CONTRACT DOCUMENTS

For

LIBRARY CHILLER REPLACEMENT

Project No. 2021-017-28

Bid No. 2022-04

For The

CITY OF WOODBURN

Woodburn, Oregon

February 2022

For Information regarding this project contact:

Pete Gauthier P.E.
Project Engineer
Engineering Division
City of Woodburn
503.982.2429

CONTRACT AND BONDS
FOR LIBRARY CHILLER
REPLACEMENT

PROJECT No. 2021-017-28
BID NO. 2022-04

CITY OF WOODBURN
PUBLIC WORKS DEPARTMENT
WOODBURN, OREGON

ERIC SWENSON	MAYOR
DEBBIE CABRALES	COUNCIL WARD 1
ALI SWANSON	COUNCIL WARD 2
ROBERT CARNEY	COUNCIL WARD 3
SHARON SCHAUB	COUNCIL WARD 4
MARY BETH CORNWELL	COUNCIL WARD 5
BENITO PUENTE JR.	COUNCIL WARD 6

CITY OF WOODBURN

PUBLIC WORKS DEPT. – ENGINEERING DIV.

BID PACKAGE
FOR
LIBRARY CHILER REPLACEMENT

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CITY OF WOODBURN

LIBRARY CHILLER REPLACEMENT

PART I

BID PREPARATION DOCUMENTS

TIME LINE
INVITATION TO BID
INSTRUCTIONS TO BIDDERS

TIMELINE

2/25/2022	Publication of Solicitation for Bids
3/31/2022	Deadline for Submission of Bids
4/4/2022	Notice of Intent to Award
4/11/2022	Contract Award by City Council
4/12/2022	Notice of Award
4/25/2022	Notice to Proceed
TBD/2022	Completion of Work

THE CITY RESERVES THE RIGHT TO MODIFY THIS SCHEDULE AT THE CITY'S DISCRETION. ALL INTERESTED PARTIES WILL RECEIVE PROPER NOTIFICATION OF CHANGES. **BID #2022-04**

INVITATION TO BID

CITY OF WOODBURN

LIBRARY CHILLER REPLACEMENT
PROJECT No. 2021-017-28
BID No. 2022-04

Sealed bids for the ***Library Chiller Replacement*** will be received by the City of Woodburn, OR at City Hall Annex, 190 Garfield St. until **2:00 PM**, **Thursday, March 31, 2022** and will thereafter be publicly opened and read.

Bids shall be addressed to the City Engineer, City of Woodburn, 190 Garfield St., Woodburn, OR 97071. Bids shall be submitted in a plain sealed envelope bearing the Bidder's name, the name of the project and the date and time of the Bid opening, and shall be clearly marked **"Bid No. 2022-04"**, and Bidders shall indicate on the Form of Proposal that ***"Bidder will comply with the provisions of Chapter 279C.800 through 279C.870, Oregon Revised Statutes"***.

DESCRIPTION OF THE PROPOSED WORK:
The major part of the work will include: Acquisition and Installation of a chiller and coordinating with the City's DDC vendor integrating into the Automated Logic front end.

Plans and specifications may be examined on or after Friday **February 25, 2022** at the City Engineer's Office, 190 Garfield Street, Woodburn, OR and on line at http://www.ci.woodburn.or.us/?q=blog-categories/bids-and-rfps . Copies of the Contract Documents may be obtained from the City Engineer's Office upon deposit of a non-refundable fee of fifty dollars ($50.00) for each set.
Additionally, electronic plan sets are available for viewing and downloading on the Engineering Division's website at: **http://www.ci.woodburn.or.us/?q=blog-categories/bids-and-rfps**
and/or have been downloaded by the following plan centers.

DJC Plan Center – Portland, OR
Contractor's Plan Center – Clackamas, OR
Salem Contractor's Exchange – Salem, OR

Bidders must be pre-qualified in accordance with the laws of the State of Oregon. Completed pre-qualification forms or proof of pre-qualification shall conform to the Special Provisions. Only bids from pre-qualified Bidders will be opened.

No bid for a construction contract shall be received or considered unless the bidder is registered with the Construction Contractors Board (CCB). The Contractor and every Subcontractor must have a Public Works Bond filed with the CCB before starting work on the project.

Bidders on this project need not be licensed for asbestos handling pursuant to ORS 468A.720.

Each bidder must indicate on the bid form whether they are a resident or nonresident bidder as defined in ORS 279A.120(b).

All Bids shall be made on the Bid forms. All Bids shall be accompanied by a Bid Bond, equal to ten percent (10%) of the total bid. Bid Bond shall be forfeited to the City if the Contractor fails to execute the contract within 7-days after acceptance of the bid and award of the Contract.

Pursuant to ORS 279C.370, bidders on public works projects with a contract value of $100,000 or more are required to disclose, 2-hours after bid opening, the bidders first-tier subcontractors. The bidder shall provide the information as required on City of Woodburn first-tier disclosure form, provided in the contract documents.

At the discretion of the Project Manager Addenda(um) and Contract clarifications shall be posted on the City, Engineering Division website and/or delivered to Plan Holders via email. Potential Bidders should check the website on a daily basis the last week before the Bid Opening date. Website can be found at http://www.ci.woodburn.or.us/?q=blog-categories/bids-and-rfps. Addenda must be signed and submitted with the Proposal to be considered a responsive bid offer.

Contract award is expected to be made by the City Council on **April 11, 2022** the City of Woodburn reserves the right to reject any and all bids not in compliance with prescribed bidding procedures and requirements, and may reject for good cause any and all bids upon a finding of the Agency if it is in the public interest to do so. The three (3) lowest bidders may not withdraw or modify his bid prior to the lapse of 35-days after the bid opening.

_____

Heather Pierson,
Woodburn City Recorder

INSTRUCTIONS TO BIDDERS
BID #2022-04

1. GENERAL:

A. SPECIFICATIONS – The Specifications that is applicable to the Work on this Project is the 2018 edition of the "Oregon Standard Specifications for Construction" and as modified by Special Provisions.

B. This is a formal procure. Faxed bids will not be accepted.

C. Bidding requirements and obligations shall comply and conform to Part 00100 of the General Conditions of the Standard Specifications or as modified by the Special Provisions or herein.

2. SECURING CONTRACT DOCUMENTS:

A. Copies of the Contract Documents are available online at http://www.ci.woodburn.or.us/?q=blog-categories/bids-and-rfps and at the Public Works Department - Engineering Division, located at:

City Hall Annex
190 Garfield Street
Woodburn, OR 97071.

B. Questions regarding bidding, materials or technical requirements should be directed to the Project Manager at:

Pete Gauthier,
190 Garfield St.
Woodburn, OR 97071
Phone: 503.980.2429
Email: pete.gauthier@ci.woodburn.or.us

Or

Dago Garcia, PE, City Engineer
190 Garfield St.
Woodburn, OR 97071
Phone: 503.982.5248
Email: dago.garcia@ci.woodburn.or.us

C. Bidder is responsible for completing and returning all page(s), attachment(s) which require a response.

D. Plan Holder's List – An electronic copy of the "Plan Holders List" is provided on the Agency website and will be periodically updated. Contractors, suppliers and others wishing to be added to this list should contact the Project Manager as identified in 2.B.

E. Project Notifications – Addenda, clarifications, etc. shall be posted on the Agency website and are the responsibility of the Contractor to download before submission of bids. Contractor shall sign and submit with offer all Addenda associated (posted on website) with the project.

3. PROJECT FINANCING:

A. This project is financed and paid for by the City of Woodburn.

C. The Engineer's cost estimated range for the construction of this project is between $150,000 and $200,000.

D. This project is subject to the prevailing wages rates under the Oregon Prevailing Wages Law (BOLI).

E. This project is subject to prevailing wage rates available at:

www.oregon.gov/boli/WHD/PWR/Pages/pwr_state.aspx and listed as "Prevailing Wage Rates for Public Works Contracts in Oregon effective January 1, 2022**".**

4. CONSTRUCTION AGREEMENT

A. The construction contract between Owner and Contractor shall be provided by The City of Woodburn. A sample Agreement is included in these documents.

5. PREBID CONFERENCE:

A. Due to Covid restrictions no prebid conference is scheduled. Bidders are encouraged to visit the site on their own prior to bidding.

6. AWARD OF THE CONTRACT:

A. Award of the Contract, by the Contract Review Board (City Council), will be by recommendation of the Public Works Department, based on the lowest cost offer of the responsive and responsible Bidder in accordance with Section 00130 of the Oregon Standard Construction Specifications and all modifications by Special Provisions.

7. SPECIAL CONCERNS:

A. The Contractor will need to coordinate with the City's DDC Vendor to integrate the new chiller into the existing controller.

8. TIME OF COMPLETION AND WORKING HOURS:

A. All project work shall be completed within ninety (90) calendar days after the dated 'Notice to proceed" or 30 days after the chiller is delivered to the contractor, whichever is later.

B. Working hours are Monday through Friday between 7:00am and 7:00pm.

CITY OF WOODBURN

LIBRARY CHILLER REPLACEMENT

PART II

BID FORMS

CERTIFICATION PAGE
FORM OF PROPOSAL
FIRST TIER SUBCONTRACTORS DISCLOSURE FORM
BID SUBMITTAL CHECKLIST

CERTIFICATION PAGE

Each Bidder (offeror) must read and comply with the following Sections. Failure to do so may result in bid/proposal (offer) rejection.

RESIDENCY INFORMATION

ORS 279A.120 (2) states "For the purposes of awarding a public contract, a contracting agency shall: (a) Give preference to goods or services that have been manufactured or produced in this state if price, fitness, availability and quality are otherwise equal; and (b) Add a percent increase to the bid of a nonresident bidder equal to the percent, if any, of the preference given to the bidder in the state in which the bidder resides."

"Resident bidder" means a bidder that has paid unemployment taxes or income taxes in this state during the 12 calendar months immediately preceding submission of the bid, has a business address in this state and has stated in the bid whether the bidder is a "resident bidder" [ORS 279A.120(1)(b)].

"Non-resident bidder" means a bidder who is not a "resident bidder" as defined above [ORS 279A.120 (1)(b)].

Check one: Bidder is a (☐) RESIDENT bidder (☐) NON-RESIDENT bidder.

CERTIFICATION OF COMPLIANCE WITH DISCRIMINATION LAWS

By my signature in Form of Proposal, I hereby attest or affirm under penalty of perjury that I am authorized to act on behalf of Contractor in this matter, and to the best of my knowledge the Contractor has not discriminated against minority, women or emerging small business enterprises certified under ORS 200.055, in obtaining any required subcontract or against a business enterprise that is owned or controlled by or that employs a disable veteran as defined in ORS 408.225.

CERTIFICATION OF COMPLIANCE WITH OREGON TAX LAWS

By my signature in Form of Proposal, I hereby attest or affirm under penalty of perjury that I am authorized to act on behalf of Contractor in this matter that I have authority and knowledge regarding the payment of taxes, and that Contractor is, to the best of my knowledge, not in violation of any Oregon Tax Laws.

For purposes of this certificate, 'Oregon Tax Laws' means those programs listed in ORS 305.380(4) which is incorporated herein by this reference. Examples include the state inheritance tax, personal income tax, withholding tax, corporation income and excise taxes, amusement device tax, timber taxes, cigarette tax, other tobacco tax, 9-1-1 emergency communications tax, the homeowners and renters property tax relief program and local taxes administered by the Department of Revenue.

VERIFICATION OF RESPONSIBILITY

The City reserves the right, pursuant to ORS 279C.375 and OAR 137-049-0390, to investigate and evaluate, at any time prior to award and execution of the contract, the lowest bidder's (apparent successful offeror's) ability to perform the contract. Submission of a signed offer shall constitute approval for the City to obtain any information the City deems necessary to conduct the evaluation. The City shall notify the apparent successful offeror, in writing, of any other documentation required. Being a responsible bidder may include having the appropriate financial, material, equipment, facility and personnel resources and expertise, or ability to obtain the resources and expertise to perform the contract. Contractor shall have a satisfactory record of contract performance. The Contractor shall also have a satisfactory record of integrity. An unsatisfactory record of integrity may include previous violations of state environmental laws or a false certifications made to any Public Agency. The Contractor is to be qualified legally to contract with the City of Woodburn. Failure to promptly provide any requested information may result in bid/proposal rejection.

The City may postpone the award of the contract after announcement of the apparent successful offeror in order to complete its investigation and evaluation. Failure of the apparent successful offeror to demonstrate responsibility, as required under ORS 279C.375 and OAR 137-049-0390, may render the offeror non-responsible and shall constitute grounds for offer rejection.

DRUG TESTING POLICY CERTIFICATION

DRUG-TESTING POLICY CERTIFICATION:

By my signature in Form of Proposal, I hereby attest or affirm under penalty of perjury that I am authorized to act on behalf of Contractor in the matter, and to the best of my knowledge the Contractor has a drug-testing program in place which applies to all employees. Contractor shall maintain a drug-testing program at all times during the performance of the Contract awarded. Failure to maintain such a program shall constitute a material breach of contract. [ORS 279C.505J

BID PROPOSAL

Honorable Mayor and City Council
City Hall
Woodburn, Oregon 97071

The undersigned, hereinafter called the Bidder, declares that the only persons or parties interested in this Proposal are those named herein, that the Proposal is in all respects fair and without fraud, which it is made without any connection or collusion with any person making another Proposal on this Contract.

The Bidder further declares that he has carefully examined the Contract Documents for the construction of the proposed improvements; that he has personally inspected the site; that he has satisfied himself as to the quantities of materials, items of equipment, and conditions or work involved, including the fact that the description of work and materials as included herein, is brief and is intended only to indicate the general nature of such items and to identify the said quantities with the detailed requirements of the Contract Documents; and that this Proposal is made according to the provisions and the terms of the Contract Documents, which Documents are herein attached and are hereby made a part of this Proposal.

The Bidder further agrees to complete construction of all work in all respects in accordance with the Special Provisions incorporated herein.

In the event the Bidder is awarded the Contract and shall fail to complete the work within the time limit set under Specifications of this document or extended time limit agreed upon, as more particularly set forth in the Contract Documents, liquidated damages shall be paid to the City of Woodburn, Oregon, using the rate formula outlined in the Special Provisions, and not less than $150.00 per day, until the work shall have been finished, as provided by the Contract Documents.

The Bidder further proposes to accept as full payment for the work proposed herein the amount computed under the provisions of the Contract Documents and based on the following unit price amounts, it being expressly understood that the unit prices are independent of the exact quantities involved, that they represent a true measure of the labor and material required to perform the work, including all allowance for overhead and profit for each type and unit of work called for in these Contract Documents.

The amounts shall be shown in both words and figures. In case of discrepancy, the amount shown in words shall govern.

It is declared that the Bidder will comply with all the provisions of ORS 279C.800 through 279.870, Oregon Revised Statutes. The workmen on the project will be paid not less than the prevailing rates of wages.

It is agreed that if the Bidder is awarded the Contract for the work herein proposed and shall fail or refuse to execute the Contract and furnish the specified Performance Bond within ten (10) calendar days after receipt of notification of acceptance of his Proposal, then, in that event, the bid security in the sum of:

(In Words):_____

(In Numbers): $_____

deposited herewith according to the conditions of the Advertisement for Bids and Information to Bidders, shall be retained by the City of Woodburn, Oregon, as liquidated damages; and it is agreed that the said sum is a fair measure of the amount of damage the City of Woodburn will sustain in case the Bidder shall fail or refuse to enter into the contract for the said work and to furnish the Performance Bond as specified in the Contract Documents. Bid security in the form of a certified check shall be subject to the same requirements as a bid bond.

If the Bidder is awarded a construction contract on this proposal, the surety who will provide the Performance Bond will be:

_____ whose address is:

_____, _____, _____
Street City State Zip

Agents Name: _____ Phone No._____

The address for all communications concerned with this Proposal and where the Contract shall be sent is:

Contractor: _____ doing business at:

_____ , _____, _____
Street City State Zip

BID PROPOSAL

FIRST STREET, HGARRISON TO NONAME, SANITARY SEWER BYPASS

Item No.	Description	QNTY.	UNITS	UNIT PRICE	TOTAL
1	Mobilization, Cleanup and Bonds etc.	1	LS	$	$
2	Equipoment Demolition and Salvage	1	LS	$	$
3	Procure Air-Cooled High Efficiency Fan Chiller	1	LS	$	$
4	Install Chiller Complete to Running Condition	1	LS	$	$
5	General Electrical	1	LS	$	$
6	Commissioning	1	LS	$	$
			Total :	$	$

Bid Item 1: This Item includes, but not limited to, all cost of bringing materials, supplies, obtaining bonds, equipment and manpower into and removing from the site and leaving the site in as good or better condition than before work was started.
Bid Item 2: This Item includes all equipment, material, and Labor to demo and remove all equipment and miscellaneous appurtenances not to be reused from premises.
Bid Item 3: This Item include all costs of procuring, shipping and delivering the new chiller to the site. Refer to Appendix B.
Bid Item 4: This Item includes all material, equipment and labor to install, the new chiller complete and operational.
Bid Item 5: This Item include all equipment, material, and Labor, not included in other bid items, to connect and make fully operational, all electrical systems included in this contract.
Bid Item 6: This Item includes verifying the proper operation and sequence of operation of the chiller including coordinating with the City's DDC vendor as necessary. The DDC vender will integrate the new chiller controls and add CO_2 sensors for outside air damper control.
Bid Item 7

The names of the principal officers of the corporation submitting this Proposal, or of the partnership, or of all persons interested in this Proposal as principals are as follows:

_____

_____

_____

_____

(If Sole Proprietor or Partnership)

In witness hereto the undersigned has set his (its) hand this_____ day of _____, 20___.

_____ _____

Signature of Bidder Title (If Corporation)

In witness whereof the undersigned corporation has caused this instrument to be executed and its seal affixed by its duly authorized officers this_____ day of _____, 20___.

Name of Corporation_____

By:_____

Title_____

Construction Contractor's Board No. _____

Attest:_____

Secretary

_____*"Bidder will comply with the provisions of (ORS) 279C.800 through 279C.870*

Initial *(Oregon Revised Statutes)*

In accordance with ORS 279A.120(b) and as specified in the Invitation to Bid, I hereby affirm that I [__] ***am*** *[__]* ***am not*** *(check appropriate box) a "resident bidder". Resident Bidder means a bidder that has paid unemployment taxes or income taxes to the State of Oregon during the 12-month period preceding submission of this bid and has a business address in this state.*

Attest:_____

Bidder

CITY OF WOODBURN, OR
FIRST-TIER SUBCONTRACTOR DISCLOSURE FORM

PROJECT NAME:	**LIBRARY CHILLER REPLACEMENT**		
PROJECT No:	**2022-017-28**	BID No:	**2022-04**
BID CLOSING DATE:	**March 31, 2022**	TIME:	**2:00 PM**
DISCLOSURE DEADLINE DATE:	**March 31, 2022**	TIME:	**4:00 PM**

This form must be submitted at the location specified in the Invitation to Bid on the advertised bid closing date with in two working hours after the advertised bid closing.

List below the name of each subcontractor that will be furnishing labor or materials and that is required to be disclosed, the category of work that the subcontractor will be performing and the dollar value of the subcontract. Enter "None" if there are no subcontractors that need to be disclosed. (IF NEEDED, ATTACH ADDITIONAL SHEETS.)

	NAME	DOLLAR VALUE	CATEGORY OF WORK
1		$	
2		$	
3		$	
4		$	
5		$	

The above listed first-tier subcontractor(s) are providing labor and/or materials with a Dollar Value equal to or greater than:

a. 5% of the total contract price or $15,000 (including all alternates), whichever is greater; or

b. $350,000.00 regardless of the percentage of the total Contract Price.

FAILURE TO SUBMIT THIS FORM FILLED OUT BY THE DISCLOSURE DEADLINE WILL RESULT IN A NON-RESPONSIVE BID. A NON-RESPONSIVE BID WILL NOT BE CONSIDERED FOR AWARD.

Form Submitted by (Bidder Name): _____

Contact Name: _____ **Phone No:** _____

Deliver Form to Agency: CITY OF WOODBURN

Person Designated to Receive Form: CITY ENGINEER

Agency's Address: 190 Garfield Street, Woodburn, OR 97071

UNLESS OTHERWISE STATED IN THE ORIGINAL SOLICITATION, THIS DOCUMENT SHALL NOT BE FAXED.

BID SUBMITTAL CHECKLIST

The following is a checklist of the items that shall be submitted with the Bidder's bid Proposal

- ❑ Prequalification – minimum three days prior to bid, see https://www.woodburn-or.gov/publicworks/page/bids-and-rfps.
- ❑ Form of Proposal
- ❑ Bid Bond
- ❑ First Tier Subcontractor Disclosure Form (Submit within two hours after bid opening time)
- ❑ Certification Page
- ❑ Addendum(s)

CITY OF WOODBURN
LIBRARY CHILLER REPLACEMENT

PART III

CONTRACT FORMS

CERTIFICATE OF LIABILITY INSURANCE – (Sample)

CONSTRUCTION AGREEMENT – (Sample)

NOTICE OF AWARD – (Sample)

PREFORMANCE BOND FORM

PAYMENT BOND FORM

MAINTENANCE AND WARRANTY BOND FORM

NOTICE TO PROCEED – (Sample)

ACORD®

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

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

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

PRODUCER	CONTACT NAME:	
	PHONE (A/C, No, Ext):	FAX (A/C, No):
	E-MAIL ADDRESS:	
	INSURER(S) AFFORDING COVERAGE	NAIC #
INSURED	INSURER A :	
	INSURER B :	
	INSURER C :	
	INSURER D :	
	INSURER E :	
	INSURER F :	

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

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

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
	COMMERCIAL GENERAL LIABILITY						EACH OCCURRENCE	$
	☐ CLAIMS-MADE ☐ OCCUR						DAMAGE TO RENTED PREMISES (Ea occurrence)	$
							MED EXP (Any one person)	$
							PERSONAL & ADV INJURY	$
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$
	☐ POLICY ☐ PRO-JECT ☐ LOC						PRODUCTS - COMP/OP AGG	$
	☐ OTHER:							$
	AUTOMOBILE LIABILITY						COMBINED SINGLE LIMIT (Ea accident)	$
	☐ ANY AUTO						BODILY INJURY (Per person)	$
	☐ OWNED AUTOS ONLY ☐ SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	☐ HIRED AUTOS ONLY ☐ NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	$
								$
	☐ UMBRELLA LIAB ☐ OCCUR						EACH OCCURRENCE	$
	☐ EXCESS LIAB ☐ CLAIMS-MADE						AGGREGATE	$
	☐ DED ☐ RETENTION $							$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y / N						☐ PER STATUTE ☐ OTH-ER	
	ANYPROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? ☐ (Mandatory in NH)	N / A					E.L. EACH ACCIDENT	$
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	$
							E.L. DISEASE - POLICY LIMIT	$

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

The City of Woodburn, OR
its elected and appointed officials, officers,
agents,employees and volunteers.

CERTIFICATE HOLDER

City of Woodburn
Public Works Dept.
190 Garfield St.
Woodburn, OR 97071

CANCELLATION

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

AUTHORIZED REPRESENTATIVE

CONSTRUCTION AGREEMENT

THIS AGREEMENT, made this ____ day of _____, 2022, by and between _____, hereinafter called "CONTRACTOR" and the CITY OF WOODBURN, an Oregon Municipal Corporation, hereinafter called "City" or "Owner".

The Contractor, for the consideration hereinafter named, does hereby agree to furnish all materials, equipment, labor and necessary implements for the construction of and doing such other work as is necessary to make an appropriate and complete improvement.

All of said work shall be done according to the terms, conditions, and requirements of the Contract Documents including the: Advertisement of Bids, Contractor's signed Proposal, information to bidders, special specifications, general conditions, standard specifications, general specifications, and plans and Addendum Nos. _____ for said improvement, which Contract Documents by this reference are made a part of this agreement.

Said improvement shall be completed by the date specified in said Contract Documents and if not so completed, unless said time for completion is extended, as provided in the Contract Documents, or if extended, if the same is not completed within time extended, the City will suffer liquidated damages as specified in the Contract Documents, which liquidated damages shall be retained out of any monies due or to become due under this agreement.

Payments shall be made as provided in the Contract Documents. The contract amount, as approved by the Council on _____, 20____, and agreed by the Contractor, is $_____.

The City will pay the required fee to the Bureau of Labor and Industries equal to one-tenth of one percent (0.1 percent) of the price of this contract, minimum fee in the amount of $250.00 and maximum fee of $7,500.00.

The Contractor will pay the prevailing wage rates in accordance with ORS279C.830 and as amended by Davis Bacon and all current amendments as set forth in the Contract.

NOW, THEREFORE, in consideration of the faithful performance of the covenants and agreements hereinbefore made by the Contractor, the City hereby covenants and agrees to pay the Contractor as in said Contract Documents provided.

IN WITNESS WHEREOF, the respective parties hereto have each caused these presents to be executed in duplicate the day and year first above written.

CITY OF WOODBURN, OREGON

ATTESTED: _____ _____.
HEATHER PIERSON, *CITY RECORDER* Eric Swenson, *MAYOR*

CONTRACTOR: _____.
Organization

By:_____. Title:_____.

NOTICE OF CONTRACT AWARD

PROJECT DESCRIPTION: **Library Chiller Replacement**
FILE No: **2021-017-28**
BID No: **2022-04**

The Owner has considered the bid submitted by you on **March 31, 2022** for the above described work in response to its Invitation to Bid.

You are hereby notified that on **April 11, 2022** the City Council accepted your bid for construction of the work in the amount of **$XXX,XXX.XX**

You are required under the terms of the Notice Inviting Bids and the Information for Bidders to execute the Agreement and furnish bonds and certificates of insurance within **14-calendar days** from the date of this Notice to you.

If you fail to execute said Agreement and furnish said bonds and certificates of insurance within 14-days of this Notice, said Owner will be entitled to consider all your rights arising out of the Owner's acceptance of your bid to be abandoned and as a forfeiture of your Bid Bond. The Owner 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 Owner.

Dated this 12 of **April, 2022**

By _____ Title _____

Contractor shall fill in all information below this line and return original signed copy

- -

ACCEPTANCE OF NOTICE

Receipt of the foregoing Notice of Award is hereby acknowledged

By: _____

Title: _____

This: _____ day of _____ 2022.

