CONTRACT DOCUMENTS AND SPECIFICATIONS

for

GREENLEAF RECREATION CENTER ROOF & HVAC REPLACEMENT

Bid Proposal #23-18

Nancy Colbert Puff, Acting City Manager

City of Portsmouth, New Hampshire

Prepared by:

AECm, LLC
13 Water Street
Newmarket, NH 03857

TABLE OF CONTENTS

City of Portsmouth
Portsmouth, New Hampshire

GREENLEAF RECREATION CENTER ROOF & HVAC REPLACEMENT

INVITATION TO BID

Sealed bid proposals, **plainly marked, GREENLEAF RECREATION CENTER ROOF & HVAC REPLACEMENT**, Bid Proposal #23-18 **on the outside of the mailing envelope as well as the sealed bid envelope,** addressed to the Finance/Purchasing Department, City Hall, 1 Junkins Avenue, Portsmouth, New Hampshire, 03801, will be accepted until **12:00 p.m. on October 27th, 2017** at which time all bids will be publicly opened and read aloud.

A mandatory Pre-Bid Meeting shall be conducted on **October 17th, 2017** at **10:00 a.m**, located at Department of Public Works, 680 Peverly Hill Road, 1st Floor Training Room.

Questions regarding the project must be submitted in writing to Elise D. Annunziata, at eannunziata@cityofportsmouth.com by **12:00 p.m. on October 20th, 2017** and will be answered in the form of an addendum posted on the City's website http://www.cityofportsmouth.com/finance/purchasing.htm by **October 24th, 2017 at 4:00 p.m.**

PROJECT SYNOPSIS: Replace existing roofing system and one (1) rooftop-mounted HVAC unit. Complete limited demolition. New roofing system includes insulation and 60-mil EPDM roof membrane. Remove and replace RTU-3 with new RTU and associated interior ducting.

BIDDER QUALIFICATIONS FOR ROOF INSTALLER: A firm with a minimum of ten years successful experience installing single-ply EPDM roofing systems and having installed at least five roofing applications or several similar systems of equal or greater size within one year.

This project is funded in part by the City's Community Development Block Grant (CDBG), which is received from the U.S. Department of Housing and Urban Development and administered by the Portsmouth Community Development Department. Project work must be completed in accordance with all applicable statutes, laws, and regulations.

Specifications may be obtained from the City's web site: http://www.cityofportsmouth.com/finance/purchasing.htm, by contacting the Finance/Purchasing Department on the third floor at the above address, or by calling the Purchasing Coordinator at 603-610-7227. Addenda to this bid document, if any, including written answers to questions, will be posted on the City of Portsmouth website at http://www.cityofportsmouth.com/finance/purchasing.htm under the project heading. Addenda and updates will NOT be sent directly to vendors. Questions may be addressed to the Purchasing Coordinator.

All work shall be completed by December 31st, 2017. Liquidated damages shall be assessed at $300 per day.

The City reserves the right, after bid opening and prior to award of the contract, to modify the amount of the work in the event that bids exceed budgeted amounts. The City of Portsmouth further reserves the right to reject any or all bids, to waive technical or legal deficiencies, to re-bid, and to accept any bid that it may deem to be in the best interest of the City.

Each Bidder shall furnish a bid security in the amount of ten percent (10%) of the bid. The Bid Security may be in the form of a certified check drawn upon a bank within the State of New Hampshire or a bid bond executed by a surety company authorized to do business in the State of New Hampshire, made payable to the City of Portsmouth, N.H.

The General Contractor will be permitted to subcontract portions of the work not to exceed an aggregate dollar value of 50% of the total contract bid amount.

INSTRUCTIONS TO BIDDERS

BIDDING REQUIREMENTS AND CONDITIONS

1. Special Notice to Bidders

Appended to these instructions is a complete set of bidding and general contract forms. These forms may be detached and executed for the submittal of bids. The plans, specifications, and other documents designated in the proposal form will be considered as part of the proposal, whether attached or not.

The bidders must submit a statement of bidder's qualifications, if requested, subsequent to bid opening but prior to award.

Addenda to this proposal, if any, including written answers to questions, will be posted on the City of Portsmouth website at http://www.cityofportsmouth.com/finance/purchasing.htm under the project heading. Addenda and updates will NOT be sent directly to firms. Contractors submitting a proposal should check the web site daily for addenda and updates after the release date. Firms should print out, sign and return addenda with the proposal. Failure to do so may result in disqualification

2. Interpretation of Quantities in Bid Schedules

The quantities appearing in the bid schedule are approximate only and are prepared for the comparison of bids. Payment to the contractor will be made only for actual work performed and accepted in accordance with the contract. Any scheduled item of work to be done and materials to be furnished may be increased, decreased or omitted as hereinafter provided, and no claim for loss, anticipated profits or costs incurred in anticipation of work not ultimately performed will be allowed due to such increase or decrease.

3. Examination of Plans, Specifications and Site Work

The bidder is expected to examine carefully the site of the proposed work, the plans, standard specifications, supplemental specifications, special provisions and contract forms before submitting a proposal. The submission of a bid shall be considered conclusive evidence that the bidder has made such examination and is satisfied as to the conditions to be encountered in performing the work and as to the requirements of the contract. It will be conclusive evidence that the bidder has also investigated and is satisfied with the sources of supply for all materials.

Plans, surveys, measurements, dimensions, calculations, estimates and statements as to the condition under which the work is to be performed are believed to be correct, but the contractors must examine for themselves, as no allowance will be made for any errors or inaccuracies that maybe found therein.

4. Familiarity with Laws

The bidder is assumed to have made himself or herself familiar with all federal and state laws and all local by-laws, ordinances and regulations which in any manner affect those engaged or employed on the work or affect the materials or equipment used in the work or affect the conduct of the work, and the bidder, if awarded the contract, shall be obligated to perform the work in conformity with said laws, by-laws, ordinances and regulations notwithstanding its ignorance thereof. If the bidder shall discover any provision in the plans or specifications which is in conflict with any such law, by-law, ordinance or regulation the bidder shall forthwith report it to the engineer in writing.

5. Preparation of Proposal

a) The bidder shall submit its proposal upon the forms furnished by the Owner. The bidder shall specify a lump sum price in figures, for each pay item for which a quantity is given and shall also show the products of the respective prices and quantities written in figures in the column provided for that purpose and the total amount of the proposal obtained by adding the amount of the several items. All words and figures shall be in ink or typed.
If a unit price or a lump sum bid already entered by the bidder on the proposal form is to be altered it should be crossed out with ink, the new unit price or lump sum bid entered above or below it and initialed by the bidder, also with ink.

b) The bidder's proposal must be signed with ink by the individual, by one or more general partners of a partnership, by one or more members or officers of each firm representing a joint venture; by one or more officers of a corporation, by one or more members (if member-managed) or managers (if manager-managed) of a limited liability company, or by an agent of the contractor legally qualified and acceptable to the owner. If the proposal is made by an individual, his or her name and post office address must be shown, by a partnership the name and post office address of each general and limited partner must be shown; as a joint venture, the name and post office address of each venturer must be shown; by a corporation, the name of the corporation and its business address must be shown, together with the name of the state in which it is incorporated, and the names, titles and business addresses of the president, secretary and treasurer.

6. Nonconforming Proposals

Proposals will be considered nonconforming and may be rejected in the Owner's sole discretion for any of the following reasons:

- If the proposal is on a form other than that furnished by the Owner, or if the form is altered or any portion thereof is detached;
- If there are unauthorized additions, conditional or altered bids, or irregularities of any kind which may tend to make the proposal or any portion thereof incomplete, indefinite or ambiguous as to its meaning;
- If the bidder adds any provisions reserving the right to accept or reject an award, or to enter into a contract pursuant to an award; or
- If the proposal does not contain a unit price for each pay item listed except in the case of authorized alter pay items.

7. Proposal Guaranty

No proposal will be considered unless accompanied by a bid bond, surety, or similar guaranty of the types and in an amount not less than 5%. All sureties shall be made payable to the "City of Portsmouth". If a bid bond is used by the bidder it shall be:

- In a form satisfactory to the Owner;
- With a surety company licensed, authorized to do business in, and subject to the jurisdiction of the courts of the State of New Hampshire; and
- Conditioned upon the faithful performance by the principal of the agreements contained in the sub-bid or the general bid.

In the event any irregularities are contained in the proposal guaranty, the bidder will have four business days (not counting the day of opening) to correct any irregularities. The corrected guaranty must be received by 4:00 p.m. If irregularities are not corrected to the satisfaction of the Owner, the Owner, in its sole discretion, may rejected the bid.

8. Delivery of Proposals

When sent by mail, the sealed proposal shall be addressed to the Owner at the address and in the care of the official in whose office the bids are to be received. All proposals shall be filed prior to the time and at the place specified in the invitation for bids. Proposals received after the time for opening of the bids will be returned to the bidder, unopened.

9. Withdrawal of Proposals

A bidder will be permitted to withdraw his or her proposal unopened after it has been submitted if the Owner receives a request for withdrawal in writing prior to the time specified for opening the proposals.

10. Public Opening of Proposals

Proposals will be opened and read publicly at the time and place indicated in the invitation for bids. Bidders, their authorized agents, and other interested parties are invited to be present.

11. Disqualification of Bidders

Any or all of the following reasons may be deemed by Owner in its sole discretion as being sufficient for the disqualification of a bidder and the rejection of his proposal:

- More than one proposal for the same work from an individual, firm, or corporation under the same or different name;
- Evidence of collusion among bidders;
- Failure to submit all required information requested in the bid specifications;
- Failure to possess a minimum of ten years successful experience installing single-ply EPDM roofing systems and having installed at least five roofing applications or several similar systems of equal or greater size within one year.
- Lack of competency or of adequate machinery, plant or other equipment, as revealed by the statement of bidders qualification or otherwise;
- Uncompleted work which, in the judgment of the owner, might hinder or prevent the prompt completion of additional work if awarded;
- Failure to pay, or satisfactorily settle, all bills due for labor and materials on former contracts;
- Default or unsatisfactory performance on previous contracts; or
- Such disqualification would be in the best interests of the Owner.

12. Material Guaranty and Samples

Before any contract is awarded, the bidder may be required to furnish a complete statement of the origin, composition and manufacture of any or all materials to be used in the construction of the work, and the Owner may, in its sole discretion, reject the bid based on the contents of the statement or as a result of the failure of the bidder to submit the statement.

AWARD AND EXECUTION OF CONTRACT

1. Consideration of Proposals

a) After the proposals are opened and read, they will be compared on the basis of the total price for all sections of work to be charged to perform the work and any such additional considerations as may be identified in the bid documents. The results of such comparisons will be immediately available to the public. In case of a discrepancy between the prices written in words and those written figures, the prices written in words shall govern. In case of a discrepancy between the total shown in the proposal and that obtained by adding the products of the quantities of items and unit bid prices, the latter shall govern.

b) The Owner reserves the right to reject any or all proposals, to waive technicalities or to advertise for new proposals, if, in the sole discretion of the Owner, the best interest of the City of Portsmouth will be promoted thereby.

2. Award of Contract

If a contract is to be awarded, the award will be made to the lowest responsible and qualified bidder whose proposal complies with all the requirements prescribed. The successful bidder will be notified, in writing, mailed to the address on his or her proposal, that his or her bid has been accepted and that the bidder has been awarded the contract. Contract signing is anticipated to take place within two (2) weeks following proposal submission.

The award shall not be considered official until such time that a Purchase Order, fully executed contract or an award letter has been issued by the Finance Director. No presumption of award shall be made by the bidder until such documents are in hand. Verbal notification of award is not considered official. Any action by the bidder to assume otherwise is done so at his/her own risk and the City will not be held liable for any expense incurred by a bidder that has not received an official award.

3. Cancellation of Award

The Owner reserves the right to cancel the award of any contract at any time before the execution of such contract by all parties without any liability of the Owner.

4. Return of Proposal Guaranty

All proposal guaranties, except those of the three lowest bidders, will be returned upon request following the opening and checking of the proposals. The proposal guaranties of the three lowest bidders will be returned within ten days following the award of the contract if requested.

5. Contract Bonds

At the time of the execution of the contract, the successful bidder shall furnish:

- Labor and materials payment bond in the sum equal to 100 percent of the contract amount.
- Performance bond in the sum equal to 100 percent of the contract amount.

At the time of project completion, the Owner may, in its sole discretion, permit the Contractor to substitute a maintenance bond in lieu of holding retainage for the entire guaranty period. If a bond is furnished it shall meet the following criteria:

- The bond shall be in an amount equal to 20 percent of the contract amount. Such bond shall guarantee the repair of all damage due to faulty materials or workmanship provided or done by the contractor. The guarantee shall remain in effect for a period of one year after the date of final acceptance of the job by the Owner.

Each bond shall be: (1) in a form satisfactory to the Owner; (2) with a surety company licensed and authorized to do business and with a resident agent designated for services of process in the State of New Hampshire; and (3) conditioned upon the faithful performance by the principal of the agreements contained in the original bid. All premiums for the contract bonds are to be paid by the contractor.

6. Execution and Approval of Contract

The successful bidder is required to present all contract bonds, to provide proof of insurance, and to execute the contract within 7 business days following receipt of the City's notification of acceptance of the bid. No contract shall be considered as in effect until it has been fully executed by all parties.

7. Failure to Execute Contract

Failure to execute the contract and file an acceptable bond within 7 business days after notification of acceptance of bid shall be just cause for the cancellation of the award and the forfeiture of the proposal guarantee which shall become the property of the Owner, not as a penalty, but in liquidation of damages sustained. Award may then be made to the next lowest responsible bidder, or the work may be re-advertised as the Owner may determine in its sole discretion.

8. Additional Information

Requests for additional information or questions should be to Elise D. Annunziata, at eannunziata@cityofportsmouth.com or 603-610-7281.

9. Reservation of Rights

The City reserves the right, after bid opening and prior to award of the contract, to modify the amount of the work in the event that bids exceed budgeted amounts. The City of Portsmouth further reserves the right to reject any or all bids, to waive technical or legal deficiencies, to re-bid, and to accept any bid that it may deem to be in the best interest of the City.

PROPOSAL FORM

GREENLEAF RECREATION CENTER ROOF & HVAC REPLACEMENT

CITY OF PORTSMOUTH, N.H.

To the City of Portsmouth, New Hampshire, herein called the Owner.

The undersigned, as Bidder, herein referred to as singular and masculine declares as follows:

1. All interested in the Bid as Principals are named herein;

2. This bid is not made jointly, or in conjunction, cooperation or collusion with any other person, firm, corporation, or other legal entity;

3. No officer, agent or employee of the Owner is directly or indirectly interested in this Bid;

4. The bidder has carefully examined the sites of the proposed work and fully informed and satisfied himself as to the conditions there existing, the character and requirements of the proposed work, the difficulties attendant upon its execution and the accuracy of all estimated quantities stated in this Bid, and the bidder has carefully read and examined the Drawings, Agreement, Specifications and other Contract Documents therein referred to and knows and understands the terms and provisions thereof;

5. The bidder understands that the quantities of work calculated in the Bid or indicated on the Drawings or in the Specifications or other Contract Documents are approximate and are subject to increase or decrease or deletion as deemed necessary by the Portsmouth City Engineer. Any such changes will not result in or be justification for any penalty or increase in contract prices; and agrees that, if the Bid is accepted the bidder will contract with the Owner, as provided in the Contract Documents, this Bid Form being part of said Contract Documents, and that the bidder will supply or perform all labor, services, plant, machinery, apparatus, appliances, tools, supplies and all other activities required by the Contract Documents in the manner and within the time therein set forth, and that the bidder will take in full payment therefor the following item prices; and

6. It is the intention of this contract that the items listed above describe completely and thoroughly the entirety of the work as shown on the plans and as described in the specifications. All other items required to accomplish the above items are considered to be subsidiary work, unless shown as a pay item.

PROPOSAL FORM
CONSTRUCTION ITEMS

ITEM #	Est. Qty	Unit	ITEM DESCRIPTION	UNIT PRICE IN FIGURES	ITEM TOTAL IN FIGURES
BASE BID ITEMS					
B01	1	EA	Roof Demolition		
B02	1	EA	Roof System Installation		
B03	1	EA	20-Year Roof Manufacturer's Warranty		
B04	1	EA	HVAC Demolition		
B05	1	EA	HVAC Installation		
B06	1	EA	HVAC Testing and Balancing		
B07	1	EA	Close-Out Documents		
				TOTAL PRICE:	
ADD ALTERNATE BID ITEMS					
A01	1	EA	Add One (1) Inch of PIC Insulation		
A02	1	EA	Install OSHA Guardrail on Roof Hatch		
A03	1	EA	Demand CO2 Ventilation Control for RTU		
A04	1	EA	Replace Roof Hatch Assembly		

Please provide unit prices for the following:

UP01	**100**	**Sf**	**Removal and Replacement of Deteriorated / Wet Roof Insulation**		

TOTAL FOR PROJECT WITHOUT ALTERNATES AND BASIS OF AWARD

The basis of award shall be the base bid price and such combination of alternates as may be in the best interests of the City.

Total in Figures $_____

In Words _____

The undersigned agrees that for extra work, if any, performed in accordance with the terms and provisions of the Contract Documents, the bidder will accept compensation as stipulated therein.

_____
Date

_____
Company

By:_____
Signature

Title:_____

_____
Business Address

_____
City, State, Zip Code

Telephone:_____

The Bidder has received and acknowledged Addenda No._____through _____.

All Bids are to be submitted on this form and in a sealed envelope, plainly marked on the outside with the Bidder's name and address and the Project name as it appears at the top of the Proposal Form.

In order to follow the City's sustainability practices, future bid invitations/specifications may be sent electronically. Please provide an email address as to where I could email future bid invitations/specifications of this type. Thank you in advance for your cooperation.

Email Address:_____

BID SECURITY BOND

(This format provided for convenience, actual Bid Bond is acceptable in lieu of, if compatible.)

KNOW ALL MEN BY THESE PRESENTS, that we the undersigned

_____, as Principal, and

_____, as Surety, are hereby

held and firmly bound unto _____

IN THE SUM OF _____
as liquidated damages for payment of which, well and truly to be made we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

The condition of this obligation is such that whereas the Principal has submitted to the _____
A CERTAIN Bid attached hereto and hereby made a part hereof to enter into a contract in writing, hereinafter referred to as the "AGREEMENT" and or "CONTRACT", for
_____
_____
_____

NOW THEREFORE,

(a) If said Bid shall be rejected or withdrawn as provided in the INFORMATION FOR BIDDERS attached hereto or, in the alternative,

(b) If said Bid shall be accepted and the Principal shall duly execute and deliver the form of AGREEMENT attached hereto and shall furnish the specified bonds for the faithful performance of the AGREEMENT and/or CONTRACT and for the payment for labor and materials furnished for the performance of the AGREEMENT and or CONTRACT,

then this obligation shall be void , otherwise it shall remain in full force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder in no event shall exceed the amount of this obligation.

BID SECURITY BOND (continued)

The Surety, for value received, hereby agrees that the obligation of said surety and its bond shall be in no way impaired or affected by any extensions of the time within such BID may be accepted, and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the parties hereto have duly executed

this bond on the _____ day of _____, 20__.

_____L.S.
(Name of Principal)

(SEAL)

BY _____

_____
(Name of Surety)

BY _____

STATEMENT OF BIDDER'S QUALIFICATIONS

Note: This is a required submittal, fill out completely.

All questions must be answered and the data given must be clear and comprehensive. This statement must be notarized. Add separate sheets if necessary

1. Name of Bidder

2. Permanent Main Office Address

3. Form of Entity

4. When Organized

5. Where Organized

6. How many years have you been engaged in the contracting business under your present name; also state names and dates of previous firm names, if any.

7. Contracts on hand; (schedule these, showing gross amount of each contract and the approximate anticipated dates of completion).

8. General character of work performed by your company.

9. Have you ever failed to complete any work awarded to you? _____(no)____(yes). If so, where and why?

10. Have you ever defaulted on a contract?
_____(no)_____(yes). If so, where and why?

11. Have you ever failed to complete a project in the time allotment according to the Contract Documents?
_____(no)_____(yes). If so, where and why?

12. List the most important contracts recently executed by your company, stating approximate cost for each, and the month and year completed.

13. List your major equipment available for this contract.

14. List your key personnel such as project superintendent and foremen available for this contract.

STATEMENT OF BIDDERS QUALIFICATIONS (continued)

15. List any subcontractors whom you will use for the following (unless this work is to be done by your own organization, if so please state).
    a. Demolition _____
    b. Roof Systems Installation _____
    c. HVAC Systems Installation _____
    d. OTHER _____
    e. OTHER _____
    f. OTHER _____
    (The City reserves the right to approve subcontractors for this project)

16. With what banks do you do business?

    a. Do you grant the Owner permission to contact this/these institutions? ____(yes) ___(no).

    b. Latest Financial Statements, certified audited if available, prepared by an independent certified public accountant, may be requested by Owner. If requested, such statements must be provided within five (5) business days or the bid proposal will be rejected. Certified Audited Statement are preferred. Internal statements may be attached only if independent statements were not prepared.

Dated at _____ this _____ day of _____, 20___.

_____
Name of Bidder

BY_____

TITLE_____

State of_____

County of_____

_____being duly sworn, deposes and

says that the bidder is _____of_____
(Name of Organization)

and answers to the foregoing questions and all statements contained therein are true and correct.

Sworn to before me this ____day of _____, 20__.

_____
Notary of Public

My Commission expires_____

CONTRACT AGREEMENT

GREENLEAF RECREATION CENTER ROOF & HVAC REPLACEMENT

THIS AGREEMENT made as of the _____ in the year **2017,** by and between the City of Portsmouth, New Hampshire (hereinafter call the Owner) and _____. (hereinafter called the Contractor),

WITNESSETH; that the Owner and Contractor, in consideration of the mutual covenants hereinafter set forth, agree as follows:

ARTICLE I- Work - The Contractor shall perform all work as specified or indicated in the Contract Documents for the Greenleaf Recreation Center roof and AC replacement. The Contractor shall provide, at his expense, all labor, materials, equipment and incidentals as may be necessary for the expeditious and proper execution of the Project.

ARTICLE II - ENGINEER - The Director of Public Works or his authorized representative will act as City Engineer in connection with completion of the Project in accordance with the Contract Documents.

ARTICLE III - CONTRACT TIME - The work shall commence in accordance with the Notice to Proceed. All Work shall be completed prior to **December 31st, 2017**.

ARTICLE IV - CONTRACT PRICE Owner shall pay Contractor for performance of the work in accordance with the Contract Documents as shown under item prices in the Bid Proposal.

ARTICLE V - PAYMENT - Partial payments will be made in accordance with the Contract Documents. Upon final acceptance of the work and settlement of all claims, Owner shall pay the Contractor the unpaid balance of the Contract Price, subject to additions and deductions provided for in the Contract Documents.

ARTICLE VI - RETAINAGE - To insure the proper performance of this Contract, the Owner shall retain certain amounts in the percentage of the Contract Price and for the time specified as provided in the Contract Documents.

ARTICLE VII - LIQUIDATED DAMAGES - In event the Contractor fails to successfully execute the work within the specified contract time the Owner shall assess the Contractor liquidated damages in the amount of **THREE HUNDRED DOLLARS ($300)** for each calendar day beyond the specified completion date for each section of work. Liquidated damages shall be deducted from the Contract Price prior to final payment of the Contractor.

ARTICLE VIII – CONTRACT DOCUMENTS – The Contract Documents which comprise the contract between Owner and Contractor are attached hereto and made a part hereof and consist of the following:

8.1 This Agreement
8.2 Contractor's Bid and Bonds
8.3 Notice of Award, Notice to Proceed
8.4 Special Requirements for Community Development Block Grant (CDBG) Funded Projects
8.5 Instruction to Bidders
8.6 General Requirements, Control of Work, Temporary Facilities, Insurance Requirements, Measurement and Payment
8.7 Special Requirements for Community Development Block Grant Projects

CONTRACT AGREEMENT (continued)

8.8 Special Provisions for Building Access During Construction
8.9 Standard and Technical Specifications
8.10 Drawings
8.11 Special Provisions
8.12 Storm water Pollution Prevention Plan
8.13 Any modifications, including change orders, duly delivered after execution of this Agreement.
8.14 Appendices

ARTICLE IX – TERMINATION FOR DEFAULT – Should contractor at any time refuse, neglect, or otherwise fail to supply a sufficient number or amount of properly skilled workers, materials, or equipment, or fail in any respect to prosecute the work with promptness and diligence, or fail to perform any of its obligations set forth in the Contract, Owner may, at its election, terminate the employment of Contractor, giving notice to Contractor in writing of such election, and enter on the premises and take possession, for the purpose of completing the work included under this Agreement, of all the materials, tools and appliances belonging to Contractor, and to employ any other persons to finish the work and to provide the materials therefore at the expense of the Contractor.

ARTICLE X – INDEMNIFICATION OF OWNER – Contractor shall defend, indemnify and hold harmless Owner and its officials and employees from and against all suits, claims, judgments, awards, losses, costs or expenses (including without limitation attorneys' fees) to the extent arising out of or relating to Contractor's alleged negligence or breach of its obligations or warranties under this Contract. Contractor shall defend all such actions with counsel satisfactory to Owner at its own expense, including attorney's fees, and will satisfy any judgment rendered against Owner in such action.

ARTICLE XI – PERMITS – The Contractor shall secure at its own expense, all permits and consents required by law as necessary to perform the work and shall give all notices and pay all fees and otherwise comply with all applicable City, State, and Federal laws, ordinances, rules and regulations.

ARTICLE XII – INSURANCE – The Contractor shall secure and maintain, until acceptance of the work, insurance with limits not less than those specified in the Contract.

ARTICLE XIII – MISCELLANEOUS –

A. Neither Owner nor Contractor shall, without the prior written consent of the other, assign, sublet or delegate, in whole or in part, any of its rights or obligations under any of the Contract Documents; and, specifically not assign any monies due, or to become due, without the prior written consent of Owner.

B. Owner and Contractor each binds himself, his partners, successors, assigns and legal representatives, to the other party hereto in respect to all covenants, agreements and obligations contained in the Contract Documents.

C. The Contract Documents constitute the entire Agreement between Owner and Contractor and may only be altered amended or repealed by a duly executed written instrument.

D. The laws of the State of New Hampshire shall govern this Contract without reference to the conflict of law principles thereof.

E. Venue for any dispute shall be the Rockingham County Superior Court unless the parties otherwise agree.

IN WITNESS WHEREOF, the parties hereunto executed this AGREEMENT the day and year first above written.

BIDDER:

BY:_____

TITLE:_____

CITY OF PORTSMOUTH, N.H.

BY:_____
Nancy Colbert Puff

TITLE: Acting City Manager

NOTICE OF INTENT TO AWARD

Date:

To:

IN AS MUCH as you were the low responsible bidder for work entitled:

GREENLEAF RECREATION CENTER ROOF & HVAC REPLACEMENT

You are hereby notified that the City intends to award the aforesaid project to you.

Immediately take the necessary steps to execute the Contract and to provide required bonds and proof of insurance within seven (7) business days from the date of this Notice.

The City reserves the right to revoke this Notice if you fail to take the necessary steps to execute this Contract.

City of Portsmouth
Portsmouth, New Hampshire

Judie Belanger,
Finance Director

NOTICE TO PROCEED

DATE:

PROJECT: GREENLEAF RECREATION CENTER ROOF & HVAC REPLACEMENT

TO:

YOU ARE HEREBY NOTIFIED TO COMMENCE WORK IN ACCORDANCE

WITH THE AGREEMENT DATED,

ALL WORK SHALL BE COMPLETED PRIOR TO **December 31st, 2017**.

CITY OF PORTSMOUTH, N.H.

_____

BY: Peter H. Rice

TITLE: Public Works Director

ACCEPTANCE OF NOTICE

RECEIPT OF THE ABOVE NOTICE TO
PROCEED IS HEREBY ACKNOWLEDGED BY

_____

This the _____day of_____ 20__

By:_____

Title:_____

CHANGE ORDER

Change Order # Date of Issuance:
Owner: CITY OF PORTSMOUTH, N.H

Contractor:

You are directed to make the following changes in the Contract Documents:

Description:

Purpose of Change Order:

Attachments:

CHANGE IN CONTRACT PRICE	CHANGE IN CONTRACT TIME
Original Contract Price: $	Original Completion Date:
Contract Price prior to this Change Order: $	Contract Time prior to this Change Order:
Net Increase of this Change Order: $	Net Increase or Decrease of this Change Order:
Contract Price with all approved Change Orders: $	Contract Time with all approved Change Orders:

RECOMMENDED: APPROVED:
APPROVED:

by_____	by_____	by_____	by_____
PW Director	City Finance	City Manager	Contractor

LABOR AND MATERIAL PAYMENT BOND

(This format provided for convenience, actual Labor and Material Bond is acceptable in lieu, if compatible)

Bond Number _____

KNOW ALL MEN BY THESE PRESENTS:

that _____

as Principal, hereinafter called Contractor, and _____ (Surety Company) a corporation organized and existing under the laws of the State of

_____ and authorized to do business in the State of New Hampshire hereinafter called Surety, are held and firmly bound unto the City of Portsmouth, N.H. Obligee, hereinafter called Owner, for the use and benefit of claimants as herein below defined, in the

amount of _____ Dollars ($_____), for the payment whereof Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal has by written agreement dated _____ entered into a

contract with Owner for _____ in accordance with drawings and specifications prepared by the Public Works Department, 680 Peverly Hill Road, Portsmouth, N.H. 03801, which contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that the Principal shall promptly make payment to all claimants as hereinafter defined, for all labor and material used or reasonably required for use in the performance of the Contract and for the hire of all equipment, tools, and all other things contracted for or used in connection therewith, then this obligation shall be void, otherwise it shall remain in full force and effect, subject however, to the following conditions:

(1) A claimant is defined as one having a direct contract with the Principal or, with a subcontractor of the Principal for labor, material, equipment, or other things used or reasonably required for use in the performance of the Contract. "Labor and material" shall include but not be limited to that part of water, gas, power, light, heat, oil and gasoline, telephone service or rental of equipment applicable to the Contract.

