PROJECT MANUAL
FOR
LINCOLN ROUNDHOUSE CHILLER REPLACEMENT

Bid No: B8712

2600 SW 9th ST.
Des Moines, Iowa
50315

Owner
Des Moines Independent Community School District
2100 Fleur Drive
Des Moines, Iowa 50321

Engineer
MODUS
1130 E 3rd St. Suite 300
Des Moines, Iowa 50309
ELECTRICAL
I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed professional engineer under the laws of the State of Iowa.

JOSHUA NIELSEN, P.E.  
IOWA LIC No. 19516

Printed or typed name  
10/5/21

Signature
Expiration Date: DECEMBER 31, 2022
Pages or sheets covered by this seal:  
Project Manual pages identified in Table of Contents. 05 OCT 2021

STRUCTURAL
I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed professional engineer under the laws of the State of Iowa.

BRETT TIGGES, P.E.  
IOWA LIC No. P24437

Printed or typed name  
10/5/21

Signature
Expiration Date: December 31, 2021
Pages or sheets covered by this seal:  
Project Manual pages identified in Table of Contents. 05 OCT 2021

MECHANICAL/PLUMBING/FIRE PROTECTION
I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed professional engineer under the laws of the State of Iowa.

HOLLY STEVENS, P.E.  
IOWA LIC No. 20288

Printed or typed name  
10/5/21

Signature
Expiration Date: DECEMBER 31, 2022
Pages or sheets covered by this seal:  
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NOTICE IS HEREBY GIVEN: Sealed proposals will be received by the Supply Chain Analyst of the Des Moines Independent Community School District at his office, Des Moines Independent Community School District, 1917 Dean Avenue, Des Moines, Iowa 50316 until three o’clock p.m. on the 21st day of October 2021, for the construction/repair and/or installation of the following improvement(s):

Bid No. B8712 DMPS LINCOLN ROUNDHOUSE CHILLER REPLACEMENT

Commencing October 4, 2021, copies of the plans and specifications for the Project are on file with and available from Beeline and Blue 2507 Ingersoll Avenue, Des Moines, Iowa 50312. Plans may also be inspected at the following locations: Construction Update Internet plan room; F. W. Dodge Corporation scan services; or at the school district’s facility management office 1917 Dean Avenue, Des Moines, Iowa 50316. Bids must be submitted on the approved bid form available in the plans and specifications. No oral, facsimile, telegraphic or telephonic bids or modifications will be considered.

Bidders will be required to provide a security deposit, in the form of an approved Bid Bond, cashiers or certified check, or certified share draft in the amount of five percent (5%) of the amount of each bid, in a separate attached envelope.

A Pre-Bid Conference will be held at 1:00 PM on Wednesday, October 13, 2021, onsite. Meet on north side of Roundhouse.

Lump-sum bids will be received under one contract as described in the specifications. Bids will be opened and read aloud immediately after specified closing time for receiving bids. All interested parties are invited to attend.

Consideration of the bids received, and the award of contract or other action may be made by the Board of Directors of the Des Moines Independent Community School District upon the proposals received in accordance with the law and the plans and specifications at its meeting to be held at 5:30 p.m. on November 2, 2021, in the District Board Room at 1800 Grand Avenue Des Moines Iowa or at any other published and/or posted location of the Board meeting.

The Board of Directors may make the award to the lowest responsive, responsible bidder meeting specifications. The right is reserved to reject any or all bids, or any part thereof, and to waive informalities, and to enter into such contract or contracts as shall be deemed in the best interests of the Des Moines Independent Community School District.

By virtue of statutory authority, a preference will be given to products and provisions grown and coal produced within the State of Iowa, and to Iowa domestic labor.

All bids will be governed by applicable provisions in the Iowa Code and Board Policies.

Secretary of the Board
Des Moines Independent Community School District
PART 1 - GENERAL

Des Moines Independent Community School District, State of Iowa, hereinafter called the “Owner,” has advertised for bids to be submitted for the construction work specified in the advertisement. Proposals to be entitled to consideration shall be in accordance with the following:

1.1 DEFINITIONS

A. Bids are sums stipulated in Proposals for which Bidders propose to perform the Work.
B. Unit Prices are sums included in Proposals as Bids per unit measure of materials and/or services, as required in the Bidding Documents.
C. Proposals are complete, properly executed forms including all information requested by the Owner.
D. Bidders are qualified contractors who submit Proposals to the Owner for Work as Prime Contractors on the Project.
E. Alternate Prices are lump sum prices included in the Proposals for labor, materials and/or services that are not included in the base bid.

1.2 EXAMINATION OF SITE and DOCUMENTS

Each Bidder shall visit the site of the proposed work and shall completely inform himself relative to construction hazards, procedure, labor, and all other conditions and factors, local and otherwise, which would affect prosecution and completion of the work and its cost. All visits to the site shall be coordinated through the Owner’s Representative. Such considerations shall include, without limitations, the arrangement and condition of existing structures and facilities; the procedure necessary for maintenance of uninterrupted, safe operation, use and occupancy of existing facilities; the availability and cost of labor; and facilities for transportation, handling and storage of materials and equipment. All such factors shall be properly investigated and considered in the preparation of the bid. Each bidder shall so fully examine the plans and specifications and acquaint himself with their requirements and with the conditions surrounding the construction on the site that he shall be fully familiar with and informed of all facilities, difficulties, and problems associated with or which might be incurred in the prosecution of the work. In case of disagreement between drawings and specifications or within either document itself, the better quality or greater quantity of work shall be figured in the bid (see GC. 6.04). It shall be the responsibility of the Bidder to direct the attention of the Architect and Owner in writing and at least seventy-two (72) hours prior to the time set for the opening of the bids, any seeming inconsistencies, ambiguous requirements, omissions, or any other matter which seems to require explanation, and to request clarification. The submission of a bid shall be taken as prima facie evidence of compliance with this requirement and as an acknowledgment that the Bidder has received all the required documents and has visited the site. There will be no subsequent financial adjustment for lack of such prior information.

1.3. INTERPRETATION

No oral interpretations will be made by anyone to any Bidder as to the true meaning or requirements of any part of the drawings, specifications, or other proposed Contract Documents. Every request for an interpretation shall be made in writing and addressed and forwarded to the Owner’s Representative not later than seven (7) calendar days before the date fixed for opening of bids. The person submitting the request shall be responsible for its prompt delivery. Every interpretation made to a Bidder will be in the form of an addendum to the Contract Documents, which, if issued, will be sent as promptly as is practicable to all persons to whom the drawings, specifications, and other proposed Contract Documents have been.
issued. All such addenda shall become part of the Contract Documents and their receipt shall be acknowledged in the Bid Proposal. The Owner will not be responsible for any other explanations or interpretations of the proposed Contract Documents.

1.4 PROPOSAL FORMS
Proposal forms included in the specification may be copied and used for submitting proposals. Proposals shall be made upon the forms provided, therefore. Refer to Document 00311 Proposal Form Instructions, and Document 00311 Proposal Form. Any Proposal NOT submitted on required forms may be rejected.

Attention is directed to the fact that the Contract Documents contain one complete set of bidding and contract forms; these are sample forms included for the information of Bidders. They are not to be detached from the Contract Documents, filled out or executed.

Special attention is directed to the Form of Bid Bond (Document 00410) included in the bidding documents. Additional copies of this form may be secured from the Owner’s Representative, but the use of this particular form is not mandatory. Any similar standard form of a recognized responsible surety which contains the same stipulations and guarantees, the same execution of the contract and indemnification of the Owner in case of default, will be acceptable.

1.5 PREPARATION OF PROPOSAL FORMS
All proposal forms must be prepared in single copy and in conformity with and be based upon and submitted subject to all requirements of the Contract Documents. They must be fully completed with all blanks appropriately filled in. Each bid shall be legibly written or printed in ink on the separate form provided. No alterations in bids, or in the printed forms therefore, by erasures, interpolations, or otherwise will be acceptable unless each such alteration is signed or initialed by the Bidder; if initialed, the Owner may require the Bidder to identify any alteration so initialed. No alteration in any bid, or in the form on which it is submitted, shall be made after the bid has been submitted.

It will be the Bidder’s responsibility to secure any and all addenda from the Architect. The Bidder will be required to acknowledge receipt of all addenda. Owner reserves the right to reject any bid which is received which has not been based upon all addenda issued by the Architect.

No Bidder may submit more than one bid. Multiple bids under different names will not be accepted from one firm or association.

The Bidder is required to bid on all alternates and complete all blanks on the bid form. If alternates are called for on a type or method of construction as to which the Bidder does not desire to bid, the Bidder shall insert the words “NO BID.” In case the Bidder desires to bid on an alternate, it shall set forth in the space provided therefore, the amount to be added or deducted from the base bid or in the event that the Bidder does not desire to make a change from the base bid, it shall so indicate by using the words “NO CHANGE.” In the selection of alternates, the Owner reserves the right to select or reject any or all alternates in the proposal if, in the judgment of the Board of Directors, or its designees, the best interest of the School District will be so served.

1.6 BID PERFORMANCE GUARANTIES
Bid security (single copy) in the form of a certified or cashier’s check, certified share draft, money or surety bond in the amount of at least five (5%) percent of the bid price, payable without condition or qualification to Des Moines Independent Community School District, shall accompany each bid in the OUTER envelope, as evidence of good faith and as a guarantee that if awarded the contract, the Bidder will execute the
Contract and give bond as required. The Bidder assumes all responsibility for furnishing acceptable bid security.

Bid security in the form of a bond (see Document 00410) will be accepted only if from a regularly established firm licensed to write such surety in the State of Iowa.

The bid security of each unsuccessful Bidder will be returned when the Construction Agreement is fully executed. The bid security will be voided but retained by the Owner, if, after the Notice of Contract Award, the Bidder shall enter into a Contract and file a satisfactory performance bond, labor and material payment bond, and certificates of required insurance, all within ten (10) calendar days after the date such notice is given by the Owner. The bid security of the second and third lowest responsible Bidders may be retained for not to exceed forty-five (45) days after opening, pending the execution of the Construction Agreement and submission of bond by the successful Bidder.

This bid security may be retained by the Owner as liquidated damages, if the bid is accepted and a contract thereon is awarded but the successful Bidder fails to enter into a contract in the form prescribed with legally responsible sureties, within ten (10) calendar days after date of Notice of Contract Award is given by the Owner.

The Owner shall require the Bidder to whom a Contract is awarded to furnish to the Owner both Performance and Labor and Material Payment bonds in the amount of one hundred (100%) percent of the Contract price, covering the faithful performance of the Contract and the payment of all obligations arising thereunder, and the Bidder will further provide warranties as required by the specifications or General Conditions.

The bonds shall be executed on the forms included with the Contract Documents (forms shall not be removed from the Contract Documents; Bidders may use copies of the bond forms included in the specifications). Accompanying each bond form shall be a “Power of Attorney” authorizing the attorney in fact to bind the surety company and certified to include the date of the bond.

1.7 LIST OF SUBCONTRACTORS AND SUPPLIERS OF LABOR AND MATERIAL

The lowest bidder for each contract shall, within twenty-four (24) hours following the bid opening, provide the Owner with the signed List of Subcontractors and Suppliers of Labor and Material on the form provided in Section 00100 Instructions to Bidders. Subcontractor is any entity performing 1-1/2% or more of the contract value. The List shall detail the quotations used in the preparation of the bid and whose services are proposed to be used in construction of the project. The List must be complete showing all sections in the Construction Documents. Failure to submit the List may preclude the bid from further consideration by the Owner. The Owner reserves the right to either disclose or not disclose the List of the successful Bidder.

Each Bidder shall identify and fully disclose on the List all those subcontractors and suppliers proposed for the work with which the Bidder is connected either directly or indirectly as part owner, participant in profits and losses or in any other manner financially or economically.

1.8 BACKGROUND INFORMATION

The lowest bidder for each contract shall, within twenty-four (24) hours following the bid opening, provide the Owner with the Background Information included in Section 00100 Instructions to Bidders. The Contractor must complete and fully disclose all information requested in the Background Information. Failure to submit the Background Information may preclude the bid from further consideration by the Owner.
The Owner may make such investigations as deemed necessary to determine the ability and qualification of the Bidder. Bidders shall submit **within twenty-four (24) hours**, if requested by the Owner, such evidence of the Bidder’s competency and practical knowledge to do the particular work covered by his proposal and of the Bidder’s financial responsibility, resources, experience, organization and equipment to complete the proposed work. Failure to comply with this requirement may result in the rejection of consideration of such bid.

In determining the Bidder’s qualifications, the following factors, among others, will be considered: work previously completed by the Bidder; the qualifications of the proposed subcontractors for their work; Bidder references; and whether the Bidder (a) maintains a permanent place of business; (b) has adequate plant and equipment to do the work properly and expeditiously; (c) has the financial resources to meet all obligations incident to the work; (d) has appropriate technical experience; and (e) has adequate, competent, experienced staff and supervisors who will be committed to the work until completion.

Each Bidder may be required to show that he has handled former work and that no just claims have been prosecuted or are pending against such work. No bid will be accepted from a Bidder who is engaged on any work which would impair his ability to perform or finance this work or other work in progress.

The Owner reserves the right to reject any bid if the Owner determines, in its sole and absolute discretion, that the Bidder is not properly qualified to carry out the obligations of the Contract and/or to complete the work contemplated by the contract. Conditional bids will not be accepted.

### 1.9 PERMITS AND FEES

The School District shall secure and pay for the general building permit. Trade contractors will be responsible to obtain and pay for their specialty permits. The Owner is exempt from paying certain fees and it will be the contractor’s responsibility to acquaint himself with the laws and regulations governing said fees. Attention is directed to the requirements of the General Conditions regarding obtaining permits. The contractor shall obtain and pay for all fees associated with work in the Department of Transportation right of way.

### 1.10 TAXES

Sales and use taxes shall be excluded from the bid for all items incorporated into the final project. The Owner will provide sales tax exemption certificates as appropriate. See section 00700 General Conditions paragraph 12.04 for additional requirements.

### 1.11 SIGNATURE OF BIDDERS

Each Bidder shall sign and notarize the bid form, **on the last page of the form** and the bid bond. If the Bidder is an individual, the Bidder must sign in individual capacity. Bids by partnerships shall be signed with the partnership name followed by the signature and designation of one of the partners or other authorized representative. Bids by corporations shall be signed with the name of the corporation followed by the signature and designation of the president or other person authorized to bind the corporation and attested to by the secretary with corporate seal (**if available**). Bids by joint ventures shall be signed by each participant in the joint venture or by an authorized agent of each participant. The names of all persons signing should also be typed or printed below the signature. A bid by a person who affixes to his signature the word “president,” “secretary,” “agent,” or other designation without disclosing his principal may be held to be the bid of the individual signing. When requested by the Owner, evidence of the authority of the person signing shall be furnished.

### 1.12 SUBMISSION OF BIDS
Bid Documents shall be enclosed in two envelopes (OUTER and INNER), each of which shall be sealed and clearly labeled “BID DOCUMENTS” and identified with the description of the work to which the proposal applies; the name of the project; the name and address of the Bidder; and the time of opening bids; all in prominent lettering so as to guard against opening prior to the stipulated time. The INNER envelope shall include the form of proposal (Document 00311) and shall be marked “BID ENCLOSED”. The “OUTER envelope” shall include the Bid Bond (Document 00410), along with the INNER envelope. If the OUTER envelope does NOT include the required document, the INNER “BID ENCLOSED” envelope will NOT be opened. No responsibility shall attach to any employee of the Owner for the premature opening of any bid not prominently identified. The Bidder shall be responsible for placing his firm name and the name and number, if applicable, of the project and the time of the bidding on the outside of such bid envelope.

The Bid Documents shall be submitted at the time and location as noted in the Invitation to Bid. Bids received after the specified time of closing will be returned unopened.

### 1.13 WITHDRAWAL OF BIDS

Any Bidder may withdraw his bid if written request for withdrawal signed in the same manner and by the same person who signed the Bid Form is received by the individual of the School District requesting the bids prior to the time established for the opening of the bids.

No Bidder may withdraw his bid for forty-five (45) days after the scheduled time set for the opening thereof, or before award of the Contract, unless said award is delayed for a period exceeding forty-five (45) calendar days.

### 1.14 MODIFICATIONS

No oral, telephonic, or telegraphic modifications will be considered.

### 1.15 ACCEPTANCE OF BIDS

The Owner reserves the right to accept the bid which in its judgment is the most responsive responsible and best bid or to reject any and all bids and alternatives and to waive or disregard irregularities or informalities in any bid as it may deem to be in the best interest of the School District. The Board of Directors or its designees may consider as irregular any bid on which there is an alteration of, or departure from, the bid form. All proposals received after the specified time of closing shall be returned unopened.

Final determination of compliance with specifications will rest with the Owner.

### 1.16 APPLICABLE LAWS AND REGULATIONS

Each Bidder shall familiarize himself with all state and local laws, codes, ordinances, and regulations which might in any manner affect the work to be done; the materials to be supplied; the taxes, permits and fees to be paid; or the labor to be employed in and about the work. Any claim of misunderstanding or ignorance on the part of any successful Bidder will not in any way excuse such Bidder from the necessity of full compliance with every such law, code, ordinance, or regulation. All state laws, codes and regulations and local ordinances, which are applicable, shall be complied with including but not limited to those specified in these documents.
1.17 INSURANCE
Throughout the life of the contract, the Contractor will be required to carry the types and amounts of insurance named in the General Conditions.

1.18 CONTRACTOR’S LICENSE
Any successful Bidder may be required by the Owner to obtain the necessary and applicable Contractor’s License from all appropriate governmental authorities and if required, shall not allow any subcontractor to commence work on his subcontract until all similar provisions required of the subcontractor have been obtained and approved.

1.19 POST-BID INTERVIEWS
Bidders in contention for contract awards may be asked to attend Post-Bid Interviews, submit Post-Bid Submittals in rough draft for review. (See Document 00500.)
BACKGROUND INFORMATION

All questions must be answered, and the data given must be clear and comprehensive. If necessary, questions may be answered on separate attached sheets. The bidder may submit any additional information.

1. When Organized

2. If Corporation, Where Incorporated

3. How many years have you been engaged in the contracting business under your present firm or trade name?

4. List all of the surety/bonding companies you have utilized in the last five (5) years

5. Have you ever been declared in default under a performance bond in the last five (5) years? If so, describe the circumstances and which surety/bonding company was involved. Include the name and contact person of the owner(s).

6. Have you ever been previously found to be a non-responsive or non-responsible bidder under Iowa Code Chapter 26, Iowa Code Section 73A or other applicable law or governing authority? If yes, please describe the circumstances.

7. List all the projects over one million dollars ($1,000,000) you are currently under contract for, including the contract value, the scheduled completion date, contact person and phone number. Also list any experience in school construction similar to this project of any value.


Yes ____________ No ____________ If yes, please explain: ________________
9. Do you currently have any legal action pending which could impact your ability to perform this Project? ______________ If yes, please explain: ______________

No actions will be made on the basis of answers to the above questions without an inquiry and an opportunity to be heard regarding the circumstances of the matters reported.

The undersigned hereby authorizes and requests any person, firm or corporation to furnish any credit history and financial condition or other information required by the District in verification of the recitals comprising this statement of Background Information. The undersigned further authorizes the District to conduct any and all necessary investigations of the undersigned’s federal and state Occupational Safety and Health Act (OSHA) Compliance, including access to State and Federal records.

I hereby certify that the above information is true and correct to the best of my knowledge and that the District may rely on the information provided.

THIS STATEMENT MUST BE NOTARIZED.

NAME OF CONTRACTOR: ________________________________

BY: __________________________________________

Signature                        Title

______________________________

Type/Print Name                  Date

STATE OF IOWA, ________________ COUNTY, ss:

Subscribed and sworn to before me by the said ______________________ on this ___ day of ___
___________________________, 20___.

________________________________________
Notary Public in and for the State of Iowa
LIST OF SUBCONTRACTORS AND SUPPLIERS OF LABOR AND MATERIAL

PROJECT: 

CONTRACTOR NAME: ________________________________

Pursuant to the provisions set forth in the Instructions to Bidders, The General Conditions, and the Proposal Form, the above-named contractor hereby designates below the names and locations of the place of business of each subcontractor. District may request subcontractor license number.

<table>
<thead>
<tr>
<th>SUBCONTRACTOR</th>
<th>BUSINESS ADDRESS</th>
<th>WORK TO BE DONE</th>
</tr>
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<tbody>
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</table>

Comments:_________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

END OF DOCUMENT
PART 1 - GENERAL

1.1 TIME OF COMPLETION

A. It is to be understood that time is of the essence for this Contract and the Contractor will be required to perform the Work within the allowable time set forth in the Contract. In this connection, attention is directed to the provisions of the General Conditions and Supplementary General Conditions, if any, relative to delays, extensions of time, and liquidated damages. The successful bidder/contractor shall, within ten (10) days after the Notice of Contract Award, prepare and submit for the Owner's approval, a Preliminary Construction Schedule. The schedule shall indicate the time of performance and the completion dates of the various portions of the Work, and the dates upon which the Owner may expect to be allowed to occupy all or portions of the Project.

B. The Owner and the Contractor shall agree mutually on any changes in either the schedule or the rate of performance of the Work which might either favorably or adversely affect such schedule dates. No additional compensation or fee shall be paid by the Owner, for any completion of all or any portions of the Work earlier than scheduled unless otherwise specifically noted in Bid Documents.

1.2 PRELIMINARY CONSTRUCTION SCHEDULE

A. The Preliminary Construction Schedule indicates planned Substantial Completion dates for significant activities during the construction period. Substantial Completion of an activity is considered to be when the work of subsequent activities can proceed in accordance with the Project Construction Schedule.

1.3 CONSTRUCTION PROGRESS SCHEDULE

A. A detailed Construction Progress Schedule shall be submitted by the Contractor prior to the submission of the first request for payment. No partial payment on account of work performed shall be made until such detailed Construction Progress Schedule has been approved by the Owner. Refer to Section 01310 for format requirements. Construction sequence or timing of schedules received from contractors may be adjusted in the Project Construction Progress Schedule by the Owner’s Representative to facilitate sequencing and coordination of the overall Project.

B. During the construction period the Contractor is required to regularly provide information and input on scheduling and coordination of his work. The Construction Progress Schedule will detail the Contractor's performance between Project milestone dates. Construction Progress Schedules will be required with each Contractor’s Application for Payment.

C. The mandatory Project milestones are listed in this section.

PROJECT MILESTONES

A. Bids Due: October 21, 2021
B. Notice of Award: November 3, 2021
C. Construction Start: November 4, 2021
D. Substantial Completion: April 4, 2022
E. Final Completion: May 13, 2022
F. Definitions:

1. Construction Start date: Established date on which the Contractor shall actively begin the Work on site to be completed under this contract. The construction start date may be amended to permit the Contractor to begin work sooner than established herein, upon approval of the Owner.

2. Substantial Completion date: Established date on which the Work, or designated portion(s) thereof, has been sufficiently completed in accordance with the Contract Documents so as to permit the owner to safely and legally occupy or utilize the Work for its intended use, subject only to minor punch list items the absence of completion which does not interfere with the Owner’s intended use of the project.

3. Final Completion date: Established date on which all outstanding items of the Work - including activities established in the Contract Documents, punch lists and established closeout documentation – have been fully executed and submitted to the Owner.

1.5 LIQUIDATED DAMAGES

A. Substantial Completion The Owner and the Contractor agree that this Agreement shall not provide for the imposition of liquidated damages based on the date of Substantial Completion.

   1. The contractor understands that if the date of Substantial Completion established by this Agreement (as may be amended by subsequent approved changes) is not attained, the Owner will suffer damages which are difficult to determine and accurately specify. The contractor agrees that if the Date of Substantial Completion is not attained, the Contractor shall pay the Owner actual damages, as determined by actual Owner expenses, to provide for the Project’s intended purpose after the established date of Substantial Completion, up to the date of actual Substantial Completion.

B. Final Completion The Owner and the Contractor agree that this agreement shall not provide for the imposition of liquidated damages based on the Date of Final Completion.

   1. The Owner, at its election, may choose to execute the completion of outstanding punch list items remaining after the established date of Final Completion. All costs incurred by the Owner for Work completed after the Final Completion date will be deducted from the final payment owed to the contractor.
General notes:

- Lincoln HS, will be in session during the duration of the project. Contractor work during school days / school activities shall not restrict full use of the parking lots and building by the school students, staff and visitors.

- Work can be done on all days.

- All hauling of equipment and materials in/out and debris removal must insure the safety of the students, staff and visitors. Station personnel at areas of conflict when material or equipment is transferred in and out.

- The contractor may utilize the school parking as directed by the owner during time when school is in session.

- Work to be coordinated through the Owner’s representative.

- All existing utility and communication services and distribution systems shall remain active during this work. Should a system be affected due to this work, the contractor shall make any required repairs to the system affected. Systems to maintain include in part: heating and ventilating, plumbing, electrical, temperature controls, fire alarm, security, intercoms, data / communications, and clock systems.

- Temporary security barriers and interior construction barriers shall be installed to separate the school and public from the work areas when rooms with work cannot be secured. All partitions shall be constructed per Section 01500 and shall be from floor to structure above. Maintain and remove the partitions when no longer required. Patch adjacent surfaces as required.

- Emergency exiting as required by the City of Des Moines code officials must be kept available while work continues for the renovation. The contractor shall phase the work around the exits to maintain a level unobstructed path of travel at all times to the public right of way.

- Close Out: Completion of Closeout Documents and punch list. – April 4 – May 13, 2022. All punch list work shall occur after school hours.

END OF DOCUMENT
PART 1 - GENERAL

1.1 PROPOSAL FORMS

A. Bidders are required to use the Proposal Form provided in Document 00311 or submit bid on the DMPS electronic portal. Contact the DMPS Senior Supply Chain Analyst at 515-242-7649 to become registered to submit a bid electronically. Additional proposal forms may be copied from this manual or obtained from the Owner’s Representative.

PART 2 - PROPOSAL FORMAT

2.1 BID PROPOSALS

A. The Proposal consists of all the following required documents:

1. Proposal Form (Document 00311) Inner Envelope.

B. Bid documents shall be enclosed in two envelopes (OUTER and INNER), each of which shall be sealed and clearly labeled “BID DOCUMENTS” and identified with the name and Bid Number of the project; the name and address of the Bidder; and the time or opening bids. The INNER envelope shall contain the Bid Proposal. The OUTER envelope shall contain the Bid Bond and INNER envelope. If all supporting documents are not included, the inner envelope will not be opened.

All information shall be in prominent lettering so as to guard against opening prior to the stipulated time. No responsibility shall attach to any employee of the Owner for the premature opening of any bid not prominently identified. The Bidder shall be responsible for placing his firm name and number, if applicable, of the project and the time of the bidding on the outside of such bid envelope.

C. All spaces provided on the Proposal Forms shall be filled in. If any space provided is not utilized by the Bidder, that space shall be filled in with the notation "NA" (Not Applicable).

D. The Proposal Forms shall be typewritten or manually printed in ink.

E. Where indicated, all amounts shall be expressed in words and in figures. In case of discrepancy, the words shall govern.

F. Bidders shall not make unsolicited notations or statements on the Proposal Forms. Alteration of the Proposal Forms is not permitted and may result in the proposal being considered non-responsive.

G. The person who signs the Proposal shall initial all changes to and erasures of the Bidder’s entries on the Proposal Forms.

H. Each Proposal shall include the legal name of the Bidder and a statement regarding whether the Bidder is a sole proprietor, a partnership, a corporation, or other type of legal entity. Proposals submitted by corporations shall have the state of incorporation noted. Any Bid submitted by an agent shall have a current Power of Attorney attached, certifying the agent’s power to bind the Bidder.

PART 3 - COMPLETION OF PROPOSAL FORMS

3.1 PROPOSAL FORM (DOCUMENT 00311)

A. Submit only one Proposal Form. Copies of the Proposal Form may be made.

B. Fill in the numbers and dates of all Addenda received and considered in the Proposal. Proposals must include acknowledgement of all Addenda issued prior to the Bid Date.
C. Type or print the signer's name and title in the spaces provided below the signature.

D. Date the Form in the spaces provided.

E. Place the Contractor's name at the bottom of each page in the space provided.

F. Have the Bid Proposal Notarized.

G. Completed Proposal form to be included in the INNER envelope.

3.2 TSB (Targeted Small Business Participation) FORM (DOCUMENT 00312)
Indicate participation on bid form. Low bidder to provide participation documents along with 24 HR information.

A. Program Description

1. In accordance with the Code of Iowa, Articles 73.15 through 73.21 and as amended by Sec. 223 of House File 479, the Board of Education of the Des Moines Independent Community School District seeks to provide opportunities for Iowa Targeted Small Businesses in the award of all contracts. The Certified Iowa Targeted Small Business participation target is ten percent (10%) of the base bid.

B. Definitions

1. Targeted Small Business (TSB) means a small business which is fifty-one percent or more owned, operated, and actively managed by one or more women or minority persons. Certified in the above context means the TSB has been certified by the Iowa Department of Inspections and Appeals. A complete listing of all certified TSB’s may be secured from the Iowa Department of Economic Development (515) 242-4700.

2. Small business means any enterprise located in this state which is operated for profit under a single management, and which has an annual gross income of less than three million dollars computed as the average of the three preceding fiscal years.

3. Minority person(s) means an individual who is Black, Hispanic, Asian or Pacific Islander, American Indian or Alaskan native.

4. Actively managed means exercising the power to make policy decisions affecting the business.

5. Operated means actively involved in the day-to-day management of the business.

C. Performance and Payment Bond Waiver

1. If Contractor is a TSB, the contractor may be eligible to receive a waiver of the performance and payment bond requirements pursuant to the provisions of the Iowa Satisfaction and Performance Bond Program, Section 12.44 of the Code of Iowa.

2. Certification of eligibility to participate in the Iowa Satisfaction and Performance Bond Program is determined by the Iowa Department of Inspection and Appeals.
3.3 NON-COLLUSION AFFIDAVIT (DOCUMENT 00313)

By signing bid form, bidder acknowledges non-collusion.

A. Submit the Non-Collusion Affidavit on the form provided. Copies may be made.
B. Type or print the signer’s name and title in the spaces provided.
C. Place the Contractor’s name at the bottom of the page in the space provided.
D. Have the Non-Collusion Affidavit Notarized.
E. Completed Non-Collusion Affidavit to be included by low bidder with the 24 HR. information.

3.4 BIDDERS STATUS FORM (DOCUMENT 00314)

Indicate on bid form, bidders residency status.

A. Submit the fully completed Bidders Status From on the form provided. Copies may be made.
B. Place the Contractor’s name at the bottom of the page in the space provided.
C. Sign and date the Form in the space provided.
D. Completed Bidders Status Form to be included by low bidder along with the 24 Hr. information.

3.5 PERSONNEL ACKNOWLEDGEMENT AND CERTIFICATION (DOCUMENT 00315)

By signing, bidder acknowledges commitment to compliance with all applicable rules, regulations, and restrictions regarding the employment of personnel as defined therein.

A. Submit an executed copy of the Personnel Certification and Acknowledgement form. Copies may be made.
B. Sign and date the Form in the space provided.
C. Completed Bidders Status Form to be included by low bidder along with the 24 Hr. information.

3.6 SUBMISSION OF PROPOSALS

A. Bidders shall bear full responsibility for delivering Proposals to the location for receipt of Proposals by the time and date for receipt of Proposals.
B. Owner will not provide telephones for use by Bidders when preparing their bid.
C. Telephone, faxed or oral bids will not be accepted.

3.7 MODIFICATION OR WITHDRAWAL OF PROPOSALS
A. Any Bidder may withdraw his bid if written request for withdrawal signed in the same manner and by the same person who signed the Bid Form is received by the individual of the School District requesting the bids prior to the time established for the opening of the Bids.

B. No Bidder may withdraw his bid for forty-five (45) days after the scheduled time set for the opening thereof, or before award of the Contract, unless said award is delayed for a period exceeding forty-five (45) calendar days.

C. Proposals that are withdrawn may be resubmitted before the time and date designated for the receipt of Proposals.

D. No oral, telephonic, telegraphic or FAXED modifications will be considered.

END OF DOCUMENT
DES MOINES INDEPENDENT COMMUNITY SCHOOL DISTRICT

LINCOLN ROUNDHOUSE CHILLER REPLACEMENT

PROPOSAL FOR: DMPS LINCOLN ROUNDHOUSE CHILLER REPLACEMENT

TO: Des Moines Independent Community School District
    Operations Center, Supply Chain Analyst, 1917 Dean Avenue
    Des Moines, Iowa 50316

COVERING BID NO: B8712

SUBMITTED BY: ___________________________________________

Name of Bidder

Members of the Board:

The undersigned has carefully examined the site, the proposed Contract Documents prepared by Studio Melee pertinent to the construction of the above referenced Project. Further, being familiar with all other conditions affecting the Work, the undersigned hereby proposes and agrees to furnish and provide all labor, materials, supervision, transportation, tools, equipment, services and other facilities necessary and required for the expeditious completion of the Work indicated above in strict conformity with said conditions and Contract Documents.

The undersigned has reviewed the work outlined in the Bidding Documents and fully understands the scope of work required in this Proposal. The undersigned acknowledges that the Proposal includes the work of all trades required for the work and understands the Owner Representative function as described in the Contract Documents. The undersigned understands that each bidder who is awarded a Contract shall be in fact a Prime Contractor, not a Subcontractor to the Des Moines Independent Community School District. The undersigned agrees that the proposal, if accepted by the Owner, will be the basis for a contract with the Owner to enter into such a contract in accordance with the intent of the Contract Documents.

The undersigned agrees to complete the work required, within the time indicated in the Contract Documents, subject to Liquidated Damages as specified in Documents 00210 and 00700.

The undersigned acknowledges the Iowa - Targeted Small Business program and actively pursued participation (document 00312). Yes ___ No ___ Low bidder to submit completed form with 24 HR. information.

The undersigned certifies that bidder has read and adheres to the terms of the Non-Collusion Affidavit (document 00313). Low bidder to submit completed form with 24 HR. information.

The undersigned has completed the Bidders Status worksheet (document 00314) and certifies the firm to be an Iowa:

Resident Bidder _____ Non-resident Bidder _____ Low bidder to submit completed form with 24 HR. information.

Enclosed in a separate envelope is a Bid Security for five percent (5%) of the amount of the Base Bid, made payable to the order of Des Moines Independent Community School District. It is to be left in escrow with the Owner as a guarantee that the undersigned will enter into a Contract and will furnish the specified insurance and bonds. The undersigned has notified the Owner Representative of any discrepancies or omissions, or of any doubt about the meaning of any of the Contract Documents, and has contacted the Owner Representative before bid date to verify the issuing of any clarifying Addenda.

The undersigned further acknowledges receipt of the following Addenda:

NO._________________ DATE_________________  

__________________________  
Contractor Name

PROPOSAL FORM TO BE SUBMITTED IN INNER ENVELOPE
DES MOINES INDEPENDENT
COMMUNITY SCHOOL DISTRICT
LINCOLN ROUNDHOUSE CHILLER REPLACEMENT

NO._________________ DATE_________________
NO._________________ DATE_________________

BASE BID - BID NO. B8712 DMPS LINCOLN ROUNDHOUSE CHILLER REPLACEMENT

The undersigned proposes to provide and construct the Work required, in accordance with said Contract Documents for

the lump sum price of:__________________________________________________________

__________________________________________________________ Dollars

($________________________), EXCLUDING ALL SALES TAXES. (Amount shall be shown in both words and figures. In case of discrepancy, the amount shown in words shall govern).

SCHEDULE OF ALTERNATES – NONE

LIST OF SUBCONTRACTORS AND SUPPLIERS OF LABOR AND MATERIAL

The lowest bidder for each contract shall, within twenty-four (24) hours following the bid opening, provide the Owner with the List of Subcontractors and Suppliers of Labor and Material. Subcontractor is any entity performing 1-1/2% or more of the contract value. The List shall detail the quotations used in the preparation of the bid and whose services are proposed to be used in construction of the project. The List must be complete showing all sections in the Construction Documents. Failure to submit the List may preclude the bid from further consideration by the Owner. The Owner reserves the right to either disclose or not disclose the List of the successful Bidder.

Each Bidder shall identify and fully disclose on the List all those subcontractors and suppliers proposed for the work with which the Bidder is connected either directly or indirectly as part owner, participant in profits and losses or in any other manner financially or economically.

The forms for the List of Subcontractors and Suppliers of Labor and Materials are included in the Instruction to Bidders, Section 00100.

AGREEMENT

It is understood and agreed that if written notice of the Owner's acceptance of this proposal is mailed, telegraphed, or delivered to the undersigned after the opening of the bid, and within forty-five (45) days, or at any time thereafter before this bid is withdrawn, the undersigned will execute and deliver to the Owner an Agreement in accordance with the bid as accepted. The undersigned will also furnish and deliver to the Owner the Payment Bond, Performance Bond and Certificate of Insurance as specified in the Contract Documents, all within ten (10) working days after receipt of Notice of Contract Award. The work under the Contract shall be commenced by the undersigned bidder, if awarded the Contract, on the date to be stated in a Notice to Proceed, issued to the Contractor and shall be completed by the Contractor in the time specified in the Contract Documents. In the event the bidder to whom an award is made fails or refuses to execute the Contract within the specified time frame; the Owner may declare the bidder's bid security forfeited as damages caused by the failure of the bidder to enter into the Contract.

If this proposal is determined to be (preliminarily) the lowest responsible bid, the undersigned shall submit a listing of subcontractors and major materials suppliers in accordance with G.C. – 27.00 and the Instructions to Bidders within 24 hours of being notified of such finding by the Owner Representative.

_________________________ Contractor Name

PROPOSAL FORM TO BE SUBMITTED IN INNER ENVELOPE
The undersigned acknowledges the fact that the Owner reserves the right to accept or reject any and all proposals, to waive any informality in receipt of this proposal, with or without cause or reason, and award the Contract on the basis stated in the Instructions to Bidders.

NOTE: If bidder is a corporation, the legal name of the corporation shall be set forth below, together with the signatures of authorized officers or agents. If bidder is a partnership, the true name of the firm shall be set forth below together with the signature of the partner or partners authorized to sign contracts on behalf of the partnership. If bidder is an individual, his signature shall be placed below.

SUBMITTED BY:

Name of Bidder
Address:

Phone #: ____________________________  Fax #: ____________________________

Contractors, License No.: ____________________________  Signature
License Expiration Date: ____________________________  Position

If Corporation: State of Incorporation: ____________________________

AFFIX CORPORATE SEAL HERE ➔
(IF APPLICABLE)

THIS STATEMENT MUST BE NOTARIZED.

STATE OF IOWA, ____________________________ COUNTY, ss:
Subscribed and sworn to before me by the said ____________________________ on this _______ _______ day of ____________________, 2021.

Notary Public in and for the State of Iowa

Contractor Name

PROPOSAL FORM TO BE SUBMITTED IN INNER ENVELOPE
If bidder is awarded the contract for this project, the bidder proposes for owner approval the award of a subcontract to the following certified Iowa TSB’s:

(if more room is needed, supply same information on second sheet and attach to this form)

1.__________________________________________ ________________________
   TSB Company Name          Address
   ________________________________ $ __________________
   Description of Work            Dollar Amount

2.__________________________________________ _________________________________
   TSB Company Name          Address
   ________________________________ $ __________________
   Description of Work            Dollar Amount

3.__________________________________________ __________________________________
   TSB Company Name          Address
   ________________________________ $ __________________
   Description of Work            Dollar Amount

Bidder’s Company Name              Telephone No.
__________________________________________ _________________________________
Address          City            State      Zip

__________________________________________
Signature (Same person who signs proposal)           Title

__________________________________________
Type/Print Name           Date

THIS STATEMENT MUST BE NOTARIZED.

STATE OF __________________, ________________ COUNTY, ss:

Subscribed and sworn to before me by the said __________________________ on this ______ day of ____________, 2021.

____________________________
Notary Public in and for the State of ______

__________________________________________
Contractor Name

Low bidder to submit form with 24 HR information
Bidder is _____ / is not _____ a certified Iowa Targeted Small Business, (TSB).

If bidder did not contact any certified Targeted Small Businesses, then state why:

The following TSB’s were contacted and declined to participate:

(If more room is needed, supply same information on second sheet and attach to this form)

<table>
<thead>
<tr>
<th>TSB Company Name</th>
<th>Address</th>
<th>Contact Name</th>
<th>Date Contacted</th>
<th>Telephone No.</th>
<th>Reason given for declining participation</th>
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</table>

Contractor Name

Low bidder to submit form with 24 HR information
The Contractor and/or the sub-contractors, as applicable, shall provide this affidavit:

NON-COLLUSION AFFIDAVIT TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID IN OUTER ENVELOPE.

State of Iowa )
County of Polk ) ss.
________________________
being first duly sworn, deposes and says that he or she

(Name)
is _________________________________________  of ___________
______,

(Title) (Contractor)
the party making the foregoing bid that the bid is not made in the interest of, or on the behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereto to effectuate a collusive or sham bid."

The undersigned certifies under penalty of perjury that the foregoing is true and correct;

THIS STATEMENT MUST BE NOTARIZED.

NAME OF CONTRACTOR: ________________________________

BY: _________________________________________________

Signature                               Title

__________________________

Type/Print Name       Date

STATE OF __________________,     COUNTY, ss:

Subscribed and sworn to before me by the said __________________ on this ______
_______day of _____________, 2021.

Notary Public in and for the State of________________________

LOW BIDDER TO SUBMIT FORM WITH 24 HR INFORMATION

______________________________
Contractor Name
Bidder Status Form

Part A

To be completed by all bidders

Please answer "Yes" or "No" for each of the following:

☐ Yes  ☐ No  My company is authorized to transact business in Iowa.
  (To help you determine if your company is authorized, please review the worksheet on the next page).

☐ Yes  ☐ No  My company has an office to transact business in Iowa.

☐ Yes  ☐ No  My company’s office in Iowa is suitable for more than receiving mail, telephone calls, and e-mail.

☐ Yes  ☐ No  My company has been conducting business in Iowa for at least 3 years prior to the first request for bids on this project.

☐ Yes  ☐ No  My company is not a subsidiary of another business entity or my company is a subsidiary of another business entity that would qualify as a resident bidder in Iowa.

If you answered “Yes” for each question above, your company qualifies as a resident bidder. Please complete Parts B and D of this form.

If you answered “No” to one or more questions above, your company is a nonresident bidder. Please complete Parts C and D of this form.

Part B

To be completed by resident bidders

My company has maintained offices in Iowa during the past 3 years at the following addresses:

Dates: _______ / _______ / _______ to _______ / _______ / _______  Address: __________________________
  City, State, Zip: __________________________

Dates: _______ / _______ / _______ to _______ / _______ / _______  Address: __________________________
  City, State, Zip: __________________________

Dates: _______ / _______ / _______ to _______ / _______ / _______  Address: __________________________
  City, State, Zip: __________________________

You may attach additional sheet(s) if needed.

Part C

To be completed by non-resident bidders

1. Name of home state or foreign country reported to the Iowa Secretary of State:

2. Does your company’s home state or foreign country offer preferences to resident bidders, resident labor force preferences or any other type of preference to bidders or laborers?  ☐ Yes  ☐ No

3. If you answered “Yes” to question 2, identify each preference offered by your company’s home state or foreign country and the appropriate legal citation.

You may attach additional sheet(s) if needed.

Part D

To be completed by all bidders

I certify that the statements made on this document are true and complete to the best of my knowledge and I know that my failure to provide accurate and truthful information may be a reason to reject my bid.

Firm Name: ________________________________

Signature: ________________________________  Date: ________________________________

You must submit the completed form to the governmental body requesting bids per 875 Iowa Administrative Code Chapter 156. This form has been approved by the Iowa Labor Commissioner.

309-6001 (09-15)
Worksheet: Authorization to Transact Business

This worksheet may be used to help complete Part A of the Resident Bidder Status form. If at least one of the following describes your business, you are authorized to transact business in Iowa.

☐ Yes ☐ No  My business is currently registered as a contractor with the Iowa Division of Labor.

☐ Yes ☐ No  My business is a sole proprietorship and I am an Iowa resident for Iowa income tax purposes.

☐ Yes ☐ No  My business is a general partnership or joint venture. More than 50 percent of the general partners or joint venture parties are residents of Iowa for Iowa income tax purposes.

☐ Yes ☐ No  My business is an active corporation with the Iowa Secretary of State and has paid all fees required by the Secretary of State, has filed its most recent biennial report, and has not filed articles of dissolution.

☐ Yes ☐ No  My business is a corporation whose articles of incorporation are filed in a state other than Iowa, the corporation has received a certificate of authority from the Iowa secretary of state, has filed its most recent biennial report with the secretary of state, and has neither received a certificate of withdrawal from the secretary of state nor had its authority revoked.

☐ Yes ☐ No  My business is a limited liability partnership which has filed a statement of qualification in this state and the statement has not been canceled.

☐ Yes ☐ No  My business is a limited liability partnership which has filed a statement of qualification in a state other than Iowa, has filed a statement of foreign qualification in Iowa and a statement of cancellation has not been filed.

☐ Yes ☐ No  My business is a limited partnership or limited liability limited partnership which has filed a certificate of limited partnership in this state, and has not filed a statement of termination.

☐ Yes ☐ No  My business is a limited partnership or a limited liability limited partnership whose certificate of limited partnership is filed in a state other than Iowa, the limited partnership or limited liability limited partnership has received notification from the Iowa secretary of state that the application for certificate of authority has been approved and no notice of cancellation has been filed by the limited partnership or the limited liability limited partnership.

☐ Yes ☐ No  My business is a limited liability company whose certificate of organization is filed in Iowa and has not filed a statement of termination.

☐ Yes ☐ No  My business is a limited liability company whose certificate of organization is filed in a state other than Iowa, has received a certificate of authority to transact business in Iowa and the certificate has not been revoked or canceled.

Low Bidder to submit form with 24 HR information.
Acknowledgment & Certification

__________ (“Company”) is providing services to the Des Moines Independent Community School District (“District”) as a Contractor, vendor, supplier, provider or sub-provider and/or is operating or managing the operations of a Contractor, vendor, supplier or provider. The services provided by the Company may involve the presence of the Company’s employees upon the real property of the District.

The Company acknowledges that Iowa law prohibits a sex offender who has been convicted of a sex offense against a minor from being present upon the real property of the District. The Company further acknowledges that, pursuant to Iowa law, a sex offender who has been convicted of a sex offense against a minor shall not operate, manage, be employed by, or act as a Contractor or volunteer at the District.

The Company hereby certifies that no one who is an owner, operator or manager of the Company has been convicted of a sex offense against a minor. The Company further certifies and agrees that it shall not permit any person who is a sex offender convicted of a sex offense against a minor to provide any services to the District in accordance with the prohibitions set forth above.

The Company further certifies that the Company has completed a satisfactory background check on the Company’s employees. The Company hereby agrees to provide the District with the Company’s background screening procedures including specific context and infractions that are reviewed by the Company. The District reserves the right to, but does not have the obligation to, conduct a District background check on Company employees as determined by the District in its sole discretion. The District reserves the right to restrict access of any Company employee upon the real property of the District if such employee does not clear the District’s background check.

The Company shall ensure that the provisions of this Acknowledgement and Certification are extended to any and all subcontractors, consultants, or others the Company may engage if such engagement involves their presence upon the real property of the District.

The Company understands and agrees that violation of any of the provisions of this Acknowledgement and Certification shall constitute sufficient grounds for termination of any contract or subcontract without damages or penalty to the District.

This Acknowledgement and Certification is to be construed under the laws of the State of Iowa. If any portion hereof is held invalid, the balance of the document shall, notwithstanding, continue in full legal force and effect.

In signing this Acknowledgment and Certification, the person signing on behalf of the Company hereby acknowledges that he/she has read this entire document that he/she understands its terms, and that he/she not only has the authority to sign the document on behalf of the Company, but has signed it knowingly and voluntarily.
Signed: __________________________________________

Print Name: __________________________________________

Title: __________________________________________

Date: __________________________________________
Draft Policy Regarding Background Checks of Applicants for Employment

The Des Moines Independent Community School District’s primary function is the education and care of the District’s students. The District considers student safety and well-being to be of paramount importance. Because of the requirements of Iowa law, and in order to further these compelling interests, the District’s hiring process includes requests for information regarding an applicant’s past criminal conviction(s). Background checks will be conducted as required by law and District policy/practice. Backgrounds checks will not be performed until a recommendation to hire has been made by the hiring team, after the interview process has occurred.

The District is also committed to equity in its entire employment process, including its hiring process. In order to achieve an equitable process with respect to the consideration of criminal convictions, while promoting the compelling interests of student safety and well-being, the District will consider an applicant’s criminal record in light of the following:

1. All applications will be considered on a case-by-case basis. While the District will endeavor to consider each applicant’s individual situation, it will also attempt to achieve equitable results between similarly-situated applicants.

2. Because honesty and candor are essential to the employer-employee relationship, failure of an applicant to disclose past criminal convictions on their application for employment and/or failure to cooperate with requests from the District to provide additional information necessary to the hiring process will generally result in a denial of employment.

3. Where an applicant’s application and/or background check result in a finding that the applicant has one or more criminal convictions, the District will issue a Pre-Adverse Action Notice to the employee, requesting that the employee provide the District with additional information relating to the conviction(s) prior to the District making a decision relating to the applicant’s employment. The applicant’s cooperation and candor are important if the applicant fails to provide additional information within the time requested, the District will make a decision based on the information available to it. Applicants should be aware that failure to promptly and voluntarily provide additional information will weigh heavily against hiring that applicant.

4. Once the District has received all available information relating to the applicant’s criminal background, the District will analyze all available information on a case-by-case basis. Factors examined by the District may include, but are not necessarily limited to all considerations that are job-related and consistent with business necessity, including specifically:
   a. The gravity of the offense/conduct,
   b. Whether the individual has a record of multiple convictions or a documented pattern indicating disregard or the law,
   c. Time since the offense(s),
   d. Whether there are any pending charges at the time of application,
   e. Nature of the job sought,
   f. How the offense(s) relates to the job,
   g. The population the applicant may interact with,
   h. Where applicable, evidence of rehabilitation

5. If the District determines not to move forward with employment, the applicant will receive a Final Adverse Action notice.
6. If an application is rejected due to an applicant’s past criminal conviction(s), that employee may be considered for employment no sooner than seven (7) years from the date of the most recent offense. All decisions will be made based on all information available to the District at the time of the subsequent application.
BID BOND

KNOW ALL PERSONS BY THESE PRESENTS, that we __________________________ as Principal, and __________________________ as Surety, are held and firmly bound to the Des Moines Independent Community School District, hereinafter called the "School District," in the penal sum of __________________________ Dollars ($ ____________), in lawful money of the United States, for the payment of which sum will and truly be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly, by these presents. The condition of this obligation is such that whereas the Principal has submitted the accompanying Bid, dated __________________________ for the project:

________________________________________________________________________

NOW, THEREFORE, if the Principal shall not withdraw said bid within the period specified therein after the opening of the same, or, if no period be specified, within forty-five (45) days after said opening, and shall, within the period specified therefore, or, if no period be specified, within seven (7) days after the prescribed forms are presented for signature, enter into a written Contract with the School District, in accordance with the bid, as accepted, and give bond with good and sufficient Surety or Sureties, as may be required for the faithful performance and proper fulfillment of such Contract, then the above obligation shall be void and of no effect, otherwise to remain in full force and virtue.

By virtue of statutory authority, the full amount of this Bid Bond shall be forfeited to the School District in liquidation of damages sustained in the event that the afore described bidder, Principal, fails to execute the Contract and provide the bond as provided in the Specifications or by law.

IN WITNESS WHEREOF, the parties have executed this instrument under their several seals this the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by the undersigned representatives pursuant to authority of the governing bodies.

________________________________________________________________________

(date) Principal
By: __________________________

________________________________________________________________________

(date) Surety
By: __________________________

(Attach Power of Attorney of agent executing Bond)

END OF DOCUMENT

PROPOSAL FORM TO BE SUBMITTED IN OUTER ENVELOPE
PART 1 - GENERAL

1.1 OWNER/CONTRACTOR AGREEMENT

A. The Agreement between the Owner and each Contractor will be written on the Owner's standard Owner/Contractor Agreement Form. A sample of this form appears as Document 00510.

B. The Owner/Contractor Agreement Form will be completed by the Owner and will be sent to the selected Contractor. A minimum of three (3) copies will be prepared for signing.

C. The executed Owner/Contractor Agreement, along with the Contract Documents as defined in Document 00700, will be the entire, integrated Contract between the Owner and each Contractor.

D. Upon receipt of an Owner/Contractor Agreement, the successful Bidder shall review it for completeness and accuracy, execute it, and return it to the Owner.

E. The Owner will execute each Owner/Contractor Agreement after the Bidder and after all required post-bid documents, (see 1.2.C. below), have been submitted.

1.2 NOTICE OF CONTRACT AWARD

A. The Owner shall issue a Notice to Proceed prior to the commencement of work under the Owner/Contractor Agreement.

B. No Contractor shall commence work until all required bonds (Documents 00600, 00610 and 00620) and insurance (Document 00650) have been submitted to and accepted by the Owner.

C. Upon receipt of a Notice to Proceed, and receipt of requisite bid documents, each Contractor shall commence work in accordance with the conditions contained in the Notice to Proceed.

END OF DOCUMENT
CONSTRUCTION AGREEMENT

THIS AGREEMENT, made and entered into this ___ day of _______, 2021 by and between DES MOINES INDEPENDENT COMMUNITY SCHOOL DISTRICT (hereinafter designated as the “Owner”), and _______________________________ (hereinafter designated as the “Contractor”), in connection with the construction of ____________ complete with all work appurtenant thereto.

In consideration of the compensation to be paid to the Contractor and of the mutual agreements herein contained, the parties agree as follows:

CA - 1.00 SCOPE OF THE WORK

The Contractor will furnish all tools, equipment, machinery, supplies, superintendence, insurance, transportation and other construction accessories, services and facilities specified or required to be incorporated in and form a permanent part of the completed work. In addition, the contractor shall provide and perform all necessary labor in a good, firm, substantial workmanlike manner and in accordance with the conditions and prices stated in the Bid Proposal and the requirements, stipulations, provisions and conditions of the Contract Documents as defined in the attached General Conditions. Said documents form the contract and are as fully a part thereof as if repeated verbatim herein. The Contractor shall perform, execute, construct and complete all things mentioned as to be done by the him in the Contract Documents, the Owner's official award of this contract to the Contractor being based on the acceptance by the Owner of the Contractor's bid, or part thereof.

CA - 2.00 THE CONTRACT DOCUMENTS

The Contract Documents shall consist of this written Agreement, which shall incorporate by this reference all of the instruments set out in Article 1 of the General Conditions as fully as if they were set out in this Agreement in full. All of the said documents and instruments are incorporated into this Agreement by the signature of the parties hereto.

CA - 3.00 TIME OF COMPLETION

The Contractor agrees to commence work under this Agreement by no later than ___________ and to substantially complete all work by no later than ____________.

CA - 4.00 LIQUIDATED DAMAGES

The Contractor understands and agrees that the completion of the entire project within the time provided is an essential feature of this Agreement. The Owner will sustain substantial damages, the amount of which is not possible to accurately determine at this time, if the work is not so completed. The Contractor, therefore, agrees to proceed with due diligence, taking all precautions and making all necessary arrangements to insure the completion of the work within the prescribed time. The Contractor further agrees that should he fail to finally and fully complete the work within the time stipulated, the Owner shall be entitled to collect liquidated damages for the cost of delay, in accordance with the General Conditions of the Contract and as defined in the Contract Documents.

CA - 5.00 CONTRACT SUM

The Owner shall pay to the Contractor for performance of the work encompassed by this Agreement, and the Contractor will accept as full compensation therefor the lump sum of:

See Attachment “A”
subject to adjustment as provided by the Contract Documents, to be paid by progress payments in cash or its equivalent in the manner provided for in the Contract Documents.

CA - 6.00 ACCEPTANCE AND FINAL PAYMENT

A.) Early Release of Retained Funds - Upon Substantial Completion the Contractor may apply for a partial or full release of retained funds. The Contractor, the Architect, and the Owner shall inspect the work covered by the portion of funds requested. When the work is found to be acceptable under the Agreement, including the satisfactory completion of all items covered by the request, the Architect shall promptly certify such to the Owner, over his own signature. The certification shall state that that portion of work provided for in this Agreement has been completed in accordance with the Contract Documents and is accepted by the Architect under the terms and conditions therefore. The Owner shall have the right to withhold 1) an amount equal to 200% of the value of labor and materials yet to be provided on the project as determined by the Owner and its authorized representative and 2) an amount equal to 200% of the value of any Chapter 573 claims currently on file at the time the request for release of retained funds is approved. The balance found to be due the Contractor, and noted in said certificate, shall be due and payable. Approval of the retained balance will be made by resolution of the Owner’ Board of Directors within thirty (30) days, unless otherwise agreed to by the parties..

B) Final Payment of Retained Funds - Upon receipt of written notice that the work is ready for final inspection and acceptance, the Contractor, the Architect, and the Owner shall inspect the work. When the work is found to be acceptable under the Agreement, and the Agreement fully performed, including the satisfactory completion of all punch list items, the Architect shall promptly certify such to the Owner, over his own signature. The certification shall state that the work provided for in this Agreement has been completed in accordance with the Contract Documents and is accepted by the Architect under the terms and conditions therefor. The entire balance found to be due the Contractor, and noted in said final certificate, shall be due and payable. Before issuance of the Owner’s Letter of Acceptance, the Contractor shall submit evidence satisfactory to the Owner that all payrolls, material bills, and other indebtedness connected with the work has been or will promptly be paid.

CA - 7.00 REPRESENTATIONS

The Contractor shall not extend the credit or faith of the Owner to any other persons or organizations.

CA - 8.00 ASSIGNMENT

The Contractor shall not assign all of his rights or obligations under this Agreement without the express written consent of the Owner. Upon any assignment even though consented to by the Owner, the Contractor shall remain liable for the performance of the work under this Agreement.

CA - 9.00 PARTIAL INVALIDITY

If any provisions of this Agreement are in violation of any statute or rule of law of the State of Iowa, then such provisions shall be deemed null and void to the extent that they may be in violation of law without invalidating the remaining provisions hereof.

CA - 10.00 WAIVER

No waiver of any breach of any one of the agreements, terms conditions or covenants of this Agreement by the Owner shall be deemed or imply or constitute a waiver of any other agreement, term, condition or covenant of this Agreement. The failure of the Owner to insist on strict performance of any
agreement, term, condition or covenant, herein set forth, shall not constitute, or be construed as a waiver of the Owner’s rights thereafter to enforce any other default; neither shall such failure to insist upon strict performance be deemed sufficient grounds to enable the Contractor to forego or subvert or otherwise disregard any other agreement, term, condition or covenant of this Agreement.

CA - 11.00 ENTIRE AGREEMENT

The within Agreement, together with the Contract Documents as defined in Article 2.00 herein, constitute the entire agreement of the parties hereto. No modification, change, or alteration of the within Agreement shall be of any legal force or effect unless in writing, signed by all the parties hereto.

CA - 12.00 COUNTERPARTS

This Agreement may be executed in several counterparts and each such counterpart shall be deemed an original.

CA - 13.00 GOVERNING LAW

Venue for any and all legal actions regarding or arising out of the transaction covered herein shall be solely in the District Court in and for Polk County, State of Iowa. This transaction shall be governed by the laws of the state of Iowa.

CA - 14.00 ATTORNEYS' FEES

In the event it becomes necessary for either party to enforce any provisions or breach of this Agreement by commencing litigation, the prevailing party in such action shall be entitled to collect, as part of any judgment entered, its reasonable expert witness and attorneys’ fees and costs.

CA - 15.00 NOTICES

All notices, requests, demands and other communications given or to be given under this Agreement shall be in writing. They shall be deemed to have been duly given when served if served personally, or on the second day after mailing if mailed by first class mail, registered or certified, postage prepaid, and properly addressed to the party to whom notice is to be given as set forth below.

If to Owner: DMPS Executive Director of Operations

If to Contractor, then to the individual at the address set forth in the signature block below.

Either party may change its address for purposes of notice by giving written notice to the other party in accordance with this paragraph.

CA - 16.00 BONDS

The Contractor shall furnish both a performance bond and a payment bond and shall pay the premium thereon. The performance bond shall guarantee the full performance of the contract.

CA – 17.00 DESIGNATED REPRESENTATIVE

The OWNER will designate a District representative who will be its authorized representative with the CONTRACTOR under this AGREEMENT.
IN WITNESS WHEREOF, the parties have executed this Agreement on the day and year first above written, and shall extend to and bind the parties, their successors, assigns and personal representatives.

DES MOINES INDEPENDENT
COMMUNITY SCHOOL DISTRICT

By: ________________________________    ATTEST: ________________________________
President, Board of Directors    Secretary, Board of Directors

________________________________________
Contractor Firm & Address:

________________________________________
Contractor Signature
As recorded in the meeting minutes of the Board of Directors held on ______________, the following is a description of the base bid and alternates proposed by ____________________ and accepted by the Board of Directors:

**Base Bid:**

**Alternate**

(Contractor Name). bid:

**Base Bid:** $

**Total Contract Amount:** $
1.1 BONDS

A. The Owner shall require the Bidder to whom a Contract is awarded to furnish both Performance and Labor and Material Payment bonds in the amount of one hundred percent (100%), of the Contract price. Bonds shall cover the faithful performance of the Contract and the payment of all obligations arising thereunder. The Bidder will further provide warranties as required by the specifications or General Conditions.

B. The bonds shall be executed on the forms included with the Contract Documents (forms shall not be removed from the Contract Documents; Bidders shall obtain original copies of the bond forms from the Owner’s Representative). Accompanying each bond form shall be a “Power of Attorney” authorizing the attorney in fact to bind the surety company and certified to include the date of the bond.

C. Performance Bond shall be in the amount of one hundred percent (100%) of the total amount of work covered by this contract. It shall guarantee the faithful performance of the Contractor or manufacturer; and it shall insure the District during the work required by any Contract and for a period of one (1) year from the date of final acceptance of the work, against faulty or improper materials and/or workmanship that may be discovered during that time. If required, warranties extending beyond one year, such as for roofing, shall be as specified in the individual specification sections.

D. Payment Bond shall be in the amount of one hundred percent (100%) of the total amount of work covered by this contract; and shall be in accordance with the law of the State of Iowa to secure the payment of all claims for labor and materials used or consumed in the performance of this Contract.

E. Payment Bonds and Performance Bonds shall include:
   1. Full name and address of Contractor, Surety and Owner
   2. The Contract Date
   3. The exact amount of the Contract
   4. Signature of Contractor
   5. Corporate Seal if applicable
   6. Notarization of Contractor and Surety
   7. Power of Attorney
   8. Local contact for Surety, with name, phone number, and address to which legal notices may be sent.

1.2 BOND COSTS IN BIDS

A. Include all costs for Payment Bonds or Performance Bonds in the bid amounts.

END OF DOCUMENT
LABOR AND MATERIAL PAYMENT BOND

Bond No. _____________

(This Bond is issued simultaneously with a Performance Bond in favor of the Owner conditioned on the full and timely performance of the Contract.)

KNOW ALL MEN BY THESE PRESENTS that _______________ as Principal (the “Principal”), _______________, a corporation organized and existing under the laws of the State of _______________, and authorized to transact business in the State of Iowa, as Surety (the “Surety”), jointly and severally bind themselves, their heirs, personal representatives, successors, and assigns, to the DES MOINES INDEPENDENT COMMUNITY SCHOOL DISTRICT, 2100 Fleur Drive, Des Moines, Iowa 50321, as Obligee (the “Owner”), for the use and benefit of it and the claimants as defined below, in the principal amount of _______________ ($___________) as adjusted by approved change orders (not to exceed 10 percent of the principal amount of this Bond unless expressly approved by the Surety, which approval shall not be unreasonably withheld) and interest as provided by law, for the payment of all amounts which become due under the Contract described below.

The Principal and the Owner have entered into a written Construction Agreement dated ________________, 2021, together with related “Contract Documents” as defined therein (all of which are collectively referred to as the “Contract” and incorporated herein by this reference), for the following Project:

______________________________________________________________________________
______________________________________________________________________________

The condition of this obligation is such that, if the Principal shall at all times promptly make payment of all amounts, claims, or demands lawfully due to all persons, firms, associations, or corporations supplying or furnishing to the Principal or its subcontractors labor or materials, supplies, or equipment which are used, provided, or performed in the prosecution of the work provided for in the Contract and any and all duly authorized modifications of the Contract that may hereafter be made, then this obligation shall be null and void; otherwise, the Surety shall pay the full value of all such claims or demands and shall indemnify and hold the Owner harmless from all payments which the Owner may be required to make under the Contract or applicable law in excess of the Contract price not exceeding the amount of this obligation, together with interest as provided by law, as well as attorneys’ fees and costs incurred by the Owner in the resolution of any claim. All such subcontractors, laborers, and materialmen shall have rights under the within Bond as are set forth in the statutes and laws of the State of Iowa.

Further, each and every claimant, who institutes a lawsuit for compensation or payment under the terms payment under the terms hereof, as part of any court award, shall be entitled to reasonable attorneys’ fees and costs.

The undersigned Surety for value received hereby agrees that no extension of time, change in, addition to, or other modification of the terms of the Contract or work to be performed thereunder, or of the specifications, or of the Contract Documents, shall in any way affect its obligation on this Bond and the Surety hereby waives notice of any such extension of time, change, addition, or modification.
Any notice which any party desires or is required to provide another shall be in writing and shall be effective upon receipt when delivered or transmitted by personal delivery, certified (return receipt) mail, or express mail service to the addresses set forth herein.

IN WITNESS WHEREOF, said Principal and Surety have executed this Bond, this _______ day of __________________, 2021.

ATTEST:

Principal

By:_______________________________________

Address:__________________________________

(S SEAL)

__________________________________________

ATTEST:

(Surety)

By:_______________________________________

Address:__________________________________

(SEAL)

__________________________________________

Claims Telephone Number: ___________________

Claims Fax Number:_________________________

The fully executed Bond form must be accompanied by a current Power of Attorney.

END OF DOCUMENT
KNOW ALL MEN BY THESE PRESENTS That _________________, a corporation organized and existing under the laws of the State of ____________________________, and authorized to transact business in the State of Iowa, as Surety (the “Surety”), jointly and severally, bind themselves, their heirs, personal representatives, successors, and assigns to the DES MOINES INDEPENDENT COMMUNITY SCHOOL DISTRICT, 2100 Fleur Drive, Des Moines, Iowa 50321, as Obligee (the “Owner”), in the principal amount of ____________________________ ($_________ ________________) as adjusted by approved change orders (not to exceed 10 percent of the principal amount of this Bond unless expressly approved by the Surety, which approval shall not be unreasonably withheld) and interest as provided by law (collectively referred to herein as the “Penal Sum”), for the performance of the Construction Agreement between the Principal and the Owner, dated _________________, 2021, for the following (Project):

______________________________________________________________________________

______________________________________________________________________________

together with the obligations of the Contract Documents, as defined in the Construction Agreement, all of which documents are collectively referred to herein as the "Contract" and are incorporated by this reference.

The condition of this obligation is such that, if the Principal shall at all times duly, promptly, and properly perform all the terms and conditions of the Contract and any authorized modifications thereof during the original term of the Contract, any extensions thereof that may be granted by the Owner, and during the term of any guarantee or warranty required under the Contract, the Principal and Surety shall have no obligation under this Bond, otherwise it shall remain in full force and effect.

The Surety for value received agrees that no extension of time, change in, addition to, or other alteration or modification of the terms of the Contract or work to be performed thereunder, or any other forbearance on the part of either the Owner or the Principal to the other shall in any way release or affect the Surety's liability or obligation on this Bond, and the Surety hereby waives notice of any such extension of time, change, addition, modification, alteration, or forbearance.

Whenever the Owner terminates the Contract in accordance with the terms thereof, the Surety shall, within fifteen (15) calendar days after written notice of such termination, notify the Owner in writing of its election to complete the Contract in accordance with its terms, or notify the Owner that the Surety elects not to complete the Contract. If the Surety fails to give the written notice so required within such fifteen (15) calendar day period, then it will be deemed to have elected not to complete the Contract. Should the Surety elect to complete the Contract, then it shall, within fifteen (15) additional calendar days following written notice of such election, obtain a contractor, subject to approval by the Owner in writing, to complete the original Contract in accordance with its terms and conditions and thereafter proceed with the work with due diligence and make available as the work progresses sufficient funds to pay the cost of completion less the balance of the Contract price. The Surety may not engage the Principal to complete the Contract, without the prior written consent of the Owner, which consent may be withheld in the
Owner's sole discretion. If the Surety elects to complete the Contract, then it shall be entitled to receive the balance of the Contract price, less (i) any amounts paid by the Owner to the Principal; (ii) costs incurred by the Owner in correcting any defective work; (iii) any additional legal, design professional, and other costs incurred by the Owner resulting from the Principal's default; and (iv) liquidated damages caused by delayed performance or nonperformance of the Principal. Any progress payments, less retainage, due but not paid at the date of termination shall be paid to the Surety so long as the Surety has agreed to indemnify the Owner for the amount thereof and no other claims have been made to such funds by subcontractors or suppliers in accordance with the Contract or applicable law.

In the event the Surety elects not to complete the Contract, the Owner may then have the work completed by such means and in such manner, by contract with or without public bidding, or otherwise, as it may deem advisable. The Surety in such event shall at all times make available, as work progresses under the Contract between the Owner and its new contractor, sufficient funds, not to exceed the Penal Sum, to pay the cost of the completion of the Contract pursuant to its terms, together with the other amounts set forth in (i) through (iv) above, but in no event shall the Surety be responsible for the payment of any sums to the Owner until the Owner has paid in full its total obligation under the terms of the original Contract, plus change orders, less deductions and claims chargeable by law or by the Contract, if any, and less the retainage which will be disbursed as provided by the Contract Documents and applicable law.

The procedures set forth herein shall apply should there be a default and termination or a succession of defaults and terminations in fulfilling the terms and conditions of the work under the original Contract.

In the event there are negotiations between the Principal and/or the Surety and the Owner subsequent to the date of termination, each party shall appoint an authorized representative with authority to represent it during the negotiations. All written communications and official discussions between the parties shall be conducted by these authorized representatives. Any notice which any party desires or is required to provide another shall be in writing and shall be effective upon receipt when delivered or transmitted by personal delivery, certified (return receipt) mail, or express mail service to the addresses set forth herein.

Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work is located and shall be instituted before the expiration of three (3) years from the date on which final payment under the contract is made; provided, however, that this period may be extended by one (1) additional year by the Owner's giving written notice to the Surety within the three (3) year period of a potential claim. Any judgment recovered hereunder by the Owner shall include interest at the legal rate, together with reasonable attorneys' fees and costs.
LINCOLN ROUNDHOUSE CHILLER REPLACEMENT

No right action shall accrue under this Bond to or for the use of any person or entity other than the Owner or its successors and assigns.

IN WITNESS WHEREOF, the Principal and Surety have signed this Performance Bond as of the __________ day of _________________, 2021.

ATTEST:  

Principal  
By:  
Address:  

(SEAL) 

ATTEST:  

(Surety)  
By:  
Address  

(SEAL)  

Claims Telephone Number:  
Claims Fax Number:  

The fully executed bond form must be accompanied by a current Power of Attorney.

END OF DOCUMENT
1.1 INSURANCE CERTIFICATES
   A. Each Contractor shall provide insurance certificates to the Owner indicating that all required insurance coverage is in force prior to beginning work on the project.
   B. Use a standard Insurance Certificate Form such as the "Acord" Form available from your insurance agent. Also include the Owner, the Architect, and their agents, representatives and employees to be added to the original certificate as additional named insurers.

1.2 CONTRACTOR'S LIABILITY INSURANCE
   A. The Contractor shall purchase and maintain liability insurance to protect the Owner and the Architect, and their agents, representatives and employees from claims set forth below which may arise out of or result from the Contractor’s operations under the contract whether such operations be by himself or by any subcontractor or by anyone directly or indirectly employed by any of them or by anyone for whose acts any of them may be liable. The insurance required shall include contractual liability insurance applicable to the Contractor’s obligations. Insurance requirements are set forth in the General Conditions, Paragraph GC-25.00.
   B. The insurance required shall be primary and non-contributory to any insurance possessed or procured by the Owner and limits of liability shall be not less than those set forth.
   C. Certificates of insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the work.

1.3 PROPERTY INSURANCE
   A. The Owner will provide property insurance for losses and damages in excess of $100,000.00 in accordance with the General Conditions, Paragraph 25.03 of the contract documents. The contractor shall be responsible for and pay all losses and damages under $100,000.00.
   B. The Owner will provide an endorsement listing the Architect as additional insured under all such policies of insurance.

END OF DOCUMENT
# GENERAL CONDITIONS OF THE CONTRACT

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</table>
The Work shall be accomplished in accordance with the Contract Documents which shall be included in this Contract and shall consist of the Invitation to Bid, Instructions to Bidders, Bid Security, Proposal, Notice of Contract Award, Insurance Policies and Certificates, Notice to Proceed, Performance Bond, Labor and Material Payment Bond, Construction Agreement, the General Conditions of the Contract, Supplementary General Conditions, drawings and specifications, tests and engineering data, approved change orders, Contractor’s Requests for Payment, Architect’s Certificates, and all addenda issued by the Owner or Architect prior to the awarding of the Contract.

2.00 DEFINITIONS

Words, phrases, and other expressions used in these Contract Documents shall have meanings as follows:

2.01 “Contract” or “Contract Documents” shall include the items enumerated above under CONTRACT DOCUMENTS.

2.02 “Owner” shall mean the Des Moines Independent Community School District, named and designated as such in the Contract Documents acting through its duly authorized representatives.

2.03 “Contractor” shall mean the corporation, company, partnership, firm, entity, or individual named and designated as such in the Contract Documents which has entered directly into this Contract with the Owner for the performance of the Work covered thereby, and any persons or entities acting on its behalf.

2.04 “Subcontractor” shall mean and refer to a corporation, partnership, entity, or individual having a direct contract with the Contractor or another subcontractor for performing work and/or furnishing labor or material which is incorporated into the Work at the request of the Contractor or other subcontractor.

2.05 “Architect” shall mean the architects or engineers designated, appointed, or otherwise employed or delegated by the Owner, or its duly authorized representatives, acting within the scope of the particular duties entrusted to them in each case.

2.06 "Owner’s Representative" shall mean the person(s) designated by the District, acting within the scope of the particular duties entrusted to them, to provide services toward the management and implementation of the Work as the Owner’s designated representative.

2.07 “Notice to Proceed” shall be deemed to have been duly served if made in writing and delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if sent by registered or certified mail to the last known business address.

2.08 “The Work” shall mean the equipment, supplies, materials, labor, and services to be furnished under the Contract and the carrying out of all obligations imposed or required by the Contract Documents.

2.09 “The Project” is the total construction designed by the Architect of which the work performed under the Contract Documents may be the whole or a part.
All time limits stated in the Contract Documents are of the essence of the Contract and must be strictly adhered to.

The Contract shall be governed by the laws of the State of Iowa.

The date of Final Completion of a Project is the date when construction is certified by the Architect to be finally completed in accordance with Contract Documents, as modified by any change orders agreed to by the parties and when the Owner has fully accepted the Project for the use for which it was intended. Such date will be set forth on a Letter of Final Acceptance issued by the Owner.

“Drawings” or “plans” shall mean all (a) graphic and pictorial portions of the Contract furnished by the Owner and/or Architect as a basis for the award of Contract; (b) supplementary drawings furnished by the Owner and/or Architect to clarify and to define in greater detail the intent of the Contract drawings and specifications; (c) drawings furnished by the Owner to the Contractor during the progress of the Work; and (d) engineering data and drawings submitted by the Contractor during the progress of the Work, provided such drawings are acceptable to the Architect.

“Specifications” are the written technical information concerning materials, components, systems, and equipment as indicated on the drawings or plans and which state the quality, performance, characteristics, and installations to be achieved by application of construction methods.

“Substantial Completion” is:

2.15.1 Established date on which the Work or designated portions thereof has been sufficiently completed in accordance with the Contract Documents so as permit the Owner to safely and legally occupy or utilize the Work for its intended use, subject only to minor punch list items the absence of completion which does not interfere with the Owner’s intended use of the Project.

2.15.2 as defined in Iowa Code Chapter 26 for purposes of early release of retainage only.

It is understood and agreed that the written terms and provisions of the Contract Documents shall supersede all oral statements of representatives of the Owner, and oral statements shall not be effective or be construed as being a part of this Contract.

Reference to the standards of any technical society, organization, or association, or to codes of local or state authorities, shall mean the latest standard, code, specification, or tentative standard adopted and published at the date of the Contract Documents unless specifically stated otherwise.

Unless otherwise specifically provided herein, the Contractor shall accept the compensation stated in the Construction Agreement as full payment for furnishing all materials, transportation, apparatus, temporary structures, equipment, services, fuel, energy, light, water, labor, tools and all risks and losses of
Every kind and description connected with the prosecution of the Work, and all other things necessary for the complete and proper execution of the Work contemplated by or reasonably implied from the Contract Documents, within the time limits indicated therein.

GC – 6.00 EXECUTION, CORRELATION, INTENT, AND INTERPRETATION OF CONTRACT DOCUMENTS AND COMPLETION DATE

6.01 Execution. The Contract Documents shall be signed in multiple copies as directed by the Owner. Within ten (10) days of Notice of Contract Award, the Contractor shall submit to the Owner a minimum of five (5) fully executed original sets of the Construction Agreement; Performance Bond and Labor and Material Payment Bond with original Power of Attorney; and certificates of required insurance coverages. The date of the Contract for purposes of these documents shall be the date of the Notice of Contract Award letter. The Owner will execute the Construction Agreement, assemble all copies, and distribute the Contract Documents. The Contractor shall not commence the Work until he receives the Notice to Proceed.

6.02 Correlation. By submitting the bid, the Contractor represents that he has visited the site, familiarized himself with the local conditions under which the Work is to be performed, and correlated his observations with the requirements of the Contract Documents.

6.03 Intent. The intention of the Contract Documents is to include all labor and materials, tools, equipment, construction equipment, water, heat, utilities, transportation, and other facilities and services necessary for the proper execution and completion of the Work. Materials or work described in words which as applied have a well-known technical or trade meaning shall be held to refer to such recognized standards.

The organization of the specifications into divisions, sections, and articles, as the case may be, and the arrangement of drawings shall not control the Contractor in dividing the work among subcontractors or in establishing the extent of work to be performed by any trade.

It is intended that even though Work is not covered under any heading, division, section, article, branch, class, or trade of the specifications, it shall nevertheless be supplied if it is required elsewhere in the Contract Documents or is reasonably inferable there from as being necessary to produce the intended results.

The specifications and drawings are intended to supplement but not necessarily duplicate each other. Any work exhibited in one and not the other shall be executed as if it had been set forth in both, so that the Work will be constructed according to the complete design.

6.04 Interpretation. Should anything necessary for a clear understanding of the Work be omitted from the specifications and drawings, or should the requirements appear to be in conflict, the Contractor shall secure written interpretations or instructions from the Architect before proceeding with the Work affected thereby. It is understood and agreed that the Work shall be performed according to the true intent of the Contract Documents.
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Where a conflict occurs between or within standards, specifications, and drawings, the more stringent or higher quality requirements shall apply. The precedence of the Construction Documents is in the following sequence:

1. Addenda to the drawings and specifications take precedence over the original Construction Documents.
2. Specifications take precedence over drawings, except in cases of error.
3. In the drawings, the precedence shall be drawings of larger scale over those of smaller scale and noted materials over graphic indications.
4. Any work mentioned in the specifications and not shown on the drawings or shown on the drawings and not mentioned in the specifications shall be of like effect as if shown or mentioned in both. The Contractor shall examine the specifications and drawings and check all dimensions and notify the Architect and the Owner of any discrepancies between the specifications and drawings and any deficiencies, omissions, or errors before any work is commenced.

6.05 All work on the Project shall be finally completed within the times indicated in the construction documents.

GC - 7.00 DRAWINGS AND SPECIFICATIONS

7.01 Copies Furnished. Unless otherwise provided in the Contract Documents, the Contractor will be furnished, free of charge, all copies of drawings and specifications and addenda reasonably necessary for the execution of the Work.

7.02 Ownership of Drawings. All drawings, specifications, and copies thereof furnished by the Architect are the property of the Owner, whether the work for which they are made is executed or not and are not to be used on other work except by written agreement with the Owner.

7.03 Drawings and Specifications Available on the Site. The Contractor shall maintain at the site for the Owner and the Architect one copy of all drawings, specifications, addenda, approved shop drawings, change orders, and other modifications, in good order and marked to record all changes made during construction. The Contractor shall also keep on the site all applicable standards, codes, manufacturer’s or other specifications referenced in the Contract Documents. The drawings, marked to record all changes made during construction, shall be delivered to the Architect for the Owner upon completion of the Work.

7.04 Figured Dimensions to Govern. Dimensions and elevations shown on the drawings shall be accurately followed. Where dimensions are not indicated, Contractor shall immediately request clarification from the Architect so as not to delay the Work and Contractor shall not proceed with such work until the necessary dimensions have been obtained from the Architect.

7.05 Contractor to Check Drawings and Schedules. The Contractor shall check all dimensions, elevations, and quantities shown on the drawings and furnished by the Architect, and shall
notify the Architect in a timely manner of any discrepancy between the drawings and the conditions on the ground, or any error or omission in drawings, or in the layout as given by stakes, points, or instructions, which he may discover. Before ordering any material or doing any work, the Contractor shall verify all measurements at the building and shall be responsible for the correctness of same. No extra charge or compensation will be allowed on account of difference between actual dimensions and measurements taken in the field. Any difference which may be found shall be submitted to the Architect in a timely manner for consideration before proceeding with the Work. The Contractor will not be allowed to take advantage of any error or omission in the drawings or Contract Documents. Full instructions will be furnished by the Architect should such error or omission be discovered and the Contractor shall carry out such instructions as if originally specified.

7.06 Detail Drawings and Instructions. Upon the contractor’s written report, the Architect shall furnish, within 10 working days, additional instructions by means of drawings or otherwise, necessary for the proper execution of the Work. All such drawings and instructions shall be consistent with the Contract Documents, true developments thereof, and reasonably inferable therefrom. The Work shall be executed in conformity therewith, and the Contractor shall do no work without proper drawings and instructions.

7.07 Project Record Drawings. The Contractor shall maintain a Contract set of drawings at the site with all changes or deviations from the original drawings neatly marked thereon in a contrasting color. The Contractor shall also maintain a Contract set of specifications at the site, noting therein by appropriate section, the names, models, and other distinguishing characteristics of the products actually incorporated into the Work. This set of drawings and specifications shall be updated daily as the job progresses and shall be made available to the Owner and Architect for inspection at all times. Upon completion of the Work and before final payment, this Project Record set of drawings and specifications shall be delivered to the Architect.

7.08 Contractors’ Review of Drawings, Plans and Specifications. Contractor’s review of drawings, plans and specifications developed by the Architect and/or the Design Team under this Agreement shall be made in Contractor’s capacity as a contractor and not as a licensed design professional.
8.01 **Shop Drawings.** Shop drawings are drawings, diagrams, illustrations, schedules, performance charts, brochures, manufacturer’s literature, product data, and any other information which are prepared by the Contractor or any subcontractor, manufacturer, supplier, or distributor, and which illustrate some portion of the Work. Said drawings will be submitted in a format agreeable to the Owner and Owner’s Representative.

8.02 **Samples.** Samples are physical examples furnished by the Contractor to illustrate materials, finishes, equipment, or workmanship, and to establish standards by which the Work will be judged.

8.03 **Subcontractor.** The Contractor shall require each subcontractor to prepare, stamp with approval, and submit to the Contractor with reasonable promptness and in orderly sequence so as to cause no delay in the Work or in the work of any other subcontractor, all shop drawings and samples on all shop fabricated items and on all matters, required by the Contract Documents or subsequently by the Architect as covered by modifications. Shop drawings and samples will properly identify specified items. At the time of submission, the subcontractor shall inform the Contractor, the Architect and the Owner’s Representative in writing of any deviation in the shop drawings or samples from the requirements of the Contract Documents. Substitutions will be allowed only in accordance with the provisions of Section 36.00 hereinafter.

The Contractor shall also require each subcontractor to prepare and transmit sufficient sets of sepia transparencies, reverse printed, and prints of all shop drawings which are specially drawn for this Project, including detailed fabrication and erection drawings, setting drawings, diagrammatic drawings, material schedules, and samples to the Contractor to meet the Project construction schedule and the subcontractors’ Contract schedule, or shall present, in writing, valid reasons for any delay. Sepias shall not be folded, but shall be rolled and transmitted in a tube suitable for mailing.

All shop drawings for all equipment and/or materials in a given system shall be submitted at one time, each complete set in a separate brochure. Complete maintenance/warranty data are to be submitted to the Contractor for distribution to the Owner’s Representative for review by the Architect and final acceptance by the Owner.

Each sheet of shop drawings shall identify the Project, subcontractor, and fabricator or manufacturer and the date of the drawings. All shop drawings shall be numbered in sequence and each sheet shall indicate the total number of sheets in the set.

The shop drawings shall indicate types, gauges, and finish of all materials. Where a shop coat of paint is required, its brand name, manufacturer’s identification number, and type shall be indicated. Sufficient data in each set of shop drawings shall be included to permit a detailed study of the system submitted and its conformance to the Contract Documents and design intent.

The Contractor will review, approve, stamp, and then submit the sepia transparencies, prints, and samples to the Owner’s Representative and Architect for approval with copies.
8.04 **Verification.** By approving and submitting shop drawings and samples, the Contractor thereby represents that it has determined and verified all field measurements, field construction criteria, dimensions, elevations, quantities, materials, catalog numbers, and similar data, as shown on the drawings and specifications furnished by the Architect and that he has checked and coordinated each shop drawing and sample with the requirements of the Work and of the Contract Documents.

8.05 **Architect Review.** The Architect will review and approve shop drawings and samples with reasonable promptness so as to cause no delay, but only for conformance with the design concept of the Project and with the information given in the Contract Documents. The Architect’s approval of a separate item shall not indicate approval of an assembly in which the item functions. On the completion of the Work, the Owner’s Representative shall be furnished three corrected copies of all shop or setting drawings showing the as-built condition of the Work. The Owner’s Representative, after the Architect’s review, will furnish one of these copies to the Owner. **Architect will keep one copy.**

8.06 **Corrections.** The Contractor shall make any corrections required by the Architect and shall resubmit the required number of corrected copies of shop drawings or new samples until approved. The Contractor shall direct specific attention in writing or on resubmitted shop drawings to revisions other than the corrections requested by the Architect on previous submissions.

8.07 **Contractor’s Responsibility.** The Architect’s approval of shop drawings or samples shall not relieve the Contractor of responsibility for any deviation from the requirements of the Contract Documents unless the Contractor has informed the Architect in writing in a separate letter attached to the submittal of such deviation at the time of submittal and the Architect has given written approval to the specific deviation, nor shall the Architect’s approval relieve the Contractor from responsibility for errors or omissions in the shop drawings or samples.

8.08 **Architect Approval Required.** No portion of the Work requiring the submission of a shop drawing or sample shall be commenced until such submittal has been approved by the Architect. All such portions of the Work shall be in accordance with approved shop drawings and samples. All material finishes and samples will be approved at one time. The Contractor shall submit all items requiring approval of finishes, color, material, etc., with sufficient lead time to allow simultaneous consideration and preparation of complete finish Color Schedule. No approvals of single items will be considered.

GC - 9.00 MATERIALS, LABOR, FACILITIES, AND STORAGE
9.01 Contractor’s Responsibility. Unless otherwise stipulated, the Contractor shall provide and pay for all materials, labor, tools, equipment, machinery, transportation, and other facilities necessary for the proper execution and completion of the Work. The Contractor shall provide and pay for all the temporary facilities required to supply all the power, light, water, and heat needed by him and the subcontractors for their work and shall install and maintain all such facilities in such manner as to protect the public and workers and conform with any applicable laws and regulations. If temporary heat and/or protection is required for the expeditious prosecution of the Work and before the permanent heating apparatus is available for use, the temporary heating apparatus shall be installed and operated in such a manner that the finish work and/or construction will not be damaged thereby.

Unless otherwise specified, the Contractor shall pay for all the power, light, and water used by him and the subcontractors, without regard to whether such items are metered by temporary or permanent meters. The cutoff date on permanent meters shall be either the agreed date of full occupancy by the Owner or the date of final acceptance of the Project, whichever shall be the earlier date. Upon completion of the Work, the Contractor shall remove all such temporary facilities from the site.

9.02 Materials. Unless otherwise specified, all materials shall be new and both workmanship and materials shall be of the highest quality. The Contractor shall furnish satisfactory evidence as to the kind and quality of materials. Samples shall be furnished, when specified, and the work shall be in accordance with those samples which have been approved.

9.03 Facilities and Storage. The Contractor shall provide and maintain, in a neat and sanitary condition, adequate temporary toilet facilities for the use of any and all employees engaged on the Work, in strict compliance with the requirements of all applicable codes, regulations, laws, and ordinances. In no event may present toilet facilities of any existing building at the site of the Work be used by employees of the Contractor or subcontractors. Upon completion of the Work, he shall remove all such temporary facilities from the site and disinfect the premises.

The Contractor shall provide suitable temporary facilities and quarters for workmen and shall maintain on premises water-tight storage shed or sheds, tool houses for storage of building materials and tools which may be damaged by weather. The Contractor shall allow space for the erection of sheds and provide similar facilities for storage by subcontractors of their materials and tools. Storage of materials shall be confined to the site. These facilities or quarters shall further provide for protection against theft and damage of building materials and tools. Upon completion of the Work, the Contractor shall remove all such temporary facilities from the site.

The Contractor shall provide adequate, weatherproofed, heated, and well-lighted office space at the site of the Work, for the use of the Architect, Owner’s Representative, and the Owner. The Contractor shall also provide telephone service at such office, which shall be available for the use of the Architect, Owner’s Representative, and the Owner, without
charge, except for toll calls. Requirements of the office space are as listed in Section 01500 paragraph 1.26.

All of the foregoing facilities shall be of a quality and placed in locations acceptable to the Owner and Owner’s Representative.

9.04 Salvage of Materials. Owner reserves the right to salvage any and all materials, equipment, furnishings, and other elements to be removed from the site regardless if such removal is indicated in the plans, specifications, drawings or other Contract Documents.

GC - 10.00 EMPLOYEES

10.00A Qualifications. The Contractor and his subcontractors shall at all times enforce strict discipline and good order among his employees, and shall not employ on the Work any person considered by the Architect, Owner or Owner’s Representative to be unfit or not skilled in the work assigned. The Contractor shall also keep its employees and those of its subcontractor from socializing upon the site of the Work after normal work hours and from fraternizing at any time with staff, students, parents, and other persons who are at the school or the site of the Work.

10.00B No Contractor shall allow any of its employees listed on the Iowa Sex Offender Registry to perform work on District Projects. The District has interpreted an "unfit employee" for purposes of this Contract to be any employee currently listed on the Iowa Sex Offender Registry. The Contractor shall fill out and sign the “Acknowledgement and Certification” form located behind this section prior to executing the Agreement.

10.00C Employee background checks are the responsibility of the Contractor and his subcontractors.

10.01 Drug-Free Zone. The Des Moines Independent Community School District is a drug-free zone. In furtherance of this standard, the Contractor shall establish and maintain a safe and efficient work environment for all employees, free from the effects of alcohol, controlled substances, and illicit drugs. The manufacture, distribution, dispensing, possession, or use of alcohol, controlled substances, and illicit drugs is prohibited on or adjacent to the Project site and all of the Owner's property at all times. Illicit drug use is the use of illegal drugs and the abuse of alcohol and other drugs, including anabolic steroids. Controlled substances are drugs specifically identified and regulated under state or federal law and include, but are not limited to, opiates, narcotics, cocaine, amphetamines and other stimulants, depressants, hallucinogenic substances, and marijuana. The Contractor will strictly enforce this prohibition among his own employees and his subcontractors and their employees at all times. Employees who violate these prohibitions will be subject to disciplinary action by their employers up to and including termination and may be denied access to the site of the Work. Violation of this provision shall also constitute sufficient grounds for termination of the Contract or any subcontract without damages or penalty to the Owner.

10.02 No Smoking. Statwide smoking ban – Iowa Code Section 142D.3
LINCOLN ROUNDHOUSE CHILLER REPLACEMENT

1. Smoking now is prohibited in all areas of school buildings, including nonpublic schools, as well as all school grounds, parking lots, athletic fields, including inside any vehicle located on school grounds or school parking lots. No longer can a school designate a smoking area.

2. Smoking is prohibited inside all publicly owned vehicles, even if parked in a private drive.

3. Smoking is prohibited inside a private vehicle that is parked in a school parking lot.

   The Iowa Department of Public Health (DPH) is in charge of writing administrative rules for the enforcement of this new law. DPH states that it will also provide sample “no smoking” signs that schools may download for free.

4. In addition, the use of tobacco and nicotine products; including, but not limited to, cigarettes, nicotine chew, snus, dissolvables, electronic cigarettes, any electronic or other devices that can be used to deliver nicotine to the person inhaling from the device, any other look-alike products in which the original product would include tobacco and/or nicotine and/or other nicotine products that are not approved by the Federal Drug Administration for tobacco cessation; on District property; including in District buildings, on District grounds, in District transportation vehicles, or at any District activity; is prohibited.

10.03 Equal Opportunity Policy. Because it is the desire of the Des Moines Independent Community School District to encourage equal employment policies, all Contractors, including suppliers supplying goods or services to the School District, are expected to comply with the spirit of equal opportunity employment, as well as with the letter of all applicable statutes and regulations. Compliance shall require Contractor not to discriminate and, in addition, to take reasonable affirmative action to ensure that members of minority groups are effectively accorded equal employment opportunities.

10.04 Responsibility for Employees. The Contractor shall be responsible to the Owner for the acts and omissions of all its employees. The Contractor shall further be responsible for the acts and omissions of all subcontractors, their agents and employees, and all other persons acting on behalf of the Contractor or subcontractors as set forth herein.

GC - 11.00 ROYALTIES AND PATENTS The Contractor shall pay all royalties and license fees. The Contractor shall defend all suits or claims for infringement of any patent rights and shall hold the Owner harmless from loss on account thereof. If the Contractor has information that the process or article specified is an infringement of a patent, it shall be responsible for such loss unless it promptly gives such information to the Architect and Owner’s Representative.
**GC - 12.00  SURVEYS, PERMITS, LAWS, REGULATIONS, AND TAXES**

12.01 **Surveys.** The Contractor shall obtain from the Architect a copy of all surveys provided by the Owner describing property lines, elevation benchmarks, physical characteristics, and utility locations.

12.02 **Permits and Licenses.** General building permit will be secured and paid for by the Owner. Any other permits, governmental fees, and licenses necessary for the proper execution and completion of the Work shall be secured and paid for by the Contractor. Easements for permanent structures or permanent changes in existing facilities shall be secured, maintained and paid for by the Owner, unless otherwise specified. The Owner will negotiate and provide for all electrical, gas, water, and sewer mains for Contractor's connections. The Contractor is to arrange with the utility company for actual connection, make necessary connections, and pay for all inspection fees and permits in connection therewith as required by any governmental agency. In addition, the Contractor will furnish any material or items as required to complete all connections. The Contractor shall call for all required government inspections on a timely basis.

12.03 **Laws and Regulations.** The Contractor shall give all notices and comply with all laws, ordinances, rules, and regulations bearing on the conduct of the Work as drawn and specified. If the Contractor observes that the drawings and specifications are at variance therewith, it shall promptly notify the Architect and the Owner's Representative in writing and any necessary changes shall be adjusted as provided in the Contract for changes in the Work. If the Contractor performs any work knowing it to be contrary to such laws, ordinances, rules, and regulations, and without such notice to the Architect and the Owner's Representative, it shall bear all costs arising therefrom and to correct same.

12.04 **Taxes.** The Owner is exempt from sales and use taxes (Section 423.3(31) Code of Iowa). The Owner will provide exemption certificates to Contractors for materials to be incorporated into the Project.

The Contractor is subject to payment of Iowa income tax on income from this work in amounts prescribed by law. If the Contractor is a non-Iowa partnership, individual, association, or corporation, it shall furnish evidence prior to the execution of the Contract that bond or securities have been posted with the Iowa State Department of Revenue in the amount required by law.

**GC - 13.00  BENCHMARKS, MONUMENTS, STAKES, AND MEASUREMENTS**

13.01 **Benchmarks.** The Contractor shall properly stake out the Work and provide and rigidly set benchmarks and batter boards as necessary for the proper performance of the Work. The Contractor shall remain responsible for their maintenance and their accuracy. A permanent benchmark, approved as to location and type by the Architect, from which all grades are to be taken, shall be established near the site of the Work by the Contractor. From this benchmark the Contractor shall ascertain all grades and levels to the building as needed. The Contract Documents shall include all necessary information to establish the benchmark.
13.02 Preservation of Monuments and Stakes. The Contractor shall carefully preserve all monuments, benchmarks, property markers, reference points, and stakes. In case of his destruction thereof, the Contractor will be charged with the expense of replacement and shall be responsible for any mistake or loss of time that may be caused. Permanent monuments or benchmarks which must be removed or disturbed shall be protected until properly referenced for relocation. The Contractor shall furnish materials and assistance for the proper replacement of such monuments or benchmarks.

13.03 Measurements. Before ordering any material or performing any work, the Contractor shall verify all measurements at the Project and shall be responsible for the accuracy of same. No extra charge or compensation shall be allowed because of any difference between actual dimensions and the measurements indicated in the drawings or specifications. Any discrepancies shall be submitted to the Architect, Owner and Owner’s Representative for consideration before proceeding with the Work.

GC - 14.00 PROTECTION OF WORK AND PROPERTY

The Contractor shall take all necessary precautions for the safety of, and shall provide all necessary protection to prevent damage, injury, or loss to all employees on the Project and all other persons who may be affected thereby; all the Work and all materials and equipment to be incorporated therein, whether in storage on or off the site, under the care, custody, or control of the Contractor or any of its subcontractors; and other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

The Contractor shall comply with all applicable provisions of the Occupational Safety and Health Administration (OSHA) and all laws, ordinances, rules, regulations, and orders of any public authority having jurisdiction for the safety of persons or property or to protect them from damage, injury, or loss. It shall erect and maintain all necessary safeguards for the safety and protection of workmen, Owners, and users of adjacent facilities and the public and shall post danger signs and other warnings against hazards created by such features of construction as protruding nails, hoists, well holes, elevator shafts, hatchways, scaffolding, window openings, stairways, excavations, and falling materials; and shall designate a responsible member of his organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor’s superintendent unless otherwise designated in writing by the Contractor to the Owner’s Representative.

The Contractor is hereby notified that some or all of the buildings covered by this Construction Agreement may contain lead-based paint. Some or all of the buildings covered by this Construction Agreement may be considered "targeted housing" as that term is used by the United States Environmental Protection Agency ("EPA") and the Iowa Department of Public Health ("IDPH"). The scope of work described herein is not "lead abatement" as that term is used by the EPA and IDPH in that the activities included are not designed to permanently eliminate lead-based paint hazards, but are designed to repair, restore or remodel a structure even though the activities may incidentally result in a reduction or elimination of lead-based hazards.

The Contractor is solely and fully responsible for the compliance with all applicable law and regulations regarding lead-based paint, including but not limited to those of EPA, IDPH and OSHA.
The Contractor shall be liable for and shall promptly repair, remedy, indemnify, and pay for all damage or loss to any person or property caused in whole or in part by the Contractor, any subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable, except damage or loss proximately caused by faulty drawings or specifications, or to the acts or omissions of the Owner, Owner’s Representative, or Architect and not attributable to any fault or negligence of the Contractor.

In an emergency affecting the safety of life or of the Work or of adjoining property, the Contractor, without special instruction or authorization from the Owner’s Representative, Owner or Architect, is hereby permitted to act, at his discretion, to prevent such threatened loss or injury; and he shall so act, without appeal, if so authorized or instructed. Any compensation, claimed by the Contractor on account of emergency work, shall be determined by agreement. Notification of and report of such emergencies shall be made immediately to the Owner’s Representative, Owner and Architect.

**GC - 15.00 ACCESS TO WORK**

15.01 **Access.** The Architect, Owner’s Representative, Owner, and their representatives shall at all times have access to the Work wherever it is in preparation or progress, and the Contractor shall provide proper facilities for such access so that the Architect and Owner’s Representative may perform their functions under the Contract Documents.

15.02 ** Inspection.** If the specifications, the Architect’s instructions, laws, ordinances, or any public authority require any work to be specially tested or approved, the Contractor shall give the Architect and Owner’s Representative timely notice of its readiness for checking by the Architect or inspection by another authority, and if the inspection is by another authority, of the date fixed for such inspection. All required certificates of inspection shall be secured by the Contractor. If any work should be covered up without approval or consent of the Architect, it must, if required by the Architect, be uncovered for examination at the Contractor’s expense.

Re-examination of questioned work may be ordered by the Owner through the Owner’s Representative, and if so ordered, the work must be uncovered by the Contractor. If work is found to be in accordance with the Contract Documents, the Owner shall pay the cost of re-examination and replacement. If such work is found not to be in accordance with the Contract Documents, the Contractor shall pay such cost.

15.03 **Testing.** Materials incorporated into the Project will be subject to routine tests as required to ensure their compliance with the specifications. Such tests may include, but shall not necessarily be restricted to, the following: Concrete: primary mix design, slump tests, cylinder compressions tests, and air entrainment tests; Steel: tensile tests; Welds: field inspection and x-ray examination; Soils: sub-soil investigation, physical analysis, and compaction tests; Asphalt pavement: physical analysis and compaction tests; and Roofing-Samples cut from in-place built-up roof.

Any other basic materials for which standard laboratory test procedures have been established may also be included if doubt as to their quality should arise.
Any testing of the above nature will be done at the discretion of the Owner who will bear all costs, unless otherwise provided in the Contract Documents. The Contractor shall be held responsible for providing samples of sufficient size for test purposes and for cooperating with the Owner or his representative in obtaining and preparing samples for tests. All tests will be in accordance with standard test procedures and will be performed by persons or firms selected by the Owner.

GC - 16.00 CONTRACTOR’S SUPERINTENDENCE AND SUPERVISION

During the progress of the Work, the Contractor shall ensure that a competent superintendent and any necessary assistants, all satisfactory to the Architect, Owner and the Owner’s Representative, are on the Project site at all times while work is in progress. The superintendent shall not be changed by the Contractor except with the consent of the Architect, Owner and Owner’s Representative, unless the superintendent proves to be unsatisfactory to the Contractor and ceases to be in its employ. The superintendent shall represent the Contractor in its absence, and all directions given to the superintendent shall be as binding as if given to the Contractor. The Architect, Owner and Owner’s Representative shall not be responsible for the acts or omissions of the superintendent or the superintendent’s assistants.

The Contractor shall provide full-time, qualified, and efficient supervision of the Work, using competent skill and attention. It shall direct, schedule, and coordinate the Work. It is responsible for determining and supervising all temporary and permanent erection and construction sequences, techniques, means, or methods. It shall coordinate the Work to ensure that all parts fit together properly and in accordance with the Contract Documents. It shall carefully study and compare all Contract Documents and other instructions and shall at once report to the Owner’s Representative any error, inconsistency, or omission which he may discover.

The superintendent shall see that the Work is carried out in accordance with the Contract Documents and in a thorough and first-class manner in every respect. The Contractor shall provide engineering, surveying, and coordination to accurately establish all lines, levels, and marks necessary to facilitate the operations of all concerned in the Contractor’s work. It shall lay out the Work in a manner satisfactory to the Architect, making permanent records of all lines and levels required for excavation, grading, and foundations, and for all other parts of the work. It shall determine the commencement and certify the proper completion of the various stages of construction.

The Contractor shall arrange for the foreman of each subcontractor (mechanical, electrical, masonry, plastering, painting, etc.) on the job to meet with the Owner’s Representative and the Architect at the job prior to any work being started by this particular subcontractor so that all phases of the subcontractor’s work can be thoroughly discussed and the quality of materials and workmanship expected can be completely understood and agreed upon.
17.01 **Field Order Request.** The Owner may, at any time, by a written FOR (Field Order Request) directed through the Architect and Owner’s Representative, without notice to the sureties and without invalidating the Contract, make changes in the drawings and/or specifications of this Contract within the general scope thereof; order extra work; or make changes by altering, adding to, or deducting from the Work. If such changes cause an increase or decrease in Contract amount, an equitable adjustment shall be made and the Contract shall be modified in writing accordingly. Any claim of the Contractor for adjustment under this clause must be asserted in writing within ten (10) days from the date of receipt by the Contractor of the notification of change. No FOR or other form of order or directive by the Owner, Owner’s Representative or Architect requiring additional compensable work to be performed, which causes the aggregate amount payable under the Contract Documents to exceed the amount appropriated for the original Construction Agreement shall be issued unless the Contractor is given written assurance by the Owner that lawful appropriations to cover the costs of the additional work have been made.

Any change or aggregate of changes which causes an increase or decrease greater that 15% of the Contract amount, shall be approved by the Board of Directors in writing.

17.02 **Approvals.** Field orders are to be approved by the Chief Operations Officer, the Architect and the Owner’s Representative. Refer to Section 01028 “Change Procedures” for the requirements associated with documenting Field Order Requests.

17.03 **Minor Changes.** In giving instructions, the Architects shall have authority to make minor changes in the Work, which do not involve extra cost, and which are not inconsistent with the purposes of the building or the Owner’s intent. Architect shall immediately notify Owner and Owner’s Representative in writing of any authorized minor changes in the Work. Otherwise, except in an emergency endangering life or property, no extra work or change shall be made unless in pursuance of a written order from the Owner and Owner’s Representative signed or countersigned by the Architect, or a written order from the Architect stating that the Owner and Owner’s Representative has authorized the extra work or change. No claim for an addition to the Contract sum shall be valid unless ordered or authorized in the manner set forth in this section.

17.04 **Price Differential.** The cost or credit resulting from a change in the Work shall be determined in one or more of the following ways:

   a. By estimate, with a detailed cost breakdown as set forth in subparagraph c. below, and acceptance in a lump sum, with a mark-up to the Owner, for the Contractor and all affected subcontractors as outlined in Section 01028 “Change Procedures”.

   b. By unit prices named in the Contract or subsequently agreed upon.

   c. If the parties are unable to agree on one of the above methods, then the amount shall be determined by force account under the following formula:
The actual cost of all direct labor performed (including forepersons employed continuously on the Work, but not the salary, or any part thereof, of the Contractor’s superintendent) and the actual materials furnished for and used in such work, less all available cash, trade, or other discounts;

ii. Rental for the use of such items of equipment as have an individual value in excess of One Thousand Dollars ($1,000); provided that the amount of such rental charge and the length of time and probable cost of the use of such equipment shall have been authorized in writing by the Owner and the Owner’s Representative;

iii. All proportionate sums paid for royalties, permits, and inspection fees;

iv. All proportionate premiums for Public Liability Insurance, Worker’s Compensation, and other proper and necessary insurance, as well as all applicable payroll taxes;

v. Either a predetermined lump sum, fixed fee, or a negotiated percentage fee which fee shall be applied to the total of paragraphs in i., ii., and iii. only, and shall constitute full compensation to the Contractor for all costs and expenses, including all overhead and profit, which are not otherwise enumerated above. Subcontractors, if employed by the Contractor on this part of the Work, will receive such portion of the Contractor’s fee as may be agreed and paid to them by the Contractor.

vi. The Contractor shall keep and present, in such manner as the Owner and Owner’s Representative may direct, an accurate accounting of all of the foregoing costs, together with all supporting vouchers and other documentation, all subject to audit by the Owner.

#### CLAIMS FOR EXTRA COST OR ADDITIONAL TIME

18.01 **Claims for Extra Cost or Time.** If the Contractor claims that any instructions by drawings or otherwise, after the date of the Contract, involve extra costs under this Contract which were not included in the original bid, or requires an extension of the Contract time, he shall give the Owner, Architect and Owner’s Representative written notice thereof no later than seven (7) calendar days after the receipt of such instructions, and in any event before proceeding to execute the Work, except in an emergency endangering life or property, and the procedure shall then be as provided for changes in the Work. No such claim shall be valid unless so made. Any change in the Contract amount or Contract time must be authorized by change order. Contractor must list all claims on each Pay Application submitted.

18.02 **Delays and Extensions of Time.** If the Contractor is delayed at any time in the commencement or progress of the critical path of the Work by any act or neglect of the Owner, Owner’s Representative or the Architect, or by any employee of each, or by any separate Contractor employed by the Owner, or by changes ordered in the Work, or by unavoidable casualties beyond the Contractor’s control which Contractor could not have avoided by the exercise of diligence, or by any cause which the Owner determines may
justify the delay, then the completion date shall be extended in writing by Owner for such reasonable time as the Owner may determine. A time extension shall be Contractor’s sole remedy and compensation for all such delays.

Extension of the Contract completion time will be considered for delays due to weather conditions only when such conditions have had a material, adverse impact upon the critical path of the Construction Progress Schedule, are more unusually severe and extended than could have reasonably been anticipated based upon normal conditions for the relevant period of time, and only if a request for such an extension of time is received within seven (7) days of the first date of each delay. Actual adverse weather delay days must prevent work on critical activities for fifty percent (50%) or more of the Contractor’s scheduled work day. Determination of extension shall be made only after analyzing the ten-year average of data from NOAA and other sources for time period being claimed. Actual days over and above this ten-year average will be considered for time extension.

All requests for extension of time shall be subject to the Owner's approval and shall be made in writing to the Owner’s Representative no more than seven (7) days after the occurrence causing the delay; otherwise they shall be waived. Any request for extension of time for a change in the Work or for any occurrence allegedly causing a delay as provided for herein must be substantiated by demonstrating the effect of the change or occurrence on the critical path of the Construction Progress Schedule.

If no schedule or agreement is made stating the dates upon which written interpretations or detail drawings shall be furnished, then no claim for delay shall be allowed on account of failure to furnish such interpretations or drawings until fifteen (15) days after demand is made for them, and not then unless such claim is reasonable.

Should the time for completion of the Contract be extended, the Owner reserves the right to occupy any part of the structure upon written notice to the Contractor from the Owner’s Representative, but only after the Architect and Owner’s Representative have made a thorough inspection accompanied by the Contractor’s superintendent to note any defects in workmanship or materials which are the responsibility of the Contractor. Any such partial occupancy shall not be deemed a waiver of any provision for liquidated damages for delay in substantial or final completion, as applicable.

When the whole or a portion of the Work is suspended for any reason, each Contractor shall properly cover over, secure, and protect all work as may be susceptible to damage from any cause.

This Article does not exclude the recovery of damages by the Owner for delay under other provisions of the Contract Documents.

**GC - 19.00 CHANGED CONDITIONS**

**19.01 Changed Conditions.** The Contractor shall promptly, and before such conditions are disturbed, notify the Owner, Architect and Owner’s Representative in writing of: (1) sub-surface or latent physical conditions at the site differing materially from those indicated in the Contract Documents, or (2) unknown physical conditions at the site, of an
unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents. The Owner, Owner’s Representative and the Architect shall promptly investigate the conditions, and if the Owner finds that such conditions do so materially differ and cause an increase or decrease in the cost of, or the time required for, performance of the Work, an equitable adjustment shall be made and the Contract modified in writing accordingly. Any claim of the Contractor for adjustment hereunder shall not be allowed unless it has given notice as above required.

19.02 Asbestos and Hazardous Materials. If the Contractor, Architect or Owner’s Representative encounter or otherwise identify or suspect asbestos, asbestos-containing material, hazardous materials, except for lead-based paint, which is addressed in GC Article 14.00, or other unusual or unexpected conditions, Contractor, Architect or Owner’s Representative shall immediately notify the Owner and shall not continue work on the Project until authorized by Owner in writing.

GC - 20.00 CORRECTION OF WORK

20.01 Correction of Work Before and After Completion. The Architect, Owner and Owner’s Representative have the authority to reject work which is defective or does not conform to the Contract Documents. The Contractor, following written demand from the Owner’s Representative, shall promptly correct all work rejected by the Architect, Owner’s Representative or Owner as defective or as failing to conform to the Contract Documents whether observed before or after final completion and whether or not fabricated, installed, or completed. The Contractor shall bear all costs of correcting such rejected work, including the cost of the Architect’s, Owner’s Representative’s and/or Owner’s consultant’s additional services. If the Contractor proceeds to build in or cover the item which has been rejected, it shall be totally responsible for the cost of removal and replacement of said item and removal and replacement of all necessary work surrounding or covering the item in order to produce a first-class job.

20.02 Tests to Determine Conformance. Whenever in the opinion of the Architect, Owner’s Representative or the Owner, tests are essential to assure the professional evaluation of the Work which is subject to being rejected or condemned, the necessary number of tests will be performed by the consultants designated by the Owner. All parties to the Contract will comply with the methods and extent of the corrections submitted in writing to the Owner, Architect and the Owner’s Representative by the designated consultant. The cost of the tests will become the Contractor’s responsibility when corrections of any nature are recommended by the consultant to the investigated work; otherwise, the Owner will pay for all tests performed. Should such special testing, inspection, or approval be caused by the Contractor’s failure to follow the requirements of the Contract Documents or of required tests under GC-15.03, Testing, indicating conditions not in conformance with the Contract Documents, the costs of such additional testing, inspection, or approval shall be borne by the Contractor, regardless of the results.
20.03 Removal of Rejected Work. The Contractor shall promptly remove from the premises all work rejected by the Architect or Owner as failing to conform to the Contract Documents whether physically in place or not. Thereafter, the Contractor shall promptly replace and re-execute such work in accordance with the Contract and without expense to the Owner. The Contractor shall further bear the expense of making good all work of other subcontractors found to be defective or destroyed or damaged by such removal or replacement.

If the Contractor does not remove such rejected work within a reasonable time, fixed by written notice from the Owner through the Owner’s Representative, the Owner may remove it and may store the material at the expense of the Contractor. If the Contractor does not pay the expenses of such removal within ten (10) days’ time thereafter, the Owner may, upon ten (10) days’ written notice, sell such materials at auction or at private sale. In such case, the Owner shall account to the Contractor for the net proceeds thereof, after deducting all the costs and expenses that should have been borne by the Contractor, including compensation for additional Architect or consultant services. If the net proceeds of sale do not cover all costs which the Contractor should have borne, the difference shall be charged to the Contractor and an appropriate change order shall be issued. If the payments then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the Owner.

20.04 Correction of Work After Final Payment. Neither the final estimate nor payment nor any provision in the Contract Documents shall relieve the Contractor of responsibility for faulty materials or workmanship and, unless otherwise specified, it shall remedy any defects due thereto and pay for any damage to other work or property resulting therefrom, which shall appear within a period of one (1) year from the date of final completion and acceptance. This warranty shall be in addition to and not in lieu of all other remedies available to the Owner.

20.05 Failure to Correct the Work. If the Contractor fails to correct such defective or nonconforming work, the Owner may correct it and otherwise proceed against the Contractor for the cost thereof in accordance with the provisions of these General Conditions.

20.06 Deductions for Uncorrected Work. If the Owner deems it inexpedient to correct work that has been damaged or is defective or has not been completed in accordance with the Contract Documents, an appropriate deduction from the Contract price shall be made and reflected by a change order, or, if the amount is determined after final payment, it shall be paid by the Contractor.

20.07 Additional Obligations. The obligations of the Contractor to correct the Work shall be in addition to, and not in limitation of, any other obligations imposed upon him by law, special guarantees, warranties, or other rights of the Owner.

GC - 21.00 OWNER’S RIGHT TO CARRY OUT WORK

If the Contractor should neglect to prosecute the Work properly or fail to perform any provision of this Contract, the Owner, after three (3) working days’ written notice to the Contractor, may, without prejudice
to any other remedy it may have, make good such deficiencies and may deduct the reasonable cost thereof from the payment then or thereafter due the Contractor. In the event such work is performed by the Owner, the Owner’s employees, or by persons other than the Contractor at the Owner’s request, the Owner shall not be liable to the Contractor for inconvenience expense or subsequent cost of removal of such work. The amount to be deducted as cost of doing the Work shall include the cost of the Architect’s additional services made necessary by such default. If the payments then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the Owner.

GC - 22.00 OWNER’S RIGHT TO TERMINATE CONTRACT

22.01 With Cause. If the Contractor should be adjudged a bankrupt; or if it should make a general assignment for the benefit of his creditors without approval of the Owner; or if a receiver should be appointed on account of his insolvency; or if it should refuse or should fail, except in cases for which extension of time is provided, to supply enough properly skilled workers, competent supervision and superintendence of the Work, proper materials, or competent management of the Project; or if it should fail to make prompt payment to subcontractors or for material or labor; or disregard laws, ordinances, or the instructions of the Architect or Owner; or otherwise be guilty of a material violation of any provision of the Contract; then the Owner, when in its sole opinion sufficient cause exists to justify such action, may, without prejudice to any other right or remedy and after giving the Contractor, and his surety, if any, seven (7) days’ written notice, terminate the employment of the Contractor and take possession of the premises and of all materials, tools, and appliances thereon and finish the Work by whatever method the Owner may deem expedient. In such case the Contractor shall not be entitled to receive any further payment until the Work is finally completed and accepted by the Owner. If the unpaid balance of the Contract sum shall exceed the expense of completing the Work, including compensation for additional architectural, managerial, consultant, and administrative services, such excess shall be paid to the Contractor. If such expense shall exceed such unpaid balance, the Contractor shall pay the difference to the Owner. The expense incurred by the Owner, as herein provided, and the damages incurred through the Contractor’s default, shall be determined by the Owner.

22.02 Without Cause. Should conditions arise which in the Owner’s opinion make it necessary or advisable to discontinue work under the Contract Documents, the Owner may terminate the Contract in whole or in part without cause or fault by the Contractor by giving seven (7) calendar days’ written notice to the Contractor. The notice shall specify the date and extent to which the Contract is terminated. Upon any such termination, the Owner shall take possession of the site and all or any part of the materials and equipment delivered or en route to the site. In the event of termination under this paragraph 22.02, the Contractor shall be equitably paid for all work properly completed, based upon the approved Schedules of Values.

GC - 23.00 PAYMENT

23.01 Schedule of Values. Payments will be made on the valuation of the Work done. Before any Request for Payment will be considered, the Contractor shall submit to the Owner’s
Representative a complete, itemized schedule of the values of the various parts of the Work, aggregating the total sum of the Contract and separating material costs from other costs. Such schedule shall include as costs the material costs of all subcontractors under such Contractor and the costs of all materials to be taken from the Contractor’s or subcontractors’ own stocks of material. The schedule shall be submitted on forms supplied by the Owner’s Representative and supported by such evidence as to its correctness as the Owner’s Representative, Architect or the Owner may direct. A separate line item shall be included in the schedule of values for overhead and profit. This schedule will be used for the estimates and payments provided for in these General Conditions. Along with such schedule the Contractor shall submit a schedule of values of estimated monthly application amounts for the course of the Work to assist the Owner in arranging payment.

23.02 Payments to Contractors. Payment to the Contractor will be made by the Owner from cash on hand from such sources as may be legally available, and from the proceeds of the Statewide Sales Tax for school infrastructure imposed by the State and authorized by the electors of the Des Moines Independent Community School District by it’s most current Revenue Purpose Statement. Payment shall be made to the Contractor based on monthly estimates in amounts equal to ninety-five percent (95%) of the Contract value of the Work completed, including materials and equipment delivered to the job during the preceding calendar month and will be based upon an Application for Payment prepared by the Contractor, subject to the approval of the Architect. One (1) copy of the Application for Payment shall be filed with the Owner’s Representative. The Architect and Owner’s Representative will certify to the Owner for payment the accuracy of each approved Application for Payment on or before eleven days prior to a regularly scheduled board meeting and within 7 working days. Such monthly payments shall in no way be construed as an act of acceptance for any part of the Work partially or totally completed. It is the policy of the Board of Directors of the Owner to schedule Certificates of Payment and accounting times to coincide with the regular meetings of the Board and to pay Contractor no more often than once per month. The Owner reserves the right to withhold payments at any time regardless of the Architect’s or Owner’s Representative’s recommendations.

The Contractor warrants and guarantees that title to all work, materials, and equipment covered by an Application for Payment, whether incorporated in the Project or not, will pass to the Owner upon the receipt of such payment by the Contractor, free and clear of all liens, claims, security interests, or encumbrances; and that no work, materials, or equipment covered by a Request for Payment will have been acquired by the Contractor or by any other person performing the Work at the site or furnishing materials and equipment for the Project, subject to an agreement under which an interest therein or an encumbrance thereon is retained by the seller or otherwise imposed by the Contractor or such other person. This provision shall not be construed as relieving the Contractor from the sole responsibility for all materials and work upon which payments have been made or the restoration of any damaged work or as a waiver of the right of the Owner to require the fulfillment of all the terms of the Contract.
23.03 **Document Submission.** Contractor shall be responsible for submitting all required Contract Documents and Applications for Payment in forms acceptable to the Owner, including but not limited to, electronic submission.

23.04 **Applications for Payment.** No Application for Payment will be submitted to the Owner until and unless the Architect and Owner’s Representative have certified it. No approval of a progress payment, nor any progress payment, nor any partial or entire use or occupancy of the Project by the Owner shall constitute an acceptance of any work not completed in accordance with the Contract Documents.

23.05 **Payments Withheld.** The Owner may withhold payment or the Architect may decline to approve an Application for Payment in whole or in part, or the Architect may withhold or nullify the whole or any part of any Application previously issued, because of subsequently discovered evidence or subsequent inspections, for such an amount or to such extent as may be necessary in the opinion of either to protect the Owner from loss on account of:

a. Defective work not remedied;

b. A reasonable doubt that the Contract can be completed for the balance then unpaid;

c. Damage to another Contractor;

d. Failure of the Contractor to prosecute any portion of the Work in a timely manner or in compliance with any approved schedules;

e. Failure of the Contractor to submit on a timely basis any documentation required by the Contract Documents, including, without limitation, monthly progress reports, schedule of values, potential claims or request for approval of subcontractors.

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**GC - 24.00 CONSTRUCTION SCHEDULE AND PROGRESS REPORTS**

All time limits stated in the Contract Documents are of the essence of the Contract.

All work on the Project shall be finally completed within the times indicated in the Construction Documents.

The Contractor shall submit, within ten (10) calendar days after the date of the Notice of Contract Award in a format acceptable to the Owner, a Preliminary Construction Schedule for the Project. This schedule shall start with the date of the Notice of Contract Award, and the completion date shall be a date which will enable the Owner to accept the Work on the date specified in the Construction Agreement.

Contractor shall submit a detailed Construction Progress Schedule prior to the first application for payment. The schedule shall portray fully a timetable representing the various elements in the schedule of values and shall provide for the expeditious and practicable execution of the Work. The time shown between the starting and completion dates of the various elements within the schedule shall represent one hundred percent (100%) completion of each element. The detailed Construction Progress Schedule shall indicate the critical path of the Work. This schedule shall be revised monthly during the progress of the Work. Monthly updates of the schedule shall be required as a Condition of Approval for the
Contractor’s Application for Payment. Additional detailed schedules of separate elements of the Work may be requested at the Owner’s discretion.

In addition, the Contractor shall submit with the Request for Payment monthly progress reports. Basically, these reports shall reflect the Contractor’s “work in place” progress and will be certified by the Contractor or its superintendent as to the date and contents of such “work in place” progress report. If requested by the Owner, the monthly progress reports shall also include representative photographs of the actual work in place. Such reports shall depict progress and percentage of completion, consistent with the values and amounts contained on the counterpart Request for Payment. The subcontractors shall be supplied copies of the Contractor’s approved schedule. These subcontractors shall develop a similar schedule based on their respective work. Failure to submit an approved progress schedule or monthly progress report shall be deemed cause to reject Requests for Payment.

The Contractor shall schedule all work so as to reduce to a minimum any disruption in the use of the existing facilities and interruptions of utility service of any type. Where electrical or mechanical work performed under this Contract will necessitate interruptions of service to existing facilities, the Contractor shall furnish and install temporary service to such facilities or perform such work at such times when said existing utilities are not in normal use. This Contractor shall bear the cost of all overtime or inconvenience resulting therefrom.

25.00 INSURANCE

The Contractor shall purchase and maintain such insurance as will protect it from claims set forth below which may arise out of or result from the Contractor’s operations under the Contract, whether such operations be by himself or by any subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable. All such insurance shall be subject to the approval of the Owner for adequacy of protection, and shall include a provision preventing cancellation without thirty (30) days’ prior notice to the Owner in writing.

25.01 Liability Insurance Requirements. The Contractor shall procure and maintain, at its own expense, until final completion and acceptance by the Owner, liability insurance as hereinafter specified. The liability insurance required is as follows:

a. Commercial General Liability Insurance. Contractor’s General Public Liability and Property Damage Insurance issued to the Contractor and protecting it from all claims for personal injury, including death and all claims for destruction of or damage to property arising out of or in connection with any operations under his Contract, whether such operations be by himself or by a subcontractor under him, or anyone directly or indirectly employed by the Contractor or by a subcontractor under him, or by anyone for whose acts any of them may be liable.

All such insurance shall be written with a limit of liability of not less than $1,000,000 for all damages arising out of one occurrence for bodily injury, including death, and property damage. The General Liability policy should have a general aggregate limit of $2,000,000 for all damages and a products completed aggregate of $2,000,000 for all damages. The policy should be endorsed to provide the designated construction Project general aggregate endorsement showing the address of the Project covered by this agreement.
All such insurance shall be written on a comprehensive policy form and shall specifically cover all blasting operations, elevators, products, completed operations, explosions, collapse, subsidence, and underground damage. Certificates evidencing the issuance of such insurance, addressed to the Owner, shall be filed with the Owner and Owner’s Representative within ten (10) days after the date of the Notice of Contract Award.

b. The policy shall include the Owner and Owner’s Representative as an additional insured. The insurer shall give the Owner and Owner’s Representative notification of any cancellation or termination by refusal to renew the policy or of any change in coverage of the policy in the manner provided by law. If no such notification is provided by law, the insurer shall give the Owner and the Owner’s Representative at least thirty (30) days’ prior written notification of any cancellation or termination by refusal to renew the policy or of any change in coverage of the policy.

25.02 Worker’s Compensation Insurance. The Contractor shall maintain at his own expense, until completion of the Work and Final Acceptance thereof by the Owner, Worker’s Compensation Insurance, including occupational disease provisions, covering the obligations of the Contractor in accordance with the provisions of the laws of the State of Iowa. The Contractor shall furnish the Owner with a certificate giving evidence that the Contractor is covered by the Worker’s Compensation Insurance herein required, each certificate specifically stating that such insurance includes occupational disease provisions. All such certificates shall be furnished within ten (10) days after the date of the Notice of Award. This policy should also include Employer’s Liability Insurance with minimum limits of $500,000 each accident for bodily injury, $500,000 each accident for bodily injury by disease, and $500,000 policy limit for bodily injury by disease.

25.03 Property Insurance. The Owner shall pay for and maintain Property Insurance, covering property of every kind and description to be incorporated into the Work, including materials and supplies, used or to be used, as part of or incidental to the construction operations. The insurance shall exclude the Contractor’s and its subcontractors’ equipment, tools, and machinery, which are not incorporated into the Work. The Property insurance shall be written under a ‘Special Cause of Loss Form’ to include perils of fire, lightning, windstorm, vandalism, and theft, as well as other perils normally covered by the standard Insurance Service Office Special Cause of Loss Form.

A loss insured under the Owner’s Property Insurance shall be adjusted by the Owner and made payable to the Owner on behalf of the Contractor and its subcontractors as their interests may appear. The Contractor shall pay subcontractors their just portions of any insurance proceeds received by the Owner and paid to the Contractor.

Unless the Owner agrees otherwise, in writing, all monies received shall be applied toward rebuilding or repairing the destroyed or damaged work.

The Owner, Contractor, its subcontractors and suppliers waive all rights against each other for damages caused by fire or other perils to the extent covered by the Property Insurance (for damages in excess of $100,000.00) obtained pursuant to this section or other property
insurance applicable to the Work, except such rights as they may have to the proceeds of such insurance held by the Owner on their behalf. The Contractor shall require similar waivers of his subcontractors, sub-subcontractors, agents, and employees of any of them.

The deductible will be $100,000.00. Contractor is responsible for all losses and damages less than the deductible.

25.04 **Installation Floater.** The Contractor shall maintain an Installation Floater policy and Builder’s Risk policy covering the Work and Materials not yet installed in the building or not otherwise covered by Builders Risk insurance. The Floater should have a minimum limit of $100,000. The Floater shall cover the following areas:

A. Property in transit; and
B. Property stored off-site at a temporary location.

25.05 **Comprehensive Automobile Liability.** The Contractor shall pay for and maintain Comprehensive Automobile Liability Insurance, including owned, non-owned, and hired vehicles in the following amounts:

Bodily Injury and Property Damage: $1,000,000 combined single limit

25.06 All liability policies which include the Owner as an additional insured shall include a Governmental Immunities Endorsement (See the Standard Endorsements Figure 1070.5), pursuant to Chapter 670.4 of the Iowa Code, which endorsement shall include the following provisions:

a. **Nonwaiver of Government Immunity.** The insurance carrier expressly agrees and states that the purchase of this policy and including the Owner as an Additional Insured does not waive any of the defenses of governmental immunity available to the Owner under Iowa Code Section 670.4 as it now exists and as it may be amended from time to time.

b. **Claims Coverage.** The insurance carrier further agrees that this policy of insurance shall cover only those claims not subject to the defenses of governmental immunity under Iowa Code Section 670.4 as it now exists and as it may be amended from time to time.

c. **Assertion of Government Immunity.** The Owner shall be responsible for asserting any defense of governmental immunity, and may do so at any time and shall do so upon the timely written request of the insurance carrier.

d. **Non-Denial of Coverage.** The insurance carrier shall not deny coverage or deny any of the rights and benefits accruing to the Owner under this policy for reasons of governmental immunity unless and until a court of competent jurisdiction has ruled in favor of the defense(s) of governmental immunity asserted by the Owner.

This Government Immunities Endorsement shall be included on all Insurance policies which include the Owner as Additional Insured.
25.07 Cancellation and Insurance Companies. All policies of insurance carried by the Contractor shall provide for 30 days advance written notice of cancellation, non-renewal, or material change in insurance coverage directed to the Des Moines Independent Community School District. The Owner will accept the policies written only by sureties legally authorized in the State of Iowa.

25.08 The Contractor and its subcontractors, sub-subcontractors and their supplies are responsible for all damage to their own tools, equipment, and vehicles of every type. The Contractor, its subcontractors, sub-subcontractors and their suppliers shall waive subrogation against the Owner for any damage to such equipment, tools, and vehicles including any insurance in force to cover such equipment.

GC - 26.00 PERFORMANCE AND PAYMENT BONDS

The Contractor shall, within ten (10) days of the Notice of Contract Award, furnish bonds to the Owner in the full amount of the Contract price, covering both the faithful performance of the Contract and the payment of all obligations for labor and materials arising thereunder, on such forms as the Owner may prescribe and with such sureties as the Owner may approve. Such bonds shall be duly executed by a qualified surety, conditioned upon the true and faithful performance of the Contract, and shall provide that if the Contractor or his subcontractors fail to duly pay for any labor, materials, or other supplies used or consumed by such Contractor or his subcontractors in the performance of the Work contracted to be done, the surety will pay the same in an amount not exceeding the sum specified in the bond, as adjusted by approved change orders, and together with interest as provided by law. The Performance Bond shall additionally guarantee that the Contractor shall remedy any omissions, correct any and all defects, and adjust and make operable all component parts of the Work falling under the requirements of his Contract which may be called to his attention within a period of twelve (12) months following the date of the Letter of Acceptance.

The premium for all bonds shall be paid by the Contractor and included in the bid price in the Bid Proposal. The Owner will accept and approve bonds written by sureties legally authorized to write such bonds in the State of Iowa. If, at any time a surety on such a bond becomes irresponsible or loses its right to do business in the State of Iowa, the Owner may require another surety acceptable to the Owner, which the Contractor shall furnish within ten (10) days after receipt of written notice to do so.

GC - 27.00 SUBCONTRACTORS

The Contractor shall, within twenty-four (24) hours following the bid opening, provide to the Owner a completed List of Subcontractors and Suppliers of Labor and Material, which details whose quotations it has used in preparation of his bid. The Contractor shall, before awarding any subcontracts, re-verify to the Owner and Architect in writing the names of subcontractors proposed for the Project. Any deviation from the original subcontractor and supplier list will not be allowed unless justification is submitted in writing to the Owner by the Contractor that the subcontractor or supplier is deemed unfit or unable to perform the specified work, is unwilling to enter into a subcontract, or is not in compliance with the Contract Documents. The Contractor shall not employ any subcontractors that the Owner or Architect may, within a reasonable time, object to as incompetent, unfit, or otherwise undesirable. Substitutions of subcontractors listed in the executed proposal form may not be made without written approval of the
The Owner shall, on request, furnish to a subcontractor, wherever practicable, evidence of the amounts certified on his account.

The Contractor agrees that it is as fully responsible to the Owner for the acts and omissions of his subcontractors and of persons either directly or indirectly employed by them, as it is for the acts and omissions of persons directly employed by it.

The Contractor, at the conclusion of the Work and before final payment is made, shall furnish to the Owner a listing, giving names, contact persons, addresses, and telephone numbers of all subcontractors and material suppliers who furnished labor and materials on the Project with identification of the services rendered and materials provided.

Nothing contained in the Contract Documents shall create any direct contractual relation between any subcontractor and the Owner.

GC - 28.00 RELATIONS OF CONTRACTOR AND SUBCONTRACTOR

The Contractor agrees to bind every subcontractor by a written agreement and require in his Contracts that every subcontractor be bound by the terms of the Construction Agreement, the General Conditions of the Contract, the Supplementary General Conditions, the drawings and specifications as far as applicable to his work, including the following provisions of this Article, unless specifically noted to the contrary in a subcontract approved in writing as adequate by the Owner.

The subcontractor agrees with the Contractor:

a. To be bound to the Contractor by the terms of the Construction Agreement, General Conditions of the Contract, the Supplementary General Conditions, the drawings and specifications, and any other Contract Documents, and to assume toward it all the obligations and responsibilities that it, by those documents, assumes toward the Owner;

b. To preserve and protect the rights of the Owner and the Architect under the Contract with respect to the Work to be performed under the subcontract so that the subcontracting thereof will not prejudice such rights;

c. To perform all Work in accordance with the requirements of the Contract Documents;

d. To submit to the Contractor applications for payment in such reasonable time as to enable the Contractor to apply for payment as specified in the General Conditions;

e. To make all claims for extras, for extensions of time, and for damages for delays or otherwise, to the Contractor in the manner provided in the General Conditions of the Contract and the Supplementary General Conditions for like claims by the Contractor upon the Owner, except that the time for making claims for extra cost is one week.

The Contractor agrees:

f. To be bound to the subcontractor by all the obligations that the Owner assumes to the Contractor under the Agreement, General Conditions of the Contract, the Supplementary
General Conditions, the drawings and specifications, and by all the provisions thereof affording remedies and redress to the Contractor from the Owner.

g. To pay the subcontractor not later than seven (7) calendar days immediately following the payment of each certificate issued under the schedule of values described in these General Conditions, the amount allowed to the Contractor on account of the subcontractor’s work to the extent of the subcontractor’s interest therein.

h. To pay the subcontractor, upon the payment of Certificates, if issued otherwise than as in g. above, so that at all times his total payments shall be as large in proportion to the value of the Work done by it as the total amount certified to the Contractor is to the value of the Work done by it.

i. To pay the subcontractor to such extent as may be provided by the Contract Documents or the subcontract, if either of these provides for earlier or larger payments than the above.

j. To pay the subcontractor a just share of any insurance payment received by the Contractor, applicable to work performed by such subcontractor.

If the Owner knows or has reason to know the Contractor is not making timely payments to the subcontractors and/or suppliers, the Owner may require the Contractor to submit verified documentation evidencing that full and timely payments have been made to the subcontractors and suppliers and/or that legal justification exists for withholding payments. In addition, the Owner may contact the subcontractors and suppliers directly to obtain verification that payments have been made as required by law or the Contract Documents.

Nothing in this Article shall create any obligation on the part of the Owner to pay or to see to the payment of any sums to any subcontractor, nor shall it form the basis for any action by the subcontractor against the Owner on any contractual theories.

GC - 29.00 ARCHITECT’S STATUS AND INSPECTIONS

29.01 Authority. The Architect shall act on the Owner’s behalf through the Owner’s Representative during construction and until the expiration of the warranty period. The Architect has the authority to act on behalf of the Owner only to the extent expressly provided in the Contract Documents or otherwise in writing. The Architect, with written approval of the Owner, shall have authority through the Owner’s Representative to stop the Work whenever such stoppage may be necessary in the Architect’s reasonable opinion to ensure the proper execution of the Contract.

29.02 Decisions. The Architect shall be, in the first instance, the interpreter of the conditions of the Contract and the judge of its performance, although the Owner shall retain the final authority in decisions regarding such matters. The Architect shall, within a reasonable time, make recommendations to the Owner’s Representative on all claims of the Contractor and on all other matters relating to the execution and progress of the Work. All such decisions shall be subject to review by the Owner. The Architect’s decisions in
matters relating to artistic effect, after consultation with the Owner, shall be final, if within the terms of the Contract Documents.

29.03 **Inspections.** The Contractor shall provide timely notice to the Owner, Owner’s Representative and the Architect when inspections are desirable or required by the terms of the Contract or the Architect’s and Owner’s Representative’s agreement with the Owner. Such notice shall be given in order to allow for the following reviews and inspections, among others:

a. Reviewing and approving shop drawings samples and other submissions for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents;

b. Inspection of bearing surfaces of excavations before footings are poured;

c. Inspection of reinforcing steel after installation and before concrete is placed;

d. Inspection of structural and architectural concrete before, during, and after pouring;

e. Evaluation of all laboratory reports;

f. Inspection of structural steel after erection and prior to its being covered or enclosed;

g. Inspection of mechanical work following its installation and prior to its being covered and enclosed;

h. Inspection of electrical work following its installation and prior to its being covered or enclosed; and

i. Inspection of exposed surfaces for compliance with the Construction Documents.
30.01 Authority. The Owner’s Representative shall be the District’s principal agent and shall act on the Owner’s behalf through the Program during construction and until the expiration of the warranty period. The Owner’s Representative has the authority to act on behalf of the Owner to the extent expressly authorized in the Contract Documents or otherwise expressed in writing. The Owner’s Representative, with written approval of the Owner, shall have authority to stop the Work whenever such stoppage may be necessary in the Owner’s Representative’s reasonable opinion to ensure the proper execution of the Contract.

30.02 Administration. The Owner’s Representative shall establish and implement procedures for reviewing and processing requests and making recommendations to the Owner and Architect with respect to clarifications and interpretations of the Contract Documents; shop drawings; samples and other submittals; contract schedule adjustments; change order and field order proposals; written proposals for substitutions; payment applications; and the maintenance of logs. Although the Owner shall retain the final authority in decisions regarding such matters, as the Owner’s representative, the Owner’s Representative shall be the party to whom all such information shall be submitted. The Owner’s Representative’s recommendation to the Owner shall relate to design considerations, matters of cost, scheduling and time of construction, and clarity, consistency and coordination of documentation.

30.03 Inspections. The Contractor shall provide timely notice to the Owner, Owner’s Representative and the Architect when inspections are desirable or required by the terms of the Contract or the Architect’s and Owner’s Representative’s agreement with the Owner. Such notice shall be given in order to allow for the following reviews and inspections, among others:

- a. Reviewing and approving shop drawings samples, product data and other submissions for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents;
- b. Inspection of bearing surfaces of excavations before footings are poured;
- c. Inspection of reinforcing steel after installation and before concrete is placed;
- d. Inspection of structural and architectural concrete before, during, and after pouring;
- e. Evaluation of all laboratory reports;
- f. Inspection of structural steel after erection and prior to its being covered or enclosed;
- g. Inspection of mechanical work following its installation and prior to its being covered and enclosed;
- h. Inspection of electrical work following its installation and prior to its being covered or enclosed; and
i. Inspection of exposed surfaces for compliance with the Construction Documents.

j. Reviewing Project schedules and schedule changes.

k. Reviewing requests for change in the Contract including all change Orders and Field Orders.

l. Reviewing and making recommendations for pay requests.

m. Reviewing certificates and policies of insurance for compliance with the Contract Documents.

n. Inspecting the site for construction observations and supervision and preparing written and photographic documentation.

GC - 31.00 CASH ALLOWANCES

The Contractor shall include in the Contract sum all allowances stated in the Contract Documents. These allowances shall cover the net cost of the materials and equipment delivered and unloaded at the site, and all applicable taxes. The Contractor's handling costs on the site, labor, installation costs, overhead, profit, and other expenses contemplated for the original allowance shall be included in the Contract sum and not in the allowance. The Contractor shall cause the Work covered by these allowances to be performed for such amounts and by such persons as the Owner or Architect may direct through the Owner’s Representative, but it will not be required to employ persons against whom it makes a reasonable objection. If the cost, when determined, is more than or less than the allowance, the Contract sum shall be adjusted accordingly by field order which will include additional handling costs on the site, labor, installation costs, overhead, profit, and other expenses resulting to the Contractor from any increase over the original allowance.

GC - 32.00 USE OF PREMISES

The Contractor shall confine its apparatus, the storage of materials, and the operations of its workers to limits indicated by law, ordinances, permits, and the Contract Documents, and shall not unreasonably encumber the premises with its materials. Contractor shall not place or store any materials, equipment, or other items or goods outside the construction area as designated in the Construction Documents, without prior written approval of the Owner and Owner’s Representative. The Contractor shall not load or permit any part of the structure to be loaded with a weight that will endanger its safety. The Contractor shall enforce all Owner instructions and other regulations regarding signs, advertisements, fires, and smoking and shall not allow the possession or consumption of alcohol or drugs on the premises by his or any subcontractor’s workers. The Contractor shall limit his construction activities, including material storage, to areas approved by the Owner’s Representative.

GC - 33.00 CUTTING, PATCHING, AND EXCAVATING

The Contractor shall do all cutting, fitting, or patching of his work that may be required to make its several parts come together properly and fit it to receive or be received by work of the subcontractors shown upon, or reasonably implied by, the drawings and specifications for the completed structure.
Any cost caused by defective or improperly timed work shall be borne by the party responsible therefore. The Contractor shall not endanger any work by cutting, excavating, or otherwise altering the Work and shall not cut or alter the Work of any subcontractor except with the consent of the Architect.

The Contractor will ensure that each subcontractor leaves all chases, holes, or openings straight, true, and of proper size in its own work, or cut the same in existing work as may be necessary for the proper installation of its own or another subcontractor’s work consulting with the Owner’s Representative and the Contractor regarding proper location and size of same. In case of its failure to leave or cut same in the proper place, it shall cut them afterward at its own expense. No piers or other structural members shall be cut or modified in the field without the written consent of the Architect and Owner’s Representative. Any extensive cutting of non-structural elements shall also require the Owner’s Representative’s and Architect’s approval. After such work has been installed, it shall carefully fit around, close up, repair, patch, and point up same as directed to the entire satisfaction of the Architect. Each section of this specification shall include all cutting, patching, and excavating for that trade division unless specifically stated to the contrary.

GC - 34.00 CLEANING UP

The Contractor shall at all times keep the premises free from accumulations of waste material or rubbish caused by its employees or work, and shall remove all rubbish as often as is necessary or as directed by the Owner, Architect or Owner’s Representative, or as specified elsewhere in these documents. At the completion of the Work, it shall remove all its rubbish from and about the building, and all its tools, scaffolding, and surplus materials and shall wash all glazing and window frames inside and outside throughout the building, removing all stains, paint, etc., on same. Care shall be taken not to scratch the glazing in this clean up.

All doors and wall coverings shall be left thoroughly clean and finished; all walls and ledges shall be dusted; all plumbing fixtures shall be cleaned; all hardware shall be free of all labels, paint, stains, dust, dirt, and the like; all marks, stains, fingerprints, other oil, and dirt shall be removed from painted, decorated, or natural finish work and the building will be ready for occupancy except for being further equipped by the Owner. In case of dispute, the Owner may perform such cleaning up as may be required and charge the cost to the Contractor.

GC - 35.00 STATUTES, ORDINANCES, AND REGULATIONS

The Contract shall be governed by the laws of the State of Iowa.

The Contractor and all subcontractors shall comply with all applicable federal and state statutes, rules, regulations, and directives of any governmental body having jurisdiction over the Work to be performed. Should any of the provisions of the Contract Documents be in conflict therewith, then that portion which is in conflict shall be considered stricken and the applicable statute, ordinance, regulation, or ruling substituted therefore. All such cases of apparent conflict coming to the attention of any party shall immediately be called to the attention of the Owner. The Contractor shall strictly observe and comply with all federal and state laws pertaining to the employment and payment of labor.
The Contractor will be held to have used in his base proposal and to furnish under the Contract those items of equipment and/or materials which are specifically identified in the specifications by a manufacturer's name, model, or catalog number. Owner, in its sole discretion, may approve substitution of equipment and/or materials of makes other than those specifically named in the Contract Documents so long as the equipment or material proposed for substitution in the opinion of the Owner is just as suitable as equipment and/or materials named in the specifications so far as performance, construction, efficiency, and utility are concerned.

All requests for substitutions must be submitted in writing at least seven (7) working days prior to the bid opening to the Owner for evaluation and final approval. Contractor’s request shall include a complete listing of the substitutions proposed, with drawings and other data required by Owner, supporting Contract price changes pertaining to each proposed substitution. Contractor shall also furnish drawings or other data required to indicate any modifications which would result from use of the proposed changes and shall furnish general arrangement drawings, full descriptive data, and any other information required to demonstrate that the proposed substitutions are equal to the product(s) specified. The Owner will determine if the proposed substitutions are acceptable or unacceptable and will notify all potential bidders of its decisions no later than five (5) calendar days before bid opening. In the absence of the Owner’s written acceptance, no substitution will be allowed for any items specified in the Contract Documents. Acceptance by the Owner of proposed substitutions shall not relieve Contractor of the responsibility for providing workmanship, materials and equipment meeting quality standards established for the Project. No substitution may be made subsequent to the award of the Contract, except upon Owner’s written approval.

Contractor may offer alternate systems to the ones named in the specifications by submitting with the proposal and on the form provided, identifying data on the system proposed, together with a statement of the amount of addition or deduction from the base bid if the bidder’s alternate is accepted. Prior approval by the Owner is not required on items submitted as alternate bids.

The Contractor, upon the Owner’s written request, shall allow the Owner to occupy portions of the Work and to place and install, subject to reasonable restrictions, as much equipment and furnishings during the progress of the Work as is possible without interfering with the progress of the Work. Such occupancy and the placing or installing of equipment and furnishings shall not in any way evidence the completion of the Work or signify the Owner’s acceptance of the Work, or any part of it. Equipment includes such things as kitchen equipment, etc. Furnishings include such things as lockers, benches, desks, etc. Prior to occupancy, the Architect and Owner shall make a thorough inspection accompanied by the Contractor’s superintendent to note any defects in workmanship or materials which are the responsibility of the Contractor. The provisions of the Article shall not be in limitation of the Owner’s rights set forth in Article 18.00.
The Contractor shall take adequate precautions to protect existing utilities on and off the site and avoid damage thereto. The Contractor shall repair or replace or have repaired or replaced at his own expense any damage to Streets, water, sewer, light, power, cable, or telephone lines, damaged by reason of his work.

The location and extent of underground utilities and cables and conduit as indicated on the drawings are not guaranteed. This information is shown only for such use as bidders and Contractors may choose to make of it. All Contractors shall check with all public utilities companies for locations and shall comply with their regulations regarding their utilities in performing the Work.

Active underground utilities shall be adequately protected from damage and if damaged shall be immediately repaired. Removal or relocation of same shall be done only as indicated on the drawings. If they are in use, they shall be maintained in continuous service. If not indicated on the drawings or not known to exist, the Contractor shall report discovery of such lines to the Architect and shall not proceed further until directed to do so.

Inactive or abandoned utilities, whether or not they are indicated on the drawings, shall be recorded as to location and depth and shall be removed for a distance of not less that three (3) feet from outside line of all concrete work unless otherwise required by regulations. Ends shall be capped or plugged. There will be no adjustment of Contract amount for work due to inactive or abandoned utilities indicated on the drawings.

If required by the specifications, the Contractor shall provide a Project sign in such form and size as may be approved by the Owner. No other advertising is permitted on the Project site.

No explosives of any nature except for those normally employed in powder actuated tools, .38 caliber or smaller, shall be employed or used on any site except with the express and specific prior written approval of the Architect and the Owner and any appropriate governmental authorities, in each instance. The Contractor shall notify the Architect of need for such approval three (3) days prior to the proposed use of such explosives.

In addition to warranties, guarantees, operating instructions, etc., elsewhere specified, the Contractor, at the conclusion of the Work and before final payment is made, shall furnish a listing, giving principal’s names, addresses, and telephone numbers of all subcontractors and material suppliers who furnished labor or materials on the job with identification of the services rendered. There shall be provided one (1) copy to the Owner’s Representative, one (1) copy to the Architect and three (3) copies to the Owner. All copies will be delivered to the Owner’s Representative for review and distribution.
The Contractor shall submit a written plan prior to completion and acceptance, consistent with the Contract Documents and applicable codes, for the testing of all building systems. All testing shall be of the complete system, before covering, or of individually separable larger portions of the system and shall be performed in the presence of the appropriate consultant and representative of the Owner. A written report shall be filed in the office of Facility Management, Des Moines Independent Community School District, recording each test, and signed by such consultant.

GC - 43.00 TEMPORARY OR TRIAL USAGE

Temporary or trial usage by the Owner of any mechanical device, machinery, apparatus, equipment, or any work or material supplied under the Contract before final completion and written acceptance by the Architect shall not be construed as evidence of the Architect's or Owner's acceptance of same or the commencement of any warranty periods.

The Owner has the privilege of such temporary or trial usage, for such reasonable time as the Owner and the Architect deem proper. The Contractor shall make no claim for damage or injury to or breaking of any parts of such work which may be caused by weakness or inaccuracy of structural parts or by defective materials or workmanship.

If the Contractor so elects, it may, without cost to the Owner, make such trial usage. However, trials shall only be conducted with the Architect's prior approval and under the Architect's observation.

When heating, air conditioning, ventilating, exhaust, or other items of electrical or other equipment are installed, it shall be the responsibility of the Contractor installing such equipment to operate it for a satisfactory period of time as required by the Architect for proper testing of the equipment and instructing the Owner's operating personnel. All items of equipment, testing meters, testing instruments, and incidentals required for proper testing and for instructing the Owner's operating personnel, shall be provided by the Contractor responsible for providing and installing the equipment.

GC - 44.00 ASSIGNMENT

Neither party to the Contract shall assign the Contract or sublet it as a whole without the written consent of the other, nor shall the Contractor assign any moneys due or to become due to him hereunder, without the previous written consent of the Owner.

GC - 45.00 SEPARATE CONTRACTS

The Owner reserves the right to let other contracts in connection with this Work. The Contractor shall afford such other Contractors' reasonable opportunity for the introduction and storage of their materials and the execution of their work, and shall properly connect and coordinate its work with theirs.

If any part of the Contractor's work depends for proper execution or results upon the Work of any other Contractor, the Contractor shall inspect and promptly report to the Owner through the Owner's Representative any defects in such work that render it unsuitable for such proper execution and results. Its failure to inspect and report shall constitute an acceptance of the other Contractor's work as fit and proper for the reception of his work, except as to defects which may develop in the other Contractor's work after the execution of its work.
To ensure the proper execution of his subsequent work, the Contractor shall measure work already in place and shall at once report to the Owner through the Architect any discrepancy between the executed work and the drawings.

**GC - 46.00  CONTRACTORS’ MUTUAL RESPONSIBILITY**

The entire Project may be covered by more than one contract and in such case there will of necessity be a certain overlapping of contracts. Each Contractor shall, therefore, take due notice of the Work called for in contracts other than his own. Should the Contractor cause damage to any separate Contractor on the Work, the Contractor agrees, upon due notice, to settle with such other separate Contractor by agreement, if it will so settle. If such other separate Contractor sues the Owner on account of any damage alleged to have been so sustained, the Owner may notify the Contractor, who shall, at the Owner’s option, defend such proceedings at the Contractor’s expense or reimburse the Owner for the expenses incurred in defense, and, if any judgment against the Owner arises therefrom, the Contractor shall pay or satisfy it and pay all costs and expenses thereby incurred by the Owner.

**GC - 47.00  LIENS**

It is hereby mutually understood by and between the parties hereto that no Contractor, subcontractor, materialman, vendee, laborer, mechanic, or other person, can or will contract for or in any other manner have or acquire any lien upon the building or works covered by this Contract, or the land upon which the same is situated.

**GC - 48.00  WORK IN EXISTING BUILDING**

In addition to all other requirements of the Contract Documents, if the Work involves an addition to an existing building, the Contractor shall erect and maintain during the progress of the Work, suitable dust-proof partitions to protect such building and the occupants thereof. If necessary in the Owner’s, Owner’s Representative’s or Contractor’s judgment, or pursuant to manufacturer’s directives or recommendations in order to protect occupants from noxious fumes, odors, or hazardous substances, the Contractor may be required to provide additional ventilation and/or work different or extended hours to avoid disruption to other activities within the existing building.

If any portions of an existing building are to be remodeled or repaired, such portions shall be adequately partitioned off with dust-proof partitions and well ventilated. Contractor’s personnel shall not access areas still in use by the Owner without prior, written authorization. All remodeling work shall be scheduled and submitted to the Owner and Owner’s Representative for approval. The various Contractors shall schedule their work jointly, in order that each may accomplish his work within such existing building in an orderly fashion during regular school vacation periods, where possible, or in such a manner as to permit full use of the building and without impairment of any existing facilities.

During the course of construction the Contractor shall maintain free and unimpeded all required exits from the building. Barricades shall be so erected that traffic is separated and protected from the construction. Such exits shall not be closed at any time for any reason while the building is occupied nor at any time when the building is unoccupied except after written approval is given by the Owner and proper warning and directional signs are posted.
The Contractor shall indemnify and hold the Owner and the Architect and their agents and employees harmless from and against all claims, damages, losses, and expenses, including attorneys’ fees arising out of or resulting from the performance of the Work, provided that any such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property, including the Work itself and including the loss of use resulting therefrom but only to the extent caused by any negligent or intentional act or omission or breach of contract of the Contractor, any subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder. This specific indemnification by the Contractor is in addition to and not in lieu of other remedies which may be available to the Owner.

Contractor agrees to indemnify and hold harmless the District and their agents and employees from and against all claims, damages, losses and expenses, including attorneys’ fees, arising out of or resulting from a breach of cybersecurity or other cyber fraud incident affecting Contractor that results in the disclosure of the District’s financial or other confidential information to any unauthorized person or misuse of the District’s financial or other confidential information by any unauthorized person. This specific indemnification by Contractor is in addition to and not in lieu of other remedies which may be available to the District.

The obligations of the Contractor under this Article shall not extend to and will be reduced by the liability of the Architect or the Architect’s Consultants to the extent directly attributable to and proximately caused by (A) the negligent preparation or approval of drawings or specifications, or (B) errors or omissions in written directions or instructions given by the Architect or the Architect’s Consultants.

It is understood and agreed that completion of the entire Project within the time stated in the Contract Agreement is a matter of vital necessity to the Owner, that the Owner will suffer substantial damages if the entire Project is not completed within that time, and that it would not be possible to accurately determine the amount of such damages. In view of these facts, if imposed by the Owner, the Contractor agrees to pay the Owner liquidated damages in the sum set forth in the Construction Agreement for each calendar day, if any, which elapses between the dates stated in the Construction Agreement for either or both Substantial Completion and Final Completion, as extended by any extensions of time under the provisions of the General Conditions of the Contract. If the Contractor shall fail to pay such liquidated damages, if imposed, promptly upon demand therefore, the surety on his performance bond shall pay such damages. Also, the Owner may withhold all or any part of such liquidated damages from any payments due the Contractor. No changes in the Work shall extend the time for completion unless set forth on a properly approved field order/change order. Document titled “Schedules and Liquidated Damages” shall determine if and at what amount liquidated damages will be imposed on the Project.

When the Contractor considers that the Work, or a designated portion thereof which is acceptable to the Owner, is substantially complete, the Contractor shall prepare for the Owner a list of items to be completed or corrected and submit it to the Owner’s Representative. The list shall include written warranties and related documents required by the Contract and assembled by the Contractor. The failure to include any
items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. When the Architect and the Owner’s Representative, on the basis of an inspection, jointly determine that the Work or designated portion thereof is substantially complete, the Architect and Owner’s Representative will then prepare a Statement of Responsibilities of the Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and fix the time within which the Contractor shall complete the items listed therein. Warranties required by the Contract Documents shall commence on the date of occupancy of the Work or designated portion thereof by the Owner unless otherwise provided in the Statement of Responsibilities. The Statement of Responsibilities shall be submitted to the Owner and the Contractor for his written acceptance of the responsibilities assigned in such Statement.

GC—52 REQUEST FOR EARLY RELEASE OF RETAINED FUNDS

Upon achieving Substantial Completion, the Contractor may formally request the release of all or part of the retained funds being held on the Project. The Contractor’s request for Release of Retained Funds shall be accompanied by the required sworn statement that ten (10) calendar days prior to filing the Request for Release of Retained Funds the required sworn statement was given to all known subcontractors, sub-subcontractors and suppliers that the Contractor is requesting the early release of retained funds. If proper documentation is received from the Contractor, the Owner will release the requested funds at the next monthly Board meeting of within thirty (30) days, whichever is less, except it may retain the following:

a) An amount equal to 200% of the value of labor and materials yet to be provided on the Project, which will include the value of the itemized costs for closeout phase items of the Project as listed in Section 01705 of the documents and other items as determined by the Owner and its authorized Contract representative.

b) An amount equal to 200% of the value of any Chapter 573 claims currently on file at the time the Request for Release of Retainage Funds is approved.

If the Owner withholds an amount from the retainage payment to the Contractor, the Owner will provide a reason the request is being denied the Contractor within thirty (30) calendar days of the receipt of the request.

Approval of early release of retained funds will be made by Resolution of Owner’s Board of Directors. The Request will be presented to the Board of Directors for acceptance when:

1) All Work, under the request has been certified as finally and satisfactorily completed;

2) All Work, under the request has been inspected and approved by the Owner’s representative;

3) the Contractor has certified to the Owner that the materials, labor, and services involved in each Application for Payment have been paid in accordance with the Contract Documents; and

4) Documents as outlined in Section 01705 “Early Release of Retained Funds” including, but not limited to, the following documents have been completed and received by the Owner:

Request for Release of Retained Funds - DMDSFM - -----
GC - 53.00 ACKNOWLEDGMENT AND FINAL PAYMENT

Within a reasonable time after final completion of the Work and before Final Acceptance thereof, a final inspection shall be made by the Architect to determine whether the Work has been completed in accordance with the Contract Documents. A written Report of Inspection and detailed “punch list,” certified as to contents and date of inspection, shall be completed by the Architect and delivered or mailed to the Contractor.

All prior Requests for Payment shall be subject to correction in the final Request for Payment.

The balance remaining due the Contractor, if any, following Final Acceptance will be paid not earlier than thirty-one (31) days from the date of Final Acceptance of said work by the Owner, subject to the conditions and in accordance with the provision of Chapter 573 of the Code of Iowa.

Final Acceptance of the Work will be made by Resolution of Owner’s Board of Directors. The Work will be presented to the Board of Directors for Final Acceptance when:

1) All Work, including the punch list, has been certified as finally and satisfactorily completed;

2) All Work, including the punch list, has been inspected and approved by the Owner’s representative;

3) the Contractor has certified to the Owner that the materials, labor, and services involved in each Application for Payment have been paid in Accordance with the Contract Documents; and

4) Documents as outlined in Section 01700 “Contract Closeout”, including, but not limited to, the following documents have been received by the Owners:
   - Application for and Certification of Payment - DMPSFM-600
   - Itemization Sheet for Final Payment - DMPSFM-610
   - Certificate of Completion - DMPSFM-620
   - Contractor’s Affidavit of Payment of Debts & Claims - DMPSFM-630
   - Contractor’s Affidavit of Release of Liens - DMPSFM-640
   - Consent of Surety Company to Final Payment - DMPSFM-650
   - Architect’s Certificate of Specifications - DMPSFM-660
   - Lien Waivers
   - Required Guarantees

If any unpaid claim for such labor, materials, supplies, or equipment is filed with the Owner before payment in full of all sums due the Contractor, the Owner shall withhold from the final payment sufficient funds, if available and in accordance with Iowa Code Chapter 573, as amended, to provide for the payment of such
林肯圆屋冷却器更换项目

索赔，直到同一索赔已支付或撤回。此类付款或撤回应由申请人或其授权代理人或受让人签订的收据或撤回命令来证明。

如果根据爱荷华州第573章提出的索赔被针对业主，承保人同意为业主辩护，赔偿，保护或偿还其就任何和所有损害，赔偿，支付或费用（包括合理的律师费）承担任何和所有索赔，包括未付索赔，从或因承保人未能履行合同义务。一项要求。

如果任何索赔的劳动，材料，供应或设备未满足所有付款后，业主应退还给业主所有因承保人未能履行合同义务而被迫支付的金额，包括所有费用和由于承保人未能履行合同义务而引起的费用。

最终付款的汇票接受不会构成业主对任何索赔的放弃，包括但不限于未付索赔，工作不端之前或之后，或因未能遵守合同文件中的任何要求。

GC - 54.00 保修部分的工作

承保人应就经由承保人提供的工作或材料或设备，根据合同文件要求保证，取得保证并交付副本给建筑师和业主。所有此类保证应从最终完成证书之日开始，不会以任何方式减少承保人对合同的职责。无论保证或保证均为由规格要求的更长时期，此类更长时间应适用。

承保人应提供建筑物接受与维护保证。保证应从接受之日起为期1年，以防止承保人未能履行其合同的保证和保证。

GC - 55.00 承保人项目的保修和保证

承保人明确保证和保证项目将由良好的，稳固的，工作得当的方式建造；没有结构工作和工作得当的缺陷和材料的缺陷；改进建筑物将适合居住，并严格遵守合同文件。

承保人将根据业主的通知在10天内修理或更换任何质量缺陷和材料，以业主为满足而接受的方式，不需业主支付费用。如果10天内未进行修复或更换或双方满意安排，业主应承担费用并将其支付给承保人。
The Owner, the Architect, and the Contractor together shall make at least one (1) complete inspection of the Work after the Work has been accepted by the Architect and the Owner. Such inspection shall be made approximately eleven (11) months after the acceptance of the Work. The Architect shall make a written report of the inspection, certified as to contents and date of inspection, and forward the report by mail to the Owner and the Contractor within seven (7) days after completion of the inspections. The Contractor shall immediately initiate such remedial work as may be necessary to correct any deficiencies or defective work shown by this report and shall promptly complete all such remedial work in a satisfactory manner.

If the Contractor fails to promptly correct deficiencies and defects shown by the report within ten (10) days after notice thereof, the Owner may do so. The Owner shall be entitled to collect from the Contractor all costs and expenses incurred in correcting such deficiencies and defects, as well as all damages resulting from such deficiencies and defects. The guarantee and warranties of the Contractor provided for herein are in addition to and not in lieu of any other remedies available to the Owner.

GC - 56.00 SOIL TEST REPORT

The Owner has arranged for a separate consultant to conduct field and laboratory soil investigations on the site and to prepare a report of the findings. Such reports, as appropriate, are included as an attachment to the specification. Such data is offered solely for reference and is not to be considered a part of the Contract Documents. The data contained in any such document prepared for the Owner by a separate consultant is believed to be reliable; however, the Owner and Architect do not guarantee its accuracy or completeness. All applicable subcontractors shall be fully familiar with the contents of such reports, if prepared, and shall consider and evaluate them in the performance of their contracts.

GC - 57.00 EXPEDITING MATERIALS

The Contractor shall exercise due diligence in seeing that all equipment, materials, and supplies are ordered and delivered well in advance of the time they are needed on the job; and it shall properly store and protect same at his expense and in accordance with these General Conditions, either at the site or elsewhere as approved by the Architect. It shall, when requested, submit to the Architect evidence that such orders have been placed and/or received.

GC - 58.00 MISCELLANEOUS KEYS, SWITCHES, ETC.

Except as otherwise specifically required by the Technical Specifications at the completion of the Project, all loose keys for hose bibs, adjustment keys and wrenches for door closers and panic hardware, keys for electric switches, electrical panels, and all other equipment shall be identified and accounted for and turned over to the Architect for transmittal to the Owner.

GC - 59.00 ELECTRONIC COMMUNICATIONS

If required by the Contract Documents, the Contractor shall use the Internet based Project Management system for communications and tracking of the Project. The system shall be used to keep comprehensive account of Project activities, conditions and issues including, but not necessarily limited to, general correspondence, reports, drawings, drawing submittals and drawing schedules, submittals, shop drawings, payment requests, transmittals, change request, and authorization, meeting minutes, confirmation of oral instruction, notice of non-conforming work, press photographs, call-back requests, and other documentation as may be specified by the Owner. The Contractor shall have access to the program
established at their main office as well as the Project site. There is no fee associated with the use of the Internet based Project Management System.
The following supplements modify, change, delete from or add to the General Conditions of the Contract for Construction. Where any Article of the General Conditions is modified or any Paragraph, Subparagraph, or Clause thereof is modified or deleted by these Supplementary Conditions, the unaltered provisions of that Article, Paragraph, Subparagraph, or Clause shall remain in effect.

END OF DOCUMENT
1.1 SUMMARY

A. Section Includes:
   1. Project description.
   2. Work by Owner.
   3. District Furnished Products.
   4. Contractor’s Use of Site and Premises.
   5. Surrounding Site Condition Survey.
   6. Work Sequence.
   7. District Occupancy.

1.2 PROJECT DESCRIPTION

A. Location: The site is located at the address indicated on the title page.
B. The project includes removal and replacement of the exiting chillers serving the Lincoln Roundhouse and replace with an air-cooled chiller with remote evaporator and site improvements as reflected in the construction documents. One bid will be submitted to include all trades and su-contractors.
C. The Owner has contracted or will contract with multiple contractors for renovation of the facilities.

1.3 WORK BY OWNER

A. Items noted "NIC" (Not in Contract), will be furnished and installed by others separately from the work included in these Bid Packages.

1.4 DISTRICT FURNISHED PRODUCTS

A. Products furnished by the District and installed by the Contractor. Refer to drawings for these items.
B. District's Responsibilities:
   1. Arrange and pay for owner furnished product delivery to site. (Verify for each item)
   2. On delivery, inspect products jointly with Contractor.
   3. Submit claims for transportation damage and replace damaged, defective, or deficient items.
   4. Maintain manufacturer's warranties, inspections and service.
   5. Obtain receipt for materials delivered to Contractor.
C. Contractor's Responsibilities:
   1. Receive and unload products at site; inspect for completeness or damage, jointly with District.
   2. Handle, store, install and finish products.
3. Repair or replace items damaged after receipt.

1.5 CONTRACTOR USE OF SITE AND PREMISES

A. Limit use of site and premises to allow:
   1. District use of the existing building during the construction period.
   2. Work by other contractors and work by District.
   3. Safe use of site and premises by public.
   4. Contractor and subcontractor employees’ use of areas outside construction zone is restricted.

B. Coordinate use of premises under direction of the Owner.

C. Notify Owner in advance of a shutdown of utilities or work outside designated construction and staging areas. Coordinate such work with Owner. All utility shutdowns shall be approved by the Owner.

1.6 SURROUNDING SITE CONDITION SURVEY

A. Prior to commencement of work, the Contractor, the Owner and the Architect shall jointly survey the site and existing buildings, paving, plant life, and other items, noting and recording existing damage such as cracks, sags, loose blocks or bricks, unhealthy plant life, and other damage.

B. This record shall serve as a basis for determination of subsequent damage to these items due to settlement or movement due to demolition and construction operations.

C. Such damage, as noted, shall be suitably marked on the item, if possible, and the official record of existing damage shall be signed by the parties making the survey.

D. Cracks, sags, or other damage to the site and adjacent buildings, paving, plant life, and other items not noted in the original survey, but subsequently observed shall be reported immediately to the Owner in writing.

1.7 WORK SEQUENCE

A. Construct work in phases to accommodate District requirements during the construction period. Coordinate construction schedule and operations with the Owner. Sequencing is listed in Section 00210.

1.8 DISTRICT OCCUPANCY

A. The District will occupy the existing building during the construction period.

B. Time is of the essence.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes

1. Procedures for preparation and submittal of Applications for Payment.

B. Related Sections:

3. Section 01300 - Submittals: Submittal procedures.
4. Section 01700 - Contract Closeout: Final Payment.
5. Document 00800 - Supplementary Conditions

1.2 SCHEDULE OF VALUES

A. Submit to the Owner’s Representative a Schedule of Values allocated to the various portions of the Work broken down by building and trade, supported by data to substantiate its accuracy as the Owner’s Representative, Architect, and the Owner may require. This schedule, when approved, shall be used as a basis for the Contractor's application for payment.

B. Sample of the Schedule of Values format follows this section. All line items shall be separated into labor and material components. A separate line item shall be included in the Schedule of Values for the Contractors Overhead and Profit.

C. Schedule of Values must be submitted, reviewed and approved by the Owner’s Representative and Architect prior to the first Application for Payment.

1.3 FORMAT

A. Sample of the Application for Payment form follows this Section and is titled "Application and Certification for Payment". Electronic emailed copies of payment applications will be used.

1.4 PREPARATION OF APPLICATIONS

A. Applications shall be prepared in two copies.

B. Contractor to meet with Owner’s Representative and Architect at regular job progress meeting to review proposed Application for Payment.

C. Application as tentatively approved by Owner’s Representative and Architect shall be submitted.

D. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed.

E. Submit back-up documentation to support Application for Payment as may be requested by the Architect or Owner’s Representative.

F. Architect will review Project Record Documents at each billing meeting. Status of Project Record Documents will be considered in evaluating proposed monthly billings.

G. List each authorized Change Order as an extension on the Schedule of Values, listing Change Order number and dollar amount as for an original item of Work.
H. Prepare Application for Final Payment as specified in Section 01700.
I. Prepare and submit with each Application for Payment the List of Potential Claims that follows this section per the requirements of paragraph G.C. – 18.01 of the General Conditions, Section 00700.
J. Prepare requests and accompanying sworn statement for early release of retained funds upon Substantial Completion as specified in Section 01705 “Early Release of Retained Funds”

1.5 SUBMITTAL PROCEDURES
A. All submittals associated with the Application for Payment shall be done in one copy.
B. Submit an updated construction schedule with each Application for Payment.
C. Payment Period: Submit at monthly intervals as coordinated by the Owner’s Representative.
D. Submit substantiating data as may be required.
E. Submit wavers on the form approved by the Owner’s Representative.
F. Submit list of potential claims.

1.6 SUBSTANTIATING DATA
A. When Owner’s Representative requires substantiating information, submit data justifying dollar amounts in question.
B. Provide one copy of data with cover letter for each copy of submittal. Show Application number, date, and line item by number and description.
C. When Application for Payment is requesting payment for stored materials the following information shall be submitted:
   1. Letter transferring ownership of material stored off site.
   2. Insurance certificate covering material stored off site.
   3. Invoice from supplier confirming cost of all stored material, whether on or off site.

1.7 PAYMENT PERIOD
A. If the Contractor has made a request for payment as stated above, the District will, with reasonable promptness, issue payments to the Contractor on the next standard monthly payment schedule, for such amount as the District, Architect, and Owner’s Representative determine to be properly due. If there are no problems with that month’s progress billing, reimbursement for compensation shall be paid to the Contractor no later than thirty (30) days from the approved progress billing.

PART 2 - PRODUCTS
Not used

PART 3 - EXECUTION
Not used

END OF DOCUMENT
LIST OF POTENTIAL CLAIMS

To: Des Moines Public Schools
From:

DMPS LINCOLN ROUNDHOUSE CHILLER REPLACEMENT: Invoice Period:
Bid Number: B8712 From: To:

Check one of the following:

Yes, we have the following listed potential claims for the contract period listed above. (List below or on additional sheets the potential claims for this contract period. Include description of potential claim and a potential estimated cost.)

No, we do not have any potential claims for the contract period listed above.

(Signature) ________________________________ (Date) ________________________________

(Printed Name) ________________________________

(Title) ________________________________
**AIA Document G703**

**APPLICATION AND CERTIFICATE FOR PAYMENT**

**CONTINUATION SHEET**

AIA Document G702, APPLICATION AND CERTIFICATE FOR PAYMENT, containing Contractor's signed Certification is attached.

Use for those contracts where variable retainage for line items may apply.

Des Moines, IA 50303

FROM CONTRACTOR:

**CONTRACTOR'S APPLICATION FOR PAYMENT**

Application is made for payment, as shown herein, in connection with the Contract

Contribution Sheet, AIA Document G703, is attached.

Line Item for OH&P

Line Item for General Conditions

Spec Section - Line for Labor

Spec Section - Line for Material

**ARCHITECT'S PROJECT NO**: 

**APPLICATION NO**: 

**APPLICATION DATE**: 

**PERIOD TO**: 

**ARCHITECT'S PROJECT NO**: 

**APPLICATION NUMBER**: 

**PERIOD TO**: 

**ARCHITECT'S PROJECT NO**: 

**APPLICATION NUMBER**: 

**APPLICATION DATE**: 

**PERIOD TO**: 

**CERTIFICATE FOR PAYMENT**

In accordance with the Contract Document, based on one or more submittals and the data comprising this application, the Architect certifies to the Owner that the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the Amount Certified.

**AMOUNT CERTIFIED**: 

**DATE**: 

**ARCHITECT**: 

**DATE**: 

**This Certificate is not negotiable. The Amount Certified is payable only to the Contractor named herein. The issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.** 

**REMAINING BALANCE**: 

**RETAINAGE**: 

**NOTES**: 

**CAUTION**: You should use an original AIA document which has this caution printed in red. An original assures that changes will not be obscured as may occur when documents are reproduced.
1.1 SUMMARY
A. Section Includes
   1. Submittals.
   3. Change procedures.
   4. Execution of change orders.
   5. Correlation of Contractor submittals.
B. Related Sections
   2. Section 01300 - Submittals.

1.15 DEFINITIONS
The following definitions shall be used in establishing prices for change orders:
A. “Price” is the direct cost of material, labor, equipment, insurance, bond, and subcontract costs, plus profit and overhead.
B. “Cost” is the direct expense for material, labor, equipment, insurance, bond, and subcontract costs.
C. “Direct expense” is the Contractor’s actual cost of any item that is required for the completion of his Contract obligation (i.e., tool rental, material, equipment, etc.).
D. “Overhead” is a business expense created by the project, but not necessarily a direct part of that portion of the work involved (i.e., small tools, project management, (including job site superintendent, administrative support, etc.).
E. “Profit” is the compensation accruing to the Contractor for the assumption of risk in a business enterprise.

1.2 SUBMITTALS
A. Submit name of the individual authorized to receive change documents and be responsible for informing others in Contractor's employ or Subcontractors of changes to the Work.
B. Field Order Request Forms: Forms approved by the Owner’s Representative and Owner.
C. Approved Forms are attached to this Section.
D. FIELD ORDER REQUESTS MUST BE SUBMITTED IN WRITING WITHIN TEN (10) DAYS FROM THE DATE THE CONTRACTOR HAS KNOWLEDGE OF THE PROPOSED CHANGE.

1.3 DOCUMENTATION OF CHANGE IN CONTRACT SUM AND CONTRACT TIME
A. Furnish a proposal for a Field Order Request containing a price breakdown, itemized as required by the Owner’s Representative. The breakdown shall be in sufficient detail to permit an analysis of all direct costs, such as material, labor, equipment, insurance, bond, and
subcontract costs. Any amount claimed for subcontracts shall be supported by a similar price breakdown.

B. Maintain detailed records of work done on a time and material basis. Provide a complete description of the proposed change together with complete information required for evaluation and to substantiate costs of all changes in the Work.

C. Document each quotation for a change in cost or time with sufficient data to allow evaluation of the quotation.

D. Provide additional data to support computations for each request:
   1. Quantity of products, labor and equipment.
   2. Taxes, insurance and bonds.
   3. Justification for any change in Contract Time. (Applies to critical path items only)
   4. Credit for deletions from Contract, similarly documented.

E. Support each claim for additional costs, and for work done on a time and material basis, with additional information:
   1. Origin and date of claim.
   2. Dates and times work was performed, and by whom.
   3. Time records and wage rates paid.
   4. Invoices and receipts for products, equipment, and subcontracts, similarly documented.

1.4 PROFIT & OVERHEAD MARK-UP FOR FIELD ORDERS AND CHANGE ORDERS

A. The profit and overhead mark-up on costs for all change orders shall NOT EXCEED the following:
   1. Fifteen (15) percent maximum mark-up for overhead and profit for Work directly performed by employees of the Contractor, Subcontractor or Sub-Subcontractor.
   2. Five (5) percent maximum Contractor’s mark-up for overhead and profit for Work performed or passed through by a Subcontractor and passed through to the Owner by the Contractor.
   3. Five (5) percent maximum Subcontractor’s mark-up for overhead and profit for Work performed or passed through by a Sub-Subcontractor and passed through to the Owner by the Subcontractor and Contractor.
   4. Regardless of the above, the maximum allowable total mark-up for all tiers of contractors shall be twenty (20) percent passed through to the Owner by the Prime Contractor under any circumstances.

1.5 CHANGE PROCEDURES – FIELD ORDERS & CHANGE ORDERS

A. The Architect will advise of minor changes in the Work not involving an adjustment to Contract Sum or Contract Time by issuing supplemental instructions.

B. The Owner’s Representative may issue a Field Order Request which includes a detailed description of a proposed change with supplementary or revised Drawings and Specifications, a change in Contract Time for executing the change, and the period of time
during which the requested price will be considered valid. Contractor shall prepare and submit an estimate within 10 days.

C. The Contractor may propose a change by submitting a request for change to the Owner’s Representative describing the proposed change and its full effect on the Work, with a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full documentation.

D. For any potential claims, the Contractor must fill out a Potential Claim Form with each monthly Pay Application. See paragraph 18.01 of the General Conditions and Section 01027 – Application for Payment

1.5 EXECUTION OF FIELD ORDERS

A. Upon the Owner’s approval of a Field Order Request (FOR), it will act as the authorization for the Contractor to proceed with the change.

B. Field Order Requests are executed for any change up to 15% of contract amount and are approved by the District’s Chief Operating Officer.

C. If Total of all FORs exceed 15% of the total contract value, the school board will be notified and any changes beyond this point are presented to the school board for approval.

1.6 CORRELATION OF CONTRACTOR SUBMITTALS

A. Contractor will promptly revise Schedule of Values and Application for Payment forms to record each authorized Field Order Request as a separate line item and adjust the Contract Sum.

B. Promptly revise progress schedules to reflect any changes in Contract Time, revise sub-schedules to adjust time for other items of work affected by the change, and resubmit.

C. Promptly enter changes in Project Record Documents.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION
PART 1 - GENERAL

1.1 SECTION INCLUDES
   A. Submission procedures.
   B. Documentation of changes to Contract Sum and Contract Time.

1.2 RELATED SECTIONS
   A. Document 00310 - Proposal: Schedule of Bid Alternates.
   B. Document 00510 - Agreement Form: Incorporating monetary value of accepted Alternates.
   C. Document 00100 - Instructions To Bidders: Requirements for Alternates.
   D. Section 01310 - Progress Schedules: Work schedule affected by Alternates.
   E. Section 01600 - Material and Equipment: Product options and substitutions.

1.3 REQUIREMENTS
   A. Submit Alternates with full description of the proposed Alternate and the affect on adjacent or related components.
   B. Alternates quoted on Proposal Forms will be reviewed and accepted or rejected at Owner's option. Accepted Alternates will be identified in the Owner-Contractor Agreement.
   C. Coordinate related work and modify surrounding work to integrate the Work of each Alternate.

1.4 SELECTION AND AWARD OF ALTERNATIVES
   A. Indicate variation of Bid Price for Alternates described below and list in Proposal Form or any supplement to it which requests a 'difference' in Bid Price by adding to or deducting from the base bid price.
   B. Bid may be evaluated on base bid price, Consideration may be given to Alternates and Bid Price adjustments.

1.5 SCHEDULE OF ALTERNATES
   A. None

PART 2 – PRODUCTS
   Not used

PART 3 – EXECUTION
   Not used

END OF SECTION
1.1 SUMMARY

A. Section Includes
   1. Coordination
   2. Pre-construction Meeting
   3. Project Meetings
   4. Pre-installation Conferences
   5. Electrical and Mechanical Coordination
   6. Coordination with Work by District
   7. Special Meetings
   8. Coordination of Contract Closeout

1.2 COORDINATION

A. Coordinate scheduling, submittals, and Work of the various Sections of specifications to assure efficient and orderly sequence of Work, with provisions for accommodating items to be installed later and for accommodating items to be installed by the District and other Contractors.

B. Resolve differences or disputes concerning coordination, interference, or extent of work of the various sections of the specifications. Contractor's decisions if consistent with the requirements of the Contract Documents shall be final.

C. Coordinate completion and clean up of Work of separate Sections in preparation for Substantial Completion.

D. Coordinate requests for substitutions to assure compatibility of space, of operating elements, and affect on work of other sections.

E. Coordinate sequence of work to accommodate District occupancy as specified in Section 01010.

F. Coordinate work so that work within telecom rooms is the first work done when a new trade comes on-site.

1.3 PRE-CONSTRUCTION MEETING

A. The Owner’s Representative will schedule a conference after Notice of Contract Award and prior to the start of Work.

B. Attendance Required: Owner, Architect, Owner’s Representative, Contractor, and others as appropriate.

C. Agenda:
   1. Submission of executed bonds and insurance certificates.
   3. Submission of Schedule of Values, and progress schedule.
4. Designation of personnel representing the parties in Contract, the Owner’s Representative, and the Architect.

5. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders and Contract Closeout procedures.

1.4 PROJECT MEETINGS

A. The Owner’s Representative will schedule and administer meetings throughout progress of the Work at weekly intervals or as designated.

B. The Owner’s Representative will make arrangements for meetings, prepare agenda with copies for participants, preside at meetings, receive minutes from the Architect, and distribute copies within two days to Contractor, Architect, Owner, participants and those affected by decisions made. Architect will record minutes in an approved format within 2 days and deliver to Owner’s Representative. In the event Architect does not provide minutes within 48 hours, the Owner’s Representative may prepare minutes.

C. Attendance Required: Project Manager, job superintendent, major Subcontractors, suppliers and others as appropriate to agenda topics for each meeting.

D. Agenda:
   1. Review minutes of previous meetings.
   2. Review of Work progress.
   3. Field observations, problems and decisions.
   4. Identification of problems that impede planned progress.
   5. Review of submittals schedule and status of submittals.
   6. Maintenance of progress schedule.
   7. Corrective measures to regain projected schedules.
   8. Planned progress during each succeeding work period.
   9. Coordination of projected progress.
   10. Maintenance of quality standards and work standards.
   11. Effect of proposed changes on progress schedule and coordination.
   12. Other business relating to Work.

1.5 PRE-INSTALLATION CONFERENCES

A. The Contractor will convene pre-installation conferences when required by individual Section of the Specifications. Include affected parties including the owner’s representative and the Architect/Engineer.

1.6 ELECTRICAL AND MECHANICAL COORDINATION

A. Coordinate use of project space and sequence of installation of mechanical and electrical work that is indicated diagrammatically on Drawings. Follow routings shown for pipes, ducts, and conduits as closely as practicable, with due allowance for available physical space; make runs parallel with lines of building. Utilize space efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
B. Use large scale drawings, if their preparation is required as part of work of Division 15 - Mechanical, and Division 16 - Electrical, of these specifications, together with shop drawings and layout drawings of other affected sections of these specifications to check, coordinate and integrate the work of various sections to prevent interferences.

C. Perform and complete checking and coordination before commencing construction in the affected areas.

D. In finished areas, except as otherwise shown, conceal pipes, ducts, and wiring in the construction. Coordinate locations of fixtures and outlets with finish elements.

1.7 COORDINATION WITH WORK BY DISTRICT

A. Coordinate service connections for District furnished and District installed equipment. Verify that service connections are correct sizes and in required locations.

B. Coordinate support and anchorage for equipment furnished and installed by the District. Provide blocking and backing as shown or directed to facilitate installation of equipment by others.

1.8 SPECIAL MEETINGS

A. The Owner’s Representative may call special meetings at any time during the course of the project. Special project meetings, if deemed necessary, shall include representatives of the Contractor and subcontractors as required by the Owner’s Representative.

1.9 COORDINATION OF CONTRACT CLOSEOUT

A. Coordinate completion and cleanup of work of separate sections in preparation for Substantial Completion.

B. After District occupancy of premises, coordinate access to site by the various construction trades for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of District's activities.

C. Assemble and coordinate closeout submittals.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION
PART 1 - GENERAL

1.1 SECTION INCLUDES
   A. Requirements and limitations for cutting and patching of work.

1.2 RELATED SECTIONS
   A. Section 01010 - Summary of Work: Work by District or by separate contractors.
   B. Section 01120 - Alteration Project Procedures: Cutting and patching for alteration work.
   C. Section 01300 - Submittals.
   D. Section 01630 - Product Options and Substitutions.
   E. Individual Product Specification Sections:
      1. Cutting and patching incidental to work of the section.
      2. Advance notification to other sections of openings required in work of those sections.
      3. Limitations on cutting structural members.

1.3 SUBMITTALS
   A. Submit written request in advance of cutting or alteration which affects:
      1. Structural integrity of any element of project.
      2. Integrity of weather-exposed or moisture-resistant element.
      3. Efficiency, maintenance, or safety of any operational element.
      5. Work by District or by separate contractor.
   B. Include in request:
      1. Identification of project.
      2. Location and description of affected work.
      3. Necessity for cutting or alteration.
      4. Description of proposed work, and products to be used.
      5. Alternatives to cutting and patching.
      6. Effect on work of District or separate contractor.
      7. Written permission of affected separate contractor.
      8. Date and time work will be executed.

1.4 QUALITY ASSURANCE
   A. Patching shall achieve security, strength, weather protection and continuity of fire ratings, as applicable.
   B. Patching shall successfully duplicate undisturbed adjacent finishes, colors, textures, and profiles. Where there is a dispute as to whether duplication is successful or has been achieved to a reasonable degree, the Architect's judgment shall be final.
PART 3 - EXECUTION

3.1 EXAMINATION
A. Inspect existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching.
B. After uncovering existing work, inspect conditions affecting performance of work.
C. Beginning of cutting or patching means acceptance of existing conditions.

3.2 PREPARATION
A. Provide temporary supports to ensure structural integrity of the work. Provide devices and methods to protect other portions of project from damage.
B. Provide protection from elements for areas which may be exposed by uncovering work.
C. Maintain excavations free of water.

3.3 CUTTING AND PATCHING
A. Execute cutting, fitting, and patching including excavation and fill to complete work.
B. Fit products together, to integrate with other work.
C. Uncover work to install ill-timed work.
D. Remove and replace defective or non-conforming work.
E. Remove samples of installed work for testing when requested.
F. Provide openings in the work for penetration of mechanical, electrical and other work.

3.4 PERFORMANCE
A. Execute work by methods to avoid damage to other work, and which will provide appropriate surfaces to receive patching and finishing.
B. Employ original installer to perform cutting and patching for weather exposed and moisture resistant elements and sight-exposed surfaces installed as work of this Contract.
C. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
D. Restore work with new products in accordance with requirements of Contract Documents.
E. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
F. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material to full thickness of the penetrated element.
G. Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit. Painted surfaces shall not present a spotty, touched-up appearance.

END OF SECTION
1.1 SECTION INCLUDES
   A. Quality control.
   B. Surveying services.
   C. Project record documents.

1.2 RELATED SECTIONS
   A. General Conditions: Benchmarks, Monuments, Statues and Measurements. GC-13
   B. Section 01700 - Contract Closeout: Project record documents.

1.3 QUALITY CONTROL
   A. Employ a professional Engineer of the discipline required for specific service on project, licensed in the State of Iowa.
   B. Submit evidence of Engineer’s errors and omissions insurance coverage in the form of an Insurance Certificate.

1.4 SUBMITTALS
   A. Submit name, address, and telephone number of Engineer before starting survey work.
   B. On request, submit documentation verifying accuracy of survey work.
   C. Submit a copy of registered site drawing and certificate signed by the Engineer, that the elevations and locations of the work are in conformance with Contract Documents.

1.5 PROJECT RECORD DOCUMENTS
   A. Maintain complete, accurate log of control and survey work as it progresses. Indicate dimensions, locations, angles, and elevations of construction and site work.
   B. Submit Record Documents under provisions of Section 01700.
   C. Project Record documents are to be updated on a regular basis. The status of the Project Record Documents will be considered when evaluating Applications for Payment. See section 1027 paragraph 1.4 E.

1.6 EXAMINATION
   A. Verify locations of survey control points prior to starting work.
   B. Promptly notify Architect of any discrepancies discovered.

1.7 SURVEY REFERENCE POINTS
   A. Contractor to locate and protect survey control and reference points.
   B. Control datum for survey is that indicated on Drawings.
   C. Protect survey control points prior to starting site work; preserve permanent reference points during construction.
   D. Promptly report to Program Manager the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.
   E. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Architect.
1.8 SURVEY REQUIREMENTS

A. Provide field engineering services. Utilize recognized engineering survey practices.

B. Establish a minimum of two permanent bench marks on site, referenced to established control points. Record locations, with horizontal and vertical data, on Project Record Documents.

C. Establish lines and levels, locate and lay out by instrumentation and similar appropriate means:
   1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
   2. Grid or axis for structures.
   3. Building foundation, column locations, and ground floor elevations.

D. Periodically verify layouts by same means.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION
1.1 SUMMARY
A. Section Includes
   1. Quality Assurance.
   2. Statutory and Jurisdictional Regulations.
B. Related Sections
   1. Document 00700 - General Conditions of the Contract for Construction

1.2 QUALITY ASSURANCE
A. For products of workmanship specified by association, trade, or Federal Standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

1.3 STATUTORY AND JURISDICTIONAL REGULATIONS
A. All work shall conform to the following requirements:
   All building projects for Des Moines Public Schools (DMPS) shall be designed and Contract Documents prepared in conformity with the following Codes and Regulations:
   1. International Building Code (Most current version used by City of Des Moines)
   2. International Existing Buildings Code (Most current version used by City of Des Moines)
   3. Des Moines Municipal Code
   4. Uniform Plumbing Code (Most current version used by City of Des Moines)
   5. National Electric Code (Most current version used by City of Des Moines)
   6. International Mechanical Code (Most current version used by City of Des Moines)
   7. International Fire Code (Most current version used by City of Des Moines)
   8. Metropolitan Design Standards for Engineering
   10. ADA Accessibility Guideline for Buildings and Facilities
   15. United States Occupational Safety and Health Administration 29CFR 1910 –
1.4 GENERAL STANDARDS FOR WORK AND MATERIALS

A. Trade Standards:
   1. Referenced standards shall have full force and effect as though printed herein. Upon request, Architect will furnish information as to where copies may be obtained.
   2. Material or trade associations, societies, or other bodies regularly publishing standards most widely used under these documents are listed herein together with reference symbols.
   3. Individual standards referenced in technical specifications (Divisions 1 through Division 16) shall also apply to the work of this contract.
   4. No construction shall commence until building plans have been submitted to and approved by the State Fire marshal’s Office and the State Building Code Bureau and/or other approving agencies as applicable.

1.5 APPLICATION

A. If there is a conflict between any referenced standard and the Contract Documents, notify the Program Manager, and await instructions before proceeding with affected work.

B. The contractual relationships, duties, and responsibilities of the parties to the Contract shall not be altered by mention or inference in any reference document.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION
PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Products and installation for patching and extending existing work.
B. Products and installation for installing new components in existing construction.
C. Transition and adjustments.
D. Repair of damaged surfaces, finishes, and cleaning.

1.2 RELATED SECTIONS

A. Section 01040 - Coordination: Work sequence: District occupancy.
B. Section 01045 - Cutting and Patching.
C. Section 01500 - Construction Facilities and Temporary Controls: Temporary enclosures, protection of installed work and existing facilities, and cleaning during construction.

PART 2 - PRODUCTS

2.1 PRODUCTS FOR PATCHING AND EXTENDING WORK

A. New Materials: As specified in product sections or match existing products and work for patching and extending work.
B. Type and Quality of Existing Products: Determine by inspection and testing products where necessary, referring to existing work as a standard.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that demolition is complete, and areas are ready for installation of new work.
B. Beginning of restoration work means acceptance of existing conditions.

3.2 PREPARATION

A. Cut, move, or remove items as necessary for access to alterations and renovation work. Replace and restore at completion.
B. Remove unsuitable material not marked for salvage, such as rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished work.
C. Remove items to be salvaged and relocate to an area on the main level of the building as designated by the Owner’s Representative. Coordinate Owner's storage with Owner’s Representative. Weather protect until acceptance by Owner.
D. Remove debris and abandoned items from area and from concealed spaces.
E. Prepare surface and remove surface finishes to provide for proper installation of new work and finishes.
F. Close openings in exterior surfaces to protect existing work and salvage items from weather and extremes of temperature and humidity. Insulate ductwork and piping to prevent condensation in exposed areas.
G. Protect existing fire alarm sensors and wiring in ceilings and walls from damage.
1. Alert Owner’s Representative prior to work in buildings with existing active fire alarm sensors to avoid response to false alarm and advise Owner’s Representative each day at end of work to reinstate response to alarms.

3.3 INSTALLATION

A. Coordinate work of alterations and renovations to expedite completion sequentially and to accommodate District occupancy.

B. Remove, cut, and patch work in a manner to minimize damage and to provide a means of restoring products and finishes to specified condition.

C. Refinish visible existing surfaces to remain in renovated rooms and spaces, to specified condition for each material, with a neat transition to adjacent finishes.

D. Advise Architect of existing plumbing, heating, ventilation, air conditioning, and electrical systems which are found to be deficient during course of the work.

E. Install products as specified in individual sections.

3.4 TRANSITIONS

A. Where new work abuts or aligns with existing, perform a smooth and even transition. Patch work to match existing adjacent work in texture and appearance.

B. When finished surfaces are cut so that a smooth transition with new work is not possible, terminate existing surface along a straight line at a natural line of division.

3.5 ADJUSTMENTS

A. Where removal of partitions or walls results in adjacent spaces becoming one, rework floors, walls, and ceilings to a smooth plane without breaks, steps, or bulkheads.

B. Where a change of plane of 1/4 inch or more occurs, provide for a smooth transition.

C. Trim existing doors as necessary to clear new floor finish. Refinish trim as required.

D. Fit work at penetrations of surfaces as specified in Section 01045.

3.6 FINISHES

A. Finish surfaces as specified in individual product sections.

B. Finish patch work to produce uniform finish and texture over entire area. When finish cannot be matched, refinish entire surface to nearest intersections.

END OF SECTION
1.1 SUMMARY

A. Section Includes
1. Submittal procedures.

B. Related Sections
1. Section 01310 - Progress Schedules
2. Section 01400 - Quality Control
3. Section 01630 - Product Options and Substitutions
5. Document 00700 – General Conditions of the Contract

1.2 SUBMITTAL PROCEDURES

A. Submit schedule of submittals within 3 working days of receiving Notice of Contract Award. Submittal schedule to include proposed submittal number, specification section, title and anticipated date of submission.

B. All submittals to be submitted for approval within 30 days of Notice of Contract Award.

C. Transmit submittals to Owner’s Representative using Owner’s Representative approved format. Electronic PDF submittals are to be used when possible.

D. Number the submittals using the specification number from the specifications. Resubmittals shall have original number with an alphabetic suffix.

E. Identify Project, Contractor, Subcontractor or supplier; name and telephone number of individual to contact for additional information; pertinent Drawing sheet and detail number(s), specification section number, as appropriate, and date of submission.

F. Apply Contractor's stamp, signed or initialed, certifying that review, verification of products required, field dimensions, adjacent construction work, and coordination of information, is in accordance with the requirements of the work and Contract Documents.

G. Submit product data sheets which clearly designate which of the items on the sheet is being provided. Cross all other items out to clarify the submittal.

H. Submit color charts in proper quantities of original color materials; photocopied reproductions will not be accepted.

I. Fully coordinate material prior to submittal. Determine and verify field dimensions and conditions, catalog numbers, and similar data. Coordinate with public agencies involved and secure necessary approvals; signify that approvals have been secured by stamp or other means. Coordinate with the various types of work involved; make submittals in groups containing all associated items.

J. Submit product submittals required by individual sections of the specifications. Submittals not required by the specifications, but made at the option of the Contractor, will be returned without review unless accompanied by written, valid justification.
K. Schedule submittals to expedite the Project and deliver to Owner’s Representative. Coordinate submission of related items. Allow a minimum of 15 calendar days for processing.

L. Make complete product submittals. Include shop drawings, product data, samples, manufacturer's instructions and manufacturer's certificates as required in individual specification sections. Partial submittals will be rejected as not complying with Contract Documents. Manufacturer’s certificates based on tests or inspections at time of manufacture may be submitted separately.

M. Identify variations from Contract Documents and product or system limitations which may be detrimental to successful performance of the completed work. State whether submitted product is the specified product or an accepted substitution. Shop drawings and product data indicating substitutions which have not been previously accepted will be returned without review.

N. Provide space for Contractor, Owner’s Representative, and Architect/Engineer review stamps.

O. Submit in PDF format.

P. The Architect will review the submittals; mark the submittals with required revisions; stamp the submittals and indicate "No Exceptions Taken," "Make Corrections Noted," "Revise and Resubmit," "Rejected" or "Submit Specified Item" and return the submittal.

Q. Review the returned submittals and take appropriate action as indicated. If submittals are marked "Revise and Resubmit," "Rejected" or "Submit Specified Item," make revisions necessary, identify revisions with a 'cloud' and resubmit in same manner and number as for the original submittal.

R. The Architect will review the resubmittal and take action, as appropriate, in the same manner as for the original submittal.

S. Review the returned resubmittal and take appropriate action as indicated. Continue to revise and resubmit until Architect returns resubmittal marked "No Exception Taken" or "Make Corrections Noted." Said marks signify final action.

T. Following final action by the Architect, provide copies of submittals for concerned parties including District, Job Superintendent and appropriate subcontractors. Instruct parties to promptly report any inability to comply with provisions.

U. Use only those submittals which bear stamps showing final review of the Contractor, the Architect and appropriate Architect's consultant, as appropriate.

V. If deviations, discrepancies or conflicts between the shop drawings/submittals and contract documents are discovered either prior to or after the shop drawings/submittals are processed by the Architect, the contract documents shall control over the shop drawings/submittals.

1.3 PRODUCT DATA/MATERIAL LIST

A. Submit the number of copies which the Contractor requires, plus six (6) copies which will be retained of any submittal which cannot be made by PDF.
B. Submit manufacturer's most recently published catalog sheets, brochures, drawings, schedules, performance charts, illustrations and other standard descriptive data.

1. Modify submittal in a neat and orderly fashion to delete information which is not applicable to Project.

2. Supplement standard information to provide additional information applicable to Project.

3. Make note of dimension and clearances required.

4. Make note of performance characteristics and capacities.

1.4 SAMPLES

A. Submit the size of samples specified in individual specification sections. Submit the number of samples which the contractor requires, plus two (2) of which will be retained. Contractor to retain Owner copy of sample at project site.

B. Submit samples to illustrate functional and aesthetic characteristics of the Product, with integral parts and attachment devices. Coordinate sample submittal for interfacing work.

C. Submit samples of finishes from the full range of manufacturer's standards of selected custom colors, textures and patterns for Architect's selection.

D. Where samples have natural variation in texture, color and dimension, submit samples showing extreme range plus the middle variation.

E. Erect Field Samples and Mock-Ups at the Project site at location acceptable to Owner’s Representative and Architect. Construct each sample or mock-up complete, including work of all trades required in finished work.

1.5 SHOP DRAWINGS

A. Submit in the form of one reproducible transparency and five opaque reproductions if submittal cannot be made by PDF or CAD. Opaque reproductions will be retained by the Owner’s Representative and Architect.

B. State or indicate data necessary to describe the product or system. Present in a clear and thorough manner.

C. Identify field dimensions; show relation to adjacent or critical features, work or products.

D. Title each drawing with DMPS LINCOLN ROUNDHOUSE CHILLER REPLACEMENT and number.

E. After review, reproduce and distribute in accordance with article on procedures above and for Record Documents described in Section 01700, Contract Closeout.

1.6 MANUFACTURER’S INSTRUCTIONS AND CERTIFICATES

A. When specified in individual specification sections, submit manufacturer's printed instruction for delivery, storage, assembly, installation, start-up, adjusting, finishing in quantities specified for Product Date.

B. Identify conflicts between manufacturer's instructions and Contract Documents.

C. Submit manufacturer's certifications based on recent or previous test results with other submittals specified. Submittal certifications based on tests or inspections at time of manufacture with product delivery.

D. When specified in individual specification sections, submit manufacturer's certificate for review in quantities specified for Product Data.
E. Indicated material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

F. Certificates may be recent or previous test results on material or Product, but must be acceptable to Architect.

1.7 PATTERNS AND COLORS

A. Unless the exact pattern and color of a product is indicated in the Contract Documents whenever a choice of pattern or color is available for a product, submit accurate color charts and pattern charts in the required number of original color or patterns for review and selection.

1.9 SUBMITTAL TIMELINE

A. The following submittals are due within 24 hours of Bid Time:
   1. Targeted Small Business Participation Form (Document 00312)
   2. Non-Collusion Affidavit (Document 00313)
   3. Bidder Status Form (Document 00314)
   4. Personnel Acknowledgement and Certification (Document 00315)
   5. List of Subcontractors and Suppliers

B. The following submittals are due 10 working days after Notice of Contract Award:
   1. Preliminary Construction Schedule
   2. Certificate of Insurance
   3. Bond
   4. Schedule of Submittals
   5. Copy of Contractor’s Safety Program
   6. Copy of Contractor’s Jobsite Staging Plan

C. The following submittals are due 10 working days prior to first Application for Payment:
   1. Schedule of Values
   2. Construction Progress Schedule
   3. Security Program (section 01500 para. 1.21)

D. The following submittals are due 30 calendar days after Notice of Contract Award:
   1. Balance of all required Project submittals

E. The submittal log will be maintained by the Contractor.

PART 2 - PRODUCTS

Not used
Not used
DES MOINES INDEPENDENT
COMMUNITY SCHOOL DISTRICT
LINCOLN ROUNDHOUSE CHILLER REPLACEMENT

PART 1 - GENERAL

1.1 SUMMARY
   A. Section Includes
      1. Format.
      2. Content.
      3. Revisions to Schedules.
   B. Related Sections
      1. Section 01040 - Coordination and Meetings: Project Meetings.

1.2 FORMAT
   A. Prepare Schedules as a horizontal bar chart or CPM with separate bar for each major portion of Work or operation, identifying first workday of each week.
   B. Use commercially available software for producing schedule. Provide electronic document to Owner’s Representative if requested.
   C. Sequence of listing: The chronological order of the start of each item of work.
   D. Scale and Spacing: To provide space for notations and revisions.

1.3 CONTENT
   A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.
   B. Identify each item by specification Section number.
   C. Identify work by separate stages and logically grouped activities.
   D. Provide sub-schedules to define critical portions of the entire Schedule.
   E. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.
   F. Show coordination with District work and other contractors.
   G. Show the network schedule logic on the schedule form of a CPM (or table if a bar chart is used).
   H. Indicate Critical Path of project activities on the project schedule.

1.4 REVISIONS TO SCHEDULES
   A. Indicate progress of each activity to date of submittal, and projected completion date of each activity.
   B. Identify activities modified since previous submittal, major changes in scope and other identifiable changes.
   C. Provide narrative report to define problem areas, anticipated delays and impact on Schedule. Report corrective action taken, or proposed, and its effect.

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1.5 SUBMITTALS

A. Submit Preliminary Construction Schedule within 10 working days after date of Notice of Award.

B. Construction Progress Schedule to be submitted and accepted prior to first Application for Payment.

C. After the Owner’s Representative has accepted the Construction Progress Schedule, it shall become the basis for determining scheduled completion of the project.

D. Submit updated Construction Progress Schedules with each Application for Payment.

E. Submit the schedule by electronic distribution.

1.6 DISTRIBUTION

A. Distribute copies of Project Construction Schedule to project site file, Subcontractors, suppliers, and other concerned parties.

B. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in Schedules.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION
1.1 SECTION INCLUDES
A. Quality assurance and control of installation.
B. References.
C. Field samples.
D. Mock-up.
E. Inspection and testing laboratory services.
F. Manufacturers' field services and reports.

1.2 RELATED SECTIONS
A. Section 01090 - Reference Standards.
B. Section 01300 - Submittals: Submission of Manufacturers' Instructions and Certificates.
C. Section 01410 - Testing Laboratory Services.
D. Section 01600 - Material and Equipment: Requirements for material and product quality.

1.3 QUALITY ASSURANCE/CONTROL OF INSTALLATION
A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship to produce Work of specified quality.
B. Comply fully with manufacturers' instructions, including each step in sequence.
C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Owner's Representative before proceeding.
D. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes or specified requirements indicate higher standards or more precise workmanship.
E. Perform work by persons qualified to produce workmanship of specified quality.
F. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

1.4 REFERENCES
A. Conform to reference standards in effect on date of Contract Documents unless otherwise specified in product Sections.
B. Obtain copies of standards when required by Contract Documents.
C. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.5 FIELD SAMPLES
A. Install field samples at the site as required by individual specification sections for review.
B. Acceptable samples represent a quality level for the Work.
C. Where field sample is specified in individual sections to be removed, clear area after field sample has been accepted by Architect.
1.6 MOCK-UP

A. Mock-ups shall be prepared in a timely manner to allow review and acceptance by the Owner’s Representative, Owner and Architect.

B. Assemble and erect specified items, with specified attachment and anchorage devices, flashings, seals and finishes.

C. Where mock-up is specified in individual Sections to be removed, clear area after mock-up has been accepted by Architect.

1.7 INSPECTION AND TESTING LABORATORY SERVICES

A. Owner will appoint, employ and pay for services of an independent firm to perform inspection and testing.

B. The independent firm will perform inspections, tests, and other services specified in individual specification sections and as required by the Architect.

C. Reports will be submitted by the independent firm to the Architect and Owner’s Representative in writing indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.

D. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage and assistance as requested.

1. Notify Architect, Inspector and Owner’s Representative 48 hours prior to expected time for operations requiring services.

2. Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.

1.8 MANUFACTURERS' FIELD SERVICES AND REPORTS

A. Submit qualifications of observer to Owner’s Representative 30 days in advance of required observations. Observer subject to approval of Owner’s Representative and Architect.

B. When specified in individual specification sections, require material or product suppliers or manufacturers to provide: qualified staff personnel to observe site conditions, conditions of surfaces and installation; quality of workmanship; start-up of equipment; test, adjust, and balance of equipment; and other as applicable, and to initiate instructions when necessary.

C. Individuals to report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

D. Submit report in triplicate within 30 days of observation to Owner’s Representative for review.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION
PART 1 - GENERAL

1.1 SECTION INCLUDES
   A. District provided testing laboratory services.
   B. Contractor provided testing and inspection services.

1.2 RELATED SECTIONS
   A. Section 01700 - Contract Closeout: Record documents.
   B. Individual Specification Sections: Inspections and tests required, and standards for testing.
   C. Divisions 15 and 16 - Mechanical and Electrical: Testing, adjusting and balancing of mechanical and electrical systems.

1.3 SELECTION AND PAYMENT
   A. The District will employ and pay for the services of testing to conduct required tests and inspections for the project.

   1. Soils: The District will employ and pay for the services of a Soils Engineer to observe excavating, grading, and filling operations and to provide testing of soil materials as specified in individual sections of this specification. The Soils Engineer will have management, laboratory and field supervisory personnel with minimum 5 years experience in testing and inspection of soils materials and will have adequate facilities, equipment, and technical references to permit performance of testing and inspections within applicable regulations and standards.

   B. Other Construction: The District will employ and pay for the services of a testing laboratory to conduct tests, inspections, and special inspections as required and as specified in individual sections of this specification.

      a. For construction requiring testing and inspection other than special inspection. The testing laboratory will have management, laboratory and field supervisory personnel with minimum 5 years experience in testing and inspection of work and materials of construction and will have adequate facilities, equipment, and technical references to permit performance of testing and inspections within applicable regulations and standards.

   B. Re-testing: Per paragraph G.C. 20, when initial tests indicate non-compliance with the Contract Documents, subsequent re-testing occasioned by the non-compliance shall be performed by the same testing agency and the costs thereof will be deducted by the District from the Contract Sum by Change or Field Order.

   C. Re-testing Covered Work: Re-examination of previously tested and inspected work may be ordered by the Architect and by the Owner. The Contractor shall uncover such work if re-testing is ordered. If work is found in accordance with Contract Documents, the District will pay costs of uncovering, removing, re-testing and replacing. If work is found not in accordance with Contract Documents, the District will deduct the cost of re-testing from the Contract Sum by Change Order and the Contractor will bear the costs of uncovering, removing and replacing work.

   D. Testing and inspecting performed for Contractor’s convenience, such as testing and inspection to establish equivalence of substitutions, equivalence of repairs to damaged
materials, and testing and inspecting to expedite the operations, shall be the Contractor's responsibility.

1. The Contractor shall employ a licensed professional engineer of the discipline required to develop a testing program that will establish equivalency.

2. The Contractor shall submit the testing program to the Architect for review.

3. The Contractor shall arrange testing in accordance with the accepted testing program to be performed by the District's testing laboratory.

4. The costs of testing done by the District's testing laboratory for the Contractor will be deducted from the Contract Sum by Change Order.

5. The Contractor may not arrange for testing upon portions of the work already completed except with the written consent of the Architect.

E. Employment of testing laboratory shall in no way relieve Contractor of obligation to perform work in accordance with requirements of Contract Documents.

F. The Architect shall have the right to make tests at any time on materials or work done whether those materials are specified or substituted items.

1.4 AGENCY RESPONSIBILITIES

A. Provide qualified personnel at site. Cooperate with Program Manager, Architect, and Contractor in performance of services.

B. Perform specified sampling and testing of materials in accordance with specified standards.

C. Ascertain compliance of materials and mixes with requirements of Contract Documents.

D. Promptly notify Program Manager, Architect, and Contractor of observed irregularities and non-conformance of work and products.

E. Perform additional tests required by Architect.

F. Attend Preconstruction Meeting. Attend Progress Meetings as requested.

G. Provide quantity estimates for all work associated with unforeseen conditions.

1.5 AGENCY REPORTS

A. Test/Inspection Reports:

1. Include every test and inspection made regardless of whether such tests and inspections indicate that the material and procedures are satisfactory or unsatisfactory.

2. Provide documentation describing scope of additional work associated with unforeseen conditions.

3. Include records of special sampling operations as required.

4. Indicate specified design strength of materials such as masonry, concrete and steel.

5. State whether or not materials and procedures comply with requirements of the Construction Documents.

6. Submit copies of reports to Program Manager, District, Architect, Structural Engineer, Civil Engineer, Soils Engineer and/or Contractor as applicable within 14 days of tests. Submit copies of reports of non-complying materials and procedures immediately.
1.6 **LIMITS ON AGENCY AUTHORITY**

A. Agency or laboratory may not release, revoke, alter or enlarge on requirements of Contract Documents.

B. Agency or laboratory may not approve or accept any portion of the work.

C. Agency or laboratory may not assume any duties of Contractor.

D. Agency or laboratory has no authority to stop work.

1.7 **CONTRACTOR RESPONSIBILITIES**

A. Package and deliver to laboratory at designated location adequate samples of materials proposed to be used which require testing. Samples shall be selected by laboratory personnel. Allow proper time for selecting samples, and making tests or considerations.

B. Cooperate with laboratory personnel, and provide access to work and to manufacturer's facilities.

C. Provide incidental labor and facilities to provide access to work to be tested, to obtain and handle samples as selected by laboratory personnel at the site or at source of products to be tested, to facilitate tests and inspections, and for storage and curing of test samples.

D. Notify Program Manager and Architect, minimum 24 hours prior to expected time for operations requiring inspection and testing services. Do not allow work to be covered prior to inspection and testing.

1.8 **SCHEDULE OF INSPECTIONS AND TESTS**

A. Testing Certificates Provided by Contractor as required:
   1. Mill test reports for reinforcing steel.
   2. Mill test reports for cement.
   3. Weighmasters tickets for each load of transit mixed concrete.
   4. Weighmasters affidavit.
   5. Certifications of welders.
   6. Certifications of materials.

B. Initial Testing Provided by Owner as required:
   1. Site Clearing: Test compaction of excavation backfill.
   2. Earthwork:
      a. Sample and test fill and base materials for compliance with specified requirements.
      b. Inspect placement of engineered fill.
      c. Inspect bottoms of footings and foundation trenches.
      d. Test compaction of each layer of engineered fill.
   3. Trenching:
      a. Inspect placement of trench backfill.
      b. Test compaction of trench backfill.
4. Asphalt Concrete Paving:
   a. Sample and test quality of paving and base if directed by Program Manager and Architect.
   b. Test compaction of paving and base if directed by Program Manager and Architect.

5. Portland Cement Concrete Paving:
   a. Review mix designs.
   b. Sample and test compressive strength of concrete.
   c. Sample and test slump of concrete.

6. Concrete Reinforcing:
   a. Inspect placement and installation of reinforcing steel.
   b. Inspect field welding of reinforcing steel.

7. Cast-In-Place Concrete:
   a. Sample and test cement.
   b. Sample and test aggregate.
   c. Review mix designs and confirm mix design proportions with weighmaster.
   d. Perform initial batch plant inspection.
   e. Inspect concrete placement.
   f. Sample and test slump of concrete.
   g. Test air content of concrete.
   h. Sample and test concrete for compressive strength.
   i. Test concrete for shrinkage.

8. Structural Steel:
   a. Inspect shop and field welding.
   b. Test full penetration welds.

9. Metal Fabrications:
   a. Inspect shop and field welding of load bearing fabrications.
   b. Test full penetration welds in load bearing fabrications.

10. Fire caulking:
    a. Inspection by city certified inspection agency.
    b. Test in accordance with accepted practice.

C. Initial Testing Performed by Owner's Testing Laboratory at Owner's Cost: The cost of the following initial tests, if required, will be deducted by the Owner from the Contract Sum by Change Order.

1. Testing to establish equivalence of material not properly identified.
2. Testing to establish equivalence of substitutions.
3. Testing required in order to expedite Contractor’s operations.
4. Testing relating to repair of work which fails to meet specifications.
5. Testing and inspection required to correct damage to material in shipping and erection.

PART 2 - PRODUCTS
Not Used

PART 3 - EXECUTION
Not Used

END OF SECTION
1.1 SUMMARY
A. Section Includes
   1. Temporary Utilities: Electricity, lighting, heat, ventilation, telephone service, water service and sanitary facilities.
   2. Temporary Controls: Barriers, fencing, water, noise and vibration control, dust and mud control, traffic control, interior and exterior enclosures, protection of installed work, security and fire protection.
   3. Construction Facilities: Access roads, parking, progress cleaning, project identification, field offices and storage sheds, and construction aids.
B. Related Sections
   1. Section 01700 - Contract Closeout: Final Cleaning.

1.2 REFERENCES
A. ASTM E84 - Surface Burning Characteristics of Building Materials.

1.3 SUBMITTALS
A. Submit under the provisions of Section 01300.

1.4 TEMPORARY ELECTRICITY
A. Contractor shall provide all additional materials required for temporary power (e.g. spider boxes, temporary panels and feeder cables) and to provide labor to relocate the panels as required for the project. Contractor shall provide the labor to tie in the temporary panels to the main switchboard and to provide periodic service and maintenance to the temporary panels.
B. Temporary electrical power will be available at the project site from existing outlets and panels. Contractor will replace damaged receptacles damaged by construction activities at no cost to the District.
C. Owner will pay cost of energy used. Contractor shall exercise measures to conserve energy.
D. Should the existing electrical power not be sufficient, Contractor will arrange with the utility company to provide the additional service required and pay the costs associated with providing the additional service or to provide generators. The Contractor will pay cost of this energy used.

Permanent convenience receptacles may be used during construction. Any devices damaged during construction shall be replaced at no cost to the Owner.

1.5 TEMPORARY LIGHTING (See Section 1.4)

1.6 TEMPORARY HEAT
A. The contractor shall supply any temporary heating systems and fuel required for the addition area to allow the continuous progression of the exterior and interior work on the building.
Contractor to install and maintain construction phase filters to prevent dust from entering the systems.

1.7 TEMPORARY VENTILATION
A. Each Trade Contractor shall be responsible for providing adequate forced ventilation of enclosed areas for proper installation and curing of materials, to disperse humidity, and to prevent hazardous accumulations of dust, fumes, vapors and gases.

1.8 TEMPORARY TELEPHONE SERVICE
A. The Contractor will be responsible for their phone / communications services.
B. Trade Contractor’s Project Manager and on-site Project Supervisor shall carry mobile telephones with them during all work hours of the project and be available by phone during off hours for emergencies. Mobile phone numbers to be made available to the Owner prior to start of construction.

1.9 TEMPORARY WATER SERVICE
A. The contractor can use the existing water services for ordinary uses. Contractor is responsible for getting water from the closest existing water source.
B. Owner will pay cost of water used for ordinary uses. Exercise measures to conserve water.
C. Contractor to provide water by tank truck or by hydrant meter for watering sod. Contractor to pay for water used.

1.10 SANITARY FACILITIES
A. The contractor shall provide temporary chemical toilets for the use of their workmen.
B. Existing and permanent sanitary facilities shall not be used.

1.11 BARRIERS
A. Contractor’s, as required, shall provide temporary barriers as detailed below:
   1. Provide temporary barriers to prevent unauthorized entry to construction / building areas and to protect existing facilities and adjacent properties from damage from construction operations.
   2. Provide barricades as required by governing authorities for public rights of way and for public access.
   3. Provide barriers around trees and plants designated to remain. Provide temporary fencing around drip line of trees designated to remain. Protect against vehicular traffic, stored materials, dumping, chemically injurious materials and puddling or continuous running water. Replace damaged plant life. Maintain existing tree and plant barriers and at the conclusion of construction operations remove temporary tree and plant barriers as directed by the Owner.
   4. Provide barricades around trenches. Barricade trenches less than 6 inches deep with warning tape. Cover trenches 6 inches deep and greater subject to pedestrian traffic with plywood covers or barricade with chain link fence as specified below. Cover trenches subject to vehicular traffic with suitable steel cover or barricade with chain link fence as specified below.
B. Relocate barriers as required by progress of work.
C. Maintain temporary barriers in a structurally sound condition with a neat, orderly appearance. Observe temporary barriers daily for safety compliance.

D. Protect non-owned vehicular traffic, stored materials, site and structures from damage.

E. Walkways and Barricades: If Contractor's portion of work interferes with pedestrians on the streets, provide pedestrian walkway protection and wood barricades conforming to City standards and requirements.

1.12 TEMPORARY FENCING

A. Temporary fencing is required as necessary to secure contractor work areas, storage areas and to protect the public. Temporary fencing and gates are to be installed and removed by the contractor. All fencing shall be 6’ high chain link with a top rail and new fabric. It shall be installed sound, maintained during its use and removed when work is complete.

1.13 CONTROL OF WATER

A. Each trade Contractor shall be responsible for water control as detailed below.

1. Rainwater shall be prevented from entering the facilities while work is underway. Rainwater, surface or subsurface water, or other fluid, shall not be permitted to accumulate in excavations or under or about the structures. Should such conditions develop or be encountered, the areas affected shall be de-watered with temporary pumps, piping, ditches, dams or other methods at the expense of the Trade Contractor.

2. Grade site to drain. Maintain excavations free of water. Provide, operate and maintain pumping equipment.

3. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.

1.14 NOISE AND VIBRATION CONTROL

A. Contractor shall insure noise and vibrations generated through the completion of the Work do not affect educational activities. The contractor and their subcontractors shall modify work schedules, at no cost to the owner, if necessary to prevent disruptions to educational activities.

B. Contractor shall comply with applicable regulatory requirements for the operation of powered equipment as detailed below.

C. Equipment and impact tools shall have intake and exhaust mufflers.

D. Cooperate with the Owner if the use of noisy and vibratory equipment becomes objectionable.

E. Speakers / radios will not be permitted.

1.15 DUST AND MUD CONTROL

A. Contractor shall be responsible for controlling dust and mud during construction.

1. Execute Work by methods to minimize raising dust from construction operations.

2. Conform with applicable Federal, State and Local regulatory requirements and ordinances concerning dust control.

3. Contractor shall be responsible for additional cleaning required in in portions of the building outside of the work area that are impacted by dust and debris generated
B. Provide positive means to prevent airborne dust from dispersing into atmosphere.
C. Remove mud originating from construction site from city streets and sidewalks.

### 1.16 TRAFFIC CONTROL

A. Contractor: Furnish, erect and maintain sufficient warning and directional signs, barricades and warning lights and sufficient flag people to give adequate warning of construction to vehicular traffic at all times.
B. Coordinate lane closures with appropriate government agencies.
C. Maintain a minimum number of travel lanes for traffic specified by appropriate government agencies.

### 1.17 EXTERIOR ENCLOSURES

A. Contractor shall be responsible for exterior enclosures as detailed below.

1. Provide temporary insulated weather-tight closures of openings in exterior surfaces to provide acceptable working conditions and protection for materials, to allow for temporary heating and maintenance of ambient temperatures identified in individual specification sections and to prevent entry of unauthorized persons. Provide doors with self-closing hardware and locks.
2. Provide temporary roofing as required.

### 1.18 INTERIOR ENCLOSURES

1. Provide temporary dust and traffic control enclosures to prevent dust and debris from entering unaltered areas and to protect the public.
2. Certain interior enclosures shall be installed at the start of the project.

### 1.19 PROTECTION OF INSTALLED WORK

A. Contractor shall be responsible for protection of installed work as detailed below.

1. Protect installed work and provide protection from damage.
2. Provide temporary protection for installed products. Control activity in immediate work area to minimize damage.
3. Provide protective coverings at walls, projections, jambs, sills and soffits of openings.
4. Protect finished floors, stairs and other surfaces from traffic, dirt, wear, damage and movement of heavy objects by protecting with durable sheet materials.
5. Prohibit traffic from landscaped areas.

### 1.20 PROTECTION OF EXISTING FACILITIES

A. Contractor shall be responsible for protection of existing facilities as detailed below.

1. Provide temporary protection for existing facilities as specified for installed work.
2. Replace or repair pipes, conduits and conductors broken or severed as a result of construction activities by the end of the workday in which they were broken or severed.
3. Become familiar with existing conditions of all systems to remain. Provide temporary connections as required to maintain systems. Protect systems during construction. Provide temporary tie-in pipes, conduits and conductors as required to maintain systems completely operational during construction.

4. The trade contractor shall be responsible for the protection of tops, trunks, and root systems of existing trees and shrubs on the project site. Install planking with 2 x 4’s to 8’ minimum height to protect existing tree trunks on the project site that may be subject to construction damage. Installation of protective structure shall be made before any work is started and not removed until directed by the Owner. Alternate method is to fence around the drip lines of the trees.

Do not permit heavy equipment or stockpiles within the branch spread. No ropes, wires, cables, or other devices shall at any time be affixed to a tree or shrub so as to damage the bark, break branches, or destroy its natural shape.

The Trade Contractor shall be liable in cases of accidental damage to trees and shrubs that are to remain on the site.

The Trade Contractor shall notify the Owner immediately in cases of accidental damage so that the proper repairs can be made. Cost of such repairs will be assessed to the Trade Contractor. The Trade Contractor shall not attempt to make such repairs himself.

Evaluation of trees or shrubs damaged beyond repair shall be made on the basis of replacement cost, if replaceable, with material of equal size. In cases where it would not be possible to replace a tree with one of equal size, trees shall be evaluated on the basis on the "Shade Tree Evaluation" formula of the International Shade Tree Conference, current edition.

5. Maintain existing plumbing, mechanical, electrical, security, intercom and fire alarm systems operational at all times.

1.21 SECURITY
A. Contractor shall be responsible for the security of its own equipment and materials on the job site.
B. Provide sufficient security program and facilities to protect work, existing facilities and Owner operations within construction area from unauthorized entry, vandalism and theft.
C. Secure, maintain and protect the work, stored materials, equipment and temporary facilities until time of acceptance, or such earlier time as Owner may choose to assume such responsibility.
D. Contain and secure construction equipment and materials to satisfaction of the Owner.
E. Submit security program to Owner for review and coordination.

1.22 TEMPORARY FIRE PROTECTION
A. Provide and maintain fire extinguishers, fire hoses and other equipment necessary for fire protection.
B. Designate use and use such equipment for fire protection only.

1.23 LAWN AREAS
1. Contractor's vehicles may not be driven into lawn areas without prior approval of the
Owner. In those cases where it is necessary to drive such a vehicle or vehicles, the Contractor shall provide planking material upon which to drive. The Contractor shall be held responsible for any damages incurred.

2. Lawn areas which are disturbed by construction shall be repaired to the satisfaction of the Owner and paid for by the Contractor.

1.24 PARKING

A. Contractor: The contractor may utilize school parking lots during non school hours. All other parking shall be off site.

1.25 PROGRESS CLEANING

A. Contractor shall provide all measures to secure debris and provide dumpsters for removal from the site.

B. Contractor shall maintain all work areas free of waste materials, debris and rubbish. Maintain site in a clean and orderly condition by removing waste materials weekly or more frequently as required. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces and other closed or remote spaces, prior to enclosing the space. Broom and vacuum clean interior areas prior to start of surface finishing and continue cleaning to eliminate dust.

C. Contractor shall supply labor for a general job site cleanup each Friday. The buildings shall be brought to a broom clean condition and all debris shall be deposited in the dumpsters. Break cartons and containers down for better use of dumpsters.

1.26 STORAGE

A. Trade contractors shall store all their materials onsite in a manner not to interfere with the work of any other trade contractor. Trade contractors shall move their stored materials as required for the work of all to proceed.

1.27 CONSTRUCTION AIDS

A. Furnish, operate and maintain a complete plant for fabricating, handling, conveying, installing, and erecting materials and equipment required under the Contract. Include elevators, hoists, derricks and conveyances for transportation of workers and transporting and placing materials and equipment necessary for performance of the work.

B. Maintain plant and equipment in safe and efficient operating condition. Repair damage due to defective plant and equipment and use thereof at no increase in Contract Sum.

C. Furnish, erect, and maintain for duration of work, scaffolds, runways, guardrails, platforms and similar temporary construction necessary for the performance of work. Such facilities shall be of type and arrangement required, structurally sound and well secured.

1.28 REMOVAL OF UTILITIES, FACILITIES AND CONTROLS

A. Remove temporary above grade or buried utilities, materials, equipment and facilities prior to inspection at completion.

B. Clean and repair damage caused by installation or use of temporary facilities.

C. Restore existing facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

1.29 TEMPORARY CONTROLS
A. Temporary Construction, Equipment and Protection
   1. Protection: Contractor must protect all workers and equipment from power lines and maintain safe distances and protective devices as required by OSHA.
   2. Temporary construction and equipment: Temporary construction and equipment shall conform to regulations, ordinances, laws and other requirements of authorities having jurisdiction, including insurance companies, with regards to safety precautions, operation and fire hazard.

B. Pollution Control
   1. Provide methods, means and facilities to prevent contamination of soil, water and atmosphere from discharge of noxious, toxic substances and pollutants produced by construction operations.
   2. Waste solvents, oils and other materials which may be harmful to people, plant life, or the environment, shall be removed from the site in containers and disposed of in accordance with applicable laws and regulations.
   3. Erect, maintain and remove silt fencing and other erosion control measures as required.

C. Safety
   1. Contractor shall submit Company Safety Plan 10 days after Notice of Award under the Provisions of Section 01300.

PART 2 - PRODUCTS
   Not used

PART 3 - EXECUTION
   Not used

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes
   1. Products.
   2. Transportation and handling.
   3. Storage and protection.

B. Related Sections
   1. Section 01400 - Quality Control: Product quality monitoring.
   2. Section 01630 - Substitutions.

1.2 PRODUCTS

A. Products: Means new materials, machinery, components, equipment, fixtures and systems forming the Work. Does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components required for reuse.

B. Do not reuse materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.

C. Provide interchangeable components of the same manufacturer, for similar components.

1.3 TRANSPORTATION AND HANDLING

A. Transport and handle products in accordance with manufacturer's instructions.

B. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.

C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

1.4 STORAGE AND PROTECTION

A. Store and protect products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive products in weather-tight, climate controlled enclosures.

B. For exterior storage of fabricated products, place on sloped supports, above ground.

C. Provide off-site storage and protection when site does not permit on-site storage or protection.

D. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation.

E. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.

F. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement or damage.

G. Arrange storage of products to permit access for inspection. Periodically inspect to assure products are undamaged and are maintained under specified conditions.
PART 2 - PRODUCTS
Not Used

PART 3 - EXECUTION
Not Used

END OF SECTION
1.1 SECTION INCLUDES
   A. Contractor’s options in selection of products.
   B. Requests for substitution of products.

1.2 RELATED SECTIONS
   B. Document 00800 - Supplementary Conditions
   C. Section 01040 - Coordination: Applicability of specified reference standards; coordination of construction.
   D. Section 01300 - Submittals: Proposed products list; product data submittals.
   E. Section 01700 - Contract Closeout: Record documents operation and maintenance data.

1.3 OPTIONS (Based on scope of project and products specified for use, review listed options below and coordinate with General Conditions 3.11.4.)
   A. Products Specified by Reference Standards or by Description Only: Any product meeting those standards.
   B. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not specifically named.
   C. Products Specified by Naming Several Manufacturers: Products of named manufacturers meeting specifications; no substitutions of products by other manufacturers allowed.
   D. Products Specified by Naming Only One Manufacturer: No option due to necessity to match existing products or systems; no substitutions allowed.

1.4 LIMITATIONS ON SUBSTITUTIONS
   A. Requests for substitutions of products will be considered only during the bid period per G.C. - 35. Subsequent requests will be considered only in case of product unavailability or other conditions beyond control of Contractor.
   B. Substitutions will not be considered when indicated on shop drawings or product data submittals without separate formal request, when requested directly by subcontractor or supplier, or when acceptance will require substantial revision of Contract Documents.
   C. Substitute products shall not be ordered or installed without written acceptance.
   D. Only one request for substitution for each product will be considered. When substitution is not accepted, provide specified product.
   E. Architect and Owner will determine acceptability of substitutions.
   F. Substitutions shall not extend the contract completion date.

1.5 REQUESTS FOR SUBSTITUTIONS
   A. Submit separate request for each substitution. Document each request with complete data substantiating compliance of proposed substitution with requirements of Contract Documents.
   B. Identify product by Specifications section and Article numbers. Provide manufacturer’s name and address, trade name of product, and model or catalog number. List fabricators and suppliers, as appropriate.
C. Attach product data as specified in Section 01300.

D. List similar projects using product, dates of installation and names of Architect/Engineer and Owner.

E. Give itemized comparison of proposed substitution with specified product, listing variations and reference to Specifications section and Article numbers.

F. Give quality and performance comparison between proposed substitution and the specified product.

G. Give cost data comparing proposed substitution with specified product and amount of net change to Contract Sum.

H. List availability of maintenance services and replacement materials.

I. State effect of substitution on construction schedule and changes required in other work or products.

J. State if use of proposed substitutions is subject to payment of license fee or royalty.

K. Submit sample of manufacturer's standard form of guarantee or warranty for proposed substitution.

1.6 CONTRACTOR REPRESENTATION

A. Request for substitution constitutes a representation that Contractor:
   1. Has investigated proposed product and has determined that it is equal to or superior in all respects to specified product or that the cost reduction offered is ample justification for accepting the offered substitution.
   2. Will provide same warranty for substitution as for specified product.
   3. Will coordinate installation of accepted substitute, making such changes as may be required for work to be complete in all respects.
   4. Will pay additional costs generated by an accepted substitution, including the cost of the Architect's additional services associated with reviewing and incorporating the substitution.

B. Contractor certifies that:
   1. Cost data presented is complete and includes all related costs under this Contract.
   2. Substitution is in full compliance with the Contract Documents and applicable regulatory requirements.

C. Contractor waives claims for additional costs related to substitution which may later become apparent.

1.7 SUBMITTAL PROCEDURES

A. Submit three copies of request for substitution.

B. Requests for substitutions will be reviewed and Contractor notified in writing of Owner’s decision to accept or reject requested substitution no later than five (5) calendar days before bid.

C. For accepted products, submit shop drawings, product data and samples under provisions of Section 01300.

PART 2 PRODUCTS
PART 3 EXECUTION

Not used.
To: MODUS
   130 East 3rd St.
   Des Moines, IA 50309

PROJECT: DMPS LINCOLN ROUNDHOUSE CHILLER REPLACEMENT

Email: Holly Stevens hstevens@modus-eng.com

We hereby submit for your consideration the following product as substitute for specified item for the above project:

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
<th>Paragraph/Line</th>
<th>Specified Item</th>
</tr>
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Proposed Substitution:__________________________________________

Attach complete product description, drawings, photographs, performance and test data, warranty, information and other information necessary for evaluation. Identify specific model numbers, finishes, options, etc.

A. Will changes be required to building design or drawing dimensions in order to properly install proposed substitution? Yes__No__. If yes, explain.
   ____________________________________________________________

B. Will the undersigned pay for changes to the building design, including engineering and drawings costs, caused by requested substitution? Yes__No__.
   ____________________________________________________________

C. Differences between proposed substitution and specified item. ______________________________ _______________________________________
   ____________________________________________________________

D. What affect does substitution have on other trades? ______________________________
   ____________________________________________________________

E. Does manufacturer's warranty of the proposed substitution differ from that specified?
   Yes__No__.
   If yes, explain ____________________________________________________________
   ____________________________________________________________

January 26, 2004
1.1 SECTION INCLUDES
   A. Starting systems.
   B. Demonstration and instructions.

1.2 RELATED SECTIONS
   A. Section 01400 - Quality Control: Manufacturers field reports.
   B. Section 01700 - Contract Closeout.

1.3 STARTING SYSTEMS
   A. Coordinate schedule for start-up of various equipment and systems.
   B. Notify Owner’s Representative seven days prior to start-up of each item.
   C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence or other conditions which may cause damage.
   D. Verify that tests, meter readings and specified electrical characteristics agree with those required by the equipment or system manufacturer.
   E. Verify wiring and support components for equipment are complete and tested.
   F. Execute start-up under supervision of responsible manufacturer’s technical representative in accordance with manufacturers’ instructions.
   G. When specified in individual specifications sections, require manufacturer to provide authorized representative to be present at site to inspect, check and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.
   H. Submit a written report in accordance with Section 01400 that equipment or system has been properly installed and is functioning correctly.

1.4 DEMONSTRATION AND INSTRUCTIONS
   A. Demonstrate operation and maintenance of Products to Owner's personnel two weeks prior to date of Substantial Completion.
   B. Demonstrate Project equipment and instruct in a classroom environment located at the site and instructed by a qualified representative who is knowledgeable about the Project.
   C. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owners' personnel in detail, to explain all aspects of operation and maintenance.
   D. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance and shutdown of each item of equipment at scheduled times, at designated location.
   E. All demonstrations and training sessions of equipment/products/systems by qualified personnel shall be video recorded by the Contractor. Two copies of the video recording shall be turned over to the Owner’s Representative.
   F. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.
   G. The amount of time required for instruction on each item of equipment and system is that specified in individual sections.
PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION
PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Closeout procedures.
B. Final cleaning.
C. Adjusting.
D. Project Record Documents.
E. Operation and maintenance data.
F. Instruction of District personnel.
G. Warranties and bonds.
H. Certification of Asbestos-Free Construction.
I. Spare parts and maintenance materials.
J. Restoration of damaged work.
K. Remedial work.
L. Keys

1.2 RELATED SECTIONS

A. Section 01040 - Project Meetings
B. Section 01500 - Construction Facilities and Temporary Controls: Progress cleaning
C. Section 01650 - Commissioning of Systems
D. Document 00700 – General Conditions

1.3 CLOSEOUT PROCEDURES

A. Submit written certification that Contract Documents have been reviewed, work has been inspected, and work is complete in accordance with Contract Documents and ready for Architect’s inspection.

B. Provide submittals to Architect required by governing or other authorities.

C. At the conclusion of the work and before final payment is made, furnish to the Owner a list with the names, contact persons, addresses and telephone numbers, of all the subcontractors and material suppliers who furnished labor and materials on the project. The list shall include identification of the services rendered and of the materials provided by each subcontractor.

D. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due. Deliver Project Record Documents, Warranties and Bonds, Certification of Asbestos-Free Construction, Spare Parts and Maintenance Materials, final Operation and Maintenance Data at one time with final Application for Payment, and full releases from all subcontractors and suppliers.

1.4 FINAL CLEANING

A. Contractor shall perform the following cleaning:
   1. Execute cleaning prior to final inspection.
2. Comply with applicable regulatory requirements during cleaning and disposal operations.
3. Use cleaning materials which will not create hazards to health or property or cause damage to products or work.
4. Use cleaning materials and methods recommended by the manufacturers of the products to be cleaned.
5. Schedule operations to prevent dust and other contaminants resulting from cleaning operations from adhering to wet or newly finished surfaces.
6. Remove grease, stains, fingerprints, labels, spilled and spattered materials and other foreign materials from interior and exterior surfaces exposed to view including glazing.
7. Remove waste and surplus materials and rubbish from the site.
8. Leave areas which have been entered during the course of the work in a neat condition, free from debris, weeds and material not called for in the Construction Documents.
9. Wash and clean interior and exterior glass and window frames.

B. Contractor shall perform final cleaning of the equipment installation. This clean up will include:
   1. Wash and shine and polish glossy surfaces to a clear shine.
   2. Vacuum and wipe insides of casework.
   3. Vacuum and mop floor
   4. Clean equipment and fixtures to a sanitary condition.
   5. Clean new and existing surfaces, equipment and fixtures within project area.

1.5 ADJUSTING
   A. Adjust operating products and equipment to ensure smooth and unhindered operation.

1.6 PROJECT RECORD DOCUMENTS
   A. Maintain on site, one set of the following record documents; record actual revisions to the work:
      2. Specifications.
      3. Addenda.
      4. Change Orders and other modifications to the Contract.
      5. Reviewed shop drawings, product data and samples.
      6. Construction schedule.
   B. Store Record Documents separate from documents used for construction. Label each document "Project Record" in neat, large printed letters. Do not use Project Record Documents for construction.
C. Maintain Project Record Documents in a clean dry, legible condition and in good order.

D. Record information concurrent with construction progress. Do not conceal any work until required information is recorded.

E. Record information initially on set of opaque Drawings and in a copy of Project Manual provided by the District. Transfer information from opaque Drawings to reproducible Drawings provided by the District.

F. Make Project Record Documents available to Owner’s Representative, and Architect at all times.

G. Architect will review Project Record Documents at each billing meeting. Status of Project Record Documents will be considered in evaluating proposed monthly billings.

H. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
   1. Manufacturer's name, the product model and number.
   2. Product substitutions or alternates utilized.
   3. Changes made by addenda and modifications.

I. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
   1. Changes made by addenda and modifications.
   3. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements such as column lines and walls.
   4. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the work.
   5. Measured locations of items, not necessarily concealed, which have been changed from locations shown on Contract Documents.
   6. Deviations from sizes, locations, and other features of installations shown in the Contract Documents.
   7. Details not on original Contract Drawings.

J. Construction Schedule: Submit a Final Construction Progress Schedule based on the latest, updated progress revised to indicate actual dates and durations of the various construction activities.

K. Submit documents to Owner’s Representative with final Application for Payment. Provide in format as acceptable to Architect.

1.7 OPERATION AND MAINTENANCE DATA

A. Operations and maintenance manuals shall be submitted in an electronic PDF format on a disc.

B. Prepare covers with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS," title of project and subject matter of if multiple discs are required.

C. Internally subdivide the contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.
D. Contents: Prepare a Table of Contents for each product or system description identified.

E. Part 1: Directory, listing names, addresses and telephone numbers of Architect, Engineer, Contractor, Subcontractors and major equipment suppliers.

F. Part 2: Operation and maintenance instructions arranged by specification section. For each category identify names, addresses and telephone numbers of Subcontractors and suppliers. Identify the following:
1. Manufacturer's trade or brand name, catalog or model number and, where applicable, serial number,
2. Significant design criteria.
3. List of equipment.
4. Parts list for each component.
5. Operating instructions.
6. Maintenance instructions for equipment and systems.
7. Maintenance instructions for finishes, including recommended cleaning methods and materials and special precautions identifying detrimental agents.

G. Part 3: Project documents and certificates, including the following:
1. Approved copies of shop drawings and product data.
2. Air and water balance reports.
3. Certificates.
4. Photocopies of warranties and bonds.

H. Submit one copy of completed volumes in final form 15 days prior to final inspection. This copy will be returned after final inspection, with Architect comments. Revise content of documents as required prior to final submittal.

I. Submit final volumes revised, with final Application for Payment.

J. Provide data where specified in individual sections.

1.8 INSTRUCTION OF DISTRICT’S PERSONNEL

A. Where specified in individual specification sections, furnish qualified personnel for on-the-job instruction of the Owner’s operation and maintenance personnel in accordance with section 01650.

B. Furnish instruction including special start-ups and running time prior to occupancy of subject areas. Furnish at no additional cost to Owner.

1.9 WARRANTIES AND BONDS

A. Warrant the entire work against defects in materials and workmanship for 12 months from date of acceptance. In addition, warrant or bond work as required in the individual specification sections.

B. Warranties between Contractor and manufacturers and between Contractor and suppliers shall not affect warranties between the Contractor and the District.
C. Submit warranties typed on the Contractor's letterhead if for the entire work and on the subcontractor's letterhead if for the work of a specification section. Use the form in Section 01710.

D. Provide original and two (2), notarized copies. Execute and assemble documents from subcontractors, suppliers and manufacturers. Verify compliance with Contract Documents. Provide table of contents and assemble in binder with durable plastic cover. Identify on or readable through the front cover with the DMPS LINCOLN ROUNDHOUSE CHILLER REPLACEMENT and address, the Contractor's name and address and the title 'WARRANTIES AND BONDS.'

E. Submit all material with final Application for Payment. For equipment put into use with Owner's permission during construction, submit within ten days after first operation. For items of work delayed beyond Date of Substantial Completion, provide updated submittal within ten days after acceptance, listing date of acceptance as start of warranty period.

1.10 CERTIFICATION OF ASBESTOS-FREE CONSTRUCTION
   A. Certify that no materials containing asbestos were incorporated into the construction of work of the Contract.
   B. Submit certification typed on Contractor's letterhead. Identify the project by name, address, District Job Number. See Section 01710 for form.

1.11 SPARE PARTS AND MAINTENANCE MATERIALS
   A. Provide products, spare parts, maintenance and extra materials in quantities specified in individual specification sections.
   B. Deliver to project site prior to final payment and place in location as directed by Owner's Representative/Owner; obtain receipt.

1.12 RESTORATION OF DAMAGED WORK
   A. Restore or replace, as specified or directed by the Architect, materials or finishes damaged from movement of equipment or other operations at no additional expense to the District.
   B. Restore to match original work. Finishes shall match appearance of original adjacent work.

1.13 REMEDIAL WORK
   A. Perform remedial work necessary due to faulty workmanship or materials at no additional expense to the District.
   B. Coordinate remedial work with District. Perform at such time and in such manner to cause minimal interruption and inconvenience to the District's operation.

1.14 SERVICE AND MAINTENANCE CONTRACTS [for elevators, etc.]
   A. Compile, review and submit specified service and maintenance contracts.
   B. Provide in PDF format titled 'SERVICE AND MAINTENANCE CONTRACTS.'
   C. Submit with warranties and bonds.

PART 2 - PRODUCTS
   Not Used

PART 3 - EXECUTION
   Not Used
END OF SECTION
PART 1 - GENERAL

1.1 SECTION INCLUDES
A. Procedures
B. Values of Closeout Requirements
C. Forms

1.2 RELATED SECTIONS
A. Document 00700 – General Conditions of the Contract
B. Section 01700 - Contract Closeout
C. Section 01710 – Contract Closeout Forms

1.3 PROCEDURES
A. In compliance with Chapter 38 Section 13 of the Iowa Code the Owner allows for the Contractor to request the early release of retained funds.
B. Prior to Owner’s release of any retained funds, the Contractor shall submit the following forms:
   1. Request for Release of Retained Funds (Section 01705 – Page 2)
   2. Notice of Contractor’s Request for Early Release of Retained Funds (Section 01705 – Page 3) (This form is to be completed by all subcontractors, sub-subcontractors and suppliers on the Project).
   3. Consent of Surety to Early Release of Retained Funds (Section 01705 – Page 4)

1.4 VALUES OF CLOSEOUT REQUIREMENTS
A. The Owner has established monetary values of closeout requirements for this Project. The Owner will retain funds equal to 200% of the value of any of the following items that are not complete at the time of the request for release of retained funds. This is in addition to funds retained for incomplete construction and punch list items.
   1. Project Record Documents (Section 01700 – Section 1.6) Value $ 2,000.00
   2. Operation and Maintenance Data (Section 01700 – Section 1.7) Value $ 2,000.00

PART 2 - PRODUCTS
Not Used

PART 3 - EXECUTION
Not Used

END OF SECTION
REQUEST FOR RELEASE OF RETAINED FUNDS

OWNER

TO:  Des Moines Independent  
     Community School District  
     2100 Fleur Drive  
     Des Moines, IA  50321

PROJECT:  _________________________________________________

FROM:  ___________________________________________________
        (Contractor)

This is to certify that I, ___________________________________________, am an authorized official of working in the  
capacity of ___________________ and have been properly authorized by said firm or corporation to sign the following  
statements pertaining to the subject Contract:

On ____________________, the project described above was designated substantially complete as  
provided for by Chapter 38 of the Iowa Code. As of ____________________, the total amount retained by the  
Owner on this Contract is $___________________.

Pursuant to Iowa Code Chapter 38, Contractor is now making this formal request for the release of all / part (circle  
one) of the retained funds currently being withheld by the Owner on this Contract.

I know of my own personal knowledge, and do hereby certify, that at least ten (10) calendar days prior to filing this  
Request for Release of Retained Funds with the Owner, the required notice was given by the Contractor to all known  
subcontractors, sub-sub-contractors and suppliers on the Project that the Contractor was requesting the early  
release of retained funds. A signed copy of each said notice is attached hereto.

Notwithstanding this Request for Release for the Retained Funds, the Owner will continue to retain, as applicable:

   a. an amount equal to 200% of the value of labor or materials yet to be provided on the Project which will  
      include the value of the itemized costs for closeout phase items of the Project as listed in Section 01705 of  
      the documents, as determined by the Owner through its authorized contract representative.

   b. an amount equal to 200% of the value of any Chapter 573 claims currently on file at the time of this Request  
      or as otherwise authorized by Iowa Code Chapter 573Upon review by the Owner of this Request, any Chapter 573  
      claims on file, and the status of any work or materials still remaining to be provided on the Project, the Owner shall  
      release all applicable retained funds at its next regularly scheduled board meeting or within thirty (30) days,  
      whichever is less. The Contractor shall release the paid retained funds to the subcontractors and suppliers in the  
      same manner as retained funds are released to the Contractor by the Owner. Each subcontractor shall pass through  
      to each lower tier subcontractor or supplier all retained fund payments from the Contractor in the same manner.

If the Owner does not release all funds requested by the Contractor, Owner shall provide an itemization and/or  
reason(s) for the non-release to the Contractor within thirty (30) days of the Contractor’s request.

________________________________ __________________ ______________ ____________
        CONTRACTOR    BY     DATE

STATE OF IOWA, __________________ COUNTY, ss:

Subscribed and sworn to before me by the said ______________________ on this ____________ day of ________  
______, ____________.

_____________________________________________ ____________
        Notary Public in and for the State of Iowa
NOTICE OF CONTRACTOR’S REQUEST FOR EARLY RELEASE OF RETAINED FUNDS

PART A - NOTICE:

You are hereby notified that ____(Contractor)______ will be requesting an early release of funds on a public improvement designated as ____ (Name of Project)______ for which you have or may have provided labor or materials. The request will be made pursuant to Iowa Code section 38.13. The request may be filed with the Des Moines Independent Community School District after ten calendar days from the date of this notice. The purpose of the request is to have the Des Moines Independent Community School District release and pay funds for all work that has been performed and charged to Des Moines Independent Community School District as of the date of this notice. This notice is provided in accordance with Iowa Code section 38.13.

This Notice was sent by __(Contractor)______ on ______________, 2021.

This Notice was received by __________________________ on _______________, 2021.

____________________________
(Signature of Receiver)

PART B – SWORN STATEMENT:

The total aggregate value of our agreement, purchase order or Work on this Project to date is $________________, of which we acknowledge receipt of total payments to date of $________________.

The below stated entity, as a Subcontractor, Sub-Subcontractor and/or Supplier attests and certifies the amounts entered above are correct as of the date of this Affidavit, and: 1) that it has received Notice from the Prime Contractor that it intends to apply for partial (or full) Release of Retained Funds and/or Final Payment for the Project, 2) that it is current in payments received to date on this project, 3) that, as of this date, is not aware of any potential claims against the Project or the Owner, and 4) that it will submit all required final closeout substantiation and documents as required by the project documents for it’s area of the work within sixty calendar days.

________________________  ____________________
(Entity)                    (Date)
CONSENT OF SURETY FOR RELEASE OF RETAINED FUNDS

TO OWNER: Des Moines Independent Community School District
PROJECT NO.:

PROJECT: _________________________________________________________________

CONTRACTOR: _____________________________________________________________

In accordance with the provisions of the Contract between the Owner and the Contractor for the above project, the ________, SURETY, on bond number ____________________ dated ____________________ hereby approves of the release of retained funds of the Contractor as authorized by law, and agrees that the release of retained funds to the Contractor shall not relieve the Surety of any of its obligations to Des Moines Independent Community School District, 2100 Fleur Drive, Des Moines, Iowa, 50321, OWNER, as set forth in said Surety’s bond.

IN WITNESS WHEREOF, the Surety has hereunto set its hand on this date:

________________________________________
Surety

________________________________________
Signature of authorized representative

ATTEST:

(Seal): ______________________________________
Printed name and title
CONTRACTOR'S CERTIFICATE OF SUBSTANTIAL COMPLETION

OWNER

TO: Des Moines Independent
Community School District
2100 Fleur Drive
Des Moines, IA 50321

PROJECT: ________________________________

FROM: ________________________________ (Contractor)

This is to certify that I, ___________________________________________, am an authorized official of __________________ working in the capacity of __________________ and have been properly authorized by said firm or corporation to sign the following statements pertaining to the subject contract:

I know of my own personal knowledge, and do hereby certify, that the work of the contract described above has been performed in accordance with, and in conformity to, the contract drawings and specifications. A list of all incomplete work is attached.

The Contractor hereby releases the Owner and its agents from all claims of and liability to the Contractor for anything done or furnished for or relating to the work, as specified in the Project Manual, except demands against the Owner for the remainder of progress payments retained to date, and unresolved written claims prior to this date.

The contract work is now substantially complete, ready for its intended use, and ready for your inspection. A list of items to be completed or corrected is attached hereto. The failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

The Contractor will complete or correct the work on the list of items attached hereto within ________________ days from the above date of Completion.

Contractor ___________________________________ By ___________________ Date ______________________

Architect ___________________________________ By ___________________ Date ______________________

The Owner accepts the work or designated portion thereof as substantially complete and will assume full possession thereof at ________________ (time) on ________________ (date), which is also the date of commencement of applicable warranties required by the contract documents, except as stated below:

Des Moines Independent Community School District ___________________________________ By ___________________ Date ______________________

This Document shall not become Valid until signed by the Contractor, Architect, and Owner
## CERTIFICATE OF FINAL ACCEPTANCE

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<th>PROJECT:</th>
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<th>CONTRACT DATED:</th>
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<th>FROM: OWNER:</th>
<th>Des Moines Independent Community School District</th>
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<th>TO CONTRACTOR:</th>
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<th>2100 Fleur Drive</th>
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Des Moines, IA 50321

The Work performed under this contract has been reviewed and found, to the Owner’s Representative’s and Architect’s best knowledge, information and belief, to be complete, based on the Owner’s Representative’s and Architect’s on-site observations, inspections, and data gathered. The date of completion of the Project or portion thereof designated above is hereby established as

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<th>Contractor</th>
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<tr>
<th>Architect</th>
<th>By</th>
<th>Date</th>
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The Owner accepts the work or designated portion thereof as complete and will assume full acceptance thereof at __________ (time) on __________ (date).

DMPS Facility Management

<table>
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<th>Des Moines Independent Community School District</th>
<th>By</th>
<th>Date</th>
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This Document shall not become Valid until signed by the Contractor, Architect, and Owner.
FINAL WAIVER AND RELEASE OF CLAIMS

TO ALL WHOM IT MAY CONCERN:

WHEREAS, the undersigned has been employed by Des Moines Independent Community School District to furnish labor and materials for (A) ___________________________ work, under a contract for the ___________________________ School in the City of Des Moines, County of Polk, State of Iowa, of which the Des Moines Independent Community School District is the Owner.

NOW THEREFORE, this ______day of _____________, 2021, for and in consideration of the sum of (B) ___________________________ dollars paid simultaneously herewith, the receipt whereof is hereby acknowledged by the undersigned, the undersigned does hereby waive and release any claims*, liens, rights to, or claim of lien with respect to and on said above-described premises, and the improvements thereon, and on the monies or other consideration due or to become due from the Owner, on account of labor, services, materials, fixtures, apparatus or machinery heretofore or which may hereafter be furnished by the undersigned to or for the above-described premises by virtue of said contract.

(C) ___________________________

(Name of sole ownership, corporation, or partnership)

______________________________

(Signature of Authorized Representative)

______________________________

(Title)

INSTRUCTIONS FOR FINAL WAIVER:

(A) Fill in nature and extent of work, strike the word labor or the word materials if not in your contract.

(B) Amount shown should be the amount actually received and equal to total amount of contract as adjusted.

(C) If waiver is for a corporation name should be used, and title of officer signing waiver should be set forth; if waiver is for a partnership, the partnership name should be used, partner should sign and designate himself as partner.

* The word claims as used herein shall include 573 Claims, Stop Orders, Stop Notices, or Freeze Orders on monies or other consideration of the Owner which are due or to become due on the Contract referenced above.
CONSENT OF SURETY TO FINAL PAYMENT

TO OWNER: Des Moines Independent Community School District
2100 Fleur Drive
Des Moines, IA 50321

PROJECT NO:

CONTRACT DATED:

PROJECT:

In accordance with the provisions of the Contract between the Owner and the Contractor as indicated above, the Surety, on bond of , hereby approves of the final payment of the Contractor, and agrees that final payment to the Contractor shall not relieve the Surety of any of its obligations to Des Moines Independent Community School District, 2100 Fleur Drive, Des Moines, Iowa, 50321, OWNER, as set forth in said Surety’s bond.

IN WITNESS WHEREOF, the Surety has hereunto set its hand on this date:

________________________________________
Surety

________________________________________
Signature of authorized representative

ATTEST:

(Seal):

________________________________________
Printed name and title
CONTRACTOR’S AFFIDAVIT OF PAYMENT OF DEBTS AND CLAIMS AND RELEASE OF CLAIMS

TO OWNER: Des Moines Independent Community School District
2100 Fleur Drive
Des Moines, IA 50321

PROJECT NO:

PROJECT:

CONTRACT DATED:

STATE OF: Iowa
COUNTY OF: Polk

The undersigned hereby certifies, except as listed below, payment has been made in full and all obligations have otherwise been satisfied for all materials and equipment furnished, for all work, labor, and services performed, and for all known indebtedness and claims against the Contractor for damages arising in any manner in connection with the performance of the contract referenced above for which the Owner or Owner’s property might in any way be held responsible or encumbered.

EXCEPTIONS:

The undersigned hereby further certifies that to the best of the undersigned’s knowledge, information and belief, except as listed below, the Release of Claims attached hereto include the Contractor, all subcontractors, all suppliers of materials and equipment, and all performers of Work, labor or services who have or may have 573 claims, or encumbrances or the right to assert claims or encumbrances against any property of the Owner arising in any manner out of the performance of the Contract referenced above.

EXCEPTIONS:
SUPPORTING DOCUMENTS ATTACHED

HERETO:
1. Consent of Surety to Final Payment. DMPSFM-640

BY: ____________________________

Signature of authorized representative

Indicate attachment: yes no

Printed Name and Title

The following supporting documents are attached:
1. Contractor’s Waiver and Release of Claims
2. Separate Waiver and Releases of Claims from Subcontractors and material and equipment suppliers accompanied by a list thereof.

Subscribed and sworn before me on this date

Notary Public

My Commission Expires
ARCHITECT’S CERTIFICATE OF SPECIFICATIONS

TO OWNER: Director, Facility Management
Des Moines Independent Community
School District
2100 Fleur Drive
Des Moines, IA 50321

The undersigned hereby certifies as follows:

1. The above referenced Project is finally completed; and
2. No asbestos or asbestos-containing material was specified as a building material in any Construction Documents for the Project; and
3. To the best of my knowledge, no asbestos or asbestos-containing material was used as a building material in the Project.

Architect

Date

Subscribed and sworn before me on this date

Notary Public

My Commission Expires
HAZARDOUS MATERIALS STATEMENT

THE FORM BELOW IS FURNISHED FOR THE CONVENIENCE OF EQUIPMENT OR MATERIALS MANUFACTURERS, DISTRIBUTORS, SUPPLIERS AND THE CONTRACTOR AND MAY BE REPRODUCED AS NECESSARY TO COMPLY WITH SUBMITTAL DOCUMENTATION AS DEFINED IN "SUPPLEMENTARY CONDITIONS".

I, ________________________________, ________________________________

(Name) (Title)

of ________________________________ do hereby declare that in completing the work of the Bid # B8712 for project ________________________________ at ________________________________ school, no manufactured materials assembly/device or item of construction will contain, or in itself is composed of, any materials listed (by Federal or State EPA or Federal or State health agencies) as a hazardous material.

________________________________________
Name

________________________________________
Title

________________________________________
Date

________________________________________
Subscribed and sworn before me on this date

________________________________________
Notary Public

________________________________________
My Commission Expires

THIS STATEMENT MUST BE NOTARIZED
WARRANTY FOR

We hereby warrant that the __________________________________________________________ which we have provided in the __________________________________________________________ has been completed in accordance with the requirements of Specification Section(s) ________________________________ and the Contract Documents.

We agree to repair or replace any or all of our work, together with any other adjacent work which may be displaced by so doing, that may prove to be defective in its workmanship or material within a period of ________________________________ from the date of acceptance of the above named project by the Owner; and we also agree to repair any and all damages resulting from such defects, all without additional expense to the Owner, ordinary wear and tear and unusual abuse or neglect excepted.

In the event of our failure to comply with the above mentioned conditions within 30 days after being notified in writing by the Owner, we collectively or separately do hereby authorize the Owner to proceed to have such defective work repaired or replaced and made good at our expense, and we will honor and pay the costs and charges therefore upon demand.

Signed: ___________________________ Date: ___________________________

Subcontractor's name:

Address:

License Number:

Countersigned: ___________________________ Date ___________________________

Contractors name:

Address:

License Number:

or

Manufacturer's Name

Address:

OR

Signed: ___________________________ Date: ___________________________

Contractors name:

Address:

License Number:

THIS STATEMENT MUST BE NOTARIZED.
SECTION 230050
BASIC HVAC REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Basic HVAC Requirements specifically applicable to Mechanical Division Specification Sections.

B. Division 23 Specification requirements also include, by reference, all Division 00 and 01 specification sections. This contractor is responsible to review these specification sections. Requirements of these specification sections are included as a part of this contract.

1.02 OWNER OCCUPANCY

A. The owner will occupy the premises during the construction period.

B. Limit use of site and premises to allow owner occupancy.

C. Cooperate with the owner to minimize conflict and to facilitate owner’s operations.

D. Schedule the work to accommodate this requirement.

1.03 REGULATORY REQUIREMENTS

A. This contractor shall give proper authorities all requisite notices relating to work in their charge, obtain official permits, licenses for temporary construction and pay proper fees for it.

B. This contractor is to be solely answerable for and shall promptly make good all damage, injury or delay to other contractors, to neighboring premises or to persons or property of the public by themselves, by their employees or through any operation under their charge, whether in the contract or extra work.

C. No attempt has been made to reproduce in these specifications any of the rules or regulations contained in city, state or federal ordinances and codes pertaining to the work covered by these specifications that the contractor be thoroughly familiar with all such ordinances and codes.

D. The fact that said various rules, regulations and ordinances are not repeated in this specification does not relieve the contractor of the responsibility of making the entire installation in accordance with the requirement of those authorities having jurisdiction.

E. All work shall comply with the applicable recommendations of:
   1. The National Board of Fire Underwriters
   2. American Gas Association
   3. The National Fire Protection Association (NFPA)
   4. The Occupations Safety and Health Act (OSHA)
   5. Current IBC Building Code
   6. Current applicable city building codes.

F. Mechanical: Conform to current mechanical code.

G. Plumbing: Conform to current plumbing code.

H. Obtain permits and request inspections from authority having jurisdiction.

1.04 PROJECT/SITE CONDITIONS

A. Install work in locations shown on the drawings unless prevented by project conditions.

B. Prepare drawings showing proposed rearrangement of work to meet project conditions, including changes to work specified in other sections. Obtain permission of owner and architect/engineer before proceeding.

C. This contractor, before submitting bid, shall visit their the site of the project to familiarize themselves with locations and conditions affecting their work.

D. It is the intent of this specification that the contractor furnishes all labor and material required completing the installation as outlined in the drawings and specifications. No additions to the
contract price shall be allowed due to the failure of this contractor to properly evaluate the effect of existing conditions on the work to be done under this contract.

E. Whenever renovation or remodeling or relocation of existing equipment is included in the contract, it is imperative that all locations of existing piping, ductwork, equipment, services and grades be noted on the job site before bid is submitted and that all elevations and grades be verified before roughing in new work.

F. This contractor shall provide holes as necessary for the installation of their work and in accordance with other specification sections in materials other than the structure.

1.05 SEQUENCING AND SCHEDULING

A. This contractor shall be kept informed as to the work of other trades engaged in the project and shall execute their work in such a manner so as not to delay or interfere with progress of other contractors.

B. Where space for mechanical and electrical lines and piping is limited, it is imperative that all such trades coordinate their work so as to ensure concealment in space provided. Where conflict exists, the engineer shall decide priority of space. If work is not properly coordinated, the engineer may require removal and relocation of work without additional compensation.

1.06 GUARANTEE

A. This contractor shall guarantee all of the apparatus, materials, equipment furnished and labor installed under this contract for a period of one year after date of final acceptance, unless a longer period is specified.

B. Neither final certificate of payment nor any provisions in the contract documents nor partial or complete occupancy of premises by owner shall constitute an acceptance for work not done in accordance with contract documents or relieve the contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship.

C. Should any defects arise as the result of defective workmanship or material within the guarantee period set forth, this contractor shall make the necessary correction at their own expense.

1.07 ENGINEER APPROVED EQUAL PRODUCTS

A. When the engineer, at the request of the interested parties, including the contractor, supplier and manufacturer approved "engineer approved equal" products for this project, such products are approved on the assumption that they will equal or exceed the performance of the products specified.

B. If such products do not do so after being installed on this project, this contractor shall replace or modify the particular product as necessary to equal the performance of the products specified at no expense to the owner, architect or engineer.

C. Request for "engineer approved equal" products shall be received by the architect/engineer prior to the last addendum being issued. Requests for substitutions received after this date will not be considered. Substitution requests shall clearly state which products are being considered for substitution. Substitution requests shall include all pertinent product information needed to evaluate the substitution as an "equal".

D. Similar products shall be all of the same manufacturers and style. There is no exception to this unless prior approval has been granted from engineer.

1.08 OWNER'S RIGHT OF SALVAGE

A. Before beginning construction, this contractor shall check and verify with the owner each item of existing equipment that must be removed.

B. The owner will designate which items of material or equipment not reused that they may wish to keep. The contractor shall then remove these items with care and store in a location designated by the owner for the owner's disposal.
C. All other items of equipment to be removed and not specified for reuse in new construction or reserved by the owner for their use shall become the property of the contractor and shall be removed from site.

1.09 PROTECTION AND MAINTENANCE

A. Where necessary to connect to any existing utility service, this contractor shall contact the owner and shall coordinate any building service connection with the owner so that normal operation to the building is disrupted as little as possible.

B. Any work to be done in existing structures shall be coordinated with the owner and arrangements made so that traffic flow may be maintained and areas finished where possible before other areas are begun.

C. This contractor shall protect existing equipment in finished areas from dirt, dust and damage as a result of their work.

D. Coordinate protection requirements with department heads before beginning construction.

E. Protect any building openings from unauthorized entry. Coordinate with owner where building entry must be controlled.

1.10 DEMOLITION

A. This contractor shall be responsible for the demolition and removal of all existing mechanical elements within the project area except as follows:
   1. Elements shown on the drawings as "existing to remain and/or to be relocated".
   2. Elements serving adjacent areas.
   3. All elements to be removed are subject to the Owner's Right of Salvage.

B. Preserve services to the existing facility. Extend/reroute/reconnect existing systems as required providing for the continued function of these systems.

1.11 CUTTING AND PATCHING

A. This contractor shall do all cutting and patching necessary for the installation of their work in all existing and new buildings unless otherwise noted.

B. This contractor shall arrange for openings in the building as required for the installation of equipment furnished under this contract. Where piping must be extended or changed, patching with concrete will be done in the building. Patching shall be at both the top and bottom of sleeves where above grade.

C. In areas where the integrity of new or existing fire separation assembly/wall is compromised by the work, contractor shall be responsible to patch and/or seal openings as necessary to maintain/return fire separation to rating as required by applicable codes.

D. This contractor shall do all cutting and patching required for their work beyond the remodeled areas unless otherwise noted. All finish work shall include patching to match existing adjacent surfaces. Painting shall be by others.

1.12 CLEANING AND RUBBISH

A. This contractor, upon completion of their work, shall remove all rubbish and debris resulting from their operation and shall remove it from site at their own expense.

B. In so far as their work is concerned, all equipment shall be cleaned and the premises left in first class condition.

C. This contractor shall maintain the work area each day to prevent hazardous accumulation of waste from their work.

1.13 SEALING AND PENETRATION

A. Clearance around the piping passing through fire or smoke rated construction shall be sealed to maintain the rated integrity of the construction (1 hr, 2 hrs. etc.). One and two-hour rated assemblies are to be patched on both sides of the assembly.
B. This contractor shall verify rating and location of all such construction with the architectural drawings and seal all penetrations.

C. Manufacturer offering products to comply with the requirements include the following:
   1. Dow Corning "Silicone RTV Foam"
   2. 3-M Corporation "Fire Barrier Caulk and Putty"
   3. Thomas & Betts "Flame Safe Fire Stop System"

D. Installation of these products to be in strict accordance with manufacturer's recommendations and architectural specification sections or equivalent fire stopping architectural specification section.

E. This contractor shall submit shop drawings showing approved sealing assemblies to be utilized on this project.

1.14 ELECTRICAL CONNECTIONS

A. This contractor shall turn over all magnetic starters, thermal protective switches, and speed changing switches furnished under this contract for all motor driven equipment to the electrical contractor who will install such starters and switches and wire them to their respective motors as a part of the electrical contract.

1.15 HAZARDOUS MATERIALS

A. If the contractor stores any hazardous solvents or other materials on the site, they shall obtain copies of the safety data sheets for the materials and post them on the site. The contractor shall inform the owner and all employed of any potential exposure to this material.

B. At no time shall any product containing asbestos be incorporated into the work.
   1. If asbestos materials are encountered, report to the owner. The owner will be responsible for asbestos removal.

1.16 RECORD DRAWINGS

A. This contractor shall provide at the conclusion of the project one clean, non-torn, neat, and legible "as-built" set of drawings to the owner. These drawings shall show the routing of pipes, ductwork and equipment drawn in at scaled locations. All dimensions indicated shall be referenced to a column line. A set of construction blue prints will be furnished for this work.

B. All mechanical systems installed shall be shown on the "as-built" drawings. This includes all addendum items and change orders.

1.17 REVIEW OF MATERIALS

A. This contractor shall submit to the engineer for review one (1) electronic copy giving a complete list of materials and equipment they propose to furnish. The brochure shall contain complete information as to the make of equipment, type, size, capacities, dimensions and illustration. One of these returned copies shall be kept on the job at all times.

B. Checking of submittal drawings by the engineer does not relieve the contractor of the responsibility for the accuracy of such drawings and for their conformity to drawings and specifications unless the contractor notifies engineer in writing of such deviation at time such drawings are furnished.

C. All submittals shall have the date marked on them when the contractor receives them from the supplier. Submittals shall be submitted through the contractor and shall not come direct from the supplier to the architect or engineer.

D. This contractor shall mark the date and sign each set that they have checked each of them in their entirety before submitting to the engineer. Submittals that are not dated and signed by the contractor will not be accepted, or checked and will be marked "resubmit" and sent back to the contractor.
1.18 TEST OF SYSTEMS

A. This contractor, before concealed, shall test all systems installed under this contract as called for in these specifications and as required by local codes. Tests shall be made in the presence of the engineer, local authorities or their duly authorized representative. Any defects discovered in testing shall be corrected and the tests repeated until all defects are eliminated.

B. This contractor shall be held responsible for all damage resulting from defects in the system.

C. At the conclusion of construction (before any covering up, painting or finishing) each element of the system shall be thoroughly tested against leakage, with appropriate pressure tests, as outlined herein and in appropriate sections of the specifications. All testing shall be hydrostatic unless permission is granted otherwise.
   1. Water: 100 psi maintained 8 hours
   2. Under Floor Pipes: 200 psi maintained 8 hours

D. Fluid lines other than the above 1.5 times operating with a minimum pressure of 60 psig.

E. After completion of installation, the systems shall be given tests under full operating conditions and pressures and all adjustments shall be made to make the system operative as required. All safety devices shall be tested for correct operation.

1.19 SCOPE OF WORK

A. All work shall be performed by well-qualified and licensed mechanics with a thorough knowledge of the various systems involved in this building. It shall be this contractor's responsibility to see that their mechanics are familiar with all the various codes and tests applicable to this work.

B. All equipment shall be new and of the type as specified by the engineer unless otherwise noted in these specifications or on the drawings to remain and or be reused.

C. The intent of the drawings and specifications is for complete installation of the systems outlined in the drawings and specifications so that at the conclusion of construction the system will be turned over to the owner complete and ready for safe and efficient operation.

D. This contractor shall be required to furnish and install all such items normally included on systems of this type, which, while not mentioned directly herein or on the drawings are obviously essential to the installation and operation of the system and which are normally furnished on quality installation of this type. The drawings and specifications cannot deal individually with the many minute items that may be required by the nature of the systems.

E. If there is a discrepancy between the drawings and the specifications or within either document, the more stringent requirement shall be estimated unless brought to the engineer’s attention and an addendum is issued for clarification.

1.20 VERIFICATION OF ELEVATION OF EXISTING LINES

A. This contractor shall before starting any new work, verify the elevations of all existing piping to which they must connect under this contract. The contractor shall report any discrepancies between drawing elevations and actual elevations to the engineer before proceeding with the work. Failure of the contractor to do so shall make them liable for the cost of extra work involved.

1.21 DAILY HOUSEKEEPING

A. At the end of each working day, this contractor shall remove all of their debris, rubbish, tools and surplus materials from the project work area. The work area shall be broom clean and left in a neat and orderly condition. The contractor for the removal of debris from the project shall not use the owner’s waste disposal facility.

B. At end of construction, all equipment shall be cleaned and the premises left in first class condition as far as this contractor's work is concerned.
1.22 CLEANING OF MECHANICAL SYSTEMS

A. The mechanical contractor shall clean and passivate all piping systems. Flush hydronic systems with water until free from all sand, grit, gravel, oil, etc. Provide Babcock/Wilcox Millipore and biological testing on the flush water. The flush will be considered a success when the water exiting the system contains less than 100 ppb of total suspended solids and less than 100 RLU's.

B. Where connections are made to existing piping systems, this contractor shall provide isolation valves, threaded tees, etc., as required to facilitate the cleaning and testing of all new piping.

C. This contractor shall thoroughly clean all rust, grease, plaster, cement, etc., from all equipment, piping furnished and installed by them as required to leave surfaces suitable for finish painting.

D. This contractor shall keep all pipes, ducts, etc., plugged, drained or otherwise protected during construction. All items of mechanical equipment shall be suitably protected and upon completion of project shall be equal to new condition.

1.23 ALTERNATES

A. Refer to General Specification Sections for alternate bid description.

1.24 DIGITAL MEDIA AGREEMENT

A. Computer Aided Drafting (CAD) documents may be available to the contractor for some uses. Contact the engineer prior to bidding to determine what information is available to be transmitted to the contractor in digital form.

B. When documents are determined to be available, and as requested by the contractor, they will be transmitted upon the completion and execution of the MODUS digital media agreement. A service fee for each document transmitted will be assessed to the contractor. Documents will be transmitted upon payment receipt. Current service fee is $100.00 per CAD sheet.

PART 2 PRODUCTS
NOT USED

PART 3 EXECUTION
NOT USED

END OF SECTION 230050
SECTION 230519
METERS AND GAUGES FOR HVAC PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES
   A. Pressure gauges
   B. Pressure gauge tappings
   C. Stem type thermometers
   D. Thermometer supports

1.02 RELATED SECTIONS
   A. Specification Section 230913 - Instruments and Control Devices for HVAC

1.03 REFERENCES
   A. ASME B40.1 - Gauges - Pressure Indicating Dial Type - Elastic Element
   B. ASME MFC-3M - Measurement of Fluid Flow in Pipes Using Orifice, Nozzle and Venturi
   C. ASTM E1 - Standard Specification for ASTM Thermometers
   D. ASTM E77 - Standard Test Method for Inspection and Verification of Thermometers
   E. AWWA C700 - Cold-Water Meters - Displacement Type, Bronze Main Case
   F. AWWA C701 - Cold-Water Meters - Turbine Type, for Customer Service
   G. AWWA C702 - Cold-Water Meters - Compound Type
   H. AWWA C703 - Cold-Water Meters - Fire-Service Type
   I. AWWA C706 - Direct-Reading Remote-Registration Systems for Cold-Water Meters
   J. AWWA C710 - Cold-Water Meters - Displacement Type, Plastic Main Case
   K. AWWA M6 - Water Meters - Selection, Installation, Testing, and Maintenance
   L. UL 393 - Indicating Pressure Gauges for Fire-Protection Service
   M. UL 404 - Gauges, Indicating Pressure, for Compressed Gas Service

1.04 SUBMITTALS
   A. Product Data: Provide manufacturers data and list, which indicates use, operating range, total range, accuracy, and location for manufactured components.
   B. Project Record Documents: Record actual locations of components and instrumentation.
   C. Operation and Maintenance Data: Include instructions for calibrating instruments.

1.05 ENVIRONMENTAL REQUIREMENTS
   A. Do not install instruments when areas are under construction, except for required rough in, taps, support, and test plugs.

PART 2 PRODUCTS

2.01 PRESSURE GAUGES
   A. Manufacturers:
      1. Ametek/US Gauge Series 1980
      2. Trerice
      3. Miljaco Corp.
      4. Weiss Instruments
      5. Dwyer
      6. Winters Instruments
      7. Engineer approved equal.
B. Gauge: Install where indicated on the drawings, 4.5 inch dial size pressure gauge, phenolic solid front pressure relieving case, Grade 2A, +/- 0.5% accuracy with range approximately twice working pressure.

C. All gauges to be fitted with gauge cocks.

2.02 PRESSURE GAUGE TAPPINGS

A. Needle Valve: Brass, 1/4 inch NPT for minimum 300 psi.

B. Ball Valve: Brass 1/4 inch NPT for 250 psi.

C. Pulsation Damper: Pressure snubber brass with 1/4 inch NPT connections.

D. Siphon: Steel, Schedule 40, 1/4 inch NPT angle or straight pattern.

2.03 STEM TYPE THERMOMETERS

A. Manufacturers:
   1. Weiss #9VU
   2. Trerice
   3. Miljaco
   4. Engineer approved equal.

B. Thermometer: ASTM E1, blue organic-filled glass tube, lens front tube, cast aluminum case with enamel finish.

C. Size: Six inch (6") scale where less than six foot (6') above floor, nine inch (9") scale where higher than six feet (6') above floor.

D. Window: Polyester/glass mixture or acrylic.

E. Stem: Aluminum, 3/4 inch NPT, 3-1/2 inch.

F. Accuracy: Two percent.

G. Calibration: Degree F.

2.04 THERMOMETER SUPPORTS

A. Socket: Brass separable sockets for thermometer stem with or without extensions as required.

B. Flange: Outside three inch (3") diameter reversible flange, designed to fasten to sheet metal air ducts with brass perforated stem.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install one pressure gauge per pump with taps before strainers and on suction and discharge of pump; pipe to gauge.

B. Install gauge taps in piping.

C. Install pressure gauges with pulsation dampeners. Provide ball valve to isolate each gauge. Install siphon on gauges in steam systems. Extend nipples and siphons to allow clearance from insulation.

D. Install thermometers in piping systems in sockets in short couplings. Enlarge pipes smaller than 2-1/2 inches for installation of thermometer sockets. Ensure sockets allow clearance from insulation.

E. Install thermometers in air duct systems on flanges.

F. Install thermometer sockets adjacent to controls systems thermostat, transmitter or sensor sockets. Where thermometers are provided on local panels, duct or pipe mounted thermometers are not required.

G. Coil and conceal excess capillary on remote element instruments.

H. Install gauges and thermometers in locations where they are easily read from normal operating level. Install vertical to 45 degree off vertical.
I. Adjust gauges and thermometers to final angle, clean windows and lenses, and calibrate to zero.

J. Refer to schematics and details on drawings for additional locations.

END OF SECTION 230519
SECTION 230529

HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES
   A. Pipe hangers and supports
   B. Accessories
   C. Flashing
   D. Equipment bases
   E. Sleeves

1.02 RELATED SECTIONS
   A. Specification Section 232113 - Hydronic Piping
   B. Specification Section 232300 - Refrigerant Piping

1.03 REFERENCES
   A. ASME B31.1 - Power Piping
   B. ASME B31.2 - Fuel Gas Piping
   C. ASME B31.5 - Refrigeration Piping
   D. ASME B31.9 - Building Services Piping
   E. ASTM F708 - Design and Installation of Rigid Pipe Hangers
   F. MSS SP58 - Pipe Hangers and Supports - Materials, Design and Manufacturer
   G. MSS SP69 - Pipe Hangers and Supports - Selection and Application
   H. MSS SP89 - Pipe Hangers and Supports - Fabrication and Installation Practices

1.04 SUBMITTALS
   A. Product Data: Provide manufacturers catalog data including load capacity.
   B. Design Data: Indicate load carrying capacity of trapeze, multiple pipe, and riser support hangers.
   C. Manufacturer's Installation Instructions: Indicate special procedures and assembly of components.

1.05 REGULATORY REQUIREMENTS
   A. Conform to applicable code for support of piping.

PART 2 PRODUCTS

2.01 PIPE HANGERS AND SUPPORTS
   A. Manufacturers:
      1. Anvil International International
      2. Cooper B-Line/Tolco
      3. Engineer approved equal.
   B. Hydronic Piping:
      1. Conform to ASME B31.9; ASTM F708
      2. Hangers for Pipe Sizes 1/2" to 1-1/2": Carbon steel, adjustable swivel, split ring. Anvil International Figure 104.
      3. Hangers for Cold Pipe Sizes 2" and Over: Carbon steel, adjustable, clevis. Anvil International Figure 260.
      4. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
      5. Multiple or Trapeze Hangers for Hot Pipe Sizes 6" and Over: Steel channels with welded spacers and hanger rods, cast iron roll. Anvil International Figure 175.
6. Wall Support for Pipe Sizes to 3 Inches: Cast iron bracket. Anvil International Figure 213.
7. Wall Support for Pipe Sizes 4" and Over: Welded steel bracket and wrought steel clamp. Anvil International Figure 195.
8. Vertical Support: Steel riser clamp. Anvil International Figure 261.
9. Floor Support for Cold Pipe: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support. Anvil International Figure 264.
10. Copper Pipe Support: Carbon steel ring, adjustable, copper plated. Anvil International Figure 97.
11. Provide zinc coated hangers and supports for all non air conditioned areas.

C. Refrigerant Piping:
1. Conform to ASME B31.5 or ASTM F708.
2. Hangers for Pipe Sizes 1/2" to 1-1/2": Carbon steel adjustable swivel, split ring. Anvil International Figure 104.
3. Hangers for Pipe Sizes 2" and Over: Carbon steel, adjustable, clevis.
4. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
5. Wall Support for Pipe Sizes to 3": Cast iron hook.
8. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
11. Provide stainless steel hangers and supports in locker rooms and other high humidity areas.
12. Provide zinc coated (hot dipped galvanized) hangers and supports for all exterior applications.

2.02 ACCESSORIES
A. Hanger Rods: Mild steel threaded both ends, threaded one end or continuous threaded.

2.03 FLASHING
A. Metal Flashing: 26 gauge galvanized steel.
B. Metal Counter Flashing: 22 gauge galvanized steel.
C. Flexible Flashing: 47 mil thick sheet butyl compatible with roofing.
D. Caps: Steel, 22 gauge minimum; 16 gauge at fire resistant elements.

2.04 EQUIPMENT BASES
A. Provide housekeeping pads of concrete, minimum four inch (4") thick and extending six inch (6") beyond supported equipment.

2.05 SLEEVES
A. Sleeves for pipes through wall below grade shall be Schedule 40, two pipe diameters larger than pipe. Seal with Linkseal.
B. Sleeves for pipes through non-fire rated floors shall be 18 gauge galvanized steel.
C. Sleeves for pipes through non-fire rated beams, walls, footings, and potentially wet floors shall be Schedule 40 steel pipe or 18 gauge galvanized steel.
D. Sleeves for pipes through fire rated and fire resistive floors and walls, and fire proofing to be a fire rated sleeve assembly including seals, UL listed.
E. Stuffing and Firestopping Insulation: Fiberglass type, non-combustible per UL tested assembly type.
F. Sealant Manufacturers:
   1. Dow Corning Silicone RTV Foam.
2. 3-M Fire Barrier Caulk and Putty.
3. Thomas & Betts Flame Safe Fire Stop System.
4. Engineer approved equal.

PART 3 EXECUTION

3.01 INSTALLATION
A. Install in accordance with manufacturer’s instructions.

3.02 PIPE HANGERS AND SUPPORTS
A. Support horizontal piping as scheduled.
B. Install hangers to provide minimum 1/2 inch space between finished covering and adjacent work.
C. Place hangers within 12 inches of each horizontal elbow.
D. Use hangers with 1-1/2 inch minimum vertical adjustment.
E. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.
F. Support riser piping independently of connected horizontal piping.
G. Provide copper plated hangers and supports for copper piping.
H. Design hangers for pipe movement without disengagement of supported pipe.
I. Support vertical piping every ten feet or on every floor.

3.03 EQUIPMENT BASES AND SUPPORTS
A. Provide housekeeping pads of concrete, minimum four inch (4") thick and extending six inches (6") beyond all floor supported equipment.
B. Provide templates, anchor bolts and accessories for mounting and anchoring equipment.
C. Construct supports of steel members. Brace and fasten with flanges bolted to structure.
D. Provide rigid anchors for pipes after vibration isolation components are installed.

3.04 FLASHING
A. Provide flexible flashing and metal counter flashing where piping and ductwork penetrate weather or waterproofed walls, floors, and roofs.

3.05 SLEEVES
A. Set sleeves in position in formwork. Provide reinforcing around sleeves.
B. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.
C. Extend sleeves through floor one inch (1") above finished floor level. Caulk sleeves.
D. Provide sleeves where piping penetrates floor, ceiling or wall fire rated assemblies. Close off space between pipe and adjacent work with fire stopping insulation and caulk.
E. Provide close fitting metal collar or escutcheon covers at both sides of penetration. Install chrome plated steel escutcheons at finished surfaces and within cabinets.

3.06 SCHEDULES

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END OF SECTION 230529
SECTION 230553
IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES
   A. Nameplates
   B. Pipe markers
   C. Labels

PART 2 PRODUCTS

2.01 NAMEPLATES
   A. Description: Laminated three-layer plastic with engraved black letters on light contrasting background color.

2.02 PIPE MARKERS
   B. Plastic Pipe Markers: Factory fabricated, flexible, semi-rigid plastic, preformed to fit around pipe or pipe covering. Larger sizes may have maximum sheet size with spring fastener.
   C. Plastic Tape Pipe Markers: Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings indicating flow direction arrow and identification of fluid being conveyed.

2.03 LABELS
   A. Description: Laminated Mylar, size 1.9" x 0.75" adhesive backed with printed identification.

PART 3 EXECUTION

3.01 PREPARATION
   A. De-grease and clean surfaces to receive adhesive for identification materials.

3.02 INSTALLATION
   A. Install identifying devices after completion of coverings and painting.
   B. Install plastic nameplates with corrosive-resistant mechanical fasteners or adhesive.
   C. Install labels with sufficient adhesive to ensure permanent adhesion and seal with clear lacquer. Apply paint primer before applying labels for unfinished canvas covering.
   D. Identify air handling units, pumps, heat transfer equipment, tanks, and water treatment devices with plastic nameplates. Small devices, such as in-line pumps, may be identified with tags.
   E. Identify control panels and major control components outside panels with plastic nameplates.
   F. Identify piping, concealed or exposed with plastic tape pipe markers. Use tags on piping 3/4 inch diameter and smaller. Identify service, flow direction, and pressure. Install in clear view and align with axis of piping. Locate identification not to exceed 20 feet on straight runs including risers and drops, adjacent to each valve and tee, at each side of penetration of structure or enclosure and at each obstruction. Identify on both sides of any wall.
   G. Conform to owner’s existing identification scheme. Verify with owner prior to bid.

END OF SECTION 230553
SECTION 230593
TESTING, ADJUSTING, AND BALANCING FOR HVAC

PART 1 GENERAL
1.01 RESPONSIBILITIES
A. THIS SPECIFICATION SECTION IS FOR INFORMATIONAL PURPOSES ONLY AND TO AID THOSE ENGAGED IN THE CONSTRUCTION OF HEATING, VENTILATING, AIR CONDITIONING, EXHAUST, AND APPERTUNANT SYSTEMS INCLUDED IN THIS PROJECT. THE TESTING AND BALANCING AGENCY ENGAGED TO COMPLETE ALL REQUIRED WORK FOR THIS PROJECT WILL BE SECURED BY AND UNDER DIRECT CONTRACT WITH THE OWNER. ALL WORK COMPLETED BY THE SELECTED TESTING AND BALANCING AGENCY WILL BE COMPLETED IN CONFORMANCE WITH THIS SECTION.

B. THE DIVISION 23 MECHANICAL CONTRACTOR SHALL PROVIDE ALL LABOR AND MATERIALS TO ASSIST THE TAB AGENCY IN THE EXECUTION OF THEIR WORK AND CORRECT ALL IDENTIFIED DEFICIENCIES AS REQUIRED THROUGHOUT CONSTRUCTION AT NO ADDITIONAL COST TO THE OWNER.

1.02 SECTION INCLUDES
A. Testing, adjustment, and balancing of hydronic systems
B. Measurement of final operating condition of HVAC systems

1.03 REFERENCES
A. AABC - National Standards for Total System Balance
B. ADC - Test Code for Grilles, Registers, and Diffusers
D. NEBB - Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems
E. SMACNA - HVAC Systems Testing, Adjusting, and Balancing

1.04 SUBMITTALS
A. Submit name of adjusting and balancing agency for approval within 30 days after award of Contract.
B. Field Reports: Indicate deficiencies in systems that would prevent proper testing, adjusting, and balancing of systems and equipment to achieve specified performance.
C. Prior to commencing work, submit report forms or outlines indicating adjusting, balancing, and equipment data required.
D. Submit draft copies of report for review prior to final acceptance of project. Provide final copies for Architect/Engineer and for inclusion in operating and maintenance manuals.
E. 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.
F. Include detailed procedures, agenda, sample report forms and copy of AABC National Project Performance Guaranty prior to commencing system balance.
G. Test Reports: Indicate data on AABC National Standards for Total System Balance Forms.

1.05 PROJECT RECORD DOCUMENTS
A. Record actual locations of flow measuring stations, balancing valve, and rough setting.
1.06 **QUALITY ASSURANCE**
   A. Perform total system balance in accordance with AABC National Standards for Field Measurement and Instrumentation, Total System Balance.
   B. Maintain one copy of each document on site.

1.07 **QUALIFICATIONS**
   A. Independent agency specializing in the testing, adjusting and balancing of systems specified in this section with minimum three years experience.
   B. Perform work under supervision of AABC Certified Test and Balance Engineer or NEBB Certified Testing, Balancing and Adjusting Supervisor.

1.08 **PRE-BALANCING CONFERENCE**
   A. Convene a conference one week prior to commencing work of this section.

1.09 **SEQUENCING**
   A. Sequence work to commence after completion of systems and schedule completion of work before substantial completion of project.

1.10 **SCHEDULING**
   A. Schedule and provide assistance in final adjustment and test of life safety system with the fire authority.

**PART 2 PRODUCTS**

**NOT USED**

**PART 3 EXECUTION**

3.01 **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. Hydronic systems are flushed, filled, and vented.
      5. Pumps are rotating correctly.
      6. Proper strainer baskets are clean and in place.
      7. Service and balance valves are open.
   B. Submit field reports. Report defects and deficiencies noted during performance of services that prevents system balance.
   C. Beginning of work means acceptance of existing conditions.

3.02 **PREPARATION**
   A. Provide instruments required for testing, adjusting, and balancing operations. Make instruments available to the engineer to facilitate spot checks during testing.
   B. Provide additional balancing devices as required.

3.03 **INSTALLATION TOLERANCES**
   A. Air Handling Systems: Adjust to within +/- 10% of design.
   B. Air Outlets and Inlets: Adjust to within +/- 10% of design.
   C. Hydronic Systems: Adjust to within +/- 10% of design.

3.04 **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.

E. At final inspection, recheck random selections of data recorded in report. Recheck points or areas as selected and witnessed by the owner.

F. Check and adjust systems approximately six months after final acceptance and submit report.

3.05 WATER SYSTEM PROCEDURE

A. Adjust water systems to provide required or design quantities.

B. Use calibrated Venturi tubes, orifices, or other metered fittings and pressure gauges to determine flow rates for system balance. Where flow-metering devices are not installed, base flow balance on temperature difference across various heat transfer elements in the system.

C. Adjust systems to provide specified pressure drops and flows through heat transfer elements prior to thermal testing. Perform balancing by measurement of temperature differential in conjunction with air balancing.

D. Effect the system balance with automatic control valves fully open to heat transfer elements.

E. Effect adjustment of water distribution systems by means of balancing cocks, valves, and fittings. Do not use service or shut-off valves for balancing unless indexed for balance point.

F. Where available pump capacity is less than total flow requirements or individual system parts, full flow in one part may be simulated by temporary restriction of flow to other parts.

3.06 SCHEDULES

A. Equipment Requiring Testing, Adjusting, and Balancing:
   1. HVAC Pumps (PCH-3)
   2. Air Cooled Water Chillers (CH-2)
   3. Air Coils (AHU#1,3,7,8,9,10,11) Chilled water coils

B. Report Forms
   1. Title Page:
      a. Name of Testing, Adjusting, and Balancing Agency
      b. Address of Testing, Adjusting, and Balancing Agency
      c. Telephone number of Testing, Adjusting, and Balancing Agency
      d. Project Name
      e. Project Location
      f. Project Architect
      g. Project Engineer
      h. Project Contractor
      i. Project Altitude
      j. Report Date
   2. Summary Comments:
      a. Design versus final performance.
      b. Notable characteristics of system.
      c. Description of systems operation sequence.
      d. Summary of outside and exhaust flows to indicate amount of building pressurization.
      e. Nomenclature used throughout report.
      f. Test conditions.
   3. Instrument List:
      a. Instrument
      b. Manufacturer
c. Model number  
d. Serial number  
e. Range  
f. Calibration date

4. Electric Motors:  
a. Manufacturer  
b. Model/Frame  
c. HP/BHP  
d. Phase, voltage, amperage; nameplate, actual, no load  
e. RPM  
f. Service factor  
g. Starter size, rating, heater elements

5. Pump Data:  
a. Identification/number  
b. Manufacturer  
c. Size/Model  
d. Impeller  
e. Service  
f. Design flow rate, pressure drop, BHP  
g. Actual flow rate, pressure drop, BHP  
h. Discharge pressure  
i. Suction pressure  
j. Total operating head pressure  
k. Shut off, discharge and suction pressures  
l. Shut off, total head pressure

6. Air Cooled Condenser:  
a. Identification/number  
b. Location  
c. Manufacturer  
d. Model number  
e. Serial number  
f. Entering DB air temperature, design and actual  
g. Leaving DB air temperature, design and actual  
h. Number of compressors

7. Chillers:  
a. Identification/number  
b. Manufacturer  
c. Capacity  
d. Model number  
e. Serial number  
f. Evaporator entering water temperature, design and actual  
g. Evaporator leaving water temperature, design and actual  
h. Evaporator pressure drop, design and actual  
i. Evaporator water flow rate, design and actual  
j. Condensing pressure drop, design and actual

8. Cooling Coils:  
a. Identification/Number  
b. Location  
c. Water flow, design and actual  
d. Water pressure drop, actual  
e. Entering water temperature, actual  
f. Leaving water temperature, actual

9. Existing CW coils
a. This contractor shall verify that the existing 2-way control valves on the existing AHUs 
shut off completely. For those that do not this contractor shall provide a proposal to 
the owner to repair/replace the valve and/or actuator. Balance the flow per the detail 
on the plans. Total flow does exceed pump capacity.

END OF SECTION 230593
SECTION 230716
HVAC EQUIPMENT INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Cellular foam

1.02 RELATED SECTIONS
A. Specification Section 232113 - Hydronic Piping
B. Specification Section 232300 - Refrigerant Piping

1.03 REFERENCES
B. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
E. ASTM C240 - Standard Test Methods of Testing Cellular Glass Insulation Block
H. ASTM C533 - Standard Specification for Calcium Silicate Block and Pipe Thermal Insulation
I. ASTM C534 - Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form
J. ASTM C552 - Standard Specification for Cellular Glass Thermal Insulation
L. ASTM C592 - Standard Specification for Mineral Fiber Blanket Insulation and Blanket-Type Pipe Insulation (Metal-Mesh Covered) (Industrial Type)
M. ASTM C612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation
N. ASTM C921 - Standard Practice for Determining the Properties of Jacketing Materials for Thermal Insulation
Q. ASTM E96 - Standard Test Methods for Water Vapor Transmission of Materials
R. NAIMA National Insulation Standards
S. NFPA 255 - Standard Method of Test of Surface Burning Characteristics of Building Materials
T. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials

1.04 SUBMITTALS
A. Product Data: Provide product description, thermal characteristics, list of materials, and thickness for equipment scheduled.
B. Manufacturer's Installation Instructions: Indicate procedures that ensure acceptable workmanship and installation standards will be achieved.
1.05 QUALITY ASSURANCE
   A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years experience.
   B. Applicator Qualifications: Company specializing in performing the work of this section with minimum three years experience.

1.06 REGULATORY REQUIREMENTS
   A. Materials: Flame spread/smoke developed rating of 25/50 in accordance with ASTM E84.

1.07 DELIVERY, STORAGE, AND PROTECTION
   A. Deliver, store, protect, and handle products to site.
   B. Deliver materials on site in original factory packaging, labeled with manufacturer's identification, including product density and thickness.
   C. Store insulation in original wrapping and protect from weather and construction traffic, dirt, water, chemical, and mechanical damage.

1.08 ENVIRONMENTAL REQUIREMENTS
   A. Maintain ambient temperatures and conditions required by manufacturers of adhesives, mastics, and insulation cements.
   B. Maintain temperature during and after installation for minimum period of 24 hours.

PART 2 PRODUCTS
2.01 CELLULAR FOAM
   A. Manufacturers:
      1. Armstrong
      2. Halstead
      3. Engineer approved equal.
   B. Insulation:
      1. ASTM C534; flexible, cellular elastomeric, molded OR sheet
      2. "K" Value: ASTM C177; 0.25 at 75 deg F.
      3. Minimum Service Temperature: -40 deg F.
      4. Maximum Service Temperature: 220 deg F.
      5. Maximum Moisture Absorption: ASTM D1056; 5.0% (pipe) by volume, 6.0% (sheet) by volume.
      6. Moisture Vapor Transmission: ASTM E96 procedure B; 0.20 perm-inches.
      7. Maximum Flame Spread: ASTM E84; 25
      8. Maximum Smoke Developed: ASTM E84; 50
   C. Elastomeric Foam Adhesive:
      1. Manufacturers:
         a. Armstrong
         b. Halstead
         c. Engineer approved equal.
      2. Air-dried, contact adhesive, and compatible with insulation.

PART 3 EXECUTION
3.01 EXAMINATION
   A. Verify that equipment has been tested before applying insulation materials.
   B. Verify that surfaces are clean and dry with foreign material removed.

3.02 INSTALLATION
   A. Install materials in accordance with manufacturer's instructions.
B. Do not insulate factory-insulated equipment.

C. Exposed Equipment: Locate insulation and cover seams in least visible locations.

D. Apply insulation close to equipment by grooving, scoring, and beveling insulation. Fasten insulation to equipment with studs, pins, clips, adhesive, wires or bands.

E. Fill joints, cracks, seams, and depressions with bedding compound to form smooth surface. On cold equipment, use vapor barrier cement.

F. Insulated Equipment Containing Fluids Below Ambient Temperature:
   1. Insulate entire system.
   2. Provide vapor barrier jackets, factory applied or field applied.
   3. Finish with vapor barrier adhesive.
   4. Insulate entire system including fittings, valves, unions, flanges, strainers, flexible connectors, pump bodies, expansion joints, air separators, and heat exchanger vessels.

G. Insulated Equipment Containing Fluids Above Ambient Temperature:
   1. Provide standard jackets with vapor barrier, factory applied or field applied.
   2. Hot equipment containing fluid 140 deg F or less do not insulate flanges and unions, but bevel and seal ends of insulation.
   3. Hot equipment containing fluids over 140 deg F insulate flanges and unions with removable sections and jackets.
   4. Insulate entire system including fittings, valves, unions, flanges, strainers, flexible connectors, pump bodies, expansion joints, air separators, and heat exchanger vessels.

H. Inserts and Shields:
   1. Application: Equipment two inch (2") diameter or larger.
   2. Shields: Galvanized steel between hangers and inserts.
   3. Insert Location: Between support shield and equipment under the finish jacket.
   4. Insert Configuration: Minimum six inch (6") long of same thickness and contour as adjoining insulation. May be factory lubricated.
   5. Insert Material: Poly Iso-Cyanurate.

I. Finish insulation at supports, protrusions, and interrupters.

J. Do not insulate over nameplate or ASME stamp. Bevel and seal insulation around such.

K. Install insulation for equipment requiring access for maintenance, repair or cleaning in such a manner that it can be easily removed and replaced without damage.

L. Provide vapor barrier jackets, field-applied to fiberglass insulated equipment containing fluids below ambient temperature.

M. Do not insulate flanges and unions, however bevel and seal ends of insulation for hot equipment containing fluid 140 deg F or less.

N. Insulate flanges and unions with removable sections and jackets for hot equipment containing fluids over 140 deg F.

O. Finish insulation at supports, protrusions, and interruptions.

P. Equipment in Mechanical Equipment Rooms or Finished Spaces: Finish with jacket for finish painting.

Q. Equipment Requiring Access for Maintenance, Repair or Cleaning: Install insulation so it can be easily removed and replaced without damage.
### 3.03 SCHEDULE

#### CELLULAR FOAM INSULATION

<table>
<thead>
<tr>
<th>EQUIPMENT</th>
<th>THICKNESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chilled Water Systems and Pumps</td>
<td>1&quot;</td>
</tr>
<tr>
<td>Plate heat exchanger</td>
<td>1&quot;</td>
</tr>
</tbody>
</table>

END OF SECTION 230716
SECTION 230719
HVAC PIPING INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Fiberglass (Chilled)
B. Flexible elastomeric cellular insulation (Chilled, refrigerant)
C. Piping jackets

1.02 RELATED SECTIONS
A. Specification Section 23 2113 - Hydronic Piping
B. Specification Section 23 2300 - Refrigerant Piping

1.03 REFERENCES
B. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
E. ASTM C240 - Standard Test Methods of Testing Cellular Glass Insulation Block
H. ASTM C533 - Standard Specification for Calcium Silicate Block and Pipe Thermal Insulation
I. ASTM C534 - Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form
K. ASTM C552 - Standard Specification for Cellular Glass Thermal Insulation
L. ASTM C578 - Standard Specification for Preformed, Cellular Polystyrene Thermal Insulation
N. ASTM C610 - Standard Specification for Expanded Perlite Block and Pipe Thermal Insulation
O. ASTM C795 - Standard Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel
P. ASTM C921 - Standard Practice for Determining the Properties of Jacketing Materials for Thermal Insulation
V. ASTM E96 - Standard Test Methods for Water Vapor Transmission of Materials
W. NAIMA National Insulation Standards
X. NFPA 255 - Standard Method of Test of Surface Burning Characteristics of Building Materials
Y. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials

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

1.05 QUALITY ASSURANCE
A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years experience.
B. Applicator Qualifications: Company specializing in performing the work of this section with minimum three years experience.

1.06 REGULATORY REQUIREMENTS
A. Conform to maximum flame spread/smoke developed rating of 25/50 in accordance with ASTM E84.

1.07 DELIVERY, STORAGE, AND PROTECTION
A. Accept materials on site, labeled with manufacturer’s identification, product density and thickness.

1.08 ENVIRONMENTAL REQUIREMENTS
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 FIBERGLASS
A. Manufacturers:
   1. Johns Manville Micro-Lok HP
   2. Owens Corning
   3. Knauf
   4. Engineer approved equal.
B. Insulation: ASTM C547 rigid molded, noncombustible
C. "K" Value: ASTM C335, 0.25 at 75 deg F.
D. Minimum Service Temperature: 0 deg F.
E. Maximum Service Temperature: 800 deg F.
F. Maximum Moisture Absorption: <5% by weight
G. Vapor Barrier Jacket: ASTM C1136, white Kraft paper with fiberglass yarn, bonded to aluminized film.
H. Moisture Vapor Transmission: ASTM E96; 0.02 perm inches.
I. Secure with self-sealing longitudinal laps and butt strips.
J. Surface Burning: ASTM E84; Flame Spread-25, Smoke Developed-50
K. VOC Content: ASTM D5116; 0.15 g/l

2.02 FLEXIBLE ELASTOMERIC CELLULAR INSULATION
A. Manufacturers:
   1. Armacell: AP Armaflex
   2. Aerocel
   3. K-flex
   4. Engineer approved equal.
B. Insulation: ASTM C534 flexible cellular elastomeric molded foam
C. "K" Value: ASTM C177 or C518; 0.27 at 75 deg F.
D. Minimum Service Temperature: -40 deg F.
E. Maximum Service Temperature: 220 deg F.
F. Maximum Moisture Absorption: ASTM D1056, 5.0% by weight gain
G. Maximum Water Vapor Permeability: ASTM E96; 0.05 perm-in
H. Maximum Flame Spread: ASTM E84; 25
I. Maximum Smoke Developed: ASTM E84; 25
J. Insulated Pipe Hangers: Refer to the requirements for elastomeric insulation contained in the Inserts and Shields portion of this section.
K. Elastomeric Foam Adhesive:
   1. Manufacturers:
      a. Armstrong #BLV 520
      b. Halstead/K-Flex
      c. Aeroflex
      d. Engineer approved equal.
   2. Air-dried contact adhesive, compatible with insulation
   3. VOC Content: 0 g/L as calculated and reported by SCAQMD 1168

2.03 PIPING JACKETS
A. PVC Plastic:
   1. Manufacturers:
      a. Johns Manville Zeston
      b. Owens Corning
      c. PIC plastics
      d. Engineer approved equal.
   2. Jacket: ASTM C921, UV resistant one piece molded type fitting covers and sheet material, off white color.
   3. Minimum Service Temperature: -40 deg F.
   4. Maximum Service Temperature: 150 deg F.
   5. Moisture Vapor Transmission: ASTM E96; 0.002 perm inches.
   6. Maximum Flame Spread: ASTM E84; 25
   7. Maximum Smoke Developed: ASTM E84; 50
   8. Thickness: 20 mil for indoor applications, 30 mil for outdoor applications
   10. Covering Adhesive Mastic Manufacturers:
        a. Johns Manville Perma-Weld
        b. Engineer approved equal.
   11. Compatible with insulation.

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 materials in accordance with manufacturer's instructions.
B. Exposed Piping: Locate insulation and cover seams in least visible locations.
C. Insulated Dual Temperature Pipes or Cold Pipes Conveying Fluids Below Ambient Temperature:
1. Provide vapor barrier jackets, factory applied or field applied.
2. Insulate fittings, joints and valves with molded insulation of like material and a thickness as adjacent pipe.
3. PVC fitting covers may be used.
4. Continue insulation through walls (unless in firewall sleeves), pipe hangers and other pipe penetrations.
5. Insulate entire system including fittings, valves, unions, flanges, strainers, flexible connections, pump bodies, and expansion joints.
6. Vapor seal insulation ends every 20 feet.

D. Inserts and Shields:

1. Manufacturers:
   a. Jeff Company/Buckaroo
   b. Armacell
   c. Cooper/Eaton
   d. TPS
   e. Engineer approved equal.
2. Shields: Galvanized saddle with flared edges between pipe hangers or pipe hanger rolls and inserts.
3. Insert Location: Between support shield and piping and under the vapor barrier and finish jacket.
4. Insert Configuration: Minimum six inch (6") long of same thickness and contour as adjoining insulation; may be factory fabricated.
5. Insert Type:
   a. Polystyrene and Fiberglass Insulation: 360 degree polyisocyanurate or phenolic foam cylindrical insert capable of supporting piping system. Pre-fabricated, insulated and jacketed supports are acceptable. Blocks, plugs, or wood material are not acceptable.
   b. Closed Cell (Elastomeric) Insulation: Pre-fabricated 360 degree insulated pipe hanger with polyethylene inserts (Armacell "Armafix" or equal). Match thickness of pipe insulation. Hanger shall have PVC or aluminum jacket. Provide friction tape on inside of pipe clamp/support to avoid slipping.

E. Insulation shall be continuous at all hangers. Hanger shall not be in direct contact with pipe.

3.03 TOLERANCE

A. Substituted insulation materials shall provide thermal resistance within 10% at normal conditions, as materials indicate.

3.04 SCHEDULE

**FIBERGLASS INSULATION**

<table>
<thead>
<tr>
<th>PIPING SYSTEMS</th>
<th>PIPE SIZE</th>
<th>THICKNESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chilled Water Supply/Return</td>
<td>Less than 6&quot;</td>
<td>1&quot;</td>
</tr>
<tr>
<td>Chilled Water Supply/Return</td>
<td>6&quot; and larger</td>
<td>1.5&quot;</td>
</tr>
<tr>
<td>Pump Bodies, Valves, and Devices</td>
<td>ALL</td>
<td>1&quot;</td>
</tr>
<tr>
<td>Cooling Coil Condensate Drains:</td>
<td>ALL</td>
<td>1&quot;</td>
</tr>
</tbody>
</table>
FLEXIBLE ELASTOMERIC FOAM INSULATION

<table>
<thead>
<tr>
<th>PIPING SYSTEMS</th>
<th>PIPE SIZE</th>
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<td>1&quot;</td>
</tr>
<tr>
<td>Chilled Water Supply/Return</td>
<td>6&quot; and larger</td>
<td>1.5&quot;</td>
</tr>
<tr>
<td>Pump Bodies, Valves, and Devices:</td>
<td>ALL</td>
<td>0.75&quot;</td>
</tr>
<tr>
<td>Refrigerant Suction Lines:</td>
<td>ALL</td>
<td>1&quot;</td>
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</tbody>
</table>

PIPE JACKET SCHEDULE

<table>
<thead>
<tr>
<th>PIPE LOCATION</th>
<th>JACKET MATERIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exterior Piping</td>
<td>PVC</td>
</tr>
<tr>
<td>Exposed to UV rays</td>
<td></td>
</tr>
</tbody>
</table>

A. Note: Jacketing shall cover the entire piping system including, but not limited to the pipe, joints, fittings and tees.

END OF SECTION 230719
SECTION 230913
DDC INSTRUMENTS AND CONTROL DEVICES FOR HVAC

PART 1  GENERAL

1.01  SECTION INCLUDES

A. Control valves
B. Input/output sensors for DDC controls
C. Variable frequency drives (VFD)

1.02  RELATED SECTIONS

A. Specification Section 23 0923 - DDC System

1.03  REFERENCES

A. NFPA 70 - National Electrical Code
B. NFPA 90A - Installation of Air Conditioning and Ventilation Systems

1.04  SUBMITTALS

A. Shop Drawings:
   1. Trunk cable schematic. These schematics must show all equipment and controllers added
      by or affected by this project, the location of each device and the location of power circuits
      for each device.
   2. Drawings of connected input and output points. These drawings must show the input or
      output device, terminal points on the input or output device, the controller that the device
      connects to, terminal points on the controller and intermediate connections such as
      terminal blocks.
   3. Drawings of location of control components, including sensors not close to their
      mechanical system (i.e., room temperature sensors, duct mounted sensors) and control
      enclosures. The locations may be shown on copies of the project's mechanical system
      drawings.

B. Control System Components:
   1. Front and side views of enclosures with overall dimensions and conduit entrance locations.
   2. Voltage, amp draw, MOCP and MCA of the controllers and attached devices.
   3. Ambient conditions to include temperature and relative humidity allowed for storage and
      operation of the controllers and attached devices.
   4. Listed Marks from an OSHA nationally recognized testing laboratory that comply with the
      listing requirements in Specification Section 23 0923.

C. Sequence of operation that outlines the programming running in the controllers, both
   programmable and application specific, and shows compliance with the sequence of control
   published on the construction drawings. The sequence may be presented in a narrative or flow
   chart format.

D. Schedule of valves indicating size, flow and pressure drop for each valve. Demonstrate the
   valves' materials of construction, static pressure rating, pressure drop rating and close off
   pressure rating using the submitted actuator.

E. Closeout:
   1. Record actual location of control components, including sensors not close to their
      mechanical system (i.e., room temperature sensors, duct mounted sensors) and control
      enclosures. Show these locations on marked up project mechanical system drawings and /
      or the shop drawings.
   2. Revise shop drawings to reflect the as installed system and the final sequences of
      operation.
   3. Routine preventative maintenance schedule that follows NEMA ICS 1.3 - Preventative
      Maintenance of Industrial Control and Systems Equipment. Include instructions for
operating controllers and describe the operating limits that must be maintained to prevent hazardous or unsafe conditions.

4. Provide manufacturers’ warranties in writing. All equipment provided or furnished by the FMS contractor must be warranted as required in the project specification. Make out the warranties in owner's name and register with the equipment's manufacturer.

1.05 QUALITY ASSURANCE

A. The installer must be a company specializing in applying the work of this section with a minimum of five years experience. The installer may be a subcontractor with the minimum five years experience with their work overseen and directed by the Facility Management System (FMS) contractor.

B. Any electrician installing electrical circuits must be licensed in Iowa as a Class A or Class B Master Electrician or must be licensed in Iowa as a Class A or B Journeyman Electrician and be employed either by an Iowa recognized electrical contractor or an Iowa licensed Class A or Class B Master Electrician. This licensing requirement does not apply to the installation of class two or class three remote control circuits, signaling circuits, power limited circuits, optical fiber cables, other cabling or communications circuits, including raceways, as defined by NFPA 70 for voice, video, audio and data circuits. Refer to Iowa Code Section 103.

1.06 REGULATORY REQUIREMENTS

A. Electrical installation to conform to requirements of NFPA 70.

B. Products must be listed and classified by Underwriters Laboratories, Inc. (UL) or ETL as suitable for the purpose specified and indicated.

C. All electrical work must be inspected in accordance with Iowa law. The inspection must be conducted by a state licensed inspector or the inspector of a political subdivision that Iowa State law recognizes as allowed to conduct inspections inside that subdivision. This inspection requirement does not apply to the installation of class two or class three remote control circuits, signaling circuits, power limited circuits, optical fiber cables, other cabling or communications circuits, including raceways, as defined by NFPA 70 for voice, video, audio and data circuits. Refer to Iowa Code Section 103.

1.07 WARRANTY

A. Warranty must be one-year parts and labor unless noted otherwise for specific components. Warranty starts when all required graphics are installed, fully active and displaying the input and output points, the hardware is operating and the owner has taken beneficial use of the chiller.

B. All warranty service must be conducted by a technician employed by the FMS contractor except that problems specific to installation by a subcontractor may be resolved by that subcontractor.

1.08 MAINTENANCE SERVICE

A. No regular maintenance of the control system is required after the warranty starts.

B. Submit a written report to the owner after any warranty call. The report must state the reason for the warranty call, the FMS contractor’s technicians diagnosis and any hardware or software repair or replacement required.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Instruments and control devices specified below may be made by the FMS manufacturer or may be third party OEM equipment cataloged by the FMS manufacturer that meets the specification requirements. All third party OEM devices must be warranted the same as devices manufactured by the approved FMS manufacturers and those warranties; both labor and material, must be executed by the FMS contractor.

1. Johnson Controls, Inc.
2. Siemens Industries
3. Trane Company
4. Schneider Electric
5. Honeywell
6. Distech
7. Automated Logic
8. Minco
9. BAPI
10. Dwyer
11. Veris
12. ACI
13. Belimo Air Control
14. Apollo
15. Bray
16. Fisher
17. Tyco/Keystone
18. Griswold
19. Danfoss
20. Flow Control Industries
21. Ruskin
22. Tamco
23. Honeywell Analytics
24. MSA
25. Setra
26. Rosemont
27. Endress + Hauser
28. Gerand Engineering
29. Onicon
30. Badger
31. Ebtron
32. Air Monitor
33. Engineer approved equal.

B. This is a list of allowed manufacturers of end devices, both input (i.e. sensors) and output (i.e. actuators, valves, dampers). Inclusion of this list does not allow that manufacturer to bid the FMS System as the FMS contractor. The qualifications of the FMS contractor are established in Specification Section 23 0923 - Direct Digital Control Systems for HVAC.

2.02 CONTROL VALVES

A. Ball Pattern:
1. Up to 2 Inches: Brass or bronze body, NPT female connections. The value trim must include a stainless steel ball and stem.
2. Modulated Valves: The valve manufacturer recommended maximum pressure drop for modulation service must be greater than the pump shut off head. Ball valves must not be used for steam service.
3. Over 2 Inches: Brass, bronze or iron body, ANSI Class 125# flanges. The valve trim must include a stainless steel ball and stem. The valve manufacturer recommended maximum pressure drop for modulation service must be greater than the pump shut off head for modulated valves. Ball valves must not be used for steam service.
4. Hydronic Systems:
   a. Valve assembly, including packing, must be capable of continuous service at pressure of 125 psig and medium temperature of 250 deg F.

B. Operators:
1. All modulating valve actuators must be electronic, using a 0-10 Vdc or 4-20 mA positioning input.
2. All valve actuators must be capable of continuous service at the medium temperature expected for the valve. The actuator may be placed in a factory approved position that is not below the horizontal plane of the valve body and/or equipped with factory approved insulation and heat shields in order to meet this requirement.

### 2.03 INPUT/OUTPUT SENSORS FOR DDC CONTROL

**A. Temperature Sensors and Transmitters:**
1. Temperature sensors used for fluid temperature measurement must be inserted into a separable immersion well. The well must be constructed of brass or stainless steel.

**B. Water and Glycol Solution Static and Differential Pressure Sensors:**
1. The pressure sensors must be electronic. Static pressure sensors for pipe pressure must span no more than 150% of the expected maximum pressure, except that the next higher standard span may be selected. Differential pressure sensors for pipe to pipe pressure differential measurement must range 0-25 psid when installed at a hydraulically distant point from the pumps and 0-50 psid when installed in close proximity to the pumps. Differential pressure sensors for venturi pressure differential measurement must have a differential pressure range selected so the maximum expected flow through the venturi produces a reading that is approximately 50% of full scale.
2. Differential pressure sensors must have three-valve manifolds.
3. Differential pressure sensors must have a proof pressure of at least 50 psig on either port.
4. Static pressure sensors must have a proof pressure of at least 100 psig.
5. Pressure sensors must be thermally compensated with a zero/span shift of no more than 0.02% of full scale per degree F of change.
6. Multiple range pressure sensors must meet the full scale accuracy requirement for the range selected, not only for the highest range available. The pressure sensors must have a non-repeatability error of no more than 0.05% full scale and hysteresis error of no more than 0.1% of full scale. The pressure sensors must have an accuracy of 0.25% of full scale.

**C. Equipment Operation Sensors:**
1. Sense fan on/off status with adjustable threshold current sensors sized for the fan motors full load current draw on one horse power and larger motors. Use on/off current sensors for smaller motors.
2. Sense pump on/off status with on/off current sensors.
3. Sense the run status of any other electric motor with adjustable threshold current sensors sized for the motors full load current draw on one horse power and larger motors. Use on/off current sensors for smaller motors.

### 2.04 VARIABLE FREQUENCY DRIVES

**A.** The existing VFD serving PCH-3 shall be reused.

### PART 3 EXECUTION

#### 3.01 PREPARATION

**A.** Verify that systems are ready to receive work.

**B.** Beginning of installation means installer accepts existing conditions.

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

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

**E.** Ensure installation components are complementary to installation of similar components.

**F.** Coordinate installation of system components with installation of mechanical systems equipment such as air handling units and air terminal units.
G. Do not install control instruments, including controllers, until building environment can be maintained within the operating conditions required by the manufacturer.

H. Verify that field measurements are as indicated on shop drawings and instructed by manufacturer.

3.02 INSTALLATION

A. Install all devices in accordance with manufacturer's instructions.

B. Provide separable wells for liquids and flanges for air bulb elements.

C. Install all water and glycol solution differential pressure transmitters with three valve manifolds. The manifold must allow connecting the high and low pressure ports together as well as isolating the high and low pressure ports from the process. The manifold may be field or factory fabricated.

D. 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.

E. Provide engraved plastic nameplates, attached with rivets or screws, for instruments and controls inside cabinet and on the cabinet face. Each controller must have a label that matches the designation used on the shop drawings. Each cabinet must have a label that matches the designation on the shop drawings. Each controller must have a label that describes the distribution panel board and circuit breaker that supplies its power. Each group of transformers must have a label that describes the distribution panel board and circuit breaker that supplies the group's power. If all components inside a cabinet are powered from the same circuit breaker, place the power source label on the front of the cabinet.

F. Provide raceway, electrical wiring and wiring devices.

G. Provide a dedicated 120 Vac, 20 amp circuit for each controller.

H. Low voltage wiring must be run in raceway in exposed locations and non-accessible ceiling and wall areas. In concealed but accessible locations, control wiring must be in cable tray where available. Where cable tray is not available, low voltage control wiring must be neatly routed parallel and perpendicular to the building lines above accessible ceilings and grouped using D-rings. Use type CL2P (plenum) cable for all wiring and cables not in enclosed raceway. No raceway may be installed in view of occupants except in mechanical and electrical utility rooms.

I. When installing a current sensor on any motor that is controlled by a VFD, place the current sensor on the power entering side of the VFD. Provide a separate junction box up-stream of the VFD to house the CT.

J. Provide conduit and electrical wiring. Refer to electrical specification for conduit requirements. All conduits for control system wiring and cabling must match the color required in the electrical Specification Section 26 0553 Identification for Electrical Systems.

END OF SECTION 230913
SECTION 230923
DDC CONTROL SYSTEM

PART 1 GENERAL

1.01 SCOPE OF WORK

A. The work will extend the existing building direct digital control system to both the new and renovation construction. The control vendor allowed to bid is:
   1. Johnson Controls, Inc. represented by company branch with business offices at 11318 Aurora Ave., Urbandale, IA 50322 and 1351 60th St. NE, Cedar Rapids, IA 52402.
   2. Update the DDC graphic and reuse the existing chiller control sequence. See the plans for point list minimum requirements. Provide all interconnection control wiring of the new chiller.
   3. Survey all existing Chilled water coil valves for functionality. Provide a separate proposal to the owner to repair/replace non-functional valves. Roundhouse building only.
   4. Replace AHU#1R two way CW coil valve with a 3-way style valve.

1.02 FMS CONTRACTOR RESPONSIBILITIES

A. The FMS (facility management system) contractor will provide and connect together all building automation equipment for HVAC equipment control.
B. The building automation equipment includes, but is not limited to, DDC panels, controllers, auxiliary panels, sensors, thermostats, operator interface hardware, relays, switches, transformers valves, actuators and variable frequency drives.
C. The FMS contractor must see equipment in compliance with UL 946 PAZX and UL 864 UDTZ and other subsystem listings as applicable.
D. All electronic equipment must conform to the requirements of FCC Regulations, Part 15, Subpart B governing radio frequency electromagnetic interference by an unintentional radiator and must be so labeled.
E. The FMS contractor must submit the necessary shop drawings required for the installation of the control system.
F. The FMS contractor must provide all low voltage control wiring and its enclosing raceways, except for the specific mounting box and conduit installation assigned to the electrical contractor. The FMS contractor must terminate this wiring in the DDC panels and all field devices.
G. The FMS contractor must document the installed system.

1.03 MECHANICAL CONTRACTOR RESPONSIBILITIES

A. The mechanical contractor must include the following:
   1. Install the temperature sensor wells furnished by the FMS contractor.
   2. Install the automatic control valves furnished by the FMS contractor.

1.04 ELECTRICAL CONTRACTOR RESPONSIBILITIES

A. The electrical contractor must include the following:
   1. Provide power wiring to and through the disconnect to electrical motors, starters and control transformers.
   2. Install the variable frequency drives furnished by the FMS contractor.

PART 2 PRODUCTS
NOT USED
PART 3 EXECUTION

3.01 PREPARATION

A. See Specification Section 23 0913 DDC Instruments and Control Devices for HVAC Part 3.01 for required preparation work.
3.02 INSTALLATION

A. See Specification Section 23 0913 DDC Instruments and Control Devices for HVAC Part 3.02 for required installation work.

END OF SECTION 230923
SECTION 232113
HYDRONIC PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Chilled water piping
B. Equipment drains and overflows
C. Unions, flanges, and couplings
D. Ball valves
E. Butterfly valves
F. Spring loaded wafer check valves

1.02 RELATED SECTIONS

A. Specification Section 23 0719 - HVAC Piping Insulation
B. Specification Section 23 2500 - HVAC Water Treatment

1.03 REFERENCES

A. ASME - Boiler and Pressure Vessel Codes, SEC 9 - Qualification Standard for Welding and Brazing Procedures, Welders, Brazers, and Welding and Braising Operators
B. ASME B16.3 - Malleable Iron Threaded Fittings Class 50 and 300
C. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings
D. ASME B16.22 - Wrought Copper and Copper Alloy Solder Joint Pressure Fittings
E. ASME B31.5 - Refrigeration Piping
F. ASME B31.9 - Building Services Piping
G. ASTM A53 - Pipe, Steel, Black and Hot-Dipped, Zinc Coated Welded and Seamless
H. ASTM A234 - Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and Elevated Temperatures
I. ASTM B32 - Solder Metal
J. ASTM B88 - Seamless Copper Water Tube
K. ASTM F708 - Design and Installation of Rigid Pipe Hangers
L. ASTM D1785 - Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120
M. ASTM D2235 - Solvent Cement for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe and Fittings
N. ASTM D2241 - Poly (Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR-Series)
O. ASTM D2310 - Machine-Made Reinforced Thermosetting Resin Pipe
P. ASTM D2466 - Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40
Q. ASTM D2467 - Socket-Type Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80
R. ASTM D2680 - Acrylonitrile-Butadiene-Styrene (ABS) and Poly (Vinyl Chloride) (PVC) Composite-Sewer Piping
S. ASTM D2683 - Socket-Type Polyethylene Fittings for Outside Diameter-Controlled Polyethylene Pipe and Tubing
T. ASTM D2751 - Acrylonitrile-Butadiene-Styrene (ABS) Sewer Pipe and Fittings
U. ASTM D2855 - Making Solvent-Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings
V. ASTM D3309 - Polybutylene (PB) Plastic Hot-and Cold-Water Distribution Systems
W. ASTM F477 - Elastomeric Seals (Gaskets) for Joining Plastic Pipe
X. ASTM F845 - Plastic Insert Fittings for Polybutylene (PB) Tubing
Y. ASTM F876 - Crosslinked Polyethylene (PEX) Tubing
Z. AWS A5.8 - Brazing Filler Metal
AA. AWS D1.1 - Structural Welding Code
AB. AWWA C105 - Polyethylene Encasement for Ductile Iron Piping for Water and Other Liquids
AC. AWWA C110 - Ductile - Iron and Gray -Iron Fittings three inch (3") through 48 inches for Water and Other Liquids
AD. AWWA C111 - Rubber-Gasket Joints for Ductile Iron and Gray-Iron Pressure Pipe and Fittings
AE. AWWA C151 - Ductile-Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds for Water or Other Liquids

1.04 SUBMITTALS
A. Product Data: Include data on pipe materials, pipe fittings, valves, and accessories. Provide manufacturers catalog information. Indicate valve data and ratings.
B. Provide schedule of all system types and piping and fitting types provided, clearly indicating which submitted piping and fittings are associated to each system on the project. Schedule shall be at the beginning of piping submittal
C. Welder’s Certificate: Include Welder’s Certification of Compliance with ASME Section IX.
D. Manufacturer's Installation Instructions: Indicate hanging and support methods, joining procedures.

1.05 PROJECT RECORD DOCUMENTS
A. Record actual locations of valves.

1.06 OPERATION AND MAINTENANCE DATA
A. Maintenance Data: Include installation instructions, spare parts lists, exploded assembly views.

1.07 QUALIFICATIONS
A. Manufacturer: Company specializing in manufacturing the products specified in this section with minimum three years experience.
B. Installer: Company specializing in performing the work of this section with minimum three years experience.
C. Welders: Certify in accordance with ASME Section IX.

1.08 REGULATORY REQUIREMENTS
A. Conform to ASME B31.9 code for installation of piping system.
B. Welding Materials and Procedures: Conform to ASME SEC 9 and applicable state labor regulations.
C. Provide certificate of compliance from authority having jurisdiction indicating approval of welders.

1.09 DELIVERY, STORAGE AND HANDLING
A. Deliver, store, protect and handle products to site.
B. Accept valves on site in shipping containers with labeling in place. Inspect for damage.
C. Provide temporary protective coating on cast iron and steel valves.
D. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.
E. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work and isolating parts of completed system.
F. Protect plastic piping materials from degradation due to ultraviolet (UV) light exposure. Where plastic piping materials are stored in a location that receives direct sunlight, provide protective coverings to shield materials UV light exposure.

PART 2 PRODUCTS

2.01 CHILLED WATER PIPING (ABOVE GRADE)

A. Steel Pipe: ASTM A53, SCH 40/STD WT. Grade B, Black.
   1. Fittings:
      a. Threaded: ASTM A196, 150 PSI Malleable Iron
      b. Weld: ASTM B16.3 Malleable Iron or ASTM A234 Forged Steel Welding Type
      c. Grooved: ASTM A536, Grade 65-45-12 Ductile Iron
      d. Flanges: Class 125 and 250, Cast Iron or Forged Steel Fittings
   2. Joints:
      a. Two Inch (2") and Under: Threaded
      b. Two Inch (2") and Over: Welded
      c. Two Inch (2") and Over: Flanged, Raised Face, Class 125 or 250
      d. Two Inch (2") and Over: Grooved Mechanical Couplings

2.02 EQUIPMENT DRAINS AND OVERFLOWS

A. Copper Tubing: ASTM B88, type #M, hard drawn.
   2. Joints: Solder, lead free, ASTM B32, 95-5 tin-antimony or tin and silver with melting range 430 deg F to 535 deg F.

2.03 UNIONS, FLANGES AND COUPLINGS

A. Unions for Pipe Two Inch (2") and Under:
   1. Ferrous Piping: 150 psig malleable iron, threaded.
   2. Copper Pipe: Bronze, soldered joints.

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

C. Grooved Mechanical Couplings for Sizes Two (2") and Larger
   1. Manufacturers:
      a. Victaulic
   2. Coupling Housing: Cast Ductile Iron Conforming to ASTM A536, rigid-type unless otherwise indicated. Housing design shall feature pad-to-pad contact for visual verification of a properly installed product.
   3. Sealing Gasket: Pressure-Responsive C-Shaped EPDM Elastomer with a temperature rating of -30F to 250F. Gaskets shall be formulated and rated for heating water applications. Gaskets recommending/requiring the use of specialized lubricants/coatings to achieve an improved heating water rating are not approved for use.
   4. Applications:
      a. Rigid-Type Couplings: Required for use in all applications unless otherwise indicated. Couplings shall comply with the pipe hanging requirements as outlined in ASME B31.9
      b. Flexible-Type Couplings: Allowed for use in locations where vibration attenuation, thermal expansion compensation, and pipe stress relief is required.
         1) Vibration Attenuation: Three “flexible-type” Victaulic couplings may be used in lieu of a flexible connector. The three couplings shall be installed in close proximity to the vibration source on both the supply and return sides of the equipment.
2) Thermal Expansion/Contraction: Flexible-type couplings may be used to accommodate for thermal expansion/contraction of the piping system. Install these couplings - as well as pipe anchors, hangers, and guides as recommended by the coupling manufacturer.

D. Dielectric Nipples:
   1. Required for all dissimilar metal pipe joints.
   2. Joints: Threaded, Flanged, or Grooved
   3. Fittings: Dielectric Nipple – Copper Silicone Casting conforming to UNS C87850. The fitting must have a minimum end to end length of:
      a. 3 inches (1/2 to ¾ inch IPS/CTS Pipe)
      b. 4 inches (1 to 2 inch IPS/CT)
      c. 6 inches (2-1/2 to 4 inch IPS/CTS Pipe)

2.04 BALL VALVES (2-1/2" AND LARGER)
A. Manufacturers:
   1. Apollo
   2. Watts
   3. Nibco #F-510-S6-R-66-FS
   4. Milwaukee
   5. Engineer approved equal.

B. Cast steel body, stainless steel ball, RPTFE seat and thrust washer, lever handle, flanged.

2.05 BUTTERFLY VALVES (OVER 2")
A. Manufacturers:
   1. Nibco #LD-2000
   2. Apollo #LD141
   3. DeZurik #BOS-US
   4. Victaulic #761
   5. Engineer approved equal.

B. Body: Ductile iron ASTM A 536, lugged, extended neck capable of providing bi-directional "Dead End Service" without the need for a downstream blind flange.


D. Disc: Aluminum Bronze or Bronze B-584 C84400 or stainless steel.

E. Stem: Stainless steel 316 or 416.

F. Valve size Up to 12": Pins fastening the disc to stem are expressly prohibited. Valve sizes over 12": Bolts fastening disc to stem are acceptable.

G. Operator: Lever handle (10 position) with memory stop. All butterfly valves six inch (6") and larger shall have gear operated handles.

2.06 SPRING LIFT CHECK VALVES (UP TO 2 INCHES)
A. Manufacturers:
   1. Crane #27TF
   2. Lukenheimer #233
   3. Engineer approved equal.

B. Lift check style, bronze body, bronze or stainless steel trim, stainless steel spring, renewable seat and disc, Class 150, threaded ends.

2.07 SPRING LOADED WAFER CHECK VALVES (OVER 2 INCHES)
A. Manufacturers:
   1. Nibco #910
   2. Metraflex #900
   3. Victaulic #716/779/W715
4. Engineer approved equal.
B. Globe style, silent check, cast iron body, bronze or stainless steel trim, stainless steel spring, renewable seat and disc, Class 125, flanged or grooved ends.

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.
D. Keep open ends of pipe free from scale and dirt. Protect open ends with temporary plugs or caps.
E. After completion fill, clean, and treat systems.

3.02 INSTALLATION
A. Install in accordance with manufacturer's instructions.
B. Install heating water, glycol, chilled water piping to ASME B31.9.
C. Route piping in orderly manner, parallel to building structure and maintain gradient.
D. Install piping to conserve building space and not interfere with use of space.
E. Group piping, whenever practical, at common elevations.
F. Sleeve pipe passing through partitions, walls, and floors.
G. Slope piping and arrange to drain at low points in open system.
H. Install piping to allow for expansion and contraction without stressing pipe, joints or connected equipment.
I. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings.
J. Provide access where valves and fittings are not accessible. Coordinate size and location of access doors.
K. Slope piping and arrange systems to drain at low points. Use eccentric reducers to maintain top of pipe level.
L. Where pipe support members are welded to structural building framing; scrape, brush clean, and apply one coat of zinc rich primer to welds.
M. Prepare unfinished pipe, fittings, supports, and accessories for finish painting.
N. Install valves with stems upright or horizontal. Not inverted.
O. Wire welding is not permitted.
P. Caulking or salting of joints is not permitted.
Q. 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 that flanges, union, and couplings for servicing are consistently provided.
R. Use unions, flanges, and couplings downstream of valves and at equipment or apparatus connections. Do not use direct welded or threaded connections to valves, equipment or other apparatus.
S. Use non-conducting dielectric connections whenever jointing dissimilar metals in open systems.
T. Provide pipe hangers and supports in accordance with ASTM B31.9 unless indicated otherwise.
U. Use ball or butterfly valves for shut-off and to isolate equipment, part of systems or vertical risers.
V. Use 3/4 inch ball valves with cap for drains at main shut-off valves, low points of piping, bases of vertical risers, and at equipment. Pipe to nearest floor drain.

3.03 PIPE JOINT CONSTRUCTION

A. Ream/remove burrs from plain ends of pipe. Prepare pipe with a beveled end prior to welding.
B. Remove Scale, slag and debris from inside and outside of pipe and fittings prior to assembly.
C. Soldered Joints: Construct joints according to ASTM B828. Apply ASTM B813 water-flushable flux, unless otherwise indicated. Install using lead-free solder complying with ASTM B32
D. Threaded Joints: Thread Pipe with tapered pipe threads according to ASME B1.20.1. Ream Pipe ends to remove burrs and restore full ID. Apply appropriate tape or thread compound to external pipe threads
E. Welded Joints: Construct joints according to AWS D10.12/D10.12M
F. Flanged Joints
G. Grooved Mechanical Joints:
   1. Pipe ends shall be grooved in accordance with coupling manufacturer’s current listed standards conforming to ANSI/AWWA C-606
   2. All grooved product shall be of one manufacturer
   3. All installers and fabricators of grooved mechanical joints shall have completed a training-course provided by a factory-trained-representative.

END OF SECTION 232113
SECTION 232123
HYDRONIC PUMPS

PART 1 GENERAL

1.01 SECTION INCLUDES
   A. Base mounted pumps

1.02 RELATED SECTIONS
   A. Specification Section 230719 - HVAC Piping Insulation
   B. Specification Section 232113 - Hydronic Piping

1.03 REFERENCES
   A. UL 778 - Motor Operated Water Pumps
   B. NFPA 70 - National Electrical Code

1.04 PERFORMANCE REQUIREMENTS
   A. Ensure pumps operate at specified system fluid temperatures without vapor binding and
      cavitation, are non-overloading in parallel or individual operation, and operate within 25% of
      midpoint of published maximum efficiency curve.

1.05 SUBMITTALS
   A. Product Data: Provide certified pump curves showing performance characteristics with pump
      and system operating point plotted. Include NPSH curve when applicable. Include electrical
      characteristics and connection requirements.
   B. Manufacturer's Installation Instructions: Indicate hanging and support requirements and
      recommendations.
   C. Millwright's Certificate: Certify that base mounted pumps have been aligned.

1.06 OPERATION AND MAINTENANCE DATA
   A. Operation and Maintenance Data: Include installation instructions, assembly views, lubrication
      instructions, and replacement parts list.

1.07 QUALIFICATIONS
   A. Manufacturer: Company specializing in manufacture, assembly and field performance of pumps
      with minimum three years experience.
   B. Alignment: Base mounted pumps shall be aligned by qualified millwright.

1.08 REGULATORY REQUIREMENTS
   A. Products Requiring Electrical Connection: Listed and classified by UL as suitable for the
      purpose specified and indicated.

PART 2 PRODUCTS

2.01 BASE MOUNTED PUMPS
   A. Manufacturers:
      1. B & G
      2. Taco
      3. Paco
      4. Armstrong Pumps, Inc.
      5. Patterson Pump
      6. Engineer approved equal.
   B. Type: Horizontal shaft, single stage, direct connected, radially or horizontally split casing for 125
      psgm maximum working pressure.
   C. Casing: Cast iron with suction and discharge gauge ports, renewable bronze casing wearing
      rings, seal flush connection, drain plug, flanged suction, and discharge.
D. Impeller: Bronze, fully enclosed, keyed to shaft.
E. Bearings: Grease lubricated roller or ball bearings.
F. Shaft: Alloy steel with bronze shaft sleeve.
G. Seal: Carbon rotating against a stationary ceramic seat, 212 deg F maximum continuous operating temperature.
H. Drive: Flexible coupling with coupling guard.
I. Baseplate: Cast iron or fabricated steel with integral drain rim.
J. Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes and materials indicated. Enclose terminal lugs in terminal box sized to NFPA 70.

PART 3 EXECUTION

3.01 PREPARATION
A. Verify that electric power is available and of the correct characteristics.

3.02 INSTALLATION
A. Install in accordance with manufacturer's instructions.
B. Provide access space around pumps for service. Provide no less than minimum as recommended by manufacturer.
C. Decrease from line size with long radius reducing elbows or reducers. Support piping adjacent to pump such that no weight is carried on pump casings. Provide supports under elbows on pump suction and discharge line sizes four inches and over for close coupled or base mounted pumps.
D. Provide air cock and drain connection on horizontal pump casings.
E. Provide drains for bases and seals, piped to and discharging into floor drains.
F. Check, align, and certify alignment of base mounted pumps prior to start-up.
G. Install close coupled and base mounted pumps on concrete housekeeping base with anchor bolts, set and level and grout in place. Provide two inch cork pad for vibration isolation.
H. Lubricate pumps before start-up.
I. Provide double sphere flexible Metraflex Metrasphere pipe connection at base mounted pumps.
J. Base mounted pumps shall have suction diffuser and strainer at pump intake.
K. Provide a single pressure gauge piped between pump supply and suction with a set of isolation valves for reading of pump differential pressure.

3.03 SCHEDULES
A. See the drawings.

END OF SECTION 232123
SECTION 232133
HYDRONIC SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES
   A. Air vents
   B. Strainers
   C. Pump suction fittings
   D. Automatic flow control valves

1.02 RELATED SECTIONS
   A. Specification Section 232113 - Hydronic Piping
   B. Specification Section 23 2123 - Hydronic Pumps
   C. Specification Section 232500 - HVAC Water Treatment

1.03 REFERENCES
   A. ASME - Boilers and Pressure Vessel Codes, SEC 8-D-Rules for Construction of Pressure Vessels.

1.04 SUBMITTALS
   A. Product Data: Provide product data for manufactured products and assemblies required for this project. Include component sizes, rough-in requirements, service sizes, and finishes. Include product description, model and dimensions.
   B. Submit inspection certificates for pressure vessels from authority having jurisdiction.
   C. Manufacturer's Installation Instructions: Indicate hanging and support methods, joining procedures.

1.05 PROJECT RECORD DOCUMENTS
   A. Record actual locations of flow controls.

1.06 OPERATION AND MAINTENANCE DATA
   A. Maintenance Data: Include installation instructions, assembly views, lubrication instructions and replacement parts list.

1.07 QUALIFICATIONS
   A. Manufacturer: Company specializing in manufacturing the products specified in this section with minimum three years experience.

1.08 DELIVERY, STORAGE AND HANDLING
   A. Deliver, store, protect and handle products to the site.
   B. Accept valves on site in shipping containers with labeling in place. Inspect for damage.
   C. Provide temporary protective coating on cast iron and steel valves.
   D. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.
   E. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

1.09 MAINTENANCE SERVICE
   A. Furnish service and maintenance of glycol system for one year from date of substantial completion.
PART 2 PRODUCTS

2.01 AUTOMATIC AIR VENTS

A. Float Type Manufacturers:
   1. Bell & Gossett #107
   2. Taco
   3. Dole
   4. Metraflex
   5. Patterson Pump
   6. Taco
   7. Engineer approved equal.

B. Brass or semi-steel body, copper, polypropylene or solid non-metallic float, stainless steel valve and valve seat; suitable for system operating temperature and pressure with isolating valve.

C. Washer Type: Brass with hygroscopic fiber discs, vent ports, adjustable cap for manual shut-off and integral spring loaded ball check valve.

2.02 Y STRAINERS

A. Size 2" and Under:
   1. Manufacturers:
      a. MetraFlex #TS
      b. Mueller Steam Specialty
      c. Watts
      d. Yarway
      e. Engineer approved equal.

   2. Screwed brass or iron body for 175 psig working pressure, "Y" pattern with 1/32 inch stainless steel perforated screen.

B. Size 2-1/2 Inch to 4 Inches:
   1. Manufacturers:
      a. Victaulic 732
      b. MetraFlex #TF
      c. Yarway
      d. Watts
      e. Engineer approved equal.

   2. Flanged or grooved iron body for 175 psig W.O.G. working pressure, basket pattern with 1/8 inch stainless steel perforated screen.

C. Provide drain valve with hose connection and cap on all strainers.

2.03 PUMP SUCTION FITTINGS (SUCTION DIFFUSER)

A. Manufacturers:
   1. Armstrong Pumps, Inc.
   2. B & G
   3. Patterson
   4. Taco
   5. Victaulic
   6. Engineer approved equal.

B. Fitting: Angle pattern, cast-iron body, threaded for two inches and smaller, flanged or grooved for 2-1/2 inches and larger, rated for 175 psig working pressure with inlet vanes, cylinder strainer with 3/16 inch diameter openings, disposable fine mesh strainer to fit over cylinder strainer and permanent magnet located in flow stream and removable for cleaning.

C. Accessories: Adjustable foot supports, blow down tapping in bottom, gauge taping in side.
D. In lieu of individual specified components, a pre-manufactured packaged assembly may be submitted. The assembly shall contain all the components assembled in the order as shown on the drawings and details.

2.04 AUTOMATIC FLOW CONTROL VALVES (AUTO FLOW)

A. Manufacturers:
   1. Bell & Gossett
   2. Danfoss
   3. FDI
   4. General Treatment Products
   5. Griswold
   6. HCI
   7. Pro Hydronic Specialties
   8. Engineer approved equal.

B. Valves shall be factory set and shall automatically limit the rate of flow to required capacity within +/- 5% accuracy over an operating pressure differential of at least fourteen times the minimum required for control. Operating differential is not to exceed 3 psig.

C. The control mechanism of the valve shall consist of a self-contained, open chamber cartridge assembly with unobstructed flow passages that eliminate accumulation of particles and debris. The cartridge shall be removable in one piece and all internal working parts shall be type #300 passivated stainless steel. The unit shall utilize the available differential pressure across the valve to actuate the control mechanism and shall be capable of self-cleaning the variable inlet ports over the full control range.

D. Cast iron valve bodies shall be provided with inlet and outlet tappings and shall be marked to show direction of flow. Valve bodies shall be rated for use at not less than 150% of system designed operating pressures. Each valve shall be furnished with a kit consisting of 1/4” x 2” minimum size nipples, quick disconnect valves (located outside of insulation) and fittings suitable for use with measuring instruments specified.

E. Provide submittal indicating certified performance data for the flow control valve, based on independent lab tests, supervised, and witnessed by a registered professional engineer. Provide documents showing actual pressure drop of units at scheduled gpm, including pressure drop through cartridge. Size for 3 psig maximum pressure drop at design flow rate.

F. Provide a metal identification tag with chain for each installed valve. The tag to be marked with zone identification, valve model number, and rated flow in GPM.

G. Flow control valves shall be warranted for a period of five years from date of substantial completion. The contractor shall furnish and install replacement cartridges with proper pressure range as required be test and balance agency to reach design flow.

H. Flow Measuring Instructions:
   1. Flow measuring instructions to verify flow rates shall be furnished.
   2. Correct flow shall be verified by establishing that the operating pressure differential across the valve tappings is within the range indicated on the submittal data sheet for that model number.

PART 3 EXECUTION

3.01 INSTALLATION

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

B. Where large air quantities can accumulate, provide enlarged air collection standpipes.

C. Provide manual air vents at system high points and as indicated.

D. Provide vent tubing to nearest drain for automatic air vents in ceiling spaces or other concealed locations.

E. Provide valved drain and hose connection on all strainer blow down connections.
F. Provide pump suction fitting on suction side of base mounted centrifugal pumps where indicated.

G. Remove pump suction filters and any other temporary strainers one week after system cleaning is finished.

H. Support pump fittings with floor mounted pipe and flange supports.

END OF SECTION 232133
SECTION 232300
REFRIGERANT PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Piping
B. Refrigerant
C. Moisture and liquid indicators
D. Valves
E. Check valves
F. Ball valves
G. Service valves
H. Flexible connections

1.02 RELATED SECTIONS

A. Specification Section 23 6213 - Packaged Air Cooled Refrigerant Compressor and Condensing Units

1.03 REFERENCES

A. ARI 495 - Refrigerant Liquid Receivers
B. ARI 710 - Liquid Line Dryers
C. ARI 730 - Flow-Capacity Rating and Application of Suction-Line Filters and Filter-Driers
D. ARI 750 - Thermostatic Refrigerant Expansion Valves
E. ARI 760 - Solenoid Valves for use with Volatile Refrigerants
F. ASHRAE 15 - Safety Code for Mechanical Refrigeration
G. ASHRAE 34 - Number Designation of Refrigerants
H. ASME - Boiler and Pressure Vessel Codes, SEC 9 - Qualification Standard for Welding and Brazing Procedures, Welders, Brazers, and Welding and Brazing Operators
I. ASME B16.22 - Wrought Copper and Copper Alloy Solder Joint Pressure Fittings
J. ASME B16.26 - Cast Copper Alloy Fittings For Flared Copper Tubes
K. ASME B31.5 - Refrigeration Piping
L. ASME B31.9 - Building Services Piping
M. ASME SEC 8D - Boilers and Pressure Vessels Code, Rules for Construction of Pressure Vessels
N. ASTM A53 - Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
O. ASTM A234 - Pipe Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and Elevated Temperatures
P. ASTM B88 - Seamless Copper Water Tube
Q. ASTM B280 - Seamless Copper Tube for Air Conditioning and Refrigeration Field Service
R. ASTM F708 - Design and Installation of Rigid Pipe Hangers
S. AWS A5.8 - Brazing Filler Metal
T. AWS D1.1 - Structural Welding Code, Steel
U. MSS SP58 - Pipe Hangers and Supports - Materials, Design and Manufacturer
V. MSS SP69 - Pipe Hangers and Supports - Selection and Application
W. MSS SP89 - Pipe Hangers and Supports - Fabrication and Installation Practices
X. UL 429 - Electrically Operated Valves

1.04 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. Provide pipe hangers and supports in accordance with ASTM B31.5 unless indicated otherwise.

C. Liquid Indicators:
   1. Use line size liquid indicators in main liquid line leaving condenser.
   2. If receiver is provided, install in liquid line leaving receiver.
   3. Use line size on leaving side of liquid solenoid valves.

D. Valves:
   1. Use service valves on suction and discharge of compressors.
   2. Use gauge taps at compressor inlet and outlet.
   3. Use gauge taps at hot gas bypass regulators, inlet and outlet.
   4. Use check valves on compressor discharge.
   5. Use check valves on condenser liquid lines on multiple condenser systems.

E. Refrigerant Charging (Packed Angle) Valve: Use in liquid line between receiver shut-off valve and expansion valve.

F. Strainers:
   1. Use line size strainer upstream of each automatic valve.
   2. Use single main liquid line strainer where multiple expansion valves with integral strainers are used.
   3. Use strainer in suction line on steel piping systems.
   4. Use shut-off valve on each side of strainer.

G. Pressure Relief Valves: Use on ASME receivers and pipe to outdoors.

H. Permanent Filter-Drier:
   1. Use in low temperature systems.
   2. Use in systems utilizing hermetic compressors.
   3. Use filter-drier for each solenoid valve.

I. Replaceable Cartridge Filter-Drier:
   1. Use vertically in liquid line adjacent to receivers.
   2. Use filter-drier for each solenoid valve.

J. Solenoid Valves:
   1. Use in liquid line of systems operating with single pump-out or pump-down compressor control.
   2. Use in liquid line of single or multiple evaporator systems.
   3. Use in oil bleeder lines from flooded evaporators to stop flow of oil and refrigerant into the suction line when system shuts down.

K. Receivers:
   1. Use on systems 5 tons (18 kW) and larger, sized to accommodate pump down charge.
   2. Use on systems with long piping runs.

L. Flexible Connectors: Utilize at or near compressors where piping configuration does not absorb vibration.

1.05 SUBMITTALS

A. Shop Drawings: Indicate schematic layout of system, including equipment, critical dimensions, and sizes.
B. Product Data: Provide general assembly of specialties, including manufacturers catalog information. Provide manufacturers catalog data including load capacity.

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

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

E. Manufacturer's Installation Instructions: Indicate support, connection requirements and isolation for servicing.

F. Submit Welder's Certification of Compliance with ASME SEC 9.

1.06 PROJECT RECORD DOCUMENTS
A. Record exact locations of equipment and refrigeration accessories on record drawings.

1.07 OPERATION AND MAINTENANCE DATA
A. Maintenance Data: Include instructions for changing cartridges, assembly views, and spare parts lists.

1.08 QUALIFICATIONS
A. Installer: Company specializing in performing the work of this section with minimum three years experience.

B. Design piping system under direct supervision of a professional engineer experienced in design of this work and licensed in Iowa.

1.09 REGULATORY REQUIREMENTS
A. Conform to ASME B31.9 for installation of piping system.

B. Welding Materials and Procedures: Conform to ASME SEC 9 and applicable state labor regulations.

C. Welder's Certification: In accordance with ASME SEC 9.

D. Products Requiring Electrical Connection: Listed and classified by UL, as suitable for the purpose indicated.

1.10 DELIVERY, STORAGE, AND HANDLING
A. Deliver, store, protect and handle products to site under provisions of Architectural Specification.

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

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

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

1.11 MAINTENANCE MATERIALS
A. Provide two refrigeration oil test kits each containing everything required to conduct one test.

B. Provide a 25 pound charge of R-410a in a storage cylinder.

C. Provide two filter-dryer cartridges of each type.

PART 2 PRODUCTS

2.01 PIPING
A. Copper Tubing: ASTM B280, type #ACR hard drawn or annealed.
   2. Joints: Braze, AWS A5.8 BCuP silver/phosphorus/copper alloy with melting range of 1190 to 1480 deg F.
2.02 REFRIGERANT
   A. Refrigerant: R-410a

2.03 MOISTURE AND LIQUID INDICATORS
   A. Manufacturers:
      1. Parker
      2. Engineer approved equal.
   B. Indicators: Double port type, UL listed with brass body, solder ends, sight glass, color coded paper moisture indicator and plastic cap; for maximum working pressure of 500 psig and maximum temperature of 200 deg F.

2.04 VALVES
   A. Manufacturers:
      1. Parker
      2. Engineer approved equal.
   B. Diaphragm Packless Valves: UL listed, globe, forged brass body and bonnet, phosphor bronze and stainless steel diaphragms, rising stem and hand wheel, stainless steel spring, nylon seat disc, solder or flared ends, with positive back seating; for maximum working pressure of 500 psig and maximum temperature of 275 deg F.
   C. Packed Angle Valves: Forged brass, forged brass seal caps with copper gasket, rising stem and seat, molded stem packing, solder or flared ends; for maximum working pressure of 500 psig and maximum temperature of 275 deg F.

2.05 CHECK VALVES
   A. Globe Type:
      1. Manufacturers:
         a. Parker
         b. Engineer approved equal.
      B. Cast bronze or forged brass body, forged brass cap with neoprene seal, brass guide and disc holder, phosphor-bronze or stainless steel spring, Teflon seat disc; for maximum working pressure of 425 psig and maximum temperature of 300 deg F.
      C. Straight through type brass body and disc, phosphor-bronze or stainless steel spring, neoprene seat; for maximum working pressure of 500 psig and maximum temperature of 200 degF.

2.06 BALL VALVES
   A. Manufacturers:
      1. Aurora
      2. Parker
      3. Alco
      4. Engineer approved equal.
   B. Two piece forged brass body with Teflon ball seals and copper tube extensions, brass bonnet and seal cap, chrome plated ball, stem with neoprene ring stem seals; for maximum working pressure of 500 psig and maximum temperature of 300 deg F.

2.07 SERVICE VALVES
   A. Manufacturers:
      1. Parker
      2. Alco
      3. Engineer approved equal.
   B. Forged brass body with copper stubs, brass caps, removable valve core, integral ball check valve, flared or solder ends for maximum pressure of 500 psig.
2.08 FLEXIBLE CONNECTORS
   A. Manufacturers:
      1. Parker
      2. Alco
      3. Engineer approved equal.
   B. Corrugated stainless steel hose with single layer of stainless steel exterior braiding, minimum
      nine inches (9") long with copper tube ends; for maximum working pressure 500 psig.

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 not interfere with use of space.
   D. Group piping whenever practical at common elevations and locations. Slope piping 1% in
      direction of oil return.
   E. Install piping to allow for expansion and contraction without stressing pipe, joints or connected
      equipment.
   F. Arrange piping to return oil to compressor. Provide traps and loops in piping and provide double
      risers as required. Slope horizontal piping 0.40% in direction of flow. Pipe size to be provided
      by unit manufacturer.
   G. Provide clearance for installation of insulation and access to valves and fittings.
   H. Provide access to concealed valves and fittings. Coordinate size and location of access doors.
   I. Flood piping system with nitrogen when brazing.
   J. Where pipe support members are welded to structural building frame, brush clean, and apply
      one coat of zinc rich primer to welding.
   K. Prepare unfinished pipe, fittings, supports, and accessories ready for finish painting.
   L. Insulate piping and equipment.
   M. Follow ASHRAE 15 procedures for charging and purging of systems and for disposal of
      refrigerant.
   N. Provide external equalizer piping on expansion valves with refrigerant distributor connected to
      evaporator.
   O. Install flexible connectors at right angles to axial movement of compressor parallel to
      crankshaft.
   P. Fully charge completed system with refrigerant after testing.
   Q. Evacuate system to 27 inches vacuum and hold at that level for 1 hour prior to charging system
      with refrigerant.

3.03 FIELD QUALITY CONTROL
   A. Field inspection and testing will be performed under provisions of Architectural Specification
      Sections.
   B. Test refrigeration system in accordance with ASME B31.5.
C. Pressure test system with dry nitrogen to 200 psig. Perform final tests at 27 inches vacuum and 200 psig using electronic leak detector. Test to no leakage.

END OF SECTION 232300
SECTION 232500
CLEANING AND TREATMENT OF HYDRONIC SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Cleaning of closed systems
B. Glycol

1.02 RELATED SECTIONS
A. Specification Section 23 2113 - Hydronic Piping
B. Specification Section 23 2133 - Hydronic Specialties

1.03 REFERENCES
A. ASME B31.9 - Building Services Piping

1.04 SUBMITTALS
A. Shop Drawings: Indicate system schematic, equipment locations, controls schematics, electrical characteristics, and connection requirements.
B. Product Data: Provide information on treatment materials, chemicals, and equipment including electrical characteristics and connection requirements.
C. Manufacturer's Installation Instructions: Indicate placement of equipment in systems, piping configuration, connection requirements, and start-up procedures.
D. Field Report: Provide a service report, generated on-site by the water treatment representative, certifying that the chillers and other hydronic equipment have been cleaned, passivated, and started up in accordance with specifications and the procedures recommended by the equipment manufacturer.
E. Provide SDS Sheets for all chemical products.

1.05 PROJECT RECORD DOCUMENTS
A. Record actual locations of equipment and piping, including sampling points, system blow-downs, and location of chemical injectors.
B. Record volume of each hydronic system, as measured by water fill meter.

1.06 QUALIFICATIONS
A. Manufacturer: Company specializing in manufacturing the products specified in this section with minimum ten-years' experience. Company shall have local representatives with water analysis laboratories and full time service personnel.
B. Installer: Company specializing in performing the work of this section and approved by manufacturer. The company must be a member of the Association of Water Technologies (AWT), or technical equivalent. The water treatment chemistry program shall be designed by an AWT "Certified Water Technologist" to meet the performance requirements defined by this specification and AWT guidelines.

1.07 REGULATORY REQUIREMENTS
A. Conform to applicable code for addition of non-potable chemicals to building mechanical systems.
B. Products Requiring Electrical Connection: Listed and classified by UL as suitable for the purpose specified and indicated.
C. Biocide products shall be registered with the EPA, with the registration number clearly shown on drum labels.

1.08 MAINTENANCE MATERIALS
A. Provide sufficient chemicals for treatment and testing during service and warranty period.
B. Provide one additional 5-gallon drum of glycol for each system.

PART 2 PRODUCTS

2.01 VENDORS
A. G.E. Water & Process Technologies
B. Jaytech
C. Nalco
D. US Water Services
E. WaterLink
F. Innovational Concepts
G. Engineer approved equal.

2.02 CLEANING OF CLOSED SYSTEMS
A. Provide all required materials and services to clean system of all oils, dirt, flux, pipe mill varnish, iron oxide corrosion by-products, and microbial agents. The process must be capable of removing grease and petroleum products, and must passivate all wetted surfaces in system including ferrous and non-ferrous piping, associated ferrous and non-ferrous pipe fittings, and mechanical equipment.

It is the responsibility of the mechanical contractor to coordinate the proper cleaning and passivation of the hydronic systems. The mechanical contractor shall provide for the water treatment contractor the materials of construction, fill volumes, and other information required for cleaning and passivation of the hydronic systems.

B. Materials:
1. Cleaning: Alkaline compound with emulsifying agents and detergent of sufficient strength to completely clean system of all foreign substances.
2. Passivation: Provide passivation chemicals appropriate for construction of piping system. Provide protection for all ferrous and non-ferrous components. Coordinate with the mechanical contractor to provide protection for all materials of construction used in the system, including aluminum, brass, and other non-ferrous material.
3. Biocide: Provide required agents to bring biological growth within testing parameters.

C. Procedure:
1. Initial System Flush:
   a. The system shall be filled with water and thoroughly flushed to remove any dirt and debris from the materials of construction. The system must be filled and drained from points which maximize flow throughout the entire loop. A system pressure of at least 10 psig must be maintained during the flush. Soft water shall be used to fill and flush heating water systems.
   b. All valves and zones in the loop must be in the open position during the flushing process. Fully flush all dead-end branch piping.
   c. The initial flush must last for at least four continuous hours.
   d. Use temporary water meter to record volume in each system, for use by the water treatment contractor.
2. Secondary Flush and System Cleaning:
   a. The system shall be filled with the passivating and cleaning agents.
   b. The system must be circulated continuously for at least 48 hours. Provide additional cleaner or circulation time as required to properly clean old or fouled piping. If the system has a boiler, raise the loop temperature to 160°F to improve cleaning.
   c. Once the cleaner has recirculated for at least 48 hours, the system must flushed again.
   d. The secondary flush must last for at least eight continuous hours. After the system has been flushed, samples must be taken at 3 different points in the system to verify the system is clean. The flush will be considered a success when a conductivity test,
of the water exiting the loop, reads within 20% of the makeup water composition. Alternately, a Babcock/ Wilcox Millipore testing of the water exiting the loop contains less than 100 ppb of total suspended solids. Biological testing must show less than 100 RLUs/CFUs. The specified biocide must be applied at legal dosage rates if microbiological growth exceeds 100 RLUs/CFUs. The water treatment vendor, and commissioning authority, must verify that the flush has achieved the listed test parameters before this step is considered complete.

e. It is the responsibility of the mechanical contractor to coordinate the proper cleaning and treatment of closed loop systems with non-ferrous (aluminum, copper, etc.) components. Coordinate with the water treatment contractor to provide appropriate cleaners and treatments, that clean and protect the components, and comply with local and state laws.

f. It is the responsibility of the mechanical contractor to coordinate the proper cleaning and treatment of Geo-thermal systems. Provide appropriate cleaners and treatments that comply with local and state laws. Temporary cleaners, in a geothermal system, must be fully flushed from the system within one week of introduction.

g. All fill water must be metered, by mechanical contractor, and the volume recorded for use by the water treatment contractor.

3. Connection to existing system: Before a new connection is made to an existing glycol system, the water chemistry of the existing and new segments shall be analyzed to verify the compatibility of the union. Refer to Testing section for required values and ranges. If the existing and new segments are required to be joined, before final testing, for any reason, the contractor is responsible to provide all cleaning and treatment, of all segments of the system required to achieve a complete system that meets the final testing requirements.

D. Testing: Verify system cleanliness and system chemistries to ensure the specifications stated above are achieved. Collect samples from three different points in the system. Once complete, send results to project Engineer and commissioning authority for review.

1. Chemical Additions: Once inhibitor and or glycol has been added to the system, the system must be tested for glycol degradation, glycol concentration, system inhibitors, corrosion products, and system contaminants.

2. Existing Glycol Systems: Existing glycol systems, to be attached to new piping installations, shall be tested and documentation provided to show they meet the following tolerances

<table>
<thead>
<tr>
<th>System Properties</th>
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</thead>
<tbody>
<tr>
<td>System pH</td>
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<td></td>
</tr>
<tr>
<td>Glycol %</td>
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<td></td>
</tr>
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<td>Copper</td>
<td>Within 30% of new system</td>
<td></td>
</tr>
<tr>
<td>Ferrous Iron</td>
<td>Within 50% of new system</td>
<td></td>
</tr>
<tr>
<td>Conductivity</td>
<td>Within 20% of new system</td>
<td></td>
</tr>
<tr>
<td>RFU/CFU</td>
<td>&gt;100 per mill</td>
<td></td>
</tr>
</tbody>
</table>

**Heating System Inhibitors**

- Tolyltriazole: 2-7 ppm
- Nitrite (NO2): 800-1200 ppm

**Cooling System Inhibitors**

- Molybdate (MoO4): 100-150 ppm
- Silica (SiO2): 50-100 ppm
- Nitrite (NO2): 800-1,500 ppm
- Polyacrylate: 20-60 FAU
If any of the above tests do not fall within required limits, the existing glycol system must be treated and retested, or flushed and refilled, to bring test results within range before new glycol can be added.

3. Final Testing: After final system fill, provide documentation system meets following conditions.

<table>
<thead>
<tr>
<th>ITEM</th>
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</tr>
<tr>
<td>Polyacrylate</td>
<td>20-60 FAU</td>
</tr>
<tr>
<td>Molybdate (Mo04)</td>
<td>100-150 ppm</td>
</tr>
<tr>
<td>Silica (Si02)</td>
<td>50-100 ppm</td>
</tr>
</tbody>
</table>

2.03 GLYCOL

A. Manufacturers:
   1. Ashland
   2. Dow
   3. Houghton
   4. Interstate Chemical
   5. Jaytech
   6. Nalco
   7. U.S. Water
   8. Engineer approved equal.

B. Furnish and install the proper quantity of industrial grade 30% propylene glycol by volume to provide for a 5 deg F solution in the system.

C. The use of pre-mix glycol is acceptable, but the inhibitor package must be compatible with system water. Phosphate inhibitors may not be used in systems supplied by hard water.

D. Provide one additional 5-gallon drum of glycol for each system.

E. Glycol Degradation Testing:
   1. If an existing glycol system is going to be connected to new piping, glycol degradation testing must be conducted on the existing loop. Testing must include:

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Heating System Inhibitors
Tolyltriazole  2-7 ppm
Nitrite (NO₂)  800-1200 ppm

Cooling System Inhibitors
Molybdate (MoO₄)  100-150 ppm
Silica (SiO₄)  50-100 ppm
Nitrite (NO₂)  800-1200 ppm
Polyacrylate  20-60 FAU

2. If any of the above tests do not fall within required limits, the existing glycol system must be treated and retested, or flushed and refilled, to bring test results within range before new glycol can be added.

PART 3 EXECUTION

3.01 PREPARATION

A. Completely fill system, to operational conditions, for cleaning and passivation. The system must be filled, started, and vented prior to cleaning.

B. Use temporary water meter to record capacity in each system. Verify meter is functional, calibrated, and installed per manufactures instructions.

C. Place terminal control valves in open position during cleaning. All system zones must be open during flush and passivation.

D. Verify that electric power is available and of the correct characteristics.

E. Refer to plans, details, and flow diagrams for locations and installation requirements.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions. Provide water treatment report from manufacturer's representative.

END OF SECTION 232500
1.01 SCOPE

A. The manufacturer must furnish water chiller(s). The chiller(s) are further described on the construction drawings and schedules.
   1. Major features of each water chiller are:
      a. Change evaporator refrigerant flow rate by staging compressors.
      b. Air cooled condenser.
      c. Water cooling evaporator.
      d. Refrigerant over pressure safety relief valves.

B. The furnished chiller(s) must meet or exceed the scheduled capacities and performance indicated on the construction drawings.

C. Furnish:
   1. Factory manufactured packaged chiller(s) with remote evaporator. Each chiller must arrive on the job site as an assembled compressor and condenser package and a separated evaporator that will be installed remote to the compressor and condenser package. The assembled compressor and condenser package must only require installation, refrigerant connection to the separated evaporator, control connection to the separated evaporator and its refrigeration specialties, connection to electrical power and connection to the facility management system (FMS) to produce chilled water. The refrigerant must be provided by the contractor. The assembled compressor and condenser package and the separated evaporator must be covered with shipping covering to protect from dirt and water. The manufacturer must design the refrigeration piping between the compressor and condenser package and the remote evaporator.
   2. Evaporator chilled water inlet strainer. The mesh must be the size required by the chiller manufacturer’s requirements. The strainer must be a wye design with a blowdown valve.
   3. Elastomeric isolation pads.
   4. Touch up paint to match factory applied finish.

D. Provide:
   1. Factory installed refrigerant over pressure safety relief devices, at least one each for the low and high pressure sides.
   2. Charge of refrigerant. This charge may be installed at the factory or installed in the field by a manufacturer trained and manufacturer authorized service organization. Remote evaporator installations must have the charge installed in the field.
   3. Single point electrical power connection. All the chiller’s electrically powered components, including controls, must receive power from the single point electrical power connection.
   4. Factory mounted transformers to power the safety and operating controls. These transformers must be powered from the single point electrical power connection.
   5. Factory installed safety controls.
   6. Factory installed microprocessor technology operating controls.
   7. BACnet MS/TP or TCP/IP integration to the FMS.
   8. Chilled water pipe connections. The contractor will specify the connections.
   9. Chilled water flow indication sensor. This sensor must indicate fluid flow through the evaporator. This sensor must use thermal dispersion or differential pressure. This sensor may be furnished to be installed by the contractor.
   10. Start up by the manufacturer or a manufacturer trained and manufacturer authorized service organization. The refrigerant charge must be at the manufacturer required weight at the conclusion of startup.
   11. Instruction to owner’s representatives of care and operation of the chiller(s) by the startup technician. The technician must be available for 8 hours of instruction.
   12. Manufacturer backed warranty.
E. Work by other includes:

1. The contractor must place the chiller at its operating location and secure it in accordance with applicable codes, construction specifications, construction drawings’ details, construction drawings’ notes and the chiller manufacturer’s installation and operation manual (IOM).
2. The contractor must place the elastomeric isolation pads under the chiller package at locations directed by the chiller manufacturer.
3. The contractor must connect the electrical power to the chiller.
4. The contractor must connect the hydronic pipes to the chiller. The contractor must provide all materials to match the chiller manufacturer provided connections.
5. The contractor must install and wire any water flow indication sensors shipped loose.
6. The contractor must install the evaporator chilled water inlet strainer.
7. The contractor must install piping from the evaporator’s pressure relief valve to outside as detailed on the construction drawings.
8. The contractor must connect the evaporator to the condensing unit with refrigerant lines, install any refrigeration specialty furnished by the chiller manufacturer and provide any required refrigeration specialty not furnished by the chiller manufacturer.
9. The contractor must connect sensors and controls located at the evaporator to the condensing unit.

1.02 RELATED SECTIONS

A. The chiller package manufacturer must examine the related specification sections to determine requirements of those sections that touch on the chiller.

B. Specification Section 23 0913 - DDC Instruments and Control Devices for HVAC

C. Specification Section 23 0923 - DDC System

1.03 QUALITY ASSURANCE

A. The chiller package must be designed, tested, rated, and certified in accordance with and installed in compliance with applicable sections of the following codes and standards in their current versions.

1. AHRI 370 - Standard for Sound Performance of Large Air-cooled Outdoor Refrigerating and Air-conditioning Equipment
2. AHRI 550 / 590 - Performance Rating of Water Chilling and Heat Pump Water-heating Packages Using the Vapor Compression Cycle
3. ASHRAE 15 - Safety Standard for Mechanical Refrigeration
4. AHARAE 34 - Designation and Safety Classification of Refrigerants
5. ASME Boiler and Pressure Vessel Code, Section VIII, Division 1
8. ASTM D1654 - Standard Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments
10. NFPA 70 - National Electric Code (NEC)
11. OSHA - Occupational Safety and Health Administration

B. The chiller package must have a mark from an OSHA Nationally Recognized Testing Laboratory (NRTL). These marks include the ETL Listed Mark and UL Listed Mark.

C. The chiller must be tested and prepared at the factory. Testing includes pressure testing the low and high sides. Preparation includes evacuating air from the refrigerant circuit(s) and weighing in full refrigerant charge(s) if chiller is factory charged.

D. The chiller manufacturer must have a manufacturer trained and manufacturer authorized service organization within 75 miles of the job site.
1.04 WARRANTY

A. The manufacturer must comprehensively warrant all equipment and material of its manufacturer and all equipment and material of all subassemblies manufactured by others, but factory installed onto the chiller package (i.e., compressors, chiller control components, etc.) against defects in workmanship and material for eighteen (18) months from date of shipment from the manufacturer’s factory or twelve (12) months from date of start-up, whichever occurs first.
   1. The comprehensive equipment and material warranty must repair or replace defective components. All warranted components must be replaced at no cost to the customer.
   2. The comprehensive equipment and material warranty must include labor to affect the repair or replacement.

B. Additionally, the manufacturer must warrant all equipment and material of its manufacturer and all equipment and material of all subassemblies manufactured by others, but factory installed onto the chiller package that are part of the compressor(s) against defects in workmanship and material for four (4) years, starting at the date of the end of the comprehensive warranty.
   1. The compressor warranty must repair or replace any defective compressor. The warranty must not pro rate the compressor’s cost. The compressor must be replaced at no cost to the customer.

C. Any removal of refrigerant, evacuation of the refrigerant circuit(s), reinstallation of the refrigerant and replacement of lost refrigerant required due to a warranted defect or consequent to a warranty defect repair must be provided at no cost to the customer.

1.05 SUBMITTAL

A. Provide the dimensions of the chiller package. Show tube cleaning and removal clearances.

B. Provide the corner weights of the chiller package. Provide empty weights for lifting and full weights for structure.

C. Provide the locations, dimensions, and types of the field connections for the hydronic piping.

D. Provide the conductor sizing and protective device sizing information for the electrical connection.

E. Provide the chiller package short circuit current rating.

F. Provide the refrigerant type and weight per circuit. If remote evaporator, include approximate weight of refrigerant in the line set.

G. Provide the design conditions capacities and performances.

H. Provide the AHRI 550 / 590 determined capacities and performance. Show this data for standard rating conditions.

I. Provide the AHRI 370 determined sound power report.

J. Provide the BACnet object names and object properties for the points required to communicate between the chiller and the FMS.

1.06 DELIVERY, STORAGE, AND PROTECTION

A. The chiller package(s) must be delivered to the job site fully assembled and ready for installation.

B. The chiller package(s) must be fully charged with refrigerant by the manufacturer at the factory or a manufacturer trained and authorized service organization in the field.

C. Ship the chiller(s) with protective covering.

D. Before shipping, block any open pipes or connections with dust, water, and vermin resistant covers.

E. The contractor must store and handle the chiller package per the manufacturer’s instructions.
PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Approved Chiller Package Manufacturers
   1. York

B. The contractor must compensate the architect and subordinate engineering consultant(s) to modify the construction plans, construction specifications and the building features to accommodate equipment that does not match the equipment shown and scheduled on the construction drawings. These building features include:
   1. Chiller package structural support.
   2. Evaporator pipe size.
   3. Evaporator pipe connection type.
   4. Electrical wire and conduit size.
   5. Electrical overcurrent size.
   7. Required clearances for operation, maintenance and heat exchanger replacement.

C. The contractor must bear all increased costs to provide a chiller package other than the equipment shown and scheduled on the construction drawings.

2.02 GENERAL

A. The manufacturer must furnish a factory assembled and factory tested air-cooled water chiller package(s) as specified in this specification section, shown on the construction drawings and scheduled on the construction drawings. The chiller package(s) must include compressors, evaporator, condenser, condenser fans, internal power and control wiring, safety controls, microprocessor based operating controls and any other features required to assemble a ready to install, connect and start package.

B. The chiller package may have multiple compressors. Multiple compressors must be controlled by a single operating controller that coordinates the compressors. A multiple compressor chiller package must have a single electrical power connection that feeds all compressors.

C. The chiller must not need to cycle its first stage compressor between on and off as the evaporator load varies between 20% and 100% of specified load in BTUH at specified evaporator leaving water temperature.

D. The evaporator will be installed indoors. The compressor(s) and condenser will be installed outdoors.

E. The chiller must start and operate continuously at 20% of design load at an outside air temperature of 35F and a wind speed of 10 mph.

F. The chiller must start and operate continuously at 100% of design load at an outside air temperature of 115F.

G. The chiller full load and part load performance must meet or exceed the requirements scheduled on the construction drawings.

H. Chiller performance must be determined using AHRI 550 / 590 and the chiller performance at AHRI 550 / 590 conditions must be AHRI certified.

2.03 CABINET

A. The frame, panels and access doors must be metal.

B. The metal surfaces must have a coating that yields an ASTM D1654 rating of 6 when subjected to an ASTM B117 500-hour 5% salt spray test.

C. The top and sides of the chiller package must have hail protection screening or panels.

2.04 COMPRESSOR

A. Compressor must be hermetic scroll type.
B. The chiller package’s evaporator discharge water temperature controller must cycle and stage the compressor(s) to match chiller capacity to the cooling load.
C. Each compressor must have a suction and discharge isolation valve.
D. Each compressor must have a suction strainer.
E. The compressor(s) must have an oil level sight glass.
F. Each compressor must have a refrigerant heater.
G. Each compressor must have a vibration isolating mount.

2.05 REFRIGERANT CIRCUIT
A. The refrigerant must be R-410a.
B. Each refrigerant circuit must use a modulating expansion device.
C. Each refrigerant circuit must have a discharge line isolation valve and enough condenser volume to allow all refrigerant to store in the condenser.
D. The evaporator pressure relief valve(s) must be spring loaded and reseating.
E. The condenser pressure relief valve(s) must be spring loaded and reseating.

2.06 HEAT EXCHANGERS
A. The evaporator must have vent and drain fittings.
B. The evaporator must be constructed, tested and stamped in accordance with applicable sections of the ASME boiler and pressure vessel code. The refrigerant side must test at 450 PSIG design working pressure. The water side must test at 150 PSIG design working pressure.
C. The condenser must test at 650 PSIG design working pressure.
D. The condenser coil must withstand cleaning with a 100 PSIG water stream.

2.07 INSULATION
A. Use closed cell, flexible, UV protected insulation.
B. The insulation’s thermal conductivity must be a maximum or 0.26 BTU / HR / FT2 / F at 75F mean temperature as tested in accordance with ASTM C177.
C. The insulation’s flame spread, and smoke developed index must be 25/50 as tested in accordance with ASTM E84.
D. Insulate all cold surfaces to include the evaporator shell and suction line(s).
E. Insulate all hot surfaces and liquid line(s) that may have a surface temperature above 140F with chiller at design load and outside air temperature of 115F.
F. The insulation thickness must be at least 3/4-inch.
G. The insulation may be factory or field installed.

2.08 ACOUSTICAL PERFORMANCE
A. The sound data must be presented as sound power as determined by an AHRI 370 compliant test.
B. Provide all optional features required to meet the sound power requirement.
C. Submit unweighted sound power data in decibels (dB) at 62.5, 125, 250, 500, 1000, 2000, 4000 and 8000 Hz.
D. Submit overall A-weighted (50 Hz to 10,000 Hz) sound power level in decibels (dB).
E. The chiller package must have an overall A-weighted sound power at design load not higher than 93 dB(A).
2.09 ELECTRICAL

A. All electrical components, wires and cables must be inside enclosures, conduit or covered wireway that are designed for outdoor use in rain, sleet, snow and ice.

B. The chiller’s safety and operating controls must be powered by chiller mounted transformers connected to the chiller’s power circuit. The transformers must output voltages required to operate the chiller’s controls.

C. The chiller package must have a fused or circuit breaker dead front single point electrical disconnect.

D. These electrical circuits may be powered from chiller mounted transformers or from a separate, dedicated, field installed circuit from a distribution panel board. If using a separate, dedicated, field installed circuit, install a non-fused disconnect on the chiller package to allow lock out, tag out.
   1. The chiller package must have a 115/1/60 outlet with GFCI protection.
   2. Each compressor must have a refrigerant heater.
   3. A chiller package with an evaporator installed on the package must have a 115/1/60 circuit to power the evaporator heater.

E. The chiller package compressor(s) and condenser fan motor(s) must be protected from phase loss, undervoltage and overvoltage.

F. The chiller package single point electrical feed must have ground fault protection.

G. The chiller package must have a minimum short circuit current rating of 65 kAIC.

2.10 SAFETY AND OPERATING CONTROLS

A. General
   1. Provide automatic control of chiller package operation including:
      a. Evaporator leaving water temperature
      b. Compressor start / stop
      c. Evaporator heater on / off
      d. Refrigerant heater on / off
   2. The chiller package operating controls must use programmable microprocessor technology.
   3. The chiller package firmware and software must store in non-volatile memory. Field programmed set points must remain after at least one year of cumulative power outages.
   4. Chiller must automatically return to normal operation after return from a power failure.
   5. Any controls not specifically listed in the specification but necessary for the chiller package to meet the intent of providing chilled water to the chilled water piping system must be provided.
   6. The chiller controls must have a BACnet MS/TP or TCP/IP interface for the FMS.

B. Chiller Package Safeties
   1. The chiller package compressor(s) must shutdown and auto reset for these conditions:
      a. Low evaporator leaving water temperature.
      b. Low chilled water flow.

C. Compressor Safeties
   1. Each compressor must shutdown and auto reset for these conditions:
      a. High compressor motor temperature.
      b. High compressor discharge pressure.
      c. Evaporator refrigerant side low pressure.

D. Display and Keypad.
   1. Each chiller package must have a dedicated display and keypad with password access.
   2. The display’s labels must present in plain English.
   3. The display’s numbers must present in inch-pound units.
4. No label or run code or error code may only present as alpha-numeric code that requires a look up table to interpret.
5. Show on the display at least the following chiller package parameters:
   a. History of last five faults. Include date, time and fault.
   b. Faults.
6. Show on the display, present to the FMS through the BACnet interface and present to the FMS through hard wired connections at least the following chiller package functions:
   a. Chiller general alarm. Hard wired dry contact.
   b. Chiller start / stop. Hard wired external dry contact.
   c. Evaporator leaving water temperature set point. Hard wired external 0 - 10 Vdc analog signal.
7. Show on the display and present to the FMS through the BACnet interface at least the following chiller package parameters:
   a. Evaporator entering and leaving water temperatures.
   b. Each refrigerant circuit's suction and discharge pressures.
   c. Each refrigerant circuit's suction, discharge, and superheat temperatures.
   d. Evaporator water flow indication sensor status.

PART 3 EXECUTION

3.01 INSTALLATION

A. Rig and install the chiller package following the manufacturer’s instructions, construction drawings and construction specifications.
B. Locate the chiller package in the general location shown on the construction drawings. Place to meet the manufacturer’s air flow and maintenance requirements. The air flow clearances must be the distances that require no derating of the chiller’s performance.
C. Level the chiller package.
D. Use the manufacturer furnished touch up paint that matches the chiller package’s finish to paint damaged and abraded factory finish.

END OF SECTION 236400
SECTION 260050
BASIC ELECTRICAL REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES
   A. Basic Electrical Requirements specifically applicable to Electrical Division Specification Sections.
   B. Division 26 Specification requirements also include, by reference, all Division 00 and 01 specification sections. This contractor is responsible to review these specification sections. Requirements of these specification sections are included as a part of this contract.

1.02 OWNER OCCUPANCY
   A. The owner will occupy the premises during the construction period.
   B. Limit use of site and premises to allow owner occupancy.
   C. Cooperate with the owner to minimize conflict and to facilitate owner's operations.
   D. Schedule the work to accommodate this requirement.

1.03 REGULATORY REQUIREMENTS
   A. This contractor shall give proper authorities all requisite notices relating to work in their charge, obtain official permits, licenses for temporary construction and pay proper fees for it.
   B. This contractor is to be solely answerable for and shall promptly make good all damage, injury or delay to other contractors, to neighboring premises or to persons or property of the public by themselves, by their employees or through any operation under their charge, whether in the contract or extra work.
   C. No attempt has been made to reproduce in these specifications any of the rules or regulations contained in city, state or federal ordinances and codes pertaining to the work covered by these specifications that the contractor be thoroughly familiar with all such ordinances and codes.
   D. The fact that said various rules, regulations and ordinances are not repeated in this specification does not relieve the contractor of the responsibility of making the entire installation in accordance with the requirement of those authorities having jurisdiction.
   E. All work shall comply with the applicable recommendations of:
      1. The National Board of Fire Underwriters
      2. The ANSI-NFPA 70 National Electrical Code
      3. The National Fire Protection Association (NFPA)
      4. The Occupations Safety and Health Act (OSHA)
      5. IBC Building Code (current) and any current applicable city building and or electrical codes.
      6. Fire Protection: Conform to International Fire Code (IFC) and NFPA.
   F. Obtain permits and request inspections from authority having jurisdiction.
   G. Conform to latest approved versions of codes.

1.04 PROJECT/SITE CONDITIONS
   A. Install work in locations shown on drawings unless prevented by project conditions.
   B. Prepare drawings showing proposed rearrangement of work to meet project conditions, including changes to work specified in other sections. Obtain permission of owner and architect/engineer before proceeding.
   C. This contractor, before submitting their bid, shall visit the site of the project to familiarize themselves with locations and conditions affecting their work.
   D. It is the intent of this specification that the contractor furnish all labor and material required to complete the installation as outlined in the drawings and specifications. No additions to the
contract price will be allowed due to the failure of this contractor to properly evaluate the effect of existing conditions on the work to be done under this contract.

E. Whenever renovation or remodeling or relocation of existing equipment is included in the contract, it is imperative that all locations of existing wiring conduits, electrical panels, equipment, services and grades be noted on the job site before bid is submitted and that all elevations and grades be verified before roughing in new work.

F. This contractor shall provide, as necessary, for the installation of their work and in accordance with materials other than the structure.

1.05 SEQUENCING AND SCHEDULING

A. This contractor shall be kept informed as to the work of other trades engaged in the project and shall execute their work in such a manner so as not to delay or interfere with progress of other contractors.

B. Where space for mechanical and electrical lines and piping is limited, it is imperative that all such trades coordinate their work so as to ensure concealment in space provided. Where conflict exists, the engineer shall decide priority of space. If work is not properly coordinated, the engineer may require removal and relocation of work without additional compensation.

1.06 GUARANTEE

A. This contractor shall guarantee all of the apparatus, materials, equipment furnished, and labor installed under this contract for a period of one year after date of final acceptance, unless a longer period is specified.

B. Neither final certificate of payment nor any provisions in the contract documents nor partial or complete occupancy of premises by owner shall constitute an acceptance for work not done in accordance with contract documents or relieve the contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship.

C. Should any defects arise as the result of defective workmanship or material within the guarantee period set forth, this contractor shall make the necessary correction at their own expense.

1.07 ENGINEER APPROVED EQUAL PRODUCTS

A. When the engineer, at the request of the interested parties, including the contractor, supplier and manufacturer approved "engineer approved equal" products for this project, such products are approved on the assumption that they will equal or exceed the performance of the products specified.

B. If such products do not do so after being installed on this project, this contractor shall replace or modify the particular product as necessary to equal the performance of the products specified at no expense to the owner, architect or engineer.

C. Request for "engineer approved equal" products shall be received by the architect/engineer prior to the last addendum being issued. Requests for substitutions received after this date will not be considered. Substitution requests shall clearly state which products are being considered for substitution. Substitution requests shall include all pertinent product information needed to evaluate the substitution as an "equal".

D. Similar products shall be all of the same manufacturers and style. There is no exception to this unless prior approval has been granted from engineer.

1.08 OWNER'S RIGHT OF SALVAGE

A. Before beginning construction, the contractor shall check and verify with the owner each item of existing equipment that must be removed.

B. The owner will designate which items of material or equipment not reused that they may wish to keep. The contractor shall then remove these items with care and store in a location designated by the owner for the owner's disposal.
C. All other items of equipment to be removed and not specified for reuse in new construction or reserved by the owner for their use shall become the property of the contractor and shall be removed from the site.

1.09 PROTECTION AND MAINTENANCE

A. Where necessary to connect to any existing utility service, this electrical contractor shall contact the owner and shall coordinate any building service connection with the owner so that normal operation to the building is disrupted as little as possible.

B. Any work to be done in existing structures shall be coordinated with the owner and arrangements made so that traffic flow may be maintained and areas finished where possible before other areas are begun.

C. This contractor shall protect existing equipment in finished areas from dirt, dust and damage as a result of their work.

D. Coordinate protection requirements with department heads before beginning construction.

E. Protect any building openings from unauthorized entry. Coordinate with owner where building entry must be controlled.

1.10 DEMOLITION

A. This contractor shall be responsible for the demolition and removal of all existing electrical elements within the project area except as follows:
   1. Elements shown on the drawings as "existing to remain and/or to be reused".
   2. Elements serving adjacent areas.
   3. Elements required for the support of the newly remodeled areas.
   4. All elements to be removed are subject to the Owner's Right of Salvage.

B. Preserve services to the existing facility. Extend/reroute/reconnect the existing systems as required providing for the continued function of these systems.

1.11 CUTTING AND PATCHING

A. This contractor shall do all cutting and patching necessary for the installation of his work in all existing and new buildings unless otherwise noted.

B. In areas where the integrity of new or existing fire separation assembly/wall is compromised by the work, this contractor shall be responsible to patch and/or seal openings as necessary to maintain and/or return fire separation to rating as required by applicable codes.

C. This contractor shall do all cutting and patching required for his work beyond the remodeled areas unless otherwise noted. All finish work shall include patching to match existing adjacent surfaces. Painting shall be by others.

1.12 CLEANING AND RUBBISH

A. This contractor, upon completion of their work, shall remove all rubbish and debris resulting from their operation and shall remove it from site at their own expense.

B. As far as their work is concerned, all equipment shall be cleaned and the premises left in first class condition.

C. This contractor shall maintain the work area each day to prevent hazardous accumulation of waste from their work.

1.13 SEALING AND PENETRATION

A. Clearance around the piping passing through fire or smoke rated construction shall be sealed to maintain the rated integrity of the construction (1 hr. 2 hrs. etc.). One and two-hour rated assemblies are to be patched on both sides of the assembly.

B. This contractor shall verify rating and location of all such construction with the architectural drawings and seal all penetrations.

C. Manufacturer offering products to comply with the requirements include the following:
1. Dow Corning "Silicone RTV Foam"
2. 3-M Corporation "Fire Barrier Caulk and Putty"
3. Thomas & Betts "Flame Safe Fire Stop System"

D. Installation of these products are to be in strict accordance with the manufacturer’s recommendations.
E. This contractor shall submit shop drawings showing approved sealing assemblies to be utilized on this project.

1.14 ELECTRICAL CONNECTIONS

A. This contractor shall mount and wire all magnetic starters, thermal protective switches, and speed changing switches furnished under the mechanical contract and install such starters and switches and wire them to their respective motors as a part of the electrical contract.
B. All other magnetic starter switches, safety switches and speed control devices indicated on the electrical drawings or specifications are the responsibility of the electrical contractor to furnish and install.
C. Unless specifically stated elsewhere, the wiring of the temperature control system shall be the responsibility of the mechanical contractor.

1.15 HAZARDOUS MATERIALS

A. If the contractor stores any hazardous solvents or other materials on the site, they shall obtain copies of the safety data sheets for the materials and post them at the site. The contractor shall inform the owner and all employed of any potential exposure to this material.
B. At no time shall any product containing asbestos be incorporated into the work.
   1. If asbestos materials are encountered, report to the owner. The owner will be responsible for asbestos removal.

1.16 AS-BUILT DRAWINGS

A. This electrical contractor shall provide (at the conclusion of the project) one clean, non-torn, neat and legible "as-built" set of drawings to the owner. These drawings shall show the routing of conduit, wiring and equipment drawn in at scaled locations. All circuits shall be labeled and shall conform to labeled panel breakers. All dimensions indicated shall be referenced to a column line. A set of construction drawings will be furnished for this work.
B. All electrical panels and electrical installed equipment shall be shown on the "as-built" drawings.

1.17 REVIEW OF MATERIALS

A. This contractor shall submit to the engineer for review one (1) electronic copy giving a complete list of materials, fixtures, devices and panels they propose to furnish. The brochure shall contain complete information as to the make of equipment, type, size, capacities, dimensions, and illustration. One of the returned copies shall be kept on the job at all times.
B. Checking of submittal drawings by the engineer does not relieve the contractor of the responsibility for the accuracy of such drawings and for their conformity to drawings and specifications unless the contractor notifies engineer, in writing, of such deviation at time such drawings are furnished.
C. All submittals shall have the date marked on them when the contractor receives them from the supplier. Submittals shall be submitted through the contractor and shall not come direct from the supplier to the architect or engineer.
D. This contractor shall mark the date and sign each set. This indicates that each of them have been checked in their entirety before submitting to the engineer. Submittals that are not dated and signed by the contractor will not be accepted or checked and will be marked "resubmit" and sent back to the contractor.
1.18 TEST OF SYSTEMS
   A. This contractor shall, before concealed, test all systems installed under this contract as called for in these specifications and as required by local codes. Tests shall be made in the presence of the engineer, local authorities or their duly authorized representative. Any defects discovered in testing shall be corrected and the tests repeated until all defects are eliminated.
   B. This contractor shall be held responsible for all damage resulting from defects in the system.
   C. Each individual feeder circuit shall be tested at the panel and in testing for insulation resistance to ground; the power equipment shall be connected for proper operation. In no case shall the insulation resistance to ground be less than that required by the National Electrical Code (NEC).

1.19 SCOPE OF WORK
   A. This contractor shall furnish all the labor and material necessary to install a complete electrical system for the building. The system shall include all items of work as outlined in these specifications and on the drawings.
   B. All work shall be performed by a well-qualified, licensed electrician with a thorough knowledge of the various systems involved in this building. It shall be this contractor's responsibility to see that their employees are familiar with all the various codes and tests applicable to this work.
   C. All equipment shall be new and of the type specified by the engineer unless otherwise noted in these specifications or on the drawings to remain and or be reused.
   D. The intent of the specifications and drawings is for complete installation of the systems outlined in the specifications and drawings so that at the conclusion of construction the system will be turned over to the owner complete and ready for safe and efficient operation. The specifications and drawings cannot deal individually with the many minute items that may be eventually required by the nature of the systems.
   E. This contractor is required to furnish and install all such items normally included on systems of this type, which, while not mentioned directly herein or on the drawings are obviously essential to the installation and operation of the system and which are normally furnished on quality installation of this type.
   F. This contractor, before proceeding with any work, shall review the architectural drawings. Any conflict between the electrical and architectural drawings shall be reported to the engineer for clarification.
   G. If there is a discrepancy between the drawings and the specifications or within either document, the more stringent requirement shall be estimated unless brought to the engineer's attention and an addendum is issued for clarification.
   H. The Electrical Contractor shall establish electrical utility elevations prior to fabrication and installation. The Electrical Contractor shall coordinate utility elevations with other trades. All elevations shall be coordinated with all trades in the field prior to installation. When a conflict between trades arises, the design team shall be notified immediately prior to further installation however priority shall be as follows:
      1. Lighting Fixtures
      2. Gravity flow piping, including steam and condensate.
      3. Electrical bus duct.
      4. Sheet metal.
      5. Cable trays, including access space.
      6. Other piping.
      7. Conduits and wireway.

1.20 DAILY HOUSEKEEPING AND CLEANING
   A. At the end of each workday, the contractor shall remove all of their debris, rubbish, tools, and surplus materials from the project work area. The work area shall be broom cleaned and left in
a neat and orderly condition. The contractor shall not use the owner's waste disposal facility for the removal of debris from the project.

B. At end of construction, all equipment shall be cleaned and the premises left in first class condition as far as this contractor's work is concerned.

PART 2 PRODUCTS
NOT USED

PART 3 EXECUTION
NOT USED

END OF SECTION 260050
SECTION 260519
ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 GENERAL

1.01 SECTION INCLUDES
   A. Building wire
   B. Wiring connectors

1.02 RELATED SECTIONS
   A. Specification Section 26 0553 - Identification for Electrical Systems
   B. Specification Section 26 2413 - Distribution Switchgear

1.03 REFERENCES
   A. NECA Standard of Installation (National Electrical Contractors Association)
   C. NFPA 70 - National Electrical Code
   D. Product Data: Provide for each cable assembly type.
   E. Test Reports: Indicate procedures and values obtained.
   F. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency specified under Regulatory Requirements.
   G. NFPA 92B - Smoke Management for Malls, Atria, and Large Spaces
   H. IBC Section 909 - Smoke Control Systems

1.04 SUBMITTALS
   A. Project Record Documents: Record actual locations of components and circuits.
   B. Project Record Documents: Provide documentation of the manufacturer’s recommended lug torque value for aluminum conductors, the date the lugs were torqued, and installed torque readings.

1.05 QUALIFICATIONS
   A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience.

1.06 REGULATORY REQUIREMENTS
   A. Conform to NFPA 70.
   B. Furnish products listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.

1.07 PROJECT CONDITIONS
   A. Verify that field measurements are as indicated.
   B. Wire and cable routing indicated is approximate unless dimensioned. Include wire and cable lengths within 10 foot of length shown.

1.08 COORDINATION
   A. Where wire and cable destination is indicated and routing is not shown, determine exact routing and lengths required.

PART 2 PRODUCTS

2.01 BUILDING WIRE
   A. Manufacturers:
      1. Okanite
2. Bell/Hubbell #BICC
3. American Insulated Wire
4. General Cable
5. Southwire
6. United Copper Industries
7. Encore Wire Corporation
8. Engineer approved equal.

B. Description: Insulated conductor wire.
   1. All wire shall be stranded. Refer to Section 26 0553 Identification for Electrical Systems for conductor color requirements.
   2. Provide solid wire pigtails at all wiring devices and lighting control devices.

C. Conductor:
   1. Copper
   2. Feeders, where sizing is indicated at the Electrical Riser Digram, may use compact aluminum equal to Southwire #AlumaFlex® Aluminum (AA-8176) Conductor.

D. Insulation Voltage Rating: 600 volts.

E. Insulation: NFPA 70, type #THHN/THWN-2. All cable installation procedures or sizing shall be based on 75 deg C temperature rating.

2.02 WIRING CONNECTORS

A. Split Bolt Connectors:
   1. Burndy
   2. Engineer approved equal.

B. Spring Wire Connectors:
   1. Thomas & Betts
   2. Engineer approved equal.

C. Compression Connectors:
   1. Burndy
   2. Thomas & Betts
   3. Engineer approved equal.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that interior of building has been protected from weather.
B. Verify that mechanical work likely to damage wire and cable has been completed.
C. Verify that raceway installation is complete and supported.

3.02 PREPARATION

A. Completely and thoroughly swab raceway over two inch (2") in size or buried below grade before installing wire.

3.03 WIRING METHODS

A. Concealed Dry Interior Locations: Use only building wire, type #THHN/THWN-2 insulation in raceway.
B. Exposed Dry Interior Locations: Use only building wire, type #THHN/THWN-2 insulation in raceway.
C. Above Accessible Ceilings: Use only building wire, type #THHN/THWN-2 insulation in raceway.
D. Wet or Damp Interior Locations: Use only building wire, type #THHN/THWN-2 insulation in raceway.
3.04 INSTALLATION

A. Route wire and cable as required meeting project conditions.
B. Install cable in accordance with the NECA “Standard of Installation.”
C. Use stranded conductors for feeders and branch circuits larger than 12 AWG.
D. Use conductors not smaller than 12 AWG for power and lighting circuits. Only pre-manufactured fixture whips are allowed to be 14 AWG.
E. Use #10 AWG conductors for 20 ampere, 120 volt branch circuits longer than 75 feet.
F. Use #10 AWG conductors for 20 ampere, 208/240 volt branch circuits longer than 200 feet.
G. Use #10 AWG conductors for 20 ampere, 277 volt branch circuits longer than 300 feet.
H. Provide minimum #8 AWG wiring for exterior lighting and power circuits leaving building.
I. It shall be the responsibility of the electrical contractor to verify all voltage drop and size all wire accordingly.
J. Pull all conductors into raceway at same time.
K. Use suitable wire pulling lubricant for building wire #4 AWG and larger.
L. Protect exposed cable from damage.
M. Use suitable cable fittings and connectors.
N. Neatly train and lace wiring inside boxes, equipment and panel boards.
O. Clean conductor surfaces before installing lugs and connectors.
P. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.
Q. Use suitable reducing connectors or mechanical connector adaptors for connecting aluminum conductors to copper conductors.
R. Use split bolt connectors for copper conductor splices and taps, #6 AWG and larger. Tape non-insulated conductors and connector with electrical tape to 150% of insulation rating of conductor.
S. Use solderless pressure connectors with insulating covers for copper conductor splices and taps, #8 AWG and smaller.
T. Use insulated spring wire connectors with plastic caps for copper conductor splices and taps, #10 AWG and smaller. All connections in exterior hand holes shall have liquidtight connections.
U. Identify and color code wire and cable under provisions of Specification Section 26 0553 - Identification for Electrical Systems. Identify each conductor with its circuit number or other designation indicated.
V. Terminate aluminum conductors with tin-plated aluminum-bodied compression connectors only. Fill with anti-oxidant compound before installing conductor.
W. Do not install multi-wire branch circuits. No sharing of neutral shall be permitted.
X. Install all conductors and make final connections in accordance with all manufacturer’s recommendations.
Y. Circuits indicated as 3-pole and having ECM motor loads shall include a neutral conductor.

3.05 FIELD QUALITY CONTROL

A. Perform field inspection and testing.
B. Inspect wire and cable for physical damage and proper connection.
C. Measure tightness of bolted connections and compare torque measurements with manufacturer's recommended values.
D. Verify continuity of each branch circuit conductor.

END OF SECTION 260519
SECTION 260529
HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Product requirements
B. Formed steel channel
C. Sleeves

1.02 REFERENCES
A. NECA Standard of Installation (National Electrical Contractors Association)
B. NFPA 70 - National Electrical Code

1.03 SUBMITTALS
A. Product Data: Provide manufacturers catalog data for fastening systems.
B. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation, and installation of products.

1.04 REGULATORY REQUIREMENTS
A. Conform to requirements of NFPA 70.
B. Products: Listed and classified by Underwriters Laboratories, Inc. as suitable for the purpose specified and indicated.

PART 2 PRODUCTS

2.01 PRODUCT REQUIREMENTS
A. Materials and Finishes:
   1. Corrosion resistant.
   2. Select materials, sizes, and types of anchors, fasteners and supports to carry the loads of equipment and conduit, including weight of wire in conduit.
B. Anchors and Fasteners:
   1. Concrete Structural Elements: Use expansion anchors and preset inserts.
   2. Steel Structural Elements: Use beam clamps and welded fasteners.
   5. Solid Masonry Walls: Use expansion anchors and preset inserts.
C. Staples:
   1. Wood Elements: UV resistant polyethylene saddles. For use with non-metallic sheathed cable only.

2.02 FORMED STEEL CHANNEL
A. Manufacturers:
   1. Globe Strut
   2. Uni-Strut
   3. Kindorf
   4. Power-Strut
   5. Erico
   6. Engineer approved equal.
B. Description: Galvanized steel.
C. Provide aluminum supports and hangers in pool area and pool equipment room.

2.03 SLEEVES

A. For conduits passing through wall, below grade, underground wall sleeves for conduits 4" or larger shall be continuous rigid steel. Seal with Linkseal, or engineer approved equal, at two diameters larger than conduit.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install products in accordance with manufacturer’s instructions and utility company regulations where applicable.

B. Provide anchors, fasteners and supports in accordance with NECA “Standard of Installation”.
   1. Do not fasten supports to pipes, ducts, mechanical equipment, or conduit.
   2. Do not use spring steel clips and clamps.
   3. Do not use powder-actuated anchors.
   4. Do not drill or cut structural members.

C. Fabricate supports from structural steel or formed steel members or steel channel. Rigidly weld members or use hexagon-head bolts to present neat appearance with adequate strength and rigidity. Use spring lock washers under all nuts.

D. Install surface-mounted cabinets and panelboards with minimum of four anchors.

E. Use steel channel supports to stand cabinets and panelboards one inch (1”) off wall in all wet and damp locations.

F. Use sheet metal channel to bridge studs above and below cabinets and panelboards recessed in hollow partitions.

G. All pathways and hangers shall be independently hung.

END OF SECTION 260529
SECTION 260533
RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Conduit requirements
B. Conduit types
C. Box types

1.02 REFERENCES
A. ANSI C80.1 - Rigid Steel Conduit, Zinc Coated
B. ANSI C80.3 - Electrical Metallic Tubing, Zinc Coated
C. ANSI C80.5 - Rigid Aluminum Conduit
D. ANSI/NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies
E. ANSI/NFPA 70 - National Electrical Code
F. NEMA 250 - Enclosures for Electric Equipment
G. NEMA WD 6 - Wiring Device Configurations
H. NEMA RN 1 - Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit
I. NECA (National Electrical Contractor's Association) Standard of Installation
J. NEMA WD 6 - Wiring Device Configurations

1.03 PROJECT RECORD DOCUMENTS
A. Accurately record actual routing of conduits larger than two inches.
B. Record actual locations and mounting heights of outlet, pull, and junction boxes on project record documents.

1.04 REGULATORY REQUIREMENTS
A. Conform to requirements of ANSI/NFPA 70.
B. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

1.05 SUBMITTALS
A. Product Data: Provide dimensions, knockout sizes and locations, materials, fabrication details, finishes, and accessories.
B. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

1.06 QUALIFICATIONS
A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience.

1.07 DELIVERY, STORAGE, AND HANDLING
A. Deliver, store, protect, and handle products to the site.
B. Accept products on site. Inspect for damage.
C. Protect products from corrosion and entrance of debris by storing above grade. Provide appropriate covering.
1.08 PROJECT CONDITIONS
   A. Verify that field measurements are as shown on the drawings.
   B. Verify routing and termination locations of conduit prior to rough in.
   C. Conduit routing is shown on the drawings in approximate locations unless dimensioned. Route as required completing the wiring system.

PART 2 PRODUCTS
2.01 CONDUIT REQUIREMENTS
   A. Minimum Size: 1/2 inch for power wiring and 1 inch for low voltage wiring unless noted otherwise.
   B. Size conduit per ANSI/NFPA 70.
   C. Above Grade Outdoor Locations: Use rigid steel and aluminum conduit. Aluminum conduit shall not contact concrete mortar or block.
   D. Wet and Damp Locations:
      1. Use rigid steel conduit and intermediate metal conduit.
      2. Use aluminum conduit and fitting in pool and pool equipment room.
   E. Dry Locations:
      1. Concealed: Use rigid steel conduit, intermediate metal conduit or electrical metallic tubing.
      2. Exposed: Use rigid steel conduit, intermediate metal conduit or electrical metallic tubing.

2.02 CONDUIT TYPES
   A. Metal Conduit:
      1. Rigid Steel Conduit: ANSI C80.1
      2. Rigid Aluminum Conduit: ANSI C80.5
      3. Intermediate Metal Conduit (IMC): Rigid steel
      4. Fittings and Conduit Bodies: ANSI/NEMA FB 1; material to match conduit.
   B. Electrical Metallic Tubing (EMT):
      1. Description: ANSI C80.3; galvanized tubing.
      2. Fittings and Conduit Bodies: ANSI/NEMA FB 1; steel setscrew fittings. Install compression type fittings in all wet and damp areas.
   C. Fittings and Conduit Bodies:
      1. NEMA TC 3
      2. Install offsets at surface boxes.
      3. Install single hole strap connectors on all exposed conduit one inch (1") and smaller.

2.03 BOX TYPES
   A. General Requirements:
      1. Do not use boxes and associated accessories for applications other than as permitted by NFPA 70 and product listing.
      2. Provide all boxes, fittings, supports, and accessories required for a complete raceway system and to accommodate devices and equipment to be installed.
      3. Provide a low voltage partition divider plate for applications where low voltage and line voltage circuits share the same outlet box.
   B. Pull and Junction Boxes:
      1. Sheet Metal Boxes: NEMA OS 1 galvanized steel.
      2. Surface Mounted Cast Metal Box: NEMA 250, type #4 and #6, flat-flanged, surface mounted junction box:
         a. Material: Galvanized cast iron.
      3. Cover: Furnish with ground flange, neoprene gasket and stainless steel cover screws.
PART 3 EXECUTION

3.01 CONDUIT INSTALLATION

A. Install conduit in accordance with NECA "Standard of Installation."
B. Arrange supports to prevent misalignment during wiring installation.
C. Support conduit using coated steel, malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.
D. Group related conduit support using conduit rack. Construct rack using steel channel and provide space on each for 25% additional conduits.
E. Fasten conduit supports to building structure and surfaces.
F. Do not support conduit with perforated pipe straps. Remove wire used for temporary supports.
G. Do not use spring steel clips and clamps for support.
H. Do not attach conduit to ceiling support wires.
I. Arrange conduit to maintain headroom and present neat appearance.
J. Route exposed conduit parallel and perpendicular to walls.
K. Route conduit installed above accessible ceilings, parallel and perpendicular to walls.
L. Route the conduit in and under slab from point-to-point.
M. Do not cross conduits in slab.
N. Maintain adequate clearance between conduit and piping.
O. Maintain 12 inch clearance between conduit and surfaces with temperatures exceeding 104 degree F.
P. Cut conduit square using saw or pipe cutter; de-burr cut ends.
Q. Bring conduit to shoulder of fittings; fasten securely.
R. Use conduit hubs to fasten conduit to cast boxes.
S. A run of conduit shall not contain more than the equivalent of four (4) quarter bends (360 degrees), including those bends located immediately at the outlet or body. Use conduit bodies to make sharp changes in direction (as around beams). Use hydraulic one-shot bender to fabricate bends in metal conduit larger than two inch (2") size. All conduit shall be held right to structure.
T. Avoid moisture traps; provide junction box with drain fitting at low points in conduit system.
U. Provide suitable fittings to accommodate expansion and deflection where conduit crosses control and expansion joints.
V. Provide suitable pull string in each empty conduit except sleeves and nipples.
W. Use suitable caps to protect installed conduit against entrance of dirt and moisture.
X. Ground and bond all conduits.
Y. Identify conduit.
Z. Install insulated bushings on all conduits and sleeves serving low voltage wiring prior to pulling wire unless otherwise noted.
AA. Install grounded insulated bushings on all conduits and sleeves serving data wiring prior to pulling wire unless otherwise noted.
AB. All low voltage conduits shall be sized to have less than 40% fill. Each penetration through a surface of any kind shall have a conduit sleeve with insulated bushings.
AC. Junction boxes shall not be installed over four foot (4") above accessible ceiling without prior written approval by owner.
AD. Conduits which enter communications entrance facilities shall extend 4 inches above the finished floor or 3 inches through the wall.

AE. No continuous section of conduit may exceed 100 feet. Utilize pull boxes as necessary. Refer to the pull box execution section for more information.

AF. All wiring in the same conduit shall be from the same source and have the same voltage except where approved by the owner.

AG. [All exposed conduit routing in common and public areas shall be coordinated prior to rough-in at an on-site construction meeting between the design team and contractor.]

3.02 BOX INSTALLATION

A. Install boxes in accordance with NECA "Standard of Installation."

B. Install electrical boxes in locations as shown on the drawings and as required for splices, taps, wire pulling, equipment connections and compliance with regulatory requirements.

C. Set wall mounted boxes at elevations to accommodate mounting heights as indicated.

D. Electrical boxes are shown on the drawings in approximate locations unless dimensioned. Adjust box location up to ten foot (10') if required to accommodate intended purpose. Verify with architectural drawings and elevations for additional information.

E. Orient boxes to accommodate wiring device orientation.

F. Maintain headroom and present neat mechanical appearance.

G. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only. Junction boxes shall not be installed over four foot (4') above accessible ceilings.

H. Inaccessible Ceiling Areas: Install outlet and junction boxes no more than six inches (6") from ceiling access panel or from removable recessed luminaire.

I. Fire-stop boxes to preserve fire resistance rating of partitions and other elements. Boxes may be installed within a minimum of 24 inch separation with written approval prior to installation.

J. Coordinate mounting heights and locations of outlets mounted above counters, benches, and back splashes.

K. Locate outlet boxes to allow luminaires positioned as shown on the drawings. If light fixture locations conflict with ceiling plans, the electrical contractor shall document discrepancies and send to the engineer for clarification.

L. Align adjacent wall mounted outlet boxes for switches, thermostats, and similar devices.

M. Use flush mounting outlet box in finished areas.

N. Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening.

O. Do not install flush mounting box back-to-back in wall, provide minimum six inch (6") separation.

P. Provide minimum 24 inch separation for receptacles in acoustic rated walls. Provide sound blocking putty where lighting control devices are located in the same stud cavity.

Q. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.

R. Install flush mounting box without damaging wall insulation or reducing its effectiveness.

S. Use adjustable steel channel fasteners for hung ceiling outlet box.

T. Do not fasten boxes to ceiling support wires.

U. Support boxes independently of conduit.

V. Use gang box where more than one device is mounted together. Do not use sectional box.

W. Use gang box with plaster ring for single device outlets.

X. Use cast outlet box in exterior locations exposed to the weather and wet locations.
Y. Large Pull Boxes: Use set screw enclosure in interior dry locations, surface-mounted cast metal box in other locations.

3.03 PULLBOXES

A. Size communications cabling pull boxes according to the following:

<table>
<thead>
<tr>
<th>Conduit Trade Size</th>
<th>Width</th>
<th>Length</th>
<th>Depth</th>
<th>Width Increase for Additional Conduit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&quot;</td>
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<td>16&quot;</td>
<td>3&quot;</td>
<td>2&quot;</td>
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<td>16&quot;</td>
<td>60&quot;</td>
<td>8&quot;</td>
<td>6&quot;</td>
</tr>
</tbody>
</table>

B. Directional changes within a pullbox shall not be allowed. Conduit entering the box shall have conduit leaving the box from the opposite side. Do not use a pull box to make 90 degree turns.

C. Install pullboxes in conveniently accessible locations.

D. Where identified on drawings as lockable, key all pullboxes the same.

E. Label all pull boxes. Handwritten labels shall not be accepted.

3.04 INTERFACE WITH OTHER PRODUCTS

A. Install conduit using materials and method to preserve fire resistance rating of partitions and other elements.

B. Piping and Ductwork: Route conduits through roof openings or through suitable roof jack with pitch pocket. Coordinate location with roofing installation specified.

C. Coordinate installation of outlet and junction boxes for equipment connection.

3.05 ADJUSTING

A. Adjust flush-mounting outlets to make front flush with finished wall material.

B. Install knockout closures in unused box openings.

C. Adjust floor box flush with finish flooring material.

3.06 CLEANING

A. Clean interior of boxes to remove dust, debris, and other material.

B. Clean exposed surfaces and restore finish.

END OF SECTION 260533
PART 1 GENERAL

1.01 SECTION INCLUDES
   A. Nameplates and labels
   B. Wire markers

1.02 REFERENCES
   A. NFPA 70 - National Electrical Code
   B. NFPA 70E - Standard for Electrical Safety in the Workplace

1.03 REGULATORY REQUIREMENTS
   A. Conform to requirements of NFPA 70.
   B. Products: Listed and classified by Underwriters Laboratories, Inc. as suitable for the purpose specified and indicated.

PART 2 PRODUCTS

2.01 NAMEPLATES AND LABELS
   A. Nameplates:
      1. Normal power: Engraved three-layer laminated plastic white letters on black background.
   B. Locations:
      1. All electrical distribution and control equipment enclosure.
         a. Switchboards and Panelboards: Line 1 shall state "Panel Name"; Line 2 shall state "Fed by Panel Name" as required by NEC section 408.4(B).
      2. Single mounted breaker.
   C. Letter Size:
      1. Use 1/8 inch letters for identifying individual equipment and loads.
      2. Use 1/4 inch letters for identifying grouped equipment and loads.
      3. Use 1/4 inch letters for identifying communications cabinets, transfer switches and transformers.
   D. Labels: Embossed adhesive tape with 3/16 inch white letters on black background. Use only for identification of individual wall switches and receptacles, control device stations, and communication outlets.

2.02 WIRE MARKERS
   A. Description: Tape feeders to indicate phases.
      1. Marker colors for 277/480V shall be as follows: phase A shall be brown, phase B shall be yellow, and phase C shall be orange.
      2. Marker colors for 120/208V shall be as follows: phase A shall be black, phase B shall be red, and phase C shall be blue.
   B. Locations: Each conductor at panelboard gutters, pull boxes, outlet and junction boxes, and each load connection.
   C. Legend:
      1. Power and Lighting Circuits: Branch circuit or feeder number indicated.
      2. Control Circuits: Control wire number indicated on schematic and interconnection diagrams.

PART 3 EXECUTION

3.01 PREPARATION
   A. Degrease and clean surfaces to receive nameplates and labels.
3.02 INSTALLATION

A. Install nameplate and label parallel to equipment lines.
B. Secure nameplate to equipment front using screws.
C. Secure nameplate to inside surface of door on panelboard that is recessed in finished locations.

END OF SECTION 260553
PART 1 GENERAL

1.01 SECTION INCLUDES
A. Manufactured units
B. Over current protective devices

1.02 REFERENCES
A. ANSI C12 - Code for Electricity Metering
B. ANSI C39.1 - Requirements for Electrical Analog Indicating Instruments
C. ANSI C57.13 - Requirements for Instrument Transformers
D. NEMA AB 1 - Molded Case Circuit Breakers
E. NEMA KS 1 - Enclosed and Miscellaneous Distribution Equipment Switches (600-volt maximum)
F. NEMA PB 2 - Dead Front Distribution Switchboards
G. NEMA PB 2.1 - Instructions for Safe Handling, Installation, Operation and Maintenance of Dead Front Switchboards Rated 600 volts or Less
H. NEMA 260 - Safety Labels for Pad Mounted Switchgear and Transformers Sited In Public Areas
J. NEPA 70 - National Electrical Code

1.03 SUMMARY
A. This specification section includes service and distribution switchboards rated 600 volt and less.

1.04 DEFINITIONS
A. GFCI: Ground-fault circuit interrupter.
B. RFI: Radio-frequency interference.
C. RMS: Root means square.
D. SPDT: Single pole, double throw.

1.05 SUBMITTALS
A. Product Data for Each Type of Switchboard: Over current protective device, transient voltage suppression device, ground-fault protector, accessory, and component indicated, include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, and finishes.
B. Shop Drawings for Each Switchboard and Related Equipment:
   1. Shop drawings shall indicate front and side enclosure elevations with overall dimensions shown; conduit entrance locations and requirements; nameplate legends; one-line diagrams; equipment schedule; and switchboard instrument details. Include the following:
      a. Enclosure types and details for types other than UL891, type #1.
      b. Bus configuration, current, and voltage ratings.
      c. Short-circuit current rating of switchboards and overcurrent protective devices.
      d. Utility company's metering provisions with indication of approval by utility company.
      e. Features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
1.06 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. The switchboard(s) and overcurrent protection devices referenced herein are designed and manufactured according to the following appropriate specifications.
   1. ANSI/NFPA 70 - National Electrical Code (NEC)
   2. ANSI/IEEE C12.16 - Solid-State Electricity Metering
   3. ANSI C57.13 - Instrument Transformers
   4. NEMA AB 1 - Molded Case Circuit Breakers and Molded Case Switches
   5. NEMA PB 2 - Deadfront Distribution Switchboards, File E8681
   6. NEMA PB 2.1 - Proper Handling, Installation, Operation and Maintenance of Deadfront Switchboards Rated 600 Volts or Less
   7. NEMA PB 2.2 - Application Guide for Ground Fault Protective Devices for Equipment
   8. UL 98 - Enclosed and Dead Front Switches
   9. UL 489 - Molded Case Circuit Breakers
   10. UL 891 - Dead-Front Switchboards
   11. UL 943 - Standard for Ground Fault Circuit Interrupters

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver in sections or lengths that can be moved past obstructions in delivery path.

B. Store indoors in clean dry space with uniform temperature to prevent condensation.

C. Protect from exposure to dirt, fumes, water, corrosive substances, and physical damage.

D. If stored in areas subjected to weather, cover switchboards to provide protection from weather, dirt, dust, corrosive substances, and physical damage. Remove loose packing and flammable materials from inside switchboards; install electric heating (250 W per section) to prevent condensation.

E. Handle switchboards according to NEMA PB 2.1, NECA 400 and manufacturer’s instructions.

1.08 COORDINATION

A. Coordinate layout and installation of switchboards and components with other construction including conduit, piping, equipment, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

B. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Architectural Specification.

PART 2 PRODUCTS

2.01 MANUFACTURED UNITS

A. Manufacturers:
   1. Eaton (Cutler-Hammer)

B. Enclosure: Steel, UL 891, as shown on the drawings.

C. Enclosure Finish: Factory-applied finish in manufacturer’s standard ANSI 49 gray finish over a rust-inhibiting primer on treated metal surface.

2.02 OVER CURRENT PROTECTIVE DEVICES

A. Molded-Case Circuit Breaker: NEMA AB 3 with interrupting capacity to meet available fault currents.

B. Molded-Case Circuit-Breaker Features and Accessories: Standard frame sizes, trip ratings, and number of poles.
C. Lugs: Mechanical compression style, suitable for number, size, trip ratings, and conductor material.

D. Application Listing: Appropriate for application; type SWD for switching fluorescent lighting loads; type HACR for heating, air-conditioning, and refrigerating equipment.

E. Microprocessor-based trip units with interchangeable rating plug, LED trip indicators, and the following field-adjustable settings:
   1. Instantaneous trip.
   2. Long-and short-time pickup levels.
   3. Long-and short-time time adjustments with I2t response.
   4. Ground-fault pickup level, time delay, and I2t response.

### PART 3 EXECUTION

#### 3.01 EXAMINATION

A. Examine elements and surfaces to receive switchboards for compliance with installation tolerances and other conditions affecting performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

#### 3.02 INSTALLATION

A. Install switchboards and accessories according to NEMA PB 2.1 and NECA 40.

B. Any panel field modifications and associated means and methods shall be approved by the Authority Having Jurisdiction and the equipment manufacturer. Any costs associated shall be included in the bid.

#### 3.03 IDENTIFICATION

A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs as specified in Specification Section "Electrical Identification."

#### 3.04 FIELD QUALITY CONTROL

A. Prepare for Acceptance Tests as Follows:
   1. Test insulation resistance for each switchboard bus, component, connecting supply, feeder, and control circuit.
   2. Test continuity of each circuit.

#### 3.05 CLEANING

A. Upon completion of installation, inspect interior and exterior of switchboards. Remove paint splatters and other spots. Vacuum dirt and debris; do not use compressed air to assist in cleaning. Repair exposed surfaces to match original finish.

END OF SECTION 262413
PART 1 GENERAL

1.01 SECTION INCLUDES
   A. Safety switches

1.02 RELATED REQUIREMENTS
   A. Specification Section 26 0529 - Hangers and Supports for Electrical Systems
   B. Specification Section 26 0553 - Identification for Electrical Systems

1.03 REFERENCE STANDARDS
   A. NEMA FU 1 - Low Voltage Cartridge Fuses; National Electrical Manufacturers Association
   B. NEMA KS 1 - Enclosed and Miscellaneous Distribution Equipment Switches (600 Volts Maximum); National Electrical Manufacturers Association
   D. NFPA 70 - National Electrical Code; National Fire Protection Association
   E. NECA - Standard of Installation (published by the National Electrical Contractors Association)

1.04 SUBMITTALS
   A. Product Data: Provide switch ratings and enclosure dimensions.
   B. Project Record Documents: Record actual locations of enclosed switches.

1.05 QUALITY ASSURANCE
   A. Conform to requirements of NFPA 70.
   B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience and with service facilities within 100 miles of Project.
   C. Products: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

PART 2 PRODUCTS

2.01 SAFETY SWITCHES
   A. Manufacturers
      1. Square D
      2. Eaton
      3. No engineer approved equal.
   B. Heavy duty safety switches shall be used for all motor loads over 1 HP and all non-motor loads 20 amps and greater.
      1. Fusible Switch Assemblies: NEMA KS 1, Type HD enclosed load interrupter knife switch.
         a. Externally operable handle interlocked to prevent opening front cover with switch in ON position.
         b. Handle lockable in OFF position.
         c. Fuse clips: Designed to accommodate NEMA FU1, Class R fuses, with rejection clips designed to permit installation of Class R fuses only.
         d. Indicated as a disconnect switch with a "F" on the drawings.
      2. Nonfusible Switch Assemblies: NEMA KS 1, Type HD enclosed load interrupter knife switch.
         a. Externally operable handle interlocked to prevent opening front cover with switch in ON position.
         b. Handle lockable in OFF position.
   a. Interior Dry Locations: Type 1.
   b. Exterior Locations: Type 3R.
   c. Enclosures shall be provided with a method of opening the cover without opening the switch.

4. Enclosure shall include a grounding bar.

PART 3 EXECUTION

3.01 INSTALLATION
   A. Install in accordance with NECA "Standard of Installation."
   B. Install in accordance with manufacturer's instructions.
   C. Install plumb and provide in accordance with Specification Section 26 0529 - Hangers and Supports for Electrical Systems.
   D. Height to be five foot (5') to operating handle.
   E. Install fuses in fusible disconnect switches. Fuses shall not be installed until equipment is ready to be energized.
   F. Provide adhesive label with white letters on black background for associated equipment.
   G. Apply adhesive tag on inside door of each fused switch indicating NEMA fuse class and size installed.

3.02 FIELD QUALITY CONTROL
   A. Perform field inspection in accordance with Section 01 4000.
   B. Inspect and test in accordance with NETA STD ATS, except Section 4.
   C. Perform inspections and tests listed in NETA STD ATS, Section 7.5.1.2.

END OF SECTION 262816
MECHANICAL SYMBOLS LIST

ELECTRICAL SYMBOLS LIST

PROJECT LOCATION MAP

MISCELLANEOUS

PIPING SPECIALTIES

MECHANICAL SYMBOLS LIST

EXR

EX

ER

PIV

V

HB

BUTTERFLY VALVE

LUBRICATED PLUG VALVE

BALL VALVE

EXPANSION JOINT

PIPE DROP

BACKFLOW PREVENTER BFP

PRESSURE GAUGE

STRAINER W/DRAIN VALVE

PIPE RISER

STRAINER

FLEXIBLE PIPE CONNECTOR

PIPE CAP

UNION

AIR VENT

TEMPERATURE WELL

2WAY CONTROL VALVE

WALL HYDRANT WH

HOSE BIBB

BALANCING VALVE

SWING CHECK VALVE

GATE VALVE

CALIBRATED BALANCE VALVE

3WAY CONTROL VALVE

SPRINKLER POST INDICATOR VALVE

CURB STOP

TRIPLE DUTY VALVE

POINT OF NEW CONNECTION

EXISTING LINE TO REMAIN

EXISTING TO BE RELOCATED

EXISTING TO BE REMOVED

EXISTING TO REMAIN

THERMOMETER

P/T PORT

NEW CHILLER LOCATION

HYDRONIC PIPING

CWR

CWS

CTR

CTB

COOLING TOWER BLOWDOWN LINE

CTS

CONDENSER WATER RETURN LINE

CONDENSER WATER SUPPLY LINE

CHILLED WATER RETURN LINE

CHILLED WATER SUPPLY LINE

BOILER ROOM

PROJECT LOCATION MAP

BOLLAR LEVEL

NEW CHILLER LOCATION

ME, MD, M, E-Sheets as noted in the Sheet Index above

23 and 26
Remove EX 6" CTR/CTS piping from this point above floor to storage 056. Blow out abandoned piping between here and boiler room. Cap piping and seal watertight.

Demo General Notes:

A. Demolition drawings are based on existing available drawings and casual field observation. Mechanical and electrical contractors shall field verify the site and include all required demolition in the bid.

B. All required demolition is not indicated. It is the intent of these documents that all mechanical and electrical systems (not to be reused or extended) be removed. Coordinate with architectural drawings.

C. Refer to specifications and other sheets for additional demolition requirements.

D. Remove all electrical connections, wiring, and conduit serving all mechanical equipment to be removed.

E. Maintain fire ratings of affected walls and floors.

F. Existing mechanical and electrical systems located in walls and chases not being removed or reused for new systems may be abandoned in place. Cap at mains or in a concealed location if required.
REMOVE 6" CTS/CTR AND ASSOCIATED INSULATION, HANGERS AND SUPPORTS. CONTRACTOR SHALL FIELD VERIFY EXACT ROUTING OF EXISTING CONDENSER WATER PIPING TO BE REMOVED.

DEMO GENERAL NOTES:

A. DEMOLITION DRAWINGS ARE BASED ON EXISTING AVAILABLE DRAWINGS AND CASUAL FIELD OBSERVATION. MECHANICAL AND ELECTRICAL CONTRACTORS SHALL FIELD VERIFY THE SITE AND INCLUDE ALL REQUIRED DEMOLITION IN THE BID.

B. ALL REQUIRED DEMOLITION IS NOT INDICATED. IT IS THE INTENT OF THESE DOCUMENTS THAT ALL MECHANICAL AND ELECTRICAL SYSTEMS (NOT TO BE REUSED OR EXTENDED) BE REMOVED. COORDINATE WITH ARCHITECTURAL DRAWINGS.

C. REFER TO SPECIFICATIONS AND OTHER SHEETS FOR ADDITIONAL DEMOLITION REQUIREMENTS.

D. REMOVE ALL ELECTRICAL CONNECTIONS, WIRING, AND CONDUIT SERVING ALL MECHANICAL EQUIPMENT TO BE REMOVED.

E. MAINTAIN FIRE RATINGS OF AFFECTED WALLS AND FLOORS.

F. EXISTING MECHANICAL AND ELECTRICAL SYSTEMS LOCATED IN WALLS AND CHASES NOT BEING REMOVED OR REUSED FOR NEW SYSTEMS MAY BE ABANDONED IN PLACE. CAP AT MAINS OR IN A CONCEALED LOCATION IF REQUIRED.
REMOVE ALL 6" CTS/CTR AND ASSOCIATED INSULATION, HANGERS AND SUPPORTS. CONTRACTOR SHALL FIELD VERIFY EXACT ROUTING OF EXISTING CONDENSER WATER PIPING TO BE REMOVED.

REMOVE MULTISTACK CHILLER AND ASSOCIATED SUPPORT

REMOVE CWR/CWS PIPING FROM CHILLER TO THIS POINT

REMOVE PUMP, FLEX PIPES, VALVES & ACCESSORIES

ER CTS/CTR DN
EX CWS DN
EX CWR DN

DEMO GENERAL NOTES:

A. DEMOLITION DRAWINGS ARE BASED ON EXISTING AVAILABLE DRAWINGS AND CASUAL FIELD OBSERVATION. MECHANICAL AND ELECTRICAL CONTRACTORS SHALL FIELD VERIFY THE SITE AND INCLUDE ALL REQUIRED DEMOLITION IN THE BID.

B. ALL REQUIRED DEMOLITION IS NOT INDICATED. IT IS THE INTENT OF THESE DOCUMENTS THAT ALL MECHANICAL AND ELECTRICAL SYSTEMS (NOT TO BE REUSED OR EXTENDED) BE REMOVED. COORDINATE WITH ARCHITECTURAL DRAWINGS.

C. REFER TO SPECIFICATIONS AND OTHER SHEETS FOR ADDITIONAL DEMOLITION REQUIREMENTS.

D. REMOVE ALL ELECTRICAL CONNECTIONS, WIRING, AND CONDUIT SERVING ALL MECHANICAL EQUIPMENT TO BE REMOVED.

E. MAINTAIN FIRE RATINGS OF AFFECTED WALLS AND FLOORS.

F. EXISTING MECHANICAL AND ELECTRICAL SYSTEMS LOCATED IN WALLS AND CHASES NOT BEING REMOVED OR REUSED FOR NEW SYSTEMS MAY BE ABANDONED IN PLACE. CAP AT MAINS OR IN A CONCEALED LOCATION IF REQUIRED.
GENERAL NOTES:

A. LAYOUT AND ROUTING SHOWN IS DIAGRAMMATIC AND SCHEMATIC IN NATURE. NOT ALL OFFSETS MAY BE SHOWN. CONTRACTOR SHALL VERIFY EXACT ROUTING REQUIRED AND NUMBER OF OFFSETS AND TRANSITIONS.

B. MAINTAIN SERVICE CLEARANCE IN FRONT OF AND ABOVE ELECTRICAL EQUIPMENT AND ACCESS ZONES. REFER TO ELECTRICAL EQUIPMENT INSTALLATION AND INSTRUCTIONS. DO NOT INSTALL PIPING IN CLEARANCE SPACE OF ELECTRICAL OR MECHANICAL EQUIPMENT.

C. COORDINATE ALL PIPING ROUTING WITH BUILDING STRUCTURE AND OTHER TRADES PRIOR TO INSTALLATION TO ALLOW FOR PROPER CLEARANCES AND FLOW REQUIREMENTS.

D. PROVIDE ISOLATION BALL VALVES ON BRANCH PIPING TAPS FROM MAIN ON ALL SUPPLY AND RETURN PIPES. ENSURE VALVES ARE INSTALLED IN ACCESSIBLE LOCATIONS.

E. VERIFY ALL SITE CONDITIONS PRIOR TO START OF WORK. FIELD VERIFY ALL NEW AND EXISTING PIPE ROUTING WITH EXISTING CONDITIONS PRIOR TO ROUGH-IN. MAKE NECESSARY OFFSETS AS REQUIRED.

F. COORDINATE ALL EXPOSED PIPE ROUTING WITH DESIGN TEAM PRIOR TO ROUGH-IN, SPECIFIC RACKING REQUIREMENTS MAY BE REQUIRED. PROVIDE JACKETING ON EXPOSED PIPING UNLESS OTHERWISE NOTED.

G. ALL CONDENSATE DRAIN PIPING SHALL BE 3/4" WITH INSULATION UNLESS NOTED OTHERWISE.
GENERAL NOTES:

A. LAYOUT AND ROUTING SHOWN IS DIAGRAMMATIC AND SCHEMATIC IN NATURE. NOT ALL OFFSETS MAY BE SHOWN. CONTRACTOR SHALL VERIFY EXACT ROUTING REQUIRED AND NUMBER OF OFFSETS AND TRANSITIONS.

B. MAINTAIN SERVICE CLEARANCE IN FRONT OF AND ABOVE ELECTRICAL EQUIPMENT AND ACCESS ZONES. REFER TO ELECTRICAL EQUIPMENT INSTALLATION AND INSTRUCTIONS. DO NOT INSTALL PIPING IN CLEARANCE SPACE OF ELECTRICAL OR MECHANICAL EQUIPMENT.

C. COORDINATE ALL PIPING ROUTING WITH BUILDING STRUCTURE AND OTHER TRADES PRIOR TO INSTALLATION TO ALLOW FOR PROPER CLEARANCES AND FLOW REQUIREMENTS.

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G. ALL CONDENSATE DRAIN PIPING SHALL BE 3/4" WITH INSULATION UNLESS NOTED OTHERWISE.

ROUTE AND SUPPORT REFRIGERANT PIPING ALONG COLUMN WITH COLORED PVC JACKET TO MATCH BUILDING.

ROUTE NEW CHILLED WATER UP USING EXISTING CORE DRILL OPENINGS IN FLOOR. CAULK PIPING THROUGH FLOOR WATER TIGHT & INSTALL INSULATION TIGHT TO OPENING BUT NOT THROUGH OPENING.

6" CWS/CWR NEW REMOTE EVAPORATOR ON NEOPRENE PAD.

DUAL CIRCUIT REFRIGERANT LINES SIZED BY MANUFACTURER. (4 PIPES TOTAL)

TRANSITION TO 3" AT THE EVAPORATOR.

ROUTE THROUGH BLANK WALL PLATE NEXT TO COLUMN AND LOUVER. SEAL WATER TIGHT.

ROUTE REFRIGERANT RELIEF VALVE PIPING TO EXTERIOR AND MAINTAIN 10' FROM EXISTING INTAKE LOUVERS.
GENERAL NOTES:

A. LAYOUT AND ROUTING SHOWN IS DIAGRAMMATIC AND SCHEMATIC IN NATURE. NOT ALL OFFSETS MAY BE SHOWN. CONTRACTOR SHALL VERIFY EXACT ROUTING REQUIRED AND NUMBER OF OFFSETS AND TRANSITIONS.

B. MAINTAIN SERVICE CLEARANCE IN FRONT OF AND ABOVE ELECTRICAL EQUIPMENT AND ACCESS ZONES. REFER TO ELECTRICAL EQUIPMENT INSTALLATION AND INSTRUCTIONS. DO NOT INSTALL PIPING IN CLEARANCE SPACE OF ELECTRICAL OR MECHANICAL EQUIPMENT.

C. COORDINATE ALL PIPING ROUTING WITH BUILDING STRUCTURE AND OTHER TRades PRIOR TO INSTALLATION TO ALLOW FOR PROPER CLEARANCES AND FLOW REQUIREMENTS.

D. PROVIDE ISOLATION BALL VALVES ON BRANCH PIPING TAPS FROM MAIN ON ALL SUPPLY AND RETURN PIPES. ENSURE VALVES ARE INSTALLED IN ACCESSIBLE LOCATIONS.

E. VERIFY ALL SITE CONDITIONS PRIOR TO START OF WORK. FIELD VERIFY ALL NEW AND EXISTING PIPE ROUTING WITH EXISTING CONDITIONS PRIOR TO ROUGH-IN. MAKE NECESSARY OFFSETS AS REQUIRED.

F. COORDINATE ALL EXPOSED PIPE ROUTING WITH DESIGN TEAM PRIOR TO ROUGH-IN. SPECIFIC RACKING REQUIREMENTS MAY BE REQUIRED. PROVIDE JACKETING ON EXPOSED PIPING UNLESS OTHERWISE NOTED.

G. ALL CONDENSATE DRAIN PIPING SHALL BE 3/4" WITH INSULATION UNLESS NOTED OTHERWISE.

EX AIR SEPARATOR
EX CWR
EX CWS
USE EXISTING CORE DRILLS IN THE FLOOR FOR NEW CHILLED WATER LINES
CAULK PIPING THROUGH FLOOR WATER TIGHT
PCH-3
6" CWS
6" CWR
EX POT FEEDER
EX EXPANSION TANK
MOUNT NEW PUMP ON EXISTING PAD AND GROUT FRAME
PROVIDE NEW PUMP ACCESSORIES AND PIPE DROP TO NEW PUMP
EX CWS/CWR DN
GENERAL NOTES:

A. LAYOUT AND ROUTING SHOWN IS DIAGRAMMATIC AND SCHEMATIC IN NATURE. NOT ALL OFFSETS MAY BE SHOWN. CONTRACTOR SHALL VERIFY EXACT ROUTING REQUIRED AND NUMBER OF OFFSETS AND TRANSITIONS.

B. MAINTAIN SERVICE CLEARANCE IN FRONT OF AND ABOVE ELECTRICAL EQUIPMENT AND ACCESS ZONES. REFER TO ELECTRICAL EQUIPMENT INSTALLATION AND INSTRUCTIONS. DO NOT INSTALL PIPING IN CLEARANCE SPACE OF ELECTRICAL OR MECHANICAL EQUIPMENT.

C. COORDINATE ALL PIPING ROUTING WITH BUILDING STRUCTURE AND OTHER TRADES PRIOR TO INSTALLATION TO ALLOW FOR PROPER CLEARANCES AND FLOW REQUIREMENTS.

D. PROVIDE ISOLATION BALL VALVES ON BRANCH PIPING TAPS FROM MAIN ON ALL SUPPLY AND RETURN PIPES. ENSURE VALVES ARE INSTALLED IN ACCESSIBLE LOCATIONS.

E. VERIFY ALL SITE CONDITIONS PRIOR TO START OF WORK. FIELD VERIFY ALL NEW AND EXISTING PIPE ROUTING WITH EXISTING CONDITIONS PRIOR TO ROUGH-IN. MAKE NECESSARY OFFSETS AS REQUIRED.

F. COORDINATE ALL EXPOSED PIPE ROUTING WITH DESIGN TEAM PRIOR TO ROUGH-IN, SPECIFIC RACKING REQUIREMENTS MAY BE REQUIRED. PROVIDE JACKETING ON EXPOSED PIPING UNLESS OTHERWISE NOTED.

G. ALL CONDENSATE DRAIN PIPING SHALL BE 3/4" WITH INSULATION UNLESS NOTED OTHERWISE.

REMOVE EXISTING PUMP, ASSOCIATED PIPING, ACCESSORIES, POWER WIRING AND CONTROLS REMOVE VERTICAL PIPING, ASSOCIATED HANGERS AND SUPPORTS. CAP EX 6" CTS AT TANK TO ELIMINATE DIRT LEG. CAP EX 6" CTS/CTR PIPING AT FLANGE NEAR FLOOR PENETRATION. BLOW OUT AND DRAIN ABANDONED UNDERGROUND PIPING BETWEEN HERE AND THE ROUNDHOUSE. EXISTING PAD TO REMAIN. ER PUMP VFD AND DISCONNECT CAP ABANDONED UNDERGROUND PIPING AT FLANGE AT FLOOR PENETRATION.
Due to the nature of the content, it cannot be accurately transcribed into plain text. The document appears to be a schematic diagram related to DMPS Lincoln Roundhouse Chiller Replacement, including details on pump frames, grout, existing and new piping, and various control and alarm systems. Specific notes and instructions are provided, but due to the complexity of the diagram and the need for visual interpretation, a detailed textual description is not feasible.
**PUMP SCHEDULE**

<table>
<thead>
<tr>
<th>Type</th>
<th>Mark</th>
<th>MANUFACTURER</th>
<th>MODEL</th>
<th>HP</th>
<th>SIZE</th>
<th>FLOW (GPM)</th>
<th>HEAD</th>
<th>RPM</th>
<th>IMP. DIA.</th>
<th>EFF.</th>
<th>ELECTRICAL</th>
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</thead>
<tbody>
<tr>
<td>PCH-3</td>
<td>TACO</td>
<td>FI 2510C</td>
<td>10</td>
<td>3 X 2-1/2</td>
<td>330</td>
<td>85</td>
<td>1760</td>
<td>9.55</td>
<td>78%</td>
<td>208/3</td>
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</tr>
</tbody>
</table>

**NOTES:**

1. PUMP MUST BE 10HP TO MATCH EXISTING VFD.

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**CHILLER SCHEDULE**

Chiller must have BACnet integration capability for JCI.

Provide floor mounting stand.
NEW 800A - 3P BREAKER

SUGGESTED ROUTE FOR NEW 800 AMP WIRE AND CONDUIT FEED TO NEW CHILLER. CUT, PAINT AND PATCH WALLS. REMOVE AND REINSTALL CEILINGS AS REQUIRED TO COMPLETE WORK.

LABEL EXISTING CHILLER BREAKER AS SPARE.

DROP TO NEW CHILLER

EX MDP

NEW REMOTE EVAP

CONTROL WIRING TO REMOTE EVAP

SEE SHEETS M501 & M502

TWO 3/4" CONDUIT UP WALL TO REMOTE EVAP

ROUTE WITH REFRIGERANT LINES

SEE DRAWING M104 FOR DEMOLITION OF WIRE, CONDUIT, STARTER AND BREAKER FOR PUMP PCD - 2 IN BOILER ROOM

GENERAL NOTES:
A. MAINTAIN SERVICE CLEARANCE AROUND ALL MECHANICAL & ELECTRICAL EQUIPMENT. DO NOT ROUTE PIPING OR CONDUIT IN CLEARANCE SPACE.

REFERENCE NOTES:
1. Qty LIST OF MATERIALS FOR NEW BREAKER.

#    PRL4 Retrofit Kit Kit Catalog Number: KPRL4MDL3800S Circuit Breaker, MDL, 800A X Space Required: 6 PRL4 Retrofit Kit 1    M Frame Connector Kit 1    800A, 3P MDL Breaker Frame 1    Thermal-Magnetic Trip Unit, 800A 3    Terminals, Mech. (2) 500-750 kcmil (Cu/Al) NEUTRAL CONDUCTORS (THWN-2) PHASE GROUND EMT SCH 40 CONDUIT PARALLEL RUNS 3" (3) 600 MCM 1/0 AWG 2 - 800/3 3"