Bond No. _____
Solicitation _____
Project BID#: **2022-04**

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS that, _____, as the Principal, and _____, a corporation organized and existing under the laws of the State of Oregon, and duly authorized to transact a surety business in the State of Oregon, as Surety, are held and firmly bound unto the City of Woodburn, a municipal corporation of the State of Oregon, in the penal sum of $_____ Dollars $_____, lawful money of the United States of America, for the payment whereof well and truly to be made, we and each of us, jointly and severally, bind ourselves, our and each of our heirs, executors, administrators successors and assign, firmly by these presents.

WHEREAS, the Principal has entered into a contract with the City of Woodburn, the plans, specifications, terms and conditions of which are contained in the above-referenced Solicitation;

WHEREAS, the terms and conditions of the contract, together with applicable plans, standard specifications, special provisions, schedule of performance, and schedule of contract prices, are made a part of this Performance Bond by reference, whether or not attached to the contract (all hereafter called the "Contract"); and

WHEREAS, the Principal has agreed to perform the Contract in accordance with the terms, conditions, requirements, plans and specifications, and all authorized modifications of the Contract which increase the amount of the work, the amount of the Contract, or constitute an authorized extension of the time for performance, notice of any such modifications hereby being waived by the Surety,

NOW, THEREFORE, THE CONDITION OF THIS BOND IS SUCH:

That if the Principal herein shall faithfully and truly observe and comply with the terms, conditions and provisions of the Contract, in all respects, and shall well and truly and fully do and perform all matters and things undertaken by Contractor to be performed under the Contract, upon the terms set forth therein, and within the time prescribed therein, or as extended as provided in the Contract, with or without notice to the Sureties, and shall indemnify and save harmless the City of Woodburn, the, its officers, employees and agents, against any direct or indirect damages or claim of every kind and description that shall be suffered or claimed to be suffered in connection with or arising out of the performance of the Contract by the Principal or its subcontractors, and shall in all respects perform said contract according to law, then this obligation is to be void; otherwise, it shall remain in full force and effect.

Nonpayment of the bond premium will not invalidate this bond nor shall the City of Woodburn, be obligated for the payment of any premiums.

This bond is given and received under authority of ORS Chapter 279C, the provisions of which hereby are incorporated into this bond and made a part hereof.

Contractor

_____

BY:

TITLE: _____

Surety

By: _____
Attorney-In-Fact

Bond No. _____
Solicitation:_____
Project Bid#: **2022-04**

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS that, _____, as the Principal, and _____, a corporation organized and existing under the laws of the State of Oregon, and duly authorized to transact a surety business in the State of Oregon, as Surety, are held and firmly bound unto the City of Woodburn, a municipal corporation of the State of Oregon, in the penal sum of $_____ Dollars $_____, lawful money of the United States of America, for the payment whereof well and truly to be made, we and each of us, jointly and severally, bind ourselves, our and each of our heirs, executors, administrators successors and assign, firmly by these presents.

WHEREAS, the Principal has entered into a contract with the City of Woodburn, the plans, specifications, terms and conditions of which are contained in the above-referenced Solicitation;

WHEREAS, the terms and conditions of the contract, together with applicable plans, standard specifications, special provisions, schedule of performance, and schedule of contract prices, are made a part of this Payment Bond by reference, whether or not attached to the contract (all hereafter called the "Contract"); and

WHEREAS, the Principal has agreed to perform the Contract in accordance with the terms, conditions, requirements, plans and specifications, and all authorized modifications of the Contract which increase the amount of the work, the amount of the Contract, or constitute an authorized extension of the time for performance, notice of any such modifications hereby being waived by the Surety,

NOW, THEREFORE, THE CONDITION OF THIS BOND IS SUCH:

That if the Principal shall faithfully and truly observe and comply with the terms, conditions and provisions of the Contract, in all respects, and shall well and truly and fully do and perform all matters and things by it undertaken to be performed under said Contract and any duly authorized modifications that are made, upon the terms set forth therein, and within the time prescribed therein, or as extended therein as provided in the Contract, with or without notice to the sureties, including the conditions listed in ORS 279.310 to 279.320, and shall indemnify and save harmless the City of Woodburn, its officers, employees and agents, against any claim for direct or indirect damages of every kind and description that shall be suffered or claimed to be suffered in connection with or arising out of the performance of the Contract by the Contractor or its Subcontractors, and shall promptly pay all persons supplying labor, materials or both to the Principal or its Subcontractors for prosecution of the work provided in the Contract; and shall promptly pay all contributions due the State Industrial Accident Fund and the State Unemployment Compensation Fund from the Principal or its Subcontractor in connection with the performance of the Contract; and shall pay over to the Oregon

Department of Revenue all sums required to be deducted and retained from the wages of employees of the Principal and its Subcontractors pursuant to ORS 316.167, and shall permit no lien nor claim to be filed or prosecuted against the City of Woodburn on account of any labor or materials furnished; and shall do all things required of the Principal by the laws of this State, then this obligation shall be void; otherwise, it shall remain in full force and effect.

Nonpayment of the bond premium will not invalidate this bond nor shall the City of Woodburn, be obligated for the payment of any premiums.

This bond is given and received under authority of ORS Chapter 279C, the provisions of which hereby are incorporated into this bond and made a part hereof.

Contractor

_____

BY:

TITLE: _____

Surety

By: _____

Attorney-In-Fact

Bond No. _____
Solicitation _____
Project Bid#: **2022-04**

MAINTENANCE/WARRANTY BOND

KNOW ALL MEN BY THESE PRESENTS that, _____, as the Principal, and _____, a corporation organized and existing under the laws of the State of Oregon, and duly authorized to transact a surety business in the State of Oregon, as Surety, are held and firmly bound unto the City of Woodburn, a municipal corporation of the State of Oregon, in the penal sum of $_____ Dollars $_____, lawful money of the United States of America, for the payment whereof well and truly to be made, we and each of us, jointly and severally, bind ourselves, our and each of our heirs, executors, administrators successors and assign, firmly by these presents.

WHEREAS, the Principal has entered into a contract with the City of Woodburn, the plans, specifications, terms and conditions of which are contained in the above-referenced Solicitation;

WHEREAS, the terms and conditions of the contract, together with applicable plans, standard specifications, special provisions, schedule of performance, and schedule of contract prices, are made a part of this Maintenance/Warranty Bond by reference, whether or not attached to the contract (all hereafter called the "Contract"); and

WHEREAS, the Principal has agreed to perform the Contract in accordance with the terms, conditions, requirements, plans and specifications, and all authorized modifications of the Contract which increase the amount of the work, the amount of the Contract, or constitute an authorized extension of the time for performance, notice of any such modifications hereby being waived by the Surety,

NOW, THEREFORE, THE CONDITION OF THIS BOND IS SUCH:

That the Principal agrees to warrant to the City of Woodburn that the construction is, and will remain for a period of one (1) year from the date of acceptance, free from defects in materials and workmanship.

That if the Principal herein shall faithfully and truly observe the terms, provisions, conditions, stipulations, directions, and requirements of the Contract and shall in all respects, whether the same be enumerated herein or not, faithfully comply with the same and shall assume the defense of indemnify and save harmless the City of Woodburn, its officers, agents, and employees from all claims, liabilities, loss, damage or injury which may have been suffered or claimed to have been suffered to persons or property directly or indirectly resulting from or arising out of the operations or conduct of the Principal or any subcontractor in the performance of the work under the Contract and shall indemnify and make whole the City for any injury or damage to any street, highway, avenue, or road or any part thereof, resulting from the operations or conduct of the Principal or any subcontractor in connection with performance or conduct of the work under the Contract,

and shall in all respects faithfully keep and observe all of said terms, provision, conditions, stipulations, directions, and requirements, then this obligation is void, otherwise, it shall remain in full force and effect.

WITNESS our hand and seals this _____ day of_____, 2020.

Contractor

_____

BY:

TITLE: _____

Surety

By: _____

Attorney-In-Fact

NOTICE TO PROCEED	
PUBLIC WORKS DEPT. **ENGINEERING DIV.**	WOODBURN OREGON Incorporated 1889

PROJECT NAME:	LIBRARY CHILLER REPLACEMENT		
BID #:	2022-04	PROJECT No #:	2021-017-28
AMOUNT:	$	B,EGIN DATE:	
CONTRACTOR:		CCB #:	
ADDRESS:			

You are hereby notified to commence work on the referenced contract, and shall fully complete all of the work of said contract within 120 calendar days.

The completion date is therefore: **August 31, 2022 or as per exception**

The contract provides for the assessment of liquidated damages for each consecutive calendar day after the above-established contract completion date that the work remains incomplete in the amount of: $ _____per day.

PM for THE CITY OF WOODBURN: Pete Gauthier

DATE: _____

Contractor: *Complete items below this line and return Document to Owner within seven (7) days*:

CONTRACTOR'S ACCEPTANCE OF THIS NOTICE

Receipt of the foregoing Notice to Proceed is hereby acknowledged:

SIGNED: _____

TITLE: _____

DATE: _____

NTP Form
Revised Dec 2009

CITY OF WOODBURN

LIBRARY CHILLER REPLACEMENT

PART IV

SPECIFICATIONS

GENERAL CONDITIONS

SPECIAL PROVISIONS

PART 00100 – GENERAL CONDITIONS

SECTION 00110 - ORGANIZATION, CONVENTIONS, ABBREVIATIONS AND DEFINITIONS

Comply with Section 00110 of the Standard Specifications modified as follows:

00110.05(a) Grammar - Add the following bullet to the bullet list:

- For the purposes of this Contract, the terms "sidewalk ramp" and "sidewalk ramps" shall respectively refer to and shall be read to mean "curb ramp" and "curb ramps".

00110.05(e) Reference to Websites - Add the following bullet list to the end of this subsection:

- City of Woodburn Public Works Department:
  https://www.woodburn-or.gov/?q=public_works

- City of Woodburn Public Works Department Bids and RFPs:
  http://www.ci.woodburn.or.us/?q=blog-categories/bids-and-rfps

- American Traffic Safety Services Association (ATSSA)
  www.atssa.com

- ODOT Construction Section
  www.oregon.gov/odot/construction/pages/index.aspx

- ODOT Construction Section - Qualified Products List (QPL)
  www.oregon.gov/ODOT/Construction/Pages/Qualified-Products.aspx

- ODOT Estimating
  www.oregon.gov/ODOT/Business/Pages/Steel.aspx

- Oregon Legislative Counsel
  www.oregonlegislature.gov/lc

- ODOT Procurement Office - Conflict of Interest Guidelines and Disclosure Forms
  www.oregon.gov/ODOT/Business/Procurement/Pages/PSK.aspx

- ODOT Procurement Office - Construction Contracts Unit Notice of Intent
  www.oregon.gov/ODOT/Business/Procurement/Pages/NOI.aspx

- ODOT Procurement Office - Construction Contracts Unit prequalification forms
  www.oregon.gov/odot/business/procurement/pages/bid_award.aspx

- Oregon Secretary of State: State Archives
  sos.oregon.gov/archives/Pages/default.aspx

- ODOT Traffic Control Plans Unit
  www.oregon.gov/ODOT/Engineering/Pages/Work-Zone.aspx
- ODOT Traffic Standards
  www.oregon.gov/ODOT/Engineering/Pages/Signals.aspx

00110.20 Definitions – Delete the "3D Engineering Model" and "3D Construction Model" definitions.

Replace the "Agency" definition with the following definition:

Agency – The City of Woodburn Public Works Department – Engineering Division.

Add the following definition:

Agency Website – This is the website of the Public Works Department, Engineering Division as owned, controlled and administrated by the City of Woodburn, OR. The URL being referenced when this term is used shall be the following:

http://www.ci.woodburn.or.us/?q=blog-categories/bids-and-rfps

Replace the "Bid Booklet" definition with the following definition:

Bid Booklet - The version that can be accessed and printed from the Agency website.

Replace the "Traveled Way" definition with the following definition:

Traveled Way - That part of the Highway for moving vehicles, exclusive of berms and Shoulders.

SECTION 00120 - BIDDING REQUIREMENTS AND PROCEDURES

Comply with Section 00120 of the Standard Specifications modified as follows:

00120.00 Prequalification of Bidders - Replace this subsection, except for the subsection number and title, with the following:

The Agency will prequalify Bidders according to ODOT's Oregon Administrative Rules and prequalification procedures. A Bidder must file for prequalification and **NO** fee. Prequalification must be renewed annually. Bidders shall make application for prequalification and for required renewals on standard forms available from the ODOT Procurement Office - Construction Contracts Unit website. Bidders shall return the completed application to the Dago Garcia at 190 Garfield St. Woodburn, OR 97071 or e-mail to dago.garcia@ci.woodburn.or.us. No facsimile of Prequalification will be accepted.

Contracts will only be awarded to Bidders who, at the time of Bid Opening, are prequalified in the Class or Classes of Work specified in the Special Provisions, except that a Bidder whose prequalification has been revoked or revised as provided in ORS 279C.430(4) may also be eligible for Award under that statute if the Project was advertised prior to the revocation or revision. The Agency will consider a Bid from a Bidder whose complete application for prequalification has been received by the Public Works Department – Engineering Division Office at least 3 Calendar Days before the opening of Bids. Bidders shall submit Bids in the same company name used on the prequalification application; provided however, if Bidder's legal name has changed since the submittal of its application for prequalification, it shall submit its Bid under its current legal name with the former name referenced by "formerly known as".

The Agency will regularly evaluate the performance of Contractors on its projects for purposes of responding to reference checks, future prequalification and determinations of responsibility.

00120.01 General Bidding Requirements - In the paragraph that begins "Bidders may submit …", replace the paragraph with the following sentence:

Bidders may submit Bids by paper only. No electronic (e-mail or facsimile) Bids will be accepted.

00120.05 Request for Plans, Special Provisions, and Bid Booklets - Replace this subsection, with the following subsection:

00120.05 Request for Plans, Special Provisions, and Bid Booklets:

(a) Informational Plans and Special Provisions - Informational Project Plans and Special Provisions are available, free of charge, on the Agency's website.

(b) Bidding Plans, Special Provisions, and Bid Booklets - Bidders must submit paper Bids.

(1) Paper Bids - Bidders submitting bids shall access and print Plans, Special Provisions, and Bid Booklets from the Agency's website. Bidders obtaining Plans, Special Provisions, and Bid Booklets must register on Agency's list of "Holders of Bidding Plans". Bids will be considered responsive only if Bidders are registered as "Holders of Bidding Plans".

Delete the paragraph that begins with the following;

"(2) Electronic Bids - Bidders …"

The Plans, which are applicable to the Work to be performed under the Contract, are included in these Special Provisions.

00120.10 Bid Booklet - In the paragraph that begins "The Bid Section includes all pages after…", add the following bullet to the bullet list:

- Certificate of nondiscrimination regarding ORS 279A.110 and certificate regarding policy and practice against sexual harassment, sexual assault and discrimination against employees who are members of a protected class as required by Chapter 212, Oregon Laws 2017 (House Bill 3060)
-

00120.30 Changes to Plans, Specifications, or Quantities before Opening of Bids - Replace all "ODOT eBids website" wording in this section with "Agency's website".

Delete "(see 00110.05(e))" wording in this section.

00120.40(a-1) Paper Bids - Replace this subsection, except for the subsection number and title, with the following:

Bidders shall not alter, in any manner, the (paper) documents within the Bid Section that are accessed and printed from the Agency's website. Bidders shall complete the certifications and statements included in the Bid Section of the Bid Booklet according to the instructions. Signature of the Bidder's authorized representative thereon constitutes the Bidder's confirmation of an agreement to all certifications and statements contained in the Bid Booklet. Entries on paper documents in the Bid Section shall be in ink or typed.

The Bidder shall properly complete and bind all the paper documents in the Bid Section, as specified in 00120.10, together with all other required documents that are part of the Bid Booklet, between the front and back covers of the Bid Booklet, except that the Bid Bond is not required if another permissible type of Bid guaranty is provided. (see 00120.40(e))

00120.40(a-2) Electronic Bids – Delete this subsection in its entirety.

00120.40(c-2) Electronic Bid Schedule Entries – Delete this subsection in its entirety.

00120.40(e-2) Bid Guaranty with Electronic Bids - Delete this subsection in its entirety.

00120.40(f) Disclosure of First-Tier Subcontractors - Replace this subsection, except for the subsection number and title, with the following:

Without regard to the amount of a Bidder's Bid, if the Agency's cost range for a public improvement Project in the "Invitation to Bid", or in other advertisement or solicitation documents, exceeds $100,000, the Bidder shall, within 2 working hours of the time Bids are due to be submitted, submit to the Agency, on a form provided by the Agency, a disclosure

identifying any first-tier Subcontractors that will furnish labor or labor and Materials, and whose contract value is equal to or greater than:

- 5% of the total Project Bid, but at least $15,000; or
- $350,000, regardless of the percentage of the total Project Bid.

For each Subcontractor listed, Bidders shall state:

- The name of the Subcontractor;
- The dollar amount of the subcontract; and
- The category of Work that the Subcontractor would be performing.

If no subcontracts subject to the above disclosure requirements are anticipated, a Bidder shall so indicate by entering "NONE" or by filling in the appropriate check box. For each Subcontractor listed, Bidders shall provide all requested information. An incomplete form will be cause for rejection of the Bid.

The Subcontractor Disclosure Form may be submitted for a paper Bid (See 00120.05(b-1) either:

By filling out the Subcontractor Disclosure Form printed from the Bid Booklet on the Agency's Engineering Division's website.

Subcontractor Disclosure Forms will be considered late if not received by the Agency within 2 working hours of the time designated for receiving Bids.

The Agency is not responsible for partial, failed, illegible or partially legible facsimile (FAX) transmissions or submittals, and such forms may be rejected as incomplete.

In the event that multiple Subcontractor Disclosure Forms are submitted, the last version received prior to the deadline will be considered to be the intended version.

Bids not in compliance with the requirements of this Subsection will be considered non-responsive.

00120.45 Submittal of Bids – Replace subsections (a) with the following:

00120.45 Submittal of Bids – Bids may be submitted by mail, parcel delivery service, or hand delivery to the office and address and at the time given in the Bid Booklet. Submit Bids in a sealed envelope and marked on the outside of the envelope as required by the Invitation to Bid. Closing time for acceptance of Bids is 2:00:00 p.m. local time on the day of Bid Opening. Bids submitted after the time set for receiving Bids will not be opened or considered. The Agency assumes no responsibility for the receipt and return of late Bids.

00120.45(b) Electronic Bids - Delete this subsection in its entirety.

00120.60(a) Paper Bids - In the paragraph that begins "Information entered into…", replace the words " ODOT Procurement Office" with the words "Agency".

In the paragraph that begins "A Bidder may withdraw…", replace the words "ODOT Procurement Office " with the words "Agency".

00120.60(b) Electronic Bids – Delete this subsection in its entirety.

00120.70 Rejection of Nonresponsive Bids - Add the following bullets to the end of the bullet list:

- The Bidder has liquidated and delinquent debt owed to the State or any department or agency of the State.

SECTION 00130 - AWARD AND EXECUTION OF CONTRACT

Comply with Section 00130 of the Standard Specifications modified as follows:

00130.10 Award of Contract - Replace the paragraph that begins "The Agency will provide Notice of Intent to Award…" with the following bullet:

The Agency will provide Notice of Intent to Award on the Agency's website.

00130.15 Right to Protest Award - Replace this subsection number and title and replace the sentence that begins "Before the Agency will..." with the following number and title and sentence:

00130.15 Right to Protest Award - Adversely affected or aggrieved Bidders, limited to the here apparent lowest Bidders and any other Bidder directly in for Contract Award, may submit to the Agency a written protest of the Agency's intent to Award within 3 working days following posting of the Notice of Intent to Award on the Agency's website. The protest shall specify the grounds upon which it is based.

The Agency is not obligated to consider late protests.

00130.50(a) By the Bidder - In the paragraph that begins "The successful Bidder…", replace the words "ODOT Procurement Office – Construction Contract Unit" with the words "Agency's Project Manager".

SECTION 00140 - SCOPE OF WORK

Comply with Section 00140 of the Standard Specifications.

SECTION 00150 - CONTROL OF WORK

Comply with Section 00150 of the Standard Specifications modified as follows:

00150.15 Construction Stakes, Lines, and Grades: - Replace this subsection number and title with the following number and title subsection:

00150.15 Construction Stakes, Lines, and Grades: All new construction is relative to existing fixed pipes and structures. The Engineer will assist in defining the location of the reference points, but the Contractor shall be responsible for final location and fit of all equipment. Survey work, if any, will be considered incidental to the Contract.

00150.30 Delivery of Notices - Add the following to the end of this subsection:

For purposes of this subsection, the time zone is Pacific Standard Time (PST) to determine time of receipt of notices and other documents. For purposes of this subsection, non-business days are Saturdays, Sundays and legal holidays as defined by ORS 187.010 and 187.020.

Following Notice to Proceed, all notices and other documents submitted to the Contractor by the Engineer, or to the Engineer by the Contractor, electronically under 00170.08:

- If recorded in Doc Express® as received before 5:00 p.m. PST on a business day it shall be considered as received on the business day on which it was actually received in Doc Express®.
- If recorded in Doc Express® as received on a non-business day, or after 5:00 p.m. PST on a business day, it shall be considered as received at 8:00 a.m. PST on the next business day.

Claims must be submitted on paper documents according to Section 00199.

00150.35 Plans, 3D Engineering Models, Working Drawings, and 3D Construction Models: Remove all of the following words from this subsection “3D Engineering Models, 3D Construction Models.

00150.50(c) Contractor Responsibilities - Add the following subsection:

00150.50(f) Utility Information:

Contact those Utilities having buried facilities and request that they locate and mark them for their protection prior to construction.

UTILITY	CONTACT PERSON	PHONE NUMBER
Century Link	Josh Fallin	503.399.4931
AT&T	Tom Normoyle	503.588.1899
NWN Gas	Daniel Kizer	503.226.4211ext8166
PGE	Darrin Perkins	503.463.4325
DataVision	Dennis Weddle	503-949-9701
Wave Cable/Internet	Derek Anderson	503.798-6651
City Water	Byron Brooks	503.980.5235
City Sewer Collections and Streets	Chad Snyder	503.982.5481
UTILITY	**CONTACT PERSON**	**PHONE NUMBER**
Republic Services - Solid Waste	Dispatch	503.981.1278
US Postal Service	Kevin McGrory	503.982.0186
First Student - School Bus	Delores Stubblefield	503.982.1427
911 - Non Emergency	Operator/Dispatch	503.982.2340

This Project is located within the Oregon Utility Notification Center area which is a Utilities notification system for notifying owners of Utilities about Work being performed in the vicinity of their facilities. The Utilities notification system telephone number is 811 (or use the old number which is 1-800-332-2344).

Further notify and coordinate with the following:

SECTION 00170 - LEGAL RELATIONS AND RESPONSIBILITIES

Comply with Section 00170 of the Standard Specifications modified as follows:
Add the following subsection:

00170.04 Patents, Copyrights, and Trademarks - Replace the paragraph that begins " Prior to use of designs, devices, materials, or processes…" with the following paragraph:

Prior to use of designs, devices, materials, or processes protected by patent, copyright, or trademark, the Contractor shall obtain from the Entity entitled to enforce the patent, copyright, or trademark all necessary evidence of Contractor's legal right to use such design, device, material, or process.

00170.05 Assignment of Antitrust Rights - Replace the bullet that reads "ORS 646.725; and" with the following bullet:

- ORS 646.725; or

00170.07 Record Requirements - In the paragraph that begins "For purposes of this Subsection, the term…", replace the words "OAR 731-005-0780" with the words "OAR 734-010-0400".

00170.07(a) Records Required - In the paragraph that begins "These records shall include…", replace the bullet that begins "Contracts or documents of other…", with the following bullet:

- Contracts or documents of other arrangements with any Related Entity as defined in OAR 734-010-0400.

In the paragraph that begins "The Contractor shall include…", replace the words "OAR 731-005-0780" with the words "OAR 734-010-0400".

00170.07(b) Access to Records - In the paragraph that begins "The Contractor shall provide…", replace the words "OAR 731-005-0780(9)" with the words "OAR 734-010-0400(9)".

00170.62 Labor Nondiscrimination - Add the following sentence to the end of this subsection:

It is a material term of this Contract that the Contractor certifies by entering into this Contract that the Contractor has a written policy and practice that meets the requirements described in Chapter 212, Oregon Laws 2017 (House Bill 3060) for preventing sexual harassment, sexual assault and discrimination against employees who are members of a protected class and that the Contractor shall maintain the policy and practice in force during the entire term of this Contract.

00170.60 Safety, Health and Sanitation Provisions – Add the following paragraph to the end of this subsection:

The Contractor is responsible to require each subcontractor at every tier to comply with the requirements of OAR 437-002-0146, Oregon OSHA's Confined Space Rule including a copy of all closed permit entry forms to the Agency Project Manager within 24 hours of closing the permit.

00170.70(a) Insurance Coverages - The following insurance coverages and dollar amounts are required pursuant to this subsection:

InsuranceCombined Single LimitAnnual Aggregate

Coverages	per Occurrence	Limit
Commercial General Liability	$1,000,000.00	$2,000,000.00
Commercial Automobile Liability	$1,000,000.00	(aggregate limit not required)

00170.70(c) Additional Insured - Add the following paragraph and bullet to the end of this subsection:

Add the following as Additional Insureds under the Contract:

- The City of _Woodburn, OR and its officers, agents, representatives, volunteers and employees

00170.72 Indemnity/Hold Harmless - Add the following paragraph and bullets to the end of this subsection:

Extend indemnity, defense and hold harmless to the Agency and the following:

- The City of _Woodburn, OR and its officers, agents, representatives, volunteers and employees

SECTION 00180 - PROSECUTION AND PROGRESS

Comply with Section 00180 of the Standard Specifications modified as follows:

00180.40(a) In General – Add the following bullets to this subsection:

- Street Closures are not allowed in this project.
- Provided and maintain access to all homes, School and Business at all times.
- All work shall be accomplished between 7:00 AM and 7:00 PM every day from Monday through Friday, excluding Legal Holidays.