(2) The above named Principal and Surety hereby jointly and severally agree with the Owner that every claimant as herein defined, who has not been paid in full before the expiration of a period of ninety (90) days after the date on which the last of such claimant's work or labor was done or performed, or materials were furnished by such a claimant, may sue on this bond for the use of such claimant, prosecute the suit by final judgment for such sum or sums as may be

LABOR AND MATERIAL PAYMENT BOND (continued)

justly due claimant, and have execution thereon. The Owner shall not be liable for the payment of any such suit or any costs or expenses of any such suit, and principal and surety shall jointly and severally indemnify, defend and hold the Owner harmless for any such suit, costs or expenses.

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

(a) Unless Claimant, other than one having a direct contract with the Principal, shall have given notice to all the following:

The Principal, the Owner and the Surety above named, within six (6) calendar months after such claimant did or performed the last of the work or labor, or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the work or labor was done or performed. Such notice shall be served by mailing the same by registered mail or certified mail, postage prepaid, in an envelope addressed to the Principal, Owner, and Surety, at any place where an office is regularly maintained for the transaction of business, or served in any manner in which legal process may be served in the State of New Hampshire save that such service need not be made by a public officer.

(b) After the expiration of one (1) year following the date on which Principal ceased all work on said contract, it being understood , however, that if any limitation embodied in this bond is prohibited by any law controlling the construction hereof, such limitation shall be deemed to be amended so as to be equal to the minimum period of limitation permitted by such law.

(c) Other than in a State court of competent jurisdiction in and for the county or other political subdivision of the State in which the project, or any part thereof, is situated, or in the United States District Court for the district in which the project, or any part thereof, is situated, and not elsewhere. (4) The amount of this bond may be reduced by and to the extent of any payment of payments made in good faith hereunder, inclusive of the payment by Surety of mechanics' liens which may be filed on record against said improvement, whether or not claim for the amount of such lien by presented under and against this bond.

Signed and sealed this _____ day of _____, 20____. In the presence of:

_____ BY: _____
(Witness) (Principal) (Seal)

_____
(Surety Company)

_____ BY: _____
(Witness) (Title) (Seal)

LABOR AND MATERIAL PAYMENT BOND (continued)

Note:
If the Principal (Contractor) is a partnership, the Bond should be signed by each of the partners.

If the Principal (Contractor) is a corporation, the Bond should be signed in its correct corporate name by its duly authorized Officer or Officers.

If this bond is signed on behalf of the Surety by an attorney-in-fact, there should be attached to it a duly certified copy of his Power of Attorney showing his authority to sign such Bonds.

There should be executed an appropriate number of counterparts of the bond corresponding to the number of counterparts of the Agreement.

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: that

_____
(Name of Contractor)

_____
(Address of Contractor)

a _____, hereinafter called Principal,
(Corporation, Partnership or Individual)

and _____
(Name of Surety)

_____
(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

City of Portsmouth, New Hampshire
(Name of Owner)

1 Junkins Avenue, Portsmouth, New Hampshire 03801
(Address of Owner)

hereinafter called **OWNER**, in the total aggregate penal sum of _____

_____ Dollars, $ (_____)

in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the **OWNER**, dated the _____ day of _____ 20 _____, a copy of which is hereto attached and made a part hereof for the construction of:

_____

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term thereof, and any extension thereof which may be granted by the **OWNER**, with or without notice to the Surety and during the one year guaranty period, and if the PRINCIPAL shall satisfy all claims and demands incurred under such contract, and shall fully indemnify and save harmless the **OWNER** from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the **OWNER** all outlay and expense which the **OWNER** may incur in making good any default, then this obligation shall be void: otherwise to remain in full force and effect.

PERFORMANCE BOND (continued)

PROVIDED, FURTHER, that the said surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to WORK to be performed thereunder or the specifications accompanying same shall in any way affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time alteration or addition to the terms of the contract or to the WORK or to the specifications.

PROVIDED, FURTHER, that it is expressly agreed that this BOND shall be deemed amended automatically and immediately, without formal and separate amendments hereto, upon amendment to the Contract not increasing the contract price more than 20 percent, so as to bind the PRINCIPAL and the SURETY to the full and faithful performance of the Contract as so amended. The term "Amendment", wherever used in this BOND and whether referring to this BOND, the contract or the loan Documents shall include any alteration, addition, extension or modification of any character whatsoever.

PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed _____ (number) counterparts, each one of which shall be deemed an original, this _____ day of _____, 20 _____.

ATTEST:

_____
Principal

By: _____
(Principal) Secretary

(SEAL) **BY**

_____
(Address)

By: _____
Witness as to Principal

_____
(Address)

_____
(Surety)

ATTEST: **BY**

Attorney - in - Fact

By _____
Witness as to Surety

_____
(Address)

_____
(Address)

NOTE: Date of **BOND** must not be prior to date of Contract.
If **CONTRACTOR** is partnership, all partners should execute BOND.

IMPORTANT: Surety companies executing **BONDS** must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State of New Hampshire.

MAINTENANCE BOND

At the Owner's election, a maintenance bond may be substituted for retainage at the completion of the project. If the Owner permits a maintenance bond, it shall be in the amount of **Twenty Percent (20%)** of the contract price with a corporate surety approved by the Owner. Such bond shall be provided at the time of Contract completion and shall guarantee the repair of all damage due to faulty materials or workmanship provided or done by the Contractor. This guarantee shall remain in effect for a period of one year after the date of final acceptance of the job by the Owner.

CONTRACTOR'S AFFIDAVIT

STATE OF _____:

COUNTY OF _____:

Before me, the undersigned, a _____
(Notary Public, Justice of the Peace)

in and for said County and State personally appeared, _____
(Individual, Partner, or duly authorized representative of Corporate)

who, being duly sworn, according to law deposes and says that the cost of labor, material, and equipment and outstanding claims and indebtedness of whatever nature arising out of the performance of the Contract between

CITY OF PORTSMOUTH, NEW HAMPSHIRE

and _____
(Contractor)

of _____

Dated: _____

has been paid in full for Construction of:

GREENLEAF RECREATION CENTER ROOF & HVAC REPLACEMENT

_____
(Individual, Partner, or duly authorized representative of Corporate Contractor)

Sworn to and subscribed
before me this _____day
of _____ 20____

_____

CONTRACTOR'S RELEASE

KNOW ALL MEN BY THESE PRESENTS that

_____ (Contractor) of

_____, County of _____and State of

_____ does hereby acknowledge

that_____(Contractor)

has on this day had, and received from the CITY OF PORTSMOUTH NEW HAMPSHIRE, final and completed payment for the Construction of:

GREENLEAF RECREATION CENTER ROOF & HVAC REPLACEMENT

NOW THEREFORE, the said _____

(Contractor)

for myself, my heirs, executors, and administrators) (for itself, its successors and assigns) do/does by these presents remise, release, quit-claim and forever discharge the City of Portsmouth, New Hampshire, its successors and assigns, of and from all claims and demands arising from or in connection with the said Contract dated _____, and of and from all, and all manners of action and actions, cause and causes of action and actions, suits, debts, dues, duties, sum and sums of money, accounts, reckonings, bonds, bills, specifications, covenants, contracts, agreements, promises, variances, damages, judgments, extents, executions, claims and demand, whatsoever in law of equity, or otherwise, against the City of Portsmouth, New Hampshire, its successors and assigns, which (I, my heirs, executors, or administrators) (it, its successors and assigns) ever had, now have or which (I, my heirs, executors, or administrators) (it, its successors and assigns) hereafter can shall or may have, for, upon or by reason of any matter, cause, or thing whatsoever; from the beginning of record time to the date of these presents.

IN WITNESS WHEREOF,

Contractor:

_____ By:_____

print name of witness:_____ Its Duly Authorized _____

Dated: _____

GENERAL REQUIREMENTS

SCOPE OF WORK

1. INTENT OF CONTRACT

The intent of the Contract is to provide for the construction and completion in every detail of the work described. The Contractor shall furnish all labor, materials, equipment, tools, transportation and supplies required to complete the work in accordance with the terms of the Contract. The Contractor shall be required to conform to the intent of the plans and specifications. No extra claims shall be allowed for portions of the work not specifically addressed in the plans and specifications but required to produce a whole and complete project, such work will be considered subsidiary to the bid items.

2. INCIDENTAL WORK

Incidental work items for which separate payment is not measured includes, but is not limited to, the following items:

a. Mobilization & Demobilization
b. Clean up
c. Temporary Facilities
d. Transportation and disposal of demolition debris and waste materials
f. Restoration of property
g. Cooperation with other contractors, abutters and utilities.
h. Accessories and fasteners or components required to make items paid for under unit prices or lump sum items complete and functional.

3. ALTERATION OF PLANS OR OF CHARACTER OF WORK

The Owner reserves the right, without notice to Surety, to make such alterations of the plans or of the character of the work as may be necessary or desirable to complete fully and acceptably the proposed construction; provided that such alterations do not increase or decrease the contract cost. Within these cost limits, the alterations authorized in writing by the Owner shall not impair or affect any provisions of the Contract or bond and such increases or decreases of the quantities as a result from these alterations or deletions of certain items, shall not be the basis of claim for loss or for anticipated profits by the contractor. The contractor shall perform the work as altered at the contract unit price or prices.

4. EXTRA WORK ITEMS

Extra work shall be performed by the Contractor in accordance with the specifications and as directed, and will be paid for at a price as provided in the Contract documents or if such pay items are not applicable than at a price negotiated between the contractor and the Owner or at the unit bid price. If the Owner determines that extra work is to be performed, a change order will be issued.

5. CHANGE ORDERS

The Owner reserves the right to issue a formal change order for any increase, decrease, deletion, or addition of work or any increase in contract time or price. The contractor shall be required to sign the change order and it shall be considered as part of the Contract documents.

6. FINAL CLEANING UP

Before acceptance of the work, the contractor shall remove from the site all machinery, equipment, surplus materials, rubbish, temporary buildings, barricades and signs. All parts of the work shall be left in a neat and presentable condition. On all areas used or occupied by the contractor, regardless of the contract limits, the bidder shall clean-up all sites and storage grounds.

The items prescribed herein will not be paid for separately, but shall be paid for as part of the total contract price.

7. ERRORS AND INCONSISTENCY IN CONTRACT DOCUMENTS

Any provisions in any of the Contract Documents that may be in conflict with the paragraphs in these General Requirements shall be subject to the following order of precedence for interpretation.

1. Technical Specifications will govern General Requirements.
2. Special Provisions will govern Technical Specifications.
3. Plans will govern Special Provisions, Technical Specifications, and General Requirements.

CONTROL OF WORK

1. AUTHORITY OF ENGINEER

(a) All work shall be done under supervision of the City Engineer and to his satisfaction. The City Engineer will decide all questions which may arise as to the quality and acceptability of materials furnished and work performed and as to the rate of progress of the work; all questions that may arise as to the interpretation of the plans and specifications; and all questions as to the acceptable fulfillment of the Contract by the Contractor.

(b) The City Engineer will have the authority to suspend the work wholly or in part for such periods as he may deem necessary due to the failure of the Contractor to correct conditions unsafe for workers or the general public; for failure to carry out provisions of the Contract; for failure to carry out orders; for conditions considered unsuitable for the prosecution of the work, including unfit weather; or for any other condition or reason deemed to be in the public interest. The Contractor shall not be entitled any additional payments arising out of any such suspensions.

(c) The Owner reserves the right to demand a certificate of compliance for a material or product used on the project. When the certificate of compliance is determined to be unacceptable to the City Engineer the Contractor may be required to provide engineering and testing services to guarantee that the material or product is suitable for use in the project, at its expense (see Sample of Certificate of Compliance).

2. PROTECTION AND RESTORATION OF PROPERTY AND LANDSCAPES

(a) The Contractor shall use every precaution to prevent injury or damage to buildings, pavement, wires, poles, or other property of public utilities; trees, shrubbery, crops, and fences along and adjacent to the right-of-way, all underground structures such as pipes and conduits, within or outside of the right-of-way; and the Contractor shall protect and carefully preserve all property marks until an authorized agent has witnessed or otherwise referenced their location.

(b) The Contractor shall be responsible for all damage or injury to property of any character, during the prosecution of the work, resulting from any act, omission, neglect, or misconduct in his manner or method of executing the work, or at any time due to defective work or materials, and said responsibility will not be released until the project shall have been completed and accepted.

(c) When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work, or as a result of the failure to perform work by the Contractor, the Contractor shall restore, at its own expense, such property to a condition similar or equal to that existing before such damage or injury was done, by repairing rebuilding, or otherwise restoring as may be directed, or the Contractor shall make good such damage or injury in an acceptable manner.

(d) If the Contractor fails to repair, rebuild or otherwise restore such property as may be deemed necessary, the Owner, after 48 hours notice, may proceed to do so, and the cost thereof may be deducted from any money due or which may become due the Contractor under the contract.

CONTROL OF WORK (continued)

(f) It is the intent of the Parties that the Contractor preserve, to as great an extent as possible, the natural features of the site.

(g) All facilities, infrastructure and features shall be protected and preserved during construction. Any damaged items shall be repaired or replaced by the contractor at no cost to the owner.

3. MAINTENANCE DURING CONSTRUCTION

The Contractor shall maintain the work during construction and until the project is accepted. This maintenance shall constitute continuous and effective work prosecuted day by day, with adequate equipment and workers to ensure that the structure is kept in satisfactory conditions at all times.

4. SAFETY PRECAUTIONS

Upon commencement of work, the Contractor shall be responsible for initiating, maintaining and supervising all safety precautions necessary to ensure the safety of employees on the site, other persons who may be affected thereby, including the public, and other property at the site or adjacent thereto.

5. PERMITS

It will be the responsibility of the Contractor to obtain all permits required for the operation of equipment in, or on, all city streets and public ways.

6. BARRICADES, WARNING SIGNS AND TRAFFIC OFFICERS

(a) The Contractor shall provide, erect and maintain all necessary barricades, suitable and sufficient lights, danger signals, signs and other traffic control devices, and shall take all necessary precautions for the protection of the work and safety of the public. Roadway closed to traffic shall be protected by effective barricades. Obstructions shall be illuminated during hours of darkness. Suitable warning signs shall be provided to control and direct traffic in a proper manner, as approved by the engineer.

(b) The Contractor will be held responsible for all damage to the work from traffic, pedestrians, animals or any other cause due to lack of adequate controlling devices.

(c) The Contractor shall provide such police officers as the City Engineer deems necessary for the direction and control of traffic within the site of project.

The work prescribed herein will not be paid for separately but will be paid for as part of the Contract Price unless specifically appearing as a bid item.

TEMPORARY FACILITIES

1. STORAGE FACILITIES

(a) The Contractor shall not store materials or equipment in a public right-of-way beyond the needs of one working day. Equipment and materials shall be stored in an approved location.

(b) The Contractor shall protect all stored materials from damage by weather or accident and shall insure adequate drainage at and about the storage location.

(c) Prior to final acceptance of the work all temporary storage facilities and surplus stored materials shall be removed from the site.

2. SANITARY FACILITIES

(a) The Contractor shall provide for toilet facilities for the use of the workers employed on the work.

(b) Temporary toilet facilities may be installed provided that the installation and maintenance conform with all State and local laws, codes, regulations and ordinances governing such work. They shall be properly lit and ventilated, and shall be kept clean at all times.

(c) Prior to final acceptance of the work all temporary toilet facilities shall be removed from the site.

3. TEMPORARY POWER

(a) The Contractor shall be responsible for providing temporary power supply (e.g., mobile generators) for all tools, lighting, and other project needs.

INSURANCE REQUIREMENTS

Insurance shall be in such form as will protect the Contractor from all claims and liabilities for damages for bodily injury, including accidental death, and for property damage, which may arise from operations under this contract whether such operation by himself or by anyone directly or indirectly employed by him.

AMOUNT OF INSURANCE

A) Comprehensive General Liability:
Bodily injury or Property Damage - $2,000,000
Per occurrence and general aggregate

B) Automobile and Truck Liability:
Bodily Injury or Property Damage - $2,000,000
Per occurrence and general aggregate

Additionally, the Contractor shall purchase and maintain the following types of insurance:

A) Workers Comprehensive Insurance coverage sufficient to meet statutory requirements for all people employed by the Contractor to perform work on this project.

B) Contractual Liability Insurance coverage in the amounts specified above under Comprehensive General Liability.

C) Product and Completed Operations coverage to be included in the amounts specified above under Comprehensive General Liability.

ADDITIONAL INSURED

All liability policies (including any excess policies used to meet coverage requirements) shall include the City of Portsmouth, New Hampshire as named Additional Insured.

1) The contractor's insurance shall be primary in the event of a loss.
2) The Additional Insured endorsement must include language specifically stating that the entity is to be covered for all activities performed by, or on behalf of, the contractor, including the City of Portsmouth's general supervision of the contractor.
3) City of Portsmouth shall be listed as a Certificate Holder and Additional Insured. The City shall be identified as follows:

City of Portsmouth
Attn: Legal Department
1 Junkins Avenue
Portsmouth, NH 03801

MEASUREMENT AND PAYMENT

1. MEASUREMENT OF QUANTITIES

(a) All work completed under the contract will be measured according to the United States standard measure.

(b) The method of measurement and computations to be used in determination of quantities of material furnished and of work performed under the contract will be those methods generally recognized as conforming to good engineering practice. Unless otherwise stated all quantities measured for payment shall be computed or adjusted for "in place" conditions.

(c) Unless otherwise specified, longitudinal measurements for area computations will be made horizontally, and no deductions will be made for individual fixtures having an area of 9 square feet or less. Unless otherwise specified, transverse measurements for area computations will be the dimensions shown on the plans or ordered in writing.

(d) Structures will be measured according to lines shown on the plans or as ordered unless otherwise provided for elsewhere in the specifications.

(e) Removal and replacement of existing roof membrane and insulation shall be reimbursed at unit price per square foot as measured in-place.

(f) The term "lump sum" when used as an item of payment will mean complete payment for the work described in the item.

(g) When a complete structure or structural unit (in effect, "lump sum" work) is specified as the unit of measurement, the unit will be construed to include all necessary fittings and accessories, so as to provide the item complete and functional. Except as may be otherwise provided, partial payments for lump sum items will be made approximately in proportion to the amount of the work completed on those items.

(h) Material wasted without authority will not be included in the final estimate.

2. SCOPE OF PAYMENT

(a) The Contractor shall receive and accept compensation provided for in the contract as full payment for furnishing all materials and for performing all work under the contract in a complete and acceptable manner and for all risk, loss, damage or expense of whatever character arising out of the nature of the work or the prosecution thereof.

(b) The Contractor shall be liable to the Owner for failure to repair, correct, renew or replace, at his own expense, all damage due or attributable to defects or imperfections in the construction which defects or imperfections may be discovered before or at the time of the final inspection and acceptance of the work.

(c) No monies, payable under the contract or any part thereof, except the first estimate, shall become due or payable if the Owner so elects, until the Contractor shall satisfy the Owner that the Contractor has fully settled or paid all labor performed or furnished for all equipment hired, including trucks, for all materials used, and for fuels, lubricants, power tools, hardware and supplies purchased by the Contractor and used in carrying out said contract and for labor and parts furnished upon the order of said Contractor for the repair of equipment used in carrying out said contract; and the Owner, if he so elects, may pay any and all such bills, in whole or in part, and deduct the amount of amounts so paid from any partial or final estimate, excepting the first estimate.

3. COMPENSATION FOR ALTERED QUANTITIES

(a) Except as provided for under the particular contract item, when the accepted quantities of work vary from the quantities in the bid schedule the Contractor shall accept as payment in full, so far as contract items are concerned, at the original contract unit prices for the accepted quantities of work done. No allowance will be made for any increased expense, loss of expected reimbursement, or loss of anticipated profits suffered or claimed by the Contractor resulting either directly from such alterations or indirectly from unbalanced allocation among the contract items of overhead expense on the part of the Bidder and subsequent loss of expected reimbursements therefore or from any other cause.

(b) Extra work performed will be paid for at the contract bid prices or at the price negotiated between the Owner and the Contractor if the item was not bid upon. If no agreement can be negotiated, the Contractor will accept as payment for extra work, cost plus 15% (overhead and profit). Costs shall be substantiated by invoices and certified payroll.

4. PARTIAL PAYMENTS

Partial payments will be made on a monthly basis during the contract period. From the total amount ascertained as payable, an amount equivalent to ten percent (10%) of the whole will be deducted and retained by the Owner until such time as the work receives final acceptance.

5. FINAL ACCEPTANCE

Upon due notice from the Contractor of presumptive completion of the entire project, the City Engineer will make an inspection. If all construction provided for and contemplated by the contract is found complete to his satisfaction, this inspection shall constitute the final inspection and the City Engineer will make the final acceptance and notify the Contractor in writing of this acceptance as of the date of the final inspection.

If, however, the inspection discloses any work in whole or in part, as being unsatisfactory, the City Engineer will give the Contractor the necessary instructions for correction of such work, and the Contractor shall immediately comply with and execute such instructions. Upon correction of the work, another inspection will be made which shall constitute the final inspection provided the work has been satisfactorily completed. In such event, the City Engineer will make the final acceptance and notify the Contractor in writing of this acceptance as of the date of final inspection.

6. ACCEPTANCE AND FINAL PAYMENT

(a) When the project has been accepted and upon submission by the Contractor of all required reports, completed forms and certifications, the Owner will review the final estimate of the quantities of the various classes of work performed. The Contractor may be required to certify that all bills for labor and material used under this contract have been paid.

(b) The Contractor shall file with the Owner any claim that the Contractor may have regarding the final estimate at the same time the Contractor submits the final estimate. Failure to do so shall be a waiver of all such claims and shall be considered as acceptance of the final estimate. From the total amount ascertained as payable, an amount equal to ten percent (10%) of the whole will be deducted and retained by the Owner for the guaranty period. This retainage may be waived, at the discretion of the City, provided the required Maintenance Bond has been posted. After approval of the final estimate by the Owner, the Contractor will be paid the entire

sum found to be due after deducting all previous payments and all amounts to be retained or deducted under the provisions of the contract.

(c) All prior partial estimates and payments shall be subject to correction in the final estimate and payment.

7. GENERAL GUARANTY AND WARRANTY OF TITLE

(a) Neither the final certification of payment nor any provision in the contract nor partial or entire use of the improvements embraced in this Contract by the Owner or the public shall constitute an acceptance of work not done in accordance with the Contract or relieve the Contractor of liability in respect to any express or implied warranties or responsibility for faulty materials or workmanship. The Contractor shall promptly remedy any defects in the work and pay for any damage to other work resulting therefrom which shall appear within a period of twelve (12) months from the date of final acceptance of the work. The Owner will give notice of defective materials and work with reasonable promptness.

(b) No material, supplies or equipment to be installed or furnished under this Contract shall be purchased subject to any chattel mortgage or under a conditional sale, lease purchase or other agreement by which an interest therein or in any part thereof is retained by the Seller or supplier. The Contractor shall warrant good title to all

materials, supplies and equipment installed or incorporated in the work and upon completion of all work, shall deliver the same together with all improvements and appurtenances constructed or placed thereon by him to the Owner free from any claims, liens or charges. Neither the Contractor nor any person, firm or corporation furnishing any material or labor for any work covered by this Contract shall have the right to a lien upon any improvements or appurtenances thereon.

Nothing contained in this paragraph, however, shall defeat or impair the right of persons furnishing materials or labor to recover under any bond given by the Contractor for their protection or any rights under any law permitting such persons to look to funds due the Contractor in the hands of the Owner. The provisions of this paragraph shall be inserted in all subcontractors and material contracts and notice of its provisions shall be given to all persons furnishing materials for the work when no formal contract is entered into for such materials.

8. NO WAIVER OF LEGAL RIGHTS

(a) Upon completion of the work, the Owner will expeditiously make final inspection and notify the Contractor of acceptance. Such final acceptance, however, shall not preclude or stop the Owner from correcting any measurement, estimate, or certificate made before or after completion of the work, nor shall the Owner be precluded or be stopped from recovering from the Contractor or his Surety, or both, such overpayment as it may sustain by failure on the part of the Contractor to fulfill his obligations under the contract. A waiver on the part of the Owner of any breach of any part of the contract shall not be held to be a waiver of any other or subsequent breach.

(b) The Contractor, without prejudice to the Contract shall be liable to the terms of the Contract, shall be liable to the Owner for latent defects, fraud or such gross mistakes as may amount to fraud, and as regards the Owner's right under any warranty or guaranty.

9. TERMINATION OF CONTRACTOR'S RESPONSIBILITY

Whenever the improvement provided for by the Contract shall have been completely performed on the part of the Contractor and all parts of the work have been released from further obligations except as set forth in his bond and as provided in Section 8 above.

SPECIAL REQUIREMENTS FOR COMMUNITY DEVELOPMENT BLOCK GRANT (CDBG) FUNDED PROJECTS

AUTHORITY

Provisions of this Agreement are pursuant to the authority set forth in Title 24 of the Code of Federal Regulations, Part 570 (Housing and Urban Development regulations concerning Community Development Block Grants (CDBG)), and pursuant to all other applicable federal, state, county or municipal authorities imposing any local laws, regulations and policies that govern funds provided under this Agreement.

FUNDING

This project is funded in part by the City's Community Development Block Grant (CDBG), which is received from the U.S. Department of Housing and Urban Development and administered by the Portsmouth Community Development Department. Project work must be completed in accordance with all applicable statutes, laws, and regulations.

ASSURANCES

1. The CONTRACTOR will comply with Title VI of the Civil Rights Act of 1964, codified in United States Code Title 42 2000 (d), and implemented at 24 CFR Part 1 as well as 24 CFR Part 570.602, and in accordance therewith, no person in the United States shall, on the grounds of race, color, national origin, religion, age or sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under, any program or activity funded in whole or in part with the Community Development funds or any other Federal financial assistance. The CONTRACTOR will immediately take any measures necessary to effectuate this Agreement.

2. CONTRACTOR will comply with Section 3 of the Housing and Urban Development Act of 1968, as amended; and implemented at 24 CFR Part 135 and in accordance therewith, in all work made possible by or resulting from this Agreement, affirmative action will be taken to ensure that residents (preferably low to moderate income as defined by U.S. Housing and Urban Development) of the City are given maximum opportunities for training and employment and that business concerns located in or owned in substantial part by residents of the City are to the greatest extent feasible, awarded contracts.

3. As this Agreement is funded by monies of the United States, CONTRACTOR shall comply with all of the provisions of Executive Order No. 11246 ("Equal Employment Opportunity") as supplemented by the regulations of the United States Department of Labor (41 C.F.R. Part 60), and with any rules, regulations and guidelines as the State of New Hampshire or the United States issue to implement these regulations. All activities and contracts are subject to Executive Order 11246, as amended and implemented at 41 CFR Chapter 60. In carrying out the Statement of Work (Exhibit A), the CONTRACTOR shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, marital or familial status, age, mental or physical handicap. The CONTRACTOR shall post in conspicuous places, available to employees

and applicants for employment, notices to be provided by the Government setting forth the provisions of this nondiscrimination clause. The CONTRACTOR shall state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, marital or familial status, age, mental or physical handicap. The CONTRACTOR shall incorporate the foregoing requirements of this paragraph in all of its contracts for program work, and will require all of its subcontractors for such work to incorporate all such EEO requirements as are applicable. CONTRACTOR further agrees to permit the State, the United States, or any designated representative of either, to have access to any of the CONTRACTOR's books, records, and accounts for the purpose of ascertaining compliance with the aforesaid rules regulations and orders, and the covenants and conditions of this Agreement.

4. CONTRACTOR shall comply with all other program requirements as described in this Agreement and in 24 CFR Part 570.503, and listed in Appendix A "Compliance by Grantee and Any Contractors, and Subcontractors with Laws and Regulations."

5. CONTRACTOR shall comply with Federal Labor Standards and Applicable Davis-Bacon Wage Rates, as attached in Appendices B and C and incorporated herein by reference.

