING SILVER ALLOY CONTACTS. AUTOMATIC TRIPPING SHALL BE CLEARLY INDICATED BY THE HANDLE, THE FACE OF EACH BREAKER SHALL BE COMMON TYPE AND EXTERNAL HANDLE TIES WILL NOT BE PERMITTED. ALL CIRCUIT BREAKERS SHALL BE BOLT ON TYPE. BRANCH CIRCUIT BREAKERS SHALL HAVE A MINIMUM INTERRUPTING CAPACITY OF 10,000 AMPS RMS, UNLESS NOTED OTHERWISE. NO HALF SIZE OR TANDEM BREAKERS WILL BE ACCEPTED. PROVIDE CIRCUIT BREAKERS UL LISTED AS TYPE HACR FOR AIR CONDITIONING EQUIPMENT BRANCH CIRCUITS. WHEN PANELS ARE SCHEDULED TO HAVE SPARES, THE BREAKER SHALL BE INSTALLED IN THE PANELBOARD. PROVIDE ACCESSORIES, AS NOTED ON DRAWINGS.

ALL PANELBOARDS AND CIRCUIT BREAKERS SHALL BE FULLY RATED. SERIES RATING IS NOT ACCEPTABLE.

PROVIDE A TYPED WRITTEN CIRCUIT DIRECTORY FOR EACH PANELBOARD.

## SECTION 26 2813 - FUSES

F. COORDINATION

1. COORDINATE FUSE REQUIREMENTS ACCORDING TO MANUFACTURER'S RECOMMENDATIONS AND NAMEPLATE DATA FOR ACTUAL EQUIPMENT TO BE INSTALLED.

G. APPLICATIONS

1. FEEDERS:
   a. FUSIBLE SWITCHES UP TO 600 AMPERES: CLASS RK1, TIME-DELAY.
   b. FUSIBLE SWITCHES LARGER THAN 600 AMPERES: CLASS L, TIME-DELAY.
2. GENERAL PURPOSE BRANCH CIRCUITS: CLASS RK1, TIME-DELAY.
2. INDIVIDUAL MOTOR BRANCH CIRCUITS: CLASS RK1, TIME DELAY.
3. PRIMARY PROTECTION FOR CONTROL TRANSFORMERS: CLASS CC, TIME-DELAY.

G. FUSES

1. PROVIDE PRODUCTS LISTED, CLASSIFIED, AND LABELED AS SUITABLE FOR THE PURPOSE INTENDED.
2. UNLESS SPECIFICALLY INDICATED TO BE EXCLUDED, PROVIDE FUSES FOR ALL FUSIBLE EQUIPMENT AS REQUIRED FOR A COMPLETE OPERATING SYSTEM.
3. VOLTAGE RATING: SUITABLE FOR CIRCUIT VOLTAGE.

D. PROVIDE THE FOLLOWING ACCESSORIES WHERE INDICATED OR WHERE REQUIRED TO COMPLETE INSTALLATION:

1. FUSEHOLDERS: COMPATIBLE WITH INDICATED FUSES.
2. FUSE REDUCERS: FOR ADAPTING INDICATED FUSES TO PERMIT INSTALLATION IN SWITCH DESIGNED FOR FUSES WITH LARGER AMPERE RATINGS.
3. PROVIDE THREE (3) SPARE FUSES FOR EACH SIZE AND TYPE OF FUSE USED ON PROJECT.

## SECTION 26 2818 - ENCLOSED SWITCHES

SAFETY SWITCHES SHALL BE NEMA HEAVY DUTY TYPE HD AND UNDERWRITER'S LABORATORIES LISTED. ALL SWITCHES SHALL HAVE BLADES WHICH ARE FULLY VISIBLE IN THE OFF POSITION WHEN THE DOOR IS OPEN. SWITCHES SHALL BE OF DEAD-FRONT CONSTRUCTION WITH PERMANENTLY ATTACHED ARC SUPPRESSORS HINGED OR OTHERWISE ATTACHED TO PERMIT EASY ACCESS TO LINE-SIDE LUGS WITH OUT REMOVAL OF THE ARC SUPPRESSOR. LUGS SHALL BE UL LISTED FOR COPPER AND/OR ALUMINUM CABLE AND FRONT REMOVABLE. ALL CURRENT CARRYING PARTS SHALL BE PLATED BY ELECTROLYTIC PROCESSES. PROVIDE ADDITIONAL ACCESSORIES, AS NOTED ON THE DRAWINGS.