Add the following subsection:

00180.40(c) Specific Limitations - Limitations of operations specified in these Special Provisions include, but are not limited to, the following:

Limitations	**Subsection**
Cooperation with Utilities	00150.50
Cooperation with Other Contractors	00150.55
On-Site Work	00180.40(b)
Contract Time	00180.50(h)
Special Events	00220.40(e)(2)(b)
Regulated Work Areas	00290.34(a)
Noise Control	00290.32

00180.41 Project Work Schedules - After the paragraph that begins "One of the following Type…" add the following paragraph:

In addition to the "look ahead" Project Work schedule, a Type _____ schedule as detailed in the Standard Specifications is required on this Contract.

00180.42 Preconstruction Conference - Add the following paragraph to the end of this subsection:

The Contractor shall conduct a group Utilities scheduling meeting with representatives from the Utility companies involved with this Project and the Engineer before the preconstruction conference. The Contractor shall incorporate the Utilities time needs into the Contractor's schedule submitted at the preconstruction conference.

00180.50(c) Beginning of Contract Time - Replace this subsection, except for the subsection number and title, with the following:

When the Contract Time is stated in Calendar Days, counting of Contract Calendar Days will begin on the day the Contractor begins On-Site Work as defined in 00110.20.

Add the following subsection:

00180.50(h) Contract Time - There is one Contract Time on this Project as follows:

Complete all Work to be done under the Contract absolutely not later than August 31, 2022.

The Contractor shall complete all Work to be done under the Contract within one hundred and twenty calendar (120) of “Notice to Proceed” or within Thirty (30) days of delivery of chiller whichever occurs later.

00180.85(b)(1) Single Contract Time - Replace this subsection, except for the subsection number and title, with the following:

The Liquidated Damages per Calendar Day* are 15.0 percent of C divided by T as defined in this Section.

C = The Contractor’s Bid amount for the Contract.
T = The total Calendar Days between the latest completion date or time listed under 00180.50(h) in the Solicitation Documents and the Bid Opening that will result in the greatest value for T.

* Calendar Day amounts are applicable when the Contract time is expressed on the Calendar Day or fixed date basis.

SECTION 00190 - MEASUREMENT OF PAY QUANTITIES

Comply with Section 00190 of the Standard Specifications.

SECTION 00195 - PAYMENT

Comply with Section 00195 of the Standard Specifications modified as follows:

00195.10 Payment for Changes in Materials Costs - Replace this subsection with the following subsection:

00195.10 Payment for Changes in Materials Costs – There are no changes in payments for escalation/De-Escalation of materials in this Contract.

Additional work required by the Agency will be negotiated on a case by case basis for all changes in materials costs and shall be agreed upon, in writing, before the work is accomplished.

All materials are subject to change in costs and conditions, as specified in subsection 00195.20 Changes in Plans or Character of Work, including but not limited to:

- Steel Materials Price Adjustment
- Asphalt Cement Price Adjustment
- Fuel Price Adjustment

The Agency reserves all of its rights under the Contract, including, but not limited to, its rights for suspension of the Work under 00180.70 and its rights for termination of the Contract under 00180.90, and this escalation/de-escalation provision shall not limit those rights.

00195.12 Steel Material Price Escalation/De-Escalation – Remove this subsection in its entirety.

00195.50 (1) Progress Payments - Replace the paragraph that begins with “At the same time each month…” of this subsection with the following:

At the same time each month, the Contractor will make an estimate of the amount and value of the Pay Item Work completed. The Contractor will submit this estimation of quantities to the Engineer for agreement on the number of estimated units completed for unit price Pay Items plus the estimated percentage completed of lump sum Pay Items.

00195.50 (2) Value of Materials on Hand – Replace the paragraph that begins with “The Engineer will…” of this subsection with the following:

The Contractor will also make an estimate of the amount and value of acceptable Materials on hand, i.e., already delivered and stored according to 00195.60(a), to be incorporated into the Work and submit this estimation to the Engineer for agreement for Pay Items for this progress payment.

00195.50(b) Retainage - Replace the paragraph that begins "The amount to be retained…" with the following paragraph:

The amount to be retained from progress payments will be 5% of the value of Work accomplished, and will be retained by the Agency until completion of the Work as specified in (c) below.

00195.50(c) Forms of Retainage - Replace this entire subsection through and including 00195.50(3) Bonds, Securities, and Other Instruments with the following:

The Agency will withhold payment of 5% of all progress payments until completion of the project as is described in (c) below.

Insert the following:

00195.50 (c) Release of Retainage – The Agency will make payment to the Contractor after the Contractor has made application for payment to the Engineer upon issuance of the Third Notification.

00195.50 (e) Withholding Payments – Change (e) to (d) in the title of this subsection.

00195.50 (f) Prompt Payment Policy – Change the (f) to (e) in the title of this subsection.

00195.90(c) No Waiver of Right to Make Adjustment - Replace this subsection, except for the subsection number and title, with the following:

The fact that the Agency has made any measurement, estimate, determination or certification either before or after completion of the Project, Final Acceptance, Agency assumption of possession of the Project Site, determination of satisfactory completion of Pay Items or Work or release of retainage under 00195.50(c) or payment for any part of the Work, shall not prevent either party from:

- Showing the true amount and character of the Work;
- Showing that any measurement, estimate, determination or certification is incorrect;
- Recovering from the other party damages that may have been suffered because the other party failed to comply with the Contract.

SECTION 00196 - PAYMENT FOR EXTRA WORK

Comply with Section 00196 of the Standard Specifications.

SECTION 00197 - PAYMENT FOR FORCE ACCOUNT WORK

Comply with Section 00197 of the Standard Specifications modified as follows:
00197.20(a) General - Replace the paragraph that begins "Except as modified by these…" with the following paragraph:

Except as modified by these provisions, Equipment use approved by the Engineer will be paid at the rental rates given in the most current edition of the EquipmentWatch Cost Recovery (Blue Book) published by EquipmentWatch, a division of Penton Business Media, Inc., and available from EquipmentWatch (phone 1-800-669-3282) (http://equipmentwatch.com).

00197.20(c-3) Rate Adjustment Factor - Replace this subsection, except for the subsection number and title, with the following:

The rate adjustment factor used above will be determined by applying only the Model Year Adjustment to the Blue Book Rates. The Regional and User Defined Ownership/Operating Adjustments shall not apply.

00197.20(c-5) Limitations - Delete the paragraph that begins "The Blue Book..."

SPECIAL PROVISIONS

WORK TO BE DONE

The Work to be done under this Contract consists of the following:

1. Removing the existing Chiller and all appurtenances not to be reused.
2. Procure and install a new chiller to meet or exceed the requirements of EEM 1 in PART V Appendix “A”, KFAA Technical Analysis Study.
3. Connect to existing chilled water Supply and return lines.
4. Coordinate with City’s DDC Vendor to integrate controls to the existing DDC. .
5. Insure that equipment is functioning properly as intended.

APPLICABLE SPECIFICATIONS

The Specifications that are applicable to the Work on this Project is the 2018 edition of the "Oregon Standard Specifications for Construction".

All number references in these Special Provisions shall be understood to refer to the Sections and subsections of the Standard Specifications bearing like numbers and to Sections and subsections contained in these Special Provisions in their entirety.

CLASS OF PROJECT

This is a Municipal Public Works Project.

SEQUENCE OF WORK

The sequence of the work will be the responsibility of the contractor with these exceptions:

1. Considering the lead time of the equipment, avoid as much as possible, having the chiller down during hot weather.
2. Coordinate with the Clima-Tech to minimize down time.
3. Keep the Library Manager on site informed of the schedule.

SECTION 00210 - MOBILIZATION

Comply with Section 00210 of the Standard Specifications.

SECTION 00310 - REMOVAL OF STRUCTURES AND OBSTRUCTIONS

Comply with Section 00310 of the Standard Specifications.

SECTION 00410 - COMMON PROVISIONS FOR PIPE LINING

Comply with Section 00410 of the Standard Specifications.

SECTION 00420 – SALVAGING PIPE

Comply with Section 00420 of the Standard Specifications modified as follows:

00420.80 Measurement – No measurement of quantities will be made for salvage pipe or associated equipment.

00420.90 Payment - No payment of quantities will be made for salvage pipe. All salvage pipe and associated equipment is the property and responsibility of the Contractor to dispose of in a location and manner as approved by law.

SECTION 00160.15 – COMMON PRODUCTS REQUIREMENTS

Add this Section, see Appendix A

SECTION 00165.93 MANUFACTURER'S FIELD SERVICES

Add this Section, see Appendix A

SECTION 00165.94 OPERATIONS AND MAINTENANCE DATA SPECIFICATION

Add this Section, see Appendix A

SECTION 00165.95 SEISMIC ANCHORAGE AND BRACING

Add this Section, see Appendix A

SECTION 10600 – EQUIPMENT DEMOLITION AND SALVAGE

Add this Section, see Appendix A

APPENDIX A

02001.30 Concrete Mix Design - Replace the bullet that begins "Cementitious material with modifiers proportioned according…" with the following bullet:

Cement with SCM proportioned according to 02001.31(b) and with trial batches performed to demonstrate that the proposed alternate mix design provides a maximum of 1,000 coulombs at 90 days when tested according to AASTHO T 277.

02001.31 Concrete Constituents - Replace this entire subsection with the following subsection:

02001.31 Concrete Constituents:

(a) Portland Cement - Use AASHTO M 85 or ASTM C150, Type I or II cement for structural or paving concrete. Use AASHTO M 85 or ASTM C150, Type III cement for precast prestressed concrete. Provide all cement from the QPL.

(b) Supplementary Cementitious Materials - SCM may be used separately or in combinations up to the specified maximum percentage by mass according to the following:

Separate SCM	Maximum
Fly Ash + Other Pozzolans	25%
GGBFS	50%
Silica Fume	5%

Combined SCM	Maximum
Fly Ash + Other Pozzolans + GGBFS + Silica Fume	50%*
Fly Ash + Other Pozzolans + Silica Fume	30%*

* Fly ash + other pozzolans shall constitute no more than 25% and silica fume shall constitute no more than 5% of the total weight of cementitious materials.

When silica fume is added to truck mixed concrete, mix the batch a minimum of 100 revolutions at the mixing speed specified by the manufacturer before leaving the batch plant.

(c) Blended Hydraulic Cement - Blended hydraulic cement may be used subject to the limits of 02001.31(b) and 02010.20.

(d) Chemical Admixtures - Use chemical admixtures according to the manufacturer's recommendations. Use WRA in all seal concrete and in Class 5000 concrete or greater. Use HRWRA in all HPC.

Use a superset extender from the QPL in all concrete for bridge decks. Use an appropriate amount to extend the initial set time of the concrete by 90 minutes.

(e) Aggregate - If the nominal maximum size of the coarse Aggregate is not included as a part of the class of concrete, or shown on the Plans, any size from 1 1/2-inch to 3/8-inch nominal maximum size Aggregate may be used according to ACI guidelines except:

Use 1 1/2 inch nominal maximum size Aggregates in bridge deck concrete.

Use 1 1/2 inch nominal maximum size Aggregates in paving concrete unless otherwise indicated.

Use 3/8 inch nominal maximum size Aggregates in drilled shafts unless otherwise indicated.

Proportion all HPC for a minimum coarse Aggregate absolute solid volume according to Table 02001-4:

Table 02001-4

Absolute Solid Volume	
Maximum Nominal Aggregate Size	**Cu. Yd. (Aggregate) / Cu. Yd. (Concrete)**
3/8"	0.36
1/2"	0.38
3/4"	0.40
1"	0.42
1 1/2"	0.44

Two or more Aggregate products or sources meeting Specifications may be blended to improve concrete properties. Blending non-specification Aggregate Materials, except for gradation, with specification Materials is not allowed.

02001.35 Required Submittals for Mix Designs - Replace this entire subsection with the following subsection:

02001.35 Required Submittals for Mix Designs - Submit the following information for each concrete mix design:

(a) Supplier's Information - Provide the supplier's unique mix design identification number and batch plant location.

(b) Mix Design Constituent Proportions:

- Weight per cubic yard (pounds per cubic yard) of cement, SCM, fine Aggregates and coarse Aggregates (SSD), mix water, concrete modifiers, and chemical admixtures

Absolute volumes of cement, SCM, fine Aggregates and coarse Aggregates (SSD), mix water, air content, concrete modifiers, and chemical admixtures

Dosage rates for chemical admixtures (ounces per cubic yard)

w/cm ratio including all chemical admixtures

(c) Aggregates - Identify the Aggregate source by the ODOT source number. Report current values of the following:

- Bulk specific gravities (SSD)

Fine Aggregate absorptions

Coarse Aggregate absorptions

Dry-rodded density of coarse Aggregates

Average stockpile gradations
Fineness modulus of sand used in the mix design calculations

(d) Cement - For each cement used, provide the following:

- Manufacturer

Brand name
Type
Source or location plant
QPL product number

(e) SCM - For each SCM used, provide the following:

- Manufacturer

Brand name
Source
Class
QPL product number

(f) Concrete Modifiers - For each concrete modifier used, provide the following:

- Manufacturer

Brand name
QPL product number

(g) Admixtures - For each admixture used, identify the following:

- Manufacturer

Brand name
Design dosage rate
QPL product number

(h) Synthetic Fiber Reinforcing - For each synthetic fiber reinforcing used, provide:

- Manufacturer

Brand name
Design dosage rate
QPL product number

(i) Water - Identify the source of water to be used and provide a certificate of compliance certifying that the water meets the requirements of 02020.10.

(j) Plastic Concrete Tests - Report the temperature, slump, density, air content, yield, and w/cm ratio of the trial batch or the average of these values for the cylinder sets presented for evaluation of a current mix design.

For drilled shaft concrete, report the following additional information:

- The total time estimate from initial batching through drilled shaft placement, including haul time, placing concrete, and temporary casing extraction.

Initial slump test results and subsequent results at 15-minute intervals, verifying a minimum slump of 4 inches is maintained for the total time estimated for drilled shaft placement, including temporary casing extraction. Report data in a table or graph format.

(k) Compressive Strength Test Results - Report the individual test results and the ASTV of cylinders from the trial batch for new mix designs. For current designs, provide the individual tests and the average of the cylinder sets presented for evaluation.

(l) Strength Analysis - Provide an analysis, showing all calculations, demonstrating that the mix design meets the requirements of 02001.33.

(m) Quality Control Personnel - Provide the name and certification number of the CCT who prepared the mix design, the QCT who performed the plastic concrete tests and cast the test cylinders, the CSTT who tested the cylinders, and the ODOT certification number of the laboratory where the cylinders were tested.

SECTION 00160.15 – COMMON PRODUCTS REQUIREMENTS

Add this Section, see Appendix A

SECTION 00165.93 MANUFACTURER'S FIELD SERVICES

Add this Section, see Appendix A

SECTION 00165.94 OPERATIONS AND MAINTENANCE DATA SPECIFICATION

Add this Section, see Appendix A

SECTION 00165.95 SEISMIC ANCHORAGE AND BRACING

Add this Section, see Appendix A

SECTION 10600 – EQUIPMENT DEMOLITION AND SALVAGE

Add this Section, see Appendix A

SPECIAL PROVISIONS APPENDIX "A"
SUPLIMENTAL SPECIFICATIONS

SECTION 00160.15 – COMMON PRODUCTS REQUIREMENTS

SECTION 00165.93 MANUFACTURER'S FIELD SERVICES

SECTION 00165.94 OPERATIONS AND MAINTENANCE DATA SPECIFICATION

SECTION 00165.95 SEISMIC ANCHORAGE AND BRACING

SECTION 10600 – EQUIPMENT DEMOLITION AND SALVAGE

SECTION 01165.15
COMMON PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 DEFINITIONS

A. Products:

1. New items for incorporation in the Work, whether purchased by Contractor or Owner for the Project, or taken from previously purchased stock, and may also include existing materials or components required for reuse.
2. Includes the terms material, equipment, machinery, components, subsystem, system, hardware, software, and terms of similar intent and is not intended to change meaning of such other terms used in Contract Documents, as those terms are self-explanatory and have well recognized meanings in construction industry.
3. Items identified by manufacturer's product name, including make or model designation, indicated in manufacturer's published product literature, that is current as of the date of the Contract Documents.

1.02 DESIGN REQUIREMENTS

A. Where Contractor design is specified, design of installation, systems, equipment, and components, including supports and anchorage, shall be in accordance with provisions of latest edition of International Building Code (IBC) by International Code Council.

B. Wind, snow, seismic, earth, and other design loads shall be shown on the General Structural Note Sheets on the Drawings.

1.03 ENVIRONMENTAL REQUIREMENTS

A. Altitude: Provide materials and equipment suitable for installation and operation under rated conditions at 180 feet above sea level.

B. Provide equipment and devices installed outdoors or in unheated enclosures capable of continuous operation within an ambient temperature range of 115 to 10 degrees F.

1.04 PREPARATION FOR SHIPMENT

A. When practical, factory assemble products. Mark or tag separate parts and assemblies to facilitate field assembly. Cover machined and unpainted parts that may be damaged by the elements with strippable protective coating.

B. Package products to facilitate handling and protect from damage during shipping, handling, and storage. Mark or tag outside of each package or crate to indicate its purchase order number, bill of lading number, contents by name, name of Project and Contractor, equipment number, and approximate weight. Include complete packing list and bill of materials with each shipment.

C. Extra Materials, Special Tools, Test Equipment, and Expendables:

1. Furnish as required by Individual Specifications.
2. Schedule:
   a. Ensure that shipment and delivery occurs concurrent with shipment of associated equipment.
   b. Transfer to Owner shall occur immediately subsequent to Contractor's acceptance of equipment from Supplier.
3. Packaging and Shipment:
   a. Package and ship extra materials and special tools to avoid damage during long term storage in original cartons insofar as possible, or in appropriately sized, hinged-cover, wood, plastic, or metal box.
   b. Prominently displayed on each package, the following:
      1) Manufacturer's part nomenclature and number, consistent with Operation and Maintenance Manual identification system.
      2) Applicable equipment description.
      3) Quantity of parts in package.
      4) Equipment manufacturer.
4. Deliver materials to Site.
5. Notify Engineer upon arrival for transfer of materials.
6. Replace extra materials and special tools found to be damaged or otherwise inoperable at time of transfer to Owner.

D. Request a minimum 7-day advance notice of shipment from manufacturer.

E. Factory Test Results: Reviewed and accepted by Engineer before product shipment as required in individual Specification sections.

1.05 DELIVERY AND INSPECTION

A. Deliver products in accordance with accepted current Progress Schedule and coordinate to avoid conflict with the Work and conditions at Site. Deliver anchor bolts and templates sufficiently early to permit setting prior to placement of structural concrete.

B. Deliver products in undamaged condition, in manufacturer's original container or packaging, with identifying labels intact and legible. Include on label, date of manufacture and shelf life, where applicable.

C. Unload products in accordance with manufacturer's instructions for unloading or as specified. Record receipt of products at Site. Promptly inspect for completeness and evidence of damage during shipment.

D. Remove damaged products from Site and expedite delivery of identical new undamaged products, and remedy incomplete or lost products to provide that specified, so as not to delay progress of the Work.

1.06 HANDLING, STORAGE, AND PROTECTION

A. Handle and store products in accordance with manufacturer's written instructions and in a manner to prevent damage. Store in approved storage yards or sheds. Provide manufacturer's recommended maintenance during storage, installation, and until products are accepted for use by Owner.

B. Manufacturer's instructions for material requiring special handling, storage, or protection shall be provided prior to delivery of material.

C. Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored products to assure that products are maintained under specified conditions, and free from damage or deterioration. Keep running account of products in storage to facilitate inspection and to estimate progress payments for products delivered, but not installed in the Work.

D. Store electrical, instrumentation, and control products, and equipment with bearings in weather-tight structures maintained above 60 degrees F. Protect electrical, instrumentation, and control products, and insulate against moisture, water, and dust damage. Connect and operate continuously space heaters furnished in electrical equipment.

E. Store fabricated products above ground on blocking or skids, and prevent soiling or staining. Store loose granular materials in well-drained area on solid surface to prevent mixing with foreign matter. Cover products that are subject to deterioration with impervious sheet coverings; provide adequate ventilation to

avoid condensation.

F. Store finished products that are ready for installation in dry and well-ventilated areas. Do not subject to extreme changes in temperature or humidity.

G. After installation, provide coverings to protect products from damage due to traffic and construction operations. Remove coverings when no longer needed.

H. Hazardous Materials: Prevent contamination of personnel, storage area, and Site. Meet requirements of product specification, codes, and manufacturer's instructions.

PART 2 PRODUCTS

2.01 GENERAL

A. Provide manufacturer's standard materials suitable for service conditions, unless otherwise specified in the individual Specifications.

B. Where product specifications include a named manufacturer, with or without model number, and also include performance requirements, named manufacturer's products must meet the performance specifications.

C. Like items of products furnished and installed in the Work shall be end products of one manufacturer and of the same series or family of models to achieve standardization for appearance, operation and maintenance, spare parts and replacement, manufacturer's services, and implement same or similar process instrumentation and control functions in same or similar manner.

D. Do not use materials and equipment removed from existing premises, except as specifically permitted by Contract Documents.

E. Provide interchangeable components of the same manufacturer, for similar components, unless otherwise specified.

F. Equipment, Components, Systems, and Subsystems: Design and manufacture with due regard for health and safety of operation, maintenance, and accessibility, durability of parts, and shall comply with applicable OSHA, state, and local health and safety regulations.

G. Regulatory Requirement: Coating materials shall meet federal, state, and local requirements limiting the emission of volatile organic compounds and for worker exposure.

H. Safety Guards: Provide for all belt or chain drives, fan blades, couplings, or other moving or rotary parts. Cover rotating part on all sides. Design for easy installation and removal. Use 16-gauge or heavier; galvanized steel, aluminum coated steel, or galvanized or aluminum coated 1/2-inch mesh expanded steel. Provide galvanized steel accessories and supports, including bolts. For outdoors application, prevent entrance of rain and dripping water.

I. Authority Having Jurisdiction (AHJ):

1. Provide the Work in accordance with NFPA 70, National Electrical Code (NEC). Where required by the AHJ, material and equipment shall be labeled or listed by a nationally recognized testing laboratory or other organization acceptable to the AHJ in order to provide a basis for approval under NEC.
2. Materials and equipment manufactured within the scope of standards published by Underwriters Laboratories, Inc. shall conform to those standards and shall have an applied UL listing mark.

J. Equipment Finish:

1. Provide manufacturer's standard finish and color, except where specific color is indicated.
2. If manufacturer has no standard color, provide equipment with finish as approved by Owner.

K. Special Tools and Accessories: Furnish to Owner, upon acceptance of equipment, all accessories required to place each item of equipment in full operation. These accessory items include, but are not limited to, adequate oil and grease (as required for first lubrication of equipment after field testing), light bulbs, fuses, hydrant wrenches, valve keys, handwheels, chain operators, special tools, and other spare parts as required for maintenance.

L. Lubricant: Provide initial lubricant recommended by equipment manufacturer in sufficient quantity to fill lubricant reservoirs and to replace consumption during testing, startup, and operation until final acceptance by Owner.

2.02 FABRICATION AND MANUFACTURE

A. General:

1. Manufacture parts to U.S.A. standard sizes and gauges.
2. Two or more items of the same type shall be identical, by the same manufacturer, and interchangeable.
3. Design structural members for anticipated shock and vibratory loads.
4. Use 1/4-inch minimum thickness for steel that will be submerged, wholly or partially, during normal operation.
5. Modify standard products as necessary to meet performance Specifications.

B. Lubrication System:

1. Require no more than weekly attention during continuous operation.
2. Convenient and accessible; oil drains with bronze or stainless steel valves and fill-plugs easily accessible from the normal operating area or platform. Locate drains to allow convenient collection of oil during oil- changes without removing equipment from its installed position.
3. Provide constant-level oilers or oil level indicators for oil lubrication systems.
4. For grease type bearings, which are not easily accessible, provide and install stainless steel tubing; protect and extend tubing to convenient location with suitable grease fitting.

2.03 SOURCE QUALITY CONTROL

A. Where Specifications call for factory testing to be witnessed by Engineer, notify Engineer not less than 14 days prior to scheduled test date, unless otherwise specified.

B. Calibration Instruments: Bear the seal of a reputable laboratory certifying instrument has been calibrated within the previous 12 months to a standard endorsed by the National Institute of Standards and Technology (NIST).

C. Factory Tests: Perform in accordance with accepted test procedures and document successful completion.

PART3 EXECUTION

3.01 INSPECTION

A. Inspect materials and equipment for signs of pitting, rust decay, or other deleterious effects of storage. Do not install material or equipment showing

such effects. Remove damaged material or equipment from the Site and expedite delivery of identical new material or equipment. Delays to the Work resulting from material or equipment damage that necessitates procurement of new products will be considered delays within Contractor's control.

3.02 INSTALLATION

A. Equipment Drawings show general locations of equipment, devices, and raceway, unless specifically dimensioned.

B. No shimming between machined surfaces is allowed.

C. Install the Work in accordance with NECA Standard of Installation, unless otherwise specified.

D. Repaint painted surfaces that are damaged prior to equipment acceptance.

E. Do not cut or notch any structural member or building surface without specific approval of Engineer.

F. Handle, install, connect, clean, condition, and adjust products in accordance with manufacturer's instructions, and as may be specified. Retain a copy of manufacturers' instruction at Site, available for review at all times.

G. For material and equipment specifically indicated or specified to be reused in the Work:

1. Use special care in removal, handling, storage, and reinstallation to assure proper function in the completed Work.
2. Arrange for transportation, storage, and handling of products that require offsite storage, restoration, or renovation. Include costs for such Work in the Contract Price.

3.03 FIELD FINISHING

A. In accordance with individual specification sections.

3.04 ADJUSTMENT AND CLEANING

A. Perform required adjustments, tests, operation checks, and other startup activities.

3.05 LUBRICANTS

A. Fill lubricant reservoirs and replace consumption during testing, startup, and operation prior to acceptance of equipment by Owner.