CONFLICT OF INTEREST

No officer, employee or agent of the City, or any other person who exercises any functions or responsibilities in connection with the Community Development Program, shall have any personal or financial interest, direct or indirect, in this Agreement; and, the CONTRACTOR shall take appropriate steps to assure compliance with the conflict of interest rules in 2 CFR Part 200.112.

POLITICAL ACTIVITY PROHIBITED - HATCH ACT

Neither the Community Development funds provided under this Agreement, nor the administration of this project shall be in any way engaged in the conduct of political activities in contravention of Chapter 15 of Title 5, United States Code.

FAITH-BASED ORGANIZATIONS

Executive Order 13279 allows a government contractor or subcontractor that is a religious organization, corporation, association, educational institution, or society to take religion into consideration in the employment of individuals to perform work connected with the services offered by such corporation, association, educational institution, or society of its activities. Such contractors and subcontractors are not exempt or excused from complying with the other requirements contained in Executive Order 11246. CONTRACTOR must adhere to 24 CFR 570.200(j) Faith-based activities.

DRUG FREE WORKPLACE

The CONTRACTOR shall establish a drug-free workplace policy that shall include:

1. Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the

CONTRACTOR's workplace and specifying the actions that will be taken against employees for violation of such prohibition;

2. Establish an ongoing drug-free awareness program to inform employees about:
    a. The dangers of drug abuse in the workplace;
    b. The CONTRACTOR's policy of maintaining a drug-free workplace;
    c. Any available drug counseling, rehabilitation, and employee assistance programs; and;
    d. The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace.

ENVIRONMENTAL REVIEW COMPLIANCE

The CONTRACTOR agrees to abide by provisions of the National Environmental Policy Act of 1969 and other provisions of law which further the purposes of such Act as required by Title 1 of the Housing and Community Development Act of 1974 as amended from time to time and in compliance with the Environmental Review Procedures of the Community Development Block Grant Program at CFR Part 58 and any subsequent regulations issued by the U.S. Department of Housing and Urban Development (HUD). The CONTRACTOR agrees that any costs incurred prior to the City receiving a Release of Funds authorization from HUD are not eligible for reimbursement. The CONTRACTOR further agrees not to obligate funds or begin implementation of the project prior to the CONTRACTOR receiving specific written authorization from the City to proceed and where applicable, a formal Removal of Grant Conditions by U.S. Department of Housing and Urban Development (HUD).

LEAD BASED PAINT

The CONTRACTOR agrees to abide by provisions of 24 CFR Part 35 Lead Based Paint Poisoning Prevention in Certain Residential Structures. The Final Rule Published by U.S. Department of Housing and Urban Development (HUD) effective as of January 11, 2002.

TERMINATION

CONTRACTOR and the City will comply with the noncompliance and termination provisions in 2 CFR 200.338. In addition to the remedies for noncompliance in 2 CFR §200.338, in accordance with 2 CFR §200.338 and 339, the City may suspend or terminate this Agreement in whole or in part if the CONTRACTOR fails to comply with any terms and conditions of this Agreement or upon the occurrence of any Event of Default or any other breach of this Agreement. The City can withhold all funding and disbursements, demand repayment for amounts disbursed, terminate all payments, and/or exercise all rights and remedies available to it under the terms of this Agreement, the Grant Documents, under statutory law, equity or under common law. If the City terminates this Agreement, the CONTRACTOR shall also forfeit to the City all unexpended monies awarded under the Agreement. CONTRACTOR may also be required to refund all CDBG funds awarded by the City. In accordance with 2 CFR §200.339, the City can terminate the Agreement with the consent of the CONTRACTOR in which case the CONTRACTOR and the City must agree upon the termination conditions, including the effective date, and in the case of partial termination, the portion to be terminated. In accordance with 2 CFR §200.339(a)(4), this Agreement may also be terminated by the City with written

notification setting forth the reason for such termination, the effective date and in the case of partial termination, the portion to be terminated. However, if the City determines in the case of partial termination that the reduced or modified portion of the award will not be accomplished for which the award was made, the City may terminate the award in its entirety. If this award is terminated or partially terminated, the CONTRACTOR remains responsible for compliance with the closeout requirements in 2 CFR §200.343 and post-closeout requirements set forth in 2 CFR §200.344. All remedies shall be deemed cumulative and, to the extent permitted by law, the election of one or more remedies shall not be construed as a waiver of any other remedy the City may have available to it.

PRE-CONSTRUCTION CONFERENCE

- Once the Contract Document is completed, the City coordinates timeframe for the pre-construction conference with the CONTRACTOR.

- The purpose of the pre-construction conference is to coordinate the construction start-up timeframe and to ensure that all of the proper payroll documentation will be produced and that federal requirements describing Equal Employment Opportunity and Section 3 requirements will be met.

COMPLIANCE MONITORING

- The General CONTRACTOR must submit weekly certified payrolls including weekly certified payrolls for all Subcontractors to the City for review and compliance with applicable State or Davis Bacon Wage Rates;

- Construction Progress Payments are submitted to the City for review and approval;

- The City is responsible for conducting on-site employee interviews for compliance with applicable prevailing wage rates and compliance with all federal, state and local requirements concerning – Section 3, MBE/WBE, etc.;

- The City will periodically monitor the construction; and

- Prior to the issuance of final contractor payment the following must be received:

    1. Certification that all prevailing wage documentation has been completed;
    2. Copies of employee interview forms completed by the City;
    3. Release of Liens Statement from general CONTRACTOR;
    4. Final Field Report from project manager authorizing final payment; and
    5. All required Section 3 and EEO forms (if applicable)

SPECIAL PROVISION FOR BUILDING ACCESS DURING CONSTRUCTION

CONTRACTOR will ensure safe pedestrian access to the building located on the premises, called GREENLEAF RECREATION CENTER throughout the project construction period until completion of the project.

STANDARD SPECIFICATIONS

Refer to the Technical Specifications.

SHOP DRAWINGS

Shop Drawings for this project shall be submitted under the following conditions:

1. The Contractor shall submit working and detail drawings, well in advance of the work, to the City Engineer for review.
2. The Contractor's drawings shall consist of shop detail, erection and other working plans showing dimensions, sizes and quality of material, details and other information necessary for the complete fabrication and erection of the pertinent work.
3. The Contractor shall submit two (2) sets of drawings to the City Engineer.
4. Prior to the approval of the drawings, any work done or materials ordered for the work involved shall be at the Contractor's risk.
5. One (1) set of the drawings will be returned to the Contractor approved or marked with corrections to be made. After approval has been given, the Contractor shall supply the City Engineer with two sets of the revised detail working drawings.
6. The City Engineer's approval of the Contractor's working drawings will not relieve the Contractor from responsibility for errors in dimensions or for incorrect fabrication processes, or from responsibility to complete the contract work.

TECHNICAL SPECIFICATIONS

GREENLEAF RECREATION CENTER ROOF & HVAC REPLACEMENT

TECHNICAL SPECIFICATIONS

SECTION 06 10 00
ROUGH CARPENTRY

PART 1 GENERAL

1.01 WORK INCLUDES
A. Provide all rough carpentry work, as indicated on the Drawings and as specified herein. Rough Carpentry shall include but not be limited to:
   1. Concealed blocking.
   2. Roofing nailers.
   3. Roofing cant strips.
   4. Pressure treated wood materials.

1.02 RELATED WORK
A. Examine Contract Documents for requirements that affect work of this Section. Other Specification Sections that directly relate to work of this Section include, but are not limited to:
   1. Section 07 53 10 FULLY ADHERED EPDM
   2. Section 07 62 00 SHEET METAL FLASHING AND FASCIA
   3. Section 07 72 00 ROOF ACCESSORIES

1.03 QUALITY ASSURANCE
A. Materials and workmanship shall conform to governing laws and applicable building code.
B. Provide lumber and plywood bearing the grade-trademark of the association under the rules or standards of which it was produced. Grade-trademarks shall conform to the rule or standard under which the material is produced, including requirements for qualifications and authority of the inspection organization, usage of authorized identification, and information included in the identification.
   1. ASTM D 245 - Lumber grades shall be determined in accordance. Grades specified are the minimum acceptable.
   2. USDC PS 20 - Lumber shall bear the grade mark of an American Lumber Standards Committee, Board of Review-approved agency.
   3. Lumber shall bear a mark of mill identification.
   4. USDC PS 1 and ANSI A199.1 - Plywood shall comply with APA Design/Construction Guide, Residential and Commercial, grading requirements.
   5. APA PRP-108 - Non-plywood type performance-rated construction panels shall conform.
   6. CABO NER-272 - Fasteners shall comply.
   7. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2010b.
   8. AWPA U1 - Use Category System: User Specification for Treated Wood; American Wood Protection Association; 2010.
   9. SPIB (GR) - Grading Rules; Southern Pine Inspection Bureau, Inc.; 2002.

1.04 SUBMITTALS
A. Shop Drawings: Submit shop drawings of wood blocking installation and other rough carpentry work in conformance with Factory Mutual wind uplift rated systems. Describe proposed methods of installation and anchorage to structure showing sizes, types, thicknesses, connections of wood blocking and related items including adjoining work by other trades.

B. Samples: Submit representative samples of all materials for use under this Section.
C. Product Data: Submit manufacturer's printed product data for each material used. Provide certifications that materials and systems comply with specified requirements.
D. Certificates: Submit certificates of grading, treatment and conformance to specified standards. Certifications shall state date of treatment, conformance with specifications and agency grading of wood.

1.05 COORDINATION

A. Coordinate the work of this Section with the work of other Sections to assure the steady progress of all the work of the Contract.
B. Field Measurements: Take field measurements before preparation of shop drawings and fabrication. Do not delay progress of the job. If field measurements are not possible prior to fabrication, allow for field cutting and fitting.

1.06 PRODUCT DELIVERY AND STORAGE

A. Materials when delivered to site shall be stacked and stored above the ground under protective coverings or indoors in such manner as to insure proper drainage, ventilation, and protection.
B. Rough carpentry materials shall be stored on elevated piles to allow for air circulation below and tipped in one direction to effectively drain moisture. Lumber shall be wrapped completely, including bottoms, in waterproof tarps. Tarps shall be tied down to protect against wind blow-off. Should delays in Project be anticipated, lumber shall be stored in covered storage trailers.
C. Do not leave any newly installed wood blocking exposed. Cover and protect all new wood daily with the new roof systems or other suitable covering approved by the Architect.

PART 2 PRODUCTS

2.01 LUMBER

A. Provide lumber for miscellaneous wood framing, blocking, cant strips, nailers, etc. for all work of the Project, including, but not limiting to, temporary railings, roofing, flashing, sheet metal work, and the like.
B. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
    1. Factory mark each piece of lumber with grade stamp of grading agency.
    2. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
    3. Lumber shall be surfaced four sides (S4S) and shall bear the grade and trademark of the association under whose rules it is produced, and a mark of mill identification.
C. Provide new lumber of consistent size, free of stains and mildew, kiln dried to a maximum moisture content of not more than 19% by weight.
D. Where exposed or semi-exposed, provide wood members selected for best possible appearance from the grade of stock specified.
E. Lumber shall be furnished in longest practical lengths with respect to each intended use, and single length pieces shall be used wherever possible.
F. General Carpentry Material Schedule shall be as follows:

Item	Grade	Species
Lumber 2 in. nominal thickness or greater	Construction Grade	Spruce – Pine - Fir
Lumber less than 2 in. nominal thickness	Construction Grade	Spruce – Pine - Fir

2.02 PRESSURE TREATED LUMBER

A. Pressure treat lumber above ground and in contact with roofing, flashing, sheet metal, masonry, concrete, dampproofing, and waterproofing in conformance with AWPA U1. Provide pressure preservative treated lumber with a minimum net retention of 0.25 pcf. Dry lumber to maximum moisture content of 19% after treatment. Use only waterborne preservatives which conform to AWPA P5. Creosote preservatives are not acceptable.
   1. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.

2.03 MISCELLANEOUS MATERIALS

A. Inserts, Anchors, and Fasteners: Provide inserts, anchors, anchor bolts, lag bolts, screws, washers, nuts, nails, and other rough hardware. Assist other trades as necessary in the placement of inserts and anchor bolts in concrete and masonry. Furnish full instructions regarding locations, sizes, and other requirements to ensure proper preparation. Provide rough hardware which complies with requirements of the governing laws and codes.
   1. Metal and Finish: Stainless steel for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
B. Rough Hardware: Provide rough hardware items for use at roof and other exterior uses hot-dip galvanized in accordance with ASTM A 153. Provide other concealed items cadmium plated or zinc chromate plated.
C. Provide hammer drive anchors and fasteners for securing wood framing, blocking or plywood into masonry of sufficient length to penetrate the receiving member a minimum of 1-1/2 in.
D. Adhesives for Gluing Wood Members to Concrete or Masonry: Formulation complying with ASTM D 3498 that is approved for use indicated by adhesive manufacturer.

PART 3 EXECUTION

3.01 ROUGH CARPENTRY WORK – GENERAL

A. No attempt is made in this Specification to list the various elements of rough carpentry work, as the major part of the work to be done is clearly shown on or reasonably inferred from the Drawings. The rough carpentry work required shall include all such work, regardless of whether or not each and every item is specifically called for. Refer to Drawings to determine the major extent of the rough carpentry work required.
B. The Contractor shall be responsible for structural integrity, connections, and anchorage of rough carpentry work. All nailing shall be in accordance with the applicable building code.
C. Discard units of material which are unsound, warped, bowed, twisted, improperly treated, not adequately seasoned, or too small to fabricate with minimum number of joint or optimum jointing arrangements, or which are of defective quality with respect to surfaces or sizes.
D. Unless indicated otherwise, blockings, nailers, etc., of 2 in. nominal thickness or greater shall be

bolted to back-up material with 1/2 in. bolts (galvanized at exterior locations and at roofs) located 4 in. from ends and splices, and spaced not greater than 32 in. on center along lengths of the members. Provide nails of sufficient length to penetrate receiving member a minimum of 1-1/2 in.

E. Unless indicated otherwise, secure 2 in. thick or smaller wood framing, nailers, furring, etc., to back-up material by use of appropriate fasteners located 4 in. from ends and spaced not greater than 16 in. on center along lengths of the members. Provide type and length of fastening devices to develop positive and secure anchorage to the back-up material.

F. Refer to FM Data Sheet 1-49 concerning anchorage spacing and size requirements for perimeter blocking. Spacings shall be halved in the zone from building corner to eight feet from corner, both directions from corner.

G. Butt joints in wood shall be flush to provide a smooth, uniform line with no irregularities. Built-up blocking shall have butt joints staggered 4 in. minimum layer to layer. The minimum length of any individual piece of woodwork shall be 12 in. All lengths of woodwork shall have a minimum of four fasteners.

H. Construct all rough carpentry work plumb, level, and true with tight, close fitting joints, securely attached and braced to surrounding construction, all in a first class workmanlike manner. Counterbore for bolt heads, nuts, and washers where required to avoid interference with other materials.

I. Wood blockings, nailers, edgings, etc., shall be installed as indicated or specified and shall be furnished in lengths not less than 12 ft., except where shorter lengths are required. Select material sizes to minimize waste.

J. All connections, nailing, and fastening of rough carpentry work shall conform to requirements of the governing laws and codes.

K. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

L. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

M. Attach to substrates as required to support applied loading. Countersink bolts and nuts flush with surfaces.

N. Repair all damage caused by puncturing of conduits, pipes, ducts, etc. when nailing, drilling or powder driving into concrete or masonry.

3.02 FASTENING OF WOODWORK

A. Wood to masonry connections shall be completed using non-impact drilled anchors through predrilled holes spaced 8 in. on center maximum. Predrill the hole, insert fastener sleeve, and secure in place with nail.

B. Install plywood on masonry surfaces hammer driven anchors through predrilled holes spaced 12 in. on center along the top and bottom edges. Keep fasteners 3 in. minimum from the board edge. Drive fastener heads flush with surface. Secure plywood to wood substrate with nails at same spacing as hammer driven anchors. Secure plywood to metal studs with screws approved by metal stud manufacturer.

C. Wood shall be secured to wood substrates and other wood to wood connection with nails spaced 12 in. on center maximum staggered along the centerline of the member being installed. All nail heads must be flush with the top surface.

3.03 CLEANING

A. Upon completion of rough carpentry work in any given area, remove all rubbish and debris from the work area and leave in broom clean condition.

END OF SECTION

SECTION 07 01 50.19
PREPARATION FOR RE-ROOFING

PART 1 GENERAL

1.01 WORK INCLUDES

A. Removal of existing roofing system on existing construction in preparation for a new roof membrane system.
B. Existing Membrane Roofing System: Rhino thermoplastic single ply rubber membrane, with related insulation, surfacing and components and accessories between concrete deck and roofing membrane.

1.02 RELATED WORK

A. Examine Contract Documents for requirements that affect work of this Section. Other Specification Sections that directly relate to work of this Section include, but are not limited to:

1. Section 01 10 00 SUMMARY
2. Section 01 30 00 ADMINISTRATIVE REQUIREMENTS
3. Section 01 74 19 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

B. Coordinate with affected mechanical and electrical work associated with roof penetrations.
C. Schedule work to coincide with commencement of installation of new roofing system.

1.03 QUALITY ASSURANCE

A. Publications listed below form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only. Editions of applicable publications current on date of issue of bidding documents apply unless otherwise indicated
B. American National Standards Institute/Single-Ply Roofing Institute (ANSI/SPRI):
C. ANSI/SPRI FX-1-01(R2006) Standard Field Test Procedure for Determining the Withdrawal Resistance of Roofing Fasteners.
D. ASTM International (ASTM):
E. C208-08.....Cellulosic Fiber Insulating Board
F. C728-05.....Perlite Thermal Insulation Board
G. C1177/C1177M-08...Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing
H. C1278/C1278M-07...Standard Specification for Fiber-Reinforced Gypsum Panel
I. D1079-09.....Standard Terminology Relating to Roofing and Waterproofing
J. National Roofing Contractors Association: Roofing and Waterproofing Manual

1.04 ADMINISTRATIVE REQUIREMENTS

A. All OSHA regulations, applicable codes and standards must be observed and complied with during all phases of this project. Project safety, protection of the building, its contents and all pedestrian traffic, shall be the responsibility of each contractor and all employees on site for the duration of the project.
B. Prior to bid submittal, the roofing contractor should attend the scheduled job site inspection to observe actual conditions and verify all dimensions on the roof.

1. Any conditions which are not shown on the contract documents should be indicated in a Request for Information to clarify conditions not shown.

C. Pre-installation Meeting: After the submission and review of roofing and flashing shop drawings, samples and printed data, convene a pre-installation meeting at least two weeks before starting installation. Review preparation and installation procedures, coordination and scheduling

necessary for related work, determine access, staging and storage areas, establish working weather conditions, roofing protection provisions, considerations for safety of building occupants and other relevant issues.

1. The following personnel shall be present:
    a. Contractor (Project Manager, Superintendent)
    b. Roofing Sub-Contractor (Project Manager, Foreman)
    c. Roofing and Flashing Materials Manufacturers
    d. Mechanical Sub-Contractor (Project Manager, Foreman)
    e. Architect, Project Manager and Owner's Representative
2. Verify compatibility of all materials in contact with roofing, including but not limited to:
    a. Treated lumber.
    b. Sealants and adhesives.
    c. Waterstop membrane.
    d. Insulations and roofing boards.
    e. Vapor Retarders.
    f. Sheathing.
    g. Walkway pads.
    h. Existing roofing and roof deck.
    i. All other roofing materials.

D. Post-demolition site inspection by the project architect and roofing manufacturer’s representative.
1. Review existing conditions with submitted shop drawings and specifications.
2. Evaluate condition of lightweight concrete roof deck. Provide means and methods of roof deck rehabilitation to receive proposed roof finish.
3. Verify conditions for systems components.

1.05 SUBMITTALS

A. Manufacturer’s literature and data.
B. List of proposed infill materials.
C. List of proposed temporary roofing materials.
D. Qualification Data: For Installer.
E. Certificate indicating installer is approved warrantor of roofing system.

1.06 FIELD CONDITIONS

A. Before beginning work, the roofing contractor must secure approval from the building owner's representative for the following:
1. Areas permitted for personnel parking.
2. Access to the site.
3. Areas permitted for storage of materials and debris.
4. Areas permitted for the location of cranes, hoists and chutes for loading and unloading materials to and from the roof.

B. Security: Obey the owner's requirements for personnel identification, inspection and other security measures.
C. Coordinate work activities daily with Owner.
D. Owner will occupy portions of building below reroofing area during construction. Conduct reroofing so owner’s operations will not be disrupted. Maintain access to walkways and adjacent occupied facilities.
E. Provide owner with not less than 72 hours notice of activities that may affect owners operations.
F. Weather Limitations: Proceed with reroofing preparation only when weather conditions permit Work to proceed without water entering existing roofing system or building.
G. Maintain continuous temporary protection prior to and during installation of new roofing system.

1.07 WARRANTY

A. Remove, replace, patch, and repair materials and surfaces affected by reroofing, by methods and with materials acceptable to warrantor.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. ROOF REHABILITATION

1. See specification section 06 10 00 ROUGH CARPENTRY
2. See specification section 07 53 00 MEMBRANE ROOFING
3. See specification section 07 62 00 SHEET METAL FLASHING AND TRIM
4. See specification section 07 71 00 ROOF SPECIALTIES
5. See specification section 07 72 00 ROOF ACCESSORIES
6. See specification section 22 14 23 STORM DRAINAGE PIPING SPECIALTIES

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces and site conditions are ready to receive work.
B. Verify deck is supported and secure.
C. Verify that existing roof surface is clear and ready for evaluation.

3.02 PREPARATION

A. Coordinate with Owner to shut down air-intake equipment in the vicinity of the Work. Cover air-intake louvers before proceeding with reroofing work that could affect indoor air quality or activate smoke detectors in the ductwork.
B. Verify that other rooftop utilities and services have been shut off before beginning work.
C. During removal operations, have sufficient and suitable materials on site to facilitate rapid installation of temporary protection in the event of unexpected rain.
D. During roof demolition prevent debris from entering or blocking roof drains and conductors. Use roof-drain plugs specifically designed for this purpose. Remove roof-drain plugs at end of each workday, when no work is taking place, or when rain is forecast.
E. Debris chutes and roll-off dumpsters (or vehicles) shall be used to transport all roofing debris off site. All debris chute and container locations shall be approved.
F. No debris shall be “thrown” or “lowered” off the roof and no debris shall be stored on the site grounds, except in roll-off containers or other approved receptacles.

3.03 MATERIAL REMOVAL

A. Remove only existing roofing materials that can be replaced with new materials the same day or be temporarily protected.
B. Remove existing roofing materials from the roof down to the existing concrete deck. Dispose of all debris off site.

1. Remove metal counter flashings.
2. Remove roofing membrane, perimeter base flashings, and flashings around roof protrusions, pitch pans and pockets.
3. Remove insulation and fasteners, cant strips, blocking and nailers. In the event the nailers and blocking, or a portion thereof, are in good condition, the contractor shall consult the architect before reusing these elements.

C. Clear lightweight concrete deck of all extraneous debris and loose concrete particles.

3.04 FIELD QUALITY CONTROL

A. The drawings identify the limits to material removal.

3.05 PROTECTION

A. Provide temporary protective sheeting over uncovered deck surfaces.
B. Turn sheeting up and over parapets and curbing. Retain sheeting in position with weights.
C. Provide for surface drainage from sheeting to existing drainage facilities.
D. Do not permit traffic over unprotected or repaired deck surface.
E. Remove temporary roofing membrane before installing new roof.

3.06 SCHEDULES

A. Unless specifically agreed to in writing by the architect, all existing roof mounted mechanical equipment shall remain during the re-roofing process. Approval from the Owner will be required to remove any roof mounted equipment. Roof mounted equipment to be removed and re-used shall be placed in a secure area and protected from damage until it is ready to be re-installed. Roof mounted equipment to be removed and not re-used shall be disposed of in a proper and legal manner.

END OF SECTION

SECTION 07 53 00
MEMBRANE ROOFING

PART 1 GENERAL

1.01 WORK INCLUDES
A. Elastomeric roofing membrane: Fully adhered.
B. Roof Insulation: flat and tapered.
C. Roof Board.
D. Vapor Retarder.
E. Roof Flashings.

1.02 RELATED WORK
A. Examine Contract Documents for requirements that affect work of this Section. Other Specification Sections that directly relate to work of this Section include, but are not limited to:
   1. Section 06 10 00 ROUGH CARPENTRY
   2. Section 07 01 50.19 PREPARATION FOR RE-ROOFING
   3. Section 07 62 00 SHEET METAL FLASHING AND TRIM
   4. Section 07 72 00 ROOF ACCESSORIES

1.03 EXTENT OF WORK
A. Provide all labor, material, tools, equipment, and supervision necessary to complete the installation of fully adhered EPDM roof membrane including flashings and insulation as specified herein and as indicated on the drawings in accordance with the manufacturer's most current specifications and details.
B. The roofing contractor shall be fully knowledgeable of all requirements of the contract documents and shall make themselves aware of all job site conditions that will affect their work.
C. The roofing contractor shall confirm all given information and advise the building owner, prior to bid, of any conflicts that will affect their cost proposal.
D. Any contractor who intends to submit a bid using a roofing system other than the approved manufacturer must submit for pre-qualification in writing five (5) days prior to the bid date. Any contractor who fails to submit all information as requested will be subject to rejection. Bids stating "as per plans and specs" will be unacceptable.

1.04 PERFORMANCE REQUIREMENTS
A. General Performance: Installed membrane roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Membrane roofing and base flashings shall remain watertight.
B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by membrane roofing manufacturer based on testing and field experience.
C. Roofing System Design: Provide membrane roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency to resist uplift pressure calculated according to ASCE/SEI 7.
D. FM Approvals Listing: Provide membrane roofing, base flashings, and component materials that comply with requirements in FM Approvals 4450 and FM Approvals 4470 as part of a membrane roofing system, and that are listed in FM Approvals' "RoofNav" for Class 1 or noncombustible construction, as applicable. Identify materials with FM Approvals markings.
E. ASTM C79/C79M - Standard Specification for Treated Core and Non-treated Core Gypsum Sheathing Board; 2001.

F. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness; 2005 (Reapproved 2010).
G. ASTM C1177 - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2008.
H. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board; 2014.
I. ASTM C1396 - Standard Specification for Gypsum Board; 2011.
J. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension; 2006a (Reapproved 2013).
K. ASTM D570 - Standard Test Method for Water Absorption of Plastics; 1998 (Reapproved 2010).
L. ASTM D624 - Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers; 2000 (Reapproved 2012).
M. ASTM D746 - Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact; 2013.
N. ASTM D4637 - Standard Specification for EPDM Sheet Used in Single-Ply Roof Membrane; 2012.
O. ASTM E96 - Standard Test Methods for Water Vapor Transmission of Materials; 2010.
P. FM DS 1-28 - Wind Design; Factory Mutual Research Corporation; 2007.
Q. NRCA ML104 - The NRCA Roofing and Waterproofing Manual; National Roofing Contractors Association; Fifth Edition, with interim updates.
R. UL - Roofing Materials and Systems Directory; Underwriters Laboratories Inc.; current edition.
S. UL - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition.

1.05 ADMINISTRATIVE REQUIREMENTS

A. Prior to bid submittal, the roofing contractor should attend the scheduled job site inspection to observe actual conditions and verify all dimensions on the roof.
   1. Any conditions which are not shown on the contract documents should be indicated in a Request for Information to clarify conditions not shown.
B. Pre-installation Meeting: After the submission and review of roofing and flashing shop drawings, samples and printed data, convene a pre-installation meeting at least two weeks before starting installation. Review preparation and installation procedures, coordination and scheduling necessary for related work, determine access, staging and storage areas, establish working weather conditions, roofing protection provisions, considerations for safety of building occupants and other relevant issues.
   1. The following personnel shall be present:
      a. Contractor (Project Manager, Superintendent)
      b. Roofing Sub-Contractor (Project Manager, Foreman)
      c. Roofing and Flashing Materials Manufacturers
      d. Mechanical Sub-Contractor (Project Manager, Foreman)
      e. Architect, Project Manager and Owner's Representative
   2. Verify compatibility of all materials in contact with roofing, including but not limited to:
      a. Treated lumber.
      b. Sealants and adhesives.
      c. Waterstop membrane.
      d. Insulations and roofing boards.
      e. Vapor Retarders.
      f. Sheathing.
      g. Walkway pads.
      h. Existing roofing and roof deck.
      i. All other roofing materials.