A1 SPECIFICATIONS
SCALE: NONE

## EQUIPMENT CONNECTION SCHEDULE

| EQUIP. | DESCRIPTION | KW | HP | VOLTS | PHASE | WIRING | DISCONNECT SWITCH | MOTOR STARTER | CONNECTION | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| RTAHU | ROOF TOP AIR HANDLE UNIT | 8.1 | - | 208 | 3Ø | REUSE EXISTING BRANCH CIRCUIT | 60 AMP FUSIBLE NEMA 3R | - | DIRECT | PROVIDE SHUT DOWN FIRE ALARM RELAY AND CONNECT TO FIRE ALARM SYSTEM AND DUCTING DUCT SMOKE DETECTOR IN SUPPLY AIR DUCT |
| CU | CONDENSING UNIT | 33.1 | - | 208 | 3Ø | REUSE EXISTING BRANCH CIRCUIT | 200 AMP FUSIBLE NEMA 3R | - | DIRECT | - |
| | | | | | | | | | | |

NOTES:
1. ALL LOW VOLTAGE HVAC CONTROL WIRING SHALL BE BY THE MECHANICAL CONTRACTOR UNLESS OTHERWISE NOTED.
2. ALL EXHAUST FANS ARE FURNISHED WITH AN INTEGRAL DISCONNECTING MEANS, UNLESS NOTED OTHERWISE.

H9 EQUIPMENT CONNECTION SCHEDULE
SCALE: NONE

### ELECTRICAL SYMBOLS

| | |
|---|---|
| WP GFCI | DUPLEX CONVENIENCE RECEPTACLE (WP = WEATHERPROOF, GFCI = GROUND FAULT CIRCUIT INTERRUPTER) |
| M | MOTOR CONNECTION, SEE PLAN AND SCHEDULE |
| | DISCONNECT SWITCH - FUSED |
| | BRANCH CIRCUIT PANEL |
| | DISTRIBUTION PANEL |
| D | DUCT MOUNTED SMOKE DETECTOR |
| | PLAN OR DETAIL NOTE IDENTIFICATION |
| H-1 | HOMERUN TO PANELBOARD, LETTER INDICATES PANEL DESIGNATION, NUMBER INDICATES CIRCUIT |
| | CONDUIT CONCEALED IN WALLS OR CEILING, CROSSHATCHES INDICATE NUMBER OF CONDUCTORS EXCEPT NO CROSSHATCHES INDICATE 2 CONDUCTORS (GROUND WIRES ARE NOT SHOWN) |
| | CONDUIT TO BE REMOVED |
| | EXISTING CONDUIT, VERIFY EXACT LOCATION |
| A | AMPERES |
| AFF | ABOVE FINISHED FLOOR |
| BD | BOARD |
| C | CONDUIT |
| CU | COPPER |
| E | INDICATES EXISTING TO REMAIN |
| F OR FRAC | FRACTIONAL |
| GND | GROUND |
| KVA | KILOVOLT AMPERES |
| KW | KILOWATT |
| P | POLE |
| PNL | PANELBOARD |
| R | INDICATES ITEM TO BE REMOVED, REMOVE EQUIPMENT, INCLUDING MOUNTING HARDWARE, AND CONDUIT AND CONDUCTORS TO SOURCE OF SUPPLY, UNLESS NOTED OTHERWISE |
| TYP | TYPICAL |
| V | VOLTS |
| W | WATT |
| WP | INDICATES WEATHERPROOF |

A9 SYMBOLS
SCALE: NONE


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| MECH. DESIGNER: ALI | |
| ELECT. TECHNICIAN: TSK | |

PROFESSIONAL ELECTRICAL ENGINEER
THOMAS A. ERNST
10213
01/03/18
STATE OF NEBRASKA

LANCASTER COUNTY ENGINEERS
RTU REPLACEMENT

SPECIFICATIONS, SYMBOLS & SCHEDULES

E2.1

# INSTRUCTIONS TO BIDDERS

**LANCASTER COUNTY, NEBRASKA**
**PURCHASING DIVISION**
**E-Bid**

**1. BIDDING PROCEDURE**

1.1 Sealed bid, (formal and informal), subject to Instructions and General Conditions and any special conditions set forth herein, will be received in the office of the Purchasing Division, 440 So. 8th St., Lincoln, NE 68508, until the bid closing date and time indicated for furnishing Lancaster County, hereinafter referred to as "County", the materials, supplies, equipment or services shown in the electronic bid request.

1.2 Bidders shall use the electronic bid system for submitting bids and must complete all required fields. If you do not care to bid, please respond to the bid request and note your reason.

1.3 Identify the item you will furnish by brand or manufacturer's name and catalog numbers. Also furnish specifications and descriptive literature if not bidding the specific manufacturer or model as listed in the specifications.

1.4 Any person submitting a bid for a firm, corporation, or other organization must show evidence of his authority so to bind such firm, corporation, or organization.

1.5 Bids received after the time and date established for receiving bids will be rejected.

1.6 The Bidders and public are invited, but not required, to attend the formal opening of bids. At the opening, prices will be displayed electronically and/or read aloud to the public. The pricing is also available for immediate viewing on-line. No decisions related to an award of a contract or purchase order will be made at the opening.

**2. BID SECURITY**

2.1 Bid security, as a guarantee of good faith, in the form of a certified check, cashier's check, or Bidder's bond, may be required to be submitted with this bid document, as indicated on the bid.

2.1.1 Bid security, if required, shall be in the amount specified on the bid. The bid security must be scanned and attached to the "Response Attachments" section of your response or it can be faxed to the Purchasing office at 402-441-6513. The original bid security should then be sent or delivered to the office of the Purchasing Division, 440 S. 8th St., Ste. 200, Lincoln, NE 68508 within three (3) days of bid closing.

2.1.2 If bid security is not received in the Purchasing Division as stated above, the vendor may be determined to be non-responsive.

2.2 If alternate bids are submitted, only one bid security will be required, provided the bid security is based on the amount of the highest gross bid.

2.3 Such bid security will be returned to the unsuccessful Bidders when the award of bid is made.

2.4 Bid security will be returned to the successful Bidder(s) as follows:

2.4.1 For single order bids with specified quantities: upon the delivery of all equipment or merchandise, and upon final acceptance by the County.

2.4.2 For all other contracts: upon approval by the County of the executed contract and bonds.

2.5 County shall have the right to retain the bid security of Bidders to whom an award is being considered until either:

2.5.1 A contract has been executed and bonds have been furnished.

2.5.2 The specified time has elapsed so that the bids may be withdrawn.

2.5.3 All bids have been rejected.

2.6 Bid security will be forfeited to the County as full liquidated damages, but not as a penalty, for any of the following reasons, as pertains to this bidding document:

2.6.1 If the Bidder fails or refuses to enter into a contract on forms provided by the County, and/or if the Bidder fails to provide sufficient bonds or insurance within the time period as established in this bidding document.

**3. BIDDER'S REPRESENTATION**

3.1 Each Bidder by electronic signature and submitting a bid, represents that the Bidder has read and understands the bidding documents, the bid attributes, the bid attachments, and the bid has been submitted in accordance therewith.

3.2 Each Bidder for services further represents that the Bidder has examined and is familiar with the local conditions under which the work is to be done and has correlated the observations with the requirements of the bid documents.

**4. INDEPENDENT PRICE DETERMINATION**

4.1 By submitting this bid, the Bidder certifies that the prices in this bid have been arrived at independently, without consultation, communication or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other Bidder or with any competitor; unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the Bidder prior to bid opening directly or indirectly to any other Bidder or to any competitor; no attempt has been made, or will be made, by the Bidder to induce any person or firm to submit, or not to submit, a bid for the purpose of restricting competition.

**5. CLARIFICATION OF SPECIFICATION DOCUMENTS**

5.1 Bidders shall promptly notify the Purchasing Agent or designee of any ambiguity, inconsistency or error which they may discover upon examination of the bidding documents.

5.2 Bidders desiring clarification or interpretation of the bidding documents for formal bids shall make a written request which must reach the Purchasing Agent or designee at least five (5) calendar days prior to the date and time for receipt of formal bids.

5.3 Changes made to the bidding documents will be issued electronically. All vendors registered for that bid will be notified of the addendum. Subsequent Bidders will only receive the bid with the addendum included.

5.4 Oral interpretations or changes to the bidding documents made in any manner other than written form, will not be binding on the County; and Bidders shall not rely upon such interpretations or changes.

**6. ADDENDA**

6.1 Addenda are instruments issued by the County prior to the date for receipt of bids which modify or interpret the bidding document by addition, deletion, clarification or correction.

6.2 Addenda notification will be made available to all registered vendors immediately via e-mail for inspection on-line.

6.3 No formal bid addendums will be issued later than forty-eight (48) hours prior to the date and time for receipt of formal bids, except an addendum withdrawing the invitation to bid, or an addendum which includes postponement of the bid.

**7. ANTI-LOBBYING PROVISION**

7.1 During the period between the advertised date and the contract award, Bidders, including their agents and representatives, shall not directly discuss or promote their bid with any member of the County Board or County staff except in the course of County-sponsored inquiries, briefings, interviews, or presentations, unless requested by the County.

**8. BRAND NAMES**

8.1 Wherever in the specifications or bid that brand names, manufacturer, trade name, or catalog numbers are specified, it is for the purpose of establishing a grade or quality of material only; and the term "or equal" is deemed to follow.

8.2 It is the Bidder's responsibility to identify any alternate items offered in the bid, and prove to the satisfaction of the County that said item is equal to, or better than, the product specified.

8.3 Bids for alternate items shall be stated in the appropriate space on the E-Bid form. Bidders MUST attach to its bid documents in the Vendor Attachment Section of the E-Bid, a statement identifying the manufacturer and brand name of each proposed alternate, plus a complete description of the alternate items including illustrations, performance test data and any other information necessary for an evaluation.

8.4 The Bidder must indicate any variances and explain by item number from the bidding document no matter how slight.

8.5 If variations are not stated in the bid, it will be assumed that the item being bid fully complies with the County's bidding documents.

**9. DEMONSTRATIONS/SAMPLES**

9.1 Bidders shall demonstrate the exact item(s) proposed within seven (7) calendar days from receipt of such request from the County.

9.2 Such demonstration can be at the County delivery location or a surrounding community.

9.3 If items are small and mailable, and the Bidder is proposing an alternate product, the Bidder shall supply a sample of the exact item. Samples will be returned at Bidder's expense after receipt by the County of acceptable goods. The Bidder must indicate how samples are to be returned.

**10. DELIVERY (Non-Construction)**

10.1 Each Bidder shall state on the bid the date upon which it can make delivery of all equipment or merchandise. Time required for delivery is hereby made an essential element of the bid.

10.2 The County reserves the right to cancel orders, or any part thereof, without obligation, if delivery is not made within the time(s) specified on the bid.

10.3 All bids shall be based upon **inside** delivery of the equipment or merchandise F.O.B. to the County at the location specified by the County, with all transportation charges paid.

10.4 At the time of delivery, a designated Lancaster County employee will sign the invoice/packing slip. The signature will only indicate that the order has been received and the items actually delivered agree with the delivery invoice. This signature does not indicate all items meet specifications, were received in good condition and/or that there is not possible hidden damage or shortages.

**11. WARRANTIES, GUARANTEES AND MAINTENANCE**

11.1 Copies of the following documents, if requested, shall accompany the bid proposal for all items being bid:

11.1.1 Manufacturer's warranties and/or guarantees.

11.1.2 Bidder's maintenance policies and associated costs.

11.2 As a minimum requirement of the County, the Bidder will guarantee in writing that any defective components discovered within a one (1) year period after the date of acceptance shall be replaced at no expense to the County. Replacement parts of defective components shall be shipped at no cost to the County. Shipping costs for defective parts required to be returned to the Bidder shall be paid by the Bidder.

**12. ACCEPTANCE OF MATERIAL**

12.1 All components used in the manufacture or construction of materials, supplies and equipment, and all finished materials, shall be new, the latest make/model, of the best quality, and the highest grade workmanship.

12.2 Material delivered under this bid shall remain the property of the Bidder until:

12.2.1 A physical inspection and actual usage of the material is made and found to be acceptable to the County; and

12.2.2 Material is determined to be in full compliance with the bidding documents and accepted bid.

12.3 In the event the delivered material is found to be defective or does not conform to the bidding documents and accepted bid, the County reserves the right to cancel the order upon written notice to the Bidder and return materials to the Bidder at Bidder's expense.

12.4 Awarded Bidder shall be required to furnish title to the material, free and clear of all liens and encumbrances, issued in the name of the Lancaster County, Nebraska, as required by the bidding documents or purchase orders.

12.5 Awarded Bidder's advertising decals, stickers or other signs shall not be affixed to equipment. Vehicle mud flaps shall be installed blank side out with no advertisements. Manufacturer's standard production forgings, stampings, nameplates and logos are acceptable.

**13. BID EVALUATION AND AWARD**

13.1 The electronic signature shall be considered an offer on the part of the Bidder. Such offer shall be deemed accepted upon issuance by the County of purchase orders, contract award notifications, or other contract documents appropriate to the work.

13.2 No bid shall be modified or withdrawn for a period of ninety (90) calendar days after the time and date established for receiving bids, and each Bidder so agrees in submitting the bid.

13.3 In case of a discrepancy between the unit prices and their extensions, the unit prices shall govern.

13.4 The bid will be awarded to the lowest responsive, responsible Bidder whose bid will be most advantageous to the County, and as the County deems will best serve the requirements and interests of the County.

13.5 The County reserves the right to accept or reject any or all bids; to request rebids; to award bids item-by-item, with or without alternates, by groups, or "lump sum"; to waive irregularities and technicalities in bids; such as shall best serve the requirements and interests of the County.

13.6 In order to determine if the Bidder has the experience, qualification, resources and necessary attributes to provide the quality workmanship, materials and management required by the plans and specifications, the Bidder may be required to complete and submit additional information as deemed necessary by the County. Failure to provide the information requested to make this determination may be grounds for a declaration of non-responsive with respect to the Bidder.

13.7 The County reserves the right to reject irregular bids that contain unauthorized additions, conditions, alternate bids, or irregularities that make the bid incomplete, indefinite or ambiguous.

13.8 Any governmental agency may piggyback on any contract entered into from this bid.

**14. INDEMNIFICATION**

14.1 The Bidder shall indemnify and hold harmless, to the fullest extent allowed by law, the County, its agents, officers, employees and representatives from and against all claims, demands, suits, actions, payments, liability, judgements and expenses (including court-ordered attorney's fees), arising out of or resulting from the performance of the contract that results in bodily injury, sickness, disease, death, civil rights liability, or injury to or destruction of tangible property, including the loss of use resulting therefrom, and that are caused in whole or in part by the Bidder, its employees, agents, any subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts any of them may be liable. This section will not require the Bidder to indemnify or hold harmless the County for any losses, claims, damages and expenses arising out of or resulting from the sole negligence of the County, its agents, employees, or representatives.

14.2 In any and all claims against the County or any of its members, officers or employees by an employee of the Bidder, any subcontractor, anyone directly or indirectly employed by any of them or by anyone for whose acts made by any of them may be liable, the indemnification obligation under paragraph 14.1 shall not be limited in any way by any limitation of 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.

**15. TERMS OF PAYMENT**

15.1 Unless stated otherwise, the County will begin processing payment within thirty (30) calendar days after all labor has been performed and all equipment or other merchandise has been delivered, and all such labor and equipment and other materials have met all contract specifications.

**16. LAWS**

16.1 The laws of the State of Nebraska shall govern the rights, obligations, and remedies of the parties under this bid and any contract reached as a result of this process.

16.2 Bidder agrees to abide by all applicable local, state and federal laws and regulations concerning the handling and disclosure of private and confidential information concerning individuals and corporations as to inventions, copyrights, patents and patent rights.

16.3 The Bidder agrees to hold the County harmless from any claims resulting from the Bidder's unlawful disclosure or use of private or confidential information.

**17. EQUIPMENT TAX ASSESSMENT**

17.1 Any bid for public improvement shall comply with Nebraska Revised Statutes 77-1323 and 77-1324. Indicating; every person, partnership, limited liability company, association or corporation furnishing labor or material in the repair, alteration, improvement, erection, or construction of any public improvement shall sign a certified statement which will accompany the contract. The certified statement shall state, stating that all equipment to be used on the project, except that acquired since the assessment date, has been assessed for taxation for the current year, giving the county where assessed.

**18. AFFIRMATIVE ACTION**

18.1 Each Bidder agrees that it will not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, ancestry, disability, age, or marital status.

18.2 The successful Bidder will be required to comply with the provisions of the County's Affirmative Action Policy.

18.3 The Equal Opportunity Officer will determine compliance or non-compliance with the County's Affirmative Action Policy upon a complete and substantial review of successful Bidder's equal opportunity policies, procedures and practices.

18.4 The County provides equal opportunity for all Bidders and encourages minority businesses, women's businesses and locally owned business enterprises to participate in our bidding process.

**19. INSURANCE**

19.1 All Bidders shall take special notice of the insurance provisions required for all County contracts (see *Insurance Clause for All County Contracts*).

**20. EXECUTION OF CONTRACT**

20.1 Depending on the type of service provided, one of the following methods will be employed. The method applicable to this contract will be checked below:

___ a. **PURCHASE ORDER**, unless otherwise noted.

1. This contract shall consist of a Lancaster County Purchase Order.
2. A copy of the Bidder's bid response (or referenced bid number) attached and that the same, in all particulars, becomes the contract between the parties hereto: that both parties thereby accept and agree to the terms and conditions of said bid documents.

_X_ b. **CONTRACT,** unless otherwise noted.

1. County will furnish of the Contract to the successful Bidder who shall prepare attachments as required. Insurance as evidenced by a Certificate of Insurance (as required), surety bonds properly executed (as required), and Contract signed and dated.
2. The prepared documents shall be returned to the Purchasing Office within 10 days (unless otherwise noted).
3. The County will sign and date the Contract and submit the Contract to the County Board of Commissioners for approval and signature.
4. Upon approval and signature, the County will return one copy to the successful Bidder.

**21. TAXES AND TAX EXEMPTION CERTIFICATE**

21.1 The County is generally exempt from any taxes imposed by the State or Federal Government. A Tax Exemption Certificate will be provided as applicable.

**22. E-VERIFY**

22.1 In accordance with Neb. Rev. Stat. 4-108 through 4-114, the contractor agrees to register with and use a federal immigration verification system, to determine the work eligibility status of new employees performing services within the state of Nebraska. A federal immigration verification system means the electronic verification of the work authorization program of the Illegal Immigration Reform and Immigrant Responsibility Act of 1996, 8 U.S.C. 1324 a, otherwise known as the E-Verify Program, or an equivalent federal program designated by the United States Department of Homeland Security or other federal agency authorized to verify the work eligibility status of a newly hired employee pursuant to the Immigration Reform and Control Act of 1986. The Contractor shall not discriminate against any employee or applicant for employment to be employed in the performance of this section pursuant to the requirements of state law and 8 U.S.C.A 1324b. The contractor shall require any subcontractor to comply with the provisions of this section. For information on the E-Verify Program, go to www.uscis.gov/everify.

## Lancaster County Engineering RTU Replacement, Bid No. 18-004 (Roof-top Viewing)

Sign in Sheet for All Attendees: January 19, 2017 at 1:30 p.m.

| NAME | COMPANY | PHONE NUMBER | E-MAIL ADDRESS |
|---|---|---|---|
| Sharon Mulder | City/County Purchasing | 402-441-7428 | smulder@lincoln.ne.gov |
| Ron Runyan | Vision Mechanical | 402-219-3330 | ron@vmech.net |
| Kelly Schroer | Kidwell | 402-817-3475 | Kschroer@kidwellinc.com |
| Dowd Ommen | Hayes Mechanical | 402-718-2611 | dommen@hayesmechanical.com |
| Nick Benes | Benes HVAC | 402-610-6561 | nickbenes@beneshvac.com |
| Adam Nielsen | MMC | 402-25-2252 | anielsen@mmcontractors.com |
| Joe Gyhra | Falcon Htg | 402 466 7437 | jgyhra@falconheatingac.com |
| Tim Study | Benes | 402 610 6556 | |
| Kyle Hohenstein | Dickey Hinds Muir Inc. | 402 610 7401 | Kyle.hohenstein@dhmlincoln.com |
| Jason Houdek | Mechanical Western | (402)580-2901 | jjhoudek@falconheatingac.com |
| Mike Nordman | Barnhart Crane | 402-432-7969 | mnordman@barnhartcrane.com |
| Phil Polak | HTS Plumbing | 402-853-1674 | ppolak@htsplbg.com |
| Tony Dupsky | Engineering Technologies | 402-476-1273 | tdupsky@eti-engineers.com |
| Ron Bohaty | LCED | 402-441-7775 | RBohaty@lancaster.ne.gov |
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