END OF SECTION

SECTION 00165.93
MANUFACTURERS' FIELD SERVICES

PART 1 GENERAL

1.01 DEFINITIONS

A. Person-Day: One person for 8 hours within regular Contractor working hours.

1.02 SUBMITTALS

A. Informational Submittals:

I. Training Schedule: Submit, in accordance with requirements of this Specification, not less than 21 days prior to start of equipment installation and revise as necessary for acceptance.
2. Lesson Plan: Submit, in accordance with requirements of this Specification, proposed lesson plan not less than 21 days prior to scheduled training and revise as necessary for acceptance.
3. Training Session Recordings: Furnish Owner with two complete sets of recordings fully indexed and cataloged with printed label stating session and date recorded.

1.03 QUALIFICATION OF MANUFACTURER'S REPRESENTATIVE

A. Authorized representative of the manufacturer, factory trained, and experienced in the technical applications, installation, operation, and maintenance of respective equipment, subsystem, or system, with full authority by the equipment manufacturer to issue the certifications required of the manufacturer. Additional qualifications may be specified in the individual specification section.

B. Representative subject to acceptance by Owner and Engineer. No substitute representatives will be allowed unless prior written approval by such has been given.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 FULFILLMENT OF SPECIFIED MINIMUM SERVICES

A. Furnish manufacturers' services, when required by an individual specification section, to meet the requirements of this Section.

B. Where time is necessary in excess of that stated in the Specifications for manufacturers' services, or when a minimum time is not specified, time

required to perform specified services shall be considered incidental.

C. Schedule manufacturer' services to avoid conflict with other onsite testing or other manufacturers' onsite services.

D. Determine, before scheduling services, that conditions necessary to allow successful testing have been met.

E. Only those days of service approved by Engineer will be credited to fulfill specified minimum services.

F. When specified in individual specification sections, manufacturer's onsite services shall include:

I. Assistance during product (system, subsystem, or component) installation to include observation, guidance, instruction of Contractor's assembly, erection, installation or application procedures.
2. Inspection, checking, and adjustment as required for product (system, subsystem, or component) to function as warranted by manufacturer and necessary to furnish Manufacturer's Certificate of Proper Installation.
3. Providing, on a daily basis, copies of manufacturers' representative field notes and data to Engineer.
4. Revisiting the Site as required to correct problems and until installation and operation are acceptable to Engineer.
5. Resolution of assembly or installation problems attributable to or associated with respective manufacturer's products and systems.
6. Assistance during functional and performance testing, and facility startup and evaluation.
7. Training of Owner's personnel in the operation and maintenance of respective product as required.

3.02 MANUFACTURER'S CERTIFICATE OF COMPLIANCE

A. When so specified, a Manufacturer's Certificate of Compliance, a copy of which is attached to this Section, shall be completed in full, signed by entity supplying the product, material, or service, and submitted prior to shipment of product or material or execution of the services.

B. Engineer may permit use of certain materials or assemblies prior to sampling and testing if accompanied by accepted certification of compliance.

C. Such form shall certify proposed product, material, or service complies with that specified. Attach supporting reference data, affidavits, and certifications as appropriate.

D. May reflect recent or previous test results on material or product, if acceptable to Engineer.

3.03 MANUFACTURER'S CERTIFICATE OF PROPER INSTALLATION

A. When so specified, a Manufacturer's Certificate of Proper Installation form, a copy of which is attached to this Section, shall be completed and signed by equipment manufacturer's representative.

B. Such form shall certify signing party is a duly authorized representative of manufacturer, is empowered by manufacturer to inspect, approve, and operate their equipment and is authorized to make recommendations required to ensure equipment is complete and operational.

3.04 TRAINING

A. General:

1. Furnish manufacturers' representatives for detailed classroom and hands-on training to Owner's personnel on operation and maintenance of specified product (system, subsystem, and component) and as may be required in applicable Specifications.
2. Furnish trained, articulate personnel to coordinate and expedite training, to be present during training coordination meetings with Owner, and familiar with operation and maintenance manual information specified in Section O I 78 23, Operation and Maintenance Data.
3. Manufacturer's representative shall be familiar with facility operation and maintenance requirements as well as with specified equipment.
4. Furnish complete training materials, to include operation and maintenance data, to be retained by each trainee.

B. Training Schedule:

1. List specified equipment and systems that require training services and show:
   a. Respective manufacturer.
   b. Estimated dates for installation completion.
   c. Estimated training dates.
2. Allow for multiple sessions when several shifts are involved
3. Adjust schedule to ensure training of appropriate personnel as deemed necessary by Owner, and to allow full participation by manufacturers' representative. Adjust schedule for interruptions in operability of equipment.
4. Coordinate with Section O1 32 00, Construction Progress Documentation, and Section 01 91 14, Equipment Testing and Facility Startup.

C. Lesson Plan: When manufacturer or vendor training of Owner personnel is specified, prepare a lesson plan for each required course containing the following minimum information:

1. Title and objectives.
2. Recommended attendees (such as, managers, engineers, operators, maintenance).
3. Course description, outline of course content, and estimated class duration.
4. Format (such as, lecture, self-study, demonstration, hands-on).
5. Instruction materials and equipment requirements.
6. Resumes of instructors providing training.

D. Prestartup Training:

1. Coordinate training sessions with Owner's operating personnel and manufacturers' representatives, and with submission of operation and maintenance manuals in accordance with Section 00165.94, Operation and Maintenance Data.
2. Complete at least 14 days prior to beginning of facility startup.

E. Post-startup Training: If required in Specifications, furnish and coordinate training of Owner's operating personnel by respective manufacturer's representatives.

F. Recording of Training Sessions:

1. Furnish audio and color recording of prestartup and post-startup instruction sessions, including manufacturers' representatives' hands-on equipment instruction and classroom sessions.
2. Video training materials shall be produced by a qualified, professional video production company.
3. Use DVD format suitable for playback on standard equipment available commercially in the United States. Blu-ray® DVD format is not acceptable without Engineer's prior approval.
4. DVD may contain multiple training sessions. If multiple training sessions included on a DVD, provide with on-screen menu for playback selection.

3.05 SUPPLEMENTS

A. The supplements listed below, following "End of Section," are part of this Specification.

1. Manufacturer's Certificate of Compliance.
2. Manufacturer's Certificate of Proper Installation.

END OF SECTION

SECTION 00165.94
OPERATION AND MAINTENANCE DATA

PART l GENERAL

1.01 SECTION INCLUDES

A. Detailed information for the preparation, submission, and Engineer's review of Operations and Maintenance (O&M) Data, as required by individual specification sections.

1.02 DEFINITIONS

A. Preliminary Data: Initial and subsequent submissions for Engineer's review.

B. Final Data: Engineer-accepted data, submitted as specified herein.

C. Maintenance Operation: As used on Maintenance Summary Form is defined to mean any routine operation required to ensure satisfactory performance and longevity of equipment. Examples of typical maintenance operations are lubrication, belt tensioning, adjustment of pump packing glands, and routine adjustments.

1.03 SEQUENCING AND SCHEDULING

A. Equipment and System Data:

1. Preliminary Data:
   a. Do not submit until Shop Drawing for equipment or system has been reviewed and approved by Engineer.
   b. Submit prior to shipment date.
2. Final Data: Submit Compilation Formatted and Electronic Media Formatted data prior to Substantial Completion of Project.

B. Materials and Finishes Data:

1. Preliminary Data: Submit at least 15 days prior to request for final inspection.
2. Final Data: Submit within 10 days after final inspection.

1.04 DATA FORMAT

A. Prepare preliminary data in the form of an instructional manual. Prepare final data in data compilation format and on electronic media.

B. Instructional Manual Format:

1. Binder: Commercial quality, permanent, three-ring or three-post binders with durable plastic cover.
2. Size: 8-1/2 inches by 11 inches, minimum.
3. Cover: Identify manual with typed or printed title "OPERATION AND MAINTENANCE DATA" and list:
   a. Project title.
   b. Designate applicable system, equipment, material, or finish.
   c. Identity of separate structure as applicable.
   d. Identify volume number if more than one volume.
   e. Identity of general subject matter covered in manual. Identity of equipment number and Specification section.
4. Spine:
   a. Project title.
   b. Identify volume number if more than one volume.
5. Title Page:
   a. Contractor name, address, and telephone number.
   b. Subcontractor, Supplier, installer, or maintenance contractor's name, address, and telephone number, as appropriate.
      1) Identify area of responsibility of each.
      2) Provide name and telephone number of local source of supply for parts and replacement.
6. Table of Contents:
   a. Neatly typewritten and arranged in systematic order with consecutive page numbers.
   b. Identify each product by product name and other identifying numbers or symbols as set forth in Contract Documents.
7. Paper: 20-pound minimum, white for typed pages.
8. Text: Manufacturer's printed data, or neatly typewritten.
9. Three-hole punch data for binding and composition; arrange printing so that punched holes do not obliterate data.
10. Material shall be suitable for reproduction, with quality equal to original. Photocopying of material will be acceptable, except for material containing photographs.

C. Data Compilation Format:

1. Compile all Engineer-accepted preliminary O&M data into a hard-copy, hard-bound set.
2. Each set shall consist of the following:
   a. Binder: Commercial quality, permanent, three-ring or three-post binders with durable plastic cover.

b. Cover: Identify each volume with typed or printed title "OPERATION AND MAINTENANCE DATA, VOLUME NO. OF_", and list:
   1) Project title.
   2) Contractor's name, address, and telephone number.
   3) If entire volume covers equipment or system provided by one Supplier include the following:
      a) Identity of general subject matter covered in manual.
      b) Identity of equipment number and Specification section.

c. Provide each volume with title page and typed table of contents with consecutive page numbers. Place contents of entire set, identified by volume number, in each binder.

d. Table of contents neatly typewritten, arranged in a systematic order:
   1) Include list of each product, indexed to content of each volume.
   2) Designate system or equipment for which it is intended.
   3) Identify each product by product name and other identifying numbers or symbols as set forth in Contract Documents.

e. Section Dividers:
   1) Heavy, 80 pound cover weight, tabbed with numbered plastic index tabs.
   2) Fly-Leaf:
      a) For each separate product, or each piece of operating equipment, with typed description of product and major component parts of equipment.
      b) List with Each Product:
         (1) Name, address, and telephone number of Subcontractor, Supplier, installer, and maintenance contractor, as appropriate.
         (2) Identify area of responsibility of each.
         (3) Provide local source of supply for parts and replacement.
      c) Identity of separate structure as applicable.

f. Assemble and bind material, as much as possible, in same order as specified in the Contract Documents.

D. Electronic Media Format:

1. Portable Document Format (PDF):
   a. After all preliminary data has been found to be acceptable to Engineer, submit Operation and Maintenance data in PDF format on CD.

b. Files to be exact duplicates of Engineer-accepted preliminary data. Arrange by specification number and name.
c. Files to be fully functional and viewable in most recent version of Adobe Acrobat.

1.05 SUBMITTALS

A. Informational:

1. Data Outline: Submit two copies of a detailed outline of proposed organization and contents of Final Data prior to preparation of Preliminary Data.
2. Preliminary Data:
   a. Submit two copies for Engineer's review.
   b. If data meets conditions of the Contract:
      1) One copy will be returned to Contractor.
      2) One copy will be forwarded to Resident Project Representative.
      3) One copy will be retained in Engineer's file.
   c. If data does not meet conditions of the Contract:
      1) All copies will be returned to Contractor with Engineer's comments (on separate document) for revision.
      2) Engineer's comments will be retained in Engineer's file.
      3) Resubmit two copies revised in accordance with Engineer's comments.
3. Final Data: Submit one data compilation format hardcopy and one electronic media format specified herein.

1.06 DATA FOR EQUIPMENT AND SYSTEMS

A. Content For Each Unit (or Common Units) and System:

1. Product Data:
   a. Include only those sheets that are pertinent to specific product.
   b. Clearly annotate each sheet to:
      1) Identify specific product or part installed.
      2) Identify data applicable to installation.
      3) Delete references to inapplicable information.
   c. Function, normal operating characteristics, and limiting conditions.
   d. Performance curves, engineering data, nameplate data, and tests.
   e. Complete nomenclature and commercial number of replaceable parts.
   f. Original manufacturer's parts list, illustrations, detailed assembly drawings showing each part with part numbers and

sequentially numbered parts list, and diagrams required for maintenance.

g. Spare parts ordering instructions.

h. Where applicable, identify installed spares and other provisions for future work (e.g., reserved panel space, unused components, wiring, and terminals).

2. As-installed, color-coded piping diagrams.

3. Charts of valve tag numbers, with the location and function of each valve.

4. Drawings: Supplement product data with Drawings as necessary to clearly illustrate:

a. Format:

1) Provide reinforced, punched, binder tab; bind in with text.

2) Reduced to 8-1/2 inches by 11 inches, or 11 inches by 17 inches folded to 8-1/2 inches by 11 inches.

3) Where reduction is impractical, fold and place in 8-1/2-inch by 11-inch envelopes bound in text.

4) Identify Specification section and product on Drawings and envelopes.

b. Relations of component parts of equipment and systems.

c. Control and flow diagrams.

d. Coordinate drawings with Project record documents to assure correct illustration of completed installation.

5. Instructions and Procedures: Within text, as required to supplement product data.

a. Format:

1) Organize in consistent format under separate heading for each different procedure.

2) Provide logical sequence of instructions for each procedure.

3) Provide information sheet for Owner's personnel, including:

a) Proper procedures in event of failure.

b) Instances that might affect validity of guarantee or Bond.

b. Installation Instructions: Including alignment, adjusting, calibrating, and checking.

c. Operating Procedures:

1) Startup, break-in, routine, and normal operating instructions.

2) Test procedures and results of factory tests where required.

3) Regulation, control, stopping, and emergency instructions.

4) Description of operation sequence by control manufacturer.

5) Shutdown instructions for both short and extended duration.

6) Summer and winter operating instructions, as applicable.

7) Safety precautions.

8) Special operating instructions.

d. Maintenance and Overhaul Procedures:

1) Routine maintenance.

2) Guide to troubleshooting.

3) Disassembly, removal, repair,

reinstallation, and re- assembly.

6. Guarantee, Bond, and Service Agreement: In accordance with Section 00195 as modified by special conditions, Closeout Procedures.

B. Content for Each Electric or Electronic Item or System:

1. Description of Unit and Component Parts:
   a. Function, normal operating characteristics, and limiting conditions.
   b. Performance curves, engineering data, nameplate data, and tests.
   c. Complete nomenclature and commercial number of replaceable parts.
   d. Interconnection wiring diagrams, including control and lighting systems.
2. Circuit Directories of Panelboards:
3. Electrical service.
4. Control requirements and interfaces.
5. Communication requirements and interfaces.
6. List of electrical relay settings, and control and alarm contact settings.
7. Electrical interconnection wiring diagram, including as applicable, single-line, three-line, schematic and internal wiring, and external interconnection wiring.
8. As-installed control diagrams by control manufacturer.
9. Operating Procedures:
   a. Routine and normal operating instructions.
   b. Startup and shutdown sequences, normal and emergency.
   c. Safety precautions.
   d. Special operating instructions.
10. Maintenance Procedures:
    a. Routine maintenance.
    b. Guide to troubleshooting.
    c. Adjustment and checking.
    d. List of relay settings, control and alarm contact settings.
11. Manufacturer's printed operating and maintenance instructions.
12. List of original manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage.

C. Maintenance Summary:

1. Compile individual Maintenance Summary for each applicable equipment item, respective unit or system, and for components or sub-units.
2. Format:
   a. Use Maintenance Summary Form bound with this Section or electronic facsimile of such.
   b. Each Maintenance Summary may take as many pages as required.
   c. Use only 8-1/2-inch by 11-inch size paper.
   d. Complete using typewriter or electronic printing.
3. Include detailed lubrication instructions and diagrams showing points to be greased or oiled; recommend type, grade, and temperature range of lubricants and frequency of lubrication.
4. Recommended Spare Parts:
   a. Data to be consistent with manufacturer's Bill of Materials/Parts List furnished in O&M manuals.
   b. "Unit" is the unit of measure for ordering the part.
   c. "Quantity" is the number of units recommended.
   d. "Unit Cost" is the current purchase price.

1.07 DATA FOR MATERIALS AND FINISHES

A. Content for Architectural Products, Applied Materials, and Finishes:

1. Manufacturer's data, giving full information on products:
   a. Catalog number, size, and composition.
   b. Color and texture designations.
   c. Information required for reordering special-manufactured products.
2. Instructions for Care and Maintenance:
   a. Manufacturer's recommendation for types of cleaning agents and methods.
   b. Cautions against cleaning agents and methods that are detrimental to product.
   c. Recommended schedule for cleaning and maintenance.

B. Content for Moisture Protection and Weather Exposed Products:

1. Manufacturer's data, giving full information on products:
   a. Applicable standards.
   b. Chemical composition.
   c. Details of installation.
2. Instructions for inspection, maintenance, and repair.

1.8 SUPPLEMENT

A. The supplement listed below, following "End of Section," is part of this Specification.

1. Maintenance Summary Form.

PART2 PRODUCTS (NOT USED)

PART3 EXECUTION (NOT USED)

END OF SECTION

MAINTENANCE SUMMARY FORM

PROJECT:_____ CONTRACT NO.:_____

1. EQUIPMENT ITEM_____

2. MANUFACTURER _____

3. EQUIPMENT/TAG NUMBER(S)_____

4. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS)_____

5. NAMEPLATE DATA (hp, voltage, speed, etc.)_____

6. MANUFACTURER'S LOCAL REPRESENTATIVE _ _ _ _ _ _ _ _ _ _ _ _

a. Name_____ Telephone No._____

b. Address_____

7. AINTENANCE REQUIREMENTS

Maintenance Operation Comments	**Frequency**	**Lubricant (If Applicable)**
List briefly each maintenance operation required and refer to specific information in manufacturer's standard maintenance manual, if applicable. (Reference to manufacturer's catalog or sales literature is not acceptable.)	List required frequency of each maintenance operation.	Refer by symbol to lubricant required.

8. LUBRICANT LIST

Reference Symbol	Shell	Exxon Mobile	Chevron Texaco	BP Amoco	Or Equal
List symbols used in No. 7 above.	List equivalent lubricants, as distributed by each manufacturer for the specific use recommended.				

9. RECOMMENDED SPARE PARTS FOR OWNER'S INVENTORY.

Part No.	Description	Unit	Quantity	Unit Cost
Note: Identify parts provided by this Contract with two asterisks.				

SECTION 00165.95
SEISMIC ANCHORAGE AND BRACING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This Section covers requirements for seismic anchorage and bracing for equipment and nonstructural components required in accordance with the International Building Code (IBC).

1.02 REFERENCES

A. The following is a list of standards which may be referenced in this Section:

1. American Institute of Steel Construction (AISC).
2. American Society of Civil Engineers (ASCE): ASCE 7, Minimum Design Loads for Buildings and Other Structures.
3. International Code Council (ICC): International Building Code (IBC).
4. Sheet Metal and Air Conditioning Contractors' National Association (SMACNA): Seismic Restraint Manual: Guidelines for Mechanical Systems.

1.03 DESIGN AND PERFORMANCE REQUIREMENTS

A. General:

1. Contractor shall be responsible for designing code required seismic attachments, braces, and anchors to the structure for elements of the architectural, mechanical, and electrical systems included in the Work in accordance with this Section unless a design is specifically provided within the Contract Documents.
2. Contractor shall also be responsible for designing seismic anchorage for modified existing architectural, mechanical, or electrical systems where code requirements would dictate design for similar new components.

B. Design Requirements:

1. In accordance with 2014 IBC, Section 1613 and Chapter 13 of ASCE 7.
2. Architectural, mechanical, electrical and other nonstructural systems, components, and elements permanently attached to the structure shall be designed to transfer the component seismic forces specified in ASCE 7 Section 13.3.1 to the structure.

3. Design forces for anchors in concrete or masonry shall be in accordance with ASCE 7, Section 13.4.2.
4. Seismic anchorage and bracing systems shall be designed by a qualified professional engineer registered in the State of Oregon.
5. Nonstructural Components: Design as nonbuilding structures for components with weights greater than or equal to 25 percent of the effective seismic weight of the overall structure.
6. Architectural Components: Includes, but are not limited to, nonstructural walls and elements, partitions, cladding and veneer, access flooring, signs, cabinets, suspended ceilings, and glass in glazed curtain walls and partitions.
7. Design seismic attachments, braces, and anchorages for parts or elements of the architectural, mechanical, and electrical systems in accordance with the provisions of the International Building Code and the following site-specific seismic criteria, unless noted otherwise on the Drawings.
    a. Site-Specific Spectral Response Coefficients :
        1) Short Period Mapped Maximum Considered Earthquake, 5 Percent Damped: S_S equals 0.861g.
        2) 1 Period Mapped Maximum Considered Earthquake, 5 Percent Damped: S_1 equals 0.327g.
        3) Short Period Design Spectral Response Acceleration, 5 Percent Damped: S_{DS} equals 0.664g.
        4) 1 Second Period Design Spectral Response Acceleration, 5 Percent Damped: S_{D1} equals 0.381g.
8. Site Class: D.
9. Seismic Design Category (SDC): D, unless noted otherwise. Same as supporting structure's SDC, as shown on Drawings.
10. Occupancy Category: Ill, unless noted otherwise. The anchorage and bracing Occupancy Category shall be the same as that for supporting structure as shown on Drawings.
11. Analyze local region of body of nonstructural component for load transfer of anchorage attachment if component Ip = 1.5.
12. Component Important Factor:
    a. Ip = 1.0, unless noted otherwise.
    b. Ip shall be taken as 1.5 for components needed for or whose failure could impair continued operation of hazardous or essential facilities.
    c. Ip shall be taken as 1.5 for components that contain hazardous materials or that are required for life safety to be functional after a seismic event.
    d. In accordance with ASCE 7, the following are exempt from the requirements of the section for provision of seismic anchorages and bracing, in addition to those items specifically exempted in

ASCE 7, Part 13.5 for architectural components and Part 13.6 for electrical and mechanical equipment:

13. Mechanical and electrical components with Ip equals 1.0 that weigh 400 pounds or less and are mounted 4 feet or less above adjacent finished floor elevation, or are provided with flexible connections between the components and associated ductwork, piping, or conduit.
14. Mechanical and electrical components with Ip equals 1.0 that weigh 20 pounds or less, are mounted at any height, and are provided with flexible connections to attached ductwork, piping, and conduit.
15. Distribution systems with Ip equals 1.0 weighing 5 pounds per foot or less.

C. Support drawings and calculations for electrical distribution components shall be provided if any of the following conditions apply:

1. Ip is equal to 1.5 and conduit diameter is greater than 2.5-inch trade size.
2. Ip is equal to 1.5 and the total weight of bus duct, cable tray, or conduit supported by trapeze assemblies exceeds 10 pounds per foot.
3. Supports are cantilevered up from floor.
4. Supports include bracing to limit deflection and are constructed as rigid welded frames.
5. Attachments utilize spot welds, plug welds, or minimum size welds as defined by AISC.

D. Existing components, systems, and equipment that are modified by the Project requirements and are not exempted by the above section in their final condition shall require the same anchorage and bracing drawing and calculation submittals as new equipment. Field verify existing conditions.

E. Other seismic design and detailing requirements identified in ASCE 7, Chapter 13 are required to be provided for new and modified architectural, mechanical and electrical component, system, or equipment.

1.04 SUBMITTALS

A. Action Submittals:

1. Shop Drawings:
   a. Submit shop drawings with supporting calculations no less than 4 weeks in advance of installation of component, equipment or distribution system to be anchored to structure.
   b. Submitted anchorage drawings and calculations are identified as

IBC deferred submittals and will be submitted to and accepted bypermitting agency prior to installation of component, equipment or distribution system.

c. List of architectural, mechanical, and electrical equipment weighing more than 20 pounds, and electrical, piping, and mechanical distribution systems weighing more than 5 pounds per foot shall be anchored, unless specifically exempted hereinafter.
d. Manufacturers' engineered seismic hardware product data.
e. Seismic attachment assemblies' drawing; include connection hardware, braces, and anchors or anchor bolts for nonexempt components, equipment, and systems.
f. List of existing architectural, mechanical, and electrical equipment or component required to be modified by Work required in the Project weighing more than 20 pounds and electrical, piping, or mechanical distribution systems weighing more than 5 pounds per foot in the final retrofitted condition.
g. Seismic attachment assemblies' drawing; include connection hardware, braces, and anchors or anchor bolts for modified, nonexempt existing components, equipment, and systems where combination of new and existing systems or component's final condition would require seismic anchorage or bracing under this Specification for new equipment.
h. Submittals will be rejected if proposed anchorage method would create an overstressed condition of supporting member. Revise anchorages and strengthening of structural support so there is no overstressed condition.

B. Informational Submittals:

1. Seismic Anchorage and Bracing Calculations: For seismic attachments, braces, and anchorages. Include IBC and project specific criteria as noted on General Structural Note Sheets on Drawing, in addition to manufacturer's specific criteria used for the design; sealed by a civil or structural engineer registered in the State of Oregon.
2. Manufacturer's seismic hardware installation requirements.

PART 2 PRODUCTS

2.01 GENERAL

A. Attachments and supports transferring seismic loads to structure shall be constructed of materials and products suitable for the application and be designed and constructed in accordance with the design criteria shown on Drawings and nationally recognized standards.

B. In accordance with Section, 00160.15 Common Product Requirements and, 02530 Metal Fabrications. Source quality control shall be in accordance with the referenced section.

C. Provide anchor bolts, and concrete and masonry anchors for anchorage of equipment in concrete or masonry in accordance with Section 02530, Metal Fabrications. Size of anchor bolts and anchors, and required minimum embedment and spacing shall be based on calculations submitted by Contractor.

D. Powder actuated fasteners and sleeve anchors shall not be used for seismic attachments and anchorage where resistance to tension loads is required. Expansion anchors, other than undercut anchors, shall not be used for nonvibration isolated mechanical equipment rated over 10 hp.

PART 3 EXECUTION

3.01 GENERAL

A. Make seismic attachments, bracing, and anchorage in such a manner that component seismic force is transferred to the lateral force resisting system of the structure through a complete load path.

B. Overall seismic anchorage system shall provide restraint in all directions, including vertical, for each component or system so anchored.

C. Components mounted on vibration isolation systems shall have snubbers in each horizontal direction and vertical restraints where required to resist overturning.

D. Anchor piping in such a manner as to ensure piping system has adequate flexibility and expansion capabilities at flexible connections and expansion joints. Piping and ductwork suspended more than 12 inches below the supporting structure shall be braced for seismic effects to avoid significant bending of the hangers and their attachments, unless high-deformability piping is used per ASCE 7, Section 13.6.8 or HVAC ducts have a cross-sectional area of less than 6 square feet.

E. Tall and narrow equipment such as motor control centers and telemetry equipment shall be anchored at the base and within 12 inches from the top of the equipment, unless approved otherwise by Engineer.

F. Architectural, mechanical, or electrical components shall not be attached to more than one element of a building structure at a single restraint location where such elements may respond differently during a seismic event. Such attachments shall also not be made across building expansion and contraction joints.

3.02 INSTALLATION

A. Do not install components or their seismic anchorages or restraints prior to review and acceptance by Engineer and permitting a g e n c y .

B. Notify Engineer upon completion of seismic restraints in accordance with Section 01 45 33, Special Inspection, Observation, and Testing.

3.03 FIELD QUALITY CONTROL

A. Field Quality Control shall be in accordance with Section 00165.35, Metal Fabrications.

END OF SECTION

SECTION 10600
EQUIPMENT DEMOLITION AND SALVAGE

PART 1 GENERAL

1.01 SCOPE:

A. This item covers the work necessary for removing and disposing or salvaging existing equipment in the pump station.

B. Reference Section 00140.90 Final Trimming and Cleanup in the General Conditions.

PART 2 PRODUCTS

2.01 GENERAL

A. Provide all equipment, tools, labor, and materials and necessary for demolition and salvage operations.

2.02 DUST CONTROL

The Contractor will be responsible for dust control in and around the Facility as it relates to the work of this contract, during the course of the Project. The Contractor shall furnish all equipment necessary to maintain air quality for protection of the workers, sensitive electrical and electronic equipment, and the environment.

PART 3 EXECUTION

3.01 GENERAL

A. Contractor shall disconnect and remove all equipment and material items from the Library building, those specified herein, and those directed by the owner. In general, the following existing items shall be removed:

- Existing chiller, pipes, and valves not to be reused.
- All appurtenances and controls not to be reused.

B. .

3.02 SALVAGE ITEMS

A. All salvage material and associated equipment is the property and responsibility of the Contractor to dispose of in a location and manner as approved by law. None of the removed items are to be salvaged on behalf of the Owner.

B. Items to be removed shall be legally disposed of by the Contractor. Items shall be hauled off site immediately after removal and disposed at a location and in a manner appropriate for the action

PART 4 TESTING – NOT USED

PART 5 GUARANTEE– NOT USED

PART 6 SUBMITTALS– NOT USED

PART 7 MEASUREMENT AND PAYMENT

7.01 LUMP SUM BASIS

A. Payment for the work in this section will be made based on the "Lump Sum" price amount listed in the bid schedule, and will be payment in full for all materials, equipment, labor, fittings, appurtenances and other incidental items required to complete the work as specified.

END OF SECTION

APPENDIX "B"

Submittals of the following shall be delivered to the Engineer. *NOTE: This list is intended to be a useful guide to the Contractor and not necessarily a definitive list of all items that a submittal may be required on. If requested by the Engineer additional item(s) shall be delivered in the format outlined for review and approval.*

General Conditions:

- ❑ Signed Contract
- ❑ Signed Notice To Proceed
- ❑ Contractor's personnel's contact information & 24-hour emergency number
- ❑ Contractors Insurance Certificate(s)
- ❑ Schedule of work in flow chart format
- ❑ List of Subcontractors
- ❑ Copies of government permits (building, electrical, plumbing ODOT right of way, etc.)
- ❑ Performance, Payment, Labor and Materials Bonds

Division 2 – Sitework:

- ❑ Dust control plan

Division 3 – Concrete –NOT USED

Division 4 – Streets – NOT USED

Division 5 – Water – NOT USED

Division 6 – Sanitary Sewers – NOT USED

Division 7 – Storm Sewers – NOT USED

Division 8 – Structures – NOT USED

Division 9 – Miscellaneous –

- ❑ Control drawings
- ❑ s
- ❑ s

Division 10 – Equipment

- ❑ Chiller Specifications
- ❑ Valves
- ❑ Pipe and fittings
- ❑ Electrical conductors and devices

CITY OF WOODBURN

LIBRARY CHILLER REPLACEMENT

PART V

PLANS

NO DRAWINGS

KFAA TECHNICAL STUDY – APPENDIX “A”

APPENDIX "A"

KFAA

TECHNICAL ANALYSIS STUDY

LIBRARY CHILLER REPLACEMENT

TECHNICAL ANALYSIS STUDY

City of Woodburn

Library Chiller Replacement

280 Garfield St., Woodburn, OR 97071

Project: ETECPS1545322046

SPONSORED BY:

ENERGY TRUST OF OREGON – EXISTING BUILDINGS PROGRAM

SERVING UTILITIES:

Portland General Electric and Northwest Natural Gas

SUBMITTED BY:

KARL FRIESEN AND ASSOCIATES, LLC DBA KFAA ENGINEERING

March 5, 2021

Version 1

KFAA Engineering ……. Integrated Resource Optimization Management Services
1822 SW Madison Street, Suite 222
Portland, OR 97025

CONTACTS

Site Contact

The following facility personnel assisted with this report:

John Hunter, Facilities Supervisor
280 Garfield St
Woodburn, OR 97071
503-982-5259
John.Hunter@ci.woodburn.or.us

Energy Trust Contact

Nikki Burton
Account Manager, Existing Buildings
ICF International
615 SW Alder St, Suite 200
Portland, OR 97205
503.351.3712
Nikki.Burton@icf.com

ATAC Contact Information

The Allied Technical Assistance Contractor (ATAC) that prepared this report is:

Karl Friesen, PE, and Tony Zagelow
Karl Friesen and Associates, LLC dba KFAA Engineering
quest
503.686.1176
www.karlfriesen.com

DISCLAIMER

In no event will Energy Trust of Oregon, Inc. or ATAC be liable for (i) the failure of the customer to achieve the estimated energy savings or any other estimated benefits included herein, or (ii) for any damages to the customer's site, including but not limited to any incidental or consequential damages of any kind, in connection with this report or the installation of any identified energy efficiency measures. The intent of this energy analysis study is to estimate energy savings associated with recommended energy efficiency upgrades. This report is not intended to serve as a detailed engineering design document, any description of proposed improvements that may be diagrammatic in nature are for documenting the basis of cost and savings estimates for potential energy efficiency measures only. Detailed design efforts may be required by participants to implement potential measures reviewed as part of this energy analysis. While the recommendations in this report have been reviewed for technical accuracy and are believed to be reasonably accurate, all findings listed are estimates only, as actual savings and incentives may vary based on final installed measures and costs, actual operating hours, energy rates, and usage.

NEXT STEPS FOR THE PARTICIPANT

APPLY FOR ENERGY TRUST INCENTIVES

Make an implementation decision: *Please evaluate the information contained in this report and any potential measures and incentives listed in the Form 110C – Project Detail and Incentive Estimates (produced by ICF). Have your contractors bid for the measure(s) you wish to implement and send ICF a copy of the final bid. ICF will review your contractor's proposed scope to determine compliance with the Existing Building's requirements and the energy efficiency measures as described in this report. After it is determined by ICF that the project bid specifications match the studied measure, Form 120C – Incentive Application will be provided for you to review. If you apply for Energy Trust incentives for your project, your signed Form 120 C - Incentive Application must be provided to ICF BEFORE you issue purchase orders or make other financial commitments to begin the project work.*

Upon completion of the Project: *ICF must be notified once the project is completed to arrange a post-installation verification for projects that receive incentives greater than $5,000. The program must receive all required documentation and perform any required post-installation verifications before incentives can be issued.*

APPLY FOR ENERGY TRUST SOLAR INCENTIVES

Make a solar implementation decision: *Please evaluate the solar site evaluation (SSE), if included in this report. Your PMC will arrange a meeting to discuss the results of the evaluation. Or, if you wish to move forward, your PMC will provide you with a list of qualified Trade Ally contractors. Obtain bids on the solar measures you want to implement. When you have selected a solar Trade Ally contractor for the installation, the Trade Ally will provide and submit the necessary incentive application paperwork to Energy Trust on your behalf. The PMC and Energy Trust's solar staff are available to answer all your solar questions.*

Upon completion of the Solar Project: *The solar Trade Ally will arrange for the final Energy Trust verifications, and within 30 days of successful verification, you will receive your solar incentive check from Energy Trust.*

KFAA Engineering ……. Integrated Resource Optimization Management Services
1822 SW Madison Street, Suite 222
Portland, OR 97025

EXECUTIVE SUMMARY

This report evaluates, for the City of Woodburn Library, located at 280 Garfield St, Woodburn, Oregon, an upgrade of their existing chiller with a new energy-efficient chiller. Plus identifies ways to use this chiller more efficiently through operational changes, to take advantage of this new chiller's variable speed and control capabilities. These improvements were identified via discussions with the facility lead and their HVAC service provider, as well as from initial and follow-up walkthroughs. These steps included occupant conversations and the placement of data loggers to collect operational data on the HVAC system.

The facility consists of two (2) separate buildings connected by a short-enclosed corridor. The old Carnegie Library side of the building was originally constructed in 1914 as part of Andrew Carnegie's nationwide library project that constructed over 35 similar type structures built between 1883 and 1929. This portion of building totals approximately 4,800 square feet. The other side of the building is the new Library which was constructed in 1977 and totals approximately 19,100 square feet for an overall 23,909 sqft. Heating, cooling, and ventilation are provided by a PACE air handler with a variable speed fan supplying VAV boxes throughout the building. Cooling provided by a York 70 ton air cooled chiller located behind the building. Heating is provided by a natural gas heater located in the mechanical room mixed air 'plenum', as well as electric resistance reheat coils in the VAV boxes.

Using data from the last three years, the annual average 3,064 therms and electricity usage 268,592 kWh
Projected current EUI = 51.2
Total % savings for electricity = 25%
The area affected by measures: 100% of the Bldg.
Total % savings for therms = 11%

ENERGY EFFICIENCY MEASURE SUMMARY

EEM 1 – Chiller replacement
EEM 2- DDC controls optimization and CO_2 sensors

Table 1: EEM Summary Table

EEM #	Estimate Electric Savings (kwh)	Estimate Gas Savings (therms)	Estimated Energy Cost Savings ($) *	Estimated Non-Energy Benefits ($) **	Estimated Installation Costs $	Estimated Simple Payback ***	Estimated Return on Investment (ROI) ****
EEM # 1	40,040	292	$ 3,342	$ 7,182	$ 101,704	9.7	10%
EEM # 2	27,400	37	$ 2,165		$ 8,080	3.7	27%

Notes:
* Cost savings are based on Energy Trust average utility rates of $0.078/kWh and $0.75/therm for Oregon and $0.792/therm for Washington in payback calculations. Actual participant rates may be different.

** Non-energy cost benefits are from items such as avoided maintenance, reduced water costs, or other cost savings.

*** Simple Payback is a measure of how quickly your investment in the measure will pay for itself.

**** Simple ROI is another measure of the measure's benefits. This is simply the inverse of the Simple Payback and can be used as a rough comparison to other investment opportunities.

HISTORICAL ENERGY USE

TABLE 2 : HISTORICAL BUILDING ENERGY USE

Average Utility Billing Analysis for	City of Woodburn - Library - Chiller							
	Electric Use (kWh)				Natural Gas Use (therms)			
	2017	2018	2019	3 Year Average	2017	2018	2019	3 Year Average
Jan	27,499	23,166	35,573	28,746	577	635	348	520
Feb	24,452	23,147	40,460	29,353	613	624	553	597
Mar	29,396	21,962	30,806	27,388	119	525	340	328
Apr	19,686	5,426	19,465	19,575	2	312	163	238
May	13,984	5,607	17,429	15,707	157	112	55	108
Jun	890	5,906	16,050	16,050	86	69	21	59
Jul	18,882	20,470	17,471	18,941	21	19	4	14
Aug	19,895	19,390	18,569	19,284	10	8	1	6
Sep	17,608	19,800	16,501	17,970	88	0	50	46
Oct	19,455	24,469	19,752	21,225	285	0	233	173
Nov	20,243	27,871	24,916	24,343	524	155	496	392
Dec	28,455	33,067	28,505	30,009	864	321	567	584
TOTAL				268,592				3,064
TOTAL ENERGY USE IN KBTU			1,223,418					
ENERGY USE INDEX (KBTU/SQ.FT./YR)			**51.2**					

THE MONTHS HIGHLIGHTED IN BLUE ARE 2020 DATA. THE MONTHS HIGHLIGHTED IN RED ARE OUTLIERS AND HIGH/LOW DUE TO FAULTY METER OR READING ERROR AND ARE EXCLUDED FROM THE AVERAGE CALCULATIONS.

NOTE: THE EUI FOR THIS BUILDING 51.2 KBTU/SQFT/YR IS 28% MORE THAN THE NATIONAL AVERAGE ENERGY USE PER SQUARE FOOT FOR A BUILDING OF THIS TYPE, 71.6 KBTU/SQFT/YR ACCORDING TO USDOE ENERGY STAR RATINGS.

FACILITY OVERVIEW

FACILITY DESCRIPTION

The facility operates as the City library for the City of Woodburn. The facility consists of two (2) separate buildings connected by a short-enclosed corridor.

Carnegie Library

This part of the facility was originally constructed in 1914 as part of Andrew Carnegie's library project that constructed over 35 similar type structures built between 1883 and 1929. It is a rectangle-shaped building on the north end of the site and totals approximately 4,800 square feet.

New Library

This part of the facility was originally constructed in 1977. Its basic footprint is rectangular with protruding architectural features on its east facade. Its longest orientation runs north/south and totals approximately 19,100 square feet.

Total approximate square footage of both buildings: 23,909

The building's occupancy is approximately six to eight hundred (600-800) visitors daily with three (3) to five (5) staff working daily.

The libraries hours of operation include:

Saturday & Sunday Closed

Monday & Tuesday Noon-7pm

Wednesday, Thursday & Friday 10 am- 5 pm

The building tightness is average for structures of their age and construction.

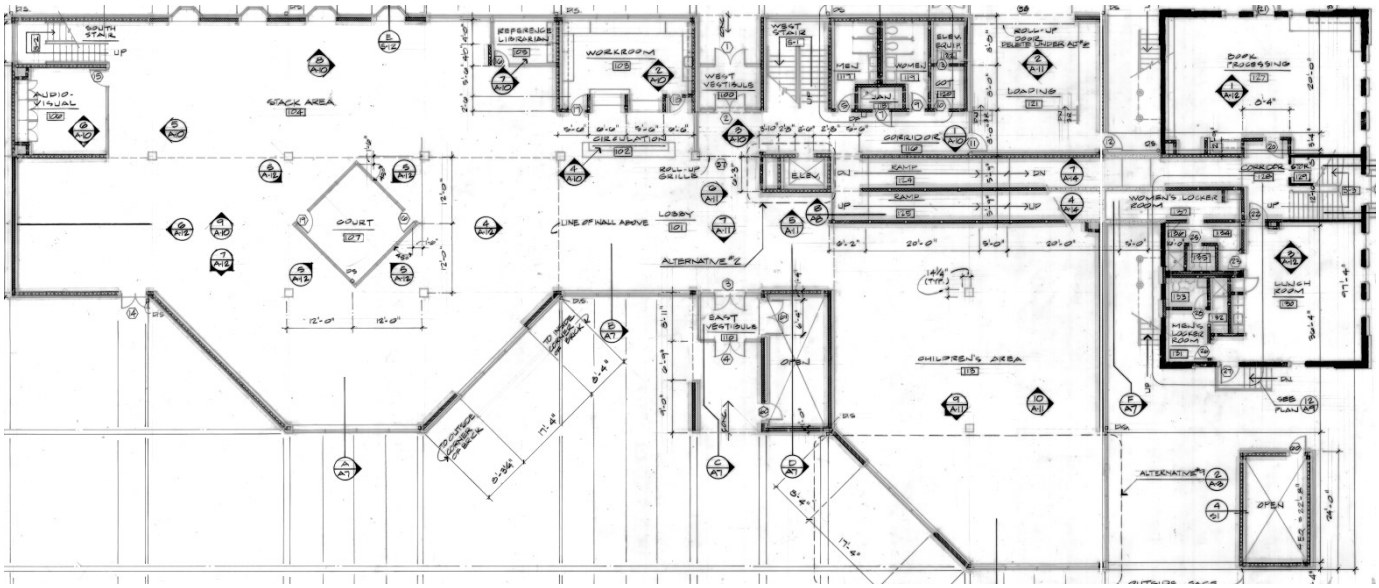

Image 1: Ground Level

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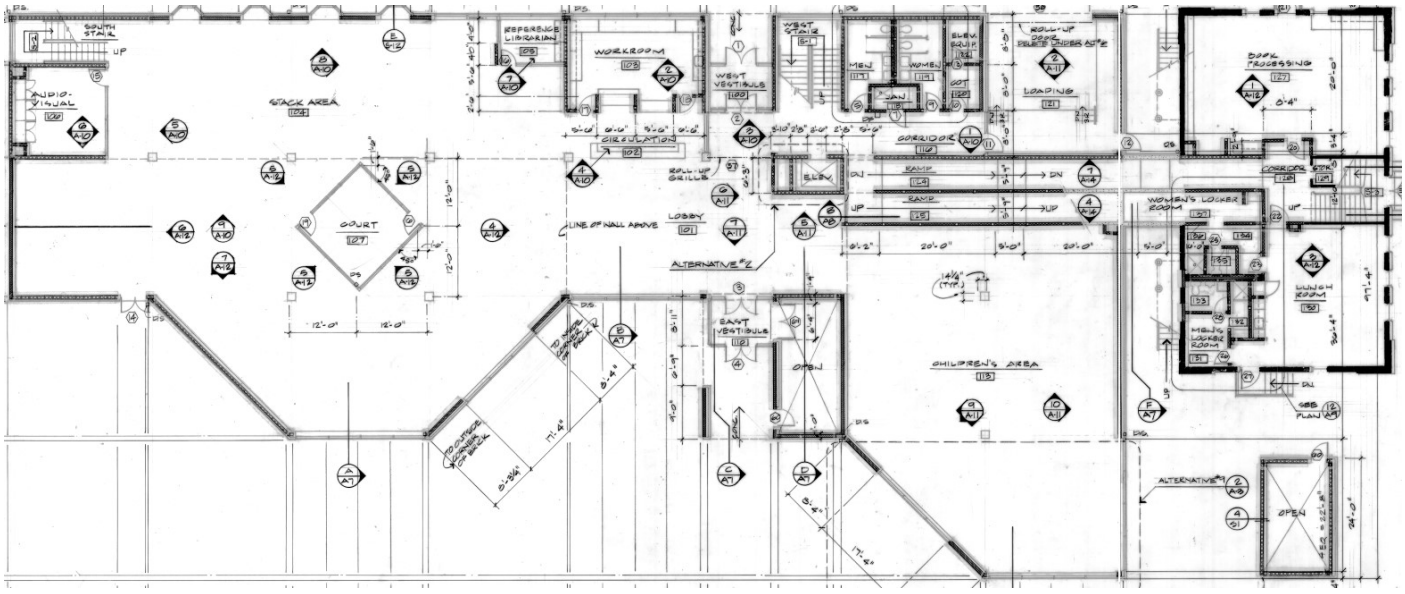


Image 2: Upper Level

Walls

Carnegie Library

External walls are constructed of white brick masonry over 10" concrete with furred insulation (R-13) (R-Value=13.03, U-Factor=0.077)

New Library

1st Level: External walls are wood frame construction with red brick masonry over ½" fiberboard sheathing and batt insulation (R-19). (R-Value=17.68, U-Factor=0.057)

2nd Level: External walls are wood frame construction with blue galvanized finish over ½" fiberboard sheathing and batt insulation (R-19). (R-Value=17.25, U-Factor=0.058)

Roof

Carnegie Library

The roof construction is an advanced wood frame, 24" o.c. with a built-up style roof finish. (R-Value=2.25, U-Factor=0.444)

New Library

The roof construction is an advanced wood frame, 24" o.c. with steel galvanized blue roofing w/ batt insulation (R-30). (R-Value=30.1, U-Factor=0.033)

Floors

Carnegie & New Library

Both buildings have floors that are 6" concrete throughout with carpeting in a few areas.

Doors

Carnegie Library

The building's main entrance is located on its west façade and consists of one (1) set of double 7'x6' wood

and glass doors. that lead into the 1st-floor main lobby. The east and west north façade have one (1) 2'x7'wood and glass doors each. All doors single doors windows are single pane clear glass (U=1.11, SHGC=0.86).

New Library
The building has two (2) matching entrances one located on the building's west façade and the other on its east façade. Both entrances have air-lock style doors consisting of two sets of 7'x6' glass and metal double doors. All doors contain double-pane clear glass (U=0.47, SHGC=0.78).

Windows
Carnegie Library
The building's windows cover approximately 15% of its facades. All windows have single-pane clear glass (U=1.11, SHGC=0.86) and an aluminum frame type, without break.

New Library
The building's windows cover approximately 5% of its facades. All windows have double-paned tempered tinted glass (U=0.47, SHGC=0.78) and an aluminum frame type, without break.

Internal Loads
Carnegie & New Library
Lighting
The buildings have upgraded fixtures to LED but a few fluorescent fixtures still exist throughout the buildings.

Miscellaneous Equipment
The employee breakrooms contain refrigerators and a microwave.

Other Miscellaneous Equipment
The equipment throughout the building is common for buildings of this type. Typical office type equipment of desktop computers, laptop computers, and printers.

Heating, Ventilating, and Air Conditioning (HVAC)

The building HVAC system consists of one (1) variable speed Supply Fan (SF-1) and one variable speed (1) Return Fan (RF-1) that serve the building's twenty-one (21) terminal units throughout the facility, eight (8) of which are on the 1st floor and thirteen (13) on the 2nd floor.
One (1) Cooling Coil (CC-1) is installed directly downstream from SF-1 and is served chilled water from the chiller (CH-1) via the Chilled Water Pump (CH-1).
One gas fired heaters installed in mechanical room 'mixed air plenum' provides heating to the facility (along with electric resistance reheat coils in the VAV boxes.
All equipment listed is in the building's equipment room except for the chiller and exhaust fan.
The chiller is located outside on the ground just outside the mechanical room entrance.

Supply Fan (SF-1): One (1) 23,000 CFM, 30 HP, 208/3, w/ VFD
Return Fan (RF-1): One (1) 23,000 CFM, 15 HP, 208/3, w/ VFD – Unit is interlocked with Supply Fan (SF-1)
Cooling Coil (CC-1): One (1), 23,000 CFM, 764 MBH
Chiller (CH-1): One (1) York YCAL Series 30-ton, air cooled scroll, 7414 kW - Serves Cooling Coil (CC-1)
Chilled Water Pump (P-1): 3 HP, 177 GPM, 208/3
Heater - 300/231 MBH Capacity (In/Out)

Exhaust Fan (EF-1): One (1) Bathroom Exhaust Fan, 1 HP

HVAC Control System

The building's HVAC system is controlled by an Automated Logic WebCTRL system installed in 2015.

Domestic Hot Water

The building's DHW is served by a 130-gallon commercial 17 kW electric water heater.

Solar Opportunities

Neither the Carnegie nor New Library is a good candidate for solar. Both buildings experience considerable shade throughout the day due to nearby trees.

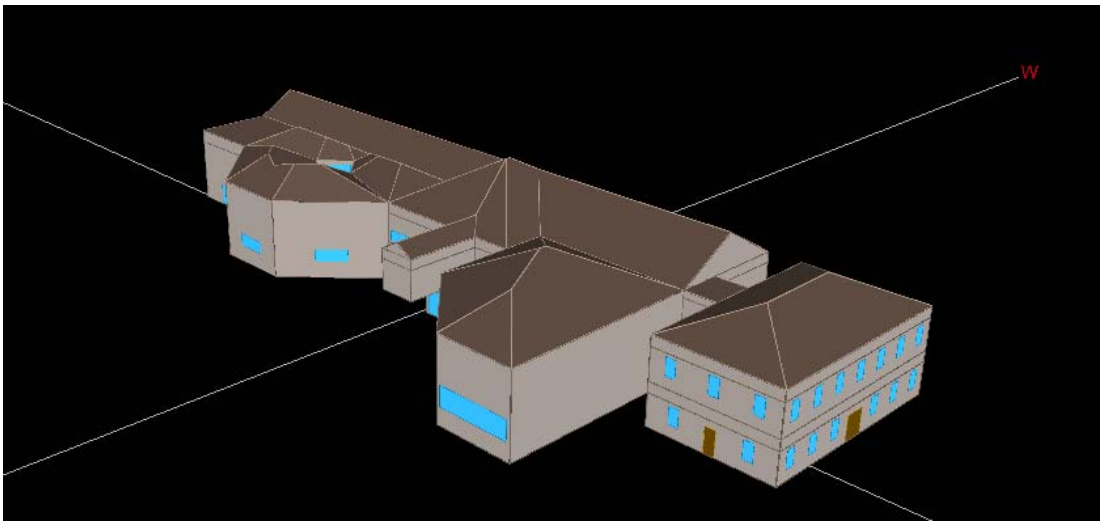
MODEL CALIBRATION AND METHODOLOGY

Table 3: Billed/Baseline versus Modeled Energy Use

	Electric Use (kWh)			Natural Gas Use (therms)		
	Baseline	Model	% Deviation	Baseline	Model	% Deviation
Jan	28,746	30,280	5.3%	519.9	588	13.1%
Feb	29,353	23,880	-18.6%	596.6	498	-16.6%
Mar	27,388	28,560	4.3%	327.9	244	-25.7%
Apr	19,575	23,200	18.5%	237.8	222	-6.5%
May	15,707	18,240	16.1%	108.2	175	61.9%
Jun	16,050	17,400	8.4%	58.5	45	-23.6%
Jul	18,941	18,050	-4.7%	14.3	2.7	-81.2%
Aug	19,284	16,990	-11.9%	6.5	3.8	-41.2%
Sep	17,970	17,240	-4.1%	46.2	60	29.9%
Oct	21,225	21,070	-0.7%	172.6	214	24.1%
Nov	24,343	21,220	-12.8%	392.0	386	-1.5%
Dec	30,009	32,490	8.3%	584.0	625	7.1%
TOTAL	268,592	268,620	0.0%	3,064	3,063	0.0%

The initial project walkthrough was performed with the building facility supervisor, the HVAC service contractor account lead and the new chiller factory representative. Original 1977 and 2000 renovation building drawings were provided to review in follow-up correspondence. Data loggers were placed throughout the building to gain an understanding of how the building operates. The building was monitored from September 18, 2020, through October 2, 2020, including temperatures, relative humidity, light intensity, and carbon dioxide levels.

A CAD model of the building was developed and inserted into the eQuest model along with building construction and energy data, including building construction materials, architectural dimensions, and geometry - '3D' drawing below.



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With all these inputs inserted into the model and changes reflected from the data loggers, the results from the energy simulation were compared with the billing data of the last 3 years provided by the ETO (both electric and natural gas consumption), so the simulation model could be calibrated.

The building's EUI is 51.2, which is 28% less than the national EUI average of 71.6 for Libraries per USDOE Energy Star ratings. Given the larger new Library portion of the building, built after the first wave of energy codes were established (versus most libraries around the country are typically much older uninsulated construction type buildings), the fairly new DDC controls/VFD fans, as well as LED lights throughout most of the building, this EUI being lower than average is understandable. However, looking at the condition/age of the chiller and some aspects of the DDC operation, there are energy savings opportunities for the building in the two areas of focus for this study. The logs identified that excess volumes of outside air are being supplied via the AHU since there are no CO2 sensors integrated within the operation of the outside air control. Although the CO2 logger observations are a little misleading since the building has reduced occupancy during this investigative process, because of the Covid-19 pandemic. So, expectations for outside air savings are tempered by this current situation. In addition, the logs, as well as inquiries on the DDC system remotely by KFAA, suggest that the building could benefit from a more aggressive occupied/unoccupied temperature setback regime. Lastly, although the chiller is only 19-20 years old, the operation could benefit from an upgrade to a new high-efficiency variable speed model. This report identifies how excess energy consumption can be reduced following the recommendations of this TAS process.

All model inputs attempt to reasonably represent the observed conditions and system operation following an effective modeling process. Zones within the building were modeled according to their heating/cooling system components and activity type. The building consists of library reading spaces, stacks, private office areas, conference rooms, hallways, reception and lobby areas, storage, and restrooms. The HVAC system was modeled as somewhat degraded efficiency 20-year-old Chiller and standard VAV system with natural gas pre-heat. Distribution boxes have electric resistance reheat.

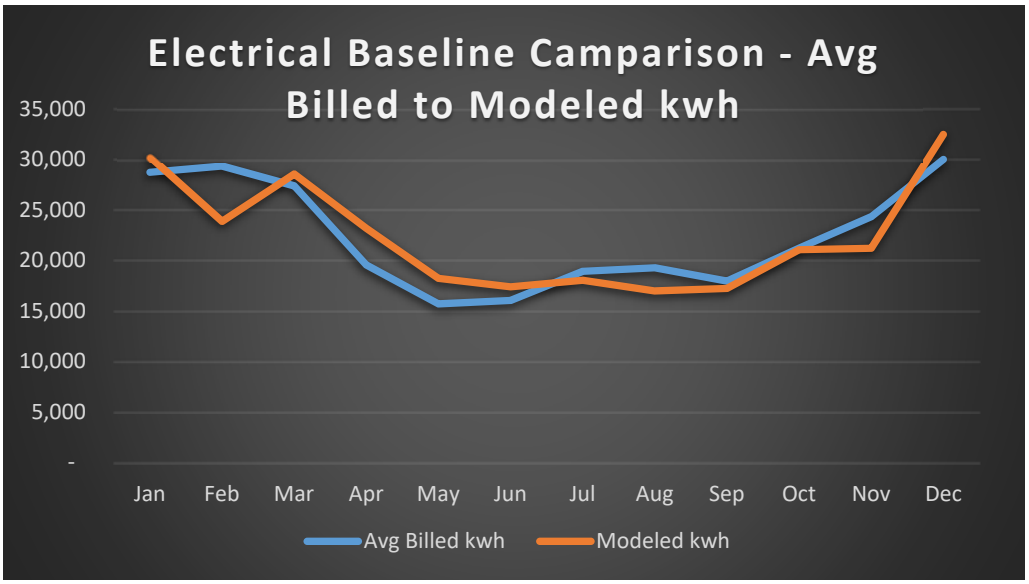
The data logs identified that the HVAC system startup engages many hours before the occupancy and ends a couple of hours after occupancy at roughly the same time each night. This action both increases energy usage to maintain temperatures when vacant, as well as this action, reduces the mechanical room gas heater's ability to perform its morning warmup cycle (natural gas heat being a less expensive source for heating). To reflect this early during the morning situation, the fan operation was modeled to operate 6 hours before and 5 hours after occupancy (5 am to 2 am).

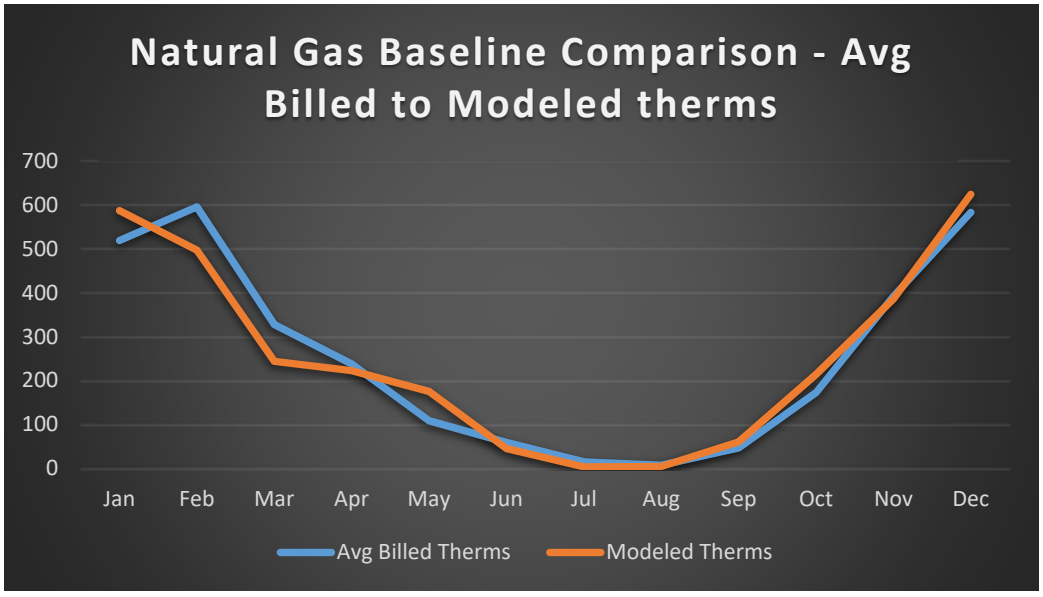
The building's occupancy profile was modeled from Monday through Friday from approximately 11 AM to 7 PM on Monday and Tuesday and 10 AM to 5 PM throughout the year and closed on weekends and public holidays. Although the staff occupancy extends these periods to more normal occupancy timeframes during the week. Ventilation air for the occupied areas was modeled at somewhat higher (expected design levels being the 20cfm/person, the design standard when the building's HVAC system was built) to account for the low CO2 levels observed in the data logs. The cooling and heating efficiencies were reduced slightly to account for the degradation of the system components over the many years of operation. The natural gas furnace in the mechanical room is used for pre-heating/morning warmups only, with the primary re-heat provided by the distribution box level, electric reheat coils. Since eQuest cannot model pre-heating/morning warmups with a different fuel source, a workaround was employed whereby a hot water baseboard was used to mimic the morning warmup scenario. Based on the existing usage and observed HVAC/re-heat operation starting early

morning and throughout occupied hours, this operating scenario was iterated around various values to calibrate the model to the actual energy use billings.

Also, only a 'moderate' unoccupied setback regime was observed in the data logs. Plus, the data logs helped identify a specific and routine HVAC system operation that started early and ended late at night, all of which was accounted for in the model calibration processes.

The eQuest model simulation was run and compared with the utility billing history per the below charts.





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DETAILED DESCRIPTION OF PROPOSED MEASURES

EEM 1 – CHILLER REPLACEMENT

BASELINE CONDITION

The existing chiller is a 70 ton, 20-year-old standard air-cooled reciprocating York chiller with nominally lower efficiencies than its original design efficiencies due to condition/age.

PROPOSED CONDITION

A new variable speed McQuay air-cooled chiller. This new unit will be more much efficient and the more sophisticated onboard controls along with the variable speed capability will allow the unit to be operated with a CHW reset temperature strategy that will both reduce the energy consumption of the chiller, but also reduce the electric reheat coil operation by delivering warmer cool air during non-peak load periods.

NON-ENERGY SAVINGS DESCRIPTION

The implementation of this measure will result in improved thermal comfort for occupants and improved energy usage per the above-mentioned strategies. This improved system will also reduce overall HVAC system management and maintenance costs. The NEB appendix has details on the calculation of these avoided maintenance costs included in the summary evaluation chart (Table 1).

TABLE 4: SUMMARY OF EEM1

	kWh Savings	Therm Savings
Estimated Total Energy Savings	40,040	292
Age of Equipment Being Replaced	The existing systems have been in place for 20 years,	
Is Existing Equipment Currently Working or Not Working?	Yes, but not optimally efficient	
Cost	$101,704	
Notes	EEM savings were calculated by making appropriate adjustments to the reset temperatures, Chiller efficiency via the eQuest model to reflect the improvements mentioned.	

TABLE 5: EEM1 CONDITIONS

Item	Baseline Condition	Proposed Condition
Chiller efficiency	1.46 kW/ton Shutdown in winter	0.64 kW/ton Shutdown in winter
SAT reset	55°F at 65°F or above 58°F at 60°F or below	OA Reset 55°F at 80°F or above 65°F at 60°F or below
Morning warmups	Very low morning warmups	Optimize the gas furnaces due to optimized SAT reset. The system does not require the pre-heat as

		much due to lower SAT temperatures.

TABLE 6: ENERGY MODELING ASSUMPTIONS FOR THE PROPOSED EEM

Item	Baseline Condition	Proposed Condition	Justification
Chiller efficiency	1.46 kW/ton (8.21 EER) Shutdown in winter	0.64 kW/ton (18.76 EER) Shutdown in winter	The chiller efficiencies for the existing system were based on design drawings from the year 2000. The efficiencies have slightly been reduced to account for inefficiencies due to age and operation. The proposed condition efficiency is based on a new chiller with variable speed condenser fans. The efficiencies on the system range from 10.76 EER (1.1 kW/ton) at 100% load to 0.57 kW/ton (20.85 EER) at 20% load. An efficiency of 0.64 kW/ton which is obtained at 50% load was selected based on the average load observed in the modeling software for the building.
SAT reset & morning warmups	55°F at 65°F or above 58°F at 60°F or below	OA Reset 55°F at 80°F or above 65°F at 60°F or below	With an optimal reset strategy, the operational savings increased because the chiller does not have to work hard to generate lower temperatures based on outside air condition and the building load. The gas furnace use (and electric reheat coils) will also reduce because the overall supply temperatures during mild outdoor temperature will be lower thus the frequency of pre-heating the air will reduce.

EEM 2 – DDC CONTROLS OPTIMIZATION AND CO2 SENSOR INTEGRATION

BASELINE CONDITION

The existing HVAC DDC control system was recently upgraded in 2015 to Automated Logic WebCTRL. This reasonably new DDC control system is efficient in managing the overall operations; however, the current system has no way to control outside air based on internal demands (DCV). Several spaces were observed with multiple personal space heaters to cope in part with the system needing to heat up cooler delivered temperature air than is necessary much of the year. Some of these issues are limitations of the existing chiller compressor cycling and others are a result of excessive outside air in need of heating before delivery to the space, resulting in excess reheat needs. In addition, excess pre and post-occupancy HVAC operations were observed based on data logs.

PROPOSED CONDITION

The existing DDC system will have CO_2 sensors added into key spaces to make decisions to open/close down the outside air based on these readings in order to react to occupant actual needs. This will allow for the reduction in the amount of colder (and warmer in the summer) outside air most of the year that needs to be conditioned thus reducing electric resistance reheat operation improving the building's overall energy efficiency. Also, more aggressive unoccupied temperature setbacks along with an optimal start/stop routine at the beginning and ends of the occupied periods will be implemented. This will reduce the system after hours of operation and provide more accurate and precise control of the HVAC system and operation schedule.

The implementation of improved and more efficient operating strategies will reduce the energy use of the building and the thermal comfort will be improved.

With the implementation of this measure, the building operation will be improved in several ways:

1. A significant improvement in outside air control is anticipated based on the active monitoring of CO2 levels combined with verified firm control of the outside air dampers. This will minimize the amount of outside air in need of heating/cooling at all times, and will shut off completely outside air after hours when no occupants remain in the building. These should be controlled to 800-850 ppm CO2 or less.

2. More aggressive unoccupied temperature setbacks will be implemented to reduce the unnecessary after-hours overall system operation, including reduced after-hours heating and cooling. The existing over-ride buttons on the existing temperatures sensors located around the building will be re-programmed to over-ride the unoccupied setpoints for an adjustable 1-2 hours when engaged. This allow for afterhours use of the HVAC system when applicable.

3. The optimal start/stop routine will be implemented to flexibly engage the HVAC system start times so the system will begin operation no earlier than needed to meet scheduled occupancy temperature needs. Plus, this system will flexibly shut down the system before or precisely no later than the occupied period. Depending on the ability of the building to hold heat/cooling, for most of the year (moderate temperature days) the heating/cooling systems can be turned off prior to the end of the occupied time period. The fans will still circulate to maintain occupant comfort but the temperatures will be allowed to ramp slowly down further reducing energy use. The optimal 'stop' feature will be programmed to allow for this prior to the end of the occupied period heating/cooling shutdown. This system response capability will make sure this setback strategy can be implemented effectively, so the HVAC system will have warmed up/cooled down the building before occupants arrive.

NON-ENERGY SAVINGS DESCRIPTION

The implementation of this measure will result in improved thermal comfort for occupants and improved energy (greater variable cool air and CO2 driven outside air control delivery capability) usage per the above-mentioned strategies. However, none of these potential savings have been included in this energy savings focused evaluation since much/most of this reduction is already taking place with the already upgraded DDC system 4-5 years ago.

TABLE 6: SUMMARY OF EEM2

	kWh Savings	Therm Savings
Estimated Total Energy Savings	27,400	37
Age of Equipment Being Replaced	The existing DDC system has been in place for 4.5 years.	
Is Existing Equipment Currently Working or Not Working?	Yes, but not optimally efficient	
Cost	$8,080	
Notes	EEM savings were calculated by making appropriate adjustments to the schedules, and outside air flow rate via the eQuest model to reflect the improvements mentioned.	

TABLE 7: EEM2 CONDITIONS

Item	Baseline Condition	Proposed Condition
Schedule	Occupancy: Building weekday M, T: 11 AM to 7 PM W, Th, F: 9 AM to 5 PM Weekends: off HVAC system operation Winter: 5 AM to 2 AM Fall, Spring: 5 AM to 12 AM Summer: 5 AM to 10 PM Different run times have been set based on seasons due to the extremity of the temperatures where in winters the system needs to run more to meet up to the lower temperatures and in fall, springless than winter and so on for summer.	Occupancy: No change HVAC system: modeled 5 AM to 11 PM for all seasons, however, the optimal start/stop routine will shorten and lengthen these times based on the conditions and observed experience over time.
Occupied setpoints	Heating: 70°F Cooling: 72°F	No Change
Unoccupied setpoints	Heating: 67°F Cooling: 79°F	Heating: 62-63°F (Modeled at 64°F) Cooling: 82-84°F (Modeled at 82°F) be aware if the coldest (below 20-25°F) and hottest (above 95-96°F) days result in too cold or hot an indoor condition upon occupancy, rather than run the risk the

		facility staff potentially 'over-ride' the system potentially for an extended period, consider programming in a reset of these setpoints upwards/downwards ie 65-67°F and 79-80°F when these extremes occur.
Optimal Start/Stop	None	Optimal start/start routine starts and stops the system at a different time each morning/evening based on the time needed to heat up/cool down the building over the past week to 10 days per the factory algorithms. The Chiller/Boiler will operate to match occupancy schedule 1-2 hours before and after to account for custodial staff use, occasional after hour use. Modeled at a conservative estimated pre-occupancy timeframe. Additional details in Table 6
OA Rate	30 cfm/person	25 cfm/person
Fan Operation	Same as HVAC system: Winter: 5 AM to 2 AM Fall, Spring: 5 AM to 12 AM Summer: 5 AM to 10 PM	Same as HVAC system: 5 AM to 11 PM for all seasons however the optimal start/stop routine will shorten and lengthen these times based on the conditions and observed experience over time.
Demand Control Ventilation	None	Install CO2 sensors to manage OSA damper positioning.

TABLE 8: ENERGY MODELING ASSUMPTIONS FOR THE PROPOSED EEM

Item	Baseline Condition	Proposed Condition	Justification
Fan Operation and Optimal Start/Stop	Supply fan modeled to operate from 5 AM to 2 AM in winter and lower during fall, spring, and summer.	Supply fan modeled to operate from 5 AM to 11 PM	With an optimal start/stop routine, the fan operation is reduced every day by turning on and off closer to the projected times the S/S routine will start/stop the HVAC system for occupant comfort. Including optimally shutting off the heating and cooling (not fan operation) before the end of the occupancy period on moderate temperature days to take advantage of the building's thermal inertia (most days in Portland are moderate temperature days so depending on far the OSA (plus solar gains impacts)is off from the internal building temperature stop heating or cooling the building 1 hour, ½ an hour, 15 minutes, etc. before the end of the occupied period
Unoccupied Temperature Setback	Heating at 67 °F Cooling at 79 °F	Heating in the 62-63°F range Cooling in the 82-84 °F range – be aware if the coldest (below 20-25°F) and hottest (above 95-96°F) days result in too cold or hot an indoor condition upon occupancy, rather than run the risk the facility staff potentially 'over-ride' the system	More aggressive setbacks for heating and cooling have been modeled for the proposed scenario to reflect the implementation of a push button in the spaces. In case of occupancy during after hours, the occupant can simply push a button and space can return to occupied temperatures within a reasonable time. Note, that based on the range proposed as well as the value used for modeling if the owner desires to alter the set-point up to the upper range i.e. 65°F when the outside air is below said 24°F, automatically via the DDC system programming (or even

		potentially for an extended period, consider programming in a reset of these setpoints upwards/downwards ie 60-61°F and 79-80°F when these extremes occur.	higher than 65°F for a few days on a 'temporary override basis's with a DDC system automatically re-setting the system back to the desired lower setbacks during a cold spell, to keep pipes from freezing or tenants satisfied, etc., since these hours per year are so few, the 64°F modeled still value allows for this operational flexibility. Yet still will achieve the projected energy savings.
Demand Control Ventilation	none	Install CO2 sensors to manage OSA damper positioning.	The outside airflow rate defined for the baseline is derived by modeling the building at levels defined at the time of design/construction i.e. 20 cfm/person. From there the values are elevated/lowered based on the data logs which show only select period's when/select locations where the CO2 levels exceed the maximum ppm desired 800-850. So, most of the time too much outside air is being supplied. Since the existing system has no CO2 level feedback/control, there is no alteration of the outside air based on space needs. The level of OSA flow in the model is adjusted iteratively along with other known, definable variables to obtain the calibrated model results and the most correct cfm values. Too much or too little outside air and the model will not calibrate with the actual energy usage billings. Then with CO2 sensors are added to vary the OSA, but within the logical limits of the physical HVAC systems in place. I.e. older systems were not designed to allow for current code level cfm volumes. So, the upgrade values cannot go as far down as the current code suggests, without expensive air handler/ductwork and distribution box upgrade costs. So, improvements are solid but only slightly beyond the original HVAC system design intent. Plus, tight complete close off OSA supplies during unoccupied periods to re-engage the HVAC system for sporadic after-hours work.

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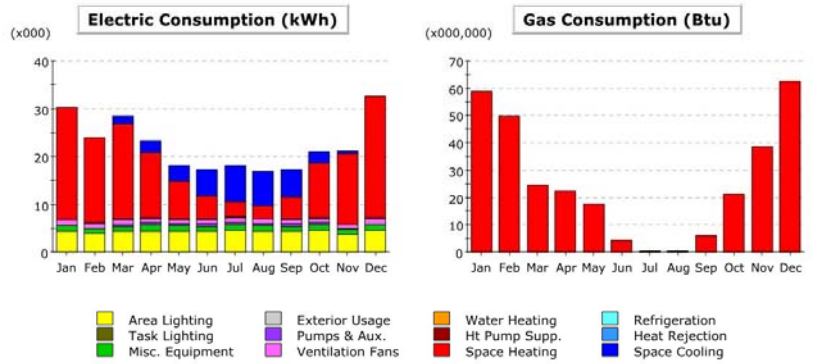
Appendix A - Equest baseline Calibrated Model

Project/Run: Woodburn Library_111420 - Baseline Design — Run Date/Time: 11/16/20 @ 13:20



Electric Consumption (kWh x000)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Space Cool	-	-	1.79	2.44	3.40	5.75	7.58	7.41	5.64	2.44	0.56	-	37.02
Heat Reject.	-	-	-	-	-	-	-	-	-	-	-	-	-
Refrigeration	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	23.41	17.74	19.80	13.60	7.93	4.66	3.07	2.52	4.67	11.48	14.78	25.36	149.03
HP Supp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Hot Water	0.17	0.15	0.17	0.17	0.16	0.15	0.15	0.14	0.14	0.15	0.14	0.17	1.85
Vent. Fans	1.17	0.98	0.92	0.89	0.85	0.95	1.07	0.97	0.88	0.87	0.82	1.20	11.58
Pumps & Aux.	0.04	0.04	0.42	0.41	0.43	0.44	0.47	0.47	0.44	0.42	0.17	0.04	3.78
Ext. Usage	-	-	-	-	-	-	-	-	-	-	-	-	-
Misc. Equip.	1.22	1.11	1.22	1.26	1.22	1.22	1.27	1.22	1.22	1.27	1.07	1.27	14.59
Task Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Area Lights	4.26	3.85	4.24	4.42	4.24	4.24	4.45	4.26	4.24	4.43	3.67	4.45	50.76
Total	30.28	23.88	28.56	23.20	18.24	17.40	18.05	16.99	17.24	21.07	21.22	32.49	268.62

Gas Consumption (Btu x000,000)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Space Cool	-	-	-	-	-	-	-	-	-	-	-	-	-
Heat Reject.	-	-	-	-	-	-	-	-	-	-	-	-	-
Refrigeration	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	58.79	49.76	24.36	22.24	17.52	4.47	0.27	0.38	6.00	21.41	38.61	62.52	306.31
HP Supp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Hot Water	-	-	-	-	-	-	-	-	-	-	-	-	-
Vent. Fans	-	-	-	-	-	-	-	-	-	-	-	-	-
Pumps & Aux.	-	-	-	-	-	-	-	-	-	-	-	-	-
Ext. Usage	-	-	-	-	-	-	-	-	-	-	-	-	-
Misc. Equip.	-	-	-	-	-	-	-	-	-	-	-	-	-
Task Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Area Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	58.79	49.76	24.36	22.24	17.52	4.47	0.27	0.38	6.00	21.41	38.61	62.52	306.31

eQUEST 3.65.7175 — Monthly Energy Consumption by Enduse — Page 1

Baseline Data - Various eQuest simulation outputs for each EEM are summarized and calculated below (as labeled)

Equest Model to Billed Data Camparison Analysis - Baseline

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Electric	Avg Billed kwh	28,746	29,353	27,388	19,575	15,707	16,050	18,941	19,284	17,970	21,225	24,343	30,009	268,592
	Modeled kwh	30,280	23,880	28,560	23,200	18,240	17,400	18,050	16,990	17,240	21,070	21,220	32,490	268,620
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Natural Gas	Avg Billed Therms	519.9	596.6	327.9	237.8	108.2	58.5	14.3	6.5	46.2	172.6	392.0	584.0	3,064
	Modeled Therms	587.9	497.6	243.6	222.4	175.2	44.7	2.7	3.8	60.0	214.1	386.1	625.2	3,063

From Baseline Chart Spreadsheet Tab	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Electric Data Drop from Equest	30.3	23.9	28.6	23.2	18.2	17.4	18.1	17.0	17.2	21.1	21.2	32.5	268.6
N Gas Data Drop from Equest	58.8	49.8	24.4	22.2	17.5	4.5	0.3	0.4	6.0	21.4	38.6	62.5	306.3
										51.15	Modeled Baseline EUI (kbtu/sqft)		
										51.15	Billed Energy Usage EUI Baseline		

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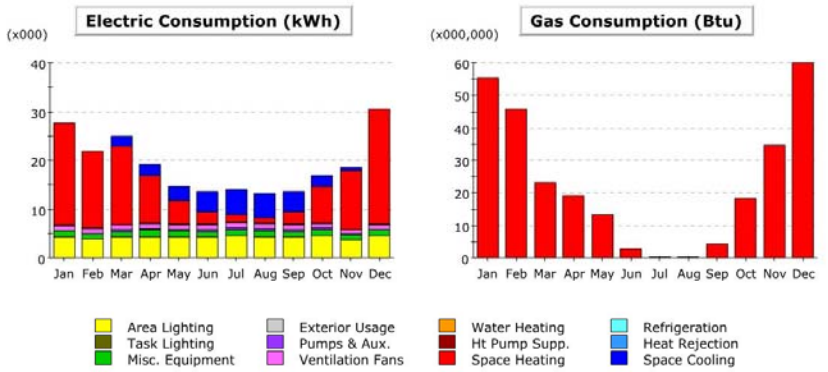
Appendix B - EEM # 1 Chiller Replacement

Project/Run: Woodburn Library_EEM 1_111420 - Baseline Design — Run Date/Time: 11/17/20 @ 23:18



Electric Consumption (kWh x000)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Space Cool	-	-	2.02	2.29	2.93	4.09	5.20	5.00	4.19	2.25	0.66	-	28.65
Heat Reject.	-	-	-	-	-	-	-	-	-	-	-	-	-
Refrigeration	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	20.74	15.66	15.93	9.72	4.89	2.50	1.41	1.06	2.49	7.53	12.06	23.51	117.53
HP Supp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Hot Water	0.17	0.15	0.17	0.17	0.16	0.15	0.15	0.14	0.14	0.15	0.14	0.17	1.85
Vent. Fans	1.10	0.94	0.89	0.90	0.90	1.02	1.15	1.08	0.94	0.89	0.80	1.14	11.74
Pumps & Aux.	0.04	0.04	0.38	0.37	0.39	0.40	0.42	0.42	0.40	0.38	0.16	0.04	3.44
Ext. Usage	-	-	-	-	-	-	-	-	-	-	-	-	-
Misc. Equip.	1.22	1.11	1.22	1.26	1.22	1.22	1.27	1.22	1.22	1.27	1.07	1.27	14.59
Task Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Area Lights	4.26	3.85	4.24	4.42	4.24	4.24	4.45	4.26	4.24	4.43	3.67	4.45	50.76
Total	27.54	21.76	24.85	19.15	14.74	13.62	14.06	13.19	13.62	16.91	18.56	30.58	228.57

Gas Consumption (Btu x000,000)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Space Cool	-	-	-	-	-	-	-	-	-	-	-	-	-
Heat Reject.	-	-	-	-	-	-	-	-	-	-	-	-	-
Refrigeration	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	55.31	45.80	23.24	19.09	13.42	2.85	0.18	0.23	4.33	18.14	34.59	59.96	277.14
HP Supp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Hot Water	-	-	-	-	-	-	-	-	-	-	-	-	-
Vent. Fans	-	-	-	-	-	-	-	-	-	-	-	-	-
Pumps & Aux.	-	-	-	-	-	-	-	-	-	-	-	-	-
Ext. Usage	-	-	-	-	-	-	-	-	-	-	-	-	-
Misc. Equip.	-	-	-	-	-	-	-	-	-	-	-	-	-
Task Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Area Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	55.31	45.80	23.24	19.09	13.42	2.85	0.18	0.23	4.33	18.14	34.59	59.96	277.14

eQUEST 3.65.7175 — Monthly Energy Consumption by Enduse — Page 1

EEM # 1	Chiller Replacement														
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Electric	Baseline Modeled kwh	30,280	23,880	28,560	23,200	18,240	17,400	18,050	16,990	17,240	21,070	21,220	32,490		268,620
	Modeled Saved kwh	2,740	2,120	3,710	4,050	3,500	3,780	3,990	3,800	3,620	4,160	2,660	1,910		40,040
															15%
Natural Gas	Baseline Modeled Therms	588	498	244	222	175	45	3	4	60	214	386	625		3,063
	Modeled Saved Therms	35	40	11	32	41	16	1	2	17	33	40	26		292
															10%
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
	Electric Data Drop from Equest	27.5	21.8	24.9	19.2	14.7	13.6	14.1	13.2	13.6	16.9	18.6	30.6		229
	N Gas Data Drop from Equest	55.31	45.80	23.24	19.09	13.42	2.85	0.18	0.23	4.33	18.14	34.59	59.96		277.1
														E MBTU	136.6
														NG MBTU	29.2
							44.21 new EUI after after above EEM Upgrade								

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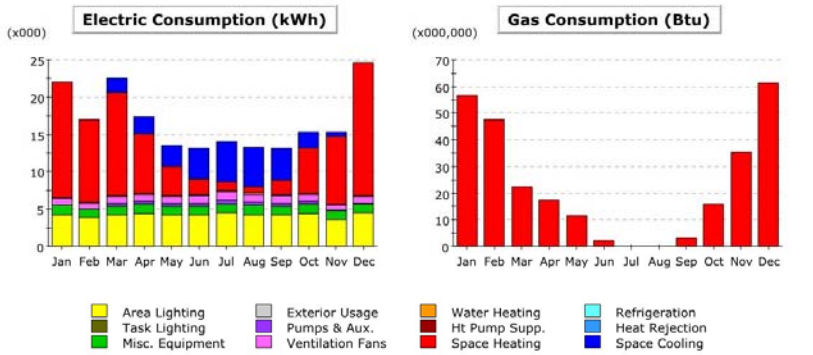
Appendix C - EEM # 2 DDC Controls optimization and CO2 sensor

Project/Run: Woodburn Library_EEM 2_111420 - Baseline Design — Run Date/Time: 11/19/20 @ 14:22



Electric Consumption (kWh x000)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Space Cool	-	-	2.02	2.28	2.91	4.08	5.39	5.24	4.22	2.24	0.66	-	29.05
Heat Reject.	-	-	-	-	-	-	-	-	-	-	-	-	-
Refrigeration	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	15.42	11.03	13.74	8.04	3.77	1.99	1.14	0.87	1.94	6.05	8.91	17.72	90.62
HP Supp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Hot Water	0.17	0.15	0.17	0.17	0.16	0.15	0.15	0.14	0.14	0.15	0.14	0.17	1.85
Vent. Fans	0.89	0.77	0.82	0.85	0.85	1.01	1.19	1.11	0.94	0.84	0.69	0.91	10.88
Pumps & Aux.	0.04	0.04	0.38	0.37	0.39	0.40	0.42	0.42	0.40	0.38	0.16	0.04	3.44
Ext. Usage	-	-	-	-	-	-	-	-	-	-	-	-	-
Misc. Equip.	1.22	1.11	1.22	1.26	1.22	1.22	1.27	1.22	1.22	1.27	1.07	1.27	14.59
Task Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Area Lights	4.26	3.85	4.24	4.42	4.24	4.24	4.45	4.26	4.24	4.43	3.67	4.45	50.76
Total	22.00	16.95	22.59	17.39	13.54	13.09	14.02	13.26	13.10	15.37	15.30	24.57	201.19

Gas Consumption (Btu x000,000)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Space Cool	-	-	-	-	-	-	-	-	-	-	-	-	-
Heat Reject.	-	-	-	-	-	-	-	-	-	-	-	-	-
Refrigeration	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	56.80	47.64	22.52	17.19	11.38	2.03	0.10	0.11	3.14	15.86	35.22	61.44	273.42
HP Supp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Hot Water	-	-	-	-	-	-	-	-	-	-	-	-	-
Vent. Fans	-	-	-	-	-	-	-	-	-	-	-	-	-
Pumps & Aux.	-	-	-	-	-	-	-	-	-	-	-	-	-
Ext. Usage	-	-	-	-	-	-	-	-	-	-	-	-	-
Misc. Equip.	-	-	-	-	-	-	-	-	-	-	-	-	-
Task Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Area Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	56.80	47.64	22.52	17.19	11.38	2.03	0.10	0.11	3.14	15.86	35.22	61.44	273.42

eQUEST 3.65.7175 — Monthly Energy Consumption by Enduse — Page 1

EEM # 2	Co2 sensor and DDC Controls upgrade														
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Electric	Baseline Modeled kwh	27,540	21,760	24,850	19,150	14,740	13,620	14,060	13,190	13,620	16,910	18,560	30,580		228,580
	Modeled Saved kwh	5,540	4,810	2,260	1,760	1,200	530	40	(70)	520	1,540	3,260	6,010		27,400
															12%
Natural Gas	Baseline Modeled Therms	553	458	232	191	134	29	2	2	43	181	346	600		2,771
	Modeled Saved Therms	(15)	(18)	7	19	20	8	1	1	12	23	(6)	(15)		37
															1%
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
	Electric Data Drop from Equest	22.0	17.0	22.6	17.4	13.5	13.1	14.0	13.3	13.1	15.4	15.3	24.6		201
	N Gas Data Drop from Equest	56.80	47.64	22.52	17.19	11.38	2.03	0.10	0.11	3.14	15.86	35.22	61.44		273.4
														E MBTU	93.5
														NG MBTU	3.7
							40.15 new EUI after after above EEM Upgrade								

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Appendix D - Vendor Quote for Upgrades
EEM #1 Chiller Budget Estimate

City of Woodburn - Library - Chiller	EEM Cost Estimation								
EEM # 1	Chiller Replacement								
	Materials				Labor / Gen'l			Total	
Item Description	Qty	Unit	$/unit	$	Hours	$/Hour	$	$	Data Source/Notes
Budget - awaiting replacement proposal not yet received as of deadline.	1	1	$63,000	$63,000	0	$150	$0	$63,000	
Crane deployment	1	1	$10,000	$10,000	0	$150	$0	$10,000	
Mechanical connection/replacement work (4 people for one full week)	1	1	$1,000	$1,000	160	$150	$24,000	$25,000	
Electrical disconnection and reconnection (1 person 2 full days)	1	1	$1,000	$1,000	16	$169	$2,704	$3,704	
Total				$75,000				$101,704	
Total								**$101,704**	

Note - A replacement proposal is forthcoming from the contractor partner involved in the process. However, as of the due date for this TAS, it had not yet been received.

Appendix E – Non-Energy Benefits for EEM 1

Non-Energy Benefits		
Per email from John Hunter, Facility Supervisor the City has paid/will pay in 2021 - $21,546 over the past 3 years for chiller maintenance		
In-House Field Personnel		All excluding scheduled preventive maintenance
Approximate Labor Hours Per Year		
Average Hourly Rate		
Field Personnel Annual Cost	**$7,182**	$21,546 over 3 years
In-House Parts/Materials		All excluding scheduled preventive maintenance
Subtotal In-House	**$7,182**	
Contractor	**$0**	
Chemical Treatment		For boiler loops, etc.
Total Avoided Costs	**$7,182**	annually
Total Other	**$0**	
Total All	**$7,182**	Annually

RE: Chiller Replacement

JH

John Hunter <John.Hunter@ci.woodburn.or.us>
To 'Karl Friesen'
Cc Theo Anderson

Date	Vendor	Description	Amount
x/x/2021	Environmental Controls	Install New TVX	$ 2,873.00
6/24/2020	Clima-Tech	Chiller triage due to failure	$ 1,326.75
6/24/2020	Environmental Controls	Chiller triage due to failure	$ 1,138.25
6/24/2020	Environmental Controls	Chiller repair - mechanical	$14,837.79
3/9/2017	Environmental Controls	Chiller repair; charge coolant.	$ 1,370.00
			$21,545.79

Regards,

John Hunter, MLIS
Woodburn Public Library Manager
503-982-5259

Appendix F – High Efficiency Chiller Cutsheet Details – EEM 1

RE: Woodburn chiller

HB

Henry Bauer <HenryB@airreps.com>
To Theo Anderson; Karl Friesen
Cc Jeff Simons; Kurt Schultheis

Thu 1:23 PM

SUBMITTAL_Woodburn Public Library Submittal 70 Ton Selection-Ver-1.docx
4 MB

Woodburn Public Library ALL - Schedule.xlsx
10 KB

Karl, there are two options included, the enhanced selection has VFDs on the Condensing Fans.
The 10 point efficiency break out is in the attached report.
Theo will be responding with the incremental cost. Thank-you, Henry

PDC Chiller							
TAG	Model	Capacity (ton)	Input (kW)	Performance [EER] (Btu/W.h)	IPLVIP (Btu/W.h)	SCCR (KA)	Flow (gpm)
Base 70 high Eff	AGZ076E	75.3	82.91	10.90	18.03	65	180.3
Base 70 tons	AGZ076E	75.3	82.15	11.00	15.93	65	180.3

Technical Data Sheet for Base 70 tons

Job Information	Technical Data Sheet
Job Name	Woodburn Public Library
Date	11/19/2020
Submitted By	Henry Bauer
Software Version	11.40
Unit Tag	Base 70 tons

Image may not represent ordered unit

Unit Overview

Model Number	Capacity ton	Voltage	Unit Starter Type	ASHRAE 90.1	LEED Enhanced Refrigerant Management Credit
AGZ076E	75.33	460 V / 60 Hz / 3 Ph	Across the Line	'07, '10, '13 & '16	Pass

Unit

Unit Type	Platform	Unit Revision
Air-Cooled Scroll Compressor Chiller	Packaged	0A

Head Pressure	Tubing
Fantrol Only (32°F Min)	Replaceable Filter Dryer with Discharge & Liquid Valves, no HGBP

Unit Controls	Display
Electronic Expansion Valve	On Controller only

Refrigerant Type	Refrigerant Weight
R410A	86 lb (per unit)

Pump Controls
Dual Evaporator Pumps - Dual Control Output

Approval
ETL/cETL, AHRI & ASHRAE 90.1

Evaporator

Water Volume:	5.5 gal
Connection Hand:	Universal Connection - Facing out back
Connection Size:	3.0 in
Insulation:	Single Layer Insulation to Suction at each Compressor

Entering Fluid Temperature	Leaving Fluid Temperature	Fluid Type	Fluid Flow	Fluid Flow Min / Max	Pressure Drop	Pressure Drop Min / Max	Fouling Factor
54.00 °F	44.00 °F	Water	180.3 GPM	72.3/ 301.3 GPM	10.5 ft H_2O	1.80 / 28.5 ft H_2O	0.000100 °F-hr-ft²/Btu

Note: Evaporator Pressure Drop does not include a strainer. Minimum flow is based on a Variable Flow Pumping System Type and applies to part load conditions only.

Condenser

Coil Fins:	MicroChannel
Guards:	None

Design Ambient Air Temperature	Altitude	Fan Diameter	Minimum Design Ambient Temperature
95.0 °F	0.000 ft	30.0 in	32.0 °F

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Technical Data Sheet for Base 70 tons

Unit Performance

Design

Capacity	Input Power	Efficiency (EER)	IPLV.IP* (EER)
75.33 ton	82.15 kW	11.00 Btu/Wh	15.93 Btu/Wh

Performance Points rated at AHRI Ambient Relief

	Unit				Evaporator				Condenser	
Point #	% Load	Capacity ton	Input Power kW	Efficiency (EER) Btu/Wh	Fluid Flow GPM	Pressure Drop ft H_2O	Entering Fluid °F	Leaving Fluid °F	Ambient Air °F	Altitude ft
1	100.0	75.33	82.15	11.00	180.3	10.5	54.00	44.00	95.0	0.000
2	90.0	67.79	66.41	12.25	180.3	10.5	53.00	44.00	89.0	0.000
3	80.0	60.26	53.59	13.49	180.3	10.5	52.00	44.00	83.0	0.000
4	70.0	52.73	43.02	14.71	180.3	10.5	51.00	44.00	77.0	0.000
5	60.0	45.20	34.06	15.92	180.3	10.5	50.00	44.00	71.0	0.000
6	50.0	37.66	26.72	16.91	180.3	10.5	49.00	44.00	65.0	0.000
7	40.0	30.13	20.31	17.80	180.3	10.5	48.00	44.00	59.0	0.000
8	30.0	22.60	14.51	18.69	180.3	10.5	47.00	44.00	55.0	0.000
9	20.0	This load point is below the chiller minimum load.								
10	10.0	This load point is below the chiller minimum load.								

** IPLV reflects AHRI standard rating conditions with water and does not change with user defined conditions*

Sound (without insulation)

Sound Pressure (at 30 feet)

63 Hz dB	125 Hz dB	250 Hz dB	500 Hz dB	1 kHz dB	2 kHz dB	4 kHz dB	8 kHz dB	Overall dBA	75% Load dBA	50% Load dBA	25% Load dBA
68	68	68	62	60	54	49	44	**65**	64	62	61

Sound Power

63 Hz dB	125 Hz dB	250 Hz dB	500 Hz dB	1 kHz dB	2 kHz dB	4 kHz dB	8 kHz dB	Overall dBA	75% Load dBA	50% Load dBA	25% Load dBA
95	95	95	89	87	81	76	71	**92**	91	89	88

Octave band is non 'A' weighted and overall readings are 'A' weighted. Sound data rated in accordance with AHRI Standard-370.

Physical

Unit

Length*	Height	Width*	Shipping Weight*	Operating Weight*
150 in	99 in	88 in	4388 lb	4451 lb

** Shipping and operating weights do not include the weights of any Options or Accessories. Contact Chiller Applications for additional information.*

Technical Data Sheet for Base 70 tons

Electrical

Unit Electrical Data

Voltage	Starter Type	Fan Motor Quantity	LRA Fan Motor (each)	FLA Fan Motors (each)
460 V / 60 Hz / 3 Ph	Across the Line	6	18 A	3.6 A
Power Connection Type:	High Short Circuit Current Rating with Single Point Disconnect Switch and Circuit Protection			
Short Circuit Current Rating:	65 kA			

Single Point Power Connection

Minimum Circuit Ampacity (MCA):	155 A
Recommended Overcurrent Protection Size:	175 A
Maximum Overcurrent Protection Size (MOCP):	175 A
Lug Connection Size:	(1) 6-350MCM

Compressor Electrical Data

Compressor Type	Compressor Quantity	Starter Type
Scroll	4	Across the Line

Circuit #:	1		2	
Compressor #:	1	3	2	4
Rated Load Amps (RLA):	30.8 A	30.8 A	26.9 A	30.8 A
Inrush Current:	229 A	229 A	173 A	229 A

Note: Power wiring connections to the chiller may be done with either copper or aluminum wiring. Wire should be sized per NEC and/or local codes. Wire sizing and wire count must fit in the power connection lug sizing listed above. Please contact your local sales office for more information.

Options

Electrical

Water Flow Indicator:	Thermal Dispersion Type

Warranty

Unit Startup	By Others
Standard Warranty:	1st Year Entire Unit Parts only

AHRI Certification

Certified in accordance with the AHRI Air-Cooled Water-Chilling Packages Certification Program, which is based on AHRI Standard 550/590 (I-P) and AHRI Standard 551/591 (SI). Certified units may be found in the AHRI Directory at www.ahridirectory.org

Appendix G – DDC Upgrade Cost Details – EEM 2

City of Woodburn - Library - Chiller	EEM Cost Estimation								
Item Description	Co2 sensor and DDC Controls upgrade								
	Materials				Labor / Gen'l			Total	
Item Description	Qty	Unit	$/unit	$	Hours	$/Hour	$	$	Data Source/Notes
CO2 Sensors	8	1	$850	$6,800	0	$100		$6,800	
Change occupancy, temperature setpoints, and push button override programming	1	1	$0	$0	8	$160	$1,280	$1,280	
Total				$0				$8,080	
Total								**$8,080**	

RE: [EXTERNAL]Woodburn Library questions and costs

TO Tim O'Connell <tim.oconnell@clima-tech.com>
To 'Karl Friesen'; Kalawaianui Hosaka

Reply | Reply All | Forward | ...
Tue 11/17/2020 3:59 PM

Karl,

Please consider $850 as a ROM unit price for the CO-2 sensor replacement described below. If you can bottom out on a quantity of sensors we could probably refine that but that unit cost would include a replacement combination temp/CO-2 sensor, configuring the new sensor within the existing programs, equipment graphical upgrade and programming time towards the Air Handler Economizer Operation and control drawing up-dates.

- We do have one economizer control point for the Air Handler on the controller but note that we do not have control points for individual Outside/Return/Exhaust air damper actuators.
- With regard to the unoccupied settings, we are not sure why they would be set to 66 deg. They are easily modified by the operators and you wouldn't need our involvement to get them adjusted
- We would need to get into the control programs to see how they are using the optimal start operations

Tim O'Connell
Estimating/Sales
(503) 710-2420 cell

Clima-Tech
AutomatedLogic

RE: [EXTERNAL]If you can, ...

TO Tim O'Connell <tim.oconnell@clima-tech.com>
To 'Karl Friesen'
Cc Kalawaianui Hosaka

You replied to this message on 11/20/2020 1:15 PM.

Karl,

Verifying the afterhours operation can be done remotely, and since the City of Woodburn has a Clima-Tech support agreement, we would not charge them unless we have to go out on site.

This assumes that the programming is in place (which is probably the case). I'll try to connect to that site to see what's in place currently.

Tim O'Connell
Estimating/Sales
(503) 710-2420 cell

Clima-Tech
AutomatedLogic

RE: [EXTERNAL]If you can, ...

TO Tim O'Connell <tim.oconnell@clima-tech.com>
To 'Karl Friesen'
Cc Kalawaianui Hosaka

Reply | Reply All | Forward
Fri 11/20/2020 8

You replied to this message on 11/20/2020 1:15 PM.

On Nov 19, 2020, at 3:30 PM, Tim O'Connell <tim.oconnell@clima-tech.com> wrote:

Karl,

If we are still discussing the Woodburn Library some (a quantity of eight) of the wall sensors installed at the site already have the override button feature. See the attached as-built sheet 11. Typically they are configured to provide a pre-determined over-ride duration (up to 3 hours, adjustable) and trigger the AHU/plant to run as well. We may need to look into the programming to verify that sequence but the hardware is already in place.

Please let me know if you have any questions.

Thank You,

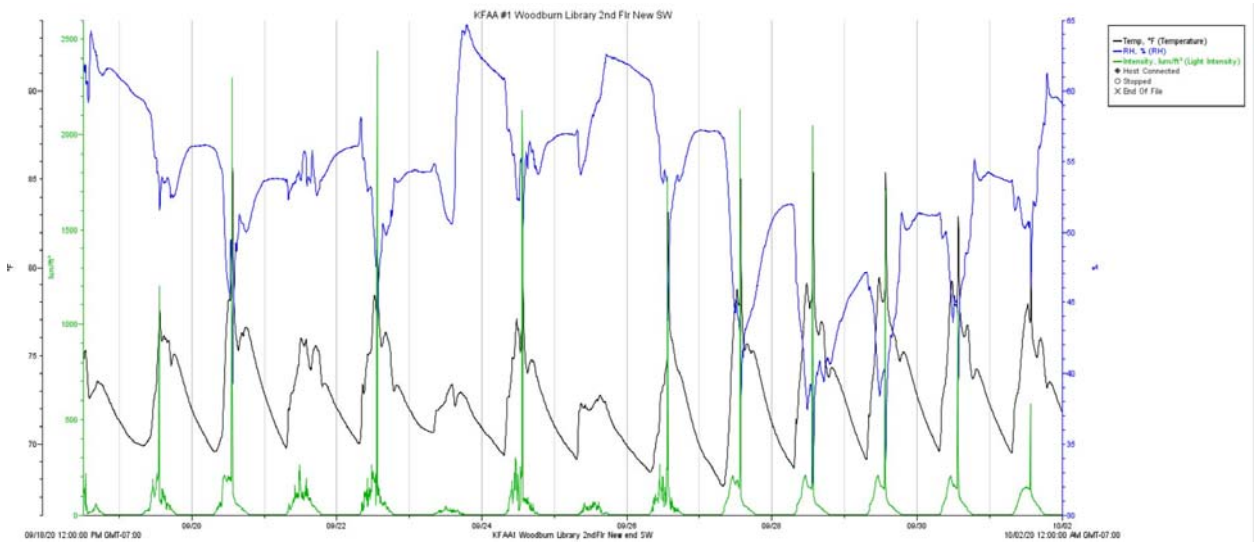
Tim O'Connell
Estimating/Sales
(503) 710-2420 cell

<image002.png>

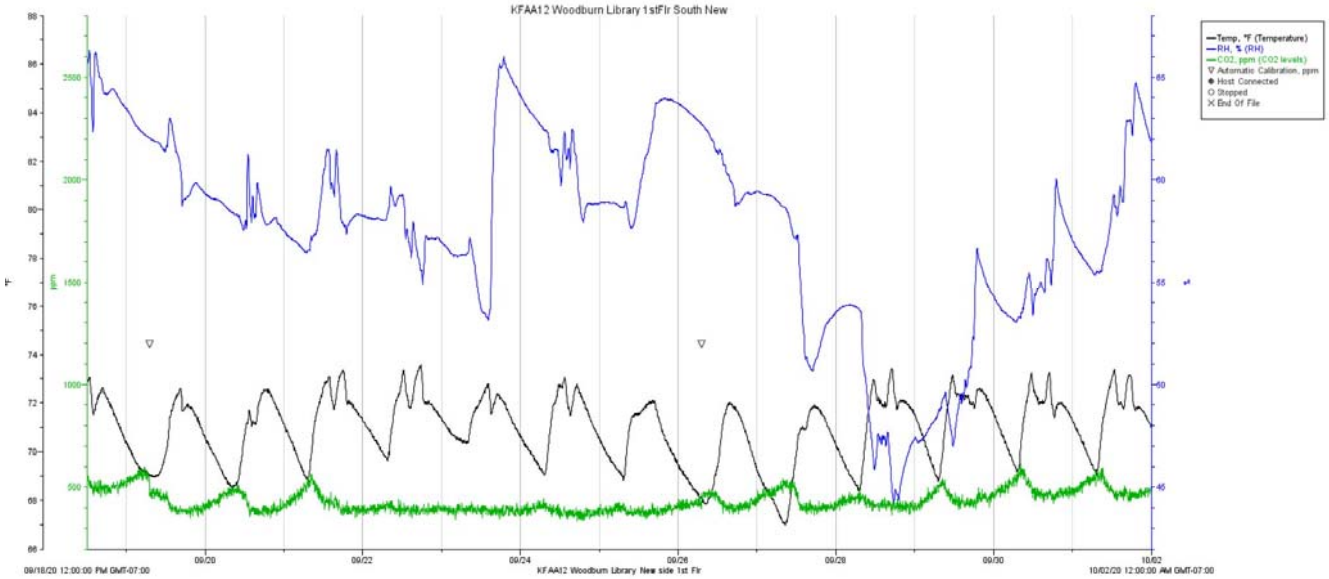
From: Karl Friesen <karl@karlfriesen.com>
Sent: Thursday, November 19, 2020 1:58 PM
To: Tim O'Connell <tim.oconnell@clima-tech.com>
Subject: [EXTERNAL]If you can, ...

If you can could you send me a cost to had an override switch into the Woodburn building. Including programming to switch the system over to occupied mode from unoccupied mode if they need to use the building after the hours established for unoccupied.

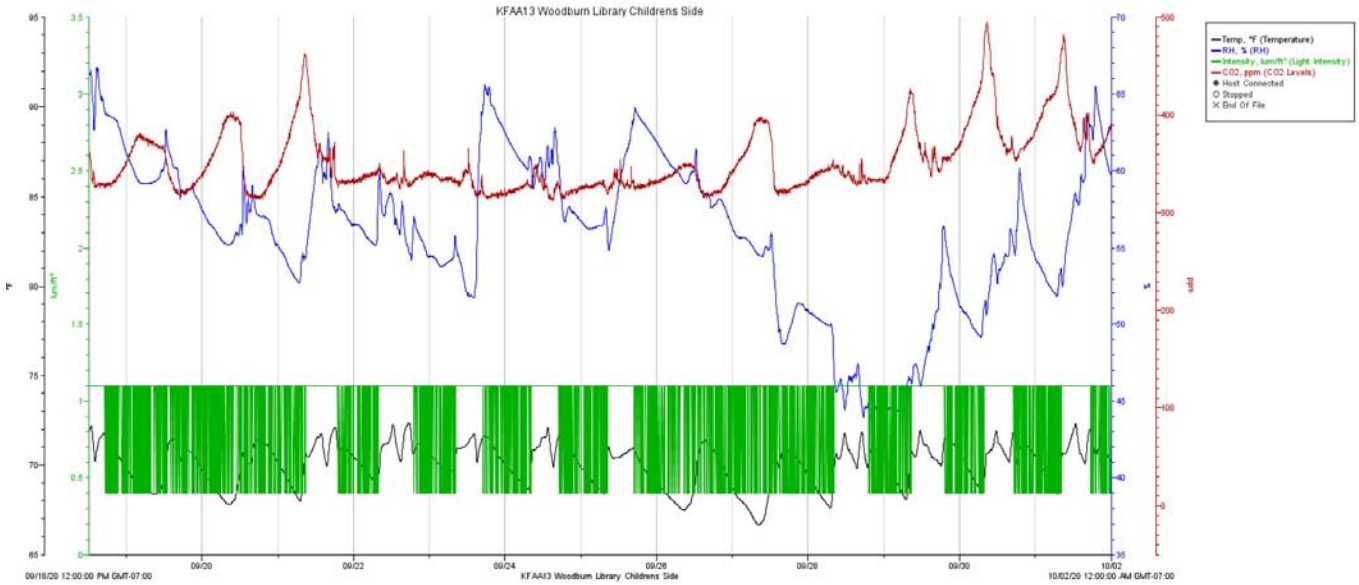
Appendix H - Data Logging Results



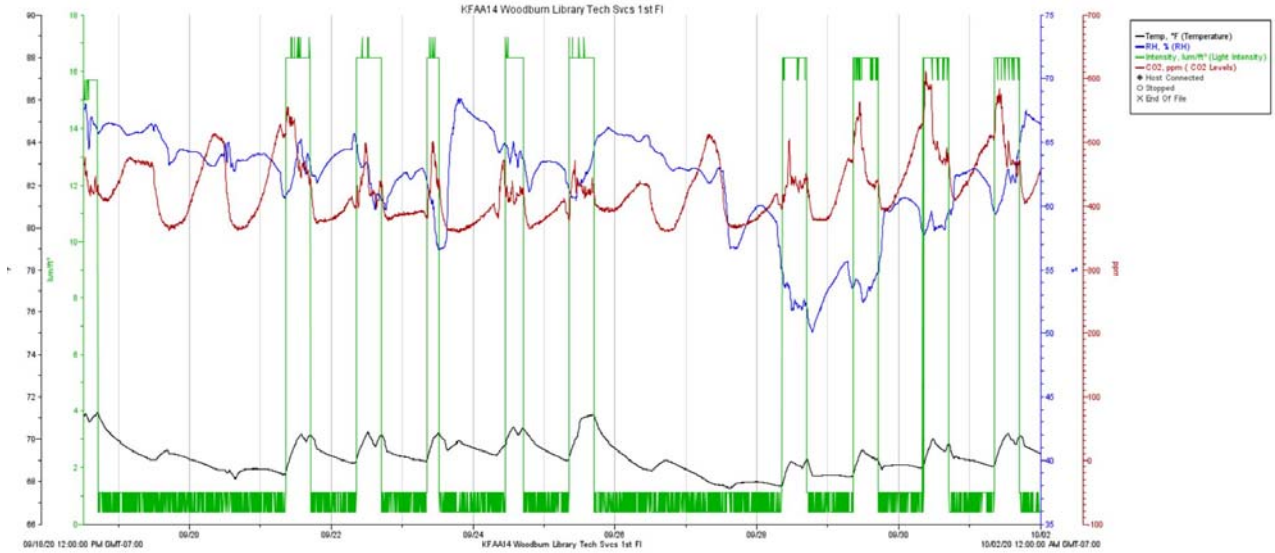
Southwest 2nd Floor: The temperature fluctuates around 69°F and 76°F on all days of the week indicate there are moderate setbacks during unoccupied hours. The sudden temperature rises at 2-3 am indicates some sort of HVAC startup/operation which continues operating till after 11 pm-12 am. The high peaks in the light levels indicate solar gain. RH levels are independent of the temperature indicating the space has excessive outdoor air.



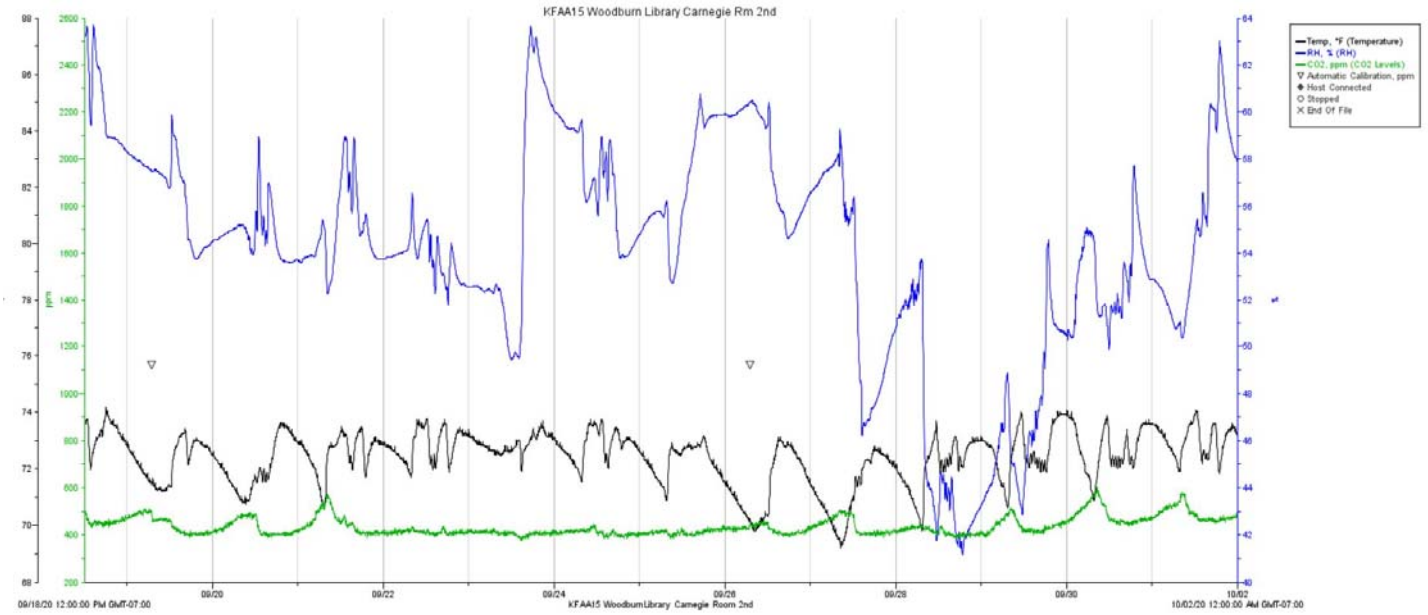
1st Floor SW: Temperatures oscillate between 68°F-73°F for all days of the week indicating little temperature setback during after hours. Lack of direct linkage between RH and temperature indicates excess outside air is being supplied. CO2 levels are averaging around 500-600 ppm also indicating excessive outside air.



Children's side library: Occupied temperatures vary between 69°F-72°F most weekdays and go as low as 67°F during weekends indicating only moderate temperature setback after hours. CO2 levels average at 400 ppm with small peaks of 500 ppm due to sudden change in occupancy or outside air damper position, however, these levels are still low, indicating excessive outside air.



Tech Services 1st floor: Temperature fluctuates between 69-71°F on weekdays with weekends floating around 68°F indicating only moderate setback control. CO2 levels are in the range of 400 – 600 ppm during occupied hours with very few peaks of 600 ppm. This indicates an excessive amount of outdoor air is being supplied to space. Lighting follows a consistent occupied schedule and shutoff during weekends and nighttime.



Carnegie Rm 2nd floor: Temperature fluctuates from around 71°F to 74°F during weekdays, dropping to 68-69°F during weekends indicating only a moderate setback has been implemented. CO2 levels average around 400 ppm at all times of the day indicating low occupancy and excessive outdoor air supply.

Appendix I - Site Photos

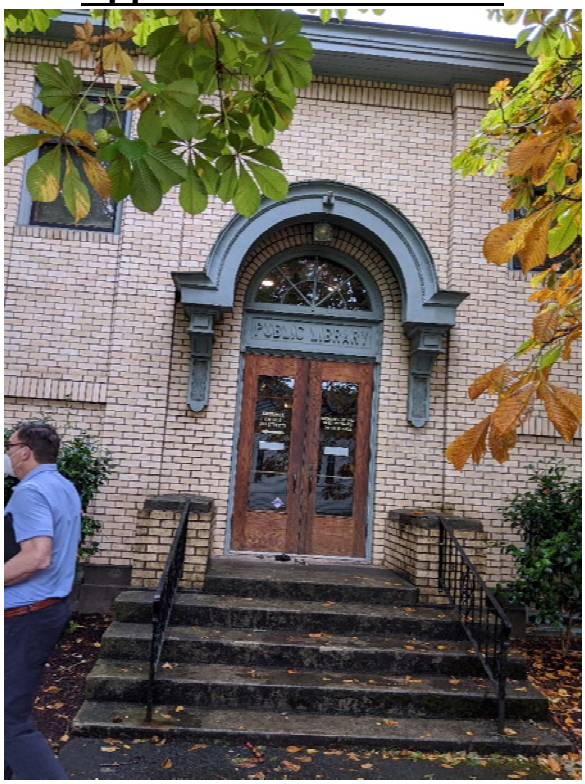


Figure 1: West Façade – Carnegie Library

Figure 2: East Façade – Carnegie Library

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Figure 3: West Façade – Carnegie Library

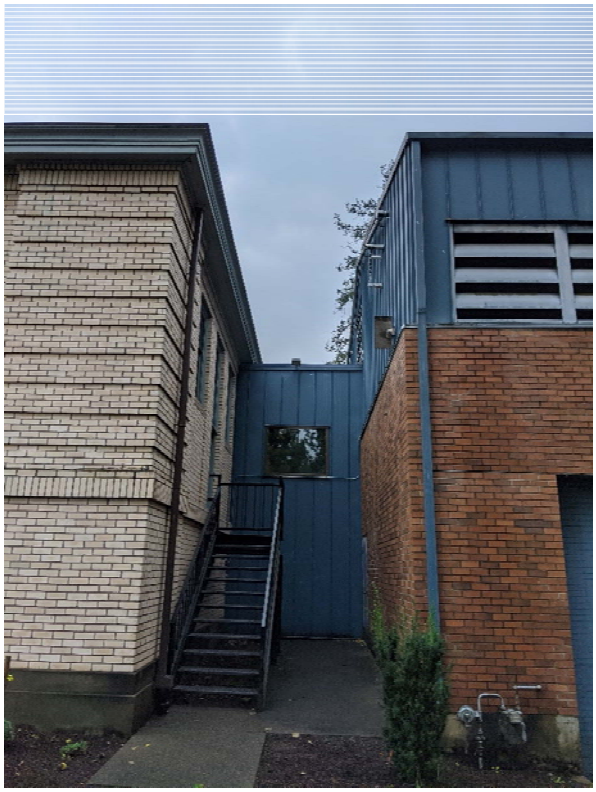

Figure 4: Connection Point Between Carnegie Library & New Library

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Figure 5: New Library – NE Facade

Figure 6: New Library – Eastside Courtyard

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Figure 7: New Library South Facade

Figure 8: New Library – Westside at Loading Dock

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Figure 9: New Library – Westside Entrance

Figure 10: Carnegie Library – Carnegie Room

Figure 11: Carnegie Library – Multi-Purpose Room

Figure 12: Carnegie Library – Basement

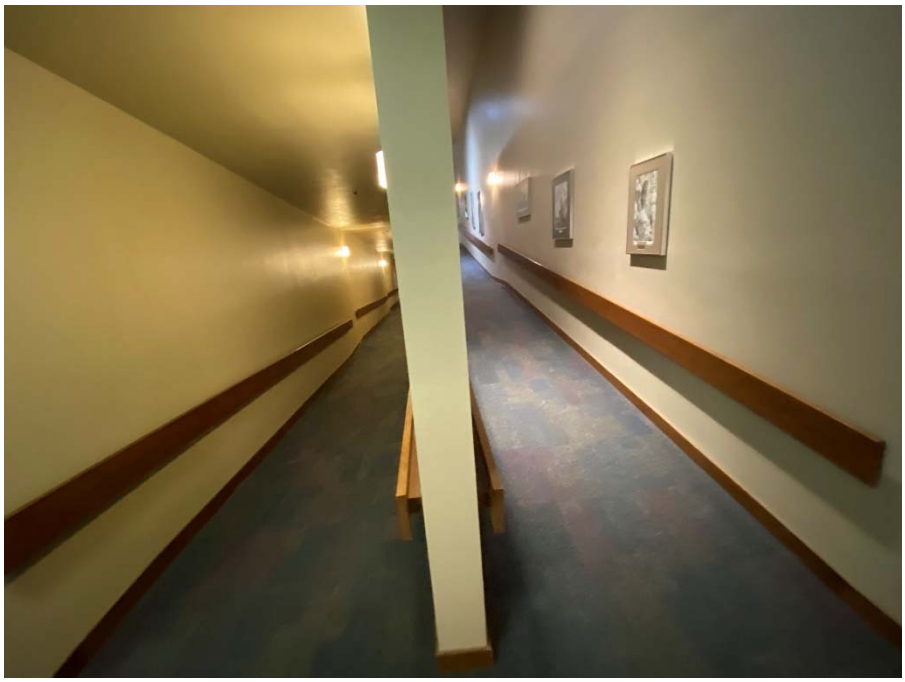

Figure 13: Carnegie Library – Connecting Corridor Between Old and New Library

Figure 14: New Library – West Entrance

Figure 15: New Library – East Entrance

Figure 16: New Library – Open Roof Atrium Reading Room

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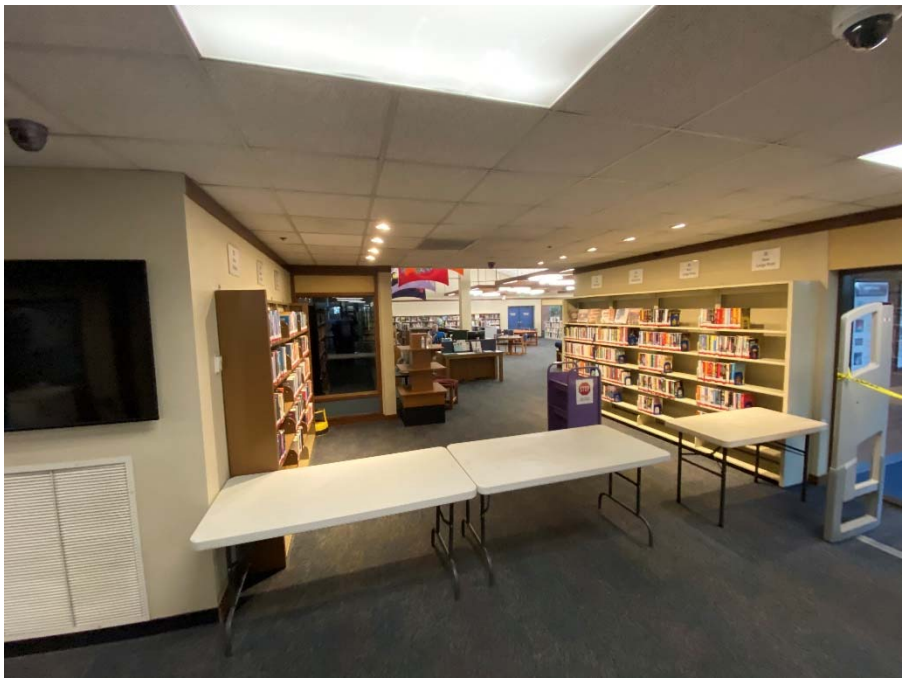

Figure 17: New Library – 1st Floor Looking South

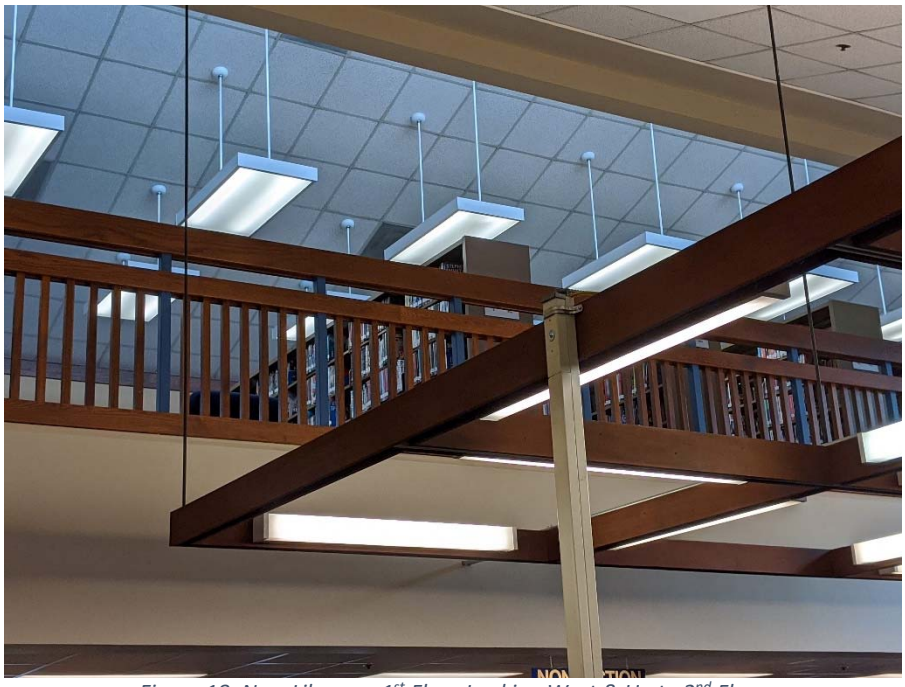

Figure 18: New Library – 1st Floor Looking West & Up to 2nd Floor

Figure 19: New Library – Loading Dock

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Figure 20: New Library – 1st Floor Looking NE

Figure 21: New Library – 1st Floor

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Figure 22: New Library – 1st Floor Looking SE

Figure 23: New Library – 1st Floor South end

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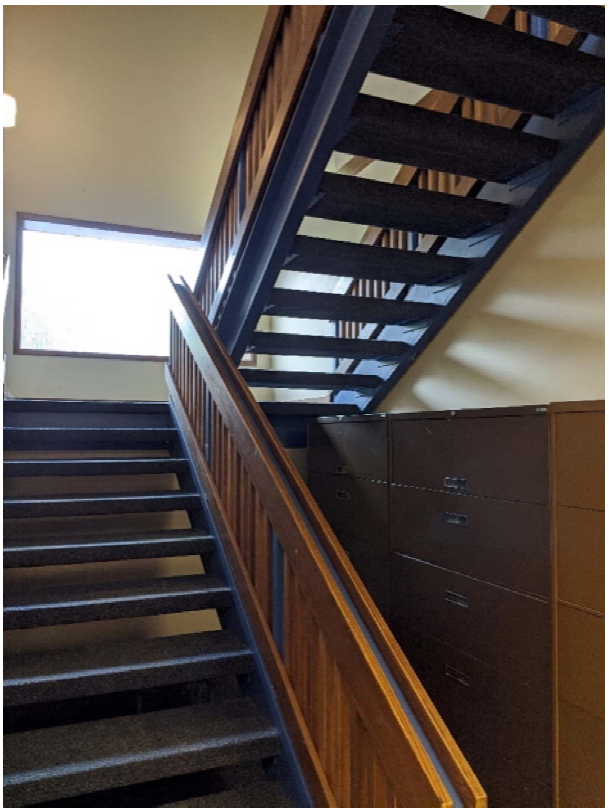

Figure 24: New Library – 1st Floor at Stairs

Figure 25: New Library – 2nd Floor at Elevator

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Figure 26: New Library – 2nd Floor Looking South

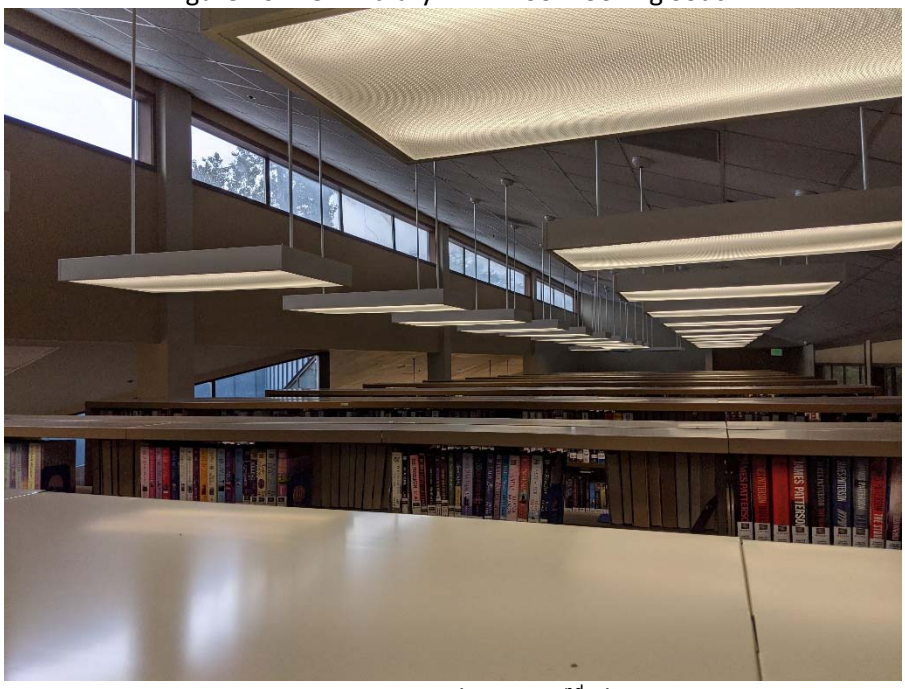

Figure 27: New Library – 2nd Floor

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Figure 28: SF-1 & CC-1 - New Library Mechanical Room

Figure 29: Fan VFD

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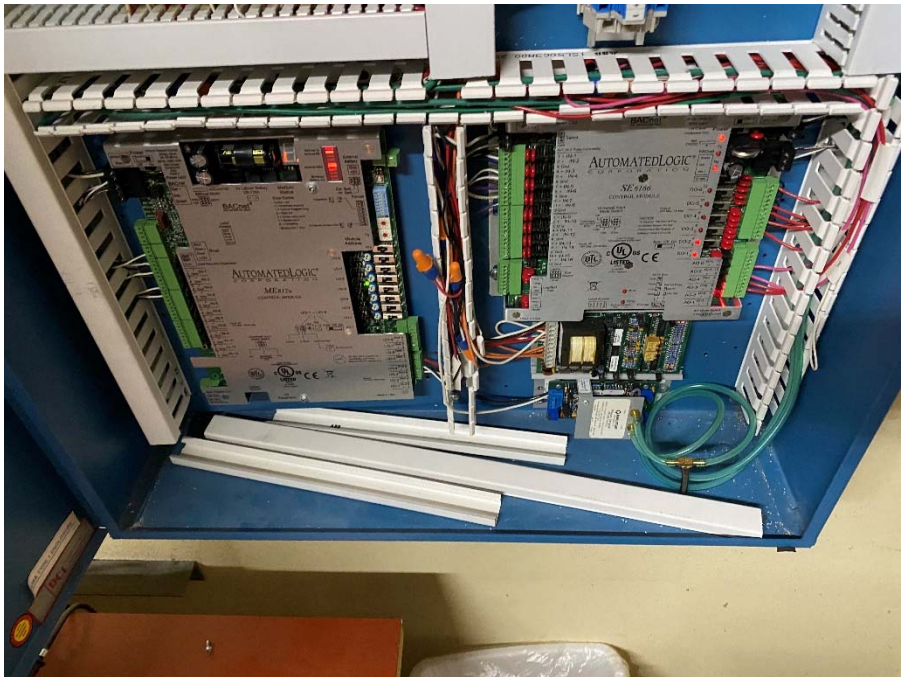

Figure 30: Automated Logic controls in Mechanical Room

Figure 31: Chilled Water Pump (P-1) - New Library Mechanical Room

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Figure 32: Return Fan (RF-1) New Library Mechanical Room


Figure 33: Chiller (CH-1) – Outside of Mechanical Room Entrance

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APPENDIX "B"

Submittals of the following shall be delivered to the Engineer. *NOTE: This list is intended to be a useful guide to the Contractor and not necessarily a definitive list of all items that a submittal may be required on. If requested by the Engineer additional item(s) shall be delivered in the format outlined for review and approval.*

General Conditions:

- ❑ Signed Contract
- ❑ Signed Notice To Proceed
- ❑ Contractor's personnel's contact information & 24-hour emergency number
- ❑ Contractors Insurance Certificate(s)
- ❑ Schedule of work in flow chart format
- ❑ List of Subcontractors
- ❑ Copies of government permits (building, electrical, plumbing ODOT right of way, etc.)
- ❑ Performance, Payment, Labor and Materials Bonds

Division 2 – Sitework:

- ❑ Dust control plan

Division 3 – Concrete –NOT USED

Division 4 – Streets – NOT USED

Division 5 – Water – NOT USED

Division 6 – Sanitary Sewers – NOT USED

Division 7 – Storm Sewers – NOT USED

Division 8 – Structures – NOT USED

Division 9 – Miscellaneous –

- ❑ Control drawings
- ❑ s
- ❑ s

Division 10 – Equipment

- ❑ Chiller Specifications
- ❑ Valves
- ❑ Pipe and fittings
- ❑ Electrical conductors and devices