1.06 SUBMITTALS

A. Prior to starting work, the roofing contractor must submit the following:
   1. Product Data: Provide data indicating membrane materials, flashing materials, insulation, fasteners, and adhesives. Provide sample documentation of 20 year warranty.
   2. Shop Drawings: Show layout, details of construction and identification of materials. Including but not limited to:
      a. Indicate joint or termination detail conditions, conditions of interface with other materials, setting plan for tapered insulation, and paver layout.
      b. Indicate areas, slopes and thicknesses of non-tapered and tapered insulation on a roof layout plan.
      c. Indicate roof mounted equipment, hatches, skylights, etc.
      d. Indicate thickness and dimensions of all parts, fastening and anchoring methods, details and locations of seams, joints, and provisions necessary for thermal expansion and contraction. Key in details on roof layout plan.
      e. Indicate details of roof flashing including jointing, expansion joint flashing, intersections, intersections with walls, transitions from cants to walls, transitions from curbs to gravel stops, and any other details required for a complete watertight installation. Key in details on roof layout plan.
   3. Samples: Submit samples illustrating insulation, roofing membrane, metal flashing, fasteners and underlayments.
   4. Manufacturer's Installation Instructions: Indicate membrane seaming precautions and perimeter conditions requiring special attention.
   5. Manufacturer's Certificate:
      a. Certify that products meet or exceed specified requirements.
      b. Certify the roofing contractor is authorized to install the manufacturer’s roofing system and lists foreman who have received training from the manufacturer along with the dates training was received.
      c. Submit final shop drawings to the roofing manufacturer for review as required by warranty requirements.
   6. Manufacturer's Field Reports: Indicate procedures followed, ambient temperatures, humidity, wind velocity during application, and supplementary instructions given.

B. Upon completion of the installed work, submit:
   1. Final Inspection: Submit copies of the manufacturer's final inspection to the Owner prior to the issuance of the manufacturer's warranty.
   2. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.07 QUALITY ASSURANCE

A. Perform work in accordance with NRCA Roofing and Waterproofing Manual and manufacturer's instructions.

B. Source: For each material type required for the work of this section, provide primary materials which are the product of one manufacturer. Provide secondary or accessory materials which are acceptable to manufacturers of primary materials.
   1. Unless otherwise noted in this specification, the roofing contractor must strictly comply with the manufacturer's current specifications and details.

C. Installer: A firm with a minimum of ten years successful experience installing single-ply EPDM roofing systems and having installed at least five roofing applications or several similar systems of equal or greater size within one year.
   1. Provide adequate number of experienced workmen regularly engaged in this type of work who are skilled in the application techniques of the materials specified.
   2. Provide at least one thoroughly trained and an experienced superintendent on the job at all times roofing work is in progress.

D. Manufacturer's Representative:
   1. Make arrangements and pay costs to have manufacturer's authorized representative on roof at beginning of roofing work to advise installer of proper procedures and quality control techniques.

2. Upon completion of the installation, the applicator shall arrange for an inspection to be made by a non-sales technical representative of the membrane manufacturer in order to determine whether or not corrective work will be required before the warranty will be issued. Notify the building owner seventy-two (72) hours prior to the manufacturer's final inspection.

E. Thermal Performance: Provide additional roof insulation in thickness required for an average R value of 21.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to the job site in the manufacturer's original, unopened containers or wrappings with the manufacturer's name, brand name and installation instructions intact and legible. Deliver in sufficient quantity to permit work to continue without interruption.

B. Comply with the manufacturer's written instructions for proper material storage.
1. Store EPDM membrane in a secure area.
2. Store other materials between 60°F and 80°F in dry areas protected from water and direct sunlight. If exposed to lower temperature, restore to 60°F minimum temperature before using.
3. Store materials containing solvents in dry, well ventilated spaces with proper fire and safety precautions. Keep lids on tight. Use before expiration of their shelf life.
4. Insulation and roof board must be on pallets, off the ground and tightly covered with waterproof materials; protect from moisture and direct exposure to sunlight.

C. Any materials which are found to be damaged shall be removed and replaced at the applicator's expense.

1.09 FIELD CONDITIONS

A. Before beginning work, the roofing contractor must secure approval from the building owner's representative for the following:
1. Areas permitted for personnel parking.
2. Access to the site.
3. Areas permitted for storage of materials and debris.
4. Areas permitted for the location of cranes, hoists and chutes for loading and unloading materials to and from the roof.

B. Security: Obey the owner's requirements for personnel identification, inspection and other security measures.

C. If discrepancies are discovered between the existing conditions and those noted on the drawings, immediately notify the architect and owner's representative by phone and solicit the manufacturer's approval prior to commencing with the work. Necessary steps shall be taken to make the building watertight until the discrepancies are resolved.

D. Weather: Perform work of this Section only when existing or forecasted weather conditions are within the limits established by manufacturers of the materials and products used.

E. Schedule and execute work to prevent leaks and excessive traffic on completed roof sections. Care should be exercised to provide protection for the interior of the building and to ensure water does not flow beneath any completed sections of the membrane system.

F. Provide protection, such as 3/4 inch thick plywood, for all roof areas exposed to traffic during construction. Plywood must be smooth and free of fasteners and splinters.

G. The roofing contractor shall use reasonable care and responsibility to protect the building and site against damages. The contractor shall be responsible for the correction of any damage incurred as a result of the performance of the contract.

H. The roofing contractor shall remove all debris from the job site in a timely and legally acceptable manner so as to not detract from the aesthetics or the functions of the building.

I. Do not disrupt activities in occupied spaces.

J. When loading materials onto the roof, the Carlisle Authorized Roofing Applicator must comply with the requirements of the building owner to prevent overloading and possible disturbance to the building structure.

K. Material Safety Data Sheets (MSDS) must be on location at all times during the transportation, storage and application of materials.

L. New roofing shall be complete and weather tight at the end of the work day.

M. Refer to Carlisle's Design Adhered Roofing System specification, Part II - Application, for General Job Site Considerations.

1.10 JOB SITE PROTECTION

A. The roofing contractor shall adequately protect building, paved areas, service drives, lawn, shrubs, trees, etc. from damage while performing the required work. Provide canvas, boards and sheet metal (properly secured) as necessary for protection and remove protection material at completion. The contractor shall repair or be responsible for costs to repair all property damaged during the roofing application.

B. During the roofing contractor's performance of the work, the building owner will continue to occupy the existing building. The contractor shall take precautions to prevent the spread of dust and debris, particularly where such material may sift into the building. The roofing contractor shall provide labor and materials to construct, maintain and remove necessary, temporary enclosures to prevent dust or debris in the construction area(s) from entering the remainder of the building.

C. Do not overload any portion of the building, by either use of or placement of equipment, storage of debris, or storage of materials.

D. Protect against fire and flame spread. Maintain proper and adequate fire extinguishers.

E. Take precautions to prevent drains from clogging during the roofing application. Remove debris at the completion of each day's work and clean drains, if required. At completion, test drains to ensure the system is free running and drains are watertight. Remove strainers and plug drains in areas where work is in progress. Install flags or other telltales on plugs. Remove plugs each night and screen drain.

F. Remove all traces of piled bulk material and return the job site to its original condition upon completion of the work.

1.11 WARRANTY

A. See Section 01 70 00 - Closeout Submittals, for additional warranty requirements.

B. Applicator/Contractor Warranty: The roofing subcontractor hereby guarantees that all roofing items not covered by the roofing manufacturer's total system warranty shall be free from defective materials and workmanship for a period of two (2) years from the date of Substantial Completion. Upon notification of any such defects within said guarantee period the roofing subcontractor shall promptly make all necessary repairs and replacements at no cost or expense to the Owner. This warranty shall be signed and countersigned by the installer (Roofer) and the Contractor.

C. Manufacturer's System and Membrane Warranties: Upon completion of the membrane roofing system work, the roofing materials manufacturer shall furnish the Owner a "Total System" warranty insuring a watertight roof for a period of twenty (20) years. The warranty shall cover all repairs necessary over the 20 year period up to the original cost of the original roofing contract. The membrane shall also be warranted not to prematurely deteriorate to the point of failure because of weathering for a period of 20 years. Warranty shall include wind speed coverage of up to 72 mph.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. EPDM Membrane Materials:
   1. Carlisle SynTec: Sure-Seal EPDM: www.carlisle-syntec.com.
   2. Substitutions: Materials shall be as specified herein, except, consideration shall be given to other products that meet or exceed those specified if requested five (5) business days prior to the date of bid opening in accordance with SECTION 01 10 02.01.

B. Roof Board:
   1. United States Gypsum Company: Securock Gypsum-Fiber Roof Board: http://www.usg.com

2. Substitutions: Materials shall be as specified herein, except, consideration shall be given to other products that meet or exceed those specified if requested five (5) business days prior to the date of bid opening in accordance with SECTION 01 10 02.01.

C. Roof Insulation: flat and tapered.
   1. Carlisle SynTec: HP-H and Hinged Target Sump: www.carlisle-syntec.com.
   2. Substitutions: Materials shall be as specified herein, except, consideration shall be given to other products that meet or exceed those specified if requested five (5) business days prior to the date of bid opening in accordance with SECTION 01 10 02.01.

2.02 ROOFING - UNBALLASTED APPLICATIONS

A. Roofing Assembly Requirements:
   1. Roof Covering External Fire-Resistance Classification: UL Class A.
   2. Factory Mutual Classification: Class I and windstorm resistance of I-90, in accordance with FM DS 1-28.

B. Elastomeric Membrane Roofing System for Existing Construction:
   1. Elastomeric Membrane Roofing: One ply membrane, fully adhered.
   2. Insulation Types - Tapered Application:
      a. Tapered extruded polystyrene board.
      b. Hinged target sump board.
   3. Insulation Types - Constant Thickness Application:
      a. Minimum 3 layers of polyisocyanurate board.
   4. Base Sheet: Vapor Retarder.
   5. Existing corrugated metal deck.

2.03 ROOFING MEMBRANE

A. Fully-Adhered Membrane: Elastomeric Membrane EPDM; non-reinforced; complying with minimum properties of ASTM D4637.
   1. Thickness: 0.060 inch (60mil).
   2. Sheet Width: 120 inch (1930 mm), minimum; factory-fabricate into largest sheets possible.
   3. Color: Black.
   4. Tensile Strength: 1305 psi, measured in accordance with ASTM D412.
   5. Ultimate Elongation: 300 percent, measured in accordance with ASTM D412.
   6. Tear Strength: 150 lbf/in, measured in accordance with ASTM D624.
   7. Water Absorption, ASTM D471: Mas 2.0 +/- percent increase in weight, 7 day immersion.
   8. Water Vapor Permeability, ASTM E96: 0.03 perms.
   9. Brittleness Temperature, ASTM D746: -49 deg F.

B. Seaming Materials: As recommended by membrane manufacturer.

C. Membrane Fasteners: As recommended by and approved by membrane manufacturer.

D. Flexible Flashing Material: Same material as membrane.

2.04 RIGID ROOFING INSULATION – TAPERED

A. Carlisle HP-H Tapered Polyiso; closed-cell polyisocyanurate foam core and bonded to fiber-reinforced facers on both sides; conforming to ASTM C 1289, Type II, Class 1.
   1. Blowing Agent: Zero ODP, 3rd generation.
   2. Fire Ratings:
      a. UL 1256, No. 120 and 123.
      b. UL 790 (ASTM E 108), Class A.
      c. UL 263 (ASTM E 119).
      d. FM 4450/4470, Class 1. Fire Rating.
   3. FM Approval, Wind Uplift Classification: 1-90.
   4. Panel: provide 4’x4’ boards.
   5. Board Edges: Square.
   6. Compressive Strength: 25 pounds per square inch, Grade 3.

7. R Value: Provide Insulation with LTTR (Long Term Thermal Resistance) in accordance with ASTM C 1289.
8. Slope of tapered board shall be:
   a. 1/8 inch per foot **minimum**.
9. Hinged Target Sump Panels: 1-1/2" Drain Start, perimeter edge thickness to be determined. FM Class 1, 25 pounds per square inch, Grade 3.

2.05 RIGID ROOFING INSULATION - FLAT

A. Carlisle HP-H Tap Flat Polyiso; closed-cell polyisocyanurate foam core and bonded to fiber-reinforced facers on both sides; conforming to ASTM C 1289, Type II, Class 1.
   1. Blowing Agent: Zero ODP, 3rd generation.
   2. Fire Ratings:
      a. UL 1256, No. 120 and 123.
      b. UL 790 (ASTM E 108), Class A.
      c. UL 263 (ASTM E 119).
      d. FM 4450/4470, Class 1. Fire Rating.
   3. FM Approval, Wind Uplift Classification: 1-90.
   4. Compressive Strength: 20 pounds per square inch, Grade 2.
   5. Panel: provide 4'x4' boards.
   6. Board Edges: Square.
   7. R Value: Provide Insulation with LTTR (Long Term Thermal Resistance) in accordance with ASTM C 1289. Minimum thickness of panels shall be as follows:
      a. Thickness 2.00 inch,R Value 11.4, flute spanability 4-3/8 inches.
B. General: Preformed roof insulation boards manufactured or approved by membrane roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses indicated and that produce FM Approvals-approved roof insulation.
C. Approved Fasteners: Appropriate for purpose intended and approved by FM Approvals and system manufacturer; length required for thickness of insulation material and penetration of deck substrate, with distribution plates if required.
D. Cant Strip and Tapered Edge Strip: Standard machine cut perlite or wood fiberboard strips in sizes indicated or required.

2.06 BASE SHEET

A. Torch-Grade SBS Base Ply: SureMB 120TG Base; mechanically fastened to deck, reinforced with a non-woven polyester mat that is saturated and coated with high-quality asphaltic bitumen and SBS elastomers; conforming to ASTM D 6164, Type I, Grade S.
   1. Sheet Width: 39-3/8"
   2. Sheet Length: 32'-9"
   3. Thickness: 0.12 inch (120 mils)
   4. Tensile Strength at 0 deg: 110 lbf/in
   5. Tensile Strength at 73 deg: 75 lbf/in
   6. Elongation at 0 deg: 4%
   7. Elongation at 73 deg: 3%
   8. Tear Strength: 85 lb/f

2.07 ACCESSORIES

A. Flexible Expansion Joint Covers:
   1. Expansion joint cover shall be preformed elastomeric bellows with preformed aluminum flange bonded adhesively and mechanically to each edge of bellows. Configuration, and location shall be as indicated on drawings.
   2. Provide prefabricated corners, ends, cross-overs, and other appurtenances as required for specific conditions. Do not field fabricate components for which prefabricated components are available.

3. Provide manufacturer's standard neoprene-grommeted 1-3/4 in. hold-tite nails, adhesives, neoprene flashings, caulking, and other appurtenant materials as recommended by expansion joint manufacturer.

B. Metal Edging and Membrane Terminations:
   1. Roof Edge Fascia: .050 kynar aluminum Carlisle SecurEdge 2000 Extended Fascia, Two piece snap-lock fascia, with extruded aluminum retainer clip, color to be selected from the Standard Color Palette.
   2. Termination bar for membrane under existing cap flashings to be 1/8" Carlisle pre-punched aluminum bar.

C. Insulation Attachment: Carlisle Fast 100 or Olybond 500 BA – low rise foam insulation adhesive.

D. Stack Boots: Prefabricated flexible boot and collar for pipe stacks through membrane; same material as membrane.

E. Cant Strips: Wood, pressure preservative treated; as specified in Section 06 10 00.

F. Insulation Joint Tape: Glass fiber reinforced type as recommended by insulation manufacturer, compatible with roofing materials; 6 inches (150 mm) wide; self adhering.

G. Membrane Adhesive: As recommended by membrane manufacturer.

H. Surface Conditioner for Adhesives: Compatible with membrane and adhesives.

I. Thinners and Cleaners: As recommended by adhesive manufacturer, compatible with membrane.

J. Roofing Nails: Galvanized, hot dipped type, size and configuration as required to suit application.

K. Strip Reglet Devices: Galvanized steel, maximum possible lengths per location, with attachment flanges.

L. Sealant at Reglets: Fill all reglets with Vulkem 116 by Tremco.

M. Insulation Perimeter Restraint: Stainless steel edge device configured to restrain insulation boards in position and provide top flashing over ballast.

N. Sealants: As recommended by membrane manufacturer.

O. Adhesives and Cleaners for Elastomeric Membrane :
   1. All products shall be furnished by Carlisle and specifically formulated for the intended purpose.
      a. Bonding Adhesive: 90-8-30A solvent based bonding adhesive for membrane to substrate.
      b. Splice Tape & Primer: 6” wide Sure Seal Secur Tape and HP-250 Primer.
      c. Splicing Cement: Sure Seal EP-95.
      d. Cleaning Solvent: Sure Seal Weathered Membrane Cleaner.
      e. External Seam Sealant: Sure Seal Lap Sealant.
      f. Sealer: Sure Seal Pourable Sealer.

P. Walkway Pads: Suitable for maintenance traffic, contrasting color or otherwise visually distinctive from roof membrane.
   1. Sure-Seal Walkway Pads
   2. Size: 30 x 30 inch (460 x 460 mm).
   3. Surface Color: Black.
   4. Adhere to the EPDM with Splice Tape.

2.08 RELATED MATERIALS

A. Provide screws, bolts, and other accessories of same material and finish as sheet metal with which used.

B. Sealant: Low-modulus sealant, silicone or urethane based, compatible and recommended by manufacturer for use with sheet metal types specified and as approved by Designer.

C. Accessories: Provide necessary clips, cleats, straps, anchors, and similar items to complete the work. Provide accessories compatible with sheet metal materials used.

D. Reglets: Furnish fabricated metal units of type and profile indicated, or if not indicated, as required to properly complete the work. Fabricate reglets from metal which is compatible with flashings used.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces and site conditions are ready to receive work.
B. Verify deck is supported and secure.
C. Verify deck is clean and smooth, flat, free of depressions, waves, or projections and suitable for installation of roof system.
D. Verify areas of existing roof deck that are sloped.
E. Verify deck surfaces are dry and free of snow or ice.
F. Verify that roof openings, curbs, and penetrations through roof are solidly set, and cant strips are in place.
G. Ensure that treated wood nailers are installed at the perimeter of each roof level, curb, expansion joint, and all roof penetrations as recommended by the membrane manufacturer. Nailers shall be firmly anchored to resist forces of not less than those prescribed by applicable codes and regulations. The thickness of the nailers shall be such that the top of the nailer is flush with the surface to which the membrane is attached at the horizontal plane. All preservative treated wood blocking shall be separated from all metals by use of membrane flashing.
H. Inspect the substrates scheduled to receive the roofing and flashing systems. Notify the Contractor of any and all defects in the substrates and do not proceed with the work until such defects have been satisfactorily corrected. Before beginning the Work, a representative of the membrane manufacturer shall examine the roof surfaces in order to ensure that they are acceptable for application.

3.02 BASE SHEET, INSULATION AND ROOF BOARD - UNDER MEMBRANE

A. Apply vapor retarder to corrugated metal deck surface with mechanical fasteners in accordance with manufacturer's instructions.
   1. The pattern of the fasteners shall be approximately four (4) rows at nine 9-inch spacing. Provide field fastener pull-testing to determine suitability.
   2. The Contractor shall be required to perform a minimum of ten pull-out tests on the base sheet at areas designated by the Architect and manufacturer’s representative. The pullout strength of the fasteners shall meet the minimum requirements specified by the manufacturer.
   3. Extend vapor retarder under cant strips and blocking to deck edge and up a minimum of 6-inches onto vertical surfaces.
   4. Install flexible flashing from vapor retarder to air seal material of wall construction, lap and seal to provide continuity of the air barrier plane.
B. Ensure vapor retarder is clean and dry, continuous, and ready for application of insulation.
C. Attachment of Flat Insulation: The initial two(2) layers of 2-inch rigid insulation shall be adhered to the mechanically attached vapor retarder and layer-to-layer using Carlisle Fast 100 or Olybond 500 BA low rise foam adhesive, maximum bead spacing 4-inch on center at all areas of the roof. All boards must be backcut or kerfed to insure complete contact with substrate. Embed insulation in adhesive in full contact, in accordance with roofing and insulation manufacturers' instructions and at coverage rates as required to meet Factory Mutual requirements. Lay subsequent layers of insulation with joints staggered minimum 6-inch from joints of preceding layer.
D. Attachment of Tapered Insulation: The tapered rigid insulation shall be adhered to the insulation layer below using Carlisle Fast 100 or Olybond 500 BA low rise foam adhesive, maximum bead spacing 4-inch on center at all areas of the roof. All boards must be backcut or kerfed to insure complete contact with substrate. Embed insulation in adhesive in full contact, in accordance with roofing and insulation manufacturers' instructions and at coverage rates as required to meet Factory Mutual requirements. Lay subsequent layers of insulation with joints staggered minimum 6-inch from joints of preceding layer.

E. Attachment of Hinged Target Sump: Coordinate and align with tapered insulation. At roof drains, use factory-tapered boards to slope down to roof drains. The preformed tapered insulation shall be adhered to the insulation layer below using Carlisle Fast 100 or Olybond 500 BA low rise foam adhesive, maximum bead spacing 4-inch on center at all areas of the roof. All boards must be backcut or kerfed to insure complete contact with substrate. Embed insulation in adhesive in full contact, in accordance with roofing and insulation manufacturers' instructions and at coverage rates as required to meet Factory Mutual requirements. Lay subsequent layers of insulation with joints staggered minimum 6-inch from joints of preceding layer.

F. Attachment of Roof Board: Install Gypsum-Fiber Roof Board over tapered insulation and adhere to the insulation layer below using Carlisle Fast 100 or Olybond 500 BA low rise foam adhesive, maximum bead spacing 4-inch on center at all areas of the roof. All boards must be backcut or kerfed to insure complete contact with substrate. Embed roof board in adhesive in full contact, in accordance with roofing and roof board manufacturers' instructions and at coverage rates as required to meet Factory Mutual requirements. Stagger joints minimum 6-inch from joints of preceding insulation layer.

G. Cut insulation and cover board to fit around roof penetrations and projections. Trim edges of cover board and insulation boards so that no edge is left unsupported. Joints between boards shall be less than ¼ inch wide.

H. Install tapered insulation cants and crickets as indicated on approved shop drawings to provide required roof slope and pitch to drains.

I. Feather or taper insulation around drains for smooth transition between roof surface and drain clamp ring.

J. Insulation shall be installed at a 1/8-inch per foot slope starting from a minimum thickness of 4-1/2” inches at the roof drains.

K. Place tapered insulation to the required slope pattern in accordance with manufacturer's instructions.

L. Lay boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.

M. Tape joints of insulation in accordance with roofing and insulation manufacturers' instructions.

N. Do not apply more insulation than can be covered with membrane in same day.

3.03 MEMBRANE APPLICATION

A. Roll out membrane, free from wrinkles or tears. Place sheet into place without stretching.

B. Shingle joints on sloped substrate in direction of drainage.

C. Working from high to low points. Position roofing membrane over top of roof board without stretching. Allow membrane to lie in relaxed position for approximately ½ hour before splicing or bonding.

D. Fold adjacent sheets in half lengthwise to expose an approximate 10 foot wide by length of the sheet substrate area.

E. Apply bonding adhesive to substrate at the rate recommended by the membrane manufacturer with a medium nap roller. Allow to tack (dry to the touch) and fully embed membrane in adhesive without wrinkles. Fully adhere one roll before proceeding to adjacent rolls. Broom membrane after mating to insure complete contact and good adhesion.

F. Membrane Splicing:
   1. Overlap adjacent sheets and mark a line 1/2 inch out from the top sheet.
   2. Fold the top sheet back and clean the dry splice area (minimum 6 inches wide) of both membrane sheets with Sure-Seal Primer as required by the membrane manufacturer.
   3. Apply SecurTAPE to bottom sheet with the edge of the release film along the marked line. Press tape onto the sheet using hand pressure. Overlap tape roll ends a minimum of 1 inch.
   4. Remove the release film and press the top sheet onto the tape using hand pressure.

5. Roll the seam toward the splice edge with a 2 inch wide steel roller.
6. Install 6”x6” Tee Lap Patches or Elastoform Flashing over all field splice intersections, overlaid with similar patch 12”x12”, and seal edges of flashing with Lap Sealant.

G. Wall and curb flashing shall be cured membrane. Continue the deck membrane as wall flashing where practicable. EPDM system requires base nailing, typically with Pressure Sensitive RUSS Strip, at all inside angle changes.

H. At intersections with vertical surfaces, follow manufacturer’s typical flashing procedures.
1. Extend membrane over cant strips and up a minimum of 8 inches onto vertical surfaces.
2. Fully adhere flexible flashing over membrane and up to nailing strips.
3. Secure flashing to nailing strips at 4-inches on center.
4. Insert flashing into reglets and secure.

I. At drip edges, extend membrane under drip edge stop and to the outside face of the wall, carry vertically down wall a minimum of 6-inches. Follow manufacturer’s typical flashing procedures.

J. Around roof penetrations, seal flanges and flashings with flexible flashing. Follow manufacturer’s typical flashing procedures.

K. Roof drains: Install membrane into drain flange and seal between membrane and drain base with water cut-off mastic, as indicated in manufacturer's standard details and published instructions for specific conditions.

L. Walkways:
1. Install walkways at all traffic concentration points (such as roof hatches, access doors, rooftop ladders, mechanical units, etc.) under base bid.
2. Adhere walkways to the membrane in accordance with the manufacturer's specifications for Splice Tape.

M. Protection Mat: Install protection mat over roofing membrane as recommended by manufacturer to protect area subject to animal fats and grease at roof exhausts of kitchen and culinary arts cooking hoods.

3.04 FIELD QUALITY CONTROL

A. System Manufacturer's Inspection: Inspection(s) shall be made by a technical representative of the system manufacturer to ascertain that the roofing system has been installed in accordance with the system manufacturer's published specifications and details.
1. The purpose of this inspection is to determine whether a system warranty will be issued by the system manufacturer. Should the technical representative find that the roofing system has not been installed in a manner that qualifies for issuance of the specified system warranty, the system shall not be acceptable to the Owner until the installer has made corrections or repairs, the system has been re-inspected by the system manufacturer's technical representative and the specified roofing system warranty has been issued.
2. Submit a copy of all inspection reports and follow-up reports to the Architect.

B. Daily Seal:
1. On phased roofing, when the completion of flashings and terminations is not achieved by the end of the work day, a daily seal must be performed to temporarily close the membrane to prevent water infiltration.
2. Use Foam Pak or other similar material in accordance with the manufacturer's requirements.

3.05 CLEANING

A. Perform daily clean up to collect all wrappings, empty containers, paper, and other debris from the project site. Upon completion, all debris must be disposed of in a legally acceptable manner.

B. In areas where finished surfaces are soiled by work of this section, consult manufacturer of surfaces for cleaning advice and conform to their documented instructions.

C. Repair or replace defaced or damaged finishes caused by work of this section.

3.06 PROTECTION

A. Protect installed roofing and flashings from construction operations.

B. Where traffic must continue over finished roof membrane, protect surfaces using durable materials.

END OF SECTION

SECTION 07 62 00
SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Provide all flashing and sheet metal work as required to complete the work of the Contract, including the following.

1. Metal copings.
2. Metal flashings.
3. Reglets.

1.02 RELATED WORK

A. Examine Contract Documents for requirements that affect work of this Section. Other Specification Sections that directly relate to work of this Section include, but are not limited to:
1. Section 07 53 10 FULLY ADHERED EPDM
2. Section 07 72 00 ROOF ACCESSORIES

1.03 REFERENCES

A. Comply with applicable requirements of the following standards. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.

1. American Society for Testing and Materials (ASTM):
   a. B 209 Aluminum and Aluminum-Alloy Sheet and Plate
   b. D 2822 Asphaltic Roof Cement
2. Sheet Metal and Air Conditioning contractors National Association (SMACNA)
   a. Manual: Architectural Sheet Metal Manual
3. American Architectural Manufacturers Association (AAMA)
   a. 2603 Organic Coatings on Aluminum Extrusions and Panels

1.04 SUBMITTALS

A. Product Data including manufacturer’s material and finish data, installation instructions, and general recommendations for each specified flashing material and fabricated product.
B. Shop Drawings of each item specified showing layout, profiles, methods of joining, terminations and anchorage details.
C. Samples of sheet metal flashing, trim, and accessory items, in the specified finish. Where finish involves normal color and texture variations, include sample sets composed of 2 or more units showing the full range of variations expected.
D. Qualification data for firms and persons specified in the “Quality Assurance” Article below to demonstrate their capabilities and experiences. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

1.05 QUALITY ASSURANCE

A. Perform work in accordance with NRCA Roofing and Waterproofing Manual and manufacturer's instructions.
B. Installer qualifications: Engage an experience installer who has completed sheet metal flashing and trim work similar in material, design and extent to that indicated for this Project and with a

record of successful in-service performance.

1.06 DELIVERY, STORAGE, AND HANDLING

A. All material shall arrive in the manufacturer's original sealed, labeled containers.
B. Deliver, store, and handle materials in manufacturer's sealed containers and rolls.
C. Store materials in a dry, protected, well-vented area. The contractor shall report damaged material immediately to the delivering carrier and note such damage on the carrier's freight bill of lading.
D. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
E. Remove any protective plastic surface film immediately before installation.

1.07 JOB CONDITIONS

A. Verify that other trades are complete before installing the roof edging.
B. Mounting surfaces shall be straight and secure; substrates shall be of proper width.
C. Refer to the construction documents, shop drawings and manufacturer's installation instructions.
D. Coordinate installation with roof membrane manufacturer's installation instructions.

PART 2 PRODUCTS

2.01 SHEET MATERIALS

A. Aluminum Sheet: ASTM B209 (ASTM B209M) alloy as standard with manufacturer for finish required, with temper as required to suit forming operations and performance required.

1. Pre-Finished Aluminum: ASTM B209 (ASTM B209M); 0.032 inch (0.8 mm) thick; plain finish shop pre-coated with modified silicone coating.
2. Modified Silicone Polyester Coating: Pigmented Organic Coating System, AAMA 2603; baked enamel finish system.
3. Color: As selected by Architect.

2.02 ACCESSORIES

A. Fasteners: Same metal as sheet metal flashing or other non-corrosive metal as recommended by sheet metal manufacturer. Match finish of exposed heads with material being fastened.
B. Protective Backing Paint: Zinc molybdate alkyd.
C. Mastic Sealant: Polyisobutylene; non-hardening, non-skinning, nondrying, non-migrating sealant.
D. Elastomeric Sealant: Generic type recommended by sheet metal manufacturer and fabricator of components being sealed.
E. Adhesives: Type recommended by flashing sheet metal manufacturer for waterproof and weather-resistant seaming and adhesive application of flashing sheet metal.
F. Paper Slip Sheet: 5-lb/square red rosin, sized building paper conforming to FS UU-B-790, Type I, Style 1b.
G. Metal Accessories: Provide sheet metal clips, straps, anchoring devices, and similar accessory units as required for installation of Work, matching or compatible with material being installed; non-corrosive; size and thickness required for performance.
H. Reglets: Surface mounted type, galvanized steel; face and ends covered with plastic tape.
I. Roofing Cement: ASTM D 4586, Type I, asbestos free, asphalt based.

2.03 FABRICATION, GENERAL

A. Sheet Metal Fabrication Standard: Fabricate sheet metal flashing and trim to comply with recommendations of SMACNA's "Architectural Sheet Metal Manual" that apply to the design,

dimensions, metal, and other characteristics of the item indicated.

B. Comply with details shown to fabricate sheet metal flashing and trim that fit substrates and result in waterproof and weather-resistant performance once installed. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
C. Form exposed sheet metal Work that is without excessive oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems.
D. Seams: Fabricate nonmoving seams in aluminum with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
E. Separate metal from non-compatible metal or corrosive substrates by coating concealed surfaces at locations of contact with asphalt mastic or other permanent separation as recommended by manufacturer.
F. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of sheet metal exposed to public view.
G. Fabricate cleats and attachment devices from same material as sheet metal component being anchored or from compatible, noncorrosive metal recommended by sheet metal manufacturer.
H. Form sections true to shape, accurate in size, square, and free from distortion or defects.
I. Form pieces in longest possible lengths.
J. Fabricate corners from one piece with minimum 18 inch (450 mm) long legs; seam for rigidity, seal with sealant.

2.04 SHEET METAL FABRICATIONS

A. General: Fabricate sheet metal items in thickness or weight needed to comply with performance requirements but not less than that listed below for each application and metal.
B. Roof-Edge Flashing: Fabricate in minimum 96-inch long, but not exceeding 10-foot long, sections. Furnish with 6-inch wide, joint cover plates.

1. Joint Style: Butt, with 12-inch wide, concealed backup plate and 6-inch wide, exposed cover plates.
2. Fabricate from the following materials:
   a. Aluminum: 0.050 inch thick.
   b. Finish: Three-Coat Fluoropolymer Metallic Fluoropolymer.

C. Copings: Manufactured coping system consisting of formed-metal coping cap in section lengths not exceeding 12 feet concealed anchorage; corner units, end cap units, and concealed splice plates with same finish as coping caps.

1. Coping-Cap Material: Formed 0.063 inch thick.
   a. Finish: Three-Coat Fluoropolymer Metallic Fluoropolymer.
   b. Corners: Factory mitered and continuously welded.
   c. Coping-Cap Attachment Method: Snap-on or Face leg hooked to continuous cleat, 20 GA. galvanized.
   d. Snap-on-Coping Anchor Plates: Concealed, galvanized-steel sheet, 12-inches wide, with integral cleats.
   e. Face Leg Cleats: Concealed, continuous galvanized-steel sheet.

PART 3 EXECUTION

3.01 EXAMINATION

A. Carefully inspect surfaces to receive sheet metal for all conditions affecting sheet metal application and performance.
B. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.
C. Verify roofing termination and base flashings are in place, sealed, and secure.
D. Beginning of work constitutes acceptance of conditions of surfaces to which this work is to be

applied.

3.02 PREPARATION

A. Install starter and edge strips, and cleats before starting installation.
B. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil (0.4 mm).

3.03 INSTALLATION

A. General: Unless otherwise indicated, install sheet metal flashing and trim to comply with performance requirements, manufacturer's installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Anchor units of Work securely in place by methods indicated, providing for thermal expansion of metal units; conceal fasteners where possible, and set units true to line and level as indicated. Install Work with laps, joints, and seams that will be permanently watertight and weatherproof.
B. Install exposed sheet metal Work that is without excessive oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
C. Expansion Provisions: Provide for thermal expansion of exposed sheet metal Work. Space movement joints at maximum of 20 feet with within 24-inches of each side corner, change of direction or intersection. Where lapped or bayonet-type expansion provisions in Work cannot be used or would not be sufficiently weatherproof and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1-inch deep, filled with mastic sealant (concealed within joints).
D. Sealed Joints: Form non-expansion, but movable, joints in metal to accommodate elastomeric sealant to comply with SMACNA standards. Fill joint with sealant and form metal to completely conceal sealant.
E. Seams: Fabricate nonmoving seams in sheet metal with flat-lock seams.
F. Counterflashings: Coordinate installation of counterflashings with installation of assemblies to be protected by counterflashings. Install counterflashings in reglets or receivers. Secure in a waterproof manner by means of snap-in installation and sealant, lead wedges and sealant, interlocking folded seam, or blind rivets and sealant. Lap counterflashing joints a minimum of 2-inch and bed with sealant.
G. Roof-Penetration Flashing: Coordinate roof-penetration flashing installation with roofing and installation of items penetrating roof. Install flashing as follows:

    1. Turn lead flashing down inside vent piping, being careful not to block vent piping with flashing
    2. Seal and clamp flashing to pipes penetrating roof, other than lead flashing on vent piping.

H. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.

3.04 FIELD QUALITY CONTROL

A. Inspection will involve surveillance of work during installation to ascertain compliance with specified requirements.

3.05 CLEANING AND PROTECTION

A. Clean exposed metal surfaces, removing substances that might cause corrosion of metal or deterioration of finishes.

B. Provide final protection and maintain conditions that ensure sheet metal flashing and trim Work during construction is without damage or deterioration other than natural weathering at the time of Substantial Completion.

END OF SECTION

SECTION 07 71 00
ROOF SPECIALTIES

PART 1 GENERAL

1.01 WORK INCLUDES
A. Manufactured Roof Fascia.

1.02 RELATED WORK
A. Examine Contract Documents for requirements that affect work of this Section. Other Specification Sections that directly relate to work of this Section include, but are not limited to:
   1. Section 06 10 00 ROUGH CARPENTRY
   2. Section 07 01 50.19 PREPARATION FOR RE-ROOFING
   3. Section 07 62 00 SHEET METAL FLASHING AND TRIM
   4. Section 07 72 00 ROOF ACCESSORIES

1.03 PERFORMANCE REQUIREMENTS
A. Work included: Furnishing and installing factory fabricated and finished roof edging.

1.04 REFERENCES
A. Work included: Furnishing and installing factory fabricated and finished roof edging.
B. Factory Mutual Research Corporation (FMRC), P.O. Box 9102, Norwood, MA 02082, 617-762-4300.
C. SPRI Sheet Membrane & Component Suppliers to the Commercial Roofing Industry, 175 Highland Ave., Needham, MA 02194, 617-444-0242, fax: 617-444-6111.

1.05 SUBMITTALS
A. Product Data: Provide manufacturer’s product and complete installation data for all materials in this specification.
B. Shop Drawings: Show layout, details of construction and identification of materials. Including but not limited to: profiles, joining method, location of accessory items, anchorage and flashing details, adjacent construction interface, and dimensions.
C. Samples: Submit 6” length of fascia section and color board samples with accurate representation of color selection.
D. Coordination Drawings: Roof plans, drawn to scale, and coordinating penetrations and roof-mounted items. Show the following:
   1. Size and location of roof accessories specified in this Section.
   2. Method of attaching roof accessories to roof or building structure.
E. Upon completion of the installed work, submit:
   1. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.06 QUALITY ASSURANCE
A. High performance roof edge system shall be CERTIFIED by the manufacturer to comply with ANSI/SPRI Standard ES-1-98. Roof edge shall meet performance design criteria according to the following test standards:
   1. ANSI/SPRI ES-1 Test Method RE-1 Test for Roof Edge Termination of Single-Ply Roofing Membranes: The fascia system shall be tested to secure the membrane to minimum of 100 lbs/ft in accord with the ANSI/SPRI ES-1 Test Method RE-1. Use the current edition of *ANSI/SPRI ES-1 Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems*.
   2. ANSI/SPRI ES-1 Test Method RE-2 Pull-Off Test for Fascia: The fascia system shall be tested in accord with the ANSI/SPRI ES-1-98 Test Method RE-2. Use the current edition of *ANSI/SPRI ES-1 Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems*.

B. The fascia product shall be listed in current *Factory Mutual Research Corporation Approval Guide* approved for [FM 1-645].

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to the job site in the manufacturer's original, unopened containers or wrappings with the manufacturer's name, brand name and installation instructions intact and legible. Deliver in sufficient quantity to permit work to continue without interruption.
B. Store materials in a dry, protected, well-vented area. The contractor shall report damaged material immediately to the delivering carrier and note such damage on the carrier's freight bill of lading.
C. Any materials which are found to be damaged shall be removed and replaced at the applicator's expense.
D. Remove protective plastic surface film immediately before installation.

1.08 FIELD CONDITIONS

A. Verify that other trades are complete before installing the roof edging.
B. Mounting surfaces shall be straight and secure; substrates shall be of proper width.
C. Refer to the construction documents, shop drawings and manufacturer's installation instructions.
D. Coordinate installation with roof membrane manufacturer's installation instructions.

1.09 WARRANTY

A. Coordinate installation with roof membrane manufacturer's installation instructions.
B. Provide a 20 year warranty for painted finish covering color fade, chalk, and film integrity.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Manufactured Roof Fascia:
   1. Carlisle SynTec: SecurEdge 2000, Extended Fascia: www.carlisle-syntec.com.
   2. Substitutions: Materials shall be as specified herein, except, consideration shall be given to other products that meet or exceed those specified if requested five (5) business days prior to the date of bid opening in accordance with SECTION 01 10 02.01.

2.02 ROOF EDGING SYSTEM

A. SecurEdge 2000 Extended Fascia: Decorative metal fascia with continuous extruded aluminum bar. To terminate adhered, ballasted or mechanically attached single-ply roofing at perimeter. The system shall be watertight with no exposed fasteners.
   1. 24 ga. galvanized steel with Kynar 500 finish.
   2. Standard 12'-0" lengths.
   3. Height as noted on drawings.
   4. Extruded bar: Shall be continuous 6063-T6 alloy aluminum at 12'-0" (3.65 m) standard lengths. All bar miters are welded.
   5. Fasteners: #12 x 1-5/8" corrosion resistant fasteners provided with drivers. No exposed fasteners permitted.
   6. Color: Kynar 500 standard color palette; color to be determined.

2.03 ACCESSORIES

A. Miters, downspout scuppers, spillout scuppers shall be fabricated by manufacturer.
B. Welded base assembly shall be used to maintain watertight integrity.
C. Provide matching brick wall cap, downspout, extenders, or other special fabrications as detailed.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces and site conditions are ready to receive work.
B. Installing contractor shall check as-built conditions and verify Carlisle's roof edge details for accuracy to fit the wall assembly prior to fabrication. The installer shall comply with Carlisle's installation guide when setting edging.

3.02 INSTALLATION OF SECUREDGE 2000 ROOF EDGE SYSTEM:

A. Installer shall use provided fasteners consistent with Carlisle's instructions, suitable for the substrate to which it is being installed.
B. Install Carlisle water cut-off mastic, as recommended by Carlisle, under the anchor bar.

END OF SECTION

SECTION 07 72 00
ROOF ACCESSORIES

PART 1 GENERAL

1.01 WORK INCLUDES
A. Manufactured curbs.
B. (Optional) Roof hatch railing.

1.02 RELATED REQUIREMENTS
A. Section 06 10 00 ROUGH CARPENTRY
B. Section 07 53 00 MEMBRANE ROOFING
C. Section 07 62 00 SHEET METAL FLASHING AND TRIM

1.03 REFERENCE STANDARDS
A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2010.
B. ASTM B209 – Standard Specification for Aluminum and Aluminum Alloy Sheet and Plate; 2007.

1.04 SUBMITTALS
A. Product Data: Manufacturer's data sheets on each product to be used and installation instructions.
B. Shop Drawings: Submit shop drawings indicating type, configuration, and dimensions of all materials. Shop drawings shall indicate fastening and anchoring methods, flashing, details, and locations of all seams, joints, and other provisions necessary for thermal expansion and condensation control.
   1. Size and location of roof accessories specified in this Section.
   2. Method of attaching roof accessories to roof or building structure.
C. Samples: For each exposed product and for each color and texture specified, prepared on Samples of size to adequately show color.

1.05 COORDINATION
A. Coordinate layout and installation of roof accessories with roofing membrane and base flashing and interfacing and adjoining construction to provide a leakproof, weathertight, secure and noncorrosive installation.
B. Coordinate dimensions with rough-in information of Shop Drawings of equipment to be supported.

1.06 DELIVERY, STORAGE, AND HANDLING
A. Store products in manufacturer's unopened packaging until ready for installation.
B. Store products under cover and elevated above grade.

PART 2 PRODUCTS

2.01 MANUFACTURED CURBS
A. Manufactured Curbs for mechanical equipment and other roof mounting assemblies: Factory-assembled hollow sheet metal construction with fully mitered and welded corners, integral counterflashing, internal reinforcing, and top side and edges formed to shed water.

1. Sheet Metal: Hot-dip zinc coated steel sheet complying with ASTM A653/A653M, SS Grade 33 (230); G60 (Z180) coating designation; 18 gage, 0.048 inch (1.21 mm) thick.
2. Manufacture curb bottom and mounting flanges for installation directly on roof deck, not on insulation; match slope and configuration of roof deck.
3. Provide the layouts and configurations shown on the drawings.

2.02 ROOF HATCH RAILING

A. Manufacturers - Roof Hatch Railing:
   1. Bilco Company
   2. Babcok-Davis Hatchways, Inc.
   3. Dur-red Products
   4. Wasco Products, Inc.

B. Roof Hatch Railing
   1. General OSHA Standards
      a. Railing System shall be designed to withstand a 200 pounds test load required by OSHA.
      b. Railing System shall consist of a top rail, mid rail, and chain or self-closing gate, with the hatch curb acting as the toe plate.
      c. Railing system shall extend to a height of at least 42” from the finished roof deck.
      d. Railing system shall be free of sharp edges and snag points.
   2. Railing Pipe Brackets & Fittings
      a. Pipe shall be anodized finish aluminum 6105T-5 1.660” OD, 1.250” nominal bore schedule 40.
      b. Mounting brackets shall be cast aluminum L161-7.
      c. Fittings are aluminum L10-7, L15-7, L135-77.
      d. Pipe ends and tops shall be plugged with weather and light resistant material cap plugs 133C.
      e. No roof penetration for the rails shall be permitted.
   3. Hardware
      a. Chain system shall be 3/16” proof coil ASTM specification, zinc plated with quick link on fixed end. If with gate, gate shall be aluminum self-closing gate with spring close
      b. Fastening system for mounting brackets shall be Fastclip™ stainless steel with self-locking nut.
   4. Finish: Factory finish shall be anodized aluminum or galvanized steel.

2.03 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items required by manufacturer for a complete installation.

B. Polyisocyanurate Board insulation: ASTM C 1289, thickness as indicated.

C. Wood Nailers: Softwood lumber, pressure treated with waterborne preservatives for aboveground use, acceptable to authorities having jurisdiction, containing no arsenic or chromium, and complying with AWPA C2; not less than 1-1/2 inches (38mm) thick.

D. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D 1187

E. Fasteners: Roof accessory manufacturer’s recommended fasteners suitable for application and metals being fastened. Match finish of expose fasteners with finish of material being fastened. Provide non-removable fastener heads to exterior exposed fasteners. Furnish the following unless otherwise indicated:
   1. Fastener’s for Aluminum Sheet: Aluminum or Series 300 stainless steel.

F. Gaskets: Manufacturer’s standard tubular or fingered design of neoprene, EPDM, PVC or silicone or a flat design of foam rubber, sponge neoprene, or cork.

PART 3 EXECUTION

3.01 PREPARATION

A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions, and other conditions affecting performance of the Work.
B. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
C. Verify dimensions of roof openings for roof accessories.
D. Clean surfaces thoroughly prior to installation.
E. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions, in manner that maintains roofing weather integrity.
    1. Install roof accessories level, plumb, true to line and elevation, and without warping, jogs in alignment, excessive oil canning, buckling or tool marks.
    2. Anchor roof accessories securely in place so they are capable of resisting indicated loads.
    3. Use fasteners, separators, sealants, and other miscellaneous items as required to complete installation of roof accessories and fit them to substrates.
    4. Install roof accessories to resist exposure to weather without failing, rattling, leaking, or loosening of fasteners and seals.
B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.
    1. Coat concealed side of uncoated aluminum roof accessories with bituminous coating where in contact with wood, ferrous metal, or cementitous construction.
    2. Underlayment: Where installing roof accessories directly on cementitous or wood substrates, install a course of felt underlayment and cover with a slip sheet, or install a course of polyethylene sheet.
    3. Bed flanges in thick coat of asphalt roofing cement where required by manufacturers of roof accessories for waterproof performance.

3.03 CLEANING

A. Clean exposed surfaces according to manufacturer’s written instructions.
B. Clean off excess sealants.

3.04 PROTECTION

A. Protect installed products until completion of project.
B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 22 14 23
STORM DRAINAGE PIPING SPECIALTIES

PART 1. GENERAL

1.01 WORK INCLUDES

A. Roof drains.
B. Miscellaneous storm drainage piping specialties.
C. Flashing materials.

1.02 RELATED WORK

A. Section 07 53 00 MEMBRANE ROOFING

1.03 SUBMITTALS

A. Product Data: For each type of product indicated.

1.04 QUALITY ASSURANCE

A. Drainage piping specialties shall bear label, stamp, or other markings of specified testing agency.

1.05 COORDINATION

A. Coordinate the work of this Section with the work of other Sections to assure the steady progress of all the work of the Contract
B. Field Measurements: Take field measurements before preparation of shop drawings and fabrication. Do not delay progress of the job. If field measurements are not possible prior to fabrication, allow for field cutting and fitting.

PART 2. PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. REPLACEMENT ROOF DRAINS
   1. Josam
   2. Wade
   3. Zurn
B. ROOF DRAINS AND CONNECTIONS
   1. For each material type required for the work of this section, provide primary materials which are the product of one manufacturer. Provide secondary or accessory materials which are acceptable to manufacturers of primary materials.
   2. Sizes of drains shall be the same size as the piping it serves. The Subcontractor shall be responsible for correctly setting all drains at proper grades for proper drainage. For insulated roofs, provide a roof drain with an adjustable drainage collar, which can be raised or lowered to meet required insulation heights, sump receiver and deck clamp. Bottom section shall serve as roof drain during construction before insulation is installed.

      a. Standard: ASME A112.6.4, for general-purpose roof drains.
      b. Body Material: 16 Ga. Type 304 Stainless Steel
      c. Flow-Control Weirs: Not Required
      d. Outlet: Bottom
      e. Dome Material: Cast iron

f. Vandal-Proof Dome: Not required
g. Water Dam: Not required

PART 3. EXECUTION

3.01 EXAMINATION

A. Verify that surfaces and site conditions are ready to receive work.
B. Verify areas of existing roof deck that are sloped.

3.02 INSTALLATION

A. Install roof drains at low points of roof areas according to roof membrane manufacturer's written installation instructions.

1. Install flashing collar or flange of roof drain to prevent leakage between drain and adjoining roofing. Maintain integrity of waterproof membranes where penetrated.
2. Install expansion joints, if indicated, in roof drain outlets.
3. Position roof drains for easy access and maintenance.

3.03 PROTECTION

A. Protect drains during remainder of construction period to avoid clogging with dirt or debris and to prevent damage from traffic or construction work.
B. Place plugs in ends of uncompleted piping at end of each day or when work stops.

END OF SECTION

SECTION 23 08 00
COMMISSIONING OF HVAC SYSTEMS

PART 1 . GENERAL

1.01 DESCRIPTION

A. The requirements of this Section apply to all sections of Division 23.
B. This project will have selected building systems commissioned. The complete list of equipment and systems to be commissioned is specified in Section 01 91 00 GENERAL COMMISSIONING REQUIREMENTS. The commissioning process, which the Contractor is responsible to execute, is defined in Section 01 91 00 GENERAL COMMISSIONING REQUIRMENTS.

1.02 RELATED WORK

A. Section 01 10 00 GENERAL REQUIREMENTS.

1.03 SUMMARY

A. This Section includes requirements for commissioning the Facility exterior closure, related subsystems and related equipment.

1.05 COMMISSIONED SYSTEMS

A. Commissioning of a system or systems specified in Division 23 is part of the construction process. Documentation and testing of these systems, as well as training of the Greenleaf Recreation Center's Operation and Maintenance personnel in accordance with the requirements of Division 23, is required in cooperation with the Greenleaf Recreation Center and the Commissioning Agent.

1.06 SUBMITTALS

A. The commissioning process requires review of selected Submittals that pertain to the systems to be commissioned. The Commissioning Agent will provide a list of submittals that will be reviewed by the Commissioning Agent. This list will be reviewed and approved by the Greenleaf Recreation Center prior to forwarding to the Contractor.
B. The commissioning process requires Submittal review simultaneously with engineering review.

PART 2. PRODUCTS (NOT USED)

PART 3. EXECUTION

3.01 CONSTRUCTION INSPECTIONS

A. Commissioning of HVAC systems will require inspection of individual elements of the HVAC systems construction throughout the construction period. The Contractor shall coordinate with the Commissioning Agent in accordance with the Commissioning plan to schedule HVAC systems inspections as required to support the Commissioning Process.

3.02 PRE-FUNCTIONAL CHECKLISTS

A. The Contractor shall complete Pre-Functional Checklists to verify systems, subsystems, and equipment installation is complete and systems are ready for Systems Functional Performance Testing. The Commissioning Agent will prepare Pre-Functional Checklists to be used to document equipment installation. The Contractor shall complete the checklists. Completed

checklists shall be submitted to the Greenleaf Recreation Center and to the Commissioning Agent for review. The Commissioning Agent may spot check a sample of completed checklists. If the Commissioning Agent determines that the information provided on the checklist is not accurate, the Commissioning Agent will return the marked-up checklist to the Contractor for correction and resubmission. If the Commissioning Agent determines that a significant number of completed checklists for similar equipment are not accurate, the Commissioning Agent will select a broader sample of checklists for review. If the Commissioning Agent determines that a significant number of the broader sample of checklists is also inaccurate, all the checklists for the type of equipment will be returned to the Contractor for correction and resubmission.

3.03 CONTRACTORS TESTS

A. Contractor tests as required by other sections of Division 23 shall be scheduled and documented. All testing shall be incorporated into the project schedule. Contractor shall provide no less than 7 calendar days' notice of testing. The Commissioning Agent will witness selected Contractor tests at the sole discretion of the Commissioning Agent. Contractor tests shall be completed prior to scheduling Systems Functional Performance Testing.

3.04 SYSTEMS FUNCTIONAL PERFORMANCE TESTING:

A. The Commissioning Process includes Systems Functional Performance Testing that is intended to test systems functional performance under steady state conditions, to test system reaction to changes in operating conditions, and system performance under emergency conditions. The Commissioning Agent will prepare detailed Systems Functional Performance Test procedures for review and approval by the Resident Engineer. The Contractor shall review and comment on the tests prior to approval. The Contractor shall provide the required labor, materials, and test equipment identified in the test procedure to perform the tests. The Commissioning Agent will witness and document the testing. The Contractor shall sign the test reports to verify tests were performed.

END OF SECTION

SECTION 23 11 23
FACILITY NATURAL-GAS PIPING

PART 1. GENERAL

1.01 DESCRIPTION

A. Fuel gas systems, including piping, equipment and all necessary accessories as designated in this section. Fuel gas piping for central boiler plants is not included.
B. A complete listing of common acronyms and abbreviations are included in Section 23 05 11, COMMON WORK RESULTS FOR HVAC Section 22 05 11, COMMON WORK RESULTS FOR PLUMBING.

1.02 RELATED WORK

A. Section 01 10 00, GENERAL REQUIREMENTS.
B. Section 07 84 00, FIRESTOPPING.
C. Section 07 92 00, JOINT SEALANTS.
D. Section 09 91 00, PAINTING.
E. Section 22 05 11, COMMON WORK RESULTS FOR PLUMBING.
F. Section 22 05 23, GENERAL DUTY VALVES FOR PLUMBING PIPING.
G. Section 23 09 11, INSTRUMENTATION AND CONTROL FOR BOILER PLANT.
H. Section 23 21 11, BOILER PLANT PIPING SYSTEMS.

1.03 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
B. American Society of Mechanical Engineers (ASME):
   B16.3-2011 ..... Malleable Iron Threaded Fittings: Classes 150 and 300
   B16.9-2012 ..... Factory Made Wrought Buttwelding Fittings
   B16.11-2011 ..... Forged Fittings, Socket-Welding and Threaded
   B16.15-2013 ..... Cast Copper Alloy Threaded Fittings: Classes 125 and 250
   B16.40-2013 ..... Manually Operated Thermoplastic Gas Shutoffs and Valves in Distribution Systems
   B31.8-2016 ..... Gas Transmission and Distribution Piping Systems
C. American Society for Testing and Materials (ASTM):
   A47/A47M-1999 (R2014) ..... Standard Specification for Ferritic Malleable Iron Castings
   A53/A53M-2012 ..... Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
   A536-1984 (R2014) ..... Standard Specification for Ductile Iron Castings
   A733-2015 ..... Standard Specification for Welded and Seamless Carbon Steel and Austenitic Stainless-Steel Pipe Nipples
   B43-2015 ..... Standard Specification for Seamless Red Brass Pipe, Standard Sizes
   B687-1999(2011) ..... Standard Specification for Brass, Copper, and Chromium-Plated Pipe Nipples
   D2513-2014e1 ..... Standard Specification for Polyethylene (PE) Gas Pressure Pipe, Tubing, and Fittings
   D2683-2014 ..... Standard Specification for Socket-Type Polyethylene Fittings for Outside Diameter-Controlled Polyethylene Pipe and Tubing
   D3261-2016 ..... Standard Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing
D. American Water Works Association (AWWA):
   C203-2015 ..... Coal-Tar Protective Coatings and Linings for Steel Water Pipes

E. International Code Council (ICC):
   IFGC-2015 ..... International Fuel Gas Code
   IPC-2015 ..... International Plumbing Code
F. Manufacturers Standardization Society of the Valve and Fittings Industry, Inc. (MSS):
   SP-72-2010a ..... Ball Valves with Flanged or Butt-Welding for General Service
   SP-110-2010 ..... Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends
G. NACE International (NACE):
   SP0274-2011 ..... High-Voltage Electrical Inspection of Pipeline Coatings
   SP0490-2007 ..... Holiday Detection of Fusion-Bonded Epoxy External Pipeline Coating of 250 to 760 µm (10 to 30 mil)
H. National Fire Protection Association (NFPA):
   54-2015 ..... National Fuel Gas Code

1.04 SUBMITTALS

A. Submittals, including number of required copies, shall be submitted in accordance with Section 01 10 02.01.
B. Information and material submitted under this section shall be marked “SUBMITTED UNDER SECTION 23 11 23, FACILITY NATURAL-GAS PIPING”, with applicable paragraph identification.
C. Manufacturer's Literature and Data including: Full item description and optional features and accessories. Include dimensions, weights, materials, applications, standard compliance, model numbers, size, and capacity.
   1. Pipe & Fittings.
   2. Valves.
   3. Strainers.
   4. All items listed in Part 2 - Products.
D. Detailed shop drawing of clamping device and extensions when required in connection with the waterproofing membrane.
E. Complete operating and maintenance manuals including wiring diagrams, technical data sheets, information for ordering replacement parts, and troubleshooting guide:
   1. Include complete list indicating all components of the systems.
   2. Include complete diagrams of the internal wiring for each item of equipment.
   3. Diagrams shall have their terminals identified to facilitate installation, operation and maintenance.

1.05 AS-BUILT DOCUMENTATION

A. Submit manufacturer’s literature and data updated to include submittal review comments and any equipment substitutions.
B. Submit operation and maintenance data updated to include submittal review comments, Greenleaf Recreation Center approved substitutions and construction revisions shall be inserted into a three-ring binder. All aspects of system operation and maintenance procedures, including applicable piping isometrics, wiring diagrams of all circuits, a written description of system design, control logic, and sequence of operation shall be included in the operation and maintenance manual. The operations and maintenance manual shall include troubleshooting techniques and procedures for emergency situations. Notes on all special systems or devices shall be included. A List of recommended spare parts (manufacturer, model number, and quantity) shall be furnished. Information explaining any special knowledge or tools the owner will be required to employ shall be inserted into the As-Built documentation.
C. The installing contractor shall maintain as-built drawings of each completed phase for verification; and, shall provide the complete set at the time of final systems certification testing. Should the installing contractor engage the testing company to provide as-built or any portion thereof, it shall not be deemed a conflict of interest or breach of the ‘third party testing company’ requirement. Provide record drawings as follows:

1. Red-lined, hand-marked drawings are to be provided, with one paper copy and a scanned PDF version of the hand-marked drawings provided on CD or DVD.
2. As-built drawings are to be provided, with a copy of them on AutoCAD version. The CAD drawings shall use multiple line layers with a separate individual layer for each system.
3. As-built drawings are to be provided, with a copy of them in three-dimensional Building Information Modeling (BIM) software version provided on CD or DVD.

D. The as-built drawings shall indicate the location and type of all lockout/tagout points for all energy sources for all equipment and pumps to include breaker location and numbers, valve tag numbers, etc. Coordinate lockout/tagout procedures and practices with local Greenleaf Recreation Center requirements.
E. Certification documentation shall be provided to COR 21 working days prior to submitting the request for final inspection. The documentation shall include all test results, the names of individuals performing work for the testing agency on this project, detailed procedures followed for all tests, and provide documentation/certification that all results of tests were within limits specified. Test results shall contain written sequence of test procedure with written test results annotated at each step along with the expected outcome or setpoint. The results shall include all readings, including but not limited to data on device (make, model and performance characteristics), normal pressures, switch ranges, trip points, amp readings, and calibration data to include equipment serial numbers or individual identifications, etc.

1.06 SYSTEM PRESSURE

A. Natural gas systems are designed and materials and equipment selected to prevent failure under gas pressure of 14.0 (w.c.).

PART 2. PRODUCTS

2.01 FUEL GAS SERVICE CONNECTIONS TO BUILDING

A. From inside face of exterior wall to a distance of approximately 1500 mm (5 feet) outside of building.
B. Pipe: Black steel, ASTM A53/A53M, Schedule 40. Shop-applied pipe coating shall be one of the following types:
   1. Coal Tar Enamel Coating: Exterior of pipe and fittings shall be cleaned, primed with Type B primer and coated with hot-applied coal tar enamel with bonded layer of felt wrap in accordance with AWWA C203. Asbestos felt shall not be used; felt material shall be fibrous glass mat in accordance with AWWA C203.
C. Holiday Inspections: Procedure for holiday inspection: Holiday Inspection shall be conducted on all coatings to determine the presence and number of discontinuities in those coatings using a Tinker & Rasor model AP/W Holiday Detector or equal. Holiday inspection shall be performed in a manner spelled out in the Tinker & Rasor operating instructions and at a voltage level recommended by the coating manufacturer or applicable NACE standard such as SP0274 or SP0490 in the case thermosetting epoxy coating. Holiday Detectors shall be calibrated and supplied with a certificate of calibration from the factory. A calibration of the Holiday Detector shall be performed once every 6 months to verify output voltages are true and correct.
D. Steel Fittings:
   1. Butt weld fittings, wrought steel, ASME B16.9.
   2. Socket weld and threaded fittings forged steel, ASME B16.11.
   3. Grooved End: Ductile iron (ASTM A536, Grade 65-45-12), malleable iron (ASTM A47/A47M, Grade 32510), or steel (ASTM A53/A53M, Type F or Type E or S, Grade B).
E. Steel Joints: Welded, ASME B31.8.

2.02 EMERGENCY GAS SAFETY SHUT-OFF VALVE

A. Permits remote shut-off of fuel gas flow to boiler plant.
B. Type: Manually opened, electrically held open, automatic closing upon power interruption. Pneumatic operator is prohibited.
C. Performance: Shall shut bubble tight within one second after power interruption. Refer to the drawings for pressure, flow, and valve size requirements.
D. Service: Natural gas and LP gas.
E. Construction: UL listed, FM approved, rated for 861 kPa (125 psig) ASME flanged ends for pipe sizes above 50 mm (2 inches), threaded ends for pipe sizes 50 mm (2 inches) and under. Cast iron, cast steel or bronze body, open and shut indicator. Valves for LP gas service shall be rated at 1725 kPa (250 psig).
F. Control Switch: Mounted in Control Room. Switch shall also cut the power to the fuel oil pump set. Refer to Section 23 09 11, INSTRUMENTATION AND CONTROL FOR BOILER PLANT. Provide auxiliary switch to provide signal to Computer Work Station.

2.03 FUEL GAS PIPING ABOVE GROUND

A. Pipe: Black steel, ASTM A53/A53M, Schedule 40.
B. Nipples: Steel, ASTM A733, Schedule 40.
C. Fittings:
   1. Sizes 50 mm (2 inch) under ASME B16.3 threaded malleable iron.
   2. Over 50 mm (2 inch) and up to 100 mm (4 inch) ASME B16.11 socket welded.
   3. Over 100 mm (4 inch) ASME B16.9 butt welded.
D. Joints: Provide welded or threaded joints.
E. Threaded Metallic Joints: Threaded joints in metallic pipe shall have tapered threads evenly cut. Metal screwed pipe joints shall be made leak-tight by applying Rector Seal No. 5 pipe thread sealant to all threaded joints. Care must be taken to prevent the pipe dope compound from getting inside the internal pipeline. Teflon tape type sealant is prohibited.

2.04 EXPOSED FUEL GAS PIPING

A. Finished Room: Use full iron pipe size chrome plated brass piping for exposed fuel gas piping connecting fixtures, casework, cabinets, equipment and reagent racks when not concealed by apron including those furnished by the Owner or specified in other sections.
   1. Pipe: ASTM B43, standard weight.
   2. Fittings: ASME B16.15 cast bronze threaded fittings with chrome finish, (125 and 250).
   3. Nipples: ASTM B687, Chromium-plated.
   4. Unions: 50 mm (2 inches) and smaller MSS SP-72, MSS SP-110, brass or bronze threaded with chrome finish. Unions 65 mm (2-1/2 inches) and larger shall be flange type with approved gaskets.
   5. Valves: MSS SP-72, MSS SP-110, brass or bronze with chrome finish.
B. Unfinished Rooms, Mechanical Rooms and Kitchens: Chrome-plated brass piping is not required. Paint piping systems as specified in Section 09 91 00, PAINTING.

2.05 VALVES

A. Ball Valve: Bronze body, rated for 1034 kPa at 185 degrees C (150 psig at 365 degrees F), 1723 kPa at 121 degrees C (250 psig at 250 degrees F), reinforced TFE seat, stem seal and thrust washer; end entry, threaded ends, UL-listed for natural or LP gas shut off service when used on those services.
B. Gas Vent Cocks: Type 701: Bronze body, tee handle, rated for 207 kPa at 38 degrees C (30 psig at 100 degrees F), ground plug, rated for tight shut-off on fuel gas service.

2.06 WATERPROOFING

A. Provide at points where pipes pass through membrane waterproofed floors or walls in contact with earth.
B. Floors: Provide cast iron stack sleeve with flashing device and an underdeck clamp. After stack is passed through sleeve, provide a waterproofed caulked joint at top hub.
C. Walls: See detail shown on drawings.

2.07 STRAINERS

A. Provide on high pressure side of pressure reducing valves, on inlet side of indicating and control instruments and equipment subject to sediment damage and where shown on drawings. Strainer element shall be removable without disconnection of piping.
B. Gas Lines: "Y" type with removable mesh lined brass strainer sleeve.
C. Body: Smaller than 75 mm (3 inches), brass or bronze; 75 mm (3 inches) and larger, cast iron or semi-steel.

2.08 DIELECTRIC FITTINGS

A. Provide dielectric couplings or unions between ferrous and non-ferrous pipe.

2.09 GAS EQUIPMENT CONNECTORS

A. Flexible connectors with Teflon core, interlocked galvanized steel protective casing, AGA certified design.

2.010 FUEL GAS PIPING BELOW GROUND

A. Thermoplastic (Polyethylene - PE): PE pipe and heat fusion fittings shall conform to ASTM D2513, SDR 11 and manufactured for 861 kPa (125 psig) working pressure. Pipe and fittings shall have heat fusion joints PE pipe and fitting materials for heat fusion shall be compatible to ensure uniform melting and a proper bond.
B. Fittings:
   1. Socket Fusion Fittings: ASTM D2683.
   2. Butt Fusion Fittings: ASTM D3261, molded and matching pipe dimensions.
C. Risers: Manufacturer's standard anodeless type riser, transition from plastic to steel pipe with fusion bonded epoxy coating. Inlet connection socket or butt weld or swaged gas-tight construction with O-ring seals, metal insert, and protective sleeve. Outlet or above ground connection end shall be threaded or flanged. Riser shall comply with ASTM A53/A53M, Type F and E, Grade A, Schedule 40.
D. Polyethylene ball valves, ASME B16.40 shall be manufactured and rated for underground gas service. Operating pressure to 861 kPa (125 psig) (SDR 9.3). Valve shall be maintenance and corrosion free. Polyethylene valves shall be full port opening type. Valves shall be wrench operated. Wrench operated valves shall have a 50 mm (2 inch) square adaptor securely fastened to the valve stem. Polyethylene valves shall be installed by butt fusion method.

2.011 VALVE BOXES

A. Provide each valve on buried piping with a plastic or cast iron valve box of a size suitable for the valve. Valve box shall have a round cover with the word "Gas" cast on it. A metal tag or label shall be installed on top or inside of each valve box lid. The tag shall designate the appropriate location number, valve size, and other pertinent information. Each cast iron box shall be given a heavy coat of bituminous paint. Provide adjustable box extensions of length required for depth of buried valve.

PART 3. EXECUTION

3.01 INSTALLATION

A. General: Comply with the ICC IFGC, ICC IPC and the following:
   1. Install branch piping for fuel gas and connect to all fixtures, valves, cocks, outlets, casework, cabinets and equipment, including those furnished by the Owner or specified in other sections.
   2. Pipe shall be round and straight. Cutting shall be done with proper tools. Pipe, shall be reamed to full size after cutting.
   3. All pipe runs shall be laid out to avoid interference with other work.
   4. Install valves with stem in horizontal position whenever possible. All valves shall be easily accessible.
   5. Install union and shut-off valve on pressure piping at connections to equipment.
   6. Pipe Hangers, Supports and Accessories:
      a. All piping shall be supported per the ICC IFGC.
      b. Shop Painting and Plating: Hangers, supports, rods, inserts and accessories used for Pipe supports shall be shop coated with red lead or zinc Chromate primer paint. Electroplated copper hanger rods, hangers and accessories may be used with copper tubing.
      c. Floor, Wall and Ceiling Plates, Supports, Hangers:
         1) Solid or split unplated cast iron, chrome plated in finished areas.
         2) All plates shall be provided with set screws.
         3) Pipe Hangers: Height adjustable clevis type.
         4) Adjustable Floor Rests and Base Flanges: Steel.
         5) Concrete Inserts: "Universal" or continuous slotted type.
         6) Hanger Rods: Mild, low carbon steel, fully threaded or Threaded at each end with two removable nuts at each end for positioning rod and hanger and locking each in place.
         7) Riser Clamps: Malleable iron or steel.
         8) Rollers: Cast iron.
         9) Self-drilling type expansion shields shall be "Phillips" type, with case hardened steel expander plugs.
         10) Miscellaneous Materials: As specified, required, directed or as noted on the drawings for proper installation of hangers, supports and accessories.
   7. Install cast chrome plated escutcheon with set screw at each wall, floor and ceiling penetration in exposed finished locations and within cabinets and millwork.
   8. Penetrations:
      a. Fire Stopping: Where pipes pass through fire partitions, fire walls, smoke partitions, or floors, install a fire stop that provides an effective barrier against the spread of fire, smoke and gases as specified in Section 07 84 00, FIRESTOPPING. Completely fill and seal clearances between piping and openings with the fire stopping materials.
      b. Waterproofing: At floor penetrations, completely seal clearances around the pipe and make watertight with sealant as specified in Section 07 92 00, JOINT SEALANTS.

B. Fuel gas piping shall conform to the following:
   1. Entire fuel gas piping installation shall be in accordance with requirements of NFPA 54.
   2. Provide fuel gas piping with plugged drip pockets at low points.

C. If an installation is unsatisfactory to the COR, the Contractor shall correct the installation at no additional cost or time to the Owner.

3.02 CLEANING OF SYSTEM AFTER INSTALLATION

A. Clean all piping systems to remove all dirt, coatings and debris.

3.03 TESTS

A. General: Test system either in its entirety or in sections after system is installed or cleaned.
B. Test shall be made in accordance with Section 406 of the International Fuel Gas Code. The system shall be tested at a minimum of 1.5 times maximum working pressure, but not less than 3 psig (21 kPa) gauge.
C. System Purging: After completing pressure tests, and before testing a gas-contaminated line, purge line with nitrogen at junction with main line to remove all air and gas. Clear completed line by attaching a test pilot fixture at capped stub-in line at building location and let gas flow until test pilot ignites. Procedures shall conform to NFPA 54 and ASME B31.8.

3.04 STARTUP AND TESTING

A. Perform tests as recommended by product manufacturer and listed standards and under actual or simulated operating conditions and prove full compliance with design and specified requirements. Tests of the various items of equipment shall be performed simultaneously with the system of which each item is an integral part.
B. When any defects are detected, correct defects and repeat test at no additional cost or time to the Owner.

3.05 COMMISSIONING

A. Provide commissioning documentation in accordance with the requirements of Section 22 08 00, COMMISSIONING OF PLUMBING SYSTEMS.
B. Components provided under this section of the specification will be tested as part of a larger system.

END OF SECTION

SECTION 23 31 13
VENTILATION DUCTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Classified, fire-rated general ventilation duct with or without internal subducts.
B. Classified, fire-rated kitchen ventilation grease ducts.

1.02 RELATED SECTIONS

A. Section 23 05 00 - Common Work Results for HVAC.

1.03 REFERENCES

A. American National Standards institute/Underwriter's laboratory (ANSI/UL) 1479 - Standard for Fire Tests of Through-Penetration Firestops.
B. National Fire Protection Association, NFPA 96 - Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations.
C. International Standards Organization (ISO)-6944 - Fire Resistance Tests -- Ventilation Ducts.
D. Underwriter's laboratory (UL) 1978 - Grease Ducts.
E. Underwriter's laboratory (UL) 2221 - Fire Resistive Grease Duct Enclosure Assemblies.

1.04 SUBMITTALS

A. Submit under provisions of Section 01 10 02.01.
B. Product Data: Manufacturer's data sheets on each product to be used, including:

   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.

C. Shop Drawings: The manufacturer shall provide "to scale" drawings depicting the actual layout. The exhaust system shall be installed as designed by the manufacturer and in accordance with the terms of the manufacturer's warranty and in conjunction with sound engineering practices.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Minimum 5 year experience manufacturing similar products.
B. Manufacturer Representation: The factory built modular exhaust system shall be furnished by a vendor organization that assures design, installation and services coordination. As well as, providing "in-warranty" and "post-warranty" unified responsibility for owner, consulting engineer and contractor.
C. Installer Qualifications: Minimum 1 year experience installing similar products.
D. Product Requirements: The exhaust system shall be installed as designed by the manufacturer and in accordance with the terms of the manufacturer's warranty and in conjunction with sound engineering practices.

E. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.

   1. Finish areas designated by Owner.
   2. Do not proceed with remaining work until workmanship is approved by Owner.
   3. Refinish mock-up area as required to produce acceptable work.

1.06 PRE-INSTALLATION MEETINGS

A. Convene minimum two weeks prior to starting work of this section.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store products in manufacturer's unopened packaging bearing the brand name and manufacturer's identification until ready for installation.
B. Handling: Handle materials to avoid damage.

1.08 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.09 SEQUENCING

A. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.010 WARRANTY

A. The exhaust system shall have a limited lifetime warranty against functional failure due to defects in material and manufacturer's workmanship from the date of installation.
B. Listed Ventilation Duct shall be warranted by the duct system manufacturer against defects in material and workmanship for a limited lifetime from the original date of installation. Any portion of the ventilation duct repaired or replaced under warranty shall be warranted for the remainder of the original warranty terms and conditions.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Acceptable Manufacturer: Hart & Cooley, ZEN Industries.

2.02 CLASSIFIED VENTILATION DUCTS

A. Ventilation Ducts: Modular, factory-built duct system.

1. Fire-Rated Model: Model IVSI-Z3 double-wall 2-hour fire rated duct as manufactured by AMPCO, with or without internal subducts and feeder branches.
2. Non-Fire-Rated Model: Model N single-wall non-fire-rated duct as manufactured by AMPCO, with or without internal subducts and feeder branches.

B. Performance Standards:

1. All products furnished under this section shall be certified under Underwriters Laboratories, Inc. (UL) category for Fire Resistive Duct Assemblies - Ventilation Ducts and thereby conform to the requirements of ISO-6944 and having fire stops tested in accordance to ANSI/UL 1479. Products shall carry the appropriate UL and classification marks or labels.
2. Fire resistance ratings for Ventilation Duct shall be applicable to ducts.
3. Alternatively, if hourly fire rating of duct is not needed, then ducts shall be of single wall pressure stack design.
4. All ducting will be insulated with a minimum of R-8.

C. Construction:

1. Material: The wall shall be constructed of .025 inch (0.64 mm0 thick aluminized steel for sizes 6 inches (152 mm) through 24 inches (610 mm) and .035 inch (0.90 mm) thick for sizes 26 inches (660 mm) through 36 inches (914 mm).
2. Material: The wall shall be constructed of .024 inch (0.61 mm) thick 304 stainless steel for all sizes.

3. Weather Exposure: Aluminized steel outer wall ventilation duct parts exposed to weather shall be protected by one coat of corrosion and heat resistant primer and one coat of heat resistant paint. Paint shall be furnished and applied by installer.

    a. Where exposed to weather, the outer channel band shall be sealed with P-600 silicone sealant to prevent rainwater from entering the space between the inner and outer walls.

4. Weather Exposure: All ventilation duct parts exposed to the weather shall be 304 stainless steel outer wall.

    a. Where exposed to weather, the outer channel band shall be sealed with P-600 silicone sealant to prevent rainwater from entering the space between the inner and outer walls.

5. Supports, fan adapters, square to round transitions, hood transitions, drain fittings and adjustable / variable lengths required to install ventilation duct shall be included.
6. Roof penetration pieces shall be either UL listed products of the ventilation duct manufacturer or roof curbs complying with local code.
7. Inner pipe joints shall be held together by means of formed, overlapping V-bands to secure the mating pipe flanges together.

8. Optional: V-bands shall have duct manufacturer's P-600 silicone sealant applied to the V-band groove where duct is under positive pressure.
9. All supply ducts shall be insulated with UL approved insulating blanket or wrap. Insulation shall be continuous and all seams shall be taped with foil adhesive tape. Minimum R-value for insulation is R-8.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.
B. If substrate preparation is the responsibility of another installer, notify Owner of unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to installation.
B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions.

3.04 KITCHED HOOD EXHAUST INSTALLATION

A. The exhaust system shall be installed according to the manufacturer's installation instructions and shall conform to all applicable state and local codes.
B. Inner pipe joints shall be sealed by use of factory supplied overlapping V bands and sealant.
C. Roof penetrations shall be suitable for a noncombustible roof and shall be according to the manufacturer's detail drawings and installation instructions.
D. When installed according to the manufacturer's installation instructions, the exhaust piping and its

supporting system shall resist side loads at least 1.5 times greater than the weight per foot of the piping for both horizontal and vertical portions of the system.

E. Provide all supports, guides, expansion joints, guy sections, guy tensioners, roof thimbles, roof flashings, storm collars and flip top terminations as required to provide a complete system.
F. The entire exhaust system from hood to the termination point, including all accessories, except as noted, shall be from one manufacturer.

3.05 CLASSIFIED VENTILATION DUCT INSTALLATION

A. Store delivered materials inside, out of the weather. Protect materials from accidental damage or vandalism.
B. Installation shall conform to the manufacturer's installation instructions, UL classification and state or local codes.
C. Support ventilation duct from building structure using rigid structural shapes for attachment of fixed point supports (Plate Support Assembly). Anchor supports to structure by welding, bolting, steel expansion anchors, or concrete inserts. Size of structural shapes shall be in accordance with manufacturer's recommendations.
D. Coordinate installation of dampers or fans. Dampers or fans shall be supported independently from the ventilation duct sections. Protect ventilation duct from twist or movement due to fan torque or vibration.
E. Protect incomplete ventilation duct installations by attaching temporary closures over open ends of sections.
F. Clean ventilation duct sections of dust and debris prior to final connection to fans.

3.06 PROTECTION

A. Protect installed products until completion of project.
B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 23 74 13
PACKAGED, OUTDOOR, CENTRAL-STATION AIR-HANDLING UNITS

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Packaged Unitary Gas/Electric Rooftop Unit (RTU)

1.02 RELATED REQUIREMENTS
A. Section 22 0513 - Motors for Mechanical Equipment.
B. Section 23 1113 - Facility Natural-Gas Piping.
C. Section 23 0513 - Common Motor Requirements for HVAC Equipment.
D. Section 23 0923.27 - Temperature Instruments.
E. Section 26 27 27 - Wiring Devices

1.03 REFERENCE STANDARDS
A. AHRI 210/240 - Standard for Performance Rating of Unitary Air Conditioning and Air-Source Heat Pump Equipment; Air-Conditioning, Heating, and Refrigeration Institute ; 2008.The roofing contractor shall be fully knowledgeable of all requirements of the contract documents and shall make themselves aware of all job site conditions that will affect their work.
B. AHRI 270 - Sound Rating of Outdoor Unitary Equipment; Air-Conditioning, Heating, and Refrigeration Institute ; 2015.
C. AHRI 520 - Performance Rating of Positive Displacement Condensing Units; Air-Conditioning, Heating, and Refrigeration Institute ; 2004.
D. ASHRAE Std 23.1 - Methods of Testing for Rating Positive Displacement Refrigerant Compressors and Condensing Units; American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. ; 2010.
E. ASHRAE Std 90.1 - Energy Standard for Buildings Except Low-Rise Residential Buildings; American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. ; 2013.
F. NEMA MG 1 - Motors and Generators; National Electrical Manufacturers Association ; 2016.
G. NFPA 54 - National Fuel Gas Code; National Fire Protection Association ; 2015.
H. NFPA 70 - National Electrical Code; National Fire Protection Association ; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
I. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; National Fire Protection Association ; 2015.
J. ANSI/ASHRAE 15 - Safety Code for Mechanical Refrigeration.
K. ASHRAE 37 - Testing Unitary Air Conditioning and Heat Pump Equipment.

1.04 SUBMITTALS
A. See Section 01 10 02.01
B. Product Data: Provide data with dimensions, duct and service connections, accessories, controls, electrical nameplate data, and wiring diagrams.
C. Shop Drawings: Indicate dimensions, duct and service connections, accessories, controls, electrical nameplate data, and wiring diagrams.
D. Manufacturer's Instructions: Indicate rigging, assembly, and installation instructions.
E. Project Record Documents: Record actual locations of components.
F. Operation And Maintenance Data: Include manufacturer's descriptive literature, operating instructions, installation instructions, maintenance and repair data, and parts listing.
G. Warranty: Submit manufacturers warranty and ensure forms have been filled out in Owner s name and registered with manufacturer.
H. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
1.. Extra Filters: One set of each type and size.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.
B. Installer Qualifications: Company specializing in performing the type of work specified in this section with minimum 5 years of experience.

1.06 REQULATORY REQUIREMENTS

A. Conform to NFPA 70.
B. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.

1.07 WARRANTY

A. See Section 01 10 05.07 - GENERAL GUARANTY AND WARRANTY OF TITLE, for additional warranty requirements.
B. Provide five year manufacturers warranty for compressor/condenser unit.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Comply with manufacturer's installation instructions for rigging, unloading, and transporting units.
B. Deliver materials to the job site in the manufacturer's original, unopened containers or wrappings with the manufacturer's name, brand name and installation instructions intact and legible. Deliver in sufficient quantity to permit work to continue without interruption.

1.09 FIELD CONDITIONS

A. Before beginning work, the HVAC contractor must secure approval from the building owner's representative for the following:
   1. Areas permitted for personnel parking.
   2. Access to the site.
   3. Areas permitted for storage of materials and debris.
   4. Areas permitted for the location of cranes, hoists and chutes for loading and unloading materials to and from the roof.
B. Security: Obey the owner's requirements for personnel identification, inspection and other security measures.
C. If discrepancies are discovered between the existing conditions and those noted on the drawings, immediately notify the architect and owner's representative by phone and solicit the manufacturer's approval prior to commencing with the work. Necessary steps shall be taken to make the building watertight until the discrepancies are resolved.
D. Weather: Perform work of this Section only when existing or forecasted weather conditions are within the limits established by manufacturers of the materials and products used.
E. Schedule and execute work to prevent leaks and excessive traffic on completed roof sections. Care should be exercised to provide protection for the interior of the building and to ensure water does not flow beneath any completed sections of the membrane system.
F. Provide protection, such as 3/4 inch thick plywood, for all roof areas exposed to traffic during construction. Plywood must be smooth and free of fasteners and splinters.
G. The HVAC contractor shall use reasonable care and responsibility to protect the building and site against damages. The contractor shall be responsible for the correction of any damage incurred as a result of the performance of the contract.
H. The roofing contractor shall remove all debris from the job site in a timely and legally acceptable manner so as to not detract from the aesthetics or the functions of the building.
I. Do not disrupt activities in occupied spaces.
J. When loading materials onto the roof, the HVAC contractor must comply with the requirements of the building owner to prevent overloading and possible disturbance to the building structure.
K. Material Safety Data Sheets (MSDS) must be on location at all times during the transportation, storage and application of materials.
L. Refer to Trane's Installation, Operation, and Maintenance manual for job site considerations.

1.10 JOB SITE PROTECTION

A. The HVAC contractor shall adequately protect building, paved areas, service drives, lawn, shrubs, trees, etc. from damage while performing the required work. Provide canvas, boards and sheet metal (properly secured) as necessary for protection and remove protection material at completion. The contractor shall repair or be responsible for costs to repair all property damaged during the RTU installation.

B. During the HVAC contractor's performance of the work, the building owner will continue to occupy the existing building. The contractor shall take precautions to prevent the spread of dust and debris, particularly where such material may shift into the building. The roofing contractor shall provide labor and materials to construct, maintain and remove necessary, temporary enclosures to prevent dust or debris in the construction area(s) from entering the remainder of the building.

C. Do not overload any portion of the building, by either use of or placement of equipment, storage of debris, or storage of materials.

D. Protect against fire and flame spread. Maintain proper and adequate fire extinguishers.

E. Take precautions to prevent drains from clogging during the RTU installation. Remove debris at the completion of each day's work and clean drains, if required. At completion, test drains to ensure the system is free running and drains are watertight. Remove strainers and plug drains in areas where work is in progress. Install flags or other telltales on plugs. Remove plugs each night and screen drain.

F. Remove all traces of piled bulk material and return the job site to its original condition upon completion of the work.

1.11 MAINTENANCE SERVICE

A. All work on units shall be accomplished by OEM factory trained and authorized servicing technicians.

B. In conjunction with and supporting Factory warranty OEM shall furnish complete factory authorized service and maintenance of packaged rooftop units for 5 year from date of substantial completion.

C. OEM shall provide quarterly, annual and bi-annual maintenance in compliance with or exceeding ASHRAE Standards

D. Include maintenance items as outlined in manufacturer's operating and maintenance data.

E. Submit copies of service call work order or report and include description of work performed.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Trane: Refer to Schedules on Contract Documents.

B. Substitutions: Not Permitted.

2.02 MANUFACTURED UNITS

A. Unit: Outdoor packaged heating only.:

1. Construction and Ratings: In accordance with AHRI 210/240 and UL 207. Testing: ASHRAE Std 23.1.
2. Performance Ratings: Energy Efficiency Rating (EER)/Coefficient of Performance (COP) not less than requirements of ASHRAE Std 90.1.

2.03 FABRICATION

A. Cabinet: Galvanized steel, phosphatized, and finished with a pre-applied baked polyurethane enamel. Structural members with access doors and removable panels shall be a minimum 22 gauge.

B. Unit’s cabinet surface shall be tested 672 hours in salt spray test in compliance with ASTM B117.

C. Cabinet construction shall allow for all service/ maintenance from one side of the unit.

D. Cabinet top cover shall be one piece construction or where seams exits, it shall be double-hemmed and gasket-sealed.
E. Access Panels: Water- and air-tight panels with handles shall provide access to filters, heating section, return air fan section, supply air fan section, evaporator coil section, and unit control section.
F. Unit's base pan shall have a raised 1 1/8 inch high lip around the supply and return openings for water integrity.
G. Provide ½ inch foil faced, fire retardant permanent, odorless glass fiber material. All edges must be captured so that there is no insulation exposed in the air stream.
The base pan shall have no penetrations within the perimeter of the curb other that the raised 1 1/8 inch high down flow supply/return openings to provide and added water integrity precaution.
H. Provide openings either on side of unit or through the base for power, control, condensate, and gas connections.
I. The base of the unit shall have 3 sides for forklift provisions. The base of the units shall have rigging/lifting holes for crane maneuvering.

2.04 FILTERS

A. Filter: Removable 2 inches (50 mm) thick glass fiber disposable filters in metal frames.

2.05 BURNERS

A. Assembly: For natural gas, capable of modulating turn down ratio of 25:1, including electric modulating main gas valve, motorized shut down valve, main and pilot gas regulators, pilot electric gas valve, manual shut-off valve and pilot adjustment valve.
B. Regulator: Required for initial gas pressure.
C. Pilot: Electrically ignited by spark rod through high voltage ignition transformer.
D. Damper: Motorized with end switch to prove position before burner will fire.

2.06 GAS FIRED HEATING SECTION

A. Completely assembled and factory installed heating system shall be integral to unit, UL or CSA approved specifically for outdoor applications for use downstream from refrigerant cooling coils. Threaded connection with plug or cap provided. Provide capability for gas piping.
B. Heating section shall be factory run tested prior to shipment.
C. Induced draft combustion type with direct spark ignition system, redundant main gas valve, and 2-staged heat (6-10 ton).
D. Gas Burner Safety Controls: Provide safety controls for the proving of combustion air prior to ignition, and continuous flame supervision. Provide flame rollout switches.
E. Induced draft blower shall have combustion air proving switches and built-in thermal overload protection on fan motor.

2.07 EVAPORATOR COIL AND SECTION

A. Provide configured aluminum fin surface mechanically bonded to copper tubing coil.
B. Microchannel evaporators provide streamlined tubes with small ports, and metallurgical tube-to-fin bond. The Microchannel coil has better heat transfer performance. Compact all-aluminum microchannel coils also help to reduce the unit weight. These all aluminum coils are recyclable, galvanic corrosion is also minimized due to all aluminum construction. Strong aluminum brazed structure provides better fin protection. In addition, flat streamlined tubes also make microchannel coils more dust resistant and easier to clean.
C. Provide an independent expansion device for each refrigeration circuit. Factory pressure tested at 600 psig and leak tested at 465 psig.
D. Provide a removable, reversible, cleanable double sloped drain pan for base of evaporator coil constructed of PVC.
E. Provide clogged Filter Switch. The indication will be registered with either a zone sensor with status indication lights or an integrated comfort system. This option is available for microprocessor controlled units.

F. Provide Fan Failure Switch. The indication will be registered with either a zone sensor with status indication lights or an integrated comfort system. This option is available for microprocessor controlled units.
G. Provide Discharge Air Sensing Tube
H. Provide Novar Return Air Sensor
I. Provide Novar Zone Temp sensor
J. Provide a removable, reversible, cleanable double sloped drain pan for base of evaporator coil constructed of Stainless Steel
K. Unit shall include a condensate overflow switch to shut the unit down in the event that a clogged condensate drain line prevents proper condensate removal from the unit.

2.08 REFRIGERATION SYSTEM

A. All units shall have direct drive hermetic, scroll type compressors with centrifugal type oil pumps. Motor shall be suction gas cooled and shall have a voltage utilization range of plus or minus 10 percent of unit nameplate.
B. 17 Plus series shall be 2 stage scroll type compressors with centrifugal type oil pumps. Motor shall be suction gas cooled and shall have a voltage utilization range of plus or minus 10 percent of unit nameplate.
C. Eflex variable speed compressor shall be capable of speed modulation from 15Hz to a maximum of 60Hz. The minimum unit capacity shall be 25% of full load. The compressor motor shall be a permanent magnet type. Each variable speed compressor shall be matched with a specially designed refrigerant cooled, variable frequency drive which modulates the speed of the compressor motor and provides several compressor protection functions.
D. Provide with thermostatic temperature motor winding control for protection against excessive temperatures caused by over/under voltage operation or loss of charge. Also provide high and low pressure switches.
E. Thermal Expansion valves are standard for all models.
F. Units shall have cooling capabilities down to 0 degree F as standard with microprocessor controls (40 degrees F with electromechanical controls. For field-installed low ambient accessory, the manufacturer shall provide a factory-authorized service technician that will assure proper installation and operation).
G. Provide each unit with 8.9 pounds of R-410A refrigerant circuit(s) factory-supplied completely piped with liquid line filter-drier, suction and liquid line pressure ports.
H. For heat pump units, provide reversing valve, discharge muffler, flow control check valve, and electronic adaptive demand defrost control on all units.
I. Provide high efficiency unit with 3 stages of cooling.
J. Provide ultra-high efficiency with eflex variable speed technology

2.09 EXHAUST/RETURN SECTION

A. Provide barometric relief gravity type dampers to operate in conjunction with economizer to provide exhaust
B. Provide, on down flow units from 3-10 tons above a factory supplied field installed power exhaust assembly that shall assist the barometric relief damper in the economizer in relieving building pressurization.
C. Supply, Return and Plenum air smoke detector: If smoke is detected all unit operation will be shut down. Reset will be manual at the unit.

2.10 OUTDOOR AIR SECTION

A. Provide No fresh air 100% return air.
B. Manual outside air damper 0-50%
C. Low leak Economizer with <<economizer features>> dampers shall be provided with airfoil blades. Dampers shall have a leakage rate of 3 CFM/sq-ft a 1.0 in WC differential.

D. Provide Fault Detection and Diagnostics (FDD) control.
E. Motorized outside air damper 0-50%
F. Provide economizer with <<ECONOMIZER_FEATURES>>.
G. Provide adjustable minimum position control located in the economizer section of the unit.
H. Provide spring return motor for outside air damper closure during unit shut down or power interruption.
I. Provide Remote Potentiometer for minimum position setting of the economizer

2.11 FAN

A. Provide evaporator fan section with forward curved, double width, double inlet, centrifugal type fan.
B. Provide self-aligning, grease lubricated, ball or sleeve bearings with permanent lubrication fittings.
C. All 10 tons, 6 ton (074), 7½ to 8½ ton high efficiency units shall be equipped with a direct drive plenum fan design. Plenum fan design shall include a backward-curved fan wheel along with an external rotor direct drive variable speed indoor motor. All plenum fan designs will have a variable speed adjustment potentiometer located in the control box.
D. Outdoor fans shall be direct drive, statically and dynamically balanced, draw through in the vertical discharge position.
E. Outdoor and Indoor Fan shall be permanently lubricated and have internal thermal overload protection.
F. Provide shafts constructed of solid hot rolled steel, ground and polished, with key-way, and protectively coated with lubricating oil.

2.12 CONTROLS

A. Field wire unit for connection with room temperature sensor.

2.13 RELATED MATERIALS

A. Provide screws, bolts, and other accessories of same material and finish as sheet metal with which used.
B. Sealant: Low-modulus sealant, silicone or urethane based, compatible and recommended by manufacturer for use with sheet metal types specified and as approved by Designer.
C. Accessories: Provide necessary clips, cleats, straps, anchors, and similar items to complete the work. Provide accessories compatible with sheet metal materials used.
D. Reglets: Furnish fabricated metal units of type and profile indicated, or if not indicated, as required to properly complete the work. Fabricate reglets from metal which is compatible with flashings used.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.
B. Install to NFPA 90A.
C. Install to NFPA 54. Provide connection to fuel gas system; refer to Section 22 1005.
D. Install unit on curb.

3.02 MAINTENANCE

A. See Section 01 7000 - Execution Requirements, for additional requirements relating to maintenance service.
B. Provide a separate maintenance contract for specified maintenance service.
C. Provide service and maintenance of units for one year from Date of Substantial Completion.

3.03 SCHEDULE

	6 Tons	7.5 Tons	8.5 Tons	10 Tons
	T/YZC072F3	T/YZC090F3	T/YZC102F3	T/YZC120F3
Cooling Performance[a]				
Gross Cooling Capacity - Full Load EER/IEER[b] Nominal cfm/AHRI Rated cfm AHRI Net Cooling Capacity - Full Load System Power (kW)	71,000 12.8/23.2 2,400/2,400 70,000 5.47	92,000 12.8/22.4 3,000/2,850 90,000 7.03	103,000 12.6/22.5 3,400/2,975 99,000 7.86	117,000 12.1/23.0 4,000/4,000 114,000 9.42
Compressor				
Number/Type	1/Scroll (Variable Speed)	1/Scroll (Variable Speed)	1/Scroll (Variable Speed)	1/Scroll (Variable Speed)
Sound				
Outdoor Sound Rating (dB)[c]	89	89	89	89
Outdoor Coil - Type	Microchannel	Microchannel	Microchannel	Microchannel
Coil Width (in.) Face Area (sq. ft.) Rows/FPI	0.8 20.8 1/23	1.0 20.9 1/20	1.0 20.9 1/20	1.0 26.7 1/20
Indoor Coil - Type	Lanced	Lanced	Lanced	Lanced
Tube Size (in.) ID Face Area (sq. ft.) Rows/FPI Refrigerant Control Drain Connection Number/Size (in.)	0.3125 12.4 5/16 Thermal Expansion Valve 1¾ NPT	0.3125 12.4 4/16 Thermal Expansion Valve 1¾ NPT	0.3125 12.4 4/16 Thermal Expansion Valve 1¾ NPT	0.3125 16.7 4/16 Thermal Expansion Valve 1¾ NPT
Outdoor Fan - Type	Propeller	Propeller	Propeller	Propeller
Number Used/Diameter (in.) Drive Type/No. Speeds cfm Motor hp Motor rpm (max.)	1/26 Direct/Variable 5,865 0.75 1,200	1/26 Direct/Variable 6,806 0.75 1,200	1/26 Direct/Variable 6,770 0.75 1,200	1/30 Direct/Variable 7,611 0.75 1,200
Indoor Fan - Type	EBM	EBM	EBM	EBM
Number Used/Diameter (in.) Drive Type/No. Speeds Number Motors Motor hp (Standard/Oversized)	1/23.03 Direct/Variable 1 2.75	1/23.03 Direct/Variable 1 2.75	1/23.03 Direct/Variable 1 2.75	1/23.03 Direct/Variable 1 2.75
Filters[d]				
Type Furnished Number Size Recommended	Throwaway (4) 2x20x25	Throwaway (4) 2x20x25	Throwaway (4) 2x20x25	Throwaway (3) 2x20x25 (2) 2x20x30
Refrigerant Charge[e]				
Pounds of R-410A	8.3	8.7	8.9	10.5

	6 Tons	7.5 Tons	8.5 Tons	10 Tons
	T/YZC072F3	T/YZC090F3	T/YZC102F3	T/YZC120F3
Heating Performance[f]				
(Gas/Electric Only)				
Heating Input				
Low Heat Input (Btu)	80,000	120,000	120,000	150,000
Mid Heat Input (Btu)	120,000	150,000	150,000	200,000
High Heat Input (Btu)	150,000	200,000	200,000	250,000
Modulating Heat Input (Btu)	150,000	200,000	200,000	250,000
Heating Output				
Low Heat Input (Btu)	64,800	97,200	97,200	121,500
Mid Heat Input (Btu)	97,200	121,500	121,500	162,000
High Heat Input (Btu)	121,500	162,000	162,000	202,500
Modulating Heat (Btu)	121,500	162,000	162,000	202,500
Steady State Efficiency%				
Low Heat Input (Btu)	81	81	81	81
Mid Heat Input (Btu)	81	81	81	81
High Heat Input (Btu)	81	81	81	81
Modulating Heat (Btu)	81	81	81	81
No. Burners				
Low Heat Input (Btu)	3	3	3	3
Mid Heat Input (Btu)	3	3	3	4
High Heat Input (Btu)	3	5	5	5
Modulating Heat (Btu)	3	5	5	5
No. Stages				
Low Heat Input (Btu)	1	1	1	2
Mid Heat Input (Btu)	1	2	2	2
High Heat Input (Btu)	2	2	2	2
Modulating Heat (Btu)	2.5:1 Modulating	2.5:1 Modulating	2.5:1 Modulating	2.5:1 Modulating
Gas Supply Line Pressure (w.c.)				
Natural (minimum/maximum) Low/Mid/High	4.5/14.0	4.5/14.0	4.5/14.0	4.5/14.0
Natural (minimum/maximum) Mod Heat	5.5/14.0	5.5/14.0	5.5/14.0	5.5/14.0
LP (minimum/maximum)	11.0/14.0	11.0/14.0	11.0/14.0	11.0/14.0
Gas Connection Pipe Size (in)				
Low Heat	1/2	1/2	1/2	3/4
Mid Heat	1/2	3/4	3/4	3/4
High Heat	3/4	3/4	3/4	3/4
Modulating Heat	3/4	3/4	3/4	3/4

END OF SECTION

CONTRACT DRAWINGS

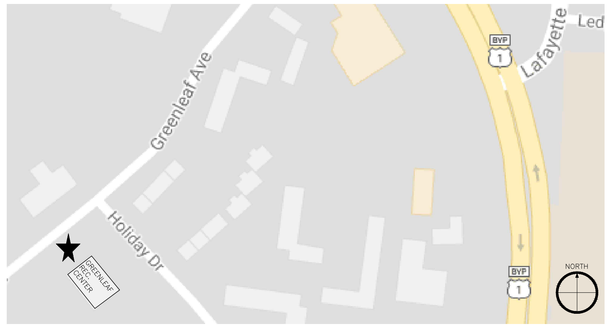
CITY OF PORTSMOUTH

DEPARTMENT OF COMMUNITY DEVELOPMENT

GREENLEAF RECREATION CENTER ROOF AND HVAC REPLACEMENT

195 GREENLEAF AVE.
PORTSMOUTH, NH

LOCUS MAP



DRAWING LIST

Sheet List	
Sheet Number	Sheet Name
A000	COVER SHEET
A001	EXISTING ROOF IMAGES
A101	ROOF PLAN
A201	ROOF DETAILS
M101	HVAC PLAN
M201	HVAC DETAILS

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CITY OF PORTSMOUTH
DEPARTMENT OF COMMUNITY DEVELOPMENT
GREENLEAF RECREATION CENTER

195 GREENLEAF AVE.
PORTSMOUTH, NEW HAMPSHIRE, 03801

ENGINEER/ARCHITECT	DESIGNED BY:	APPROVED BY:	CHECKED BY
JM	DS	TN	TN

REVISIONS

No.	Description	Date

GREENLEAF ROOF AND HVAC REPLACEMENT

COVER SHEET

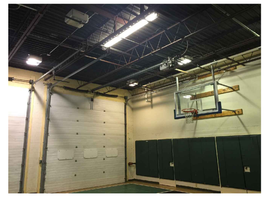
DRAWN BY	SCALE	DATE	PROJECT NUMBER
DS	NA	10/02/17	CONTRACT: A
			A000
			SHEET OF

NOTES: PHOTOGRAPHS TAKEN BETWEEN 8/29/17 AND 9/7/17

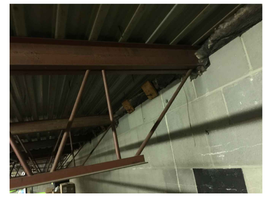
1 Roof Overview (South East View)

2 Northwest Elevation

3 Northeast Elevation



4 Southeast Activity Room



5 Bar Joist Detail

6 Soffit Insulation

7 Interior Roof Soffit

8 RTU Ducting

9 RTU Ducting

10 RTU 3 (Northeast View)

11 RTU 2 (Northwest View)

12 RTU 2 (East View)

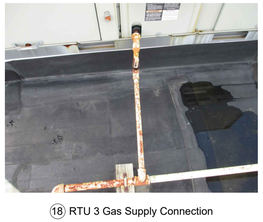
13 RTU 1 (Northwest View)

14 RTU 1 & RTU 2 (South View)

15 RTU 3 Corrosion

16 Gas Supply Piping

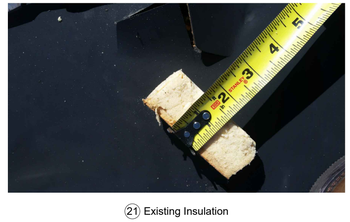
17 Gas Supply Piping



18 RTU 3 Gas Supply Connection

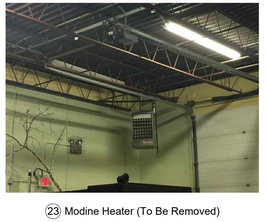
19 RTU 1 Gas Supply Piping Connection

20 Existing Roof Test Cut



21 Existing Insulation

22 Existing Roof Hatch



23 Modine Heater (To Be Removed)

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CITY OF PORTSMOUTH
DEPARTMENT OF COMMUNITY DEVELOPMENT
GREENLEAF RECREATION CENTER

195 GREENLEAF AVE.
PORTSMOUTH, NEW HAMPSHIRE, 03801

ENGINEER/ARCHITECT	DESIGNED BY:	APPROVED BY:	CHECKED BY
JM	DS	TN	TN

REVISIONS

No.	Description	Date

GREENLEAF ROOF AND HVAC REPLACEMENT

EXISTING ROOF IMAGES

PROJECT NUMBER
CONTRACT: A

DRAWN BY	SCALE	DATE
DS	NA	10/02/17

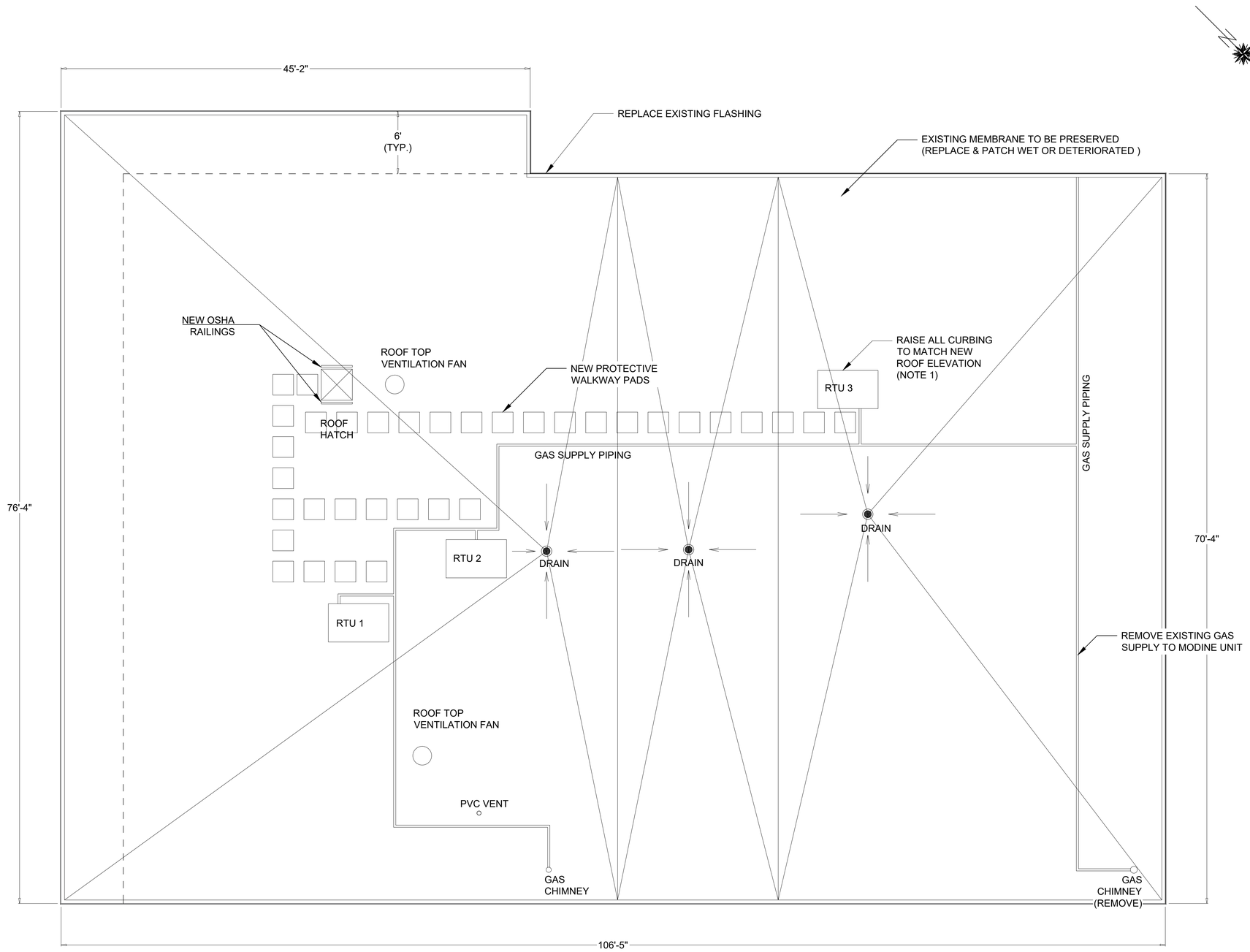
A001
SHEET OF

GENERAL ROOF DEMOLITION NOTES:

1. ALL OSHA REGULATIONS, APPLICABLE CODES AND STANDARDS MUST BE OBSERVED AND COMPLIED WITH, IN ALL PHASES OF THIS PROJECT. PROJECT SAFETY, PROTECTION OF THE BUILDING, ITS CONTENTS AND ALL PEDESTRIAN TRAFFIC, SHALL BE THE RESPONSIBILITY OF EACH CONTRACTOR AND ALL EMPLOYEES ON SITE FOR THE DURATION OF THE PROJECT.
2. CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS AND REPORT TO THE OWNERS REPRESENTATIVE ALL DISCREPANCIES BEFORE BEGINNING ANY PHASE OF THE WORK.
3. DURING ROOF DEMOLITION, ALL ROOF AND GUTTER DRAINS SHALL BE PLUGGED AT THE BEGINNING OF EACH WORKDAY AND UNPLUGGED AT THE END OF THE WORKDAY, TO PREVENT ROOFING DEBRIS FROM ENTERING THE DRAINAGE SYSTEM.
4. DEBRIS CHUTES AND ROLL-OFF DUMPSTERS (OR VEHICLES) SHALL BE USED TO TRANSPORT ALL ROOFING DEBRIS OFF SITE. ALL DEBRIS CHUTE AND CONTAINER LOCATIONS SHALL BE APPROVED BY OWNER.
5. NO DEBRIS SHALL BE "THROWN" AND NO DEBRIS SHALL BE STORED ON THE SITE GROUNDS, EXCEPT IN ROLL-OFF CONTAINERS.
6. CONTRACTORS SHALL INSPECT AND REMOVE ALL DEBRIS FROM THE ROOF AND SITE AT THE END OF EACH WORK DAY.
7. REMOVE EXISTING FASCIA EDGE FLASHING. PROTECT EXISTING INSULATION AND MEMBRANE, REPLACE DAMAGED OR WET INSULATION.
8. REPLACE ALL DETERIORATED WOOD BLOCKING FROM FASCIA AND CURBING.
9. CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL EXISTING FLASHING, FASCIA, WOOD BLOCKING, AND ALL OTHER MATERIALS TO BE REPLACED WITH THE NEW ROOFING SYSTEM.
10. CONTRACTOR SHALL INSPECT AND IDENTIFY ALL EXISTING INSULATION FOR DETERIORATION AND SATURATION. DETERIORATED OR SATURATED INSULATION SHALL BE REMOVED AND REPLACED IN KIND AT THE DIRECTION OF THE CITY.
11. CONTRACTOR SHALL DISCONNECT AND REMOVE EXISTING ROOFTOP EQUIPMENT AND REPLACE AND RECONNECT AFTER RAISED CURBS ARE CONSTRUCTED.
12. CONTRACTOR SHALL MONITOR WEATHER FORECASTS AND SHALL SEAL THE ROOF TO PREVENT WATER INTRUSION DURING RAINFALL EVENTS.

GENERAL ROOF CONSTRUCTION NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR BUILDING UP ALL EXISTING EQUIPMENT CURBS TO MATCH THE HEIGHT OF THE NEW INSULATION (+8").
2. NEW POLYISOCYANURATE (PIC) INSULATION SHALL HAVE A MINIMUM R-VALUE OF 7.0 PER INCH.
3. ALL ROOFTOP EQUIPMENT, CURBS, GAS PIPING STANCHIONS , MECHANICAL BASES AND OTHER ROOFTOP INSTALLATIONS SHALL BE MINIMUM OF 8" ABOVE NEW ROOF DECK SURFACE.
4. FOR PATCHED SECTIONS INSTALL CARLISILE MB 120 TG BASE SHEET, MECHANICALLY FASTENED (12" O.C.). (EA)
5. OVER EXISTING MEMBRANE, INSTALL (3) 1" FLAT BOARDS OF POLYISOCYANURATE INSULATION. MECHANICALLY FASTEN TO DECK 12" ON CENTER (O.C.).
6. INSTALL TAPERED POLYISOCYANURATE INSULATION SYSTEM BY CARLISLE OR EQUAL, ADHERE LAYER TO LAYER WITH CARLISLE FAST 100 OR OLBOND 500 BA LOW RISE FOAM ADHESIVE. REFER TO THE CARLISLE TAPERED DESIGN FOR DETAILS. USE CARLISLE HINGED TARGET SUMP SYSTEM AT ROOF DRAINS.
7. TAPERED POLYISOCYANURATE INSULATION MUST MEET MANUFACTURER MINIMUM SLOPE TO OBTAIN 20 YEAR WARRANTY, AND SUFFICIENT DRAINAGE.
8. INSTALL THE FOLLOWING EPDM SYSTEM BY CARLISLE OR EQUAL: 0.060 NON REINFORCED EPDM, FULLY ADHERED.
9. INSTALL NEW ROOF DRAINS AT ALL DRAIN LOCATIONS INDICATED IN THE PROJECT DOCUMENTS.
10. PROVIDE A 20 YEAR MANUFACTURER WARRANTY.
11. CONTRACTOR SHALL SUBMIT AN INSULATION AND ROOF PANEL LAYOUT PLAN INDICATING DRAINAGE DIRECTIONS. THIS PLAN SHALL BE APPROVED BY OWNER PRIOR TO INSTALLATION.
12. ALL ROOFING COMPONENTS SHALL BE INSTALLED IN STRICT ACCORDANCE W/ MANUFACTURER STANDARDS.
13. ALL WORK SHALL COMPLY W/ CURRENT LOCAL BUILDING CODE STANDARDS INCLUDING IBC 2006, IFC 2006,IMC 2006, IECC 2006, NFGC 2009, NEC 2011.



FIXTURE KEY

☒ -ROOF HATCH	▭ -ROOF TOP UNIT
○ -EXHAUST FAN	○ -PVC VENT
○ -GAS CHIMNEY	◉ -DRAIN

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CITY OF PORTSMOUTH
DEPARTMENT OF COMMUNITY DEVELOPMENT
GREENLEAF RECREATION CENTER

195 GREENLEAF AVE.
PORTSMOUTH, NEW HAMPSHIRE, 03801

ENGINEER/ARCHITECT	DESIGNED BY:	APPROVED BY:	CHECKED BY
JM	DS	TN	TN

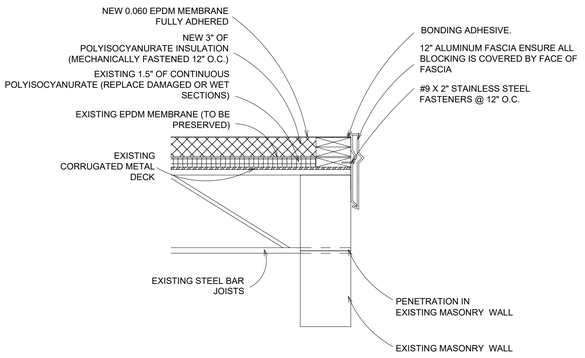
REVISIONS

No.	Description	Date

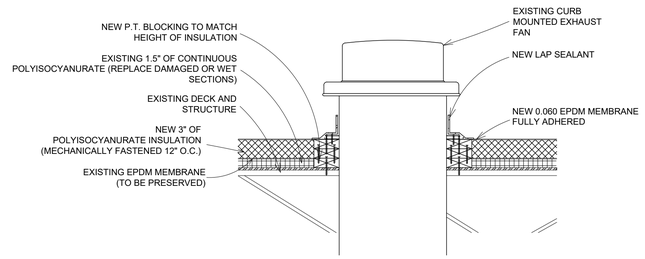
GREENLEAF ROOF AND HVAC REPLACEMENT

ROOF PLAN

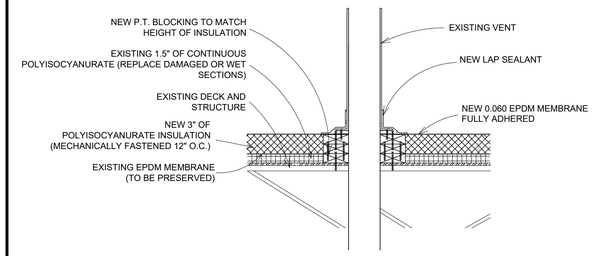
DRAWN BY	SCALE		PROJECT NUMBER
DS	1'=3/16"	10/02/17	CONTRACT: A
			A101
			SHEET OF



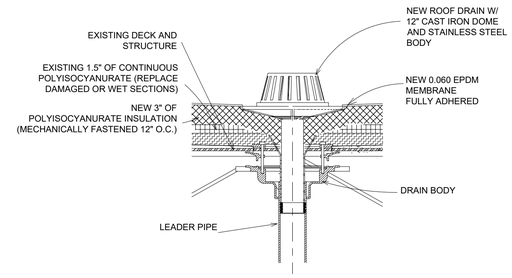
1 FASCIA DETAIL
1" = 1'-0"



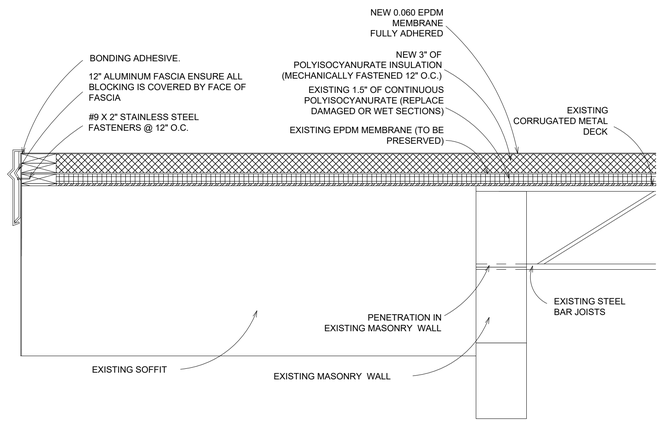
2 CURB DETAIL, EXHAUST VENT (TYP.)
1" = 1'-0"



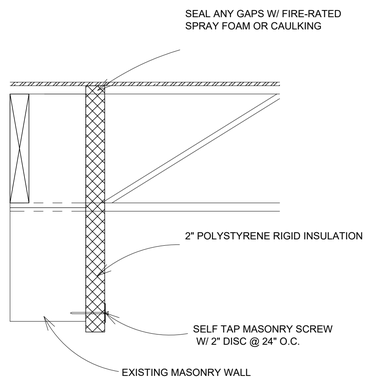
3 CURB DETAIL, PVC VENT
1" = 1'-0"



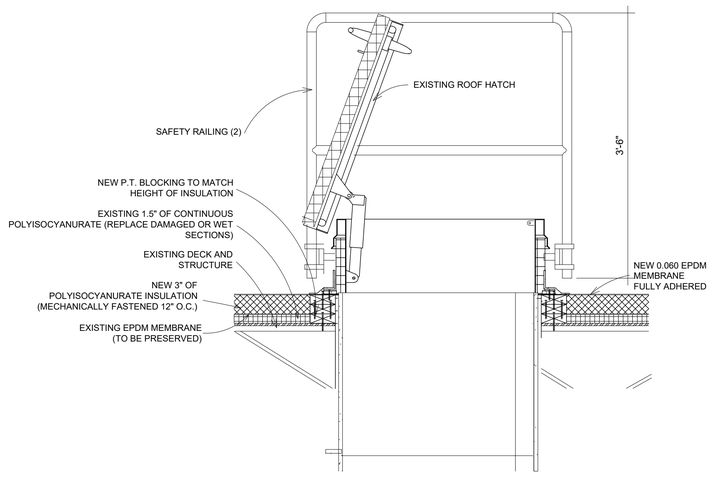
4 ROOF DRAIN DETAIL (TYP.)
1" = 1'-0"



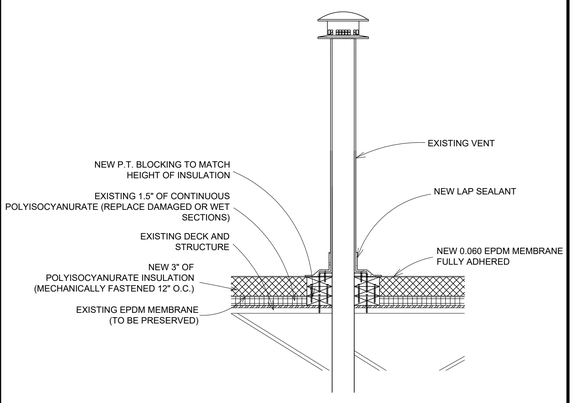
5 ROOF OVERHANG DETAIL
1" = 1'-0"



6 SOFFIT INSULATION DETAIL
1½" = 1'-0"



7 ROOF HATCH DETAIL
1" = 1'-0"



8 CURB DETAIL, GAS CHIMNEY
1" = 1'-0"

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ENGINEER/ARCHITECT	DESIGNED BY:	APPROVED BY:	CHECKED BY
JM	DS	TN	TN

REVISIONS

No.	Description	Date

GREENLEAF ROOF AND HVAC REPLACEMENT

ROOF DETAILS

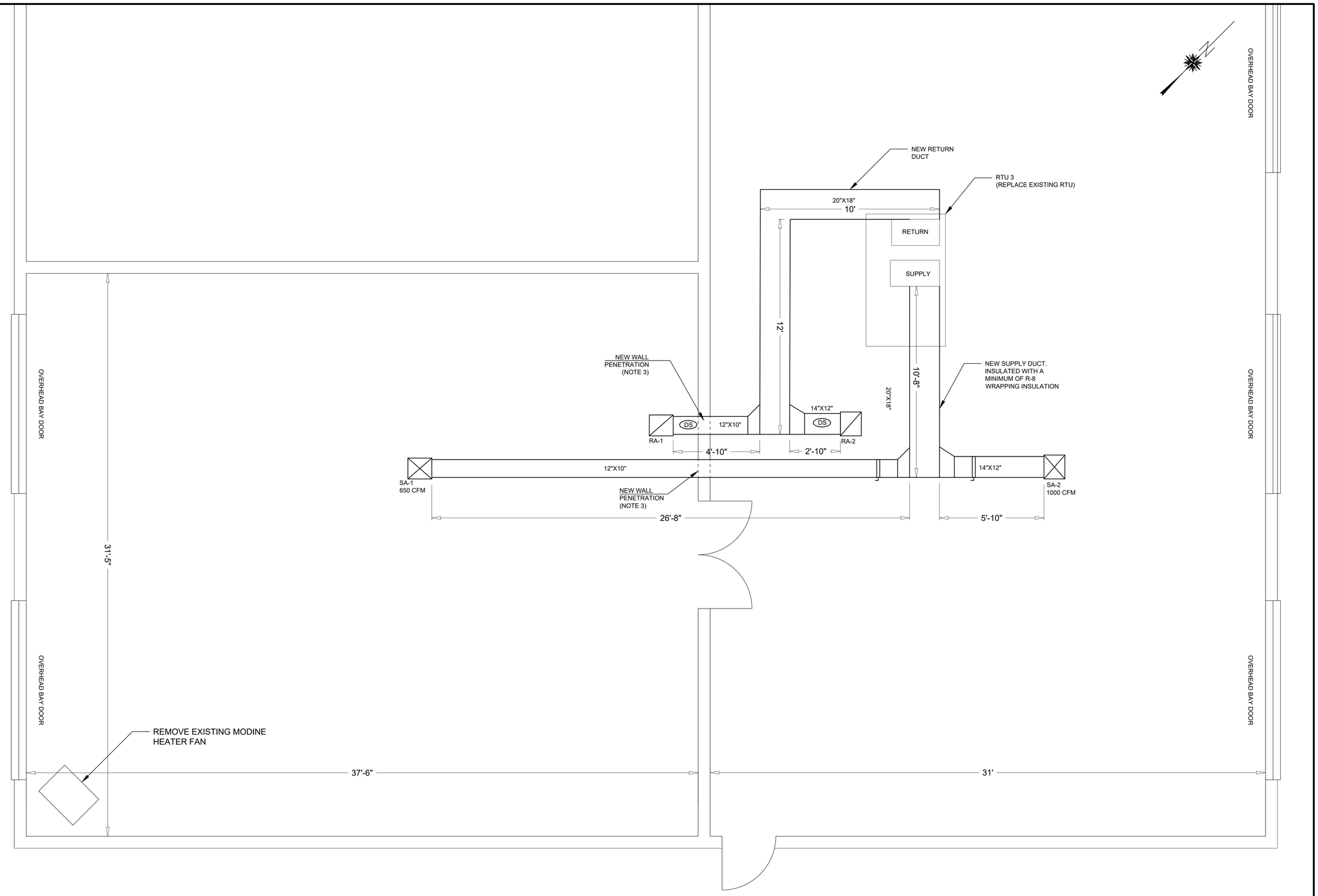
DRAWN BY	SCALE		PROJECT NUMBER
DS	VARIES	10/02/17	CONTRACT: A
			A201
			SHEET OF

GENERAL HVAC DEMOLITION NOTES:

1. CONTRACTOR IS TO DEMOLISH AND DISPOSE OF ALL EXISTING RTU AND SUPPLY AND RETURN DUCT WORK.
2. PROPER REMOVAL AND DISPOSAL, INCLUDING ANY APPLICABLE RECYCLABLE MATERIALS, OF RTU 3 IS THE RESPONSIBILITY OF THE CONTRACTOR.
3. CONTRACTOR SHALL DISCONNECT ALL GAS PIPING PRIOR TO ROOF INSULATION.REMOVE EXISTING RTU'S ON NEW CURING AND REINSTALL.

GENERAL HVAC CONSTRUCTION NOTES:

1. CONTRACTOR SHALL MAKE NEW PENETRATIONS IN THE CMU WALL TO ACCOMMODATE NEW DUCTING. FIRE SEAL ALL PENETRATIONS W/ APPROVED GROUT OR CAULKING (NO FOAM).
2. CONTRACTOR IS RESPONSIBLE FOR HANGING THE NEWLY SPECIFIED DUCT WORK FROM THE EXISTING JOISTS.
3. CONTRACTOR SHALL INSULATE THE SUPPLY AIR DUCTWORK WITH A MINIMUM OF R-8 WRAPPING INSULATION.
4. RTU SHALL BE INSTALLED, TESTED, AND COMMISSIONED PER MANUFACTURER STANDARDS. WARRANTY SHALL BE PROVIDED TO OWNER.
5. CONTRACTOR SHALL MODIFY THE EXISTING ROOF OPENINGS TO ACCOMMODATE ALL NEW HVAC EQUIPMENT.
6. CONTRACTOR SHALL INSTALL DUCT SMOKE DETECTORS TO DISABLE RTU IN EVENT OF FIRE.
7. NET WEIGHT OF REPLACEMENT RTU CANNOT EXCEED EXISTING RTU.
8. INSTALL NEW SUPPLY DIFFUSERS IN ACCORDANCE WITH SCHEDULE.
9. INSTALL NEW RETURN GRILLS IN ACCORDANCE WITH SCHEDULE.
10. CONTRACTOR SHALL BALANCE ROOM AIRFLOW IN ACCORDANCE WITH DRAWING.
11. CONTRACTOR IS RESPONSIBLE FOR INSTALLATION AND MOUNTING THE NEW RTU 3, WHICH INCLUDES BUT IS NOT LIMITED TO ANY NECESSARY ROOF CURB EQUIPMENT.
12. RTU BASIS OF DESIGN: TRANE YCZ102F3.
13. INSTALL NEW RTU IN EXISTING RTU 3 LOCATION. CONTRACTOR IS RESPONSIBLE FOR ANY EQUIPMENT MOUNTING.
14. ALL WORK SHALL COMPLY WITH CURRENT LOCAL CODE STANDARDS INCLUDING IBC 2006, IFC 2006,IMC 2006, IECC 2006, NFGC 2009, NEC 2011.



FIXTURE KEY

-DUCT DAMPER
(DS) -DUCT SMOKE DETECTOR
-SUPPLY REGISTER
-RETURN REGISTER

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JM	DS	TN	TN

REVISIONS

No.	Description	Date

GREENLEAF ROOF AND HVAC REPLACEMENT

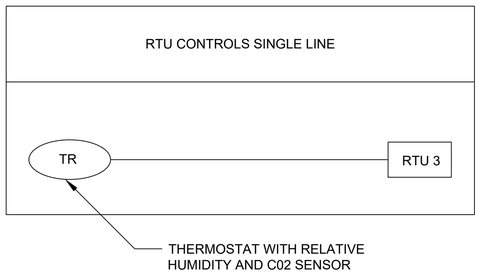
HVAC PLAN

PROJECT NUMBER
CONTRACT: A

DRAWN BY	SCALE	DATE	SHEET
DS	1"=3/8"	10/02/17	M101 OF

RTU SCHEDULE													
NAME	MANUFACTURER	MODEL #	V	PHASES	TONS	COMPRESSORS			FANS				GAS INPUT (btuh)
						#	RLA	LRA	#	HP (ea)	CFM	FLA	
OPTION ONE - SINGLE UNIT REPLACEMENT													
RTU 3	TRANE	YZC102F3RL	208/ 230	3	8.5	1	5.7	13.6	1	.75	3400	8.5	120,000

DUCTWORK SCHEDULE									
UNIT TYPE	20"X18" RECTANGULAR DUCT	14"X12" RECTANGULAR DUCT	12"X10" RECTANGULAR DUCT	12"X10" SUPPLY REGISTER (SA)	14"X12" SUPPLY REGISTER (SA)	12"X10" RETURN REGISTER (RA)	14"X12" RETURN REGISTER (RA)	20"X18" TO 14"X12" DUCT ADAPTER	20"X18" TO 12"X10" DUCT ADAPTER
QUANTITY	32'-8"	8'-8"	31'-6"	1	1	1	1	2	2



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JM	DS	TN	TN

REVISIONS

No.	Description	Date

GREENLEAF ROOF AND HVAC REPLACEMENT

HVAC DETAILS

PROJECT NUMBER
CONTRACT: A

DRAWN BY	SCALE		
DS	NA	10/02/17	M201

SHEET OF

APPENDICES

Appendix A – Compliance with Laws and Regulations

Appendix B – Federal Labor Standards Provisions

Appendix C – Applicable Davis-Bacon Wage Rate Decision

APPENDIX A:

CITY OF PORTSMOUTH
COMMUNITY DEVELOPMENT DEPARTMENT

Compliance by Grantee and Any Contractors and Subcontractors with Laws and Regulations

CONTRACTOR and all subcontractors shall comply with the following federal and state laws and all applicable standards, rules, orders, or regulations issued pursuant thereto:

1. The Copeland "Anti-Kickback" Act, as amended (118 USC 874) as supplemented in Department of Labor regulations (41 CFR Chapter 60).

2. Nondiscrimination, Title VI of the Civil Rights Act of 1974 (PL 88- 352), as amended, (42 USC 2000d) the Fair Housing Act of 1968 (PL 90-284), Executive Orders 11063 and 12259, and the requirements imposed by the Regulations of the Department of Housing and Urban Development (24 CFR 107 and 24 CFR 570.496) issued pursuant to that Title.

3. Labor Standards. Contract Work Hours and Safety Standards Act (40 USC 327-333).

4. The Flood Disaster Protection Act of 1973 (PL 93-234), as amended, regulations issued pursuant to that act, and Executive Order 11985.

5. Architectural Barriers Act (PL 90-480), 42 USC 4151, as amended, and the regulations issued or to be issued thereunder, including uniform accessibility standards (24 CFR 40) for public buildings with 15 or more residential units. RSA 275-C:10 and the New Hampshire Architectural Barrier Free Design Code (Han 100, et. seq.) also apply.

6. Rehabilitation Act of 1973, 29 USC 794, Sections 503 and 504, Executive Order 11914 and U.S. Department of Labor regulations issued pursuant thereto.

7. The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (PL 91-646), as amended, 15 CFR Part 916 including amendments thereto and regulations thereunder.

8. The National Environmental Policy Act of 1969 (PL 90-190): the National Historic Preservation Act of 1966 (80 Stat 915, 116 USC 470); and Executive Order No. 11593 of May 31, 1971, as specified in 24 CFR 58.

9. The Clean Air Act, as Amended, 42 USC 1857 et seq., the Federal Water Pollution Control Act, as amended, 33 USC 1251 et seq. and the regulations of the Environmental Protection Agency with respect thereto, at 40 CFR Part 15, as amended from time to time.

10. RSA 354 and rules of the New Hampshire Human Rights Commission (HUM 100, et. seq.) on discrimination in employment, membership, accommodations, and housing.

11. The Age Discrimination Act of 1975 as amended (42 USC 6101, et. seq.) and implementing regulations.

12. The lead paint requirements (24 CFR 35) of The Lead-Based Paint Poisoning Prevention Act (42 USC 4821, et. seq.).

13. The NH State Energy Code (RSA 155-D).

14. The NH State Life Safety Code (RSA 155:1) and rules of the NH State Fire Marshall.

15. Citizen Participation Requirements. The 1987 amendments to the Housing and Community Development Act of 1974, stated in Section 508.

16. Affirmative Action Requirements.

17. Section 3 of the Housing and Urban Development Act of 1968 (12 USC 1701u) as amended by the Housing and Community Development Act of 1992 (42 USC 5301).

18. In addition to other provisions required by the Federal agency or non-Federal entity, all contracts made by the non-Federal entity under the Federal award must contain provisions covering the following, as applicable. [**APPENDIX II TO PART 200—CONTRACT PROVISIONS FOR NON-FEDERAL ENTITY CONTRACTS UNDER FEDERAL AWARDS]**

(A) Contracts for more than the simplified acquisition threshold currently set at $150,000, which is the inflation adjusted amount determined by the Civilian Agency Acquisition Council and the Defense Acquisition Regulations Council (Councils) as authorized by 41 U.S.C. 1908, must address administrative, contractual, or legal remedies in instances where contractors violate or breach contract terms, and provide for such sanctions and penalties as appropriate.

(B) All contracts in excess of $10,000 must address termination for cause and for convenience by the non-Federal entity including the manner by which it will be effected and the basis for settlement.

(C) Equal Employment Opportunity. Except as otherwise provided under 41 CFR Part 60, all contracts that meet the definition of "federally assisted construction contract" in 41 CFR Part 60-1.3 must include the equal opportunity clause provided under 41 CFR 60-1.4(b), in accordance with Executive Order 11246, "Equal Employment Opportunity" (30 FR 12319, 12935, 3 CFR Part, 1964-1965 Comp., p. 339), as amended by Executive Order 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and implementing regulations at 41 CFR part 60, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor."

(D) Davis-Bacon Act, as amended (40 U.S.C. 3141-3148). When required by Federal program legislation, all prime construction contracts in excess of $2,000 awarded by non-Federal entities must include a provision for compliance with the Davis-Bacon Act (40 U.S.C. 3141-3144, and 3146-3148) as supplemented by Department of Labor regulations (29 CFR Part 5, "Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction") (see Attachment B). In accordance with the statute, contractors must be required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, contractors must be required to pay wages not less than once a week. The non-Federal entity must place a copy of the current prevailing wage determination issued by the Department of Labor in each solicitation. The decision to award a contract or subcontract must be conditioned upon the acceptance of the wage determination (see Attachment C, Wage Rate Decision). The non-Federal entity must report all suspected or reported violations to the Federal awarding agency. The contracts must also include a provision for compliance with the Copeland "Anti-Kickback" Act (40 U.S.C. 3145), as supplemented by Department of Labor regulations (29 CFR Part 3, "Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States"). The Act provides that each contractor or CONTRACTOR must be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency.

(E) Contract Work Hours and Safety Standards Act (40 U.S.C. 3701-3708). Where applicable, all contracts awarded by the non-Federal entity in excess of $100,000 that involve the employment of mechanics or laborers must include a provision for compliance with 40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5). Under 40 U.S.C. 3702 of the Act, each contractor must be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. 3704 are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

(F) Rights to Inventions Made Under a Contract or Agreement. If the Federal award meets the definition of "funding agreement" under 37 CFR §401.2 (a) and the recipient or CONTRACTOR wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that "funding agreement," the recipient or CONTRACTOR must comply with the requirements of 37 CFR Part 401, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," and any implementing

regulations issued by the awarding agency.

(G) Clean Air Act (42 U.S.C. 7401-7671q.) and the Federal Water Pollution Control Act (33 U.S.C. 1251-1387), as amended—Contracts and subgrants of amounts in excess of $150,000 must contain a provision that requires the non-Federal award to agree to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251-1387). Violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA).

(H) Debarment and Suspension (Executive Orders 12549 and 12689)—A contract award (see 2 CFR 180.220) must not be made to parties listed on the government wide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 CFR 180 that implement Executive Orders 12549 (3 CFR part 1986 Comp., p. 189) and 12689 (3 CFR part 1989 Comp., p. 235), "Debarment and Suspension." SAM Exclusions contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549.

(I) Byrd Anti-Lobbying Amendment (31 U.S.C. 1352)—Contractors that apply or bid for an award exceeding $100,000 must file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the non-Federal award.

(J) See §200.322 Procurement of recovered materials.

[78 FR 78608, Dec. 26, 2013, as amended at 79 FR 75888, Dec. 19, 2014]

APPENDIX B:

Federal Labor Standards Provisions

Federal Labor Standards Provisions

U.S. Department of Housing and Urban Development
Office of Labor Relations

Applicability

The Project or Program to which the construction work covered by this contract pertains is being assisted by the United States of America and the following Federal Labor Standards Provisions are included in this Contract pursuant to the provisions applicable to such Federal assistance.

A. 1. (i) Minimum Wages. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR Part 3), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under Section l(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of 29 CFR 5.5(a)(1)(iv); also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period.

Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under 29 CFR 5.5(a)(1)(ii) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible, place where it can be easily seen by the workers.

(ii) (a) Any class of laborers or mechanics which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. HUD shall approve an additional classification and wage rate and fringe benefits therefor only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(b) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and HUD or its designee agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by HUD or its designee to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, D.C. 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB control number 1215-0140.)

(c) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and HUD or its designee do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), HUD or its designee shall refer the questions, including the views of all interested parties and the recommendation of HUD or its designee, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)

(d) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (1)(ii)(b) or (c) of this paragraph, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part

of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)

2. Withholding. HUD or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract In the event of failure to pay any laborer or mechanic, including any apprentice, trainee or helper, employed or working on the site of the work, all or part of the wages required by the contract, HUD or its designee may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased. HUD or its designee may, after written notice to the contractor, disburse such amounts withheld for and on account of the contractor or subcontractor to the respective employees to whom they are due. The Comptroller General shall make such disbursements in the case of direct Davis-Bacon Act contracts.

3. (i) Payrolls and basic records. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in Section l(b)(2)(B) of the Davis-bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5 (a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section l(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs. (Approved by the Office of Management and Budget under OMB Control Numbers 1215-0140 and 1215-0017.)

(ii) (a) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to HUD or its designee if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant sponsor, or owner, as the case may be, for transmission to HUD or its designee. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i) except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at http://www.dol.gov/esa/whd/forms/wh347instr.htm or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to HUD or its designee if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant sponsor, or owner, as the case may be, for transmission to HUD or its designee, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this subparagraph for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to HUD or its designee. (Approved by the Office of Management and Budget under OMB Control Number 1215-0149.)

(b) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under 29 CFR 5.5 (a)(3)(ii), the appropriate information is being maintained under 29 CFR 5.5(a)(3)(i), and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR Part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(c) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by subparagraph A.3.(ii)(b).

(d) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under subparagraph A.3.(i) available for inspection, copying, or transcription by authorized representatives of HUD or its designee or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, HUD or its designee may, after written notice to the contractor, sponsor, applicant or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and Trainees.

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant ',to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by

the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under 29 CFR Part 5 shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR Part 3 which are incorporated by reference in this contract

6. Subcontracts. The contractor or subcontractor will insert in any subcontracts the clauses contained in subparagraphs 1 through 11 in this paragraph A and such other clauses as HUD or its designee may by appropriate instructions require, and a copy of the applicable prevailing wage decision, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in this paragraph.

7. Contract termination; debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act Requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this contract

9. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and HUD or its designee, the U.S. Department of Labor, or the employees or their representatives.

10. (i) Certification of Eligibility. By entering into this contract the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001. Additionally, U.S. Criminal Code, Section 1 01 0, Title 18, U.S.C., "Federal Housing Administration transactions", provides in part: "Whoever, for the purpose of . . . influencing in any way the action of such Administration..... makes, utters or publishes any statement knowing the same to be false..... shall be fined not more than $5,000 or imprisoned not more than two years, or both."

11. Complaints, Proceedings, or Testimony by Employees. No laborer or mechanic to whom the wage, salary, or other labor standards provisions of this Contract are applicable shall be discharged or in any other manner discriminated against by the Contractor or any subcontractor because such employee has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or relating to the labor standards applicable under this Contract to his employer.

B. Contract Work Hours and Safety Standards Act. The provisions of this paragraph B are applicable where the amount of the prime contract exceeds $100,000. As used in this paragraph, the terms "laborers" and "mechanics" include watchmen and guards.

(1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which the individual is employed on such work to work in excess of 40 hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of 40 hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in subparagraph (1) of this paragraph, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in subparagraph (1) of this paragraph, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of 40 hours without payment of the overtime wages required by the clause set forth in sub paragraph (1) of this paragraph.

(3) Withholding for unpaid wages and liquidated damages. HUD or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contract, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act which is held by the same prime contractor such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in subparagraph (2) of this paragraph.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in subparagraph (1) through (4) of this paragraph and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in subparagraphs (1) through (4) of this paragraph.

C. Health and Safety. The provisions of this paragraph C are applicable where the amount of the prime contract exceeds $100,000.

(1) No laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health and safety as determined under construction safety and health standards promulgated by the Secretary of Labor by regulation.

(2) The Contractor shall comply with all regulations issued by the Secretary of Labor pursuant to Title 29 Part 1926 and failure to comply may result in imposition of sanctions pursuant to the Contract Work Hours and Safety Standards Act, (Public Law 91-54, 83 Stat 96). 40 USC 3701 et seq.

(3) The contractor shall include the provisions of this paragraph in every subcontract so that such provisions will be binding on each subcontractor. The contractor shall take such action with respect to any subcontractor as the Secretary of Housing and Urban Development or the Secretary of Labor shall direct as a means of enforcing such provisions.

APPENDIX C:

Applicable Davis-Bacon Wage Rate Decision

General Decision Number: NH170013 09/22/2017 NH13

Superseded General Decision Number: NH20160013

State: New Hampshire

Construction Type: Building

County: Rockingham County in New Hampshire.

BUILDING CONSTRUCTION PROJECTS (does not include single family homes or apartments up to and including 4 stories).

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.20 for calendar year 2017 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.20 (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2017. The EO minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/06/2017
1	07/28/2017
2	09/22/2017

BRME0003-001 05/01/2016

	Rates	Fringes
BRICK POINTER/CAULKER/CLEANER	$ 30.36	22.01

CARP0118-006 10/01/2016

	Rates	Fringes
CARPENTER (Acoustical Ceiling Installation, Drywall Hanging, Form Work and Floor Layer Including Carpet, Hardwood and Resilient)	$ 27.06	19.39

ELEC0490-004 06/01/2016

	Rates	Fringes
ELECTRICIAN		
Electrician	$ 28.00	18.94
Low Voltage Wiring Installer	$ 19.47	16.43

ELEV0004-002 01/01/2017

	Rates	Fringes
ELEVATOR MECHANIC	$ 55.86	31.585

a. PAID HOLIDAYS: New Year's Day, Memorial Day, Independence Day, Labor Day, Veterans' Day, Thanksgiving Day, Christmas Day and the Friday after Thanksgiving.

b. VACATION: Employer contributes 8% of basic hourly rate for 5 years or more of service; 6% of basic hourly rate for 6 months to 5 years of service as vacation pay credit.

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* IRON0007-007 09/16/2017

	Rates	Fringes
IRONWORKER (Reinforcing and Structural)	$ 24.79	21.79

LABO0976-001 07/01/2016

	Rates	Fringes
LABORER: Common or General (Industrial Work Only)	$ 19.96	16.62

LABO0976-002 07/01/2016

	Rates	Fringes
LABORER: Concrete Worker (removing forms, demolition and removal of concrete, pouring and leveling of concrete)	$ 19.96	16.62

SUNH2011-009 02/22/2011

	Rates	Fringes
CARPENTER (Drywall Finishing/Taping Only)	$ 27.02	11.69
CARPENTER, Excludes Acoustical Ceiling Installation, Drywall Finishing/Taping, Drywall Hanging, and Formwork	$ 23.53	8.25
CONCRETE FINISHER	$ 20.65	0.00
GLAZIER	$ 20.25	4.07
LABORER: Common or General	$ 16.46	0.00
LABORER: Mason Tender - Brick	$ 18.15	7.97
OPERATOR: Backhoe	$ 19.30	6.52
OPERATOR: Excavator	$ 21.27	7.63
OPERATOR: Loader	$ 22.03	0.95
PAINTER: Brush and Roller	$ 16.15	0.00

PLUMBER/PIPEFITTER, Includes
HVAC Pipe Work.....$ 25.34 5.85

ROOFER.....$ 17.55 3.25

SHEET METAL WORKER (HVAC Duct
Installation Only).....$ 25.50 13.90

SPRINKLER FITTER (Fire
Sprinklers).....$ 24.91 5.74

TRUCK DRIVER.....$ 20.47 6.70

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example:

PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination

* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION