CITY OF DE PERE

PROJECT
23-14

CITY HALL BOILER REPLACEMENT

BID DATE:
DECEMBER 15, 2022
@ 1:00 PM

Bid documents, including plans and specifications, are available for download at www.QuestCDN.com. The QuestCDN website can also be accessed through the City website at www.deperewi.gov/projects or by pressing the *Projects* icon at the bottom of any City website page. Download cost is $15 for each contract. Bidders will be charged an additional fee of $30 to submit a bid electronically. Bidding documents may be viewed on the QuestCDN website or at the Municipal Service Center, 925 S. Sixth Street, De Pere, WI 54115.

Bid Tabs must be verified by staff prior to posting and will be available for viewing on the website within 7 days following the bid opening. Award information will be pending until approved by the Common Council.

SECTION 00 01 10

TABLE OF CONTENTS

INTRODUCTORY INFORMATION

PROJECT BID DOCUMENTS

CONTRACTING REQUIREMENTS

DIVISION 1 GENERAL REQUIREMENTS

SECTION 00 11 13

NOVEMBER 25, 2022 – DECEMBER 2, 2022

CITY OF DE PERE

ADVERTISEMENT TO BID

PROJECT 23-14

CITY HALL BOILER REPLACEMENT

Online bids will be received and accepted for Project 23-14 City Hall Boiler Replacement via the online electronic bidding service through QuestCDN.com, until 1:00 PM, Thursday, December 15, 2022, at which time they will be publicly accepted, displayed and read aloud.

Project 23-14 for which proposals are being sought for the demolition and installation of boilers and replacement of circulation pumps at the De Pere City Hall at 335 S. Broadway Street, De Pere, WI 54115.

Complete digital project bidding documents are available for viewing and/or downloading at www.QuestCDN.com or may be examined at the office of the Director of Public Works. Digital plan documents may be downloaded for $15 by inputting Quest project #8341821 on Quest's Project Search page. Project documents must be downloaded from QuestCDN which will add your company to the Planholder List and allow access to vBid online bidding for the submittal of your bid. Bidders will be charged an additional fee of $30 to submit a bid electronically. The QuestCDN website can also be accessed through the City website at www.deperewi.gov/projects or by pressing the *Projects* icon at the bottom of any City website page. Contact QuestCDN Customer Support at 952-233-1632 or info@questcdn.com for assistance in membership registration, downloading digital project information and vBid online bid submittal questions.

Each proposal shall be accompanied by a bid bond in an amount equal to five percent (5%) of the bid, payable to the City of De Pere, as a guarantee that if the bid is accepted, the bidder will execute a contract and furnish a contract bond as set forth in the General Conditions of the City of De Pere. In case the bidder fails to file such contract and bond, the amount of the bid bond shall be forfeited to the City of De Pere as liquidated damages.

A pre-bid meeting (not mandatory) will be held on Wednesday, December 7, 2022 at 9:00 AM at the De Pere City Hall located at 335 S. Broadway Street, De Pere, WI 54115. The pre-bid meeting will meet in the City Hall main lobby prior to reviewing the boiler systems.

The letting of the contract is subject to the provisions of the following Wisconsin Statutes:

Section 62.15 regarding Public Works.

Section 66.0901(3) regarding Prequalification of Contractor.

Each bidder shall pre-qualify by submitting proof of responsibility on forms furnished by the Director of Public Works. Such forms shall be filed with the Director of Public Works no later than 4:00 PM, Monday, December 12, 2022. Prospective bidders who have previously submitted such forms subsequent to January 1, 2022 will not be required to separately submit such form for this project.

The City of De Pere reserves the right to reject any or all bids, to waive any informalities in bidding and to accept any proposal which the Common Council deems most favorable to the interest of the City of De Pere.

Dated this 25th day of November, 2022.

Board of Public Works
City of De Pere
Eric Rakers, P.E.
City Engineer

Project 23-14

SECTION 00 21 13

INSTRUCTIONS TO BIDDERS

ARTICLE 1 – DEFINED TERMS

1.1 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below:

None

ARTICLE 2 – COPIES OF BIDDING DOCUMENTS

2.1 Complete sets of the Bidding documents in the number and for the deposit sum, if any, stated in the Advertisement to Bid may be obtained as stated in the Advertisement for bids.

2.2 Complete sets of Bidding Documents shall be used in preparing Bids; Owner does not assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

2.3 Owner, in providing the Bidding Documents on the terms stated in the Advertisement for Bids, does so only for the purpose of obtaining Bids for the Work and does not confer a license or grant for any other use.

ARTICLE 3 – QUALIFICATIONS OF BIDDERS

3.1 In accordance with Section 66.0901(3), each bidder shall pre-qualify by submitting proof of responsibility on forms furnished by the Director of Public Works. Such forms shall be filed with the Director of Public Works as stated in the Advertisement for Bids. Prospective bidders who have previously submitted such forms after January 1st of this year will not be required to separately submit such form for this project.

ARTICLE 4 – EXAMINATION OF BIDDING DOCUMENTS, OTHER RELATED DATA AND SITE

4.1 Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated conditions appear in the General Conditions.

4.2 Reference is made to Section 01 10 00: Summary of Work, for work that will be completed and for the identification of the general nature of other work that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) that relates to the Work contemplated by these Bidding Documents. On request, Owner will provide to each Bidder for examination access to or copies of Contract Documents (other portions thereof related to price) for such other work.

4.3 It is the responsibility of each Bidder before submitting a Bid to:

A. Examine and carefully study the Bidding Documents, the other related data identified in the Bidding Documents, and any Addenda;

B. Visit the Site and become familiar with and satisfy Bidder as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;

C. Become familiar with and satisfy Bidder as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work;

D. Obtain and carefully study (or accept consequences of not doing so) all examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents, and safety precautions and programs incident thereto;

E. Agree at the time of submitting its Bid that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price(s) bid and within the times and in accordance with the other terms and conditions of the Bidding Documents;

F. Become aware of the general nature of the work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents;

G. Correlate the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents;

H. Promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies, that bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder; and

I. Determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work.

4.4 The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 4, that without exception the Bid is premised upon performing and furnishing the Work required by the Bidding Documents and applying any specific means, methods, techniques, sequences, and, procedures of construction that may be shown or indicated or expressly required by the Bidding Documents, that Bidder has given Engineer written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in the

Bidding Documents and the written resolutions thereof by Engineer are acceptable to Bidder, and that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work.

ARTICLE 5 – SITE AND OTHER AREAS

5.1 The Site is identified in the Bidding Documents. Easements for permanent structures or permanent changes in existing facilities are to be obtained and paid for by Owner unless otherwise provided in the Bidding Documents. All additional lands and access thereto required for temporary construction facilities, construction equipment, or storage of materials and equipment to be incorporated in the Work are to be obtained and paid for by Contractor.

ARTICLE 6 – INTERPRETATIONS AND ADDENDA

6.1 All questions about the meaning or intent of the Bidding Documents are to be submitted to Engineer in writing. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda mailed or delivered to all parties recorded by Engineer as having received the Bidding Documents. Questions received less than ten days prior to the date for opening of Bids may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

6.2 Addenda may be issued to clarify, correct, or change the Bidding Documents as deemed advisable by Owner and Engineer.

ARTICLE 7 – BID SECURITY

7.1 A Bid shall be accompanied by Bid security made payable to Owner in an amount of five percent (5%) of Bidder's maximum Bid price and in the form of a certified check or bank money order or Bid bond (on the form attached) issued by a surety meeting the requirements of the General Conditions. Submittal of a Bid Bond on a form other than the Bid Bond form included in the Bidding Documents may be cause for rejection of Bid. The fully executed bid bond must be uploaded into QuestCDN. If the bidder elects to furnish bid security other than a bid bond, the bid security must be submitted in a sealed envelope enclosed in a separate package plainly marked on the outside with the notation "BID SECURITY" along with the project number and name and addressed to the Board of Public Works of the City of De Pere, Municipal Service Center, 925 S. Sixth Street, De Pere, WI 54115 **prior to the deadline for submission of bids.**

7.2 The Bid security of the Successful Bidder will be retained until such Bidder has executed the Contract documents, furnished the required contract security and met the other conditions of the Notice of Award, whereupon the Bid security will be returned. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within fifteen (15) days after the Notice of Award, Owner may annul the Notice of Award and the Bid security of that Bidder will be forfeited. The Bid security of other Bidders whom Owner believes to have a reasonable chance of receiving the award may be retained by Owner per the General

Conditions.

7.3 Bid security of other Bidders whom Owner believes do not have a reasonable chance of receiving the award will be returned within seven days after the Bid opening.

ARTICLE 8 – CONTRACT TIMES

8.1 The number of days within which, or the dates by which, Milestones are to be achieved and the Work is to be substantially completed and ready for final payment are set forth in the Bid Form and Summary of Work.

ARTICLE 9 – LIQUIDATED DAMAGES

9.1 Provisions for liquidated damages are set forth in the General Conditions.

ARTICLE 10 – SUBSTITUTE AND "OR-EQUAL" ITEMS

10.1 The Contract, if awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents without consideration of possible substitute or "or-equal" items. Whenever it is specified or described in the Bidding Documents that a substitute or "or-equal" item of material or equipment may be furnished or used by Contractor if acceptable to Engineer, application for such acceptance will not be considered by Engineer until after the Effective Date of the Bid Form and Summary of Work.

ARTICLE 11 – SUBCONTRACTORS, SUPPLIERS, AND OTHERS

11.1 The Bidder shall submit with the Bid to Owner a list of all such Subcontractors, Suppliers, individuals, or entities proposed for those portions of the Work for which such identification is required. Such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit a substitute, in which case apparent Successful Bidder shall submit an acceptable substitute, Bidder's Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and Owner may consider such price adjustment in evaluating Bids and making the Contract award.

11.2 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposed to use acceptable Subcontractors, Suppliers, individuals, or entities. Declining to make requested substitutions will not constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which Owner makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner subject to revocation of such acceptance after the Effective Date of the Agreement.

11.3 Contractor shall not be required to employ any Subcontractor, Supplier, individual, or entity against whom Contractor has reasonable objection.

ARTICLE 12 – PREPARATION OF BID

12.1 The Bid form is included with the Bidding documents.

12.2 All blanks on the Bid Form shall be completed by printing in ink or by typewrite and the Bid signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form. A Bid price shall be indicated for each alternative, and unit price item listed therein, or the words "No Bid," "No Change," or "Not Applicable" entered.

12.3 A Bid by a corporation shall be executed in the corporate name by the president or a vice-president or other corporate officer accompanied by evidence of authority to sign. The corporate seal shall be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporations shall be shown below the seal.

12.4 A Bid by a partnership shall be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership shall be shown below the signature.

12.5 A Bid by a limited liability company shall be executed in the name of the firm by a member and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm shall be shown below the signature.

12.6 A Bid by an individual shall show the Bidder's name and official address.

12.7 A Bid by a joint venture shall be executed by each joint venture in the manner indicated on the Bid Form. The official address of the joint venture shall be shown below the signature.

12.8 All names shall be typed or printed in ink below the signatures.

12.9 The Bid shall contain an acknowledgement of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.

12.10 The address and telephone number for communications regarding the Bid shall be shown.

12.11 The Bid shall contain evidence of Bidder's authority and qualification to do business in the state where the Project is located or covenant to obtain such qualification prior to award of the Contract. Bidder's state contractor license number, if any, shall also be shown on the Bid Form.

ARTICLE 13 – BASIS OF BID; COMPARISON OF BIDS

13.1 Unit Price

A. Bidders shall submit a Bid on a unit price basis for each item of Work listed in the Bid Schedule.

B. The total of all estimated prices will be the sum of the products of the estimated quantity of each item and the corresponding unit price. The final quantities and Contract Price will be determined in accord with the General Conditions.

C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between words and figures will be resolved in favor of the words.

ARTICLE 14 – SUBMITTAL OF BID

14.1 A Bid shall be submitted no later than date and time prescribed and at place indicated in Advertisement for Bids and shall be submitted electronically using the QuestCDN online bidding vBid platform. No paper bids will be accepted.

14.2 See Bid Form for a list of documents typically required to be submitted with the Bid.

ARTICLE 15 – MODIFICATION AND WITHDRAWAL OF BID

15.1 A Bid may be modified or withdrawn by an appropriate document duly executed in the manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids.

15.2 If within 24 hours after Bids are opened, any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is rebid, that Bidder will be disqualified from further bidding on the Work.

ARTICLE 16 – OPENING BIDS

16.1 Bids will be opened as indicated in the Advertisement to Bid. The bid opening can be viewed live via the GoToMeeting information shown below. An abstract of the amounts of the base bids and major alternatives, if any, will be made available to bidders after opening the bids.

The bid opening can be viewed live via GoToMeeting as follows:
Please join my meeting from your computer, tablet, or smartphone.

https://meet.goto.com/388291869

You can also dial in using your phone.
United States (Toll Free): 1 877 309 2073

Access Code: 388-291-869

Get the app now and be ready when your first meeting starts: https://meet.goto.com/install

ARTICLE 17 – BIDS REMAIN SUBJECT TO ACCEPTANCE

17.1 All bids will remain subject to acceptance for the period of time stated in the General Conditions, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

ARTICLE 18 – EVALUATION OF BIDS AND AWARD OF CONTRACT

18.1 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner further reserves the right to reject the Bid of any Bidder whom it finds, after reasonable inquiry and evaluation, to not be responsible. Owner may also reject the Bid of any Bidder if Owner believes that it would not be in the best interest of the Project to make an award to that Bidder. Owner also reserves the right to waive all informalities not involving price, time, or changes in the Work and to negotiate contract terms with the Successful Bidder.

18.2 More than one Bid for the same Work from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing that any Bidder has an interest in more than one Bid for the Work may be cause for disqualification of that Bidder and the rejection of all Bids in which that Bidder has an interest.

18.3 In evaluating Bids, Owner will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices and other data, as may be requested in the Bid Form or prior to the Notice of Award.

18.4 In evaluating Bidders, Owner will consider the qualifications of Bidders and may consider the qualifications and experience of Subcontractors, Supplier, and other individuals or entities proposed for those portions of the Work for which the identify of Subcontractors, Suppliers, and other individuals or entities must be submitted as provided in the Supplementary Conditions.

18.5 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders, proposed Subcontractors, Suppliers, individuals, or

entities to perform the Work in accordance with the Contract Documents.

18.6 Bidder agrees to waive any claim it has or may have against the Owner and the respective employees arising out of or in connection with the administration, evaluation or recommendation of any Bid.

18.7 If the Contract is to be awarded, Owner will award the Contract to the lowest responsible responsive Bidder whose Bid is in the best interests of the Project.

ARTICLE 19 – CONTRACT SECURITY AND INSURANCE

19.1 The General Conditions set forth Owner's requirements as to performance and payment bonds and insurance. When the Successful Bidder delivers the executed Agreement to Owner, it shall be accompanied by such bonds and a certificate of insurance.

ARTICLE 20 – SIGNING OF AGREEMENT

20.1 When Owner gives a Notice of Award to the Successful Bidder, it shall be accompanied by the required number of unsigned counterparts of the Agreement with the other Contract Documents which are identified in the Agreement as attached thereto. Within ten (10) days thereafter, Successful Bidder shall sign and deliver the required number of counterparts of the Agreement and attached documents to Owner. Within ten (10) days thereafter, Owner shall deliver one fully signed counterpart to Successful Bidder with a complete set of Drawings with appropriate identification.

END OF SECTION

SECTION 00 41 13

CITY OF DE PERE

BID FORM

PROJECT 23-14

This bid, submitted by the undersigned Bidder to the City of De Pere, in accordance with the Advertisement to Bid, which will be received until 1:00 PM, Thursday December 15, 2022 is to furnish and deliver all materials, and to perform and do all work on the project designated per Section 01 10 00 Summary of Work.

Bidder has examined and carefully prepared the bid from the plans and specifications and has checked the same in detail before submitting said proposal or bid; and that said bidder or bidder's agents, officer or employees have not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with this proposal or bid.

Bidder has examined and carefully studied the Bidding Documents, other related data identified in the Bidding Documents, and the following Addenda, receipt of which is hereby acknowledged:

Addendum No.	Addendum Date
_____	_____
_____	_____

BASIS OF BID:

Bidder will complete the Work in accordance with the Contract documents for the following price(s):

As stated in the attached Unit Price Bid Schedule.

Unit Prices have been computed in accordance with the General Conditions.

Bidder acknowledges that estimated quantities are not guaranteed and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

TOTAL BID PRICE: $_____

ATTACHMENTS TO THIS BID

The following documents are submitted with and made a condition of this Bid:

A. Required Bid Security
B. Unit Price Bid Schedule (Section 00 41 43)
C. Tabulation of Subcontractors (Section 00 43 36)

BID SUBMITTAL

This Bid is submitted by _____ of _____,_____

The Bidder, being duly sworn, does dispose that they are an authorized representative of

Bidder, if Bidder is:

An Individual

Name (typed or printed): _____

By: _____
(Individual's signature)

Doing business as: _____

A Partnership

Partnership Name: _____

By: _____
(Signature of general partner – attach evidence of authority to sign)

Name (typed or printed): _____

A Corporation

Corporation Name: _____

State of Incorporation: _____

Type (General Business, Professional, Service, Limited Liability): _____

By: _____
(Signature – attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

(CORPORATE SEAL)

Attest _____

Date of Qualification to do business in Wisconsin is ___/___/___.

Joint Venture

Name of Joint Venture: _____

First Joint Venturer Name: _____ (SEAL)

By: _____

(Signature of first joint venture partner – attach evidence of authority to sign)

Name (typed or printed):_____

Title: _____

Second Joint Venturer Name: _____ (SEAL)

By:_____

(Signature of second joint venture partner – attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

(Each joint venturer must sign. Manner of signing for each individual, partnership, and corporation that is a party to joint venture should be in manner indicated above.)

Bidder's Business Address _____

_____

Phone No. _____ Fax No. _____

E-mail _____

SUBMITTED on _____, 20____.

State Contractor License No. _____(if applicable)

SECTION 00 41 43

CITY OF DE PERE

PROJECT 23-14

BID SCHEDULE – UNIT PRICE

ITEM	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT BID
SC-01	Demolition of Existing Boilers and Circulation Pumps	LS	1	$	$
SC-02	Installation of New Boilers	LS	1	$	$
SC-03	Replacement of Circulation Pumps	LS	1	$	$
				TOTAL AMOUNT BID	$

SECTION 00 43 13

CITY OF DE PERE

BID BOND

KNOW ALL MEN BY THESE PRESENTS: That _____,

as Principal, hereinafter called Principal, and _____,

as Surety, hereinafter called Surety, are held and firmly bound unto the City of De Pere, a municipal corporation of the State of Wisconsin, as Obligee, hereinafter called City, in the amount of _____ dollars ($_____) for the payment whereof Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presence.

WHEREAS, Principal has made a proposal to the City for furnishing all materials, labor, tools, equipment and incidentals necessary to complete the work of Project 23-14 in accordance with drawings and specifications prepared by the Director of Public Works of said City, which proposal is by reference made a part hereof, and is hereinafter referred to as the BID.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if Principal shall be awarded the contract for said project and Principal shall enter into a contract in accordance with the BID, then this obligation shall be null and void; otherwise it shall remain in full force and effect, provided that:

1. The liability of Surety shall in no event exceed the penalty of this bond.

2. Any suits at law or proceedings, in equity brought or to be brought against Surety to recover any claim hereunder shall be executed within six (6) months from the date of this instrument.

Signed and sealed this _____ day of _____, 20____.

In the presence of:

_____ _____
WITNESS PRINCIPAL (SEAL)

_____ _____
WITNESS SURETY (SEAL)

SECTION 00 43 36

TABULATION OF SUBCONTRACTORS

The following information is submitted which gives the name, business address, and portion of work for each subcontractor that will be used in the work if the bidder is awarded the contract, and no subcontractor doing work in excess of one-half of one percent of the total amount of the bid and who is not listed will be used without the written approval of the Engineer. Additional numbered pages outlining this portion of the proposal may be attached to this page.

PORTION OF WORK	BUSINESS NAME	BUSINESS ADDRESS

SECTION 00 51 00

NOTICE OF AWARD

(Contractor)
(Contractor Name)
(Address)
(Address)

Project Description: 23-14 City Hall Boiler Replacement

The City has considered the proposal submitted by you dated (BID DATE) for the above-described project in response to its Advertisement for Bids dated November 25, 2022 and December 2, 2022.

You are hereby notified that the Common Council of the City of De Pere has accepted your bid of (Contract Amount $_____.00).

You are required to execute the Contract and furnish the required Performance Bond, Payment Bond and Certificates of Insurance within ten (10) calendar days from the date of this notice to you.

If you fail to execute said Agreement and to furnish said bonds within ten (10) days from the date of this notice, said City will be entitled to consider all your rights arising out of the City's acceptance of your bid as abandoned and as a forfeiture of your Bid Bond. The City will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this NOTICE OF AWARD to the City.

Dated this _____ day of _____2023.

_____
DEPARTMENT OF PUBLIC WORKS

BY: Eric P. Rakers, P.E.
City Engineer

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF AWARD is hereby acknowledged by:

_____, this the _____ day of _____, 20___

By:_____

Title:_____

SECTION 00 52 13

CONTRACT

This Contract, made and entered into this day _____ (date to be affixed by City), by and between (Contractor Name), hereinafter called Contractor, and the City of De Pere, a municipal corporation of the State of Wisconsin, hereinafter called City.

WITNESSETH: That, in consideration of the covenants and agreements herein contained, to be performed by the parties hereto, and of the payments hereinafter agreed to be made, it is mutually agreed as follows:

ARTICLE I - SCOPE OF WORK

The Contractor shall furnish all materials and all equipment and labor necessary, and perform all work shown on the drawings and described in the specifications for the project entitled Project 23-14 City Hall Boiler Replacement, all in accordance with the requirements and provisions of the following documents, which are hereby made a part of this Contract:

(a) Advertisement for Bids, dated November 25, 2022 and December 2, 2022.

(b) Drawings designated for Project 23-14 City Hall Boiler Replacement dated November 25, 2022.

(c) City of De Pere 2022 Construction Specifications.

(d) Special Provisions dated November 25, 2022.

(e) Proposal submitted by (Contractor Name) dated Bid Date.

(f) Addenda No. dated

ARTICLE II - TIME OF COMPLETION

(a) The work to be performed under the Contract shall be commenced within (number spelled out) (__) calendar days after receipt of written notice to proceed. The work shall be completed within (Number spelled out) (__) calendar days) or (specific calendar dates) after receipt of Notice to Proceed.

(b) Time is of the essence with respect to the date of completion herein above stated. Failure to complete the work within the number of calendar days stated in this Article, or interim dates included in the work sequence in Section 01 10 00, Summary of Work, including any extensions granted thereto, shall entitle the City to deduct from the monies due the Contractor an amount equal to Update based on 00 70 00 - General Conditions (Page 27)($) per day for each calendar day of delay in the completion of the work. Such amount shall be considered and treated not as a penalty but as liquidated damages, which the City will sustain, by failure of the Contractor to complete the work within the time stated.

ARTICLE III - PAYMENT

(a) The Contract Sum. The City shall pay to the Contractor for the performance of the Contract the amounts determined for the total number of each of the following units of work completed at the unit price stated thereafter. The number of units contained in this schedule is approximate only, and the final payment shall be made for the actual number of units that are incorporated in or made necessary by the work covered by the Contract.

(b) Progress Payments. The City shall make payments on account of the Contract as follows:

1. On not later than the fourth Friday of every month the Contractor shall present to the City an invoice covering an estimate of the amount and proportionate value of the work done as verified by the City under each item of work that has been completed from the start of the job up to and including the fourth Friday of the preceding month, and the value of the work so completed determined in accordance with the schedule of unit prices for such items, together with such supporting evidence as may be required. This invoice shall also include an allowance for the cost of such materials and equipment required in the permanent work as have been delivered to the site but not as yet incorporated in the work.

2. On not later than the third week of the following month, the City shall, after deducting previous payments made, pay to the Contractor 95% of the amount of the approved invoice, retaining 5% of the estimate of work done until 50% of the work has been completed. At 50% completion of the work, the previous retainage shall not yet be paid, but further partial payments shall be made in full to the contractor without additional retainage being taken unless the engineer certifies that the work is not proceeding satisfactorily. If the work is not proceeding satisfactorily, additional amounts may be retained. After substantial completion, an amount retained may be paid to the contractor, keeping retained only such amount as is needed for the remaining work.

3. The Contractor shall notify the City in writing when all work under this Contract has been completed. Upon receipt of such notice the City shall, within a reasonable time, make the final inspection and issue a final certificate stating that the work provided for in this Contract has been completed and is accepted under the terms and conditions thereof, and that the entire balance due the Contractor as noted in said final certificate is due and payable. Before issuance of the final certificate the Contractor shall submit evidence satisfactory to the City that payrolls, material bills, and other indebtedness connected with the work under this Contract have been paid. The City shall make final payment as soon after issuance of the final certificate as practicable.

ARTICLE IV – CONTRACT DOCUMENTS

(a) Contents

1. The Contract documents consist of the following:
   a. This Contract (pages 00 52 13-1 to 0052-13-3, inclusive).
   b. Payment bond (pages 00 61 13-1 to 00 61 13-2, inclusive).
   c. Performance bond (page 00 61 16-1).
   d. General Conditions (pages 00 70 00-1 to 00 70 00-27, inclusive).

e. Specifications as listed in the table of contents of the Project Manual.
f. Drawings consisting of ___ sheets with each sheet bearing the following general title: ___[or] the Drawings listed on attached sheet index.
g. Addenda (numbers ___ to ___ inclusive), dated_____.
h. Exhibits to this Agreement (enumerated as follows):
   1) Contractor's Bid (pages 00 41 13-1 to 00 41 13-3, inclusive).
   2) Bid Schedule – Unit Prices (Pages 00 41 43-1 to 00 41 43- , inclusive).
   3) Tabulation of Subcontractors (page 00 43 36-1).
   4) Documentation submitted by Contractor prior to Notice of Award (00 51 00-1).
i. The following which may be delivered or issued on or after the Effective Date of the Agreement and are not attached hereto:
   1) Notice to Proceed (Page 00 55 00-1).
   2) Change Orders.

2. The documents listed in Paragraph (a) Contents, are attached to this Agreement (except as expressly noted otherwise above).

3. There are no Contract Documents other than those listed above in this Article IV.

IN WITNESS WHEREOF, the parties hereto have executed this Contract, the day and year first written above.

_____ _____
(WITNESS) (CONTRACTOR) (SEAL)

_____ BY: _____
(WITNESS)

_____
(TITLE)

BY: _____

_____
(TITLE)

CITY OF DE PERE (SEAL)

Approved as to Form By: _____ (City Attorney)

Sufficient funds are available to provide for the payment of this obligation.

_____
(COMPTROLLER)

BY:_____ BY:_____
(MAYOR) (CITY CLERK)

SECTION 00 55 00

NOTICE TO PROCEED

Date: _____

(CONTRACTOR NAME)
(ADDRESS)
(ADDRESS)

Project Description: 23-14 City Hall Boiler Replacement

You are hereby notified to commence work in accordance with the CONTRACT dated _____, within ten (10) days of this Notice. All work under this contract shall be completed within _____(NUMBER IN WORDS) (__#) consecutive days from the start of construction or _____(DATE) whichever comes first.

_____
Department of Public Works

By: Eric P. Rakers, P.E.
Title: City Engineer

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by

_____, this _____ day of _____, 20___.
Company Name

_____
Signature

BY: _____
Printed Name

TITLE: _____

SECTION 00 61 13

CITY OF DE PERE

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: That (CONTRACTOR NAME), as Principal, hereinafter called Contractor, and _____, as Surety, hereinafter called Surety, are held and firmly bound unto the City of De Pere, a municipal corporation of the State of Wisconsin, as Obligee, hereinafter called the City, for the use and benefit of claimants as herein below defined in the amount _____ _____(CONTRACT AMT. SPELLED OUT) ($_____) for the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Contractor has by written agreement dated _____ (date to be affixed by City) entered into a contract with City for Project 23-14, in accordance with drawings and specifications prepared by the Director of Public Works of said City, which contract is by reference made a part hereof, and is hereinafter referred to as the CONTRACT.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if Contractor shall promptly make payments to all claimants as hereinafter defined, for all labor and material used or reasonably required for use in the performance of the CONTRACT, then this obligation shall be null and void; otherwise it shall remain in full force and effect, subject, however, to the following conditions.

1. A claimant is defined as one having a direct contract with Contractor or with a subcontractor of Contractor for labor, material, or both, used or reasonably required for use in the performance of the contract, labor and material being construed to include that part of water, gas, power, lights, heat, oil, gasoline, telephone service, or rental of equipment directly applicable to the contract.

2. The above named Contractor and Surety hereby jointly and severally agree with the City that every claimant as herein defined, who has not been paid in full before the expiration of a period of ninety (90) days after the date on which the last of such claimant's work or labor was done or performed, or materials were furnished by such claimant may sue on this bond for the use of such claimant in the name of the City, prosecute the suit to final judgment for such sum or sums as may be justly due claimant, and have execution thereon, provided, however, that the City shall not be liable for the payment of any costs or expenses of any such suit.

3. No suit or action shall be commenced hereunder by any claimant:

   a. Unless claimant shall have given written notice to any two of the following: The Contractor, the City, or the Surety above named, within ninety (90) days after such claimant did or performed the last of the work or labor, or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the work or labor was done or performed. Such notice shall be served by mailing the same by registered mail, postage prepaid, in an envelope addressed to the Contractor, City, or Surety, at any place where an office is regularly maintained for the transaction of business, or served in any manner in which legal process may be served in the State of Wisconsin, save that such service need not be made by a public officer.

   b. After the expiration of one (1) year following the date on which Contractor ceased work on said CONTRACT.

c. Other than in a state court of competent jurisdiction in and for the County or other political subdivision of the state in which the project, or any part thereof, is situated, or in the United States District Court for the district in which the project, or any part thereof, is situated, and not elsewhere.

4. The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder, inclusive of the payment by Surety of mechanics' liens, which may be filed or recorded against said improvement, whether or not claim for the amount of such lien be presented under and against this bond.

SIGNED AND SEALED THIS _____ DAY OF _____, 20___.

In Presence of:

_____ _____
(WITNESS) (CONTRACTOR) (SEAL)

_____ _____
(WITNESS) (SURETY) (SEAL)

SECTION 00 61 16

CITY OF DE PERE

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: That (CONTRACTOR'S NAME), as Principal, hereinafter called Contractor, and _____, as Surety, hereinafter called Surety, are held and firmly bound unto the City of De Pere, a municipal corporation of the State of Wisconsin, as Obligee, hereinafter called City, in the amount of _____(AMOUNT WRITTEN OUT) ($_____) for the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assign, jointly and severally, firmly by these presents.

WHEREAS, Contractor has by written agreement dated _____ (date to be affixed by City), entered into a contract with the City for Project 23-14, in accordance with drawings and specifications prepared by the Director of Public Works of said City, which contract is by reference made a part hereof, and is hereinafter referred to as the CONTRACT.

NOW THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if the Contractor shall promptly and faithfully perform said CONTRACT, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

Whenever Contractor shall be, and declared by the City to be in default under the CONTRACT, the City having performed City's obligations there under, the Surety may promptly remedy the default, or shall promptly

1. Complete the CONTRACT in accordance with its terms and conditions or

2. Obtain a bid or bids for submission to City for completing the CONTRACT in accordance with its terms and conditions, and upon determination by the City and Surety of the lowest responsible bidder, arrange for a contract between such bidder and City make available as work progresses (even though there should be a default or succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the contract price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "balance of the contract price" as used in this paragraph shall mean the total amount payable by City to Contractor under the CONTRACT and any amendments thereto, less the amount properly paid by City to Contractor.

Any suit under this bond must be instituted before the expiration of two (2) years from the date on which final payment under the CONTRACT falls due. No right of action shall accrue on this bond to or for the use of any person or corporation other than the owner named herein or the heirs, executors, administrators or successors of City.

SIGNED AND SEALED THIS _____ DAY OF _____, 20_____.

In the Presence of:

_____ _____

(WITNESS) (CONTRACTOR) (SEAL)

_____ _____

(WITNESS) (SURETY) (SEAL)

SECTION 00 62 76

APPLICATION FOR PAYMENT

Contractor's Application for Payment No.

Application Period:	Application Date:
Owner: City of De Pere	Contractor:
	Contractor's Project No.:

APPLICATION FOR PAYMENT

Change Order Summary

Approved Change Orders		
Number	Additions	Deductions
Total	$0.00	$0.00
NET CHANGE BY CHANGE ORDERS:		$0.00

1.	ORIGINAL CONTRACT PRICE:.....	
2.	Net change by Change Orders and Written Amendments (+ or -):.....	$0.00
3.	CURRENT CONTRACT PRICE (Line 1 plus Line 2):.....	$0.00
4.	Total completed and stored to date Column H on Progress Estimate:.....	$0.00
5.	Retainage (per Agreement):	
a.	Work Completed - Column H (95% up to 50% of Contract or 2.5% of 100% of Contract)	$0.00
6.	AMOUNT ELIGIBLE TO DATE (Line 4 minus 5).....	$0.00
7.	LESS PREVIOUS PAYMENTS (Line 6 from prior Application).....	$0.00
8.	AMOUNT DUE THIS APPLICATION (Line 6 minus Line 7).....	$0.00

CONTRACTOR'S CERTIFICATION

The undersigned Contractor certifies that:(1) all previous progress payments received from Owner on account of Work done under Contract have been applied on account to discharge Contractor's legitimate obligations incurred in connection with Work covered by prior Applications for Payment; (2) title of all Work, materials and equipment incorporated in said Work or otherwise listed in or covered by this Application for Payment will pass to Owner at time of payment free and clear of all Liens, security interests and encumbrances (except such as are covered by a Bond acceptable to Owner indemnifying Owner against any such Liens, security interest or encumbrances); and (3) all Work covered by the Application for Payment is in accordance with the Contract Documents and is not defective.

By:	Date:

Payment of: $ _____
(Line 8 or other - attach explanation of other amount)

is recommended by: _____ _____
(Contractor) (Date)

Payment of: $ _____
(Line 8 or other - attach explanation of other amount)

is recommended by: _____ _____
(Owner) (Date)

SECTION 00 65 16

CERTIFICATE OF SUBSTANTIAL COMPLETION

Project:	
Owner:	Owner's Contract No.:
Contractor:	

This [tentative] [definitive] Certificate of Substantial Completion applies to:
☐All Work under the Contract Documents: ☐The following specified portions of the Work:

_____
Date of Substantial Completion

The Work to which this Certificate applies has been inspected by authorized representatives of Contractor and Engineer, and found to be substantially complete. The Date of Substantial completion of the Project or portion thereof designated above is hereby declared and is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below.

A [tentative] [definitive] list of items to be completed or corrected is attached hereto. This list may not be all-inclusive, and 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 responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance, and warranties shall be as provided in the Contract Documents except as amended as follows:

☐Amended Responsibilities ☐ Not Amended

Owner's Amended Responsibilities:

Contractor's Amended Responsibilities:

The following documents are attached to and made part of this Certificate:

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract Documents.

Executed by Engineer Date

Accepted by Contractor Date

SECTION 01 10 00

SUMMARY OF WORK

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes
   1. References
   2. Work Covered by the Contract Documents
   3. Work Sequence/Schedule
   4. Use of Premises
   5. Warranty
   6. Miscellaneous Provisions

1.2 REFERENCES

A. General Specifications. The work under this contract shall be in accordance with the City of De Pere, 2022 Construction Specifications and these Special Provisions and plans, and the latest edition of the Wisconsin Department of Transportation Standards Specifications for Highway and Structure Construction, where referenced in the City Specifications.

B. Definitions. Any reference to the "state" or the "department" in said Standard Specifications shall mean the "City of De Pere" for the purposes of this contract.

C. Industry Standards
   1. Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
   2. Comply with standards in effect as of date of the Contract Documents, unless otherwise indicated.
   3. If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement.
   4. The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements.
   5. Each section of the specifications generally includes a list of reference standards normally referred to in that respective section. The purpose of this list is to furnish the Contractor with a list of standards normally used for outlining the quality control desired on the project.

The lists are not intended to be complete or all inclusive, but only a general reference of standards that are regularly referred to.

6. Each entity engaged in construction on the Project shall be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents. Where copies of standards are needed to perform a required construction activity, obtain copies directly from the publication source and make them available on request.

1.3 WORK COVERED BY THE CONTRACT DOCUMENTS

A. Project Identification
   1. Project Location
      a. De Pere City Hall
         335 S. Broadway Street
         De Pere, WI 54115
   2. Work will be performed under the following prime contract:
      a. Project 23-14 City Hall Boiler Replacement

B. The Work includes:
   1. Demolition of boilers, circulation pumps and associated appurtenances.
   2. Installation of boilers and associated appurtenances.
   3. Replacement of circulation pumps.

1.4 WORK SEQUENCE/SCHEDULE

A. Project shall be completed by August 31, 2023.

B. Conduct construction activities to maintain access to City Hall with minimal disruption to municipal operations.

C. No work may occur on the following holidays:
   1. Memorial Day – Monday, May 29, 2023
   2. Independence Day – Tuesday, July 4, 2023

1.5 USE OF PREMISES

A. Contractor shall have full use of the premises for construction operations, including use of the Project Site, as allowed by law, ordinances, permits, easement agreements and the Contract documents.

B. Contractor’s use of premises is limited only by Owner’s right to perform work or to retain other contractors on portions of the Project.

C. Provide protection and safekeeping of material and products stored on or off the premises.

D. Move any stored material or products which interfere with operations of Owner or other Contractors.

1.6 WARRANTY

A. The Contractor warrants and guarantees to the City that all work shall be in accordance with the Contract Documents and will not be defective. Prompt notice of all defects will be given to the Contractor. All defective work, whether or not in place, may be rejected, corrected or accepted as provided in this proposal.

B. If within one (1) year after the date of contract work completion or such longer period of time as may be prescribed by law or by the terms of any applicable special guarantee required by the Contract Documents or by a special provision of the Contract Documents, any work is found to be defective, the Contractor shall comply in accordance with the City's written instructions. These written instructions will include either correcting such defective work or, if it has been rejected by the City, removing it from the site and replacing it with non-defective work. If the Contractor does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk or loss or damage, the City may have the defective work corrected or the rejected work removed and replaced. All direct and indirect costs of correction or removal and replacement of defective work, including compensation for additional professional services, shall be paid by the Contractor.

1.9 MISCELLANEOUS PROVISIONS

A. Adhere to the special provisions as listed in the appendices.

B. Coordinate material staging and work area impacts with Tom Blohowiak, Maintenance Supervisor.

PART 2 – PRODUCTS

PART 3 – EXECUTION

END OF SECTION

SECTION 01 22 05

MEASUREMENT AND PAYMENT SPECIAL CONSTRUCTION

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes:

	Bid Item No.
1. Demolition of Existing Boilers and Circulating Pumps	SC-01
2. Installation of New Boilers	SC-02
3. Replacement of Circulating Pumps	SC-03

B. Unit Prices include:
   1. Defined work for each Unit Price Item which will provide a functionally complete Project when combined with all unit price items. If there are specific work items which the Contractor believes are not identified in any Unit Price Item, but is required to provide a functionally complete Project, then the identified specific work items shall be included in the appropriate Unit Price Item.
   2. The method of measurement for payment.
   3. The price per unit for payment.

1.2 GENERAL WORK ITEMS

A. Include with the appropriate Unit Price Item the following work items which are common to the Unit Price Items for special construction.

B. If there is a specific Unit Price Item for any of the following items, then the work item shall be included with that specific unit price item.
   1. Loading, hauling and disposing of surplus material.
   2. Maintenance, protection, replacement and/or repair of facilities not designated for alteration on the Site beyond the limits identified.
   3. Dust control.
   4. Regulatory requirements.
   5. Quality assurance and quality control testing and inspections.
   6. Shop drawings and other submittals.

1.3 DEMOLITION OF EXISTING BOILERS AND CIRCULATING PUMPS

A. The unit price for Demolition of Existing Boilers and Circulating Pumps work includes:
   1. General Work Items of Article 1.2.
   2. Removal of boilers, circulating pumps and associated appurtenances per the plans and specifications.

B. Measurement for payment will not be made.

C. The unit of measurement for payment is lump sum.

1.4 INSTALLATION OF NEW BOILERS

A. The unit price for Installation of New Boilers work includes:
   1. General Work Items of Article 1.2.
   2. Installation of new boilers and associated appurtenances per the plans and specifications.

B. Measurement for payment will note made.

C. The unit of measurement for payment is lump sum.

1.5 REPLACEMENT OF CIRCULATING PUMPS

A. The unit price for Replacement of Circulating Pumps work includes:
   1. General Work Items of Article 1.2.
   2. Replacement of circulating pumps and associated appurtenances per the plans and specifications.

B. Measurement for payment will not be made.

C. The unit of measurement for payment is lump sum.

END OF SECTION

SECTION 01 29 00

PAYMENT PROCEDURES

PART 1 – GENERAL

1.1 SUMMARY

A. This section includes:
   1. Administrative and procedural requirements necessary to prepare and process Applications for Payment.

1.2 SCHEDULE OF VALUES

A. Unit Price work will be the Schedule of Values used as the basis for reviewing Applications for Payment.

1.3 APPLICATIONS FOR PAYMENT

A. Each Application for Payment shall be consistent with previous applications and payments as recommended by the Engineer and approved by Owner.

B. The date for each progress payment should be the 3rd Wednesday of each month. The period covered by each Application for Payment starts on the day following the end of the preceding period and ends the 4th Friday of the Month.

C. Use forms provided by Engineer for Applications for Payment. Sample copy of the Application for Payment and Continuation Sheet is included in Section 00 62 76.

D. Application Preparation Procedures
   1. When requested by the Contractor, the Engineer will determine the actual quantities and classifications of Unit Price Work performed.
      a. Preliminary determinations will be reviewed with the Contractor before completing Application for Payment.
      b. Engineer will complete the Application for Payment based on Engineer's decision on actual quantities and classifications.
      c. Engineer will submit three original copies of Application for Payment to Contractor for certification of all three original copies.
      d. Contractor shall submit signed Application for payment to Owner for approval within time frame agreed to at the Preconstruction Conference.
   2. If payment is requested for materials and equipment not incorporated in the Work, then the following shall be submitted with the Application for Payment:
      a. Evidence that materials and equipment are suitably stored at the site or at another location agreed to in writing.

b. A bill of sale, invoice, or other documentation warranting that the materials and equipment are free and clear of all liens.
c. Evidence that the materials and equipment are covered by property insurance.

3. Complete every entry on form. Execute by a person authorized to sign legal documents on behalf of Contractor.

E. With each Application for Payment, submit waivers of liens from subcontractors and suppliers for the construction period covered by the previous application.
1. Submit partial waivers on each item for amount requested before deduction for retainage on each item.
2. When an application shows completion for an item, submit final or full waivers.
3. Owner reserves the right to designate which entities involved in the Work shall submit waivers.
4. Submit final Application for Payment with or preceded by final waivers from every entity involved with performance of the Work covered by the application.
5. Submit waivers of lien on forms executed in a manner acceptable to Owner.

F. The following administrative actions and submittals shall precede or coincide with submittal of first Application for Payment:
1. List of subcontractors.
2. Schedule of Values (For Lump Sum Work).
3. Contractor's construction schedule.

G. Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted including, but not limited, to the following:
1. Evidence of completion of Project closeout requirements.
2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
3. Updated final statement, accounting for final changes to the Contract Sum.
4. Consent of Surety to Final Payment.
5. Final lien waivers as evidence that claims have been settled.
6. Final liquidated damages settlement statement.

PART 2 – PRODUCTS

PART 3 – EXECUTION

END OF SECTION

SECTION 01 33 00

SUBMITTALS

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for submittals:
   1. Progress Schedule.
   2. Schedule of Shop Drawings and Sample Submittals.
   3. Shop Drawings.

B. Failure to meet Submittal requirements to the satisfaction of the Engineer will constitute unsatisfactory performance of the work in accordance with the Contract Documents, therefore, the Engineer may recommend to the Owner that all or a portion of payments requested during the corresponding pay period be withheld until these requirements are met.

1.2 SUBMITTAL PROCEDURES

A. Coordination: Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.
   1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
   2. Coordinate transmittal of different types of submittals for related elements of the work so processing will not be delayed by the need to review submittals concurrently for coordination.
      a. The Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received.
   3. To avoid the need to delay installation as a result of the time required to process submittals, allow sufficient time for submittal review, including time for re-submittals.
      a. Allow two weeks for initial submittal.
      b. Allow two weeks for reprocessing each submittal.
      c. No extension of Contract Time will be authorized because of failure to transmit submittals to the Engineer sufficiently in advance of the work to permit processing.

B. Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.
   1. Assign a reference number to each submittal and re-submittal.
   2. Provide a space approximately four (4) by five (5) inches (100 by 125 mm) on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken.
   3. Include the following information on the label for processing and recording action taken.

a. Project name.
b. Date.
c. Name and address of the Engineer.
d. Name and address of the Contractor.
e. Name and address of the subcontractor.
f. Name and address of the supplier.
g. Name of the manufacturer.
h. Number and title of appropriate Specification Section.
i. Drawing number and detail references, as appropriate.

4. Each submittal shall be stamped by the Contractor indicating that submittal was reviewed for conformance with the Contract Documents. The Engineer will not accept unstamped submittals.

C. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal to the Engineer. The Engineer will not accept submittals received from sources other than the Contractor.
1. On the transmittal, record relevant information and requests for Engineer action. On a form, or separate sheet, record deviations from Contract Document requirements, including variations, limitations, and justifications. Include Contractor's certification that information complies with Contract Document requirements.

1.3 CONTRACTOR'S PROGRESS SCHEDULE

A. Prepare and submit to the Engineer within 10 (ten) days after the Effective Date of the Agreement, four copies of a preliminary progress schedule of the work activities from Notice to Proceed until Substantial Completion.
1. Provide sufficient detail of the work activities comprising the schedule to assure adequate planning and execution of the work, such that in the judgment of the Engineer, it provides an appropriate basis for monitoring and evaluation of the progress of the work. A work activity is defined as an activity which requires substantial time and resources (manpower, equipment, and/or material) to complete and must be performed before the contract is considered complete.
2. The schedule shall indicate the sequence of work activities. Identify each activity with a description, start date, completion date and duration. Include, but do not limit to the following items, as appropriate to this contract:
a. Shop drawing review by the Engineer.
b. Excavation and grading.
c. Asphalt and concrete placement sequence.
d. Restoration.
e. Construction of various segments of utilities.
f. Subcontractor's items of work.
g. Allowance for inclement weather.
h. Contract interfaces, date of Substantial Completion.
i. Interfacing and sequencing with existing facilities and utilities.

j. Sequencing of major construction activities.
k. Milestones and completion dates.

B. Distribution: Following response to the initial submittal, print and distribute copies of the revised construction schedule to the Engineer, Subcontractors, and other parties required to comply with scheduled dates. When revisions are made, distribute to the same parties. Delete parties from distribution when they have completed their assigned portion of the work and are no longer involved in construction activities.

C. Schedule Updating: Revise the schedule after each meeting, event, or activity where revisions have been recognized or made. Issue the updated schedule concurrently with the report of each meeting.

D. Punch List: Prepare and submit to the Engineer within ten (10) days after substantial completion a detailed progress schedule for outstanding work and punch list items.

1.4 SCHEDULE OF SHOP DRAWINGS AND SAMPLE SUBMITTALS

A. Submit four (4) hard copies or electronic copies of preliminary submittal schedule in accordance with the General Conditions of the Contract and as follows:
1. Coordinate submittal schedule with the subcontractors, Schedule of Values, and of products as well as the Contractor's Progress Schedule.
2. Prepare the schedule in chronological order. Provide the following information:
a. Scheduled date for the first submittal.
b. Related Section number.
c. Submittal category (Shop Drawings, Product Data, or Samples).
d. Name of the subcontractor.
e. Description of the part of the work covered.
f. Scheduled date for the Engineer's final release or approval.

B. Distribution: Following response to the initial submittal, print and distribute copies of the revised construction schedule to the Engineer, Subcontractors, and other parties required to comply with scheduled dates. Post copies in the field office. When revisions are made, distribute to the same parties. Delete parties from distribution when they have completed their assigned portion of the work and are no longer involved in construction activities.

C. Schedule Updating: Revise the schedule after each meeting or activity where revisions have been recognized or made. Issue the updated schedule concurrently with the report of each meeting.

1.5 SHOP DRAWINGS

A. Submit newly prepared information drawn accurately to scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or

copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not a Shop Drawing.

B. Collect product data into a single submittal for each element of construction of system. Product data includes printed information, such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams, and performance curves.
   1. Mark each copy to show actual product to be provided. Where printed Product Data includes information on several products that are not required, mark copies to indicate the applicable information. Include the following information:
      a. Manufacturer's printed recommendations.
      b. Compliance with trade association standards.
      c. Compliance with recognized testing agency standards.
      d. Application of testing agency labels and seals.
      e. Notation of dimensions verified by field measurement.
      f. Notation of coordination requirements.

C. Do not use shop drawings without an appropriate final stamp indicating action taken.

D. Submittals: Submit four (4) copies of each required submittal. The Engineer will retain two (2) copies, and return the others to the Contractor marked with action taken and corrections or modifications required.

E. Distribution: Furnish copies of reviewed submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms. Maintain one copy at the project site for reference.
   1. Do not proceed with installation until a copy of the Shop drawing is in the Installer's possession.
   2. Do not permit use of unmarked copies of the Shop Drawing in connection with construction.

1.6 ENGINEER'S ACTION

A. Except for submittals for the record or information, where action and return is required, the Engineer will review each submittal, mark to indicate action taken, and return promptly. The Engineer will stamp each submittal with a uniform action stamp. The Engineer will mark the stamp appropriately to indicate the action taken, as follows:
   1. "No Exceptions Taken": The work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents.
   2. "Make Corrections Noted": The work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents.

3. "Amend and Resubmit": Do not proceed with work covered by the submittal. Resubmit without delay. Do not use, or allow others to use, submittals marked "Amend and Resubmit" at the Project Site or elsewhere where work is in progress.
4. "Rejected – See Remarks": Do not proceed with work covered by the submittal. Resubmit without delay. Do not use, or allow others to use, submittals marked "Rejected and Resubmit" at the Project Site or elsewhere where work is in progress.

B. Unsolicited Submittals: The Engineer will return unsolicited submittals to the sender without action.

PART 2 – PRODUCTS

PART 3 – EXECUTION

END OF SECTION

PROJECT 23-14 APPENDIX

Appendix A

HVAC SYSTEMS SPECIFICATIONS

APPENDIX A

General:
Project shall be site visited to verify actual conditions. All work shall comply with all applicable State and Local Codes and Regulations.

Mechanical contractor shall provide as-built drawings, HVAC system operation and maintenance manuals and training to owner's maintenance personnel.

The temperature control system shall be tested, adjusted and calibrated in compliance with SPS 364.0313. Air and hydronic systems shall be balanced in accordance with the National Environmental Balancing Bureau (NEBB), and SPS 364.0313. Submit (1) one electronic copy of air balancing reports. Submit (1) one electronic copy of shop drawings for approval and (1) one electronic copy of operation & maintenance manuals for all equipment.

Firestopping shall be provided as required to maintain the fire resistance rating of the walls and floors penetrated by the HVAC system components. Firestopping shall meet ASTM E814 requirements.

This will be a turnkey project in which the Mechanical Contractor is responsible for all work associated with the demolition of the existing system and the installation of the new hot water heating plant as shown. This shall include the following:

- General work to provide access to existing shafts and chimney and concrete pads for new boilers.
- Electrical work for removal of existing equipment, relocation of existing conduits as required and installation of new equipment.
- Temperature control work to install new hot water heating plant.
- Pneumatic control work to disconnect existing equipment and cap tubing.

Motors
Motors 1 horsepower and larger shall be premium efficiency. Motors shall meet or exceed efficiency levels per energy code for intended duty. Continuous duty rated at ambient temperature of 104 deg F.

Provide electronic commutation (EC) single phase motors or polyphase motors with variable frequency drive for direct drive applications and all applications requiring speed control.

Motors connected to variable frequency controllers shall have shaft grounding devices the meet the following specified requirements. Bearing isolator or labyrinth seal that includes a built-in grounding ring and brush. The brush shall contain conductive microfibers that completely surround the shaft to discharge any current flowing through it.

Provide AEGIS SGR Bearing Protection Rings as manufactured by Electro Static Technology (EST).

Ductwork Installation

General:

Combustion air ductwork shall be fabricated with galvanized steel. Fabrication and installation of duct and fittings shall be in accordance with SMACNA "HVAC Duct Construction Standards, Metal and Flexible" 1995 edition. Ductwork shall be sealed at all joints, transverse and longitudinal seams and connections in compliance with IMC 603.9 (SMACNA Seal Class A).

Ductwork Pressure Classification:

Unless noted otherwise, construct ductwork to the following specified pressure classifications.

- Combustion air ductwork: 2" w.g. positive and negative air pressure.

Pipe and Fittings

General:

Piping shall be reamed and thoroughly cleaned of scale and dirt before being installed. Provide vents at all high piping points and drains with hose connection at low points. Butterfly valves shall be Nibco LD-2000. Ball valves shall be full port Nibco type S-585.

Heating Hot Water Piping:

Piping 2-1/2" and larger shall be ASTM A53, standard weight schedule 40 black steel pipe with ASTM A234 grade WPB/ANSI B16.9 standard weight, carbon steel fittings. All joints shall be welded construction. Connections to equipment may be grooved type. Piping 2" and smaller shall be ASTM B88 seamless, type L, copper with ANSI B16.22 copper solder joint fittings or ProPress mechanical fittings.

Gas Piping:

Natural gas piping shall be ASTM A53, standard weight schedule 40 black steel pipe. Piping 2" and smaller shall be threaded with ASTM A197/ANSI B16.3 class 150 black malleable iron threaded fittings. Provide gas pressure regulators for each boiler, with a spring having an adjustment range of 3" w.c. to 8" w.c. with an inlet gas pressure of 2 psig. Vent each gas pressure regulator individually to the outside.

Insulation – follow IECC 2018 Table C403.2.10

Insulate the following piping in accordance with Table C403.2.10 of the 2015 International Energy Conservation Code:

Make-up Water (0-60 deg F)	Rigid Fiberglass
Hot Water Heating (141 – 200 deg F)	Rigid Fiberglass

Minimum Pipe Insulation Thickness (In Inches)

Fluid Operating Temperature Range and Usage (deg F)	Insulation Conductivity		Nominal Pipe or Tube Size (inches)				
	Conductivity Btu.in/(hr.ft2.F)	Mean Temperature Rating, deg F	< 1	1 to < 1-1/2	1-1/2 to < 4	4 to < 8	> 8
141 - 200	0.25 – 0.29	125	1.5	1.5	2.0	2.0	2.0
40 - 60	0.21 – 0.27	75	0.5	0.5	1.0	1.0	1.0

Fiberglass insulation shall be 3 lbs/cu.ft. density, ANSI/ASTM C547 'k' value of 0.24 at 75 deg. F mean temperature, with a flame spread rating of 25 or less and a smoke developed rating 50 or less. Provide white kraft faced piping jacket with self-sealing lap. Provide Zeston pre-molded PVC insulation fittings for all piping fittings. Label piping to identify the heating system, with flow directional arrows.

Insulate combustion air ductwork with 3" thick (minimum installed R-12), rigid glass fiber insulation, ANSI/ASTM C612, Class 1, 3 lb/cu.ft. density, 'k' value of 0.24 at 75 deg. F mean temperature. Provide 0.002" foil scrim facing.

High Efficiency Gas-Fired Boilers

Furnish and install high efficiency, sealed combustion, full modulation, gas-fired boilers of size, type, and capacity as noted on the plans. The boilers shall be high efficiency, with modulating combustion air chambers and a 160 psig design pressure. Boilers shall be manufactured by Patterson-Kelley.

The boiler shall be equipped with a natural gas full modulation burner, with a minimum of 5:1 turndown, certified by AGA. Boiler shall be furnished with an insulated jacket. The boiler shall be complete with standard hot water trim, water flow switch, combustion altimeter-thermometer, modulating combustion air blower assembly, low water cut off, high limit aquastat, 60 psig ASME relief valve, operating limit control, ignition transformer, pilot igniter, and all combustion safety controls as required. All boiler control components shall be furnished by boiler manufacturer and wired by the Temperature Control Contractor.

The gas train shall comply with FM and CSD-1 specifications. The gas train shall be factory mounted and wired and include the following components: main entrance shut-off gas cock, low gas pressure switch, high gas pressure switch, main gas regulator, redundant automatic gas valves

and test ports. Each boiler shall include an intermittent gas pilot with pilot gas train. The boiler's positive shutoff step-down gas pressure regulator shall be rated for an inlet gas pressure of 4"w.c. to 14"w.c.

Boiler panel pilot lights shall include power, call-for-heat, low water, main-gas-valve, high/low gas pressure and flame failure. Entire boiler, combustion system and controls shall be U.L. listed

and AGA approved.

Provide a gas piping connection for each boiler consisting of gas valve, 6" dirt leg, union and gas pressure regulator, as required. Provide factory start-up service with start-up report and one year service warranty with an extended 4 year burner parts warranty.

Each boiler shall be vented with Category IV positive pressure vent stack. Vent shall be constructed with an inner wall of AL29-4C stainless steel and an outer wall of aluminized steel, with a 1" annular insulating air space or polypropylene venting system. Vent shall conform to NFPA-54, UL1738, with a maximum operating temperature of 550 deg. F and an internal static pressure of 6" w.g. Install in accordance with manufacturer's instructions. Provide a drip condensation tee fitting at the discharge of each boiler and route to acid neutralizer.

System Cleaning
Clean, flush and treat the hydronic heating hot water system according to the following procedure by HOH Water Technology:

Aluminum Boiler: Cleaning and Treatment
Recommended products: CL-200 Multi-purpose cleaner, CS-32 Closed system pH stabilizer and CS-50 Closed system inhibitor

Procedure:
1. Fill system with fresh water from city water mains. If possible, determine system volume with water meter.
2. Flush system by draining at a total flow rate equal to the fill rate of city water. Operate circulating pumps and open all zone valves to ensure flow through the entire system during this period.
3. Add CL-200 Cleaner to the system at approximately 1/2 gallon per 100 gallons of system volume.
4. Circulate the CL-200 Cleaner through the system for approximately 24 hours (with heat) to 48 hours (without heat); ensuring the **entire** system sees flow.
5. Flush system with city water as described in Step 2. Continue flushing until the system flush water exhibits a conductivity reading equal to the conductivity of the city water. Check system water conductivity at multiple locations, to ensure thorough flushing.
6. Discontinue flushing.
7. Add CS-32 Closed system pH stabilizer. The recommended dosing for a Hot Water System is 1 pound per 100 gallons of system volume.
8. Circulate for 6 hours.
9. Add CS-50 Closed system inhibitor. The recommended dosing for a Hot Water System is 2 gallons per 100 gallons of system volume.

When handling any chemicals, be sure all proper safety precautions are observed and proper protective clothing/equipment is used.

If there are any questions, contact your HOH representative before proceeding.

In-Line Pumps
Furnish and install circulating pumps as shown on the plans. Acceptable manufacturers: Armstrong.

Inline pumps shall be single stage, iron construction with bronze fittings with a working pressure of 125 PSI and operating temperature of 225 F continuous. The pump internals shall be capable of being serviced without disturbing the piping connections. Pump motors shall operate at scheduled rpm and shall be high efficient.

The pump shall employ a mechanical seal with Buna-N carbon rotating element and ceramic stationary seat. The pump shall be resiliently mounted, equipped with oil lubricated journal bearings. The manufacturer is to provide replacement impellers or trimming of impellers to meet capacity requirements indicated on the plans.

The pump shall be factory tested, thoroughly cleaned, and painted with one coat of machinery enamel prior to shipment. A set of installation instructions shall be included with the pump. Heating Contractor shall install the pumps in strict accordance with the manufacturer's instructions.

Provide pressure gauges piped and valved for measuring both suction and discharge pressure, complete with shutoff gauge valves.

Air Control
Air separator shall be installed in supply piping and shall be Caleffi 551 Series. The unit shall be constructed for 125 PSI working pressure and stamped with the ASME "U" symbol. The Contractor shall remove and clean the unit after the initial cleaning and again in 30 days. A blowdown connection shall be provided to facilitate routine cleaning.

Install high capacity air vent in air outlet.

Expansion Tanks
Tanks shall be constructed according to requirements of ASME for 125 PSI service. Securely support tanks in place where shown. Expansion tanks shall be diaphragm, bladder or standard compression type tanks as scheduled.

Inline Supply Fans
Furnish and install Thermotek, Penn, Cook, Acme or Greenheck supply fan as scheduled on the drawings. All components shall be AMCA approved and capacities shall be AMCA rated and bear the AMCA seal.

Temperature Controls
Extend existing direct digital control (DDC) system as required to incorporate new boilers, primary pumps and secondary pumps. Coordinate type of space temperature sensor control function with the owner.

Provide DDC control operating information consisting of system control drawings, wiring diagrams, written detailed sequence of HVAC component system operation, summary listing of DDC control points, engineering data for each control system component with size and selection. Submit 6 copies (one electronic) of DDC submittals for approval.

All low voltage wiring shall be plenum rated thermostat wire. All line voltage wiring required to complete the DDC control system, such as electrical interlocks, shall be run in thin wall conduit.

All setpoints defined within the sequence of operations shall be fully adjustable via the BAS system user interface.

Mechanical Contractor shall provide and install the following control components:

- Low voltage wiring necessary for boilers to be cascaded together
- Boiler header sensor located in secondary piping
- Low voltage wiring necessary to connect header sensor to master boiler
- Boiler outdoor air sensor on north side of building wired to master boiler
- Communication protonode wired into master for connection to BAS system
- Bus wiring between system pumps

Controls Contractor shall provide and install the following components:

- BAS System to enable/disable and monitor boilers (boilers to operate under their own control through boiler panel).
- BAS system to enable/disable system pumps and monitor (pumps to operate under their own controls)
- BAS Contractor shall be on-site for start-up/Owner training to make sure all points are visible and communication is operating correctly.
- All alarms shall be reported through the BAS system.

TEMPERATURE CONTROL SEQUENCE OF OPERATIONS

<u>Boilers B-3 and B-4, Boiler Pumps BP-5 and BP-6:</u>
Two hot water heating boilers are designed to satisfy the heating requirements for the building with redundancy. Upon failure, the standby boiler shall be activated to satisfy the heating load.

Upon demand for heat, the lead boiler shall be energized to maintain the supply water temperature. DDC system shall include monitoring of modulating boiler burner control. Control shall include interlock of the respective boiler's primary pump to start. Boiler pumps shall operate at constant flow. Boiler pump shall run for five (5) minutes after boiler has been de-energized. Provide boiler and primary pump lead-lag control and alarm for boiler and pump failure.

Provide a DDC indoor-outdoor reset (ratio and temperature range adjustable) to reset the hot water supply temperature in reverse proportion to outdoor air temperature by modulating the boilers.

The schedule shall be as the outside air varies from 10 deg F to 60 deg F, the secondary hot water supply temperature shall vary from 180 deg F to 120 deg F (adjustable).

Control contractor shall wire factory boiler operating controls, including boiler low water cut-off control and install control devices required by the boiler manufacturer.

Secondary pumps HWP-7 and HWP-8 shall be provided with lead-lag control with pump failure indication, audible alarm and DDC alarm point through the BAS system. A differential pressure switch across the pumps shall indicate pump failure and start the standby pump. A heating water differential pressure sensor shall control the variable frequency drives of the pumps HWP-7 & HWP-8 by varying the speed of their motors to maintain a differential pressure of 7 psig (adjustable).

Inline Combustion Air Supply Fan, ISF-1:
Upon a call for heat, the inline combustion air supply fan shall be energized and shall operate continuously during boiler burner operation.

Execution
This Contractor shall do all cutting necessary for the passage of ducts. This Contractor shall take all necessary precautions to protect his work from damage or injury until the completion and final acceptance of his work.

This HVAC Contractor must instruct the Owner and his representatives in the proper operating techniques of the system. The Contractor shall provide Owner with Operating & Maintenance Manuals.

The Contractor must install piping, ductwork and equipment to prevent transmission of noise.

The Heating Contractor shall guarantee the entire system against all defects for a period of one (1) year from date of final acceptance.

APPENDIX B

CITY HALL BOILER REPLACEMENT PLANS

CITY OF DE PERE

CITY HALL BOILER REPLACEMENT PROJECT

335 S BROADWAY, DE PERE, WI 54115

DUCT SEALING (IECC 403.2.9)

SEAL DUCTWORK IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS, TABLE 1-1, SEAL CLASS A.

ALL JOINTS, LONGITUDINAL AND TRANSVERSE SEAMS AND CONNECTIONS IN DUCTWORK SHALL BE SECURELY FASTENED AND SEALED WITH WELDS, GASKETS, MASTICS (ADHESIVES), MASTIC-PLUS-EMBEDDED-FABRIC SYSTEMS OR TAPE. TAPES AND MASTICS USED TO SEAL DUCTWORK SHALL BE LISTED AND LABELED IN ACCORDANCE WITH UL 181.

LABELING FOR APPROVED TAPES AND MASTICS

SEALANT	UL LISTING
DUCTWORK	
PRESSURE-SENSITIVE TAPE	181A-P
MASTIC	181A-M
HEAT-SENSITIVE TAPE	181A-H
FLEXIBLE AIR DUCTS AND FLEXIBLE AIR CONNECTORS	
PRESSURE-SENSITIVE TAPE	181B-FX
MASTIC	181B-M

DUCT CONNECTIONS TO FLANGES OF AIR DISTRIBUTION SYSTEM EQUIPMENT SHALL BE SEALED AND MECHANICALLY FASTENED.

MECHANICAL FASTENERS FOR USE WITH FLEXIBLE NON-METALLIC AIR DUCTS SHALL COMPLY WITH UL 181B AND SHALL BE MARKED 181B-C.

UNLISTED DUCT TAPE IS NOT PERMITTED AS A SEALANT ON ANY DUCT.

NOTE:
TAPE ALONE CANNOT BE SUBSTITUTED FOR MECHANICAL FASTENERS.

APPLICABLE CODES AND REGULATIONS:

THE DRAWINGS HAVE BEEN PREPARED IN ACCORDANCE WITH THE FOLLOWING CODES - NOTIFY THE ENGINEER OF ANY CONFLICTS.

STATE OF WISCONSIN CH. SPS 341 – BOILER AND PRESSURE VESSELS CODE

STATE OF WISCONSIN CH. SPS 345 – MECHANICAL REFRIGERATION CODE

STATE OF WISCONSIN CH. SPS 362 – BUILDINGS AND STRUCTURES CODE, ADOPTS THE INTERNATIONAL BUILDING CODE – 2015 VERSION (WITH AMENDMENTS)

STATE OF WISCONSIN CH. SPS 363 – ENERGY CONSERVATION CODE, ADOPTS THE INTERNATIONAL ENERGY CONSERVATION CODE – 2015 VERSION (WITH AMENDMENTS)

STATE OF WISCONSIN CH. SPS 364 – HEATING, VENTILATING AND AIR CONDITIONING CODE. ADOPTS THE INTERNATIONAL MECHANICAL CODE – 2015 VERSION (WITH AMENDMENTS)

STATE OF WISCONSIN CH. SPS 365 – FUEL GAS APPLIANCES CODE, ADOPTS THE INTERNATIONAL FUEL GAS CODE – 2015 VERSION (WITH AMENDMENTS)

STATE OF WISCONSIN CH. SPS 366 – EXISTING BUILDINGS CODE, ADOPTS THE INTERNATIONAL EXISTING BUILDING CODE – 2015 VERSION (WITH AMENDMENTS)

NATIONAL FIRE PROTECTION ASSOCIATION CH. 54 – REGARDING GAS PIPING INSTALLATION (AS ADOPTED BY SPS 365)

SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATED INC. (SMACNA) STANDARDS

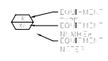
GENERAL NOTES:

1. THESE GENERAL DRAWING NOTES APPLY TO THE SCOPE OF WORK AND SHALL BE CONSIDERED THE DEFAULT REQUIREMENTS UNLESS INFORMATION IS SPECIFICALLY NOTED ELSEWHERE ON THE PLAN DOCUMENTS.
2. FIELD VERIFY EXISTING CONDITIONS PRIOR TO FABRICATION OF SYSTEMS AND INSTALLATION OF WORK.
3. ALL HVAC WORK SHALL BE COORDINATED WITH THE WORK OF OTHER TRADES.
4. ALL DUCTWORK SHALL BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH SMACNA STANDARDS.
5. DUCT DIMENSIONS INDICATED ON THE PLANS ARE CLEAR INSIDE DIMENSIONS. WHERE INTERNAL DUCT LINING IS REQUIRED, INCREASE SHEET METAL DUCT SIZE TO ACCOMMODATE LINING.
6. ALL FIRE DAMPERS SHALL BE 1.5 HOUR RATED (SUITABLE FOR USE IN 2 HOUR RATED WALLS AND FLOORS).
7. ACCESS PANELS FOR ACCESS TO HVAC SYSTEMS WILL BE COORDINATED WITH OTHER TRADES OF WORK PROVIDING ACCESS PANELS.
8. ALL PIPING AND DUCTWORK PENETRATIONS THROUGH WALLS, FLOORS, OR PARTITIONS IDENTIFIED AS FIRE WALLS, SMOKE TIGHT WALLS, FIRE BARRIERS, SMOKE BARRIERS, SHAFTS, OR OTHER FIRE RATED CONSTRUCTION SHALL BE FIRE STOPPED AND/OR PROTECTED WITH REQUIRED LIFE SAFETY DAMPERS TO MAINTAIN FIRE RATINGS, SMOKE RATINGS, AND UL LISTINGS.
9. REFER TO ARCHITECTURAL FLOOR PLANS AND LIFE SAFETY DRAWINGS FOR LOCATION AND RATING OF ALL FIRE RATED ASSEMBLIES.
10. GAS PIPING SHALL BE INSTALLED IN ACCORDANCE WITH NFPA CHAPTER 54 (CURRENT ADOPTED VERSION).
11. FINAL TESTING, ADJUSTING AND BALANCING (TAB) WORK WILL BE PROVIDED IN ACCORDANCE WITH ASSOCIATED AIR BALANCE COUNCIL (AABC) OR NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB) REQUIREMENTS. SYSTEMS SHALL BE BALANCED TO WITHIN +/-10% OF AIR AND WATER QUANTITIES AS INDICATED ON PLANS AND SCHEDULES. 3 SETS OF TAB REPORTS SHALL BE PROVIDED TO THE OWNER IN A FORMAT ACCEPTABLE TO THE OWNER, OR AS OTHERWISE REQUIRED PER CONTRACT REQUIREMENTS. RETAIN A COPY OF THE TAB REPORT AT THE PROJECT SITE FOR REVIEW BY THE LOCAL AHJ.
12. AFTER PROJECT SUBSTANTIAL COMPLETION, 3 SETS OF OPERATION AND MAINTENANCE MANUALS SHALL BE PROVIDED TO THE OWNER IN A FORMAT ACCEPTABLE TO THE OWNER, OR AS OTHERWISE REQUIRED PER CONTRACT REQUIREMENTS. RETAIN A COPY OF THE O&M MANUAL AT THE PROJECT SITE FOR REVIEW BY THE LOCAL AHJ.
13. ALL OPENINGS IN EXISTING GENERAL CONSTRUCTION FOR NEW HVAC WORK WILL BE PROVIDED BY THE MECHANICAL CONTRACTOR, UNLESS NOTED OTHERWISE.

HVAC LEGEND

SYMBOL	IDENTIFICATION	SYMBOL	IDENTIFICATION
	SUPPLY AIR DUCT UP		SUPPLY AIR DUCT DOWN
	RETURN OR OUTSIDE AIR DUCT UP		RETURN OR OUTSIDE AIR DUCT DOWN
	EXHAUST AIR DUCT UP		EXHAUST AIR DUCT DOWN
	FIRE / FIRE SMOKE / SMOKE DAMPER		VOLUME DAMPER
	MECHANICAL / AUTOMATIC DAMPER		DUCT TRANSITION
	EXISTING TO NEW CONNECTION		AIR FLOW ARROW
S	SMOKE DETECTOR	T	THERMOSTAT
R	REFRIGERANT SENSOR	H	HUMIDISTAT
	ROUND DUCT / PIPE ELBOW DOWN		ROUND DUCT / PIPE UP
	UNION		END CAP
	BUTTERFLY VALVE		CONSTANT FLOW REGULATING VALVE
	2 - WAY CONTROL VALVE, MODULATING		3 - WAY CONTROL VALVE, MODULATING
	GAS VALVE		BALL VALVE
	INVERTED BUCKET TRAP		GATE VALVE
	CHECK VALVE		STRAINER
	ANGLE VALVE		RELIEF VALVE
	DOUBLE CHECK VALVE		TRIPLE DUTY VALVE
	GLOBE VALVE		FLOW SWITCH
	SIDE MOUNTED INLINE PUMP		PRESSURE GAUGE
	FLEXIBLE CONNECTION		PIPE FLOW DIRECTION ARROW
	THERMOMETER		PIPE ELBOW UP TAKE OFF
	IN LINE PIPE DROP		PIPE ELBOW UP
	PIPE ELBOW DOWN		CIRCULATING PUMP
W	CITY WATER	D	DRAIN
G	NATURAL GAS	PC	PUMP CONDENSATE
P	PROPANE GAS	C	CONDENSATE
HW	LOW TEMPERATURE HOT WATER SUPPLY	HWR	LOW TEMPERATURE HOT WATER RETURN
CHW	CHILLED WATER SUPPLY	CHWR	CHILLED WATER RETURN
HPS	HIGH PRESSURE STEAM	HPC	HIGH PRESSURE CONDENSATE
LPS	LOW PRESSURE STEAM	LPC	LOW PRESSURE CONDENSATE
CW	CONDENSER WATER SUPPLY	CWR	CONDENSER WATER RETURN
RL	REFRIGERANT LIQUID	RS	REFRIGERANT SUCTION
1	REVISION MARK	CO2	CO_2 SENSOR
1	NOTE MARK		

EQUIPMENT CALLOUT



AIR TERMINAL CALLOUT

THERMOSTAT CALLOUT

Sheet List

Sheet Number	Sheet Name
H000	TITLE PAGE
H201	FLOOR PLANS AND HHW SYSTEM PIPING SCHEMATIC
M700	HVAC SCHEDULES
M800	HVAC SPECIFICATIONS

tweet to tarot
325 REID STREET
DE PERE, WI. 54115
920-498-0400
WWW.TWEETGAROT.COM

City of De Pere
City Hall Boiler Replacement Project
335 S Broadway, De Pere, WI 54115

NOT FOR CONSTRUCTION

ISSUANCE HISTORY

REVIEW SET	7/26/22

SHEET REVISIONS

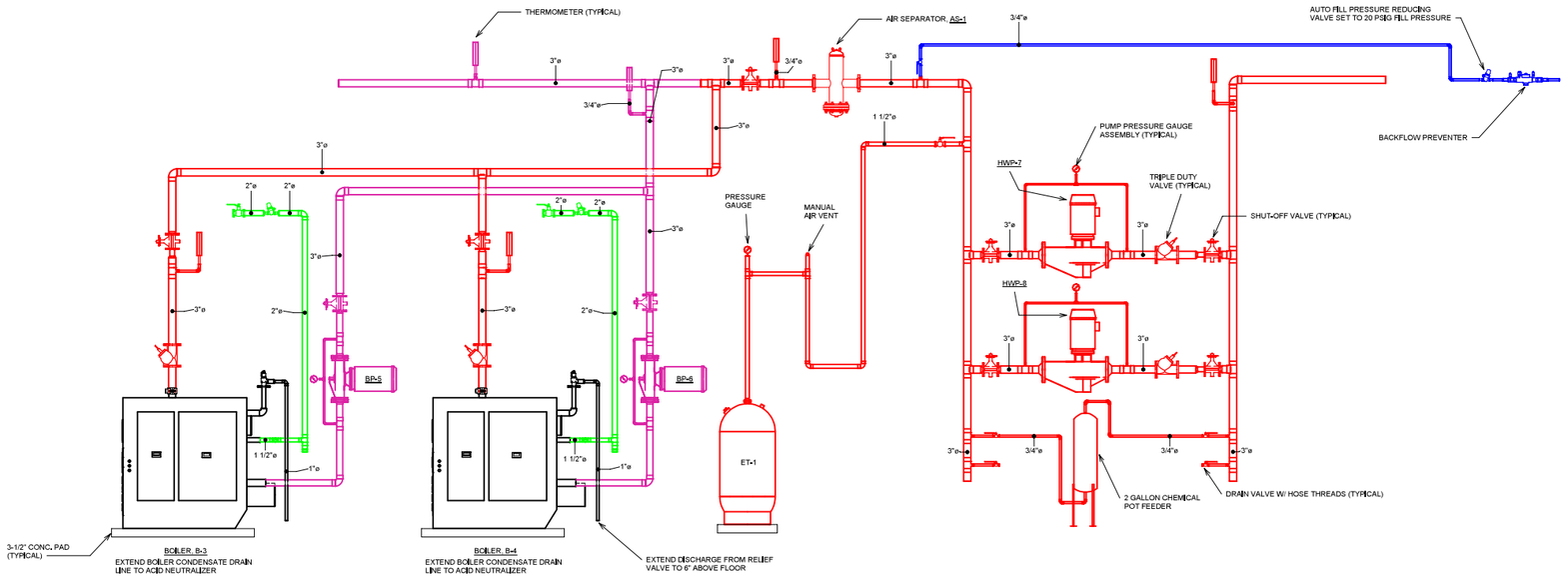
TITLE
TITLE PAGE

JOB#:	42054
DRAWN BY:	Collin Fayas
CHECKED BY:	Bill Harrington
SCALE:	AS SHOWN

H000

7/27/2022 9:01:46 AM

THIS LINE SHOULD MEASURE 1" LONG



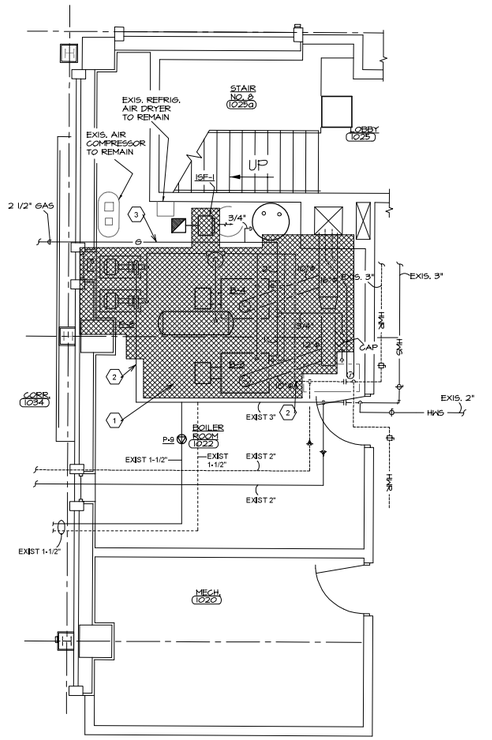
4 HHW System Piping Schematic
NO SCALE

DEMOLITION NOTES

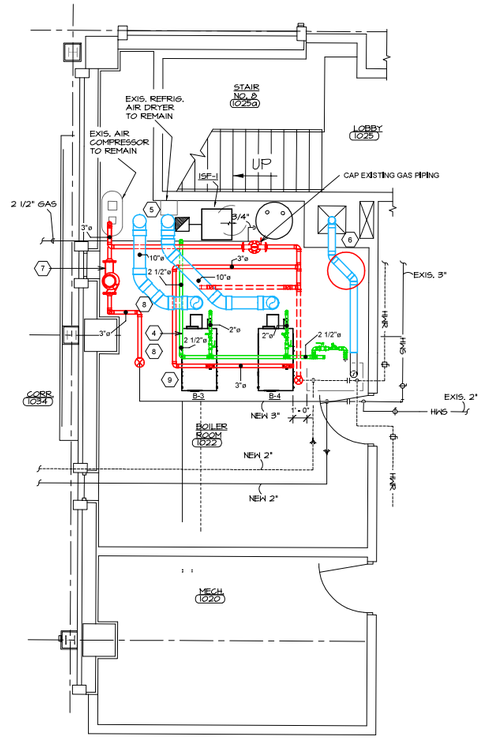
1. REMOVE EXISTING HEATING HOT WATER PLANT INCLUDING BOILERS, BOILER PUMPS, EXPANSION TANKS, AIR SEPARATOR, BASE-MOUNTED SYSTEM PUMPS, HOT WATER SUPPLY AND RETURN PIPING, GAS PIPING, BOILER VENT AND COMBUSTION AIR SUPPLY FAN WITHIN HATCHED AREA. REMOVE EXISTING MAKE-UP WATER LINE THROUGH BACKFLOW PRETEVENTER.
2. FIELD VERIFY LOCATION OF EXISTING HEATING HOT WATER SUPPLY AND RETURN PIPING. COORDINATE NEW CONNECTION POINT LOCATIONS.
3. FIELD VERIFY LOCATION OF EXISTING GAS PIPING. COORDINATE NEW CONNECTION POINT LOCATION.

HVAC PLAN NOTES

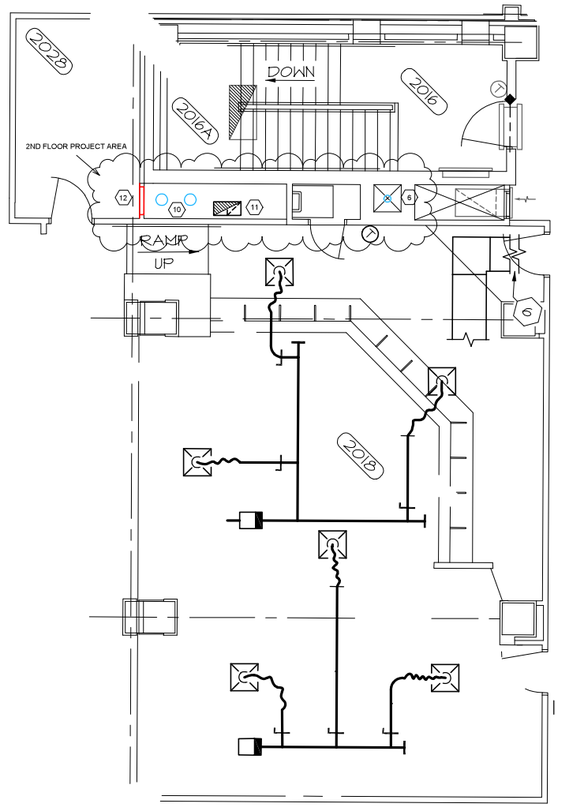
4. EXTEND NEW 2-1/2" GAS LINE TO NEW BOILERS AND EXISTING GAS-FIRED HUMIDIFIER.
5. NEW 10" DIAMETER CATEGORY IV GAS VENT UP THROUGH ROOF. ROUTE IN EXISTING SHAFT. MODIFY EXISTING COMBUSTION AIR DUCTWORK AND RELOCATE ELECTRICAL CONDUIT AS REQUIRED FOR INSTALLATION.
6. EXTEND NEW 6" DIAMETER GAS VENT FROM GAS-FIRED HUMIDIFIER TO EXISTING CHIMNEY. INSTALL STAINLESS STEEL CHIMNEY LINER FOR GAS VENT. EXTEND UP AND TERMINATE AT TOP OF CHIMNEY.
7. SYSTEM PUMP ASSEMBLY – SEE SCHEMATIC ON THIS SHEET.
8. CAP TWO (2) EXISTING FLOOR DRAINS/HUB DRAINS BELOW FLOOR. PATCH CONCRETE AS REQUIRED.
9. EXTEND CONCRETE PAD AS REQUIRED FOR INSTALLATION OF NEW BOILERS.
10. EXTEND TWO (2) NEW 10" DIAMETER CATEGORY IV BOILER VENTS UP THROUGH ROOF, OFFSET IN RISE AS REQUIRED. TERMINATE MINIMUM OF 36" ABOVE COMBUSTION AIR INTAKE HOOD. INSTALL GAS VENT PENETRATION THROUGH ROOF IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
11. RELOCATE COMBUSTION AIR DUCTWORK IN SHAFT AS REQUIRED FOR INSTALLATION OF NEW GAS VENTS.
12. FURNISH AND INSTALL 24 x 24 ACCESS DOOR.



1 First Floor Boiler Room Demolition Plan
1/4" = 1'-0"



2 First Floor Boiler Room HVAC Plan
1/4" = 1'-0"



3 Partial 2nd Floor HVAC Plan
1/4" = 1'-0"

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City of De Pere
City Hall Boiler Replacement Project
335 S Broadway, De Pere, WI 54115

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ISSUANCE HISTORY	
REVIEW SET	7/26/22

SHEET REVISIONS		

TITLE
FLOOR PLANS AND HHW SYSTEM PIPING SCHEMATIC

JOB#:	42054
DRAWN BY:	Collin Fayas
CHECKED BY:	Bill Harrington
SCALE:	AS SHOWN

H201

7/27/2022 9:01:41 AM

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EXPANSION TANK SCHEDULE

TAG	LOCATION	SYSTEM SERVED	MANUFACTURER	MODEL	TANK DIMENSIONS		ESTIMATED SYSTEM VOLUME (GAL)	MINIMUM ACCEPTANCE VOLUME (GAL)	ACTUAL TANK ACCEPTANCE VOLUME (GAL)	TOTAL TANK VOLUME (GAL)	SYSTEM FILL PRESSURE (PSIG)	INITIAL FILL TEMPERATURE (DEG F)	INITIAL TANK FILL PRESSURE (PSIG)	MAXIMUM SYSTEM OPERATING PRESSURE (PSIG)	MAXIMUM SYSTEM OPERATING TEMPERATURE (DEG F)	NOTES
					DIAMETER (IN)	HEIGHT (IN)										
ET-1	BOILER ROOM 1022	HEATING HOT WATER SYSTEM	THE JOHN WOOD COMPANY	JAER-23-607	16	72.375	600	28.32	60.0	60.0	15	40	20	60	180	1, 2, 3, 4, 5

NOTES
1. EXPANSION TANK SHALL BE ASME RATED.
2. FURNISH WITH TANK PURGE VALVE.
3. FURNISH WITH AIR VENT.
4. PROVIDE DRAIN VALVE WITH HOSE THREADS AND CAP.
5. BASED ON 100% WATER SOLUTION.

PUMP SCHEDULE

TAG	SERVICE	LOCATION	MANUFACTURER	MODEL	CONNECTION SIZE		CAPACITY		FLUID	DUTY POINT EFF.	IMPELLER SIZE (in.)	MOTOR RPM	HP	VOLTAGE /PH	VFD (Y/N)	EMER. POWER (Y/N)	WEIGHT (LBS.)	NOTES
					SUCTION (in.)	DISCHARGE (in.)	GPM	HEAD										
BP-5	BOILER, B-5 PUMP	BOILER ROOM 1022	ARMSTRONG FLUID TECHNOLOGY	SERIES 4360-3D-4P	3	3	100	20	WATER	58.3%	5.090	1,760	1	120/1	N	N	155	2
BP-6	BOILER, B-6 PUMP	BOILER ROOM1022	ARMSTRONG FLUID TECHNOLOGY	SERIES 4360-3D-4P	3	3	100	20	WATER	58.3%	5.090	1,760	1	120/1	N	N	155	2
HWP-7	HEATING HOT WATER SYSTEM PUMP	BOILER ROOM 1022	ARMSTRONG FLUID TECHNOLOGY	DESIGN ENVELOPE: VIL 4380 0205-003.0	2	2	130	50	WATER	78.1%	4.970	2,780	3	208/3	Y	N	76	1, 2
HWP-8	HEATING HOT WATER SYSTEM PUMP	BOILER ROOM 1022	ARMSTRONG FLUID TECHNOLOGY	DESIGN ENVELOPE VIL 4380 0205-003.0	2	2	130	50	WATER	78.1%	4.970	2,780	3	208/3	Y	N	76	1, 2
HWP-9	POLICE DEPT ZONE	BOILER ROOM 1022	BELL & GOSSETT	SERIES 90-1.5A	1-1/2	1-1/2	15	34	WATER	46.1%	5.875	1,800	3/4	208/3	N	N	100	3

NOTES:
1. FURNISH PUMP WITH INTEGRAL VFD.
2. FURNISH WITH TRIPLE DUTY VALVE - SEE SCHEDULE.
3. EXISTING PUMP TO REMAIN.

SEALED COMBUSTION GAS-FIRED BOILER SCHEDULE

TAG	MANUFACTURER	MODEL	GAS INPUT MBH	HEAT OUTPUT MBH	LEAVING WATER TEMP DEG F	GPM	PRESS DROP (FT)	BOILER EFF.	EXHAUST VENT SIZE	COMB. AIR INLET	GAS TRAIN CERTIFIED	BURNER STAGES	ELECTRICAL COMPONENT CERTIFIED	BLOWER HP	AMPS	VOLTS	WEIGHT	NOTES
B-1	PATTERSON-KELLEY	C-1500H	1,500.0	1,414.0	180	100	6.6	94%	10"	10"	YES	MODULATING	UL	----	15.0	120/1	1,200	1, 2, 3, 4, 5
B-2	PATTERSON-KELLEY	C-1500H	1,500.0	1,414.0	180	100	6.6	94%	10"	10"	YES	MODULATING	UL	----	15.0	120/1	1,200	1, 2, 3, 4, 5

NOTES:
1. MANUFACTURER TO PROVIDE BOILERS WITH 60 PSIG RELIEF VALVES AND ASME CSD-1.
2. BOILER SHALL BE ASME CSD-1 COMPLIANT.
3. FURNISH WITH CONDENSATE NEUTRALIZER KIT.
4. FULL BURNER MODULATION 10% - 100%, 10:1 TURN DOWN RATIO
5. BOILER PERFORMANCE BASED ON A STRAIGHT WATER SOLUTION.

FAN SCHEDULE

TAG	SERVICE	LOCATION	MANUFACTURER	MODEL NO.	WHEEL DIA.	AIRFLOW	SP (IN. WC)	RPM	BHP	DRIVE	MAX. SOUND (SONES)	HP	VOLTAGE/ PH	EC MOTOR (Y/N)	VFD (Y/N)	EMEG. POWER (Y/N)	WEIGHT (LBS.)	NOTES
ISF-1	COMBUSTION AIR	BOILER ROOM 1022	THERMOTEK	TH-SIF11DD	11.75"	750	0.75	1,630	0.39	DIRECT	12.1	0.5	115/1	Y	N	N	129	1, 2

NOTES:
1. FURNISH WITH FAN SPEED CONTROLLER FOR BALANCING.
2. FURNISH FAN WITH SPRING VIBRATION ISOLATORS.

KEY: EF = EXHAUST FAN, TF = TRANSFER FAN, SF = SUPPLY FAN, CEF = CEILING EXHAUST FAN, DF = DESTRATIFICATION FAN

TRIPLE DUTY VALVE SCHEDULE

TAG	LOCATION	SYSTEM SERVED	MANUFACTURER	MODEL	SIZE	CONNECTION TYPE	FLOW (GPM)	WPD (FEET)	STEM OPEN POSITION	Cv @ STEM POSITION	NOTES
TDV-7	BOILER ROOM 1022	HEATING HOT WATER SYSTEM PUMP, HWP-7	ARMSTRONG FLUID TECHNOLOGY	FTV-3FS	3	FLANGED	130	3.00	100%	75.1	1
TDV-8	BOILER ROOM 1022	HEATING HOT WATER SYSTEM PUMP, HWP-8	ARMSTRONG FLUID TECHNOLOGY	FTV-3FS	3	FLANGED	130	3.00	100%	75.1	1
TDV-5	BOILER ROOM 1022	BOILER PUMP, BP-5 (BOILER, B-3)	ARMSTRONG FLUID TECHNOLOGY	FTV-3FS	3	FLANGED	100	3.00	100%	57.8	2
TDV-6	BOILER ROOM 1022	BOILER PUMP, BP-6 (BOILER, B-4)	ARMSTRONG FLUID TECHNOLOGY	FTV-3FS	3	FLANGED	100	3.00	100%	57.8	2

NOTES
1. MOUNT IN HORIZONTAL SECTION OF SUPPLY PIPING AT OUTLET OF HEATING HOT WATER SYSTEM PUMP.
2. MOUNT IN VERTICAL SECTION OF SUPPLY PIPING AT OUTLET OF BOILER.
3. BASED ON WATER.

AIR SEPARATOR SCHEDULE

TAG	LOCATION	SYSTEM SERVED	MANUFACTURER	MODEL	PIPE CONNECTIONS		FLOW (GPM)	WPD (FT)	OPERATING WEIGHT (LBS)	NOTES
					INLET (IN)	OUTLET (IN)				
AS-1	BOILER ROOM 1022	HEATING HOT WATER SYSTEM	CALEFFI	NA551080A	3	3	130	0.85	62	1, 2, 3

NOTES
1. FURNISH WITH STRAINER and FLANGED CONNECTIONS.
2. FURNISH WITH HIGH CAPACITY AIR VENT.
3. PROVIDE MANUAL BLOWDOWN VALVE.
4. BASED ON WATER.

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JOB#:	42054
DRAWN BY:	Collin Fayas
CHECKED BY:	Bill Harrington
SCALE:	AS SHOWN

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HVAC SPECIFICATIONS

General
Project shall be site visited to verify actual conditions. All work shall comply with all applicable State and Local Codes and Regulations.

Mechanical contractor shall provide as-built drawings. HVAC system operation and maintenance manuals and training to owner's maintenance personnel.

The temperature control system shall be tested, adjusted and calibrated in compliance with SPS 364.0310, Air and hydronic systems shall be balanced in accordance with the National Environmental Balancing Bureau (NEBB), and SPS 364.0313, Submit (1) one electronic copy of air balancing reports, Submit (1) one electronic copy of shop drawings for approval and (1) one electronic copy of operation & maintenance manuals for all equipment.

Firestopping shall be provided as required to maintain the fire resistance rating of the walls and floors penetrated by the HVAC system components. Firestopping shall meet ASTM E814 requirements.

This will be a turnkey project in which the Mechanical Contractor is responsible for all work associated with the demolition of the existing system and the installation of the new hot water heating plant as shown. This shall include the following:

- General work to provide access to existing shafts and chimney and concrete pads for new boilers.
- Electrical work for removal of existing equipment, relocation of existing conduits as required and installation of new equipment.
- Temperature control work to install new hot water heating plant.
- Pneumatic control work to disconnect existing equipment and cap tubing.

Work by Others:
The following work is not provided by the Mechanical Contractor:

Asbestos abatement.

Painting of HVAC systems, unless otherwise specifically noted.

Motors
Motors 1 horsepower and larger shall be premium efficiency. Motors shall meet or exceed efficiency levels per energy code for intended duty. Continuous duty rated at ambient temperature of 104 deg F.

Provide electronic commutation (EC) single phase motors or polyphase motors with variable frequency drive for direct drive applications and all applications requiring speed control.

Motors connected to variable frequency controllers shall have shaft grounding devices the meet the following specified requirements. Bearing isolator or labyrinth seal that includes a built-in grounding ring and brush. The brush shall contain conductive microfibers that completely surround the shaft to discharge any current flowing through it.

Provide AEGIS SGR Bearing Protection Rings as manufactured by Electro Static Technology (EST).

Ductwork Installation
General:
Combustion air ductwork shall be fabricated with galvanized steel. Fabrication and installation of duct and fittings shall be in accordance with SMACNA "HVAC Duct Construction Standards. Metal and Flexible" 1995 edition. Ductwork shall be sealed at all joints, transverse and longitudinal seams and connections in compliance with IMC 603.9 (SMACNA Seal Class A).

Ductwork Pressure Classification:
Unless noted otherwise, construct ductwork to the following specified pressure classifications.

Combustion air ductwork: 2" w.g. positive and negative air pressure.

Pipe and Fittings
General:
Piping shall be reamed and thoroughly cleaned of scale and dirt before being installed. Provide vents at all high piping points and drains with hose connection at low points. Butterfly valves shall be Nibco LD-2000. Ball valves shall be full port Nibco type S-585.

Heating and Chilled Water Piping:
Piping 2-1/2" and larger shall be ASTM A53, standard weight schedule 40 black steel pipe with ASTM A234 grade WPB/ANSI B16.9 standard weight, carbon steel fittings. All joints shall be welded construction. Connections to equipment may be grooved type. Piping 2" and smaller shall be ASTM B88 seamless, type L, copper with ANSI B16.22 copper solder joint fittings or ProPress mechanical fittings.

Gas Piping:
Natural gas piping shall be ASTM A53, standard weight schedule 40 black steel pipe. Piping 2" and smaller shall be threaded with ASTM A197/ANSI B16.3 class 150 black malleable iron threaded fittings. Provide gas pressure regulators for each boiler, with a spring having an adjustment range of 3" w.c. to 8" w.c., with an inlet gas pressure of 2 psig. Vent each gas pressure regulator individually to the outside.

Insulation – follow IECC 2018 Table C403.2.10
Insulate the following piping in accordance with Table C403.2.10 of the 2015 International Energy Conservation Code:

Make-up Water (0-60 deg F)	Rigid Fiberglass
Hot Water Heating (141 – 200 deg F)	Rigid Fiberglass
Minimum Pipe Insulation Thickness (in Inches)	

Fiberglass insulation shall be 3 lbs/cu.ft. density, ANSI/ASTM C547 'k' value of 0.24 at 75 deg. F mean temperature, with a flame spread rating of 25 or less and a smoke developed rating 50 or less. Provide white kraft faced piping jacket with self-sealing lap. Provide Zeston pre-molded PVC insulation fittings for all piping fittings. Label piping to identify the heating system, with flow directional arrows.

Insulate combustion air ductwork with 3" thick (minimum installed R-12), rigid glass fiber insulation, ANSI/ASTM C612, Class 1, 3 lb/cu.ft. density, 'k' value of 0.24 at 75 deg. F mean temperature. Provide 0.002" foil scrim facing.

High Efficiency Gas-Fired Boilers
Furnish and install high efficiency, sealed combustion, full modulation, gas-fired boilers of size, type, and capacity as noted on the plans. The boilers shall be high efficiency, with modulating combustion air chambers and a 160 psig design pressure. Boilers shall be manufactured by Fulton, Patterson-Kelley or RBI.

The boiler shall be equipped with a natural gas full modulation burner, with a minimum of 5:1 turndown, certified by AGA. Boiler shall be furnished with an insulated jacket. The boiler shall be complete with standard hot water trim, water flow switch, combustion air meter-thermometer, modulating combustion air blower assembly, low water cut-off, high limit aqua stat, 60 psig ASME rated valve, operating limit control, ignition transformer, pilot igniter, and all combustion safety controls as required. All boiler control components shall be furnished by boiler manufacturer and wired by the Temperature Control Contractor.

The gas train shall comply with FM and CSD-1 specifications. The gas train shall be factory mounted and wired and include the following components: main entrance shut-off gas cock, low gas pressure switch, high gas pressure switch, main gas regulator, redundant automatic gas valves and test ports. Each boiler shall include an intermittent gas pilot with pilot gas train. The boiler's positive shutoff step-down gas pressure regulator shall be rated for an inlet gas pressure of 4" w.c. to 14" w.c.

Boiler panel pilot lights shall include power, call-for-heat, low water, main-gas-valve, high/low gas pressure and flame failure. Entire boiler, combustion system and controls shall be U.L. listed and AGA approved.

Provide a gas piping connection for each boiler consisting of gas valve, 6" dirt leg, union and gas pressure regulator, as required. Provide factory start-up service with start-up report and one year service warranty with an extended 4 year burner parts warranty.

Each boiler shall be vented with Category IV positive pressure vent stack. Vent shall be constructed with an inner wall of AL29-4C stainless steel and an outer wall of aluminized steel, with a 1" annular insulating air space or polypropylene venting system. Vent shall conform to NFPA-54, UL1738, with a maximum operating temperature of 550 deg. F and an internal static pressure of 6" w.g. Install in accordance with manufacturer's instructions. Provide a drip condensation tee fitting at the discharge of each boiler and route to acid neutralizer.

System Cleaning
Clean, flush and treat the hydronic heating hot water system according to the following procedure by HOH Water Technology:

Aluminum Boiler: Cleaning and Treatment
Recommended products: CL-200 Multi-purpose cleaner, CS-32 Closed system pH stabilizer and CS-50 Closed system inhibitor

Procedure:
1. Fill system with fresh water from city water mains. If possible, determine system volume with water meter.
2. Flush system by draining at a total flow rate equal to the fill rate of city water. Operate circulating pumps and open all zone valves to ensure flow through the entire system during this period.
3. Add CL-200 Cleaner to the system at approximately 1/2 gallon per 100 gallons of system volume.
4. Circulate the CL-200 Cleaner through the system for approximately 24 hours (with heat) to 48 hours (without heat); ensuring the **entire** system sees flow.
5. Flush system with city water as described in Step 2. Continue flushing until the system flush water exhibits a conductivity reading equal to the conductivity of the city water. Check system water conductivity at multiple locations, to ensure thorough flushing.
6. Discontinue flushing.
7. Add CS-32 Closed system pH stabilizer. The recommended dosing for a Hot Water System is 1 pound per 100 gallons of system volume.
8. Circulate for 6 hours.
9. Add CS-50 Closed system inhibitor. The recommended dosing for a Hot Water System is 2 gallons per 100 gallons of system volume.

When handling any chemicals, be sure all proper safety precautions are observed and proper protective clothing/equipment is used.

If there are any questions, contact your HOH representative before proceeding.

In-Line Pumps
Furnish and install circulating pumps as shown on the plans. Acceptable manufacturers: Armstrong, Bell & Gossett, Taco, Grundfos.

Inline pumps shall be single stage, iron construction with bronze fittings with a working pressure of 125 PSI and operating temperature of 225 F continuous. The pump internals shall be capable of being serviced without disturbing the piping connections. Pump motors shall operate at scheduled rpm and shall be high efficient.

The pump shall employ a mechanical seal with Buna-N carbon rotating element and ceramic stationary seat. The pump shall be resiliently mounted, equipped with oil lubricated journal bearings. The manufacturer is to provide replacement impellers or trimming of impellers to meet capacity requirements indicated on the plans.

The pump shall be factory tested, thoroughly cleaned, and painted with one coat of machinery enamel prior to shipment. A set of installation instructions shall be included with the pump. Heating Contractor shall install the pumps in strict accordance with the manufacturer's instructions.

Provide pressure gauges piped and valved for measuring both suction and discharge pressure, complete with shutoff gauge valves.

Air Control
Air separator shall be installed in supply piping and shall be Caleffi 551 Series. The unit shall be constructed for 125 PSI working pressure and stamped with the ASME "U" symbol. The Contractor shall remove and clean the unit after the initial cleaning and again in 30 days. A blowdown connection shall be provided to facilitate routine cleaning.

Install high capacity air vent in air outlet.

Expansion Tanks
Tanks shall be constructed according to requirements of ASME for 125 PSI service. Securely support tanks in place where shown. Expansion tanks shall be diaphragm, bladder or standard compression type tanks as scheduled.

Inline Supply Fans
Furnish and install Thermotek, Penn, Cook, Acme or Greenheck supply fan as scheduled on the drawings. All components shall be AMCA approved and capacities shall be AMCA rated and bear the AMCA seal.

Temperature Controls
Extend existing direct digital control (DDC) system as required to incorporate new boilers, primary pumps and secondary pumps. Coordinate type of space temperature sensor control function with the owner.

Provide DDC control operating information consisting of system control drawings, wiring diagrams, written detailed sequence of HVAC component system operation, summary listing of DDC control points, engineering data for each control system component with size and selection. Submit 6 copies (one electronic) of DDC submittals for approval.

All low voltage wiring shall be plenum rated thermostat wire. All line voltage wiring required to complete the DDC control system, such as electrical interlocks, shall be run in thin wall conduit.

All setpoints defined within the sequence of operations shall be fully adjustable via the BAS system user interface.

Mechanical Contractor shall provide and install the following control components:
- Low voltage wiring necessary for boilers to be cascaded together
- Boiler header sensor located in secondary piping
- Low voltage wiring necessary to connect header sensor to master boiler
- Communication protonode wired into master for connection to BAS system
- Bus wiring between system pumps

Controls Contractor shall provide and install the following components:
- BAS System to enable/disable and monitor boilers (boilers to operate under their own control through boiler panel).
- BAS system to enable/disable system pumps and monitor (pumps to operate under their own controls)
- BAS Contractor shall be on-site for start-up/Owner training to make sure all points are visible and communication is operating correctly.
- All alarms shall be reported through the BAS system.

TEMPERATURE CONTROL SEQUENCE OF OPERATIONS

Boilers B-3 and B-4, Boiler Pumps BP-5 and BP-6:
Two hot water heating boilers are designed to satisfy the heating requirements for the building with redundancy. Upon failure, the standby boiler shall be activated to satisfy the heating load. Upon demand for heat, the lead boiler shall be energized to maintain the supply water temperature. DDC system shall include monitoring of modulating boiler burner control. Control shall include interlock of the respective boiler's primary pump to start. Boiler pumps shall operate at constant flow. Boiler pump shall run for five (5) minutes after boiler has been de-energized. Provide boiler and primary pump lead-lag control and alarm for boiler and pump failure.

Provide a DDC indoor-outdoor reset (ratio and temperature range adjustable) to reset the hot water supply temperature in reverse proportion to outdoor air temperature by modulating the boilers. The schedule shall be as the outside air varies from 10 deg F to 60 deg F, the secondary hot water supply temperature shall vary from 180 deg F to 120 deg F (adjustable).

Control contractor shall wire factory boiler operating controls, including boiler low water cut-off control and install control devises required by the boiler manufacturer.

Secondary pumps HWP-7 and HWP-8 shall be provided with lead-lag control with pump failure indication, audible alarm and DDC alarm point through the BAS system. A differential pressure switch across the pumps shall indicate pump failure and start the standby pump. A heating water differential pressure sensor shall control the variable frequency drives of the pumps HWP-7 & HWP-8 by varying the speed of their motors to maintain a differential pressure of 7 psig (adjustable).

Execution
This Contractor shall do all cutting necessary for the passage of ducts. This Contractor shall take all necessary precautions to protect his work from damage or injury until the completion and final acceptance of his work.

This HVAC Contractor must instruct the Owner and his representatives in the proper operating techniques of the system. The Contractor shall provide Owner with Operating & Maintenance Manuals.

The Contractor must install piping, ductwork and equipment to prevent transmission of noise.

The Heating Contractor shall guarantee the entire system against all defects for a period of one (1) year from date of final acceptance